

PAPER A

General Instructions

Paper A has two parts:

- **Part A requires you to prepare a full patent specification and drawings based on a hypothetical invention and prior art.**
- **Part B consists of one question related to the subject matter of Part A that requires a written answer.**

You will be provided with the following materials during the examination:

- **Instructions and mark breakdown.**
- **A narrative describing the invention in the inventor's own words, including prior art and invention illustrations for reference.**
- **A set of five pre-labelled drawings to be referenced by the specification.**
- **The *Patent Act* and *Patent Rules*.**

Instructions for Part A

You have been approached by an inventor with an invention that she would like to patent. She has provided you with an invention disclosure form that explains her invention in her own words.

The inventor wishes you to prepare a Canadian patent application for her invention. The inventor has also provided a set of labelled drawings already prepared by a technical artist for use in the application.

On the basis of the information and documents provided by the inventor, prepare the specification and drawings of a Canadian patent application in accordance with the following instructions.

1. You are required to prepare the specification. The petition and other such formal parts of an application are not required. The drawings have already been labelled with reference numerals.
2. Assume that there is no more relevant prior art aside from what is mentioned by the inventor.
3. Do not import your own knowledge of the subject matter into your analysis and preparation of the specification.
4. Your description and claims must be compliant with subsections 27(3)-(5.2) and sections 28.2 and 28.3 of the *Patent Act*, and with sections 46, 51, 52, 56, 57 and 60-63 of the *Patent Rules*.
5. You have been given a set of drawings to be used in preparing the application. These drawings have been prelabelled for you; you are not required to insert any labels in the drawings. You **must** refer to all five drawings and all reference numerals in your specification.
6. Marks for the description are awarded in part for appropriate terminology and organization as well as completeness, accuracy, and inclusion of alternative embodiments where appropriate. Since the inventor lacks patent training, the terminology, structure, and organization of the inventor's description of her own invention may not be appropriate for a patent application.
7. Your specification must include the following claims:
 - a. A first **independent claim for a single article of manufacture**.
 - b. **Four dependent claims** for the above independent claim.
 - c. A second, **commercially relevant, independent claim of any type** you choose (e.g., art, process, method, use, machine, apparatus, device, system, assembly, manufacture, kit, product, composition of matter, compound).
8. All claims must recite novel and inventive subject matter. The independent claims must be drafted as broadly as possible while still meeting the requirements for patentability

under Canadian law, when construed in accordance with the rules for purposive construction applied by Canadian courts. However, you **may** ignore the requirement for unity of invention in subsection 36(1) of the *Patent Act*.

9. Marks will be given for only the first four dependent claims. Additional dependent claims will **not** be marked.
10. Marks for the dependent claims are based in part on the strategic, legal and/or commercial significance of their subject matter. For example, dependent claims that further distinguish the claimed invention from the prior art may be allocated more marks than dependent claims that describe known subject matter.
11. Marks for the second independent claim are based in part on the strategic, legal and/or commercial significance of their claimed subject matter.
12. Deductions will be taken for faults in the claims:
 - a. Unacceptable limitations (superfluous elements) in independent claims
 - b. Anticipation of the second independent claim, or redundancy of the second independent claim in view of the other claims
 - c. Indefiniteness in any claim (e.g., antecedent errors, unclear language, inconsistencies)
13. Deductions will be taken for faults in the rest of the specification:
 - a. Incorrect admissions of prior art
 - b. Mischaracterization of non-essential elements as essential
 - c. Inconsistent, unclear or informal language
 - d. Poor organization
 - e. Failure to identify trademarks
 - f. Failure to reference all drawings

Instructions for Part B

Answer the question provided in complete sentences. Citations to legal authorities (case law, statutes, regulations) are not necessary and will not be marked.

MARK BREAKDOWN

Part A – Patent Specification			
Claims			
Claim 1 - independent			40
Claim 2 - dependent			2
Claim 3 - dependent			2
Claim 4 - dependent			2
Claim 5 - dependent			2
Claim 6 - independent			12
Subtotal			60
Description			
Title	1	Description (“summary”) of invention	3
Technical field	1	Brief description of the drawings	2
Background art	3	Description of preferred embodiments (including reference to drawings)	24
Subtotal			34
Part B – Short Answer Question			
First concern			3
Second concern			3
Subtotal			6

	TOTAL	100
--	--------------	------------

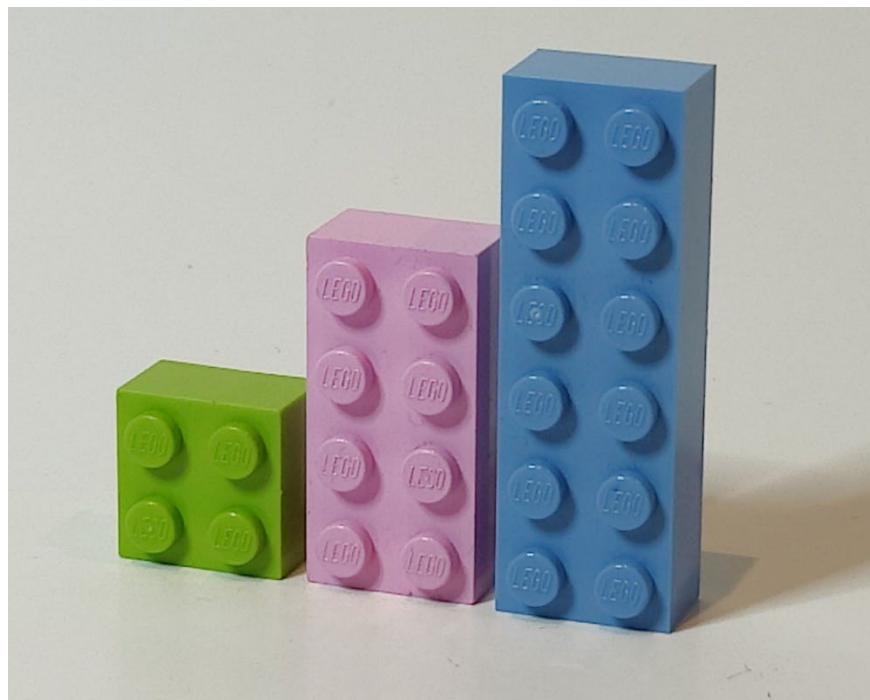
The following is a transcript of an interview between you and an inventor. Following the interview, the inventor instructs you to prepare and file a patent application in Canada, for the invention discussed during the interview.

Transcript of the Interview

You: Good morning. I understand you have a new invention and you are interested in filing a patent application. Describe to me what your invention is about?

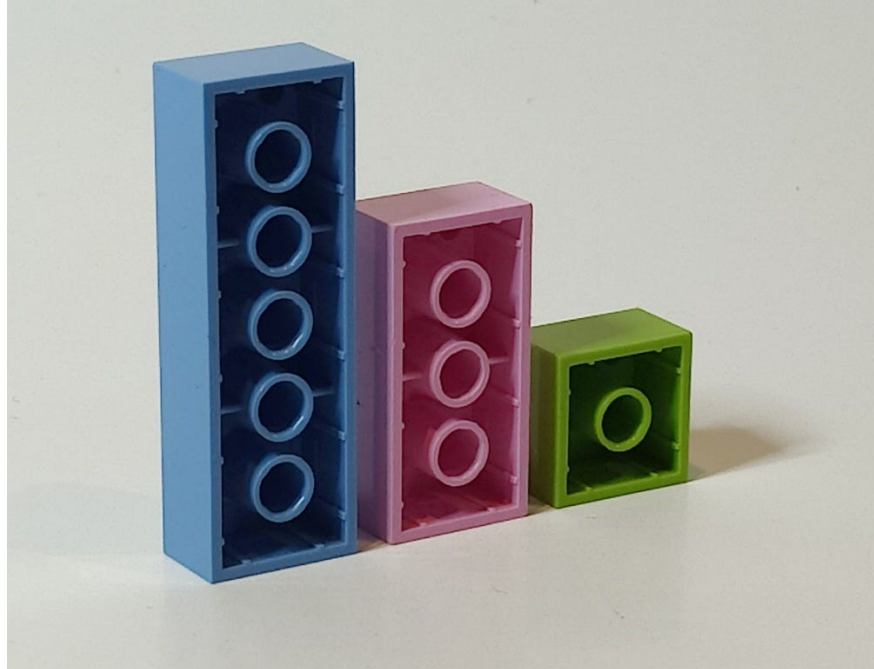
Inventor: Well, simply put, my invention is an alternative to Lego, it's a new design of an interlocking toy brick. However, to fully understand what makes my new brick stand out, I need to tell you a bit of a story.

I brought some example Lego bricks as well as some drawings. I'm sure you are familiar with Lego, it's made by a company in Denmark, the company is known as The Lego Group. I brought some Lego bricks with me:

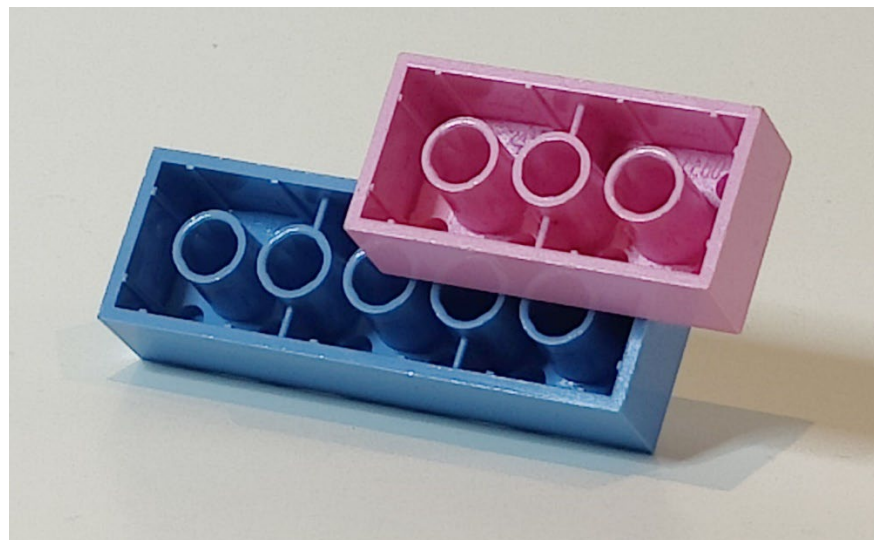


You can see that on the outside, on the top wall there are a series of knobs that protrude from the surface. From left to right, you see here a 2 by 2, a 2 by 4, and a 2 by 6 brick. That's what we hobbyists call them because it describes the arrangement of the knobs.

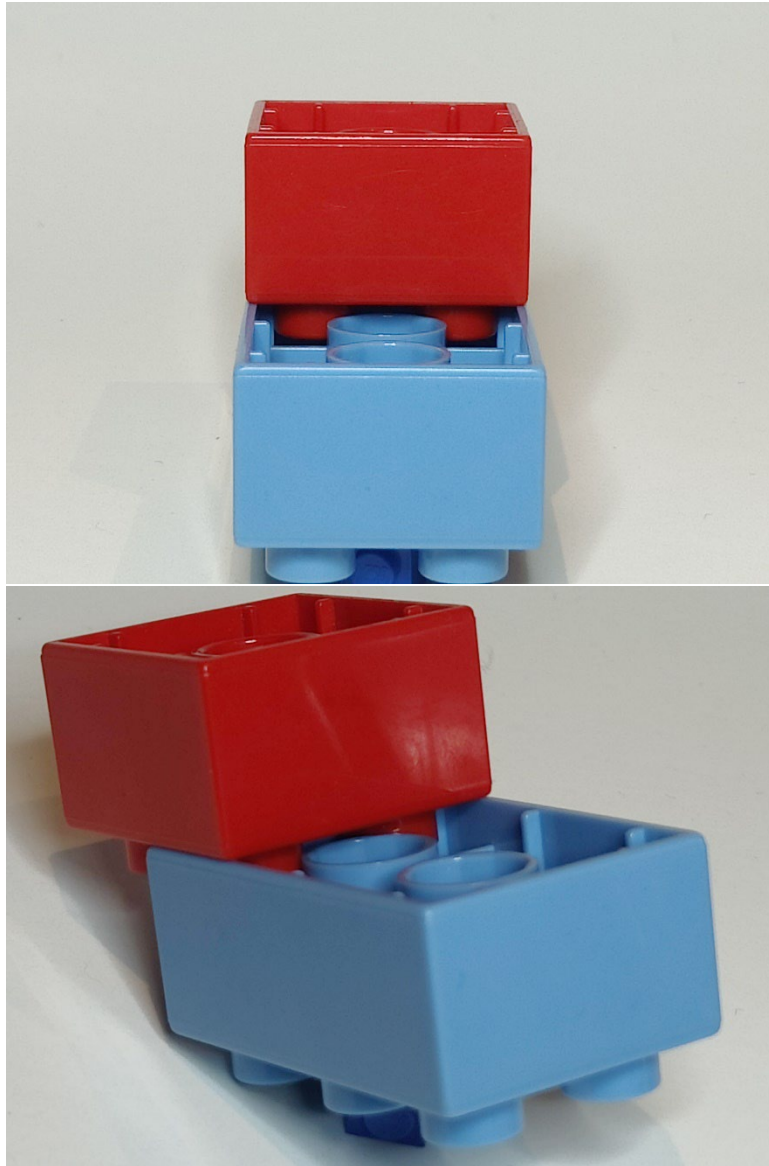
If you turn the bricks over, you can see that the bottom of each Lego brick has a hollow interior with certain protrusions and ridges and ribs. These protrusions and ridges and ribs project from the inside face of that top wall.



You connect bricks by inserting the knobs of one brick into the empty spaces of another brick. The spaces around the ribs and the cylinders are sized just so that the knobs are very slightly larger in diameter than the available space. So when the knobs enter these spaces, they press on the cylinders and ribs, and the cylinders and ribs, which are trying to maintain their shape, press back on the knobs. This creates friction that holds the knobs of the brick in place:



Here is an example of some other larger Lego bricks, actually they sell them under the Duplo brand and they are meant for young children. You can see how the studs of the red brick are positioned between the cylinders and ribs of the blue brick:



But back to my story. Growing up I always wanted the latest and greatest Lego kits, but they were so expensive, so my parents would buy the cheaper blocks sold by Lego's competitors. It used to drive me crazy as a kid that my masterpiece structures came apart so easily at the smallest bump or when I tried to move them. Of course, I never really understood why at the time. Fast forward to today, I still love to build, so I spent some time figuring out what makes the Lego bricks hold together so much better than other less expensive toy building blocks on the market. It's all about the clutch power.

You: I am not familiar with clutch power, can you explain what that term means?

Inventor: Clutch power is something we talk about in the hobbyist space, it's all about the amount of force it takes to pull two toy blocks apart, or to put it another way, how tightly one toy brick can grip another. Part of the reason Lego is so successful is that their brick has just the right wall thickness, material, design, and manufacturing tolerances so that you get the right amount of clutch power. You

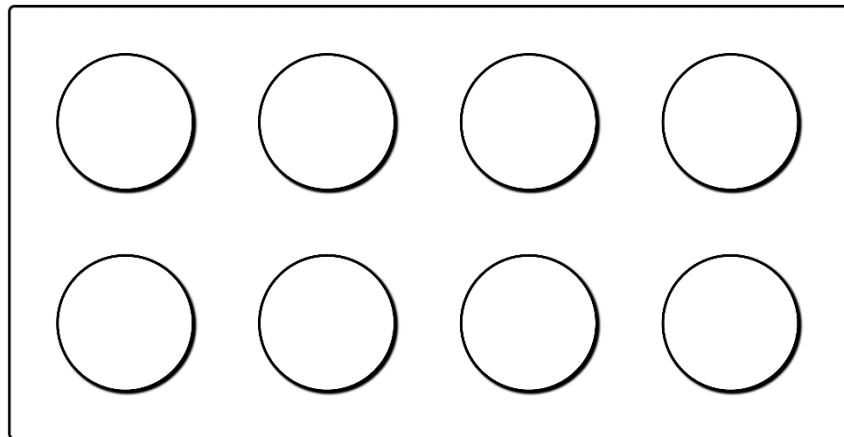
could also call it friction or clamping force. If you think about stacking Lego bricks, it's harder to separate them than to put them together.

You: Can you tell me a bit more about the problems with non-Lego building bricks?

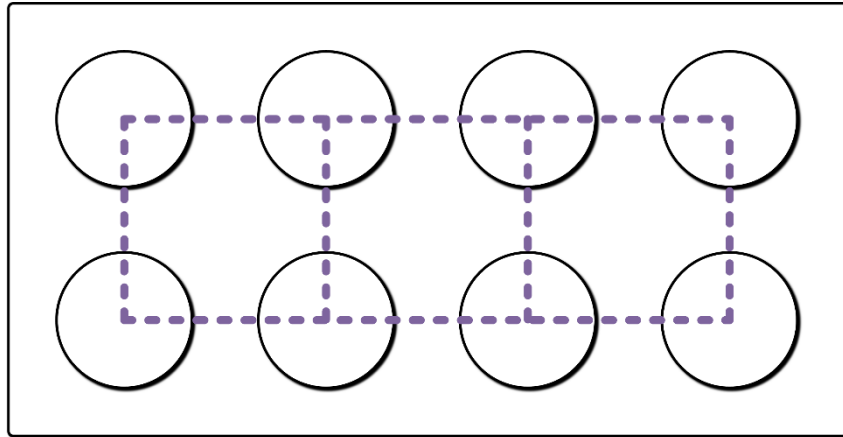
Inventor: You can tell by handling Lego bricks and competitor bricks that there is a clear difference. Lego bricks are made of a particular plastic that seems to add to the clutch power, by providing just the right amount of friction. The competitor toy blocks don't have that same feel to them. While competitor bricks come in interesting colours and patterns, they don't have the right amount of grip holding them together and as a result, the structures you build with those bricks are more likely to come apart when moved or jostled. With Lego bricks this is less of a concern.

You: So the superior gripping power of Lego is due to the special plastic?

Inventor: After years of studying these blocks, I figured out that the clutch power or grip strength is derived from not only the material, but more importantly, by the design of the bricks in the way they interlock with one another. Take another look at those Lego bricks I showed you a minute ago. A typical Lego brick has a top surface and four sidewalls extending perpendicular from the top surface to define the brick shape. It's rectangular. The bottom or underside of the brick is open. Here's a drawing I made of the top surface:



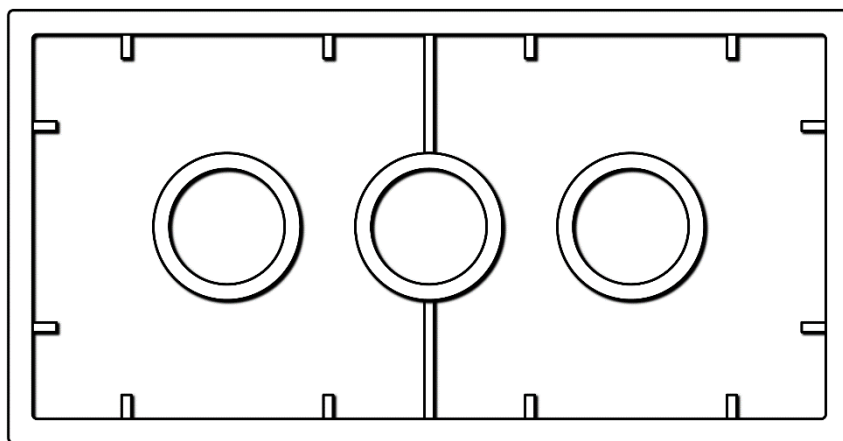
This is a very typical Lego brick, a very common size. Each of the knobs is spaced apart from one another in a very specific pattern. The knobs are arranged in two series or lines that are parallel to one another. The knobs are at the vertices of a square grid pattern, if you look at the center of each knob they are at the corners of an imaginary square. They are all equidistant. Here, I will mark up the square grid pattern in this line drawing with some dashed lines.



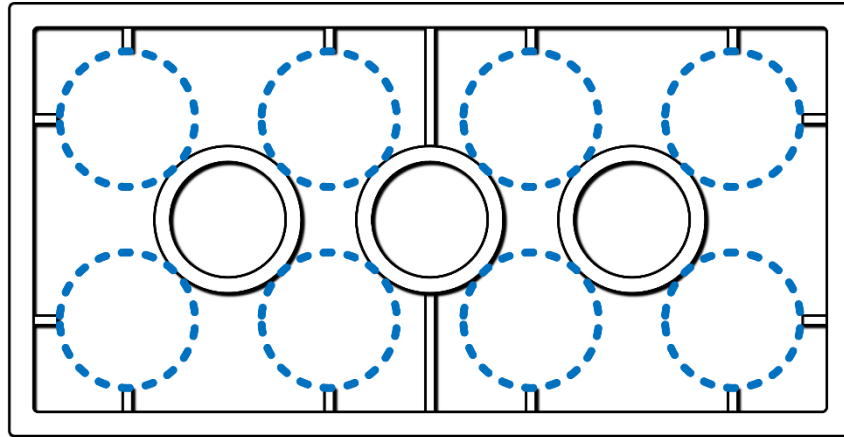
Like I said earlier, we call this particular brick a “2 by 4” brick, because its knobs are in two rows of four knobs. This very regular, square spacing of the knobs is common among all Lego bricks and competitor bricks to enable them to be used interchangeably.

As you can see from the Lego bricks I showed you earlier, the inside of the Lego block has at least one cylindrical projection, the number of projections depend on the size of the block. In the case of the 2 by 4 block there are three cylinders projecting from the inside of the top wall, arranged such that they are in a line and are spaced in a specific pattern to enable the bottom of the Lego brick to engage with the knobs of another brick. The cylindrical projections have a circular cross section, they are typically hollow but they can also be solid although that wastes material for no added functionality.

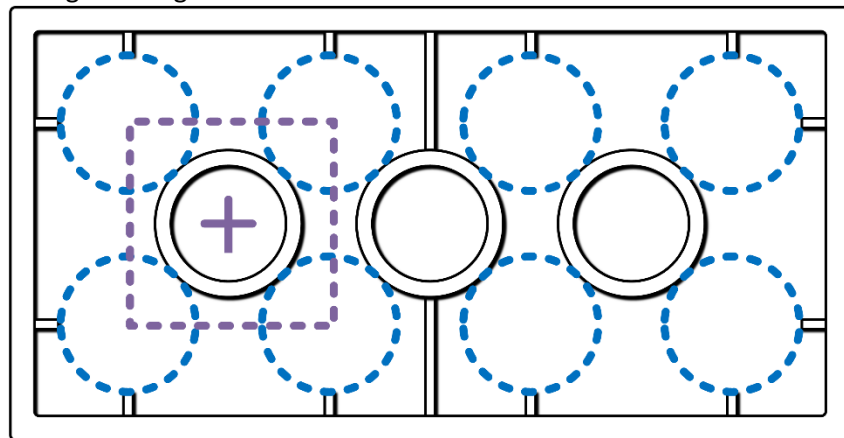
The inner surface of the side wall has a number of different ribs which project inward into the interior of the brick. Some of the ribs are small and project only a short distance from sidewall whereas some of the ribs are longer and project inwards and are joined to the tubular projections. The longer ribs provide rigidity to the block. You can see them more clearly in this line drawing:



Now I will mark up the drawing to show you where the knobs of the brick are located with respect to these cylinders. Imagine that you could see through the top wall and see the position of the knobs sticking out of the top wall. You’d see that they are in the positions marked by these circles in dashed lines:



Remember how I said the knobs were in a square arrangement? Well, the cylinders are positioned so they are centered right in the middle of each square. Here, I will draw one of those squares on this diagram over four neighbouring knobs:



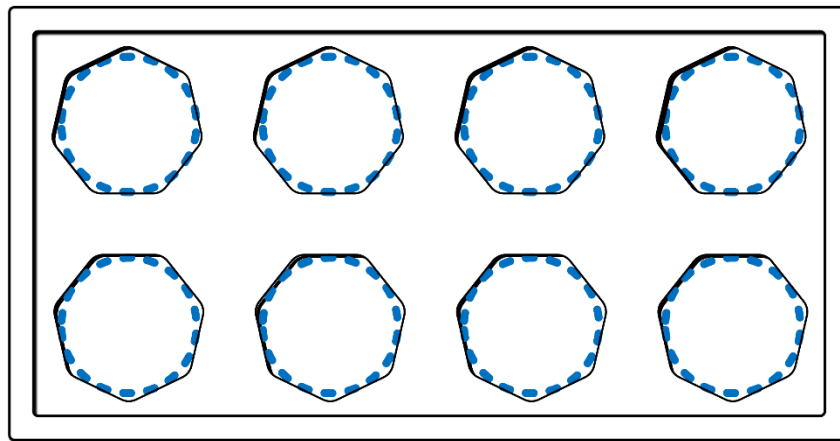
I marked the center of the cylinder—that's the axis of the cylinder—with a cross. It is aligned with the center of the square grid defining the arrangement of the knobs.

When you connect this brick to another Lego brick, the knobs of the second brick will be positioned in the same place as these dashed circles. Now here's the important part of the Lego design. When you insert the knobs of the second brick into the first brick, there are three contact surfaces that hold each knob in place. Each knob is in contact with a combination of ribs and cylinders. Maybe one rib and two cylinders, or two ribs and one cylinder. When you pull the blocks apart you have to overcome the friction provided by the contact points. The clutch power of the Lego brick is the result of their proprietary plastic and the friction it provides, and these three contact points on each knob. I have marked the contact points for two of the knobs in this drawing:

But this isn't great because the intersecting interior walls providing those contact points are quite thin. Since the bricks are plastic, they're prone to deformation, which means the walls get bent out of shape and don't provide enough surface area for contact with the knobs anymore. These bricks are available for purchase today, but they're not very popular.

Besides, with the crosshatch design, half of the knobs only have three areas of contact with the interior walls. You need more contact surface area to increase friction, like maybe five areas of contact for each knob. It was surprisingly difficult to come up with a new design that would have five or more contact points. Lots of people told me it would be impossible.

It's not that it's impossible, but it's not practical to manufacture and sell. I also came across this toy brick, which is practically a solid brick with eight holes in the underside:

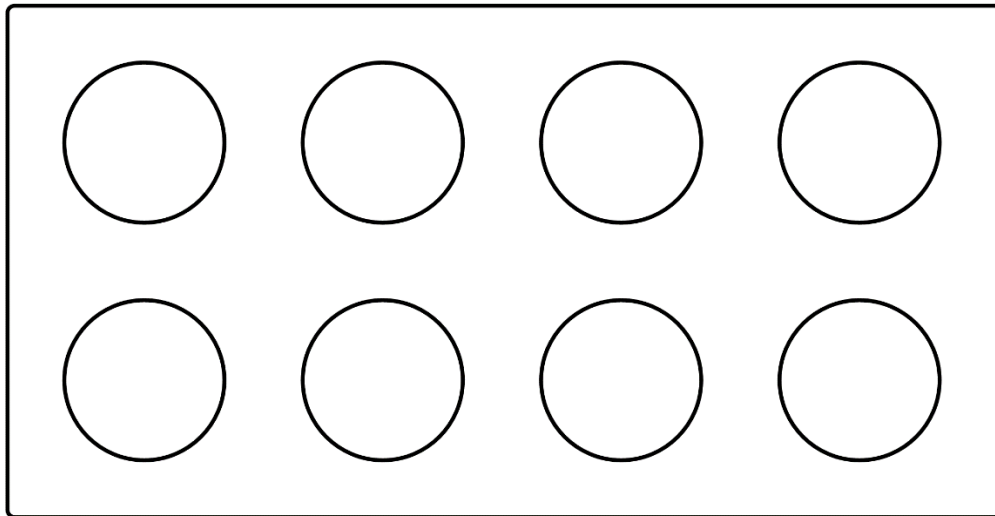


I call this the "recessed" design. These recesses are seven-sided, like a heptagon with rounded corners, so in fact there are seven contact points between a knob and its corresponding hole. Maybe it works, but it requires a lot of plastic. Even with a cheaper plastic it is actually too expensive to manufacture. Kits of these bricks are more expensive and noticeably heavier than Lego bricks. Not only that, but if one of those holes was made just a shade too small, it would be difficult to put bricks together—and if you managed to do it, it would be impossible to separate them again because the clutch power would be too strong.

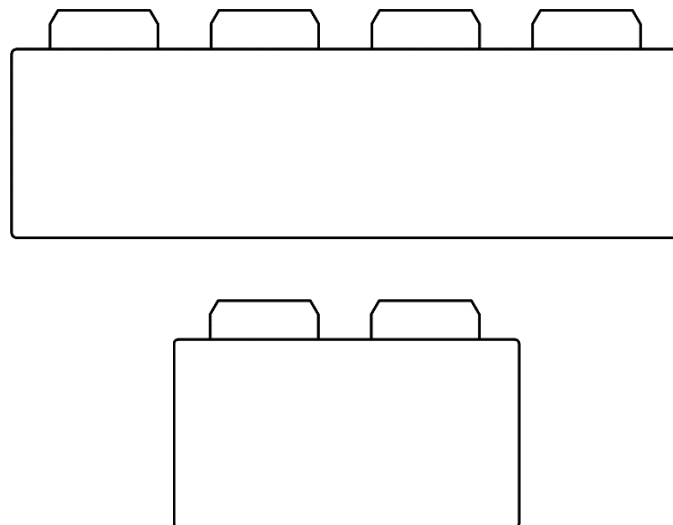
I went through a whole series of designs and failures before I came up with my invention. Through testing I determined that when you use a cheaper plastic and cheaper manufacturing processes to make the Lego brick design, you don't get the right amount of clutch power because those little ribs really need to be exactly the right size so that there is friction between the ribs and the knobs. This requires precise molding. I read that Lego has a manufacturing tolerance of 10 microns. If you skimp on your molds or your quality control, some of your ribs won't protrude enough to be useful. In other words, if you want to reduce manufacturing cost, you shouldn't use ribs. What I figured out was that I needed to try and cram in more rounded wall surfaces. It's a fact that curved walls are stronger than flat walls. In that crosshatch design, the contact points are provided by straight walls that tend to buckle. Lego had the right idea with those cylindrical projections on the inside of their bricks because those are curved wall surfaces.

However, there isn't enough space inside the brick for more cylindrical projections so I needed to come up some alternatives to make my concept work. What I finally figured out was that you didn't need to

use a full circle or cylinder to get the rounded wall, just a portion of a circle in the form of a semi circle or an arc would work, I guess you can call them convex surfaces. Here are my drawings. Here it is from the top, it looks exactly like a Lego brick and it is exactly the same size with the same knobs as Lego.



And here it is looking at the long side and the short side.



You: And what are the dimensions of your brick?

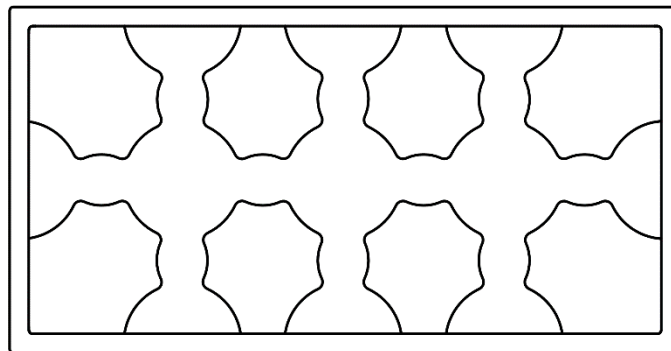
Inventor: The actual numbers aren't important. I mean they're important because they need to match Lego. If Lego were to suddenly change the sizes of their bricks, then my brick needs to be made the same size as theirs. But that reminds me, I need to be clear about what size brick my design works with. Lego comes in all shapes and sizes, with different numbers of knobs, but my design works for a particular size of block. It needs to be a rectangular block like the 2 by 4 brick, or longer. In that size the amount of clutch power is perfect, I think. It might work in a 2 by 2 brick size, but I'm not certain and

anyway, the 2 by 4 is the most important. Most building kits include a 2 by 4 brick. I think it's most important to have a patent on the 2 by 4 brick.

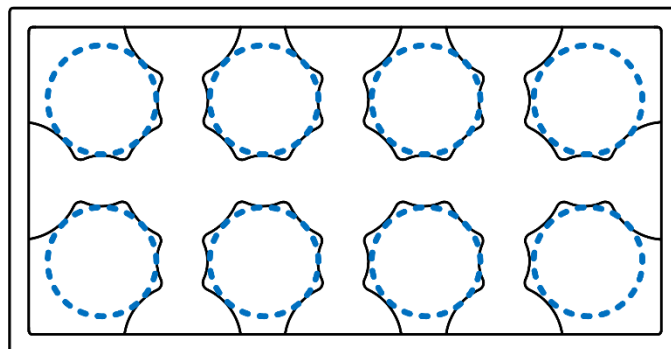
You: So you haven't measured a Lego brick?

Inventor: Well of course I have, because I need to make them the same size. The exterior dimensions are 31.8 by 15.8 by 9.6 mm for the body of the brick, and the knobs are 1.8 mm high and have a diameter of 4.8 mm. The square grid I described earlier, the squares have a length of 8 mm. That means the center of each knob is 8 mm away from the center of its neighbouring stud. Also, notice that the tops of the knobs are bevelled. They're not perfect cylinders. This makes it easier to insert the knobs into another brick. The same is true of Lego, there's a barely perceptible bevel.

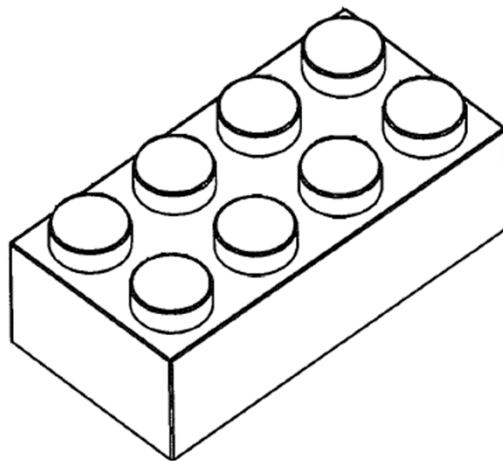
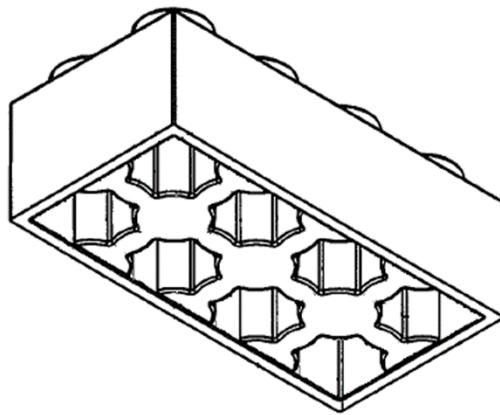
This is the underside of my brick design:



The clamping force of my brick is increased by having at least five contact points when the bricks are engaged with one another. Here I have drawn in the knobs of another brick in dashed lines:

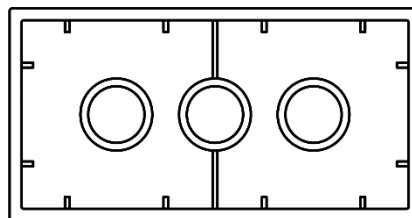


You can see that for the four outermost knobs, there are five places where the knob is in contact with the brick. For the four inner knobs, there are six places of contact. And every contact area is on a curved wall. Here is a drawing I made of two bricks about to be put together. You can see that the vertical sides of the knobs will contact the bulging parts of the walls and the semi-cylinders and whole cylinders.

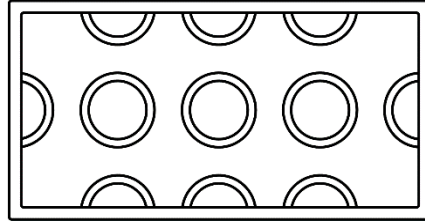


You: Interesting. How did you arrive at this design?

Inventor: Well, I thought about a Lego brick with those three cylindrical projections. Remember, it looked like this, with cylindrical tubes extending from the inside of the upper wall of the block:

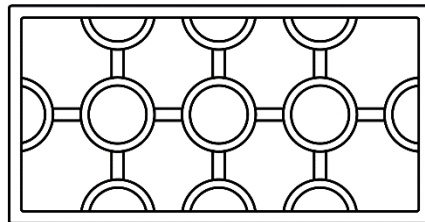


I didn't want to use the ribs, because that requires precise molding, and I wanted more convex walls, and I realized I could remove the ribs and insert half-cylinders instead. The half-cylinders emerge from the inside of the sidewalls:

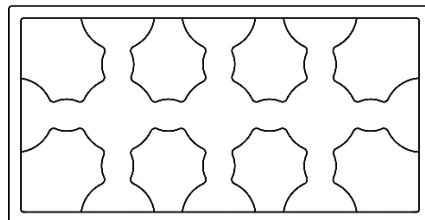


So, I now had a set of posts where some were cylindrical and some were semi-cylinders. They project from the inside of the top face of the brick, similar to Lego. And you can see that they are arranged in a square grid arrangement too, although not the same square grid as the knobs. In fact each cylinder is positioned in the same place as the cylinders in Lego. The semi-cylinders are arranged in line with the cylinders. If you imagine the center of each cylinder and semi-cylinder, their centers are spaced apart in the same square grid as the studs, but offset.

Next, I connected the cylinders and the semi-cylinders with some walls to give it more rigidity:

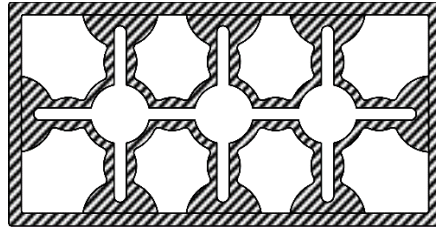


So the colinear cylinders and semi-cylinders are connected. And then, to create more areas of contact, I made these walls bulge outward. I also made all the posts solid:



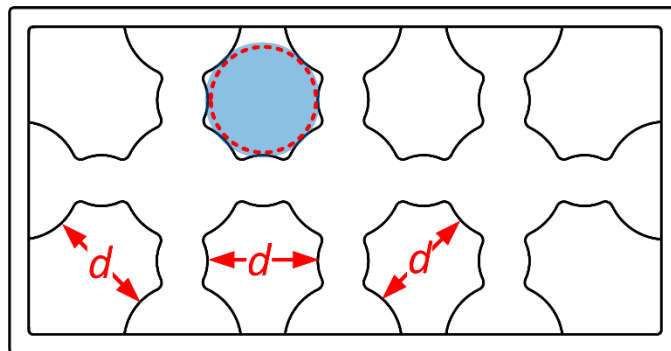
So in the end, you have either five or six contact areas distributed around the circumference of a knob, and every contact area is on a convex surface because they are provided by the connecting walls, the cylinders, and semi-cylinders. And this design allows for greater manufacturing tolerances than the Lego brick, or the crosshatch or recessed designs I showed you. The walls of my design are narrower and a little more flexible than the recessed brick design, so it is more forgiving if you happen to make one of the recessed areas a little smaller than it should be.

Oh, by the way, I did come up with an alternate design where I reduced the consumption of plastic by hollowing out the cylinders and walls, but I'm not certain I'm going to use it:



You: You keep saying “clutch power”. You also said it was a friction or clamping force. To be correct, though, there isn’t actually any clutching or clamping occurring, is there? Clutching and clamping implies an externally applied force that is used to grab and hold onto the stud but that’s not really happening. This is a friction fit, isn’t it, where the recesses in your design are just barely smaller than the exterior dimension of the knob so that the knob is held in place by friction?

Inventor: Well, you’re right. We hobbyists got the “clutch power” terminology from Lego. But that’s what I was saying, it’s about friction. It is what they call a friction fit, and specifically an interference fit, in engineering. Let me show you with another drawing.



Here’s my block design. You see that the distance d between the closest points of the opposite walls, which is the distance between the contact surfaces of the brick that will engage with the knob of another brick, is supposed to be the same for all opposing walls, subject to manufacturing tolerances. And that distance d is just a bit smaller than the diameter of a knob. The red dashed circle is a circle with diameter d . The blue solid circle represents a knob. The diameter of the knob is just slightly larger than the diameter d . Depending on the material used to make the block, the ideal difference can range from 10 to 30 microns. That’s a wider range of manufacturing tolerance than for Lego.

Also, when bricks are manufactured, they’re not perfect. Some of those distances d might be outside the expected tolerance. Some opposing walls might be farther apart, and not even be in contact with the knob when it is inserted. But it is likely that other walls defining the recess for that knob will be within tolerance, so there will still be friction with some contact surfaces holding the knob in place. That’s why it’s important to have many contact surfaces to engage the knob. Even if some fail, there will still be enough to hold the knob in place. This is what you need to do when you are not manufacturing to the exacting standards of Lego.

You: Is that also where the word “knob” comes from? Is that Lego terminology?

Inventor: No, that’s my word. Lego calls them “studs”.

You: Is there a difference in meaning?

Inventor: You mean, technically? I don't know. I guess a knob could imply a rounded bump or ball.

You: Okay. Can you talk about the material your block is made from?

Inventor: My brick is made from any suitable plastic. Ideally, I like to use ABS (Acrylonitrile Butadiene Styrene) which is the same type of material used to make the classic Lego brick. ABS is a hard plastic that is commonly used and is scratch resistant. Most manufacturers are already set up to work with ABS so it makes it the ideal choice.

However, there are lots of alternatives out there too like a polycarbonate/ABS composite, polyvinyl chloride, acrylic, polypropylene, and so on. It all comes down to pricing, availability, and manufacturers capability to work with the material. All these materials are suitable for my blocks. I think that my design will be good to use with materials that have a lower friction coefficient than ABS, like polyoxymethylene, because my design compensates for the low friction.

Oh, and this reminds me. I was thinking that maybe, once consumers have access to 3D printers with a high enough resolution, capable of printing fine details, I could actually sell the 3D printer files to customers so they could print their own bricks on demand in whatever colour they want. The printer file can be made available on a website, so remote customer computers could be used to make a purchase, download the file, and print on a local 3D printer. These printers exist now, but they're quite expensive so really only used for professional or industrial applications. I predict that average consumers will have easy access to these types of 3D printers in about 5 years, maybe 10.

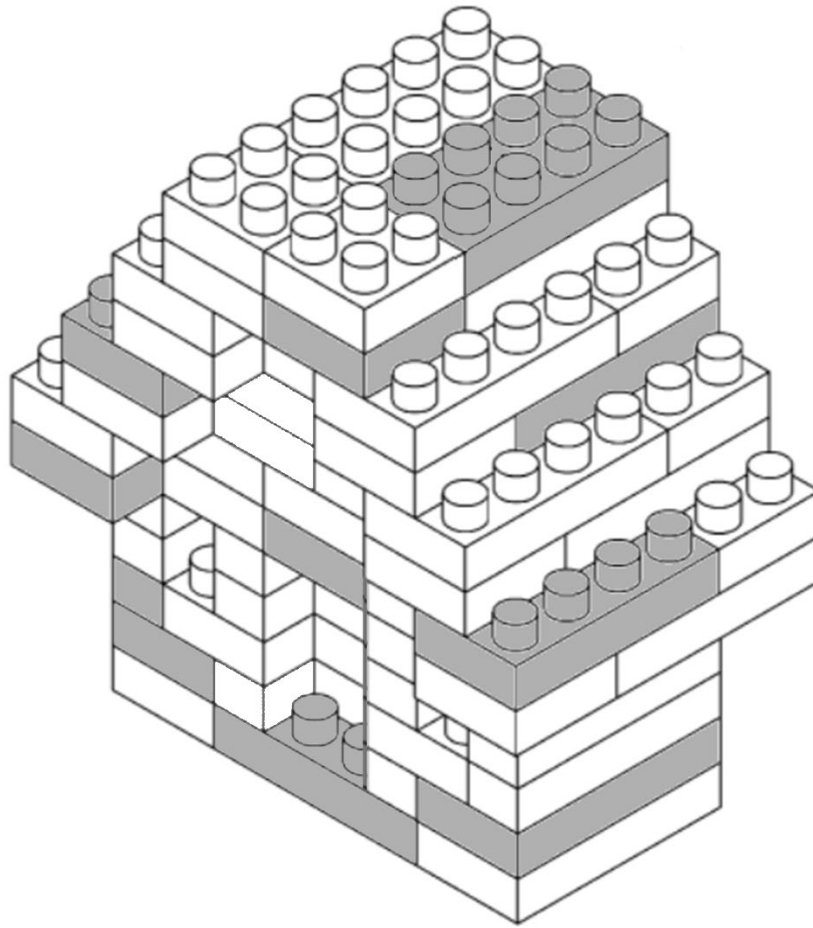
You: Can you talk about who the end-user of the invention is?

Inventor: Great question, and obviously the first thing that comes to mind is kids. However, who would be the purchaser – it would be parents and hobbyists.

And I have some ideas about marketing.

First, I believe I can manufacture my bricks at a lower cost and can offer sets of blocks to build specific structures, just like Lego does, but at a lower price point.

Also, let's say you have a set of competitor bricks that do not hold together very well because they don't have enough clutch power. I thought to myself, could you improve a structure built of those lower quality bricks if you mix in some of my bricks? Since my bricks and these competitor bricks are compatible with Lego, they should be compatible with each other. After testing lots of different brick combinations, I have determined that if you are using cheaper bricks lacking in clutch power to build a structure, that mixing in a minimum number of my blocks will improve the structure's stability and rigidity. Let me show you what I mean with this house I built:



The white bricks are competitor bricks which, by themselves, aren't that great because they are lower quality copies of the Lego brick design, with only three contact areas per stud. The grey bricks are mine. If this house were built exclusively with the competitor bricks, it would break apart if you tried to lift it—every time. But because my blocks are scattered throughout the structure so that about 10% of the studs that are connected to another brick, are connected to one of my bricks, it's less likely to happen. I found that about the house made with a combination of bricks stayed together when I lifted it—it became much sturdier. I even tried this with a house that was 90% Lego bricks and I discovered that this made the structure slightly sturdier, too. Not as great an improvement as when mixed with cheaper competitor bricks, but there was an improvement. In short, because my blocks have more contact areas, essentially they can reinforce an interlocking toy brick structure made of Lego-type bricks. Actually, the same is true if you use some of the competitor bricks that have more contact areas per stud, like the recessed design I showed you earlier, but I don't think anyone has actually figured out that you just need a certain amount of these bricks to achieve this enhanced stability.

So, I think I can also offer small packs of my blocks that customers can buy to be used in combination with non-Lego bricks to increase structure stability. This will result in lower cost for the customer, compared to Lego kits, and more customer satisfaction with competitor kits because the structures they build will hold together better. So the customer can buy a non-Lego building kit from a competitor, and

then buy a pack of replacement bricks from me in the right colours for their kit. They can use my bricks to replace some of the original bricks in the kit, and that will provide extra stability in the structures they build.

You: As you move forward with your plans for commercialization, you should remember that Lego is a registered mark – do you have permission to use it?

Inventor: I was thinking I could just reach out to get permission from Lego. It will be important for me in my advertising to talk about what I have learned about Lego and non-Lego sets.

PART B

Short Answer Question (6 marks maximum)

The inventor questions the value of including the second independent claim in her patent application. Provide two brief and distinct explanations why the subject matter of your second independent claim is legally, commercially, or strategically desirable or valuable, discussing any of the following topics:

- patentability or patent validity
- patent infringement
- remedies for patent infringement
- claim construction

Your answer must clearly identify each distinct legal, commercial or strategic concern and the legal rule or principle giving rise to that concern, and explain how your second independent claim addresses that concern. While you may discuss two concerns relating to one of the topics above (e.g., two validity concerns or two infringement concerns), those concerns must be different and the legal rules or principles must be different.

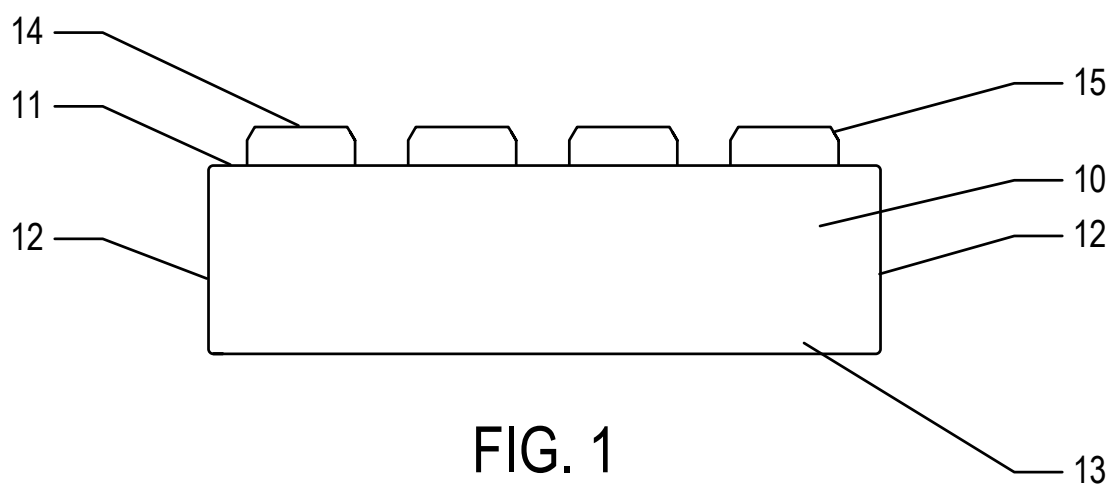
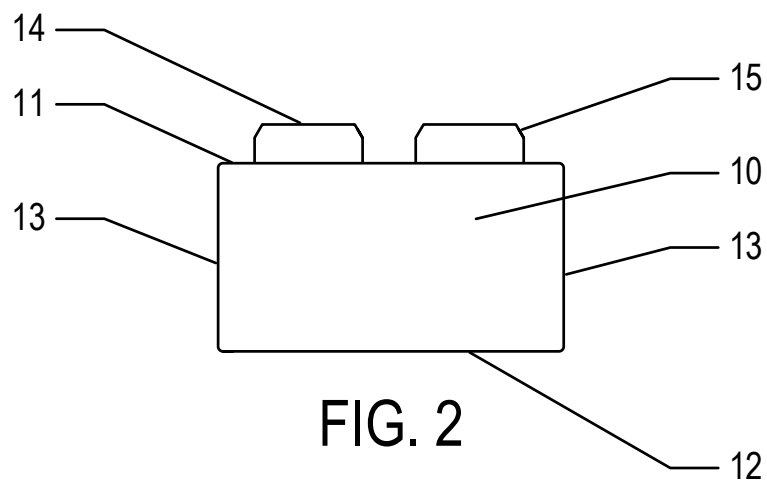


FIG. 1



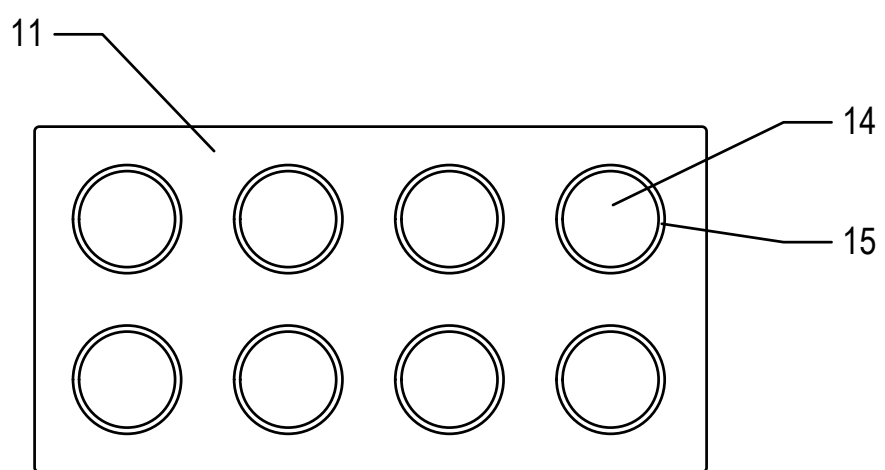
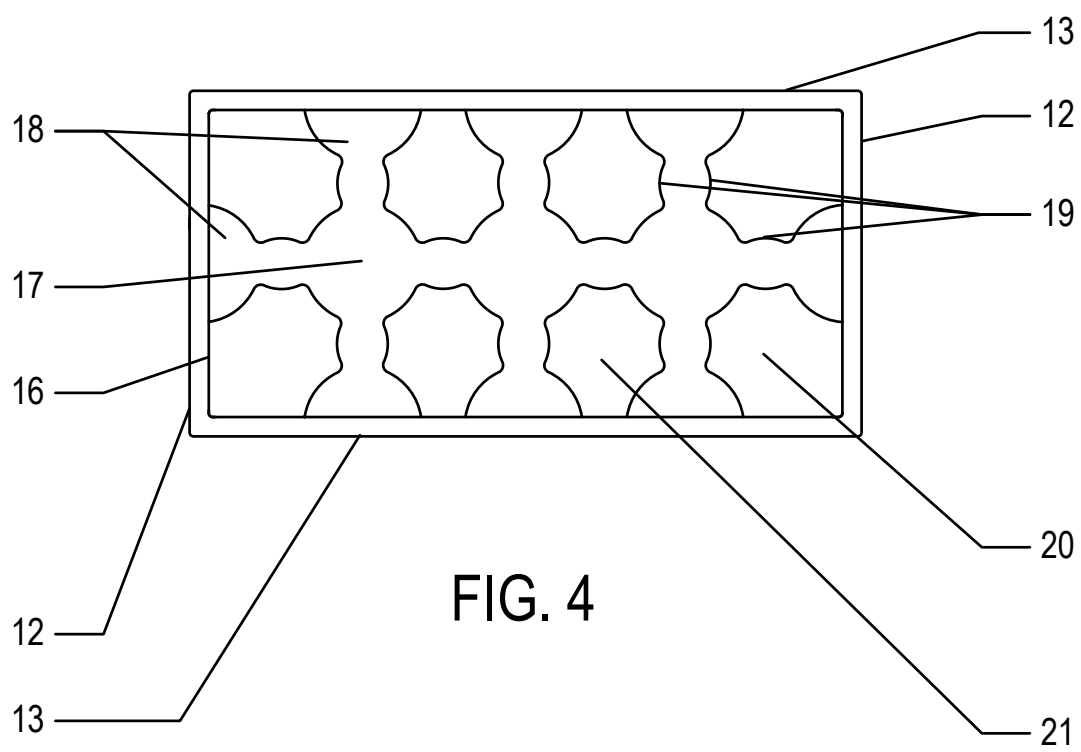


FIG. 3



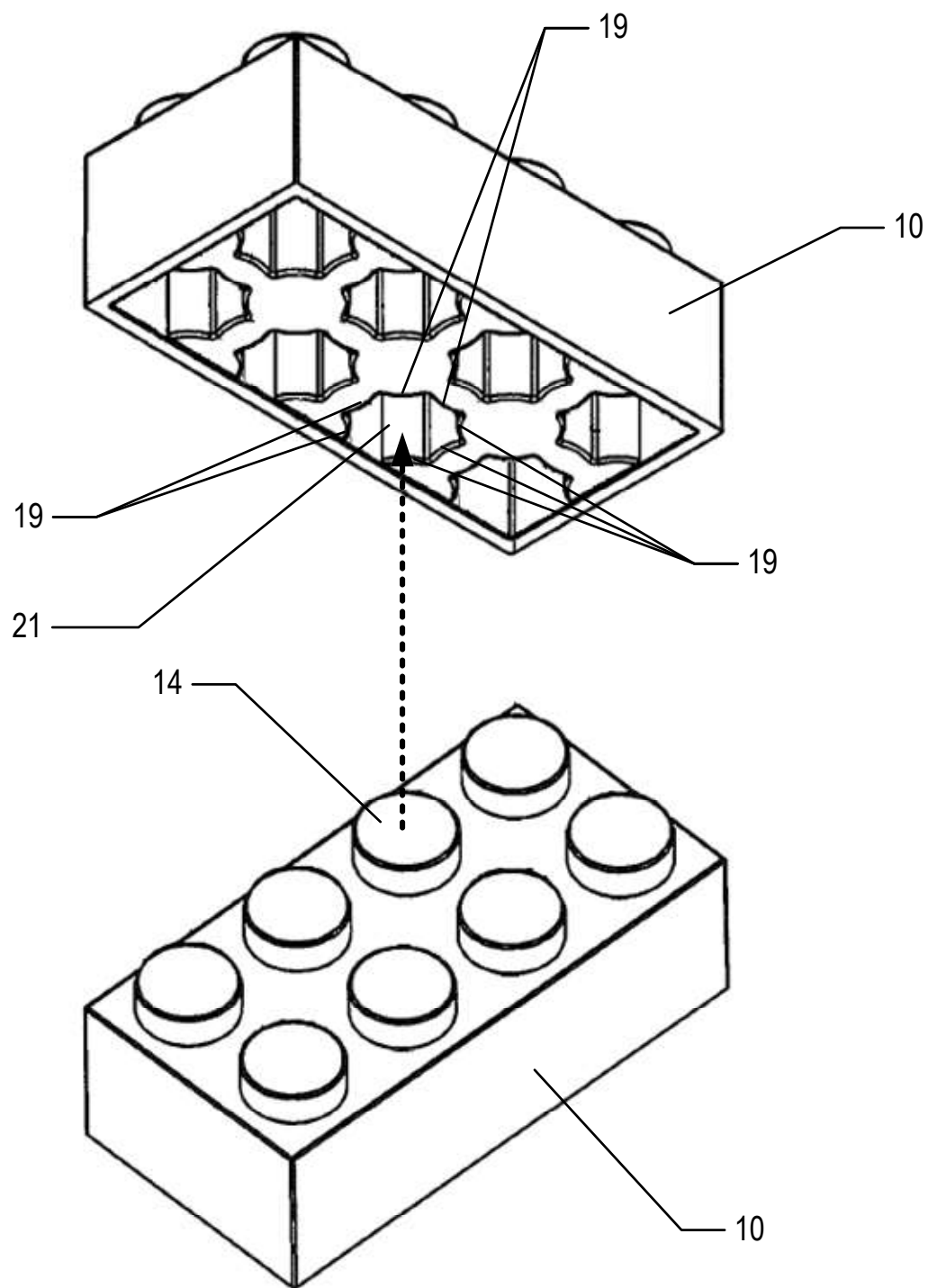


FIG. 5

Part A – Patent Specification

INDEPENDENT CLAIM 1

Example claim:

1. A rectangular toy brick, comprising:
a top wall and four side walls comprising first and second pairs of opposing side walls;
a plurality of cylindrical studs projecting from an exterior surface of the top wall in a first square grid arrangement;
at least one cylindrical post projecting from an interior surface of the top wall at each position corresponding to a center of the first square grid;
a plurality of semi-cylindrical posts projecting from the interior surface, the semi-cylindrical posts being disposed on the interior of the first and second pairs of the opposing side walls;
the at least one cylindrical post and the plurality of semi-cylindrical posts being connected in a second square grid arrangement by convex wall segments;
the at least one cylindrical post, the plurality of semi-cylindrical posts, and the convex wall segments configured to engage a complementary plurality of cylindrical studs of the same dimension and arrangement as the plurality of cylindrical studs in a friction fit.

1. A rectangular toy brick, comprising:
a top wall and four side walls extending between the top wall and a bottom face of the toy brick;
a plurality of cylindrical studs projecting from an exterior surface of the top wall in a square grid arrangement;
one or more cylindrical posts projecting from an interior surface of the top wall at each position corresponding to a center of the square grid;
a plurality of semi-cylindrical posts projecting from the interior surface, the semi-cylindrical posts being disposed on the interior of the first and second pairs of the opposing side walls;
a plurality of convex wall segments connecting the one or more cylindrical posts and the plurality of semi-cylindrical posts;
the bottom face comprising a plurality of recesses for receiving a plurality of complementary cylindrical studs of the same dimension and arrangement as the plurality of cylindrical studs, each recess being defined by a plurality of contact surfaces provided by a combination of convex wall segments, semi-cylindrical posts, and at least one cylindrical post, for engaging one of the complementary cylindrical studs in a friction fit.

Claim Element	Requirements	Mark
rectangular toy brick [comprising a top wall and four side walls...]	Brick must have a rectangular prism shape. The mere term “block” or “brick” is not equivalent to this shape.	0 or 2
a plurality of cylindrical studs	Plurality of studs, protuberances, projections (1 mark) that are cylindrical or have a circular	0, 1 or 2

	cross-section (1 mark). No marks if claim encompasses only one stud.	
projecting from an exterior surface of the top wall	Studs are arranged on one face of the brick. No marks if studs can be construed to be on the same face as the posts.	0 or 1
in a first square grid arrangement	Studs must be centered at the vertices of a square grid (imaginary squares arranged in a continuous tile) to enable complementary arrangement (addressed below).	0 or 5
at least one cylindrical post one or more cylindrical posts	Appropriate number (1 mark) of posts with cylindrical shape (1 mark). Note: it is acceptable to recite a plurality of cylindrical posts; this means the claim cannot be a 2x2 brick, but as noted below no marks are deducted if the brick is a 2x4, etc. brick. However, the number of cylindrical/semi-cylindrical posts and connecting walls must be consistent with a brick having a plurality of cylindrical posts. A suitable number of may be implicit in the claim.	0, 1 or 2
projecting from an interior surface of the top wall the <u>bottom face</u> comprising a plurality of recesses...	In respect of the semi-cylindrical and cylindrical posts, and convex walls. Positioned such that the connection means for engaging studs of another brick (set out in the following claim elements) are on a face opposing the studs of the claimed brick. Marks are awarded here for the general structure: the engaging means are on the opposite face of the stud face, regardless of the engaging means recited in the claims.	0 or 2
at each position corresponding to a center of the first square grid	The cylindrical posts are aligned with the centers of the square grid.	0 or 2
a plurality of semi-cylindrical posts	Suitable number of walls or posts (1 mark) that are semi-cylindrical or semi-circular in shape (1 mark). Note: it is acceptable to recite a specific number of posts, if the claim is limited to a 2x4 brick. A suitable number of may be implicit in the claim.	0 or 2
projecting from the interior	Semi-cylindrical posts are disposed around the	0 or 2

surface, the semi-cylindrical posts being disposed on the interior of the first and second pairs of the opposing side walls	<p>interior of the side walls.</p> <p>Note: projection from the interior surface addressed above. No marks if projections can be construed to be on the same face as the studs.</p>	
<p>the at least one cylindrical post and the plurality of semi-cylindrical posts being [connected] in a second square grid arrangement</p> <p>the [bottom face] comprising a plurality of recesses for receiving a plurality of complementary cylindrical studs of the same dimension and arrangement as the plurality of cylindrical studs, each recess being defined by a plurality of contact surfaces provided by a combination of convex wall segments, semi-cylindrical posts, and at least one cylindrical post, for engaging one of the complementary cylindrical studs in a friction fit</p>	<p>Semi-cylindrical, cylindrical posts must be centered at the vertices of a square grid (imaginary squares arranged in a continuous tile) such that complementary studs will be aligned with the studs of the brick. This is not the same square grid as the studs but has the same spacing.</p> <p>This arrangement may be implicit in the claim, for example through the arrangement of recesses, the position of the cylindrical posts expressed in the claim, and the provision of contact surfaces or definition of a recess by walls provided by the cylinder, semi-cylinders, and convex walls . This arrangement must be claimed to be complementary with the studs.</p>	0 or 5
<p>connected</p> <p>[a plurality of convex wall segments] connecting</p>	Semi-cylindrical, cylindrical posts must be connected.	0 or 2
<p>by convex wall segments</p> <p>a plurality of convex wall segments</p>	<p>The connections are provided by wall segments that are convex (or similar term; accept “bulge”).</p> <p>For example, “wherein the projections are formed by a plurality of cylinders, semi-cylinders, and curved walls to form five or more convex points of contact” may be awarded 3 marks here; but if the claim does not specifically recite that the walls connect the cylinders and semi-cylinders, then the candidate would not receive the preceding 2 marks.</p> <p>No marks if there is no distinct wall segment or distinct convexity connecting the posts (e.g., “the posts being connected to provide a convex</p>	0 or 3

	wall” does not provide distinct convexity).	
<p>the at least one cylindrical post, the plurality of semi-cylindrical posts, and the convex wall segments configured to engage a complementary plurality of cylindrical studs ... in a friction fit</p> <p>each recess being defined by a plurality of contact surfaces provided by a combination of convex wall segments, semi-cylindrical posts, and at least one cylindrical post for engaging one of the complementary cylindrical studs in a friction fit</p>	<p>Engagement or engagement surfaces for any given complementary stud are provided by a combination of semi-cylindrical posts, one or two cylindrical posts, convex wall segments. Limitation must clearly indicate that all three are present with correct number (e.g., “at least one cylindrical post”, convex wall segments and semi-circular posts, plural). It is acceptable to indicate that there are at least five contact areas, but this alone is insufficient to meet this requirement.</p> <p>Limitation must clearly describe the arrangement of the studs to be engaged by the brick.</p> <p>Terminology must be consistent with a friction (interference) fit, and not merely receiving a knob in a recess. Must not imply an externally applied force. Terminology like “clamp”, “clutch” not acceptable.</p>	0 or 10
Claim elements with no impact on the marking		
<p>No marks are awarded or deducted for the following:</p> <ul style="list-style-type: none"> • structure limited to a 2x2 or 2x4 brick • merely reciting that brick is “plastic” (deduct marks if a specific type of plastic is recited) • recital of walls and surfaces to define the brick shape, unless these features create an unacceptable limitation or indefiniteness • studs/recesses are a multiple of 2, minimum 4 • the block or brick is a toy • a reference to another brick with different dimensions when defining the arrangement of complementary studs (provided the complementary studs have the same arrangement as the brick’s studs) • referring to a portion of the brick as the “top” or “bottom” (or similar wording) for the purpose of distinguishing between faces of the brick, provided this terminology does not result in a limitation that the brick must have a particular orientation • studs, semi-cylindrical, cylindrical posts project normally from exterior or interior surface of wall, as the case may be 		
Deductions for unacceptable limitations (-5 marks each)		Deduction
Reciting an unnecessary limitation of use		
Improper preamble (e.g., reciting an “apparatus” or other term inconsistent with a single piece)		
Improper transitional phrase (e.g., “consisting of”)		

Insufficient structure to support the arrangement of interior posts, convex walls	
Bottom surface is a wall or solid	
Bottom of brick receives/engages the same studs that are on top of the same brick	
Claim encompasses engagement of a complementary stud in a manner that is not possible (e.g., only one convex wall, only one semi-cylindrical post)	
Requirement that brick is engaged with another brick, or other language indicating an active engagement (e.g., when defining the arrangement of the posts and convex walls, stating that the brick “engages” studs of another brick)	
Any other recital of method step	
For any other superfluous claim limitation or element	
Deductions for indefiniteness errors (-0.5 marks each)	
Indefiniteness errors include antecedent errors, unclear language	
TOTAL INDEPENDENT CLAIM MARK (minimum 0)	/40

DEPENDENT CLAIMS 2-5

Only the first four dependent claims are marked. Claims are worth a maximum of 0.5, 1, or 2 marks depending on limitation value (extent to which the limitation usefully differentiates over the prior art). If more than one limitation is included in a claim, only the higher mark applies to that claim. Deductions are taken for any error to a minimum score of 0 for the claim. “Improper dependency” includes claim misnumbering, incorrect dependencies (i.e., creating an indefiniteness error) and unnecessarily limiting dependencies.

Limitations worth 2 marks:

- a) specific numbers of posts or internal walls, if claim 1 was written without specifying numbers
- b) hollowed-out structure
- c) specific limitation to a material with lower friction coefficient than ABS, or specific limitation to polyoxymethylene (if material is only mentioned in a list or Markush group, then only 1 mark)
- d) each recess is defined by at least 5 contact surfaces
- e) bevel on studs

Limitations worth 1 mark:

- f) any other selection of material, whether individually claimed (e.g. ABS alone), whether presented in a list of alternatives, Markush group, etc.
- g) if (a) does not apply, for the first dependent claim specifying dimensions of bricks specific numbers of posts or internal walls, if claim 1 already specified a number of at least one type of post or wall
- h) manufacturing tolerance (e.g. specifying 10-30 microns smaller)
- i) some recesses defined by 6 contact surfaces
- j) solid structure (provided there is not another claim reciting hollowed-out structure)

Limitations worth 0.5 marks:

- k) complementary studs are on an interlocking toy brick, however characterized
- l) specifying number of exterior walls or faces
- m) rectangular prism shape

- n) manufactured by 3D printing
- o) brick of claim 1 in a set or pack of bricks
- p) any limitation that should have been in claim 1
- q) definition of friction fit
- r) specifying 2x2, 2x4 arrangement of studs
- s) specifying exterior dimensions
- t) solid structure (if there is another claim reciting hollowed-out structure)
- u) compatibility with Lego brick (note that the claim may be indefinite because there are different shapes and sizes of Lego brand bricks)
- v) repetitive limitation (e.g. reciting that convex walls are hollow when another dependent claim already recited that cylinders are hollow; could have been written as alternatives in one dependent claim)
- w) if (a) applies, for each subsequent dependent claim specifying numbers of posts or internal walls
- x) if (g) applies, for each subsequent dependent claim specifying numbers of posts or internal walls, if claim 1 already specified a number of at least one type of post or wall

All other limitations receive a mark of 0.

Claim 2 (minimum mark 0; maximum 2)	Mark
Limitation value (0.5, 1, or 2 marks)	
Improper dependency deduction: -0.5 max	
Unclear language or inconsistencies: -0.5 max	
Claim 3 (minimum mark 0; maximum 2)	Mark
Limitation value (0.5, 1, or 2 marks)	
Improper dependency deduction: -0.5 max	
Unclear language or inconsistencies: -0.5 max	
Claim 4 (minimum mark 0; maximum 2)	Mark
Limitation value (0.5, 1, or 2 marks)	
Improper dependency deduction: -0.5 max	
Unclear language or inconsistencies: -0.5 max	
Claim 5 (minimum mark 0; maximum 2)	Mark
Limitation value (0.5, 1, or 2 marks)	
Improper dependency deduction: -0.5 max	
Unclear language or inconsistencies: -0.5 max	
TOTAL DEPENDENT APPARATUS CLAIMS MARK (minimum 0)	/8

SECOND INDEPENDENT CLAIM

This claim is worth a maximum of 12 marks. 6 marks are allocated to objective strategic value, and 6 marks are allocated for drafting a sound claim. Claims that are anticipated receive a score of 0. Other deductions are taken for any error to a minimum score of 0 for the claim.

Claim 6 (minimum 0 marks)	Mark
<p>Objective strategic value</p> <p>Subject matter worth 6 marks:</p> <ul style="list-style-type: none"> method of constructing a structure, kit for a structure or a structure involving: <ul style="list-style-type: none"> a combination of bricks with 3 contact areas per stud and bricks with at least 5 contact areas per stud distributed among them bricks sufficiently defined to have studs on one surface arranged in square grid arrangement, complementary recesses on opposing surface to engage complementary set of studs in same arrangement (e.g., similar to first part of model claim 1) such that at least 10% of the connected studs are connected with at least 5 contact areas <p>Subject matter worth 4 marks:</p> <ul style="list-style-type: none"> method of constructing a structure, kit for a structure or a structure with inventive and prior art bricks, but omitting the 10%-90% composition <p>Subject matter worth 2 marks:</p> <ul style="list-style-type: none"> system or method of manufacturing bricks using additive manufacturing (i.e., using a 3D file) same brick design as claim 1, but with specific numbers of cylindrical posts, etc. (note deduction if claim is redundant) no marks given for claim directed only to computer readable medium comprising the 3D printer file (i.e., not an executable program) <p>Subject matter worth 0 marks:</p> <ul style="list-style-type: none"> mere use or manufacture of the brick of claim 1 (e.g., building a structure, a structure comprising the bricks, molding with one of the specified plastics) 	0, 2, 4 or 6
Body: Structure, Utility, Essential Elements	
<p>Structure</p> <p>Preamble must be clear and relevant.</p> <p>Body of claim must be generally consistent with preamble (e.g., if preamble directed to something that appears to be system or apparatus, body should have moving or cooperating parts and an implicit rule of action or operation (e.g., not proper to recite elements of mere kit); if preamble appears to be written for article of manufacture, body should not include interacting parts or implicit action or operation; if written for single article, body should not have multiple articles).</p> <p>If a computer-readable medium is claimed, claim must be properly formed in accordance with Canadian practice to receive this mark</p>	0 or 1
<p>Utility</p> <p>Does not appear to encompass non-working embodiment (1 pt)</p> <p>If a computer-readable medium is claimed, claim must be properly formed in accordance with Canadian practice to receive this mark</p>	0 or 1

Essential elements Sufficient essential elements to patentably distinguish over prior art (i.e., to make the claim inventive) and to give effect to what the preamble/Part B purports the claim is about.	0 or 4
Deductions	
If claim is anticipated (i.e., lacking novelty over a piece of prior art), can be written as dependent on any of the other claims, or is otherwise redundant with any of the other claims, then Body marks set to 0/6; candidate may only receive the Objective strategic value marks For example, if claim encompasses a kit comprising a plurality of bricks of claim 1 with nothing more (e.g., if intended for use with less effective bricks but does not adequately define such bricks such that the bricks of the invention are excluded, or if no kit instructions (not actually mentioned in narrative), then set Body marks to 0/6.	
If claim requires multi-party infringement: -3	
For each superfluous claim limitation, in view of preamble and explanation given in Part B: -3	
For each use of the same terminology as the other claims in a conflicting manner (an indefiniteness): -2	
For each incident of unclear language or other inconsistency: -0.5 (e.g., antecedent errors)	
TOTAL SECOND INDEPENDENT CLAIM MARK	/12

DESCRIPTION – PARAGRAPHS 56(1)(a) TO (d)

Minor typographical and spelling errors do not result in deductions unless the errors adversely impact clarity or impede reading the description. Deductions for this will be taken as lack of clarity (unclear or informal language) as set out below.

Element	Requirements	Mark
Title	Consistent with description and claims as drafted, precise, but not overly limiting, without including a trademark, coined word, or personal name, or otherwise unacceptable content (such as “novel”).	0 or 1
Technical field	Consistent with description / claims as drafted (0.5 pts for each independent claim) and useful for narrowing field of search to a subclass (neither too broad nor too narrow), without including too much information such as claim language or inventive concept0 marks for field that simply repeats the content of the title.	0, 0.5, or 1
Background art	3 pts max:	0, 1, 2, or 3

	<p>1 pt for generally identifying the prior art technology (prior art bricks)</p> <p>1 pt for brief explanation of function or structure of prior art giving rise to problem to be solved (combination of lower quality materials with fewer contact areas resulting in lower friction, or simply less stable connections; causes structures to come apart easily)</p> <p>1 pt for identifying or alluding to the problem to be solved (may be expressed as need for greater friction, better gripping, increase in number of contact areas)</p> <p>Deductions: Referring to the invention as prior art: background section scores 0. Admitting any individual non-prior art features as prior art: -1, to a minimum mark of 0.</p>	
Description (“summary”) of invention	<p>3 pts max:</p> <p>1 pt for statement that permits the reader to understand the technical problem to be solved (may reiterate the problem identified in the background, or may be implicit by stating an advantage of the invention—e.g., provides greater friction)</p> <p>1 pt for statement that summarizes solution, consistent with first independent claim</p> <p>1 pt for statement that summarizes solution, consistent with second independent claim</p> <p>Consistory clauses are not acceptable unless the clause also includes the requirements above</p>	0, 1, 2 or 3
Brief description of drawings	<p>2 pts max for correct description of views in figures, in correct sequence, using terms consistent with description/claims.</p> <p>1 pt if description is correct but out of sequence</p> <p>0 pts if terms are not consistent with description/claims</p>	0, 1, or 2
Sub-total before description of embodiments and drawings		/10

DESCRIPTION – PARAGRAPHS 56(1)(e) AND (f)

Requirement		Mark
CONSISTENCY		
First independent claim fully supported	The first independent claim must be fully and clearly supported by the description and drawings e.g. claim language used in the specification, all elements clearly described, consistent language throughout. Consistory clauses not acceptable	0 or 2
Dependent claims fully supported	All dependent claims as drafted are fully and clearly supported by the description (note: if one or more dependent claims are not supported the mark is 0) Consistory clauses not acceptable	0 or 1
Second independent claim fully supported	The second independent claims must be clearly and fully supported by the description Consistory clauses not acceptable	0 or 2
Proper reference Numbers	Correct and consistent usage of figures and reference numerals <u>throughout</u> the detailed description. All figures and reference numerals must be employed.	0 or 1
COMPLETENESS		
Common block shape	<p>Must include all of the following for 1 marks:</p> <ul style="list-style-type: none"> • rectangular brick shape • top wall or surface • four side walls • bottom face that is <u>not</u> described, implicitly or explicitly, as a wall or solid (e.g., "open") • exterior dimensions of brick <p>If exterior dimensions are missing but there is an indication that dimensions of the brick should be the same as or compatible with a Lego brick and remaining points above are present, 0.5 marks</p>	0, 0.5 or 1
Studs	<p>Must include all of the following for 2 marks:</p> <ul style="list-style-type: none"> • cylindrical studs • projecting from top wall or surface • regular spacing in a square grid arrangement • 2 x 4 arrangement • bevelling • dimensions, including spacing 	0, 1 or 2

	<p>between</p> <p>If stud dimensions are missing but there is an indication that dimensions of the studs should be the same as or compatible with a Lego brick and remaining points above are present, 1 mark</p>	
Interconnection mechanism and operation	<p>Must include all of the following for 5 marks:</p> <ul style="list-style-type: none"> • cylindrical projections and semi-cylindrical projections project from interior surface of top wall • cylindrical projections arranged at centers of square grid defining arrangement of studs (or equivalent description) semi-cylindrical projections emerge from interior of side walls • semi-cylinders and cylinders arranged in square grid arrangement, colinearly • semi-cylinders and cylinders connected by walls • connecting walls are convex • recesses defined by at least 5 contact areas 	0 or 5
Interconnection function	<p>Must include all of the following for 3 marks:</p> <ul style="list-style-type: none"> • studs of one brick are inserted into the voids/spaces/recesses of another brick such that they are complementary • to separate bricks, pull apart to overcome friction • correct explanation of friction fit (cannot rely on “clutch power” or “clamping force” or “grip strength”, etc.) <p>If need to overcome friction to separate blocks not mentioned but remaining points included, 2 marks</p>	0, 2 or 3
Materials	<p>Must include all of the following for 2 marks:</p> <ul style="list-style-type: none"> • may be hollowed out to reduce plastic consumption • ABS, polycarbonate/ABS composite, polyvinyl chloride, acrylic, polypropylene, polyoxymethylene • design compensates for low friction when a material with a lower friction coefficient than ABS is used 	0, 1 or 2

	If only one of the above bullet points is missing, 1 mark. If two or more of the above bullet points are missing, 0 marks.	
Compatibility	<p>Must include all of the following for 1 mark:</p> <ul style="list-style-type: none"> • correct identification of the source of Lego bricks (The Lego Group) (may be mentioned in the background or the summary) • sized to be compatible with sets with the same stud arrangement as Lego 	0 or 1
Advantages	<p>Must include all of the following for 2 marks (may be identified in the summary):</p> <ul style="list-style-type: none"> • increased surface <u>area</u> of contact (compared to prior art) • having larger number of contact surfaces compensates for manufacturing errors • greater manufacturing tolerance possible than Lego (i.e., greater than 10 microns) • contoured walls stronger than straight walls <p>0.5 marks for each bullet point</p>	0, 0.5, 1, 1.5 or 2
Use and commercial embodiments	<p>Must include all of the following for 2 marks:</p> <ul style="list-style-type: none"> • delivery of 3D printing files for consumers to print • combine with other bricks with 3 contact areas in 10-90 combination (at least 10%) to increase stability • kits of replacement bricks to be used with a kit of other bricks <p>If 10-90 combination is present but 3D printing files and/or kits of replacement bricks missing, 1 mark</p>	0, 1 or 2
DEDUCTIONS		
For each non-essential element characterized as essential or essential element characterized as optional and each misleading statement: -3 marks		
For each instance of inconsistent, unclear or informal language, -0.5 marks for each instance to a maximum of -5 marks		
Poorly organized draft: -2 marks		
The description should be provided in the prescribed order. However, the summary		

may follow the brief description of the drawings and the claims may precede the description.	
Failure to identify trademarks: -0.5 marks for each distinct trademark to a maximum of -2 marks	
Failure to reference all of the drawings described above: -2 marks	
Sub-total for description of embodiments and drawings	/24

Part B – Short Answer Questions (6 MARKS MAXIMUM)

Only the first two answers (concerns) will be marked. For each concern identified, 1 mark will be allocated for each of the following, to a maximum of 3 marks for each concern and 6 marks total for the question.

Requirement	Example (based on the method/kit/structure worth 6 marks)	Mark
Legal, commercial or strategic concern must be applicable to the fact scenario described by the inventor and a reasonable, practical business concern.	<p>Example 1: infringement It may be possible that some new competitor would achieve the same benefit of increasing the friction with a larger number of contact areas (compared to Lego) but with a different structure than the inventor's</p> <p>Example 2: validity The manufacturer of the recessed brick may pivot to providing smaller kits of their bricks to be used in combination with other bricks, just as the inventor proposes; but those bricks are prior art. They will not be infringing claim 1, and a claim directed to a pack of bricks with a larger number of contact areas but no specific structure that is only <i>intended</i> to be used with other types of bricks runs the risk of being anticipated</p>	<p><i>Concern 1</i> 0 or 1</p> <p><i>Concern 2</i> 0 or 1</p>
Legal rule or principle must be clearly stated and correlate to the identified concern.	<p>Example 1: infringement Infringement occurs only when the accused product takes all the essential elements of the claims (e.g., Free World Trust v. Électro Santé Inc., 2000 SCC 66)</p> <p>Example 2: validity A claim is anticipated if all of the elements of the claims are disclosed and enabled by the prior art (in this case, the recessed brick) (e.g., Apotex Inc. v. Sanofi-Synthelabo Canada Inc., 2008 SCC 61)</p>	<p><i>Concern 1</i> 0 or 1</p> <p><i>Concern 2</i> 0 or 1</p>

	[citations not required; provided here for reference]	
Explanation must clearly link the claimed subject matter to the resolution of the concern and be applicable to the fact scenario No marks if the characterization of the claimed subject matter is inaccurate (e.g., answer states that claim will prevent competitors from selling new design, but claim does not actually encompass new design).	<p>Example 1: infringement Structures are stronger when some of the 3-contact-area bricks are replaced with bricks with 5 or more contact areas, and the inventor discovered a ratio to obtain this effect that need not be limited to the inventor's specific brick design. This claim protects the technique of strengthening a structure built with 3-contact-area bricks without being limited to the inventor's precise design.</p> <p>Example 2: validity Specifying that a certain percentage of the bricks/connections must be made with a brick with 5 or more contact areas whereas the remainder employ 3 or more contact areas is new, so avoids anticipation while potentially being useful to assert against the competitor</p>	<p><i>Concern 1</i> 0 or 1</p> <p><i>Concern 2</i> 0 or 1</p>

OVERALL RESULTS

Part A		
Independent Apparatus Claim	Maximum 40	
Dependent Apparatus Claims	Maximum 8	
Second Independent Claim	Maximum 12	
Disclosure excluding detailed description (sub-total)	Maximum 10	
Detailed description	Maximum 24	
Part B		
Short Answer Question	Maximum 6	
TOTAL	Maximum 100	

PATENT AGENT EXAMINATION

PAPER B

2022

PART A – LONG ANSWER QUESTIONS [80 Marks Total]

The following four (4) documents are provided:

1. Canadian Patent No. 2,xxx,872
2. D1: Canadian Patent Application No. 2,xxx,195
3. D2: Canadian Patent Application No. 2,xxx,630
4. D3: US Patent No. 9,xxx,816

INSTRUCTIONS TO CANDIDATES

Review the following background and documents provided and include an appropriate response to each question. Do not provide extraneous commentary if not directly relevant to the question. For example, if the question requires a determination as to novelty, do not comment on other criteria such as utility, obviousness, etc. Note that statements of authorities or pertinent law (which may include case law and statutory and regulatory provisions), analysis and argument are required **ONLY** when requested. Point form answer is acceptable.

BACKGROUND

Your client is Marie, the daughter of a family which includes her brothers Arnaud and Laurent. Whenever a family trip in the van is planned during winter, the front seat is reserved for the person who clears the largest windshield surface of ice or snow. Marie and her brothers have tried many conventional ice scraping tools in order to achieve the honor of sitting in the coveted front seat.

Marie devised an invention to guarantee future wins over her brothers. To test her concept, she decided to 3D print a prototype of her invention and headed to a public library providing 3D printing services. Although she lacked the knowledge to operate the 3D printing machine herself and funds to pay the nominal fee for the plastic materials, she proposed to name the librarian, Igor Rodinsky, as a co-inventor on her patent application and the library as co-owner if Igor operated the machine free of charge. He accepted her generous offer and printed the first prototype using the library's 3D printer and plastic materials during afternoon peak hours.

After testing the first prototype, Marie filed a US provisional patent application on March 1, 2013. During November 2013, Marie developed a second embodiment of her invention and filed a subsequent Canadian patent application on February 28, 2014, claiming priority to the US provisional patent application. The Canadian patent application fully described both the first and second embodiments. The Canadian patent application issued as Canadian Patent No. 2,xxx,872 on August 7, 2017.

To fund the manufacturing of her scraper, Marie published an entry on the "Go-Fund-an-Inventor" crowdfunding service. The entry was uploaded to the "Go-Fund-an-Inventor" website on March 5, 2013, but only published officially on the site on April 13, 2013. The publication included images (including the one below) demonstrating how to hold the scraper against a windshield. The publication also included comments from users that the scraper can be held easily, irrespective of the size of one's hands or the types of gloves worn.



Marie has now learned that a foreign company based in Finland, a few weeks after the publication of the “Go-Fund-the-Inventor” page for her invention, is now manufacturing and distributing in Canadian hardware stores a similar scraper which might fall within the scope of the claims of her Canadian Patent No. 2,xxx,872.

She asks you to assess the validity of Canadian Patent No. 2,xxx,872. She provides you with Canadian Patent No. 2,xxx,872 and the results of her prior art search which revealed documents D1-D3, which do not appear to have been considered by the Canadian Examiner.

QUESTION 1: [6.0 marks]

Evaluate the citability of D1 [2.5 marks], D2 [2.0 marks] and D3 [1.5 marks] in view of anticipation and obviousness. Provide reasons why the documents are citable or not, and apply and cite all the appropriate sections of the *Patent Act*. [6.0 marks]

QUESTION 2: [15.0 marks]

Assuming that these elements are essential, construe the following selected claim terms of Canadian Patent No. 2,xxx,872:

- a) “a hollow conical body” (claim 1) [3.5 marks]
- b) “an open top portion” (claims 1 and 6) [2.0 marks]

- c) “a scraping edge” (claims 1 and 6) **[2.0 marks]**
- d) “a cap” (claims 1 and 6) **[2.0 marks]**
- e) “a neck” (claims 1 and 6) **[3.0 marks]**
- f) “upper portion of the cap being of a larger diameter than that of the open top portion of the conical body” (claim 1) **[2.5 marks]**

QUESTION 3: [29.5 marks]

Are claims 1, 2, 3, 4, and 5 anticipated by any one of D1-D3? Provide detailed supporting arguments and reference to the appropriate sections of the documents and figures. In the event that features are repeated in subsequent claims, it is acceptable to refer to analysis in previous claim(s). **[29.5 marks]**

QUESTION 4: [26.5 marks]

Is claim 6 obvious in view of D1-D3? Provide detailed supporting arguments, apply the appropriate test from the case law, and refer to the appropriate sections of the documents and figures. **[26.5 marks]**

QUESTION 5: [1.0 mark]

If Marie’s entry to the “Go-Fund-an-Inventor” website was uploaded and published officially on the site February 27, 2013 instead of April 13, 2013, identify and briefly explain **one** potential issue that may affect the validity of any of the claims of Canadian Patent No. 2,xxx,872. **[1.0 mark]**

QUESTION 6: [2.0 marks]

Based on the background information provided, identify and briefly explain **TWO** potential issues that may affect the validity of any of the claims of Canadian Patent No. 2,xxx,872. Only the first TWO potential issues will be marked. **[2.0 marks]**

END OF QUESTIONS IN PART A

CA '872

Canadian Patent No. 2,xxx,872
Issue Date: August 7, 2017

WINDSHIELD ICE SCRAPER

5

Filing Date: February 28, 2014
Publication Date: September 4, 2014
Priority Data: US 13/xxx,555 filed March 1, 2013

10

Inventors: Marie Yeager, Igor Rodinsky
Owners: Ice-Scraper, Inc., Ottawa Public Library

FIELD OF THE INVENTION

15

[1] This invention relates to ice scrapers for removing debris, ice, frost, and snow from a curved or multi-planar surface such as, for example, windshields and windows of vehicles.

BACKGROUND OF THE INVENTION

20

[2] Vehicles left outdoors in cold climates often accumulate winter elements on the vehicles' windshields and windows. To address this problem, various scrapers have been proposed in the art and implemented for scraping ice, frost, and snow off a vehicle's windshield and windows prior to operation. Conventional scrapers have a handle which is grasped in the user's hand. While some scrapers are short arcuate devices, others comprise an elongated handle with a scraper blade at one end. Some ice scrapers employ a scraper at one end of an elongated handle with a brush being mounted on the other end.

25

[3] The handles of these types of scrapers, however, are not ergonomic. The scrapers are used to press the scraping edge against the surface that is being scraped. This manner of scraping exerts considerable stress on the wrist and requires the wrist to be flexed at various angles, and therefore frequently leads to wrist injuries or can be quite painful, especially for the elderly or those with weak hands and wrists (e.g., those suffering from arthritis or carpal tunnel syndrome).

30

CA '872

[4] Further, the scrapers do not effectively transfer the applied pressure to a surface to be cleaned. The amount of pressure that can be applied to the surface is also limited because of the limited strength of the wrist, thereby detracting from the effectiveness and efficiency of the scraping process. Although the longer ice scrapers provide an extended reach, it is
5 difficult for the user to apply sufficient scraping pressure to the scraper blade.

[5] Conventional ice scrapers are typically inflexible. Their body and blade are designed to be rigid in order to apply a concentrated force to a surface in order to dislodge and deflect ice, frost, or snow thereon. However, this rigidity also prevents the blade and
10 blade edge from conforming to curved or multi-planar surfaces. Consequently, such ice scrapers are unable to remove ice, frost, or snow effectively from curved or multi-planar surfaces, such as windshields, windows, headlights, and surrounding frames of vehicles.

[6] Moreover, conventional scrapers are problematic to store. While short handled
15 scrapers can be stored anywhere, they are easily lost and difficult to find in the dark or among clutter in a garage or vehicle trunk. Long handled scrapers are bulky to accommodate within a vehicle, often becoming wedged behind the seats or taking up the passenger's legroom.

[7] The problems associated with conventional scrapers have been recognized and
20 efforts to improve the scraper design have been made. However, they have not been altogether successful either functionally or commercially.

SUMMARY OF THE INVENTION

[8] In one aspect, an ice scraper for a windshield is provided, comprising:
25 a hollow conical body having an open top portion and an open bottom portion, the open top portion being of a smaller diameter than the open bottom portion, the open bottom portion having a scraping edge formed thereon extending around the periphery thereof, and the hollow conical body further being constructed of a pliable material so that the scraping
30 edge conforms readily to curvatures in the windshield; and

CA '872

a cap having an upper portion and a lower portion, a neck extending from the upper portion of the cap, the neck being releasably secured to the open top portion of the hollow conical body, the upper portion of the cap being of a larger diameter than that of the open top portion of the hollow conical body, wherein the cap acts as a handle.

5

[9] In another aspect, an ice scraper for a windshield is provided, comprising:

a first hollow conical body having an open top portion and an open bottom portion, the open top portion being of a smaller diameter than the open bottom portion, the open bottom portion having a scraping edge formed thereon extending around the periphery thereof, and the first hollow conical body further being constructed of a pliable material so that the scraping edge readily conforms to curvatures in the windshield; and

10

a cap shaped as a second hollow conical body, the cap having an upper portion and a lower portion, a neck extending from the upper portion of the cap, the neck being releasably secured to the open top portion of the first hollow conical body, the upper portion of the cap being of a larger diameter than that of the open top portion of the first hollow conical body, the lower portion of the cap being dome-shaped.

15

BRIEF DESCRIPTION OF THE DRAWINGS

[10] The invention will be described in detail with reference to the following drawings wherein:

20

[11] FIG. 1 is a perspective view of a scraper according to a first embodiment;

[12] FIG. 2 is a plan view of the cap of the scraper of FIG. 1;

[13] FIG. 3 is a top plan view of the conical body of the scraper of FIG. 1;

[14] FIG. 4 is a sectional view of the cap of FIG. 2;

25

[15] FIG. 5 is a sectional view of the conical body of FIG. 3;

[16] FIG. 6 is a side view of a scraper according to a second embodiment;

[17] FIG. 7 is a side view of the conical body of FIG. 6;

[18] FIG. 8 is a side view of the cap of FIG. 6; and

[19] FIG. 9 is a detailed side view of the scraping edge of either the conical body of

30

FIG. 7 or the cap of FIG. 8.

CA '872

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[20] The present invention comprises an ice scraper for removing debris, ice, frost, and snow from a curved or multi-planar surface such as, for example, windshields, windows, headlights, mirrors, and surrounding frames of vehicles. The invention will now be described having reference to the accompanying figures.

[21] FIGS. 1-5 show a first exemplary embodiment of the ice scraper 10 generally comprising two components: a cap 12 and a conical body 14. The cap 12 and conical body 14 are shown unassembled in FIGS. 3-5 to show each component in greater detail, and assembled and ready for use in FIG. 1.

[22] As shown in FIGS. 2 and 4, the cap 12 generally comprises an upper portion 16 and a lower portion 18. The upper portion 16 comprises a disk 20 and a plurality of cones 22 projecting upwardly from the disk 20. The disk 20 is flat and circular-shaped, and has an upper surface 24 and a lower surface 26. In one embodiment, the cones 22 are serrated and arranged in rows on the upper surface 24 of the disk 20, towards the center area of the disk 20, and project upwardly from the upper surface 24 of the disk 20. In one embodiment, the disk 20 has a diameter of about two inches and a thickness of about 1/8 inches.

[23] The lower portion 18 comprises a neck 28 extending downwardly from the lower surface 26 of the disk 20. In one embodiment, the neck 28 is cylindrical-shaped and includes a sidewall 30 defining an inner cavity 32 and an opening 34. In one embodiment, the neck 28 is integral with the lower surface 26 of the disk 20. The neck 28 has a diameter smaller than the diameter of the disk 20.

[24] As shown in FIGS. 3 and 5, the conical body 14 comprises an open top portion 36 and an open bottom portion 38, which is a frusto-conical shape. In one embodiment, the open top portion 36 is integral with the open bottom portion 38 to define a unitary hollow cavity 40 extending therethrough. The open top portion 36 is cylindrical-shaped and

CA '872

includes a sidewall 42 defining the unitary hollow cavity 40. The open top portion 36 has a diameter which is smaller than the diameter of the open bottom portion 38.

[25] The neck 28 and open top portion 36 are sized to be releasably secured to each other. The neck 28 is sized to fit within the open top portion 36, and the open top portion 36 is sized to accommodate and receive the neck 28. In one embodiment, the neck 28 has an outer diameter of about 0.9 inches, a length of about one inch, and the sidewall 30 has a thickness of about 1/16 inches. In one embodiment, the open top portion 36 has an inner diameter of about 1 inch, a length of about 1 inch, and the sidewall 42 having a thickness of about 1/16 inches.

[26] A flared or outwardly extending portion 44 is positioned between the open top portion 36 and the open bottom portion 38, and comprises a sloped wall 46 defining the unitary hollow cavity 40. The sloped wall 46 is narrow where it merges with the sidewall 42 of the open top portion 36, and progressively widens to the open bottom portion 38. The sloped wall 46 has a textured surface or a surface having a plurality of raised stiffeners 48 provided thereon to add strength and act as grips. In one embodiment, the flared portion 44 has a height of about 4 inches, and the sloped wall 46 has a thickness of about 1/16 inches. The reduced thicknesses of the sidewall 42 and sloped wall 46 which together define the unitary hollow cavity 40 ensure that the ice scraper 10 is as lightweight and portable as possible for easy handling by the user.

[27] In one embodiment, the open bottom portion 38 has a diameter of about 5.5 inches. It is formed by a relatively sharp ridge 50 about the circumference of the open bottom portion 38. Ridge 50 includes an outwardly facing surface 52a and an inwardly facing surface 52b converging at two equal opposing angles with respect to a longitudinal axis of the scraper resulting in, a scraping edge 52.

[28] It will be appreciated that the ice scraper 10 is simple but rugged in construction that it can be made at low cost. The ice scraper 10 may be easily fabricated using a blow molding process including, but not limited to, extrusion blow molding, injection blow

CA '872

molding, and other processes known in the art which create hollow items. Blow molding is a relatively simple and rapid process for manufacturing the ice scraper 10. The ice scraper 10 may be formed of resilient or pliable plastic including, but not limited, to polyethylene, polypropylene, vinyl, nylon, polystyrene, or formed of a laminated fibrous material. Any suitable material may be used that can withstand elastic deformation without deforming plastically. In one embodiment, the ice scraper 10 is formed of a pliable material capable of deforming to conform to a curved or multi-planar surface, allowing its entire scraping edge 52 to contact the surface to be thoroughly cleaned. The dimensions of the ice scraper 10 may vary; however, the ice scraper 10 may be fabricated to be sufficiently large to be easily found among clutter in a vehicle, but sufficiently compact for easy storage within the vehicle.

[29] In operation, the user can comfortably grasp the conical body 14, while the cap 12 acts as a handle. The ice scraper 10 is ergonomic due to its configuration and pliable material, proving to be of great relief to users who may be elderly or afflicted with hand and wrist pain due to arthritis or carpal tunnel syndrome. The ice scraper 10 reduces stress to joints, tendons, and tissues compared to conventional scrapers.

[30] The user conveniently has the option of using the ice scraper 10 in two different positions to clean a surface which may be flat, curved, or multi-planar (e.g., a windshield, window, headlight, or frame of a vehicle). In the first position, the user places the open bottom portion 38 against the surface to be cleaned, applies pressure directly to the surface, and drives the ice scraper 10 in any direction on the surface to remove debris, ice, frost, or snow. The ice scraper 10 provides a dual cleaning action with each pass of the user's hand. For example, when the ice scraper 10 is placed over snow on a surface, the snow is captured within the hollow cavity 40, while snow outside of the scraping edge 52 can still be pushed away from the surface. Test results proved that the ice scraper 10 was able to clean a grimy EMUSK™ car windshield impressively better (>98% debris removed) and faster (50% less time) compared to conventional scrapers. In the second position, the user can reverse the ice scraper 10 by placing the cones 22 of the cap 12 against the surface to be cleaned,

CA '872

applying pressure directly to the surface, and moving the ice scraper 10 in a circular manner on the surface to loosen coarse frost/ice.

[31] It should be apparent, however, to those skilled in the art that many more modifications besides those already described are possible without departing from the inventive concepts herein. FIGS. 6-9 show a second exemplary embodiment of the ice scraper 100 generally comprising a cap 54 and a conical body 56. The cap 54 and conical body 56 are shown unassembled in FIGS. 7 and 8 to show each component in greater detail, and assembled and ready for use in FIG. 6.

[32] As shown in FIGS. 6 and 7, the conical body 56 comprises an open top portion 58 and an open bottom portion 60. In one embodiment, the open top portion 58 is integral with the open bottom portion 60 to define a unitary hollow cavity 62 extending therethrough. The open top portion 58 is cylindrical-shaped and includes a sidewall 64 defining the unitary hollow cavity 62. The open top portion 58 has a diameter which is smaller than the diameter of the open bottom portion 60.

[33] A flared portion 66 is positioned between the open top portion 58 and the open bottom portion 60, and comprises a sloped wall 68 defining the unitary hollow cavity 62. The sloped wall 68 is narrow where it merges with the sidewall 64 of the open top portion 58, and progressively widens to the open bottom portion 60. As shown in FIG. 9, a circular-shaped stiffener 70 encircles the flared portion 66 proximate to the base of the conical body 56. Below the stiffener 70, a scraping surface 72 is defined at the intersection of an outwardly facing vertical surface 74 and an inwardly facing sloped surface 76 of the sloped wall 68, thereby forming a ring 78 which traverses the perimeter of the base of the conical body 56.

[34] As shown in FIGS. 6 and 8, the cap 54 is a similar but smaller version of the conical body 56 in sharing the same conical configuration and scraping components 80. However, the cap 54 of the second embodiment is sized smaller than the conical body 56 so to be portable in a pocket such as that of a coat or trouser for use alone as a mini-scraper when

CA '872

necessary. For such purpose, the cap 54 comprises a domed handle 82 and a conical body 84. In one embodiment, the domed handle 82 is integral with the conical body 84 to define a unitary hollow cavity 86 extending therethrough. The domed handle 82 comprises a neck piece 88 and a dome portion 90 which together define the unitary hollow cavity 86. The

5 domed handle 82 is sized to fit within the open top portion 58 of the conical body 56.

[35] The conical body 84 comprises an open bottom portion 92. A flared portion 94 is positioned between the domed handle 82 and the open bottom portion 92, and comprises a sloped wall 96 defining the unitary hollow cavity 86. The sloped wall 96 is narrow where

10 it merges with the domed handle 82, and progressively widens to the open bottom portion 92. As shown in FIG. 9, a circular-shaped stiffener 70 encircles the flared portion 94 proximate to the base of the conical body 84. Below the stiffener 70, a scraping surface 72 is defined at the intersection of an outwardly facing vertical surface 74 and an inwardly facing sloped surface 76 of the sloped wall 68, thereby forming a ring 78 which traverses

15 the perimeter of the base of the conical body 84.

[36] The second embodiment of the ice scraper 100 conveniently provides the user with two options for cleaning a surface. With the first option, the user can press fit the cap 54 into the conical body 56, place the open bottom portion 60 against the surface to be cleaned,

20 apply pressure directly to the surface, and drive the ice scraper 100 in any direction on the surface to remove debris, ice, frost, or snow. With the second option, the user can remove the cap 54 from the conical body 56 in order to use the cap 54 alone to clean a surface. The user can easily grasp the domed handle 90 of the cap 54 in the palm of the user's hand, place the scraping surface 80 against the surface to be cleaned, apply pressure directly to

25 the surface, and drive the cap 54 in any direction on the surface to remove debris, ice, frost, or snow.

[37] The ice scraper 10, 100 is uniquely multi-functional beyond its utility to clean a surface. In one embodiment, the ice scraper 10, 100 may be used as a funnel for guiding

30 liquid into an opening for example, antifreeze or windshield washer fluid into the vehicle's reservoir. In one embodiment, the ice scraper 10, 100 may be used as a megaphone for

CA '872

example, during an emergency on the road. For both utilities, the cap 12, 54 can be removed from the conical body 14, 56 which can then be used alone as a funnel or megaphone.

CLAIMS:

5

1. An ice scraper for a windshield comprising:

a hollow conical body having an open top portion and an open bottom portion, the open top portion being of a smaller diameter than the open bottom portion, the open bottom portion having a scraping edge formed thereon extending around the periphery thereof, and
10 the hollow conical body further being constructed of a pliable material so that the scraping edge conforms readily to curvatures in the windshield; and

a cap having an upper portion and a lower portion, a neck extending from the upper portion of the cap, the neck being releasably secured to the open top portion of the hollow conical body, the upper portion of the cap being of a larger diameter than that of the open
15 top portion of the hollow conical body, wherein the cap acts as a handle.

2. The ice scraper of claim 1, wherein an exterior surface of the hollow conical body has stiffening members formed thereon.

20 3. The ice scraper of claim 1, further comprising a plurality of cones projecting from the upper portion of the cap for loosening coarse frost.

4. The ice scraper of claim 1, wherein the scraping edge is formed by an outwardly facing surface and an inwardly facing surface converging at equal opposing angles with
25 respect to a longitudinal axis of the scraper to define a sharp scraping surface.

5. The ice scraper of claim 1, wherein the upper portion of the cap comprises a flat disk and a plurality of cones projecting from an upper surface of the flat disk.

30 6. An ice scraper for a windshield comprising:

a first hollow conical body having an open top portion and an open bottom portion, the open top portion being of a smaller diameter than the open bottom portion, the open

CA '872

bottom portion having a scraping edge formed thereon extending around the periphery thereof, and the first hollow conical body further being constructed of a pliable material so that the scraping edge readily conforms to curvatures in the windshield; and

- 5 a cap shaped as a second hollow conical body, the cap having an upper portion and a lower portion, a neck extending from the upper portion of the cap, the neck being releasably secured to the open top portion of the first hollow conical body, the upper portion of the cap being of a larger diameter than that of the open top portion of the first hollow conical body, the lower portion of the cap being dome-shaped.

- 10 7. The ice scraper of claim 1 or 6, being formed by a blow molding process.

CA '872

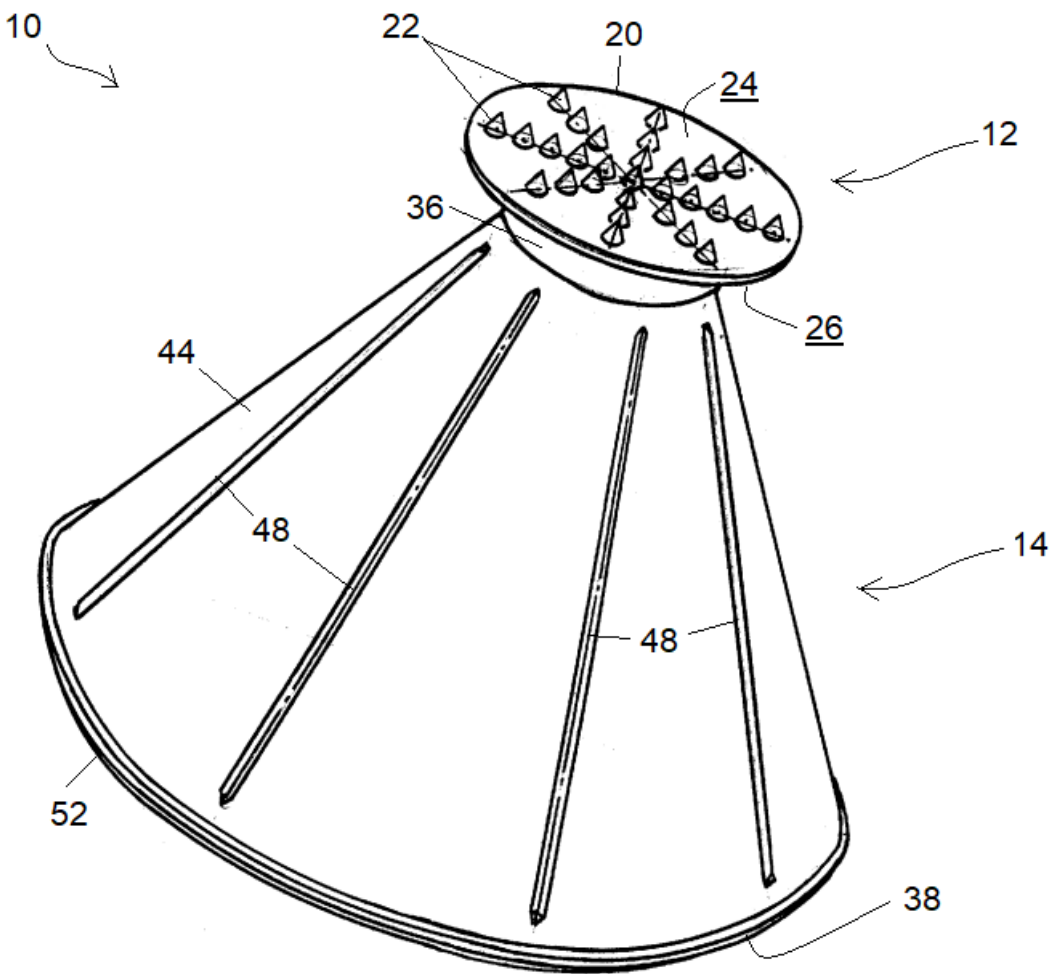


FIG. 1

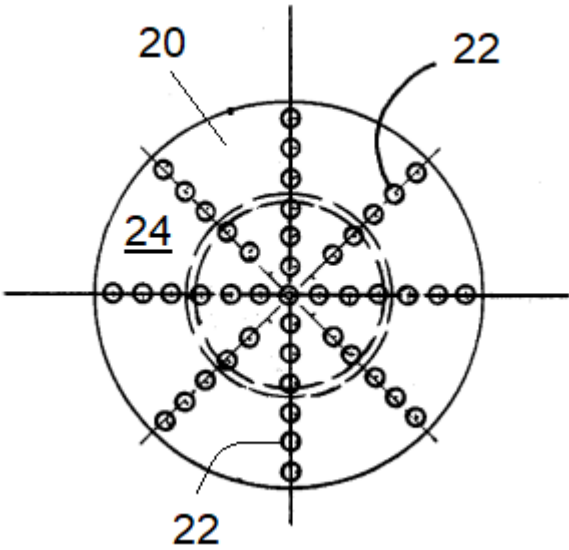


FIG. 2

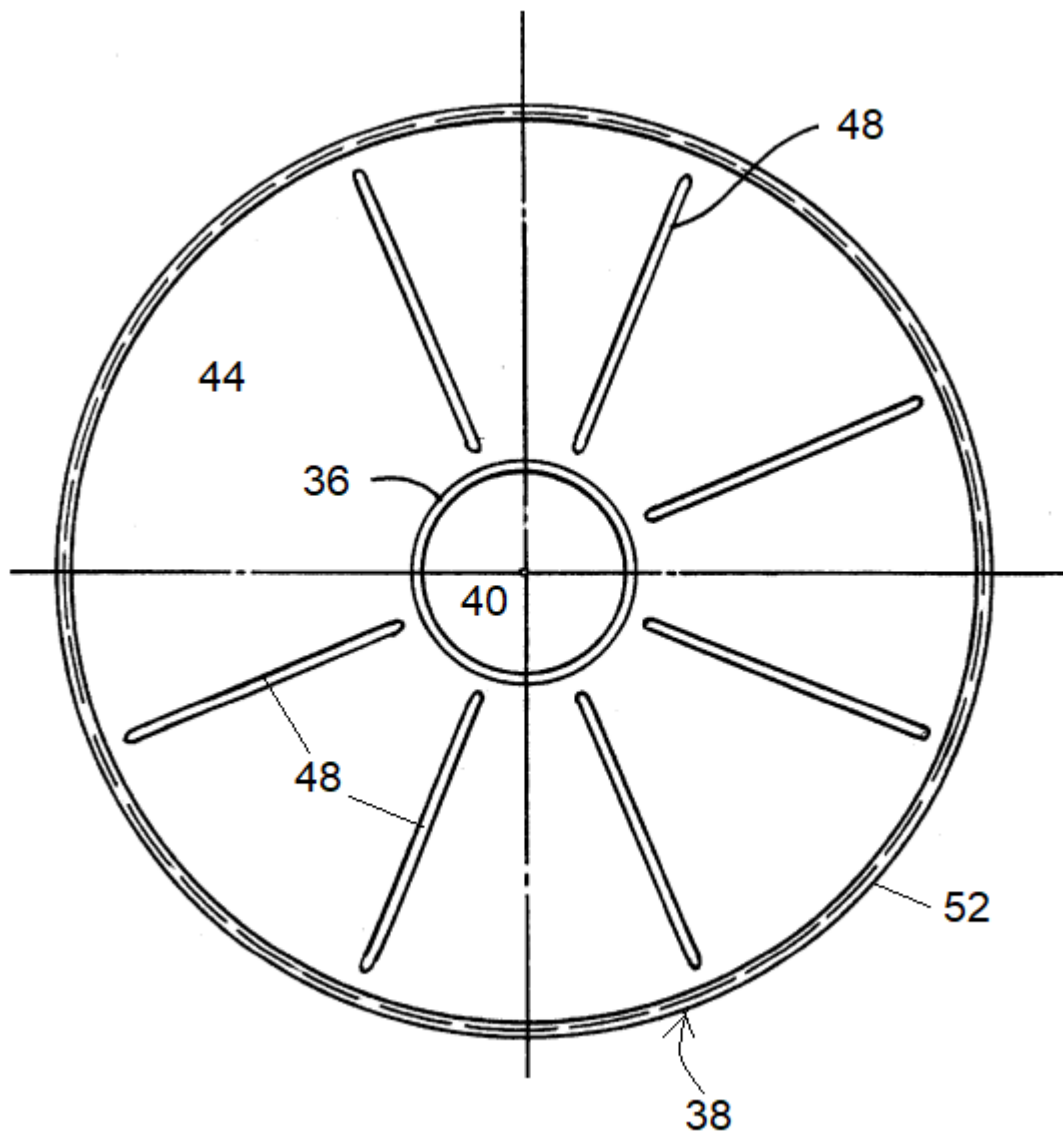


FIG. 3

CA '872

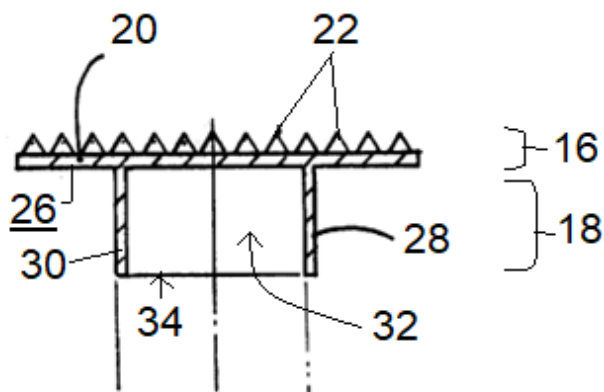


FIG. 4

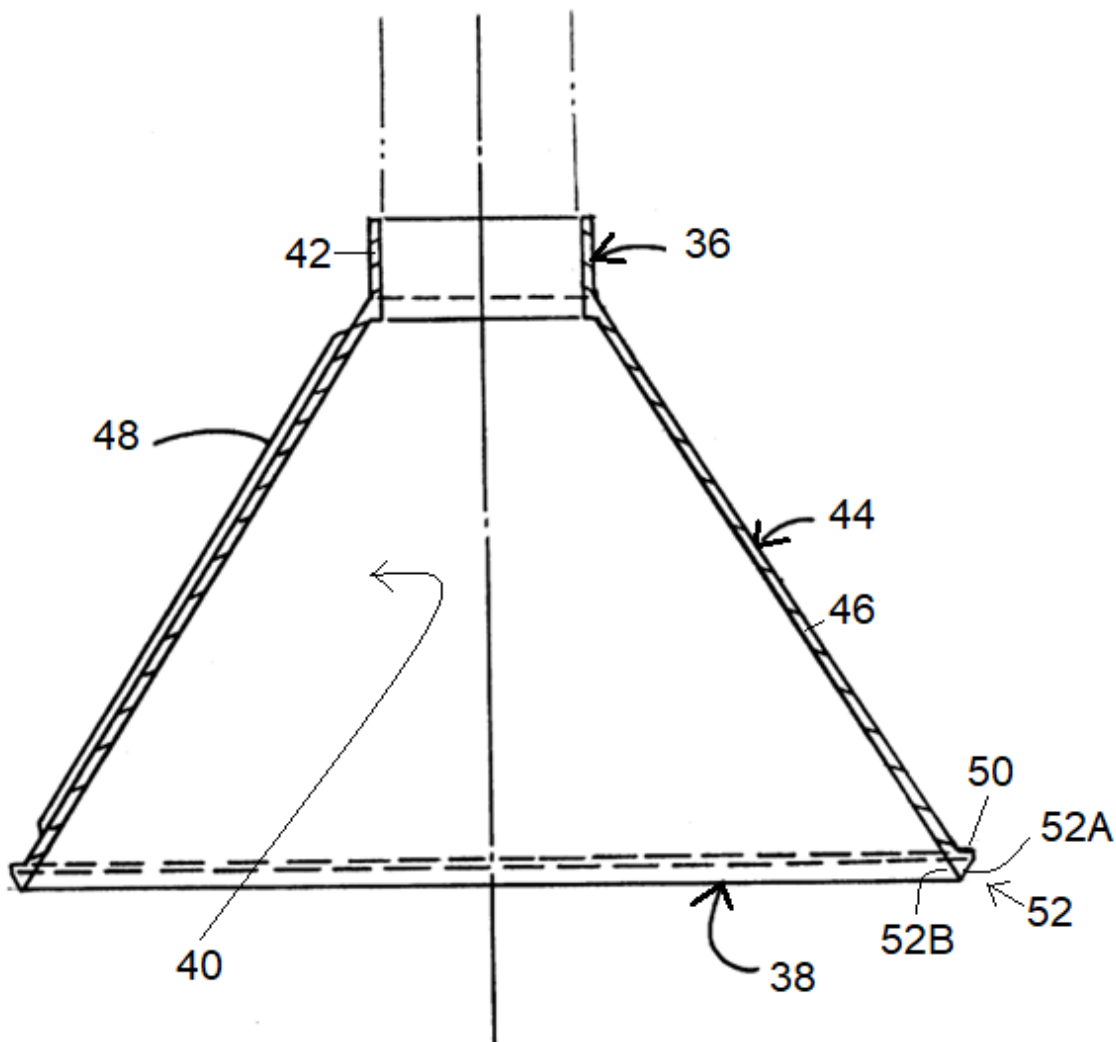


FIG. 5

CA '872

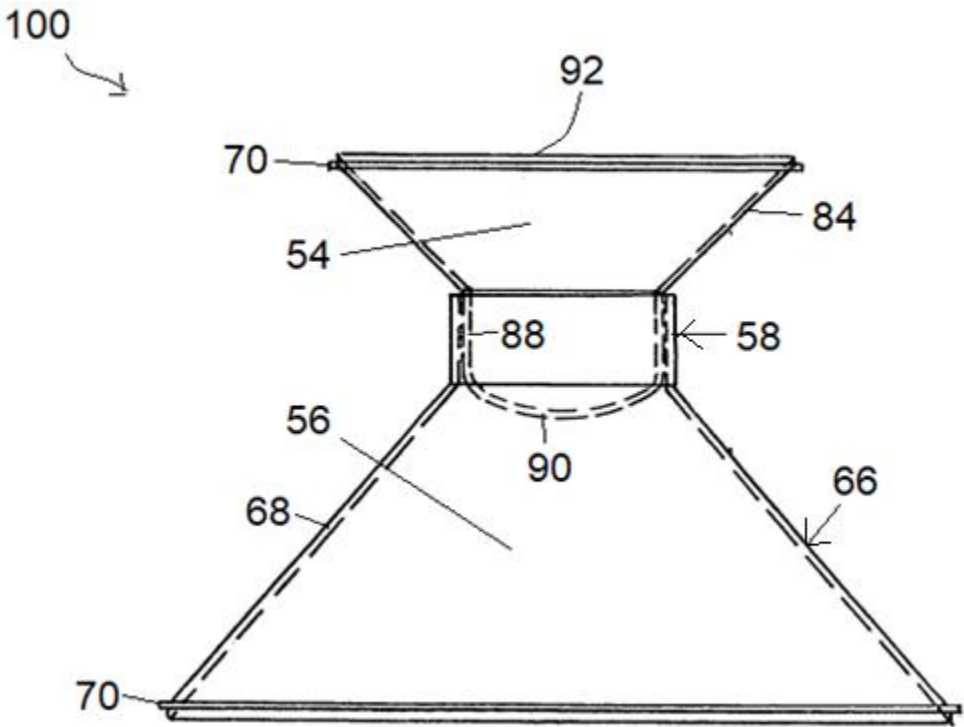


FIG. 6

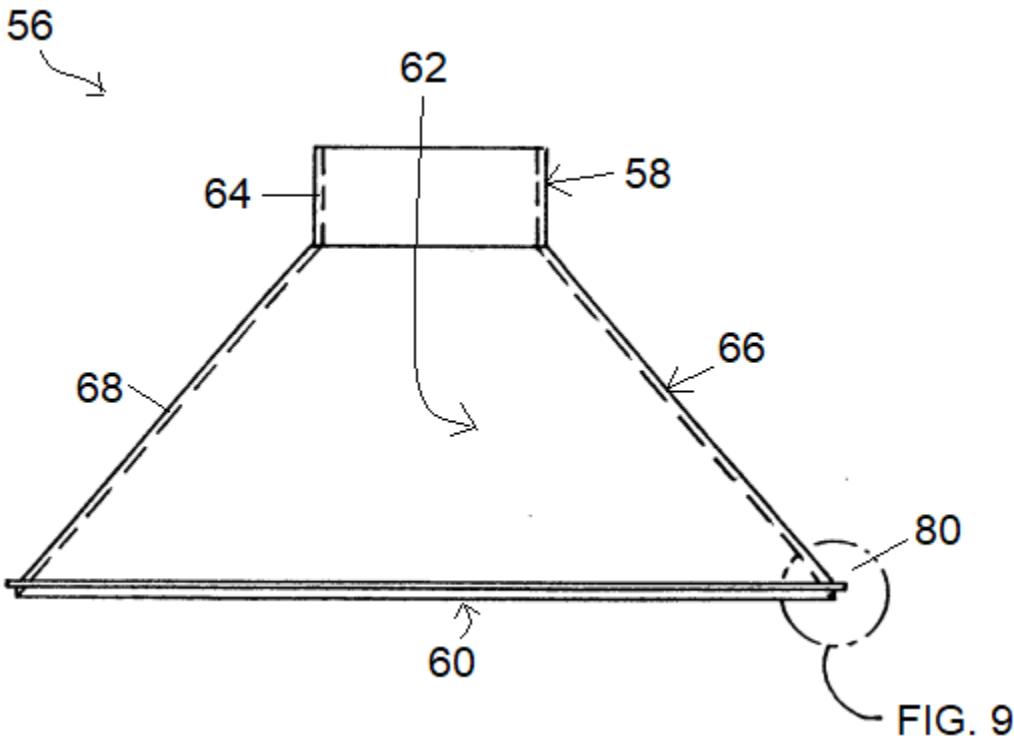
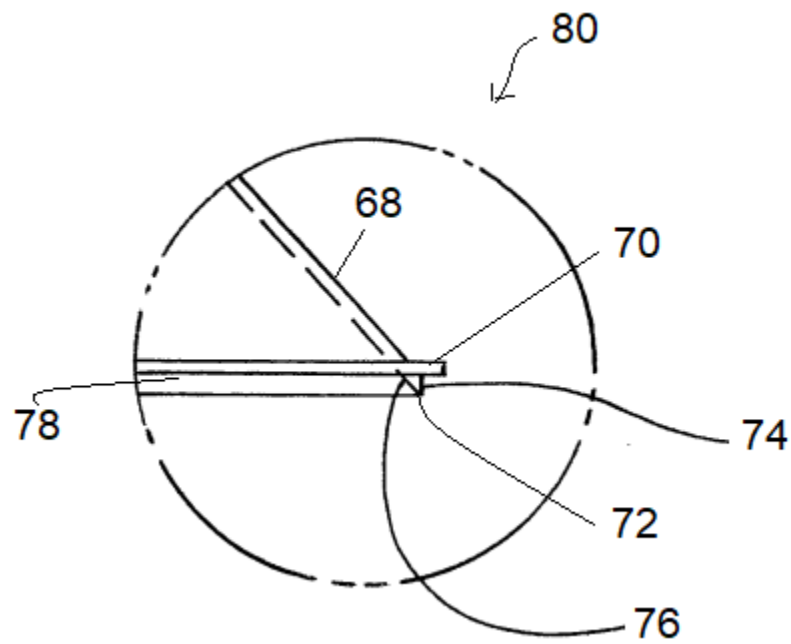
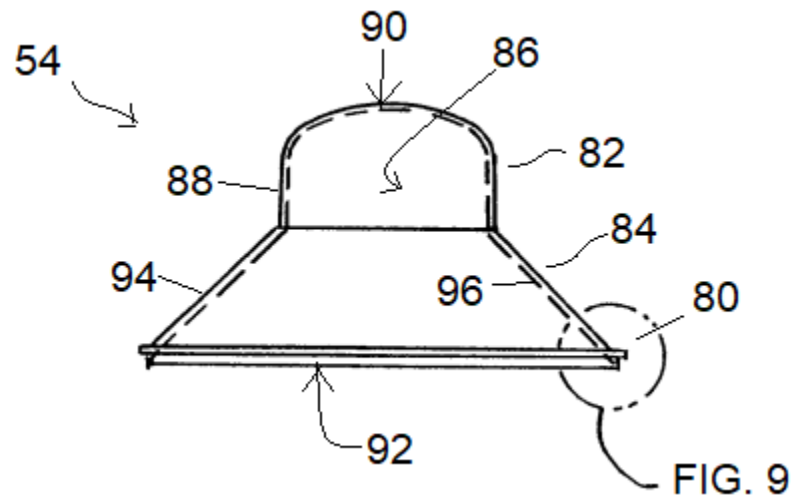


FIG. 7



DOCUMENT D1**DOCUMENT D1****Canadian Patent Application No. 2,xxx,195**5 **WINDSHIELD SCRAPER APPARATUS**

Filing Date: **February 1, 2011**
Publication Date: **July 15, 2012**
Priority Data: **Utility Model DE 20 2013 XXX 123 U1 filed January 15, 2011**
10 **Inventor:** **Dieter SCHNEEMANN**
Owner: **Schaber GmbH**

FIELD OF THE INVENTION

[1] The invention relates to a new and improved windshield scraper apparatus which is
15 configured for removal of ice and snow from automotive windshields and additionally
includes an annular continuous or serrated edge to provide enhanced and expeditious
removal of ice and snow from a windshield, utilizing a circular shaped cutting edge.

BACKGROUND

[2] Various ice scraper tools are utilized in the automotive environment for removal of
20 ice and snow accumulated thereon to permit visibility during operation of an associated
motor vehicle. There continues to be a need, however, for a new and improved windshield
scraper tool which addresses both the problems of ease of use as well as effectiveness in
construction.

SUMMARY OF THE INVENTION

25 [3] In view of the foregoing disadvantages inherent in conventional windshield scraper
tools, the present invention provides a windshield scraper apparatus which utilizes a
plurality of selectively utilized circular ice scraping blades of either linear or serrated
construction for removal of ice and snow from an associated windshield. As such, the
general purpose of the present invention is to provide a new and improved windshield
30 scraper apparatus which has all the advantages of the prior art windshield scraper apparatus
and none of the disadvantages.

DOCUMENT D1

[4] To attain this, the present invention provides an apparatus including a unitary upper housing formed with an upper housing portion coaxially aligned and integral with a lower conical housing, wherein the lower conical housing portion includes a lower annular scraper edge, wherein a serrated scraper blade member may be cumulatively added to the lower scraper annular edge for enhanced scraping of ice and the like on automotive windshields. A modification of the invention includes a disk structure formed with mounting bores receiving securement rods, wherein the disk is reversibly mounted relative to the bottom surface of the lower conical housing portion for securement thereto utilizing a continuous scraper edge or a serrated edge.

[5] It is therefore an object of the present invention to provide a new and improved windshield scraper apparatus which has all the advantages of the prior art windshield scraper apparatus and none of the disadvantages.

[6] It is another object of the present invention to provide a new and improved windshield scraper apparatus which may be easily and efficiently manufactured and marketed.

[7] It is a further object of the present invention to provide a new and improved windshield scraper apparatus which is of a durable and reliable construction.

[8] An even further object of the present invention is to provide a new and improved windshield scraper apparatus which can be manufactured at a low cost with regard to both materials and labor, and can thus be more economical for the consumer.

[9] Still another object of the present invention is to provide a new and improved windshield scraper apparatus which utilizes circular blades for more efficient removal of ice and snow from a windshield, permitting the continuous use of the scraper apparatus without having to lift the scraper blade from the windshield.

[10] For a better understanding of the invention, its operating advantages and the specific objects attained by its uses, reference should be made to the accompanying drawings and description in which preferred embodiments of the invention are detailed.

DOCUMENT D1

BRIEF DESCRIPTION OF THE DRAWINGS

[11] The invention will be better understood and objects, other than those set forth above, will become apparent when consideration is given to the following detailed description thereof. Such description makes reference to the annexed drawings wherein:

5 [12] FIG. 1 is an isometric exploded illustration of the present invention.

[13] FIG. 2 is a top plan view of the present invention.

[14] FIG. 3 is a side view of the present invention.

[15] FIG. 4 is a cross-sectional view setting forth rotated side portions for illustration of various components for manufacture of the present invention.

10 DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

[16] With reference now to the drawings, and in particular to FIGS. 1 to 4 thereof, a new and improved windshield scraping apparatus embodying the principles and concepts of the present invention and generally designated by the reference numeral 10 will be described.

[17] More specifically, the windshield scraper apparatus 10 of the present invention
15 comprises a unitary housing 11 formed with an upper portion 12, including a strap 13 diametrically and pivotally mounted to opposed sides of the upper portion 12. The windshield scraper apparatus 10 includes a planar housing top surface 14 orthogonally oriented relative to a central axis 11a defined by the unitary housing 11. A conical lower wall portion 15 is mounted coextensively to a lower end of the upper portion 12 at a
20 junction 18, with a plurality of recesses 17 diametrically directed within the unitary housing 11 at the junction 18. An annular continuous rigid scraping edge 16 is defined as a lower terminal end edge of the conical lower wall portion 15, and is orthogonally oriented relative to the axis 11a for scraping of snow and the like. For enhanced scraping capacity, a conical scraping ring 19 is provided, wherein the conical scraping ring 19 includes an opening and
25 a conical configuration with a cylindrical mounting ledge 20 formed interiorly of the scraping ring 19 and arranged parallel to a torroidal top surface 19a of the scraping ring 19.

DOCUMENT D1

The scraping ring 19 includes a lower annular edge in the form of serrated scraping ring 21 that is also orthogonally aligned relative to the axis 11a.

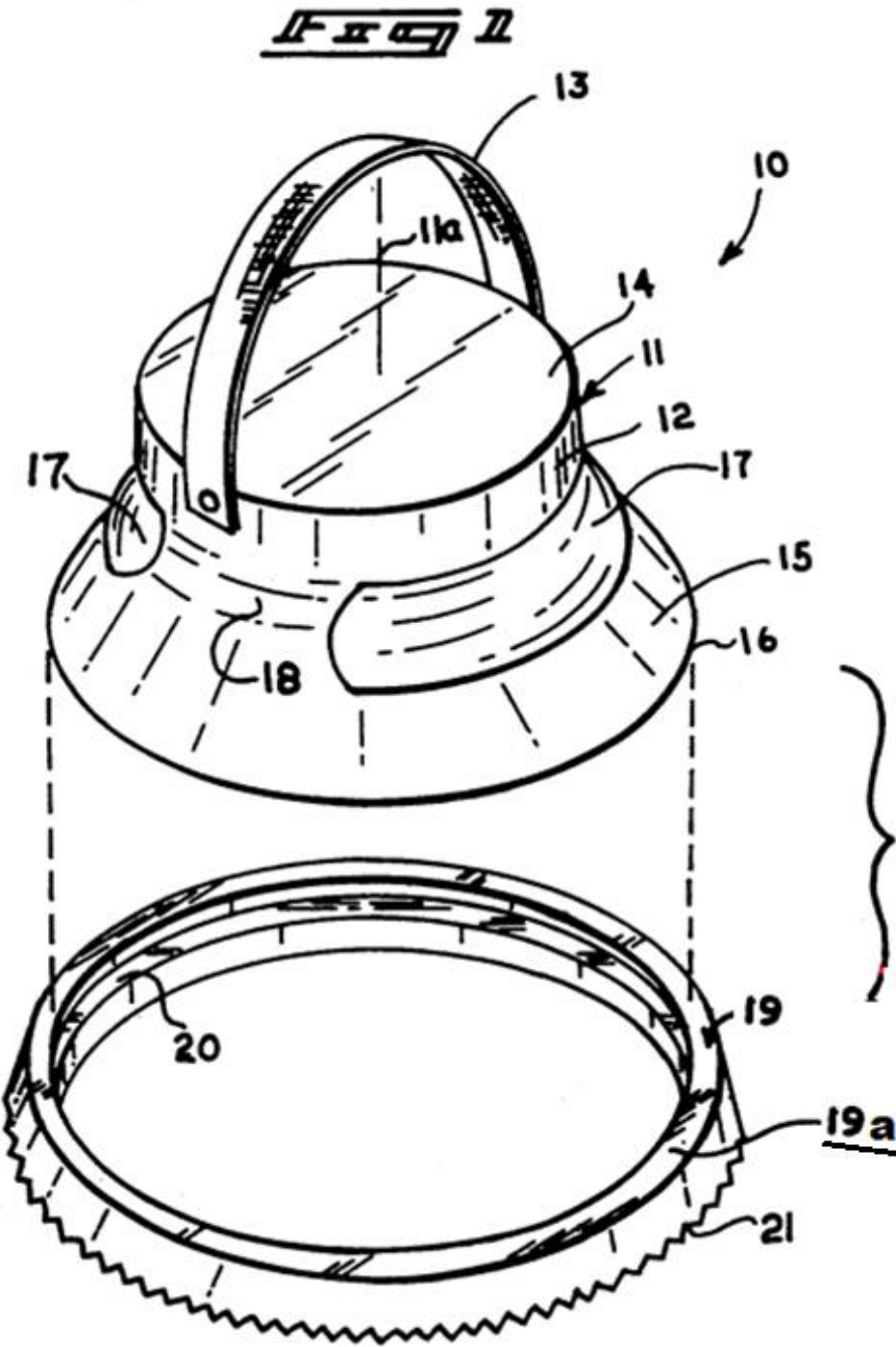
[18] It should be noted that the recesses 17 permit enhanced manual grasping of the unitary housing 11 where an individual positions a palm overlying the top surface 14 and grasps the unitary housing 11 by projecting an individual's fingers within one of the plurality of recesses 17. When the individual places the serrated scraping ring 21 onto an associated windshield, the tips of the teeth of the serrated scraping ring 21 cut into the ice and snow. The scraper apparatus 10 is designed to be rigid in order to apply a concentrated force to the windshield in order to dislodge ice and snow, preferably from the flat portions of the windshield. Circulatory motion of the scraper apparatus 10 provides enhanced removal of ice and snow from the windshield.

[19] As to the manner of usage and operation of the present invention, the same should be apparent from the above disclosure, and accordingly no further discussion relative to the manner of usage and operation of the present invention shall be provided.

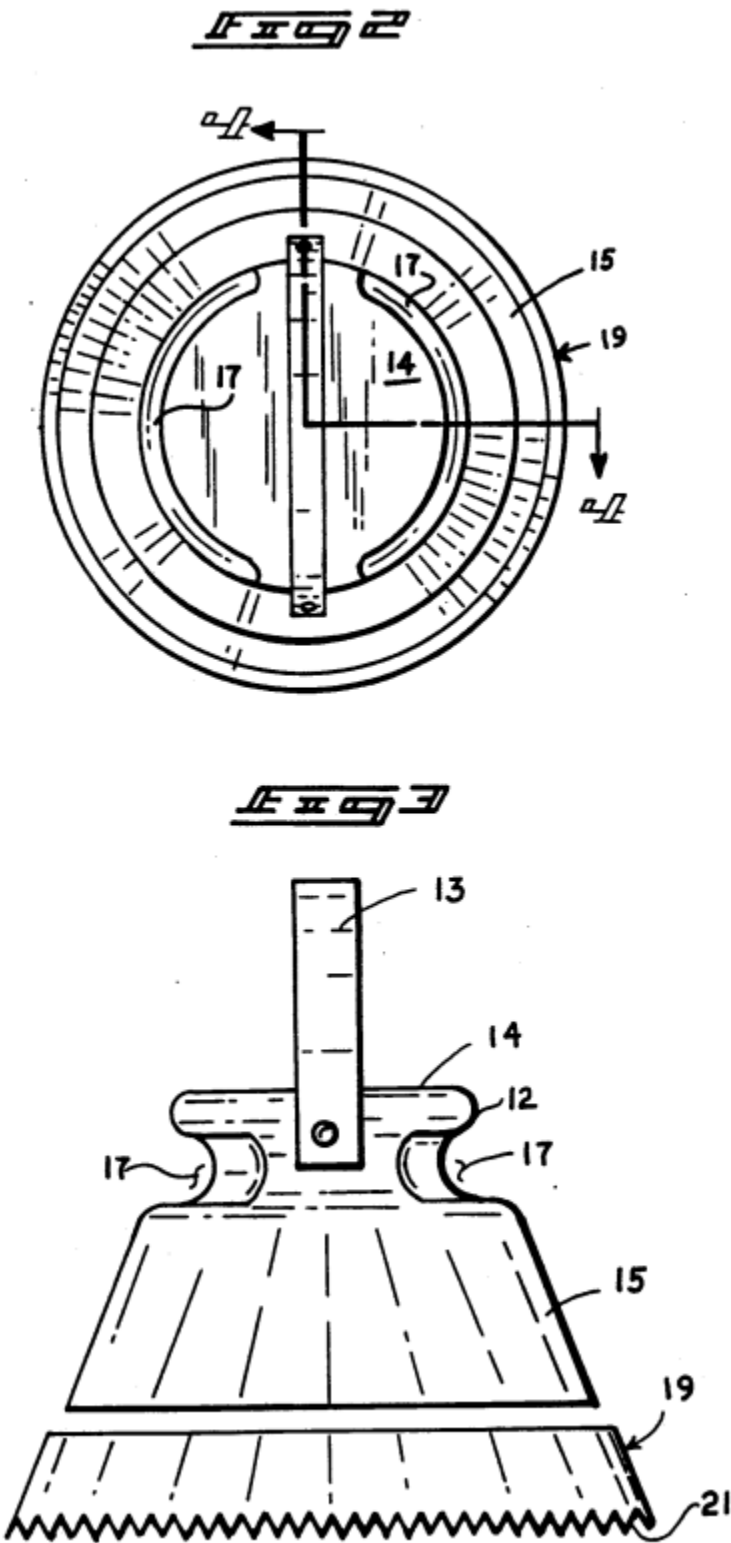
[20] With respect to the above description then, it is to be realized that the optimum dimensional relationships for the parts of the invention, to include variations in size, materials, shape, form, function and manner of operation, assembly and use, are deemed readily apparent and obvious to one skilled in the art, and all equivalent relationships to those illustrated in the drawings and described in the specification are intended to be encompassed by the present invention.

[21] Therefore, the foregoing is considered as illustrative only of the principles of the invention. Further, since numerous modifications and changes will readily occur to those skilled in the art, it is not desired to limit the invention to the exact construction and operation shown and described, and accordingly, all suitable modifications and equivalents may be resorted to, falling within the scope of the invention.

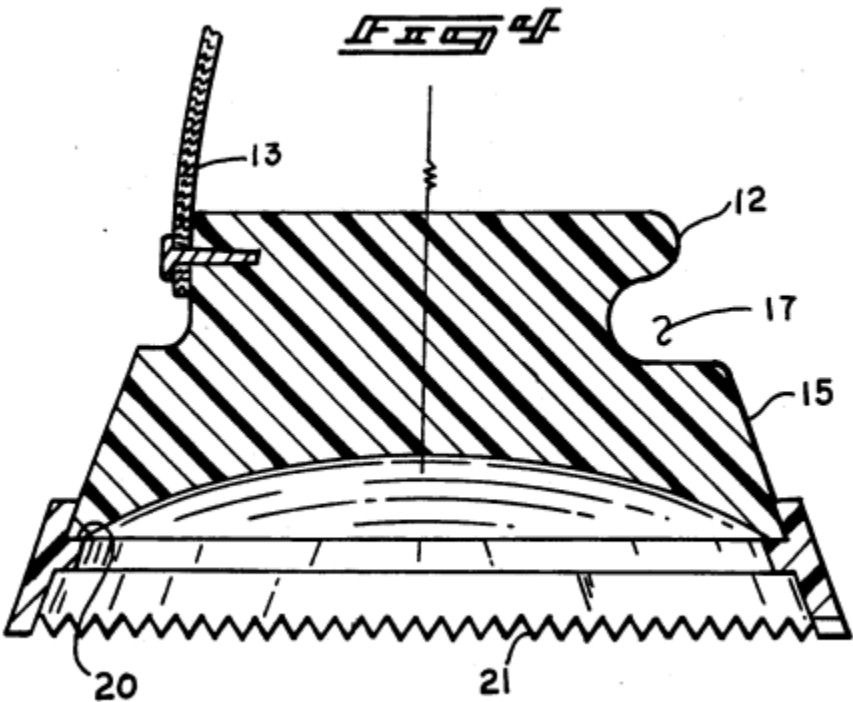
DOCUMENT D1



DOCUMENT D1



DOCUMENT D1



DOCUMENT D2**DOCUMENT D2****Canadian Patent Application No. 2,xxx,630**5 **ICE REMOVER FOR WINDSHIELDS**

National Entry: **August 20, 2011**
PCT Filing Date: **August 20, 2010**
Publication Date: **February 25, 2011**
10 **PCT:** **PCT/FI2011/xxx,710**
 Priority Data: **FI 200909395 filed on August 25, 2009**

Inventor: **Dagmar Salminen**
15 **Assignee:** **Kaavin Inc.**

FIELD OF THE INVENTION

[1] This invention relates to a simple, effective and novel ice remove for windshields.

BACKGROUND OF THE INVENTION

20 [2] The collection of ice at the outer side of windshields of motor vehicles is common during the winter. The ice adheres strongly to the glass and can be difficult to remove except with the use of sharp steel instruments, for example, razor blades properly held for cutting and removing the ice. Such sharp steel implements, however effective they may be for ice removal, scratch and otherwise damage the surface of the glass.

25 SUMMARY OF THE INVENTION

[3] With the invention herein, the ice is very quickly and expeditiously removed without risking abrading the glass surface. The implement can be used in two different types of ice conditions, namely when the ice is either a thin deposit or a thick deposit on
30 the windshield. The invention has two different forms that may be readily connected together to deal with the two different types of conditions.

[4] Broadly, in one embodiment, the invention comprises an ice scraping implement of a hard plastic material, said material having a degree of hardness between that of ice and
35 glass and provided with a wall having an annular scraping edge, the sides of which are

DOCUMENT D2

located in angular relation to each other.

[5] In another embodiment, the invention comprises an ice removing implement adapted for scraping ice frozen to the surface of glass comprising, a member having a wall and a scraping edge formed by two sides of said member joining at a corner to provide said
5 scraping edge, said implement adjacent the scraping edge being a material having a hardness that the scraping edge will penetrate ice frozen on glass and not hard enough to scratch the glass, the outer side of the wall, to be presented to and forced against the ice, being serrated to provide spaced apart ribs with intervening grooves between the ribs, as
10 and for the purposes specified.

[6] In a further embodiment, the invention comprises an ice scraping implement of a hard plastic material, the degree of hardness of which is less than that of glass and sufficiently hard to penetrate ice frozen on glass, including an annular wall having a free
15 edge and provided with an ice penetrating and scraping annular portion around it for engaging with and removing ice frozen to a glass surface, by forced movement of said scraping edge against the ice.

[7] In yet another embodiment, the invention comprises an ice scraping device
20 comprising, a hollow member of substantially circular form in cross section, having the lower portion thereof flared outwardly, the inner and outer sides of said member being brought together to form a sharp edge, said device being formed of a hard plastic having a lesser degree of hardness than glass and greater than ice.

BRIEF DESCRIPTION OF THE DRAWINGS

[8] The invention may be understood from the following description in connection with the accompanying drawings wherein:

[9] Fig. 1 is an elevational view showing a portion of a windshield in section, and
30 illustrating the manner in which the ice removing implement may be used in removal of a thin ice coating,

DOCUMENT D2

[10] Fig. 2 is an enlarged longitudinal sectional view thereof,

[11] Fig. 3 is a plan view thereof, and

5 [12] Fig. 4 is a bottom view thereof.

DETAILED DESCRIPTION OF THE INVENTION

[13] In a preferred construction of the ice removing implement 100, upper member 1 and lower member 2, preferably of hard rubber, are connected together. The upper end 3
10 of the lower member 2 has a reduced diameter and is exteriorly threaded. The upper member 1 comprises a cylindrical sleeve 7 of the same material which has a downwardly extending section 4 below an integral cross-web 5 extending across the interior of the sleeve 7. The downwardly extending section 4 is interiorly threaded and may be threadably secured upon the upper end 3 to connect the upper member 1 and the lower member 2.

15

[14] Above the cross-web 5, the upper member 1 defines a recess 6 surrounded by the cylindrical sleeve 7. The exterior surface of the upper member 1 is corrugated by provision of a continuous series of vertically extending ribs 8 separated by vertical grooves between the ribs 8.

20

[15] The lower portion of the lower member 2 is flared outwardly and downwardly, providing a continuous annular bell-like wall 9 around an interior recess 10. The lower edges 11 of the wall 9 are curved downwardly and inwardly, meeting with the lower parts of the sides of the interior recess 10 to provide a relatively sharp continuous annular edge
25 12. As shown in Fig. 1, the windshield glass 13 has a thin layer of ice 14 deposited at a side thereof. Where the ice coating is relatively thin, the lower member 2 is brought against the ice 14 and the sharp continuous annular edge 12 will pass therethrough and then by moving the implement laterally over the surface of the windshield glass 13, the ice 14 will be scraped ahead of the sharp continuous annular edge 12 and forced outwardly between the
30 sharp continuous annular edge 12 and the lower edges 11. When the ice 14 is relatively thick, the implement is reversed in position and the corrugated outer edges (vertically

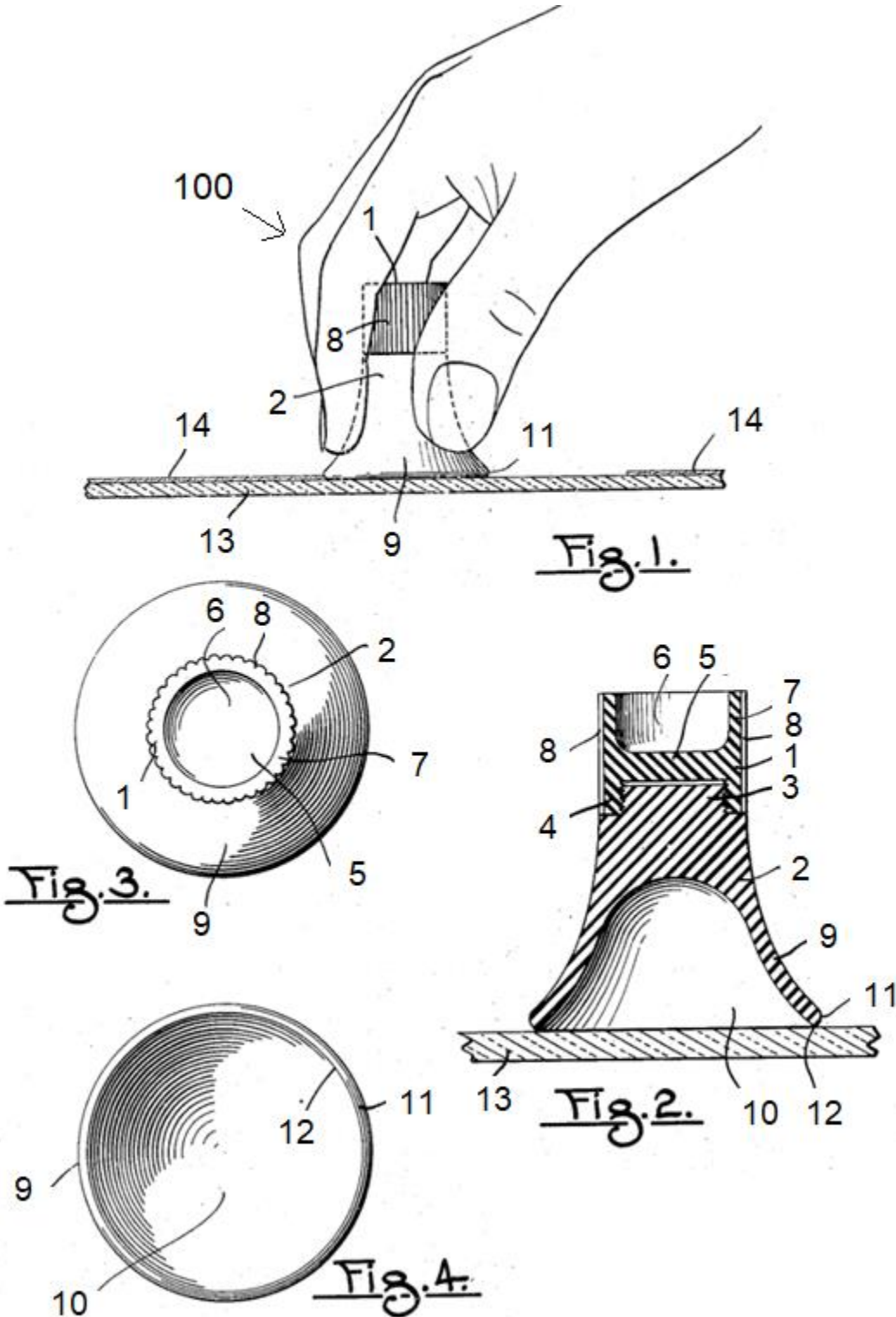
DOCUMENT D2

extending ribs 8) of the cylindrical sleeve 7 of the upper member 1 are forced into the ice 14 and will cut therethrough more readily than the sharp continuous annular edge 12, and will scrape and remove the ice 14 from the windshield glass 13.

- 5 [16] The implement may be formed of a material such as hard rubber or a similar material which does not scratch or abrade the windshield glass 13, but cuts the ice 14 and scrapes and removes it from the windshield glass 13 rapidly and cleanly.

- 10 [17] It is to be understood that the specific construction disclosed herein demonstrates two of the forms only in which this invention may be embodied. There are numerous other ways in which the implement can be constructed to obtain the sharp continuous annular edge 12 with the lower edges 11 of the wall 9 in conjunction therewith, and also to obtain a corrugated edge for engagement and removal of the thicker deposits of ice. The construction does not have to be in the circular or conical form shown but may take
15 numerous other forms.

DOCUMENT D2



DOCUMENT D3

US Patent No. 9,xxx,816
Issue Date: February 8, 2018

5

FROST REMOVING DEVICE FOR WINDSHIELDS

Filing Date: August 11, 2015
Publication Date: February 17, 2016
10 **Priority Data:** Continuation of US Patent Application No. 11/xxx,344 filed on October 4, 2014

Inventor: Glen Fitzgerald
15 **Assignee:** Snow-No-More Ltd.

FIELD OF THE INVENTION

[1] This invention pertains to frost-removing devices for removing frost from the windshields of automotive vehicles, airplanes, and other vehicles.

20 **BACKGROUND OF THE INVENTION**

[2] Modern automobiles are typically provided with defrosting devices for defrosting the windshields. However, such defrosting devices require that the motor be running and warmed up in order to provide the necessary warm stream of air to defrost the windshield. Manually-operable frost scrapers are also known in the art, but are formed of rigid materials such that their application
25 to the conventional windshields having high curvatures results in an ineffective and inefficient cleaning of frost therefrom.

SUMMARY OF THE INVENTION

[3] One of the primary objects of this invention is to provide a frost-removing device for
30 windshields having high curvatures, with the frost-removing device being capable of effectively following the curvature of the windshield through any number of given points.

DOCUMENT D3

[4] Another object of this invention is to provide a frost removing device for curved windshields, with the frost-removing device being formed of a pliable flexible material including, but not limited to, rubber or plastic.

- 5 [5] A further object of this invention is to provide a frost-removing device which is simple in construction and assembly, inexpensive to manufacture, and durable in use.

BRIEF DESCRIPTION OF THE DRAWINGS

- 10 [7] FIG. 1 is a side elevational view of a first embodiment of the frost-removing device, showing the application of the frost-removing device to a conventional curved windshield for an automobile in use;

[8] FIG. 2 is a bottom perspective view of the frost-removing device of FIG. 1;

15

[9] FIG. 3 is a cross-sectional view of the frost-removing device, taken on line 3-3 of FIG. 2, looking in the direction of the arrows;

[10] FIG. 4 is a cross-sectional view showing a second embodiment of the frost-removing device;

20

[11] FIG. 5 is a bottom perspective view of a third embodiment of the frost-removing device; and

[12] FIG. 6 is a partial cross-sectional view, taken on the vertical plane of line 6-6 of FIG. 5, looking in the direction of the arrows.

25

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[13] With reference to FIGS. 1-6, reference numeral 10 generally designates a frost-removing device constructed in accordance with the teachings of this invention. The device 10 may be formed of any suitable flexible material including, but not limited to, rubber or plastic.

30

DOCUMENT D3

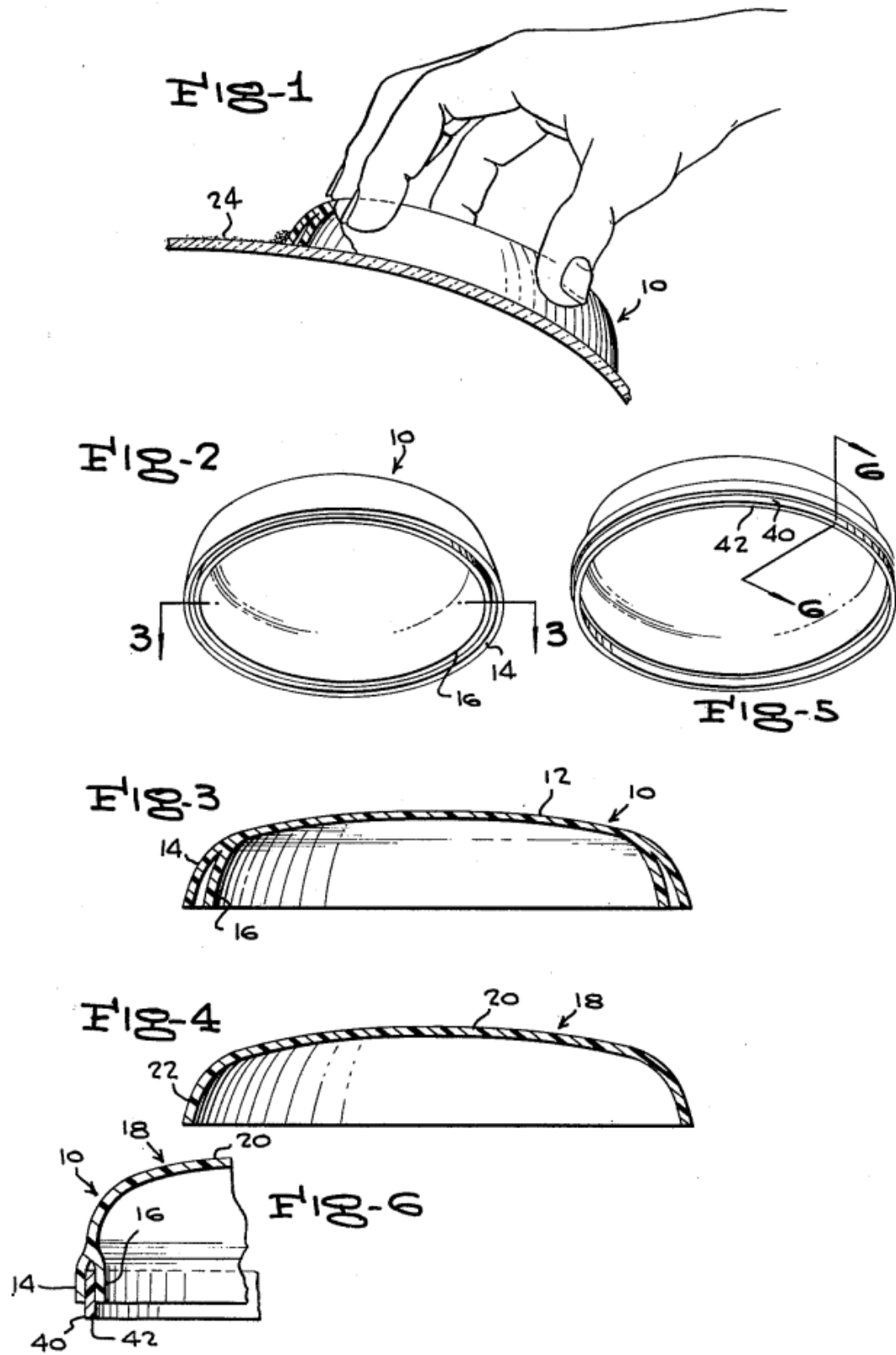
[14] In a first embodiment shown in FIGS. 1 to 3, the device 10 comprises a substantially discoidal back member 12 which, at its circumferential marginal edge, is provided with an angularly-projecting flange 14 which is integrally connected with a second continuous cylindrical flange 16. As shown in FIG. 3, the flanges 14 and 16 are spaced from one another.

[15] In a second embodiment shown in FIG. 4, the device 18 comprises a discoidal back member 20 which, at its circumferential marginal edge, has an arcuately-shaped laterally-projecting flange 22.

[16] In a third embodiment shown in FIGS. 5 and 6, the device 10 is provided, intermediate the flanges 14, 16, with a removable or replaceable endless annular insert 40 which is fixedly held therebetween. The insert 40 has a width greater than the width of the flanges 14, 16 and normally projects, as at 42, beyond the outermost ends of the flanges 14, 16 in order to provide a window panel frost or dew-removing implement.

[17] The use of these devices is shown for example, in FIG. 1, wherein the fingers of the user are shown to be gripped substantially about the flange 14, the outer edges of the two flanges 14 and 16 being shown as engaging against the exterior surface of the conventional curved windshield 24. The flexibility of the device 10 permits the edges of the flanges 14, 16 or the insert 40 to follow the contour of the windshield, and a scrubbing or reciprocating movement of the user's hand relative to the windshield 24 will effectively scrape and remove any frost deposited thereon. The frost-removing device 18, shown in FIG. 4, is operated in the same manner.

DOCUMENT D3



PART B – Short Answer Questions [20 Marks Total]

INSTRUCTIONS TO CANDIDATES

Provide an appropriate response to each question. Do not provide extraneous commentary if not directly relevant to the question. Note that statements of authorities or pertinent law (which may include case law and statutory and regulatory provisions) and analysis are required **ONLY** when requested.

QUESTION 7: [4.0 Marks]

You receive a Notice of Allowance from the Canadian Intellectual Property Office (CIPO) for one of your client's Canadian patent applications. After reviewing the allowed claims, you realize that there is an error with respect to the dependency of claim 3. Claim 3 depends on itself.

What is the best option to correct the error? List the requirements to correct the error, cite the relevant section(s) of the *Patent Rules*, and confirm whether or not there are fee(s) associated with the correction (the amount is not required but list the type of fee(s), if any). **[4.0 Marks]**

QUESTION 8: [3.0 Marks]

Your client, Oh Happy Day Inc., has filed a Canadian patent application on November 1, 2022 claiming priority to a Finnish Patent Application No. 2021/xxx123 filed on November 2, 2021. The Finnish patent application was allowed on October 27, 2022. Your client wishes to expedite allowance of the Canadian patent application.

List ONE (1) of two (2) best options that you can provide your client. For the option you choose, list the requirements, cite the relevant section(s) of the *Patent Rules*, if any, and confirm whether or not there are fee(s) associated with the option that you choose (the amount is not required but

list the type of fee(s), if any). **[3.0 Marks]**

QUESTION 9: [4.0 Marks]

You receive a frantic phone call from your UK Associate on November 1, 2022, advising that they were supposed to enter the 30-month Canadian national phase for their client on October 15, 2022, based on a PCT application filed on April 15, 2020.

If you are able to enter national phase in Canada, list the requirements, cite the relevant section(s) of the *Patent Rules*, if any, and confirm whether or not there are fee(s) associated with the national phase entry (the amount is not required but list the type of fee(s), if any). **[4.0 Marks]**

QUESTION 10: [3.0 Marks]

Your client contacts you about their Canadian patent application CA 2,xxx,456. The client advises that they would like to file a divisional application to a new set of claims.

What is your advice to the client? Cite the relevant section(s) of the *Patent Act*. **[3.0 Marks]**

QUESTION 11: [2.0 marks]

Which of the following is NOT patentable subject matter? List only letter(s) as your answer. **[2.0 marks]**

- a) A unique textile material bearing markings to enable greater precision during a manufacturing procedure.
- b) A novel and unobvious abstract idea.
- c) A new and inventive composition for treating toothache in a subject.
- d) A previously undiscovered new bird found in the wild.

QUESTION 12: [2.0 marks]

Your client requests that you draft and file a patent application directed to his newest product, which will be presented to the public for the first time tomorrow. Your client provides detailed

documentation on how the product works to assist with the drafting.

- a) If your client wishes to file the patent application only in Canada and the United States, how should you proceed? **[0.5 mark]**
- b) How would your answer change if your client wishes to also file in Europe? **[1.5 marks]**

QUESTION 13: [2.0 marks]

Your client is being sued by their competitor for patent infringement. The competitor alleges that your client's new sunscreen lotion infringes their patent. Upon review of the patent and the allegedly infringing sunscreen lotion, you find that your client's sunscreen lotion is prepared according to a method which includes every limitation recited in the competitor's patent claims. Your client further tells you that they did consult their competitor's patent to create their sunscreen lotion, but found that by following the manufacturing method described in the patent, the resulting lotion would not block ultraviolet rays and would leave a crusty residue on the skin. Your client modified the manufacturing method described in the patent by adding a further processing step, which is not disclosed in the patent.

What TWO defenses are available to your client according to the above scenario? Cite relevant sections of the *Patent Act*. **[2.0 marks]**

END OF QUESTIONS IN PART B

END OF PAPER B

MARKING GUIDE - PAPER B (2022)

PART A – LONG ANSWER QUESTIONS [80 Marks Total]

QUESTION 1: [6.0 marks]

Evaluate the citability of D1 [2.5 Marks], D2 [2.0 Marks], and D3 [1.5 Marks] in view of anticipation and obviousness. Provide reasons why the documents are citable or not and apply and cite all the appropriate sections of the *Patent Act*. **[6.0 marks]**

ANSWER TO QUESTION 1: [6.0 marks]

- **D1** – Third party CA patent application ‘195 has a filing date that is before the claim date of Canadian Patent No. 2,xxx,872. Citable for anticipation [28.2(1)(c)]. Third party CA patent application ‘195 published before claim date. Citable for obviousness [28.3(b)]. **(2.5 marks)**
- **D2** – Third party CA patent application ‘630 has a filing date that is before the claim date of Canadian Patent No. 2,xxx,872. Citable for anticipation [28.2(1)(c)]. Third party CA patent application ‘630 published before claim date. Citable for obviousness [28.3(b)]. **(2.0 marks)**
- **D3** – Third party US patent ‘816 was publicly disclosed after the claim date of Canadian Patent No. 2,xxx,872. NOT citable for anticipation [28.2(1)(b)] and obviousness [28.3(b)]. **(1.5 marks)**

QUESTION 2: [15.0 marks]

Assuming that these elements are essential, construe the following selected claim terms or expressions of Canadian Patent No. 2,xxx,872:

ANSWER TO QUESTION 2: [15.0 marks]

- a) “a hollow conical body” (claim 1) **[3.5 marks]**
- Ice scraper (10, 100) has a conical body (14, 56). **(0.5)**
 - “Hollow” means having a void or space. **(0.5)**

- “Conical body” means a cone-shaped structure which tapers from a roughly circular base to a point. **(0.5)**
- The body includes a flared portion (44, 66) between the open top portion (36, 58) and the open bottom portion (38, 60) OR as shown in FIGS. 1 and 5-7, the conical body can be considered frusto-conical. **(0.5)**
- In an example, the open top portion (36, 58) is integral with the open bottom portion (38, 60) to define a unitary hollow cavity (40, 62) extending therethrough. A sloped wall (46, 68) defines the unitary hollow cavity (40, 62). **(1.0)**
- The conical body is multi-functional and can be used as an ice scraper, funnel, and megaphone. **(0.5)**

b) “an open top portion” (claims 1 and 6) **[2.0 marks]**

- Open top portion (36 in the first embodiment shown in FIGS. 5, 58 in the second embodiment shown in FIG. 6). **(0.5)**
- “Top portion” must be defined with respect to an opposite “bottom portion” in the figures. **(0.5)**
- “Open” means lacking an enclosing or confining barrier to allow access or passage through a void or space. **(0.5)** The open top portion can receive the neck of the caps (12, 54). **(0.5)**

c) “a scraping edge” (claims 1 and 6) **[2.0 marks]**

- A scraping edge (52, 72). **(0.5)**
- “Scraping” implies contacting an object or surface to remove matter. **(0.5)**
- “Edge” is defined broadly as a side or portion of a structure that contacts the windshield. **(0.5)**

- It can be formed by a relatively sharp ridge 50 about the circumference of the open bottom portion 38. Ridge 50 includes an outwardly facing surface 52a and an inwardly facing surface 52b converging at two equal opposing angles with respect to a longitudinal axis of the scraper resulting in, a scraping edge 52. Description describes “edge” as an intersection of angles (paragraph 27; FIGS. 3 and 5) or as “scraping surface” formed as an intersection of vertical and sloped surfaces (paragraph 35; and FIG. 9) but the edge should not be limited to these shapes. **(0.5)**

d) “a cap” (claims 1 and 6) **[2.0 marks]**

- Cap (12, 54). **(0.5)**
- “Cap” is a structure that covers a surface or closes an opening, such as the open top portion of the conical body, and is shaped to fit into the open top portion of the conical body. **(0.5)**
- Cap has dual functions – (1) operates as a handle when inserted in the conical body; (2) can be used as scraper alone (paragraphs 29 and 36). **(1.0)**

e) “a neck” (claims 1 and 6) **[3.0 marks]**

- Neck (28) shown in FIG. 4 of first embodiment; neck piece (88) shown in FIG. 8 of second embodiment. **(0.5)**
- A neck is, for example, cylindrical-shaped and may include a sidewall 30 defining an inner cavity 32 and an opening 34. **(0.5)**
- The neck 28 can be integral with the disk 20. The neck 28 can have a diameter smaller than the diameter of the disk 20. **(0.5)**
- The neck 28 and open top portion 36 can be sized to be releasably secured to each other. The neck 28 can be sized to fit within the open top portion 36. In examples, the neck

28 can have an outer diameter of about 0.9 inches, a length of about one inch, and the sidewall 30 has a thickness of about 1/16 inches. **(1.5)**

f) “upper portion of the cap being of a larger diameter than that of the open top portion of the conical body” (claim 1) **[2.5 marks]**

- In FIGS. 2 and 4, the “upper portion” of the cap 12 includes a disk 20 which has a larger diameter than the diameter (2 inches) of the open top portion 36. It has a larger diameter (about 2 inches) than the open top portion of the conical body (1 inch) (paragraphs 22 and 25). **(1.0)**
- In FIG. 6, the cap has a cone shape. The scraping surface of the cap is larger than the neck piece (88) that is sized to fit in the open top portion (58) of the conical body. **(1.0)**
- The larger diameter negates use of conventional ice scraper handles and allows the cap to function as a handle (paragraph 29). **(0.5)**

QUESTION 3: [29.5 marks]

Are claims 1, 2, 3, 4, and 5 anticipated by any one of D1-D3? Provide detailed supporting arguments and references to the appropriate sections of the documents and figures. In the event that features are repeated in subsequent claims, it is acceptable to refer to analysis in previous claim(s). **[29.5 marks]**

ANSWER TO QUESTION 3: [29.5 marks]

Anticipation Breakdown	D1 – CA ‘195	D2 – CA ‘630
CA ‘872		
Claim 1		
An ice scraper for a windshield comprising:	Yes, windshield scraper apparatus 10 (Fig. 1). (0.5)	Yes, an ice scraping/removing element 100 for use on a windshield 13. (0.5)

a hollow conical body	Yes, a conical scraping ring 19 (Fig. 1). (0.5)	Yes, member 2 is designated as being hollow in paragraph 7. It has a flared portion to provide an annular/circular edge. (1.0)
having an open top portion and	Yes, conical scraping ring 19 as seen in Fig. 1 has an opening due to ring structure-opening around element 19. (0.5)	No, upper end of part 2 is closed. (0.5)
an open bottom portion,	Yes, conical scraping ring 19 as seen in Fig. 1 has an opening due to ring structure-opening around element 21. (0.5)	Yes, member 2 is hollow and forms continuous annular bell-like wall 9 around an interior recess 10 (paragraph 15). (0.5)
the open top portion being of a smaller diameter than the open bottom portion,	Yes, scraping ring 19 has a conical tapered configuration. In Figs. 1 or 3, the top portion designated with reference number 19 has a smaller diameter than the bottom portion designated by reference number 21. (1.0)	No, no open top portion (1.0)
the open bottom portion having a scraping edge formed thereon extending around the periphery thereof, and	Yes, serrated scraping ring lower annular edge in the form of serrated scraping ring 21. Annular nature of edge implies that it extends around the periphery as can be seen in Fig. 1. (1.0)	Yes, element 2 has scraping edge 12. Annular nature of edge implies that it extends around the periphery as can be seen in Fig. 4. (1.0)
the hollow conical body further being constructed of a pliable material so that the scraping edge conforms readily to curvatures in the windshield; and	No, material unknown – Paragraph 20 indicates that the optimum materials for the parts are obvious for the POSITA. However, serrated nature of the scraping edge due to its shape inherently does not conform to the curvature of the windshield since it is mentioned that the scraping edge 16 of housing 11 is rigid and works best for	No, element 2 made of hard rubber/plastic. No indication that material can conform to shape of glass – only that it does not scratch glass – paragraph 5. (1.0)

	flat portions of the windshield. (1.0)	
a cap having an upper portion and a lower portion,	Yes, housing 11 (cap) has top surface 14 (upper portion) and upper portion 12 and a lower portion 15 (lower portion). (1.5)	Yes, element 1 has an upper portion 7 and a lower portion 4. (1.5)
a neck extending from the upper portion of the cap,	Yes, between upper portion 12 and a lower portion 15 is junction 18 (neck which is a narrower part of structure with respect to conical lower portion 15. Upper portion 12 extends from top surface 14. (1.5)	Yes, lower portion 4 extends from upper portion - cylindrical wall 7. (1.0)
the neck being releasably secured to the open top portion of the hollow conical body,	Yes, upper portion 12 (neck), as part of unitary housing 11 can be releasably installed on cylindrical mounting ledge 20 of the scraping ring 19. The scraping ring 19 is not permanently secured on the housing 11 as the housing 11 includes a scraping edge 16. (1.0)	Yes, section 4 connected to element 2. Section 4 is interiorly threaded and is releasably screwed upon exterior threaded part 3. (1.0)
the upper portion of the cap being of a larger diameter than that of the open top portion of the hollow conical body, wherein the cap acts as a handle.	No, see Figure 1 or 3, an upper portion 12 or top surface 14 is smaller in diameter than top portion of scraping ring 19. (0.5) No, strap 13 or recesses 17 operate as handles but are not related to the relative size between the cap and the conical body. (0.5)	No, see Figure 2, cylindrical wall 7 is of uniform diameter along its entire length. (0.5) Yes, upper member 1 can act as handle. (0.5)
Enablement + Conclusion	Not enabled – not anticipated (0.5)	Not enabled – not anticipated (0.5)
	[10.5 marks]	[10.5 marks]

Claim 2 (dep on 1)		
The ice scraper of claim 1, wherein an exterior surface of the hollow conical body has stiffening members formed thereon.	No, surface of scraping ring 19 appears to be uniform/no stiffening members. (0.5)	No, element 2 has uniform external surface/ no stiffening members (ribs 8 are not on element 2) (0.5)
Enablement + Conclusion	Not enabled – not anticipated (0.5)	Not enabled – not anticipated (0.5)
	[1.0 mark]	[1.0 mark]
Claim 3 (dep on 1)		
The ice scraper of claim 1, further comprising a plurality of cones projecting from the upper portion of the cap for loosening coarse frost.	No, the top surface 14 of housing 11 appears smooth/planar/no cones on top surface 14. (0.5)	No, upper member 1 has only a recess 6/ ribs 8 are not cones. (0.5)
Enablement + Conclusion	Not enabled – not anticipated (0.5)	Not enabled – not anticipated (0.5)
	[1.0 mark]	[1.0 mark]
Claim 4 (dep on 1)		
The ice scraper of claim 1, wherein the scraping edge is formed by an outwardly facing surface and an inwardly facing surface converging at equal opposing angles with respect to a longitudinal axis of the scraper to define a sharp scraping surface.	No, the serrated shape of edge 21 is not formed with outwardly and inwardly facing surfaces. (0.5)	No, there is an annular scraping edge, the sides of which are located in angular relation to each other see paragraph 4. Nothing in the description indicates that the angles are equal opposing angles. (0.5)
Enablement + Conclusion	Not enabled – not anticipated (0.5)	Not enabled – not anticipated (0.5)
	[1.0 mark]	[1.0 mark]
Claim 5 (dep on 1)		

The ice scraper of claim 1, wherein the upper portion of the cap comprises a flat disk and a plurality of cones projecting from an upper surface of the flat disk.	No, top surface 14 is a flat/smooth disk/no cones. (1.0)	No, upper member 1 has only a recess 6/ ribs 8 are not cones. (0.5)
Enablement + Conclusion	Not enabled – not anticipated (0.5)	Not enabled – not anticipated (0.5)
	[1.5 marks]	[1.0 mark]

QUESTION 4: [26.5 marks]

Is claim 6 obvious in view of D1-D3? Provide detailed supporting arguments, apply the appropriate test from the case law, and refer to the appropriate sections of the documents and figures. [26.5 marks]

ANSWER TO QUESTION 4: [26.5 marks]

A) POSITA and CGK [1.0 mark]

(i) Person skilled in art

- engineer or designer experienced in manufacture of snow and ice clearing devices and tools for windshields/windows of vehicles. (0.5)

(ii) Common general knowledge

- person skilled in the art would be familiar with a variety of snow and ice clearing tools for use on car windshields. Examples include hand scrapers with short or long handles, and scrapers at end of snow brushes. (0.5)

B) Inventive concept [6.5 marks]

Inventive concept is a combination of the following features:

a) **First hollow conical body [1.0 mark]**

- First hollow conical body. (0.5)
- Can be used without a conventional handle to apply direct pressure to the windshield. Conical shape allows comfortable grasp. Can apply scraping action in multiple directions due to circular shape of cone/other advantages/function. (0.5)

b) **Open top portion [1.0 mark]**

- Open top portion. (0.5)
- Opening allows insertion of cap therein. Open top portion allows conical body to be used as funnel for guiding liquid into an opening for example, antifreeze or windshield washer fluid into the vehicle's reservoir; or as a megaphone for example, during an emergency on the road/advantages/function. (0.5)

c) **Scraping edge formed thereon extending around the periphery [1.0 mark]**

- Scraping edge formed thereon extending around the periphery. (0.5)
- Scraping edge contacts the surface to be thoroughly cleaned. "Around the periphery" uses the full shape of the conical body such that scraping action can be applied in any direction/advantages/function. (0.5)

d) **Constructed of a pliable material [0.5 mark]**

- Pliable material capable of deforming to conform to a curved or multi-planar surface, allowing its entire scraping edge to contact the surface to be thoroughly cleaned (paragraph 28). (0.5)

e) **Cap shaped as a second hollow conical body [1.0 mark]**

- Cap shaped as a second hollow conical body. (0.5)
- Cap 54 is a similar but smaller version of the conical body 56 in sharing the same conical configuration (paragraph 34). Cap 54 is sized smaller than the conical body

56 so to be portable in a pocket such as that of a coat or trouser for use alone as a mini-scraper. Allows ice scraper 100 to be simply used to scrape smaller areas such as headlights or mirrors/advantages/function. (0.5)

f) **Neck extending from the upper portion of the cap, the neck being releasably secured to the open top portion of the first hollow conical body** [0.5 mark]

- Neck extending from the upper portion of the cap, the neck being releasably secured to the open top portion of the first hollow conical body. (0.5)

g) **Upper portion of the cap being of a larger diameter than that of the open top portion of the first hollow conical body** [1.0 mark]

- Upper portion of the cap being of a larger diameter than that of the open top portion of the first hollow conical body. (0.5)
- Larger diameter of upper portion of cap allows cap to act as a handle. Uses natural shape of conical body to get same “handle” feature that was provided in the first embodiment with a flat disk including grating cones for loosening coarse frost/advantage/function. (0.5)

h) **Lower portion of the cap being dome-shaped** [0.5 mark]

- Domed handle (82) facilitates manipulation of smaller cap (54) when placed in the palm of a user’s hand. (0.5)

C) **Differences** [5.0 marks]

- D1 [2.5 marks]

- i) First conical body not made of pliable material – rigid serrated teeth do not conform to the curvature of a windshield. (0.5)
- ii) No cap shaped as second conical body. (0.5)

- iii) No neck of cap releasably secured to first conical body. Housing 11 is releasably secured but is not shaped as a neck. **(0.5)**
- iv) Upper portion of cap (housing 11) has smaller diameter than top portion of the conical body. **(0.5)**
- v) Lower portion of housing 11 is not dome shaped. **(0.5)**

• **D2 [2.5 marks]**

- i) Element 2 – first conical body – does not have an open top portion. **(0.5)**
- ii) Element 2 is not made of a pliable material but rather of “hard rubber” and is not meant to conform to the curvature of a windshield. **(0.5)**
- iii) Element 1 – cap is not shaped as a second hollow conical body. **(0.5)**
- iv) Upper portion of element 1 – cap does not have a larger diameter than the top portion of the conical body (element 2). **(0.5)**
- v) Lower portion of element 1 is not dome-shaped. **(0.5)**

D) Viewed without any knowledge of the alleged invention as claimed, do those differences constitute steps which would have been obvious to the person skilled in the art or do they require a degree of inventiveness? [13.0 marks]

a) **Not obvious in view of D1 alone [3.0 marks]**

Any THREE of the following for full marks [each 1.0 mark]:

- i) First conical body is not made of pliable material – serrated teeth do not need to conform to the curvature of the windshield. Serrated teeth cannot be manipulated on their own as a standalone tool – must be linked to housing 11.
- ii) No cap shaped as second hollow conical body. In D1, the conical body and cap cannot be easily used independently as scraping tools, or when combined together, the tool in D1 is used only in one manner, cannot be turned over to scrape smaller

surfaces. One can argue that housing 11 is somewhat conical but not necessarily a “hollow” body.

- iii) No neck feature of cap. Absence of neck for holding tool requires other forms of handles like strap 13 or recesses 17.
- iv) Upper portion of cap (housing 11) has a smaller diameter than the top portion of the conical body.
- v) Housing 11 is not meant to fit within a palm of the hand for scraping smaller surfaces. No motivation to provide dome shape in bottom portion of the cap/housing 11.

b) Not obvious in view of D2 alone [3.0 marks]

Any THREE of the following for full marks [each 1.0 mark]:

- i) Element 2 – with closed top portion – prevents use of element 2 as a funnel or megaphone.
- ii) Element 2 is not made of a pliable material but rather of “hard rubber.” D2 is concerned with avoiding abrading the surface of a windshield rather than conforming to the curvature of the windshield.
- iii) Element 1 – cap is not shaped as a second hollow conical body. Element 1 can be used as an independent scraper, but it does not benefit from the conical shape to facilitate manipulation of the cap and application of pressure on surfaces to be cleaned. It uses a corrugated surface to remove thick ice – a separate problem being addressed.
- iv) Upper portion of element 1 – cap does not have a larger diameter than the top portion of the conical body – absence of larger diameter does not provide a handle in vertical direction.

- v) Element 1 can fit within the palm of the user's hand. However, there is no suggestion in D2 to improve comfort in manipulation of element 1 on its own by avoiding straighter edges through a dome-shape when placing element 1 in the palm of one's hand.

c) **Not obvious when combining D1 and D2 [7.0 marks]**

- Neither D1 nor D2 suggest the use of a pliable material to make the conical body conform (advantage) to the curvature of the windshield. **(1.0)**
- First conical body in D1 has open top portion but does not converge to a neck in order to be used as a funnel or megaphone. First conical body in D2 does converge to a neck shape, but does not have an open top portion for use as a funnel or megaphone. No motivation to combine the two to solve their respective differences. **(1.0)**
- Neither D1 nor D2 suggest a combination of similarly-shaped conical bodies. D1 has only a conical cap body including serrated teeth. D2 adds a cylindrical corrugated cap to a cylindrical body. D1 and D2 suggest using two different tools with different functions that can be attached together, rather than two similarly shaped tools that can be used for differently sized surfaces. **(3.0)**

2.0 marks for any ONE of the following:

- The first conical body in D1 (serrated edge) is not meant to be used alone as the first conical body in D2 can be used.
- Assembly of two conical bodies through a common neck provides a tool that can be easily turned over for use on differently sized surfaces. D1 cannot be turned over - it is used with or without a serrated edge. D2 can be turned over, but is probably difficult to manipulate when applying element 1 against a surface since element 1 has a much smaller diameter than element 2.

- Assembly of two conical bodies also provides a simple “convergent-divergent” design with larger cones expanding from a central common neck (*or reference to larger diameter of upper portion of cap*), which provides handles in both configurations when the combined tool is used and turned over. D1 solves a handle issue with strap 13 or recesses 17. D2 does not provide a handle when manipulated in manner shown in FIG. 1. No suggestion to solve deficiencies of D1 or D2 with the solutions of D1 or D2.
- Users on “Go-Fund-An-Inventor” page mention that the scraper can be held easily irrespective of the size of one’s hands or the types of gloves worn. In D1, fingers must be sized to fit in recesses 17, which may be difficult when wearing gloves. D2 does not suggest a solution to this issue.
- Neither D1 nor D2 suggest including a domed or rounded feature for comfortably holding a smaller portion of the scraper in the palm of a hand.

E) Conclusion: Not obvious [1.0 mark]

QUESTION 5: [1.0 mark]

If Marie’s entry to the “Go-Fund-an-Inventor” website was uploaded and published officially on the site on February 27, 2013 instead of April 13, 2013, identify and briefly explain **one** potential issue that may affect the validity of any of the claims of Canadian Patent No. 2,xxx,872.

ANSWER TO QUESTION 5: [1.0 mark]

- Issue of public disclosure (0.5) – the publication on a website more than 1 year before the claim date constitutes a disclosure (a) before the one-year period immediately preceding the filing date or, if the claim date is before that period, before the claim date by the applicant, in such a manner that the subject-matter became available to the public in Canada or elsewhere 28.2 (1) (a) of the *Patent Act*. (0.5)

QUESTION 6: [2.0 marks]

Based on the background information provided, identify and briefly explain **TWO** potential issues that may affect the validity of any of the claims of Canadian Patent No. 2,xxx,872. Only the first TWO potential issues will be marked. **[2.0 marks]**

ANSWER TO QUESTION 6: [2.0 marks]

Any TWO of the following for full marks [each 1.0 mark]:

- Issue of whether proper inventors have been named **(0.5)** – Igor Rodinsky is named as a co-inventor on CA ‘872. A rule of thumb is that an inventor can be defined by someone who contributes to the inventive concept and reduction to a definite and practical shape of one or more of the claims in a patent. At Marie’s request, Igor simply operated the 3D printer and may not be a co-inventor. **(0.5)**
- Issue of public disclosure **(0.5)** – The prototype was printed at a public library during “peak hours” so there is a possibility that the prototype might have been disclosed to the public. **(0.5)**
- Issue of ownership **(0.5)** – Questionable as to whether the library should be named as an owner since the 3D printing was simply a service provided to the general public for a nominal fee to cover the plastic materials. **(0.5)**

END OF QUESTIONS IN PART A

PART B – Short Answer Questions [20 Marks Total]

QUESTION 7: [4.0 Marks]

You receive a Notice of Allowance from the Canadian Intellectual Property Office (CIPO) for one of your client's Canadian patent applications. After reviewing the allowed claims, you realize that there is an error with respect to the dependency of claim 3. Claim 3 depends on itself.

What is the best option to correct the error? List the requirements to correct the error, cite the relevant section(s) of the *Patent Rules*, and confirm whether or not there are fee(s) associated with the correction (the amount is not required but list the type of fee(s), if any). **[4.0 Marks]**

ANSWER TO QUESTION 7: [4.0 Marks]

1. The claim dependency error would be considered an obvious error and can be corrected under Subsection 100(2) of the *Patent Rules*. The amendment is permissible since it is obvious that something other than what appears in the specification and the drawings was intended and that nothing other than the proposed amendment could have been intended. **(1.0)**
2. The error must be corrected on or before the date of the payment of the final fee. **(1.0)**
3. File an amendment after allowance to correct the obvious error. **(1.0)**
4. No fee is necessary. **(1.0)**

QUESTION 8: [3.0 Marks]

Your client, Oh Happy Day Inc., has filed a Canadian patent application on November 1, 2022 claiming priority to a Finnish Patent Application No. 2021/xxx123 filed on November 2, 2021. The Finnish patent application was allowed on October 27, 2022. Your client wishes to expedite allowance of the Canadian patent application.

List ONE (1) of two (2) best options that you can provide your client. For the option you choose, list the requirements, cite the relevant section(s) of the *Patent Rules*, if any, and confirm whether or not there are fee(s) associated with the option that you choose (the amount is not required but list the type of fee(s), if any). **[3.0 Marks]**

ANSWER TO QUESTION 8: [3.0 Marks]

1) Request advanced exam (Special Order) under Section 84(1)(a) of the *Patent Rules*. **(0.5)**

a) Request regular examination of the application; **(0.5)**

b) Request that the application be laid open to the public; **(0.5)**

c) Request advanced examination, making the statement failure to advance the application is likely to prejudice that person's rights; and **(0.5)**

d) Pay the regular examination fee and the advanced examination fee. **(1.0)**

OR

2) Request examination under the Patent Prosecution Highway (PPH) **(0.5)**

a) Request regular examination of the application; **(0.5)**

b) Request that the application be laid open to the public; **(0.5)**

c) Fill out and file the PPH Request Form and provide a copy of the allowed claims from Finnish Patent Application No. 2021/xxx123; and **(0.5)**

d) Pay the regular examination fee and there is no fee associated with the PPH. **(1.0)**

QUESTION 9: [4.0 Marks]

You receive a frantic phone call from your UK Associate on November 1, 2022, advising that they were supposed to enter the 30-month Canadian national phase for their client on October 15, 2022, based on a PCT application filed on April 15, 2020.

If you are able to enter national phase in Canada, list the requirements, cite the relevant section(s) of the *Patent Rules*, if any, and confirm whether or not there are fee(s) associated with the national phase entry (the amount is not required but list the type of fee(s), if any). **[4.0 Marks]**

ANSWER TO QUESTION 9: [4.0 Marks]

You can enter late national phase in Canada by October 15, 2023 under Subsection 154(3) of the *Patent Rules*. **(1.0)**

The requirements are as follows:

- a) File a request for national phase entry; **(0.5)**
- b) File a request for reinstatement of rights; **(0.5)**
- c) Provide a statement that the failure to enter the 30-month national phase was unintentional; **(0.5)**
- d) Pay the i) basic national fee, ii) fee for reinstatement of rights, iii) all annual maintenance fees for anniversary dates of the international filing date before the national phase entry date. **(1.5)**

QUESTION 10: [3.0 Marks]

Your client contacts you about their Canadian patent application CA 2,xxx,456. The client advises that they would like to file a divisional application to a new set of claims.

What is your advice to the client? Cite the relevant section(s) of the *Patent Act*. **[3.0 Marks]**

ANSWER TO QUESTION 10: [3.0 Marks]

- 1. Advise the client that you will file a voluntary amendment to add the new set of claims and leave it up to the Examiner to issue a unity of invention objection. If no unity of invention objection is raised, all claims can remain in the current application and no divisional should be filed. If a unity objection is raised, then you can file a divisional to the claims to the separate invention. **(2.0)**
- 2. Section 36(2.1) of the *Patent Act*. **(1.0)**

QUESTION 11: [2.0 marks]

Which of the following is NOT patentable subject matter? List only letter(s) as your answer.

[2.0 marks]

- a) A unique textile material bearing markings to enable greater precision during a manufacturing procedure.

- b) A novel and unobvious abstract idea.
- c) A new and inventive composition for treating toothache in a subject.
- d) A previously undiscovered new bird found in the wild.

ANSWER TO QUESTION 11: [2.0 marks]

B (1.0)

D (1.0)

QUESTION 12: [2.0 marks]

Your client requests that you draft and file a patent application directed to his newest product, which will be presented to the public for the first time tomorrow. Your client provides detailed documentation on how the product works to assist with the drafting.

- A) If your client wishes to file the patent application only in Canada and the United States, how should you proceed? (0.5 mark)
- B) How would your answer change if your client wishes to also file in Europe? (1.5 marks)

ANSWER TO QUESTION 12: [2.0 marks]

- A) You have a one-year grace period to draft and file the patent application. (0.5)
- B) You can file an incomplete application (Canada) or a provisional application (USA) based on the detailed documentation provided by the client, and file in Europe later claiming priority from the incomplete/provisional application to respect the absolute novelty requirement of Europe (1.5).

QUESTION 13: [2.0 marks]

Your client is being sued by a competitor for patent infringement. The competitor alleges that your client's new sunscreen lotion infringes their patent. Upon review of the patent and the allegedly infringing sunscreen lotion, you find that your client's sunscreen lotion is prepared according to a method which includes every limitation recited in the competitor's patent claims. Your client further tells you that they did consult their competitor's patent to create their sunscreen

lotion, but found that by following the manufacturing method described in the patent, the resulting lotion would not block ultraviolet rays and would leave a crusty residue on the skin. Your client modified the manufacturing method described in the patent by adding a further processing step, which is not disclosed in the patent.

What TWO defenses are available to your client according to the above scenario? Cite relevant sections of the *Patent Act*. [2.0 marks]

ANSWER TO QUESTION 13: [2.0 marks]

Any TWO of the following for full marks (each 1.0 mark):

- Overbreadth (0.5), Subsection 27(4) of the *Patent Act* (0.5)
- Lack of utility (0.5), Section 2 of the *Patent Act* (0.5)
- Insufficient disclosure (0.5), Subsection 27(3) of the *Patent Act* (0.5)

END OF QUESTIONS IN PART B

CANADIAN PATENT AGENT QUALIFYING EXAMINATION

2022

PAPER C - PATENT OFFICE PRACTICE

This examination is four (**4**) hours in length.

This examination is composed of two parts:

Part A, comprising question C1 (**80** pts); and

Part B, comprising questions C2 to C9 (**20** pts).

For Part A, you will be evaluated on the following:

Dealing correctly with all issues; and

Appropriate statutory/regulatory citations, where applicable.

Note that salutations, signatures and other formalities of correspondence are not required in your answers; substance is important.

For Part B, you will be rated on the correctness and clarity of the answers.

PART A: Question C1 (80 pts)

C1. You are the patent agent responsible for the prosecution of Canadian patent application no. 3,XXX,999. You are provided with the following documents:

1. A copy of the patent examiner's examination report dated 15 November 2022.
2. A copy of application 3,XXX,999 that is the object of the office action.
3. A copy of each of the three prior art documents (D1-D3) cited in the examination report. Although these documents are based on actual patent documents, they have been altered for the purposes of this examination.

Instructions to Candidates

Provide a response to the examination report. Your response must include:

- a set of claims drafted with due consideration to their allowability and the rights of your client; marks may be deducted for any unnecessary limitations in independent claim(s) [total of 34 pts, including 24 pts for claim 1, 7 pts for other claim amendments, and 3 pts for clarity];
- a new abstract [10 pts];
- a clear indication of where support can be found for each amended feature [5 pts];
- a discussion of the prior art documents cited [3 pts], and of novelty [5 pts] and inventiveness [10 pts] of your amended claims with respect to said prior art; and
- a discussion of every other defect raised in the examination report, including a statement explaining how each defect has been corrected (note that it is not required to physically amend the description and the drawings) [13 pts].

15 November 2022 (15-11-2022)

RAY AGENT

ipmail@ra.com

Application No.: 3,XXX,999
Owner: Best Arborist Inc.
Title: TREE PROTECTION SYSTEM
Classification: A01G 13/10 (2006.01)
Your File No.: WXYZ-000
Examiner: K. Dryden

YOU ARE HEREBY NOTIFIED OF A REQUISITION BY THE EXAMINER IN ACCORDANCE WITH SUBSECTION 86(2) OF THE *PATENT RULES*. IN ORDER TO AVOID ABANDONMENT UNDER PARAGRAPH 73(1)(a) OF THE *PATENT ACT*, A WRITTEN REPLY MUST BE RECEIVED WITHIN **FOUR (4)** MONTHS AFTER THE ABOVE DATE.

This application has been examined as originally filed.

The number of claims in this application is 8.

Documents Cited:

D1:	WO 2016/195111 A1	LAFLEUR	8 December 2016 (08-12-2016)
D2:	US 2003-140222 A1	LEMAIRE	31 July 2003 (31-07-2003)
D3:	GB 2519333 A	SHUTT	6 May 2015 (06-05-2015)

The examiner has identified the following defects in the application:

Lack of Novelty

Claims 1, 7 and 8 encompass subject-matter that was disclosed in D1 before the claim date and do not comply with paragraph 28.2(1)(b) of the *Patent Act*.

Regarding claim 1, document D1 discloses a tree protection system (figures 1 and 2) comprising a flexible UV-stable layer (11, 12) including a plurality of openings with a maximum dimension in the range of 0.1 to 50 mm, preferably between 0.2 and 10 mm, formed therein, the layer configured to protectively surround at least the base of a tree (figures 5 and 6); and a unitary fastener adapted to secure overlapping opposed portions of the layer together during protectively surrounding at least the base of the tree in response to application of a single force directed toward the opposed portions (paragraphs 0019, 0020, 0023, 0028, 0030).

Regarding claim 7, document D1 discloses a tree protection system wherein the layer has a thickness between about 1 mm and about 5 mm (paragraph 0030).

Regarding claim 8, document D1 discloses a tree protection system wherein the layer is composed of thermoplastic resins such as high density polyethylene, low density polyethylene, acrylonitrile-butadiene-styrene (ABS) copolymer, polypropylene or nylon (paragraph 0031).

Obviousness

Claims 2-4 do not comply with section 28.3 of the *Patent Act*. These claims are directed to subject-matter that would have been obvious at the claim date to a person skilled in the art or science to which it pertains having regard to D1 in view of D2.

Document D1, which has been briefly discussed above, may be regarded as the closest prior art for the subject-matter of these claims. The difference between the tree protection system of D1 and that defined in claims 2-4 resides in the additional layers.

Document D2 generally describes a shield for protecting the base of a plant or tree (figure 1) comprising at least two layers (paragraph 0009). Regarding claim 2, document D2 discloses a flexible UV-stable second (outer) layer (16 in figures 1 and 2) overlying and secured to the first layer (18), the second layer impervious to herbicides, the first layer and the second layer configured to protectively surround at least the base of the tree (paragraphs 0014, 0017, 0018, 0025, 0026).

Regarding claim 3, D2 also discusses the importance of protecting the plant stem or tree trunk from the effects of light and UV radiation (paragraph 0016), and the fact that the characteristics of the surface of the outer layer must be chosen to reflect light and thus reduce the temperature inside the shield (paragraph 0017). Whether the protection from herbicides and the protection from heating by the sun are performed by the same or separate layers is trivial. In any case, it is mentioned in D2 that although at least two layers are required to construct the shield, “any number of layers may be used” (paragraph 0009; see also paragraph 0020).

Regarding claim 4, D2 discloses the second layer being a film and having a thickness between 2 and 6 mils (or 0.0508 and 0.152 mm) (paragraph 0018).

Therefore, in view of documents D1 and D2 combined, a person skilled in the art would readily arrive at the subject-matter of claims 2-4 of the present application.

Claims 5 and 6 do not comply with section 28.3 of the Patent Act. These claims are directed to subject-matter that would have been obvious at the claim date to a person skilled in the art or science to which it pertains having regard to D1 in view of D3.

Document D1, which has been briefly discussed above, may be regarded as the closest prior art for the subject-matter of these claims. The difference between the tree protection system of D1 and that defined in claims 5 and 6 resides in the construction of the fastener.

Document D3 generally discloses a tree protection system in the form of a horticultural cage comprising a mesh (6) that is held to a frame (2) by means of fasteners (3).

Regarding claim 5, D3 discloses a fastener comprising a head (12) at a first end (32); a shaft (31) extending from the first end to a second end defining a tip (33); and at least two resilient prongs (34) extending from the tip toward the first end (figures 3A, 3B, 4B, 5A and 17A).

Regarding claim 6, it is clear from figures 2, 3A-3C, 4B, 5A, 16 and 17A-7C that the tip of the fastener in D3 is rounded.

Therefore, in view of documents D1 and D3 combined, a person skilled in the art would readily arrive at the subject-matter of claims 5 and 6 of the present application.

Other Defects in the Claims

Claim 1 is indefinite and does not comply with subsection 27(4) of the *Patent Act*. The use of the expression “preferably” directs the claim simultaneously to both broad and narrow embodiments, causing a lack of clarity as to the intended scope of this claim.

Claims 3 and 4 are indefinite and do not comply with subsection 27(4) of the *Patent Act*. The term “second layer” has no antecedent in claim 1.

Claim 3 is indefinite and does not comply with subsection 27(4) of the *Patent Act*. It is not clear how the third layer is configured to protect the tree from frost cracking.

Claim 8 does not comply with subsections 63(2) and 63(3) of the *Patent Rules*. A dependent claim must refer to a preceding claim or claims. In addition, a preamble such as “according to any one of claims” would make it clear that the above claim depends upon each claim in the alternative only.

Claim 8 is indefinite and does not comply with subsection 27(4) of the *Patent Act*. The use of the trademark “Novodur” does not clearly specify the nature of the material. For clarity, it should be replaced with the common name of the product.

Defects in the Description and Drawings

Subsection 57(2) of the *Patent Rules* requires that the description not refer to a document that does not form part of the application unless the document is available to the public. The URL internet address referred to in paragraph 37 points to a non-permanent electronic file, and thus it does not constitute a permanently retrievable and publicly available non-patent document and should be deleted.

The specification does not comply with section 52 of the *Patent Rules*, which requires that trademarks mentioned in the application be identified as such. If “Novodur” in paragraph 22 is a trademark, it must be so identified.

Figure 4 of the drawings does not comply with section 59 of the *Patent Rules*. Reference characters not mentioned in the description should not appear in the drawings, and vice versa. Reference character 68 which is described as a “tip” in paragraphs 42 and 46 does not appear in the drawings.

Defects in the Abstract

The abstract does not comply with section 55 of the *Patent Rules*. The abstract should contain a concise summary of the disclosure that appears in the description, claims and drawings and should specify the technical field to which the invention relates. The abstract should also be drafted such that the technical problem, the gist of the solution to that problem by means of the invention, and the uses of the invention are made clear.

The abstract has not been drafted in a manner that allows an understanding of the technical problem and the gist of the solution of the problem by means of the invention. The applicant is hereby required to provide a new abstract compliant with section 55 of the *Patent Rules*.

In view of the foregoing defects, the applicant is requisitioned, under subsection 86(2) of the *Patent Rules*, to amend the application in order to comply with the *Patent Act* and the *Patent Rules* or to provide arguments as to why the application does comply.

Under section 102 of the *Patent Rules*, any amendment made in response to this requisition must be accompanied by a statement explaining the purpose of the amendment and identifying the differences between the new page and the replaced page.

K. Dryden
Patent Examiner
819-555-1342

(21) **CA 3,XXX,999**
(12) CANADIAN PATENT APPLICATION
(54) TITLE: TREE PROTECTION SYSTEM
(22) FILING DATE: 2020/08/21
(41) PUBLICATION DATE: 2022/02/21
(51) INT. CL.: A01G 13/10 (2006.01)
(71) APPLICANT: BEST ARBORIST INC.
(72) INVENTOR: BOSSY, M.

ABSTRACT

A tree protection system including a flexible UV-stable first layer including a plurality of openings between about 5 mm and about 9 mm formed therein, the first layer configured to protectively surround at least the base of a tree, and a unitary fastener adapted to secure overlapping opposed portions of the first layer together during protectively surrounding at least the base of the tree.

DESCRIPTION

TREE PROTECTION SYSTEM

FIELD OF THE INVENTION

[0001] The present invention is directed to tree protection systems.

BACKGROUND OF THE INVENTION

[0002] There are numerous challenges associated with protecting trees, such as saplings from damage to at least the tree trunks by animals, such as rodents, woodpeckers and sapsucking birds, and deer. Tree trunks may also need to be protected from application of herbicides. Additionally, especially during spring, trees may be damaged by "frost cracking", in which a frozen tree trunk may split when exposed to direct sunlight on one side as a result of uneven heating on opposite sides of the tree trunk. It is also desirable to protect the trees, such as during handling, which may involve transporting, such as associated with harvesting the trees from a tree nursery.

[0003] There is a need for a tree protection system that is inexpensive and easily installed/removed.

BRIEF DESCRIPTION OF THE INVENTION

[0004] In an embodiment, the invention is directed to a tree protection system including a flexible UV-stable first layer including a plurality of openings between about 5 mm and about 9 mm formed therein, the first layer configured to protectively surround at least the base of a tree. The tree protection system may further include a unitary fastener adapted to secure overlapping opposed portions of the first layer together during protectively surrounding at least the base of the tree in response to application of a single force directed toward the opposed portions.

[0005] In another embodiment, the tree protection system includes a flexible UV-stable first layer including a plurality of openings between about 5 mm and about 9 mm formed therein. The tree protection system further includes a flexible UV-stable second layer overlying and secured to the first layer, the second layer impervious to herbicides such as glyphosate-based herbicides, the first layer and the second layer configured to protectively surround at least the base of a tree. The tree protection system further includes a unitary fastener adapted to secure overlapping opposed portions of the first layer together during protectively surrounding at least the base of the tree in response to application of a single force directed toward the opposed portions.

[0006] In yet another embodiment, a tree protection system includes a flexible UV-stable first layer including a plurality of openings between about 5 mm and about 9 mm formed therein. The tree protection system further includes a flexible UV-stable second layer overlying and secured to the first layer, the second layer impervious to herbicides, the first layer and the second layer configured to protectively surround at least the base of a tree. The tree protection system further includes a flexible UV-stable third layer at least partially overlying and secured to one of the second layer and the first layer, the third layer configured to substantially protect the base of the tree from frost cracking. The tree protection system further includes a unitary fastener adapted to secure overlapping opposed portions of the first layer together during protectively surrounding at least the base of a tree in response to application of a single force directed toward the opposed portions.

[0007] In still yet another embodiment, a tree protection system includes a flexible UV-stable first layer including a plurality of openings between about 5 mm and about 9 mm formed therein, the first layer configured to protectively surround at least the base of a tree.

[0008] In another embodiment, a tree protection system includes a flexible UV-stable first layer including a plurality of openings between about 5 mm and about 9 mm formed therein. The tree protection system further including a flexible UV-stable second layer overlying and secured to the first layer, the second layer impervious to herbicides, the first layer and the second layer configured to protectively surround at least the base of a tree.

[0009] In yet another embodiment, a tree protection system includes a flexible UV-stable first layer including a plurality of openings between about 5 mm and about 9 mm formed therein. The tree protection system further includes a flexible UV-stable second layer overlying and secured to the first layer, the second layer impervious to herbicides, the first layer and the second layer configured to protectively surround at least the base of a tree. The tree protection system further includes a flexible UV-stable third layer at least partially overlying and secured to at least one of the second layer and the first layer, the third layer configured to substantially protect the base from frost cracking.

[0009a] Other features and advantages of the present invention will be apparent from the following more detailed description, taken in conjunction with the accompanying drawings which illustrate, by way of example, the principles of the invention.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] FIG. 1 is a plan view of an exemplary layer of the tree protection system.

[0011] FIG. 2 is an upper perspective view of an installed exemplary tree protection system.

[0012] FIG. 3 is an upper perspective view of an installed exemplary tree protection system.

[0013] FIG. 4 is an elevation view of an exemplary fastener.

[0014] FIG. 5 is an elevation view of an installed exemplary tree protection system.

[0015] FIG. 6 is an elevation view of a tree subjected to conditions for developing frost split.

[0016] FIG. 7 is a partial elevation view of cracks formed in a tree trunk as a result of frost split.

[0017] FIG. 8 is an elevation view of an installed exemplary tree protection system.

[0018] FIG. 9 is an elevation view of an exemplary fastener prior to insertion in overlapping layers of an exemplary tree protection system.

[0019] FIG. 10 is an enlarged, partial elevation view of an exemplary tree protection system.

[0020] Wherever possible, the same reference numbers will be used throughout the drawings to represent the same parts.

DETAILED DESCRIPTION OF THE INVENTION

[0021] The tree protection system includes a layer, such as a mesh, such as a sheet of high density polyethylene (HDPE) mesh or other plastics or polymers, which, when positioned around a tree and laterally surrounding the tree trunk, provides protection to the tree from a broad spectrum of threats including rodents, woodpeckers and sapsucking birds, deer, and scraping in the field. Fasteners, such as unitary or one-piece fasteners may be used to secure the layer around and laterally surround the tree, which fasteners can easily be selectively unfastened as needed. The layer is sufficiently soft and smooth and is of sufficient thickness to prevent damage to a harvested tree during shipment. In one embodiment, the tree protection system protects trees during application of herbicides. In one embodiment the tree protection system provides protection from frost cracking. In summary, the tree protection system provides a "Swiss Army Knife" of tree protection options, as it is recognized that not all protection options may be required.

[0022] For purposes herein, HDPE may be a blend with low density polyethylene (LDPE). In one embodiment, the layer may be composed of acrylonitrile-butadiene-styrene (ABS) copolymer such as Novodur, polypropylene (PP), nylon, or combination thereof.

[0023] In one embodiment, as shown in FIG. 1, a tree protection system **20** includes a layer **10**, such as a mesh. In one embodiment, layer **10** may define a rectangular flat pattern, having a height **H1** and a width **W1**. In one embodiment, tree protection system **20** (FIG. 2) includes layer **10** that protectively wraps around a tree **18**, such as around the base of the tree, in which overlapping opposed portions of layer **10** are secured by fasteners **16**. Other layer geometric shapes may be used so long as the layer, when wrapped around the tree, covers the intended

portion of the tree, and fasteners can secure overlapping portions of the layer together. In one embodiment of the tree protection system **20**, an optional layer **12** may be secured or bonded to layer **10** and will be discussed in further detail below. As shown, layer **12** may define a rectangular flat pattern, having a height **H2** and a width **W1**. In one embodiment, layer **12** may have a width different than layer **10**, i.e., different than **W1**. In one embodiment of tree protection system **20**, an optional layer **14** may be secured or bonded to layer **10** and will be discussed in further detail below. As further shown, layer **14** may define a rectangular flat pattern, having a height **H1** and a width **W2** that may be generally centered relative to width **W1**. In one embodiment, layer **14** may have a height different than layer **10**, i.e., different than **H1**. In one embodiment, layer **14** may not be generally centered relative to width **W1**.

[0024] In one embodiment, height **H1** is between about 18 inches (46 cm) and about 48 inches (122 cm), or any suitable sub-range thereof.

[0025] In one embodiment, width **W1** is between about 11 inches (28 cm) and about 19 inches (48 cm), or any suitable sub-range thereof. It is to be understood that these dimensions for **H1** and **W1** are exemplary and in other embodiments, can be greater than or less than those dimensions. Other layer geometric shapes may be used so long as the layer(s), when wrapped around a tree, covers the intended portion of the tree, and fasteners can secure overlapping portions of the layer(s) together.

[0026] In one embodiment, layer **10** has a thickness of about 1 mm (0.04 in). In one embodiment, layer **10** has a thickness between about 1 mm (0.04 in) and about 5 mm (0.20 in), or any suitable sub-range thereof. In one embodiment, layer **10** has a thickness less than 1 mm (0.04 in). In one embodiment, layer **10** has a thickness greater than 5 mm (0.20 in).

[0027] The layers **10**, **12**, **14** are each composed of flexible UV-stable material. For purposes herein, the term "UV-stable," "UV resistant," or similar is intended to define a material having the ability to resist ultraviolet (UV) light or sunlight for extended periods of time, such as months or even years and continue to function as intended. The term "flexible" or similar such as in the context of "flexible" layer or mesh or film is intended to mean that the layer or mesh or film is capable of being flexed sufficiently in order to wrap around and protectively surround a tree **18**. As shown in FIG. 3, for example, an end, such as an upper end of layer **10** may be configured to form an enlarged portion **22** such as a flared portion relative to other portions of the layer surrounding tree **18**. This enlarged portion **22** provides an enlarged opening to provide enhanced protection for the tree, such as around the lower branches protruding from an upper portion of the tree trunk to prevent damage to the tree, such as from sapsucking birds. In one embodiment, in which layer **10** has a height greater than the tree, an upper end of layer **10** may be folded along a line parallel to its upper end in order to reduce the height of layer **10**, and at a later date the fold line may be moved in accordance with growth of the tree. In one embodiment, layer **10** is composed of high-density polyethylene (HDPE) that further incorporates carbon black into the plastic mixture, providing enhanced UV resistance and stability that is easy for an end user to verify.

[0028] Other products on the market may be stabilized with additives such as carbon black, but actual UV resistance may be more difficult for the customer to confirm without specialized

equipment or years of sun exposure. Unlike other products, this material can be shipped unrolled and flat to customers, reducing overall cost.

[0029] It is to be understood that the layers may be composed of any suitable UV-stable or UV resistant material, including, but not limited to plastics.

[0030] Layer **10** includes novel sizing of holes or openings **24** (FIG. 1) formed therein. In one embodiment, openings or holes **24** formed in the sheet have a maximum dimension between about 5 mm (0.20 in) and about 9 mm (0.35 in).

[0031] . The term "maximum dimension" refers to the largest dimension of a straight line intersecting any two points along the periphery of an opening or hole. The openings or holes may define a circle, a polygon, such as a regular polygon, such as a hexagon or other closed geometry. This range of opening **24** or hole size is sufficiently large to allow sunlight **50** to come into direct contact with tree bark, aiding growth. This range of opening **24** or hole size permits wind circulation to prevent significant temperature and humidity buildup around the tree trunk. This range of opening **24** or hole size mitigates risk of insect infestation and pest nesting in an enclosed space. The openings **24** or holes are sufficiently small to provide protection to tree bark during shipping and to allow a fastener **16**, such as a "button" fastener as shown in FIG. 4 to be utilized, which is discussed in further detail below, providing increased ease of use. The opening **24** or hole size is optimized to provide protection from as many animal threats as possible, including, but not limited to mice, voles, groundhogs, rabbits, woodpeckers, sapsuckers, and deer.

[0032] By virtue of the generally uniform arrangement of openings **24** in layer **10**, the tree trunk does not develop shaped "tan lines" that may form on the tree trunk as a result of using a tree guard, such as a spiral tree guard, which is a helically coiled or wound strip of material that may be applied over a tree trunk.

[0033] Layer **10** or mesh includes numerous beneficial physical characteristics. For example, the mesh is sufficiently rigid when installed to maintain its shape when vertically positioned on one end or edge (i.e., stand on its own), yet sufficiently flexible to be curled or overlappingly extend around the tree. Layer **10** is also sufficiently soft and smooth with sufficiently small holes to provide protection to the trunk during shipping without causing damage to the trunk itself. Layer mesh can be produced via extrusion, sheet perforation, or other suitable fabrication methods. Extruded mesh has been found by Applicant to cost less and have greater durability compared to perforated sheeting.

[0034] In one embodiment, tree trunk protection system **20** incorporates a novel herbicide spray protection layer **12** or film. When bonded to layer **10**, film layer or layer **12** provides trees **18** with protection from local herbicide application applied low to the ground, such as shown in FIG. 5. That is, tree trunk protection system **20** facilitates the machine application, such as by a vehicle **28** incorporating a herbicide applicator **30** of herbicide **26** (including, but not limited to glyphosate-based herbicides, by itself or in any combination thereof with other non-glyphosate-based herbicides) to large volumes of trees, such as trees arranged in multiple rows in a manner similar to other cash crops, reducing costs typically associated with more precise and expensive manual application. In one embodiment, this layer **12** or film that is impervious to the herbicide is a thin layer of polymer such as a vinyl-based or low-density polyethylene plastic which is then bonded,

such as by heat or adhesive to the layer **10**. In one embodiment, the layer **12** is white or a suitable light color. As a result of layer **12** or film being nonporous and utilizing a suitable light color, heat absorption is minimized around the tree trunk, especially when layer **12** or film faces the tree when installed to protectively surround the tree. In one embodiment, the layer **12** is translucent to allow some light exposure on the base of the tree trunk. In one embodiment, the translucent layer permits 45 percent light exposure, although in another embodiment, the percent of light exposure may be 22 percent or less. In one embodiment, the thickness of the film layer **12** is between about 0.001 mm and about 0.3 mm, or any suitable sub-range thereof.

[0035] Thicker plastic layers are more expensive, less flexible, and more difficult to bond to other layers. Thinner material tears easily, especially during heat treatment. UV-resistance is particularly important if film layer material is vinyl-based. The ability to easily apply a herbicide protection layer **12** or film of varying translucencies, thicknesses, and colors in any combination as appropriate is a beneficial feature of the system.

[0036] Thicker layer **10** or mesh is beneficial to the heat application of the layer **12** or film in that some rigidity in the layer **10** or mesh is maintained immediately after application bonding. Thinner layers **10** or meshes heat more quickly and thoroughly, increasing the probability of deformation during the manufacturing process. A smooth and flat layer **10** or mesh surface is likewise beneficial in achieving a strong bond with the layer **12** or film.

[0037] In one embodiment, the tree protection system **20** incorporates a novel and beneficial frost protection layer **14** or film. As shown in FIG. 6, tree **18** having a frozen trunk has the tendency to split or develop cracks **56** (FIG. 7) when exposed to direct sunlight **50** on one side, i.e., a sunlit side **54**, as a result of uneven heating on opposite sides (sunlit side **54** versus a shaded side **52**) of the tree trunk. By reducing uneven heat exposure to the tree trunk, the film helps reduce the risk of frost cracking (<http://www.missouribotanicalgarden.org/frost-cracks.aspx>). FIG. 8 shows an exemplary tree protection system **20** protectively surrounding tree **18**, in which layer **14** is positioned on sunlit side **54** between the sun and the tree trunk to prevent exposure of the tree trunk to direct sunlight **50**.

[0038] In an exemplary embodiment, a vertical layer **14** sheet of film is bonded to the layer **10** or mesh as depicted in FIGS. 1 and 8. Optionally, layer **12** or film may be included for herbicide protection, as previously discussed. In one embodiment, layer **12** is composed of polyethylene, polyvinyl chloride, polycarbonate, or combination thereof. In one embodiment, the plastic surface of layer **14** or film facing away from the trunk is white or a sufficiently light color to reflect light, while an opposed inner lining **58** of the layer **14** or film composed of a similar material is black or a sufficiently dark color to ensure opacity. The holes or openings **24** (FIG. 1) in the layer or mesh allow breathability and limit the greenhouse effect inside the film barrier protectively surrounding the tree. During spring, the season in which trees are generally most at risk from frost splits, the layer **14** or film is intended to face east, toward the sun in the morning when the trunk is coldest. After spring, the layer **14** or film may be rotated to the north or south to allow the trees direct sun exposure.

[0039] The frost protection film may be applied in a process similar to the bonding process for the spray protection film.

[0040] The tree trunk protection system **20** is compatible with a beneficial fastener **16** (FIG. 4). Conventionally, products relating to tree trunk protection are most frequently fastened with hog ring staples, zip ties, string, or plastic tape. All of these methods are relatively labor intensive.

[0041] Referring to FIG. 9, by employing a fastener **16**, such as a plastic fastener that secures both overlapping layers of the protection system in one motion or a single force, application or installation of the tree trunk protection system **20** is accomplished more quickly and easily.

[0042] In one embodiment, small fasteners such as those used in auto manufacturing that are ultimately intended for use with plastic panels are suitable for the novel application of fastening a plastic mesh around a tree **18**. The design of fastener **16** shown in FIG. 4 specifically accommodates attributes of the layer **10** or mesh and protective layers **12**, **14** or film bonded to it. Fastener **16** such as a button fastener is a unitary or one-piece construction comprising a head **60** at an end **62**. A stem or shaft **64** extends from head **60** to an opposed end **66**, defining a tip **68**. A pair of resilient prongs **70** extend toward head **60** and radially outwardly from shaft **64**, forming a "V shape". The term "resilient" and similar as in "resilient prong" means the prong may be elastically deformed such as in response to a force, with the prong having a retention force to return the prong to an undeformed position when the prong is no longer subjected to the force. One beneficial attribute relates to prong width or the distance between prongs **70** of fastener **16**. In one embodiment, fasteners **16** are sized to accommodate 5 mm - 9 mm mesh openings as previously discussed, the mesh having, for example, a 2 mm cord diameter. At least the maximum distance between undeflected outside surfaces **72** or outside-outside width of the prongs **70** is larger than the maximum size of openings **24** (FIG. 1) in the layer **10** (FIG. 1) or mesh. FIG. 9 shows fastener **16** prior to being secured to opposed ends **82** of layer **10** or mesh in response to application of a single force toward the opposed ends **82** of layer **10** or mesh. The prongs **70** are compressed as the fastener **16** is pushed through corresponding openings **24** of the mesh or layer **10** and at least partially released once fully inserted, preventing the fastener **16** from falling out or being inadvertently removed. Increasing the shaft **64** or stem length on the fastener **16** allows it to fasten multiple layers of mesh together. By cuffing or folding the topmost portion, such as several inches of the layer **10** or mesh onto itself, such as shown in FIG. 10, a large mesh sheet or layer **10** may be quickly reduced in size to fit a small tree with low branches and later uncuffed to continue to provide protection to the trunk as the tree grows.

[0043] Another beneficial attribute included with the fastener **16** is a prong-shaft gap **74**. The prong-shaft gap **74** between the prongs **70** and the shaft **64** is sufficiently wide such that the prongs **70** may be elastically compressed to less than a predetermined distance from each other, such as to permit insertion inside of openings **24** (FIG. 9), such as 5 mm as the fastener **16** is applied or secured to the layer **10** or mesh. However, the prong-shaft gap **74** is not so large that one prong **70** can slip out of the mesh opening **24** if the fastener **16** is pushed to one side of the opening.

[0044] Yet another beneficial attribute included with the button fastener **16** is a prong-head gap **76** created by the difference in length between the shaft **64** and the prongs **70**. The differential lengths of the shaft **64** and the prongs **70** provide a prong-head gap **76** sufficient to allow the prongs **70** to completely pass through both the film layers **12**, **14**, as well as the layer **10** or mesh. A smaller prong-head gap **76** may not accommodate all layers; one or more of the layers may remain wrapped around the prongs **70**, thus compressing the prongs. The compressed prongs

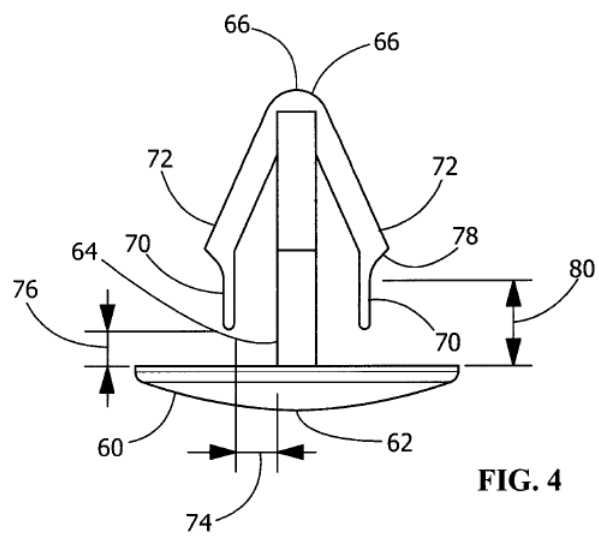
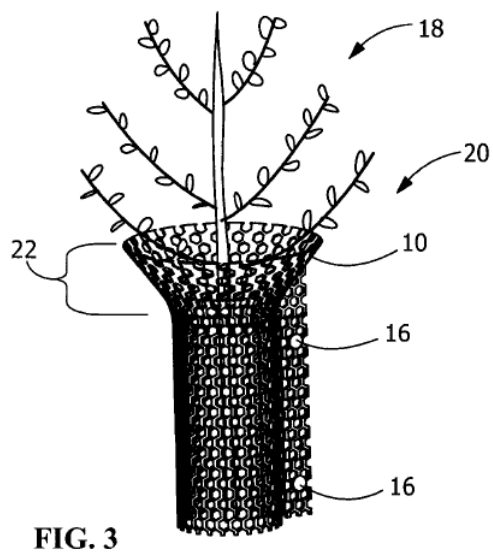
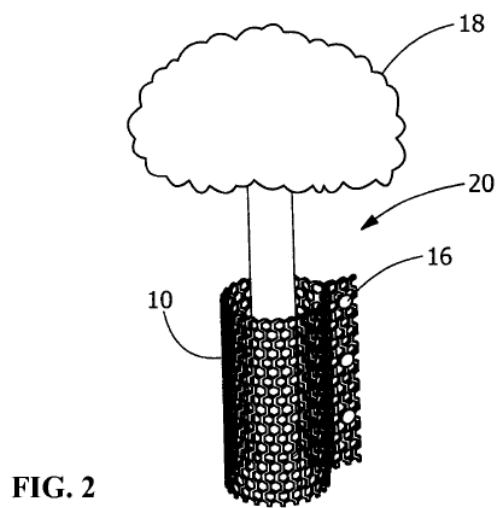
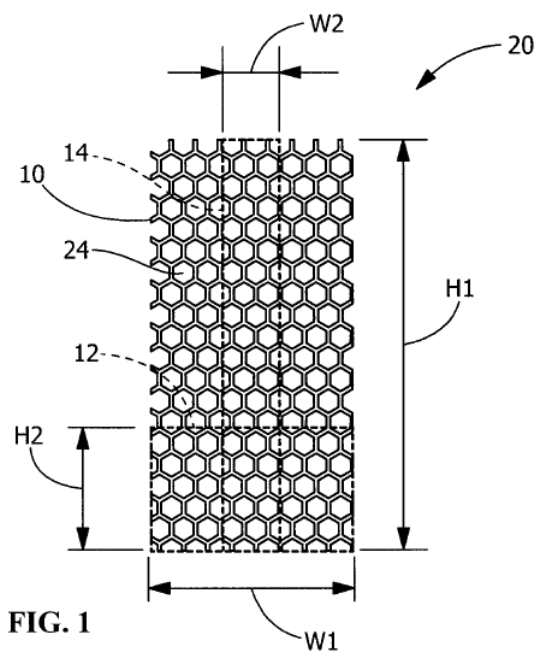
70 may permit the inadvertent removal of the fastener **16** from one or more layers since the prongs **70** in this compressed configuration cannot achieve a secure lock. A larger prong-head gap **76** allows the prongs **70** to completely pass through all layers, ensuring that the layer **10** or mesh is fastened securely within the prong-shaft gap **74** with minimal effort by the user.

[0045] Alternatively, or in addition to the above embodiment, each one of prongs **70** of fastener **16** includes a radially inwardly directed tapered portion **78** formed between opposed ends of the prongs (FIG. 4). This feature permits the temporary attachment of one or more layers. When used in conjunction with the prong-head gap **76**, full insertion of one or more layers into the prong-head gap **76** allows the secure fixation of said layers to the fastener within the prong-shaft gap **74**, and temporary fixation of one or more additional layers around tapered portions **78** of the prongs **70**. Tapered portion **78** keeps these additional layers in place but allows their easy detachment by a user. For instance, this feature permits easy temporary removal of the fasteners **16** from one layer of the mesh while remaining fixed in the other layer, as well as easy subsequent refastening of the fasteners **16** to the mesh. This temporary removal allows the user to easily unfasten and refasten for instance the lower section of the mesh, permitting direct access to the base of the tree **18**, for reasons such as measuring the diameter of the otherwise protected tree **18**. By remaining securely fastened to one side of the mesh when the mesh is opened, the fasteners **16** are prevented from completely separating from the tree protection system **20**. This feature prevents inadvertent loss of fasteners **16**. The dimension of the prong-head gap **76** is selected to accommodate all layers upon application of sufficient force, including any layer temporarily kept on tapered portions **78**, thus providing a secure fastening of all layers.

[0046] Returning to FIG. 4, the fastener **16** includes a beneficial tip **68**. The tip of the button is rounded to aid in puncturing the film layer, but not so pointed as to scrape trees it may come in contact with during shipping. The term "rounded" and the like includes circular, ovalar, blunt curved surface or combination thereof.

[0047] In one embodiment, the button fastener or fastener **16**, as previously discussed, is composed of Nylon to ensure UV stability and structural integrity when used outdoors.

[0048] While the invention has been described with reference to one or more embodiments, it will be understood by those skilled in the art that various changes may be made and equivalents may be substituted for elements thereof without departing from the scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the essential scope thereof. Therefore, it is intended that the invention not be limited to the particular embodiment disclosed as the best mode contemplated for carrying out this invention, but that the invention will include all embodiments falling within the scope of the appended claims. In addition, all numerical values identified in the detailed description shall be interpreted as though the precise and approximate values are both expressly identified.



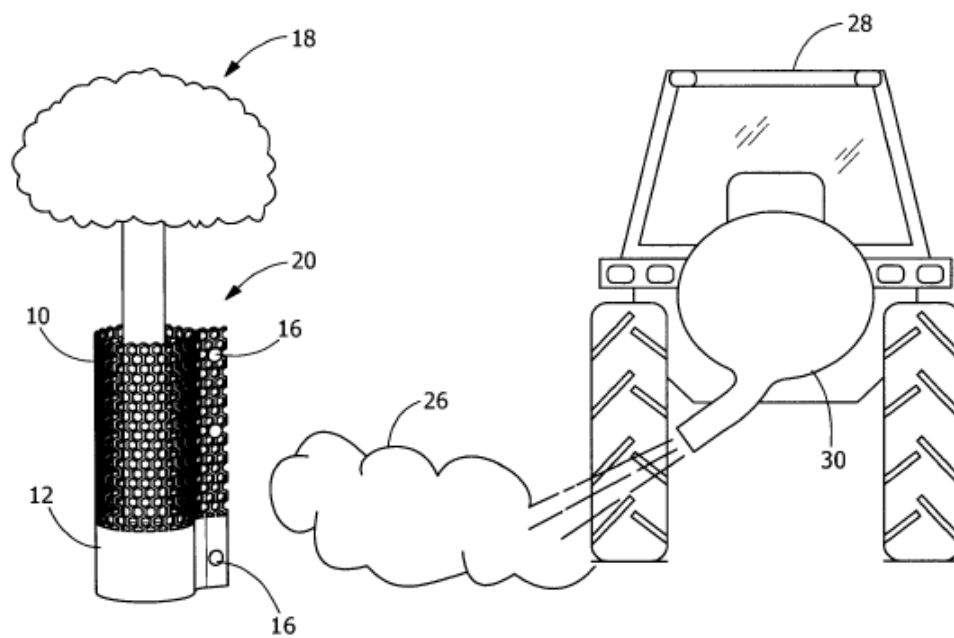


FIG. 5

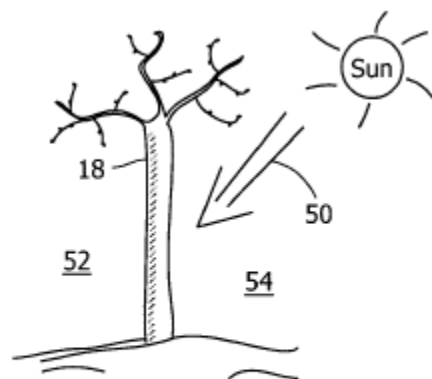


FIG. 6

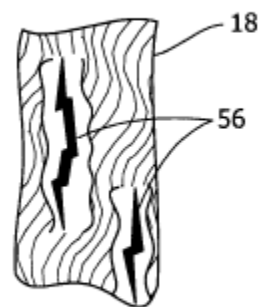


FIG. 7

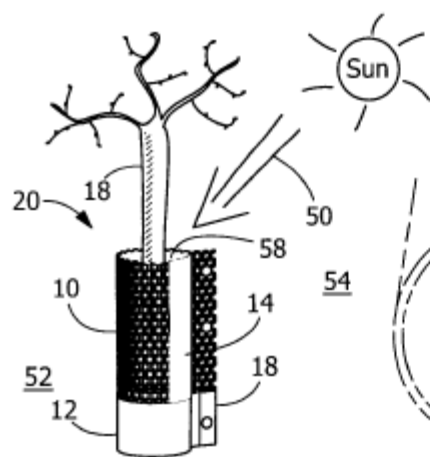


FIG. 8

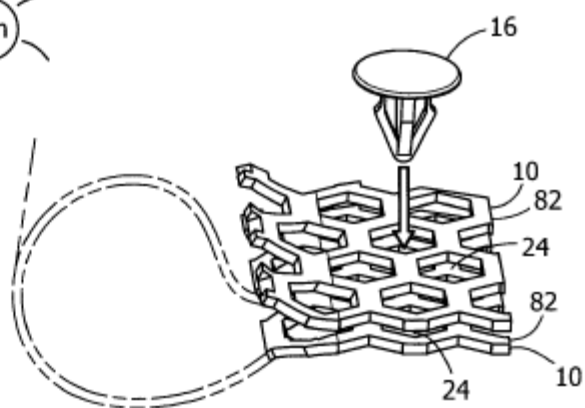


FIG. 9

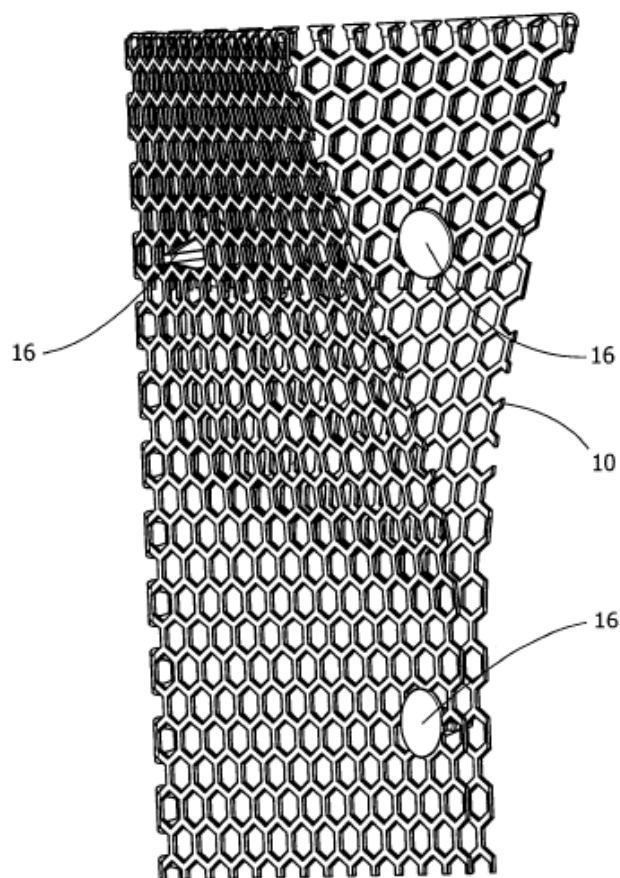


FIG. 10

CLAIMS

1. A tree protection system comprising:
a flexible UV-stable first layer including a plurality of openings with a maximum dimension between about 5 mm and about 9 mm, preferably between about 6 mm and about 8 mm, more preferably between about 6 mm and about 7 mm, formed therein,
the first layer configured to protectively surround at least the base of a tree;
and a unitary fastener adapted to secure overlapping opposed portions of the first layer together during protectively surrounding at least the base of the tree in response to application of a single force directed toward the opposed portions.
2. The tree protection system of claim 1, further comprising:
a flexible UV-stable second layer overlying and secured to the first layer, the second layer impervious to herbicides, the first layer and the second layer configured to protectively surround at least the base of the tree.
3. The tree protection system of claim 1, further comprising:
a flexible UV-stable third layer at least partially overlying and secured to one of the second layer and the first layer, the third layer configured to protect the tree from frost cracking.
4. The tree protection system of any one of claims 1 to 3, wherein the second layer is a film having a thickness between about 0.001 mm and about 0.3 mm.
5. The tree protection system of claim 1, wherein the fastener further comprises:
a head at a first end;
a shaft extending from the first end to a second end defining a tip; and
at least two resilient prongs extending from the tip toward the first end.
6. The tree protection system of claim 5, wherein the tip is rounded.
7. The tree protection system of claim 1, wherein the first layer has a thickness between about 1 mm and about 5 mm.
8. The tree protection system of claims 1 to 8, wherein the first layer is composed of high density polyethylene, low density polyethylene, Novodur, polypropylene, nylon or combination thereof.

D1

[19] PCT INTERNATIONAL APPLICATION

[11] **WO 2016/195111 A1**

[22] Filing Date: 5 June 2015 (05-06-2015)

[43] Publication Date: 8 December 2016 (08-12-2016)

[51] Int. Cl.: A61G 13/02

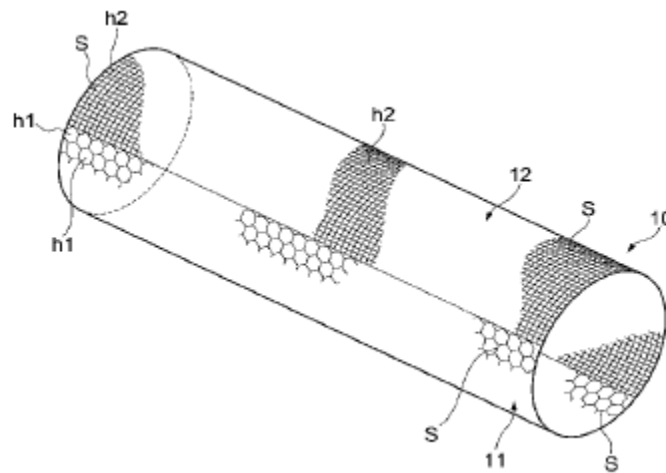
[71] Applicant: Universal Tree Inc.

[76] Inventor: G. Lafleur

[54] Title: Plant protection

Abstract

A cylindrical net **10** according to one embodiment protects a plant from insects. The cylindrical net **10** is equipped with a first net section **11**, and a second net section **12** for forming a cylinder along with the first net section **11**. The first net section **11** has a larger mesh **h1** than the mesh **h2** of the second net section, and the first and second net sections **11**, **12** are provided in the circumferential direction of the cylinder.



Description

TECHNICAL FIELD

[0001] The present invention relates to a cylindrical net and a plant protection method.

BACKGROUND ART

[0002]-[0003] (deleted)

TECHNICAL PROBLEM

[0004] Reducing the damage caused by insect pests is very important for those growing plants, and there is a demand to further protect plants from insect pests.

[0005] Accordingly, the present invention provides a cylindrical net and a method for protecting plants that reduce insect pest damage to plants and enable superior plant protection.

TECHNICAL SOLUTION

[0006] A cylindrical net according to one aspect of the present invention is a cylindrical net for protecting plants from insect pests, the cylindrical net comprising: a first net part; and a second net part forming a cylinder together with the first net part. The first netting portion has a mesh larger than the mesh of the second netting portion, and the first and second netting portions are arranged circumferentially in the cylinder.

[0007]-[0015] (deleted)

ADVANTAGEOUS EFFECTS

[0016] According to the present invention, plants can be further protected from pest damage.

DESCRIPTION OF DRAWINGS

[0017] Fig.1 is a schematic perspective view of a cylindrical netting according to one embodiment. Fig.2 is an expanded view of the tubular net illustrated in Fig.1.

Fig.3 is an enlarged view of an example of a configuration of the region A in Fig.2.

Fig.4 is an enlarged view of an example of a configuration of the region B in Fig.2.

Fig.5 is a schematic view for explaining the attachment site of the cylindrical net in a plant.

Fig.6 is a drawing illustrating an example of a state in which a cylindrical net is wound around a plant.

Fig.7 is an end view taken along the line VII-VII in Fig.6.

DESCRIPTION OF EMBODIMENTS

[0018] (deleted)

[0019] First, a cylindrical net **10** used for protecting plants will be described with reference to Fig.1. As schematically illustrated in Fig.1, the cylindrical net **10** is a cylindrical body extending in a predetermined direction. The diameter of the cylindrical net **10** when the cylindrical net **10** is viewed from the longitudinal direction can be appropriately adjusted according to the winding location, but is ordinarily in the range of 1 cm to 2 m, and preferably in the range of 2 cm to 1 m. The length in the extension direction (longitudinal direction) of the cylindrical net **10** may be any length necessary for winding, and is typically in the range of 10 cm to 30 m, preferably 20 cm to 20 m, and more preferably 30 cm to 10 m.

[0020] The tubular net **10** has a first net portion **11** and a second net portion **12** in the circumferential direction. As illustrated in the expanded view of the tubular net **10** in Fig.2, the first and second net portions **11**, **12** are configured from sheet-like nets.

[0021] The long sides (sides in the longitudinal direction) of the first and second net parts **11**, **12** are joined together to form a cylindrical net **10**. Specifically, a tube is configured by joining one long side of the first net part **11** and one long side of the second net part **12**, and joining the other

long side of the first net part **11** and the other long side of the second net part **12**. Therefore, in a cylinder formed by the first net part **11** and the second net part **12**, two boundary lines between the first net part **11** and the second net part **12** exist around the axis of the cylinder (in other words, the circumferential direction), and the extending direction of each boundary line is substantially parallel to the axis of the cylinder. Here, a case in which the first and second net parts **11**, **12** are rectangular in the expanded view of the cylindrical net **10** is described as an example, but the first and second net parts **11**, **12** may be square shaped.

[0022] In one embodiment, as illustrated in FIGS.1 and 2, the second netting portion **12** is larger than the first netting portion **11**. That is, on the peripheral surface of the cylindrical net **10**, the region occupied by the second net part **12** is larger than the region occupied by the first net part **11**.

[0023] The first and second netting portions **11**, **12** may be joined, for example, by stitching them together, or may be joined by folding one into the other, or may be joined by applying adhesive tapes. Joining may be performed using a stapler or the like, crimping may be performed by heating, or joining may be performed using hooks or hook and loop fasteners may be attached to the first and second net parts **11**, **12** in advance. Depending on the bonding form, a part of the first and second net parts **11**, **12** may protrude from the cylinder constituted by the first and second net parts **11**, **12**.

[0024] The first net portion **11** is a net having a knitted structure formed by knitting yarn **S** so as to form a plurality of meshes **h1**. In the first net portion **11**, multiple meshes **h1** are disposed in a two-dimensional manner. Similarly, the second net portion **12** is a net having a knitted structure formed by knitting yarns **S** so as to form multiple meshes **h2**. Also in the second net part **12**, a large number of meshes **h2** are two-dimensionally arranged. However, the first and second netting portions **11**, **12** may have a woven structure in which yarns **S** are woven.

[0025] The material of the yarn **S** constituting the first and second netting portions **11**, **12** is natural fiber or synthetic fiber. Natural fibers include natural fibers made from pulp, cellulose, cotton, jute, and hemp, and synthetic fibers include synthetic fibers made from thermoplastic resins. The thickness of the yarn must be a thickness capable of maintaining the strength as a net, and is ordinarily in the range of 10 to 1000 denier, preferably 50 to 500 denier, and more preferably 50 to 300 denier.

[0026] The mesh **h1** of the first net part **11** has a hexagonal shape, as illustrated in the schematic enlarged view of the region **A** in Fig.2 illustrated in Fig.3. As shown in Fig.3, if mesh **h1** has a hexagon, the size of mesh **h1** is represented by the length of diagonal line **a**.

[0027] The mesh **h2** of the second net part **12** has a quadrilateral shape, as illustrated in the schematic enlarged view of the region **B** in Fig.2 illustrated in Fig.4. As illustrated in Fig.4, in a case where the mesh **h2** has a quadrilateral shape, the size of the mesh **h2** is represented by a distance **b**, **c**, where **b**, **c** is a distance between two sets of opposite sides facing each other on four sides constituting the quadrilateral shape. Examples of squares include rectangles, squares, and parallelograms. When the rectangle is a parallelogram, the smaller of the angles formed by the two sides is typically in a range of 60 to 90 degrees. In one embodiment, when the mesh **h2** is square in shape, the size of the mesh **h2** is represented by the length of one side of the square.

[0028] The size (hole size) of the mesh **h1**, **h2** is typically in the range of 0.1 to 50 mm, preferably 0.2 to 20 mm, and more preferably 0.2 to 10 mm.

[0029] The size of mesh **h1** is greater than the size of mesh **h2**. That is, the cylindrical net **10** is constituted by two nets having different meshes. The mesh **h2** is preferably sized so that the target insect pests cannot pass through (for example, smaller than the head of the insect pests), and the mesh **h1** is preferably sized so that the target insect pests can pass through (for example, equal to or larger than the head of the insect pests).

[0030] The first and second netting portions **11**, **12** must be weather resistant, i.e. they are made of material that remains intact under both cold and hot conditions, and when exposed to UV radiation from the sun. The thickness of the first and second netting portions **11**, **12** is such that they are sufficiently flexible, for example between 1 and 5 mm. In one embodiment, the first and second netting portions **11**, **12** are made of thermoplastic resin. In this case, the cylindrical net **10** is also made of a thermoplastic resin. Hereinafter, the first and second net portions **11**, **12** will be referred to as "thermoplastic resin net".

[0031] Examples of thermoplastic resins include polyolefin-based resins (eg. high- or low-density polyethylene, polypropylene, etc.), polyvinyl alcohols, polyvinyl acetates, polycarbonates, polyesters, polyamides (eg. nylon), polystyrenes, polymethylmethacrylates, polyacrylonitriles, acrylonitrile-butadiene-styrene (ABS) copolymers, polyvinyl chloride, and the like.

[0032]-[0053] (deleted)

[0054] An attachment site **21** where the cylindrical net **10** is attached in the plant **20** will be described using the schematic view of the plant **20** illustrated in (a) of Fig.5 and (b) of Fig.5, which is an enlarged view of the region surrounded by the dot-dash line in (a) of Fig.5. For explanatory purposes, in (b) of Fig.5, a newborn site is illustrated as a protected site **22**.

[0055] As illustrated in (a) and (b) of Fig.5, the attachment site **21** is, for example, a site on the movement path when the insect pests move from the ground side or from the leaves toward the protected site **22**. Examples of attachment sites **21** include stems, stems, branches, foliage, pseudostems, and petal axes (peduncle) of the plant **20**. Pseudostem refers to a stem-like portion (leaf sheath portion) highly extended to the ground, and occurs, for example, in banana or the like. Fig.5 illustrates an example in which the attachment site **21** is a trunk. When attaching the cylindrical net **10** to the plant **20**, the present invention is not limited to the case where the cylindrical net **10** is attached to one attachment site **21**, and the cylindrical net **10** may be attached to a plurality of attachment sites **21**.

[0056]-[0068] (deleted)

[0069] Next, a method for protecting plants using the cylindrical net **10** illustrated in Fig.1 will be described. This plant protection method has a wrapping process in which the cylindrical net **10** is wrapped around the plant **20**.

[0070] In this winding step, as schematically illustrated in Fig.6, the cylindrical net **10** is wound in the circumferential direction of the attachment site **21**. As illustrated in Fig.6, the cylindrical net **10** may be attached to a part of an attachment site **21** (for example, a trunk or the like). The attachment site **21** typically has a rod shape extending in one direction, and thus, in Fig.6, the attachment site **21** of the cylindrical net **10** in the plant **20** is schematically indicated by a rod. Accordingly, in the drawings, both ends of the attachment site **21** are free ends, but as illustrated in Fig.5, the attachment site **21** is continuously connected to other parts of the plant **20**. The attachment sites **21** are schematically represented by rods as well as in Fig.7.

[0071] When the cylindrical net **10** is wound around the attachment site **21**, the cylindrical net **10** is arranged so that the second net part **12** is positioned on the protected site **22** side and the first net part **11** is positioned further from the protected site **22** side. Since the insect pests move toward the protected site **22**, by disposing the cylindrical net **10** as described above, the cylindrical net **10** is disposed such that the insect pests enter the cylindrical net **10** from the first net part **11**.

[0072] After such winding, a fixing step of fixing the cylindrical net **10** to the attachment site **21** is performed. The fixing method in this fixing step is not particularly limited. For example, the cylindrical net **10** may be tied with a string, the overlapping areas of the cylindrical net **10** may be stitched together after winding the cylindrical net **10** around the attachment site **21**, fixed using an adhesive tape, stapler, or the like, crimped by heating, or fixed using hooks or hook and loop fasteners may be attached in advance.

[0073] As illustrated in Fig.6, the cylindrical net **10** wound around the attachment site **21** has an annular shape, and the surface of the cylindrical net **10** on the attachment site **21** side is in surface contact with the surface of the attachment site **21**.

[0074] The time at which the cylindrical net **10** is attached to the plant **20** as described above may be a time at which it is necessary to suppress the damage of insects to the plant **20**. Such a period of time may normally be before the insect pests reach the protected site **22**. For example, in a case where the protected site **22** is a completion site, the site may be before completion or after completion. In addition, the insect pests may be before or after the generation of the insect pests.

[0075] Next, the effects of the cylindrical net **10** and the plant protection method using the same will be described using Fig.7. Fig.7 is a schematic view of an end face when the configuration illustrated in Fig.6 is cut along a line **VII-VII**. In Fig.7, for the sake of explanation, an insect is schematically illustrated as an example of a pests, and the insect moves from the lower side to the upper side of the attachment site **21** in Fig.7. That is, although not illustrated in Fig.7, it is assumed that the protected site **22** is present on the upper side.

[0076] A cylindrical net **10** is attached on the movement path along which the insect pests move from the lower side to the upper side of the attachment site **21**. The cylindrical net **10** is disposed such that insect pests enter from the first net portion **11**. Because the mesh **h1** of the first netting portion **11** is relatively large, insect pests reaching the tubular netting **10** pass through the mesh **h1** of the first netting portion **11** and enter the tubular netting **10**.

[0077] The second netting part **12** is disposed following the first netting part **11** in the circumferential direction of the cylindrical netting **10**, but because the mesh **h2** of the second netting part **12** is small, insect pests can almost not pass through the second netting part **12**. Therefore, the insect pests move in the circumferential direction along the inner surface of the cylindrical net **10** as indicated by the dashed arrow in Fig.7. As a result, the insect pests circulate on the inner surface of the cylindrical net **10** and begin to rotate and become trapped in the cylindrical net **10**, circulate on the inner surface of the cylindrical net **10** and escape from the cylindrical net **10** from the first net part **11** side, or fall off the cylindrical net **10** while circulating on the inner surface of the cylindrical net **10**, so the insect pests can hardly pass through the cylindrical net **10**. Therefore, since insect pests do not reach the protected site **22**, it is possible to protect the protected site **22** from insect pests damage.

[0078] (deleted)

[0079] In a form in which the cylindrical net **10** contains an insecticidal active ingredient, if insect pests migrate along the inner surface of the cylindrical net **10**, the insect pests are poisoned by the insecticidal active ingredient and fall easily. As a result, the effect of reducing the insect trapping efficiency of the protected site **22** is further enhanced. In addition, even if the insect pests can pass through the cylindrical net **10**, at least one of the aggressive behavior and proliferation of the insect pests is impaired. From this perspective as well, the effect of reducing insect damage to the protected site **22** may be further enhanced.

[0080] The size of the first and second net parts **11**, **12** is not particularly limited, but from the perspective of the trapping effect of insects in the cylindrical net **10**, the second net part **12** is preferably larger than the first net part **11**. This is because when the area of the second net part **12** is larger on the peripheral surface of the cylindrical net **10**, the insect pests that have entered the cylindrical net **10** from the first net part **11** are even more difficult to pass through the cylindrical net **10**.

[0081] (deleted)

[0082] For example, in a form in which the cylindrical net **10** contains an insecticidal active ingredient, the present invention is not limited to a case in which the insecticidal active ingredient is contained in the production process. For example, the cylindrical net **10** may contain the insecticidal active ingredient by spraying the insecticidal active ingredient onto the net or spraying or painting the insecticidal active ingredient onto the cylindrical net **10** after producing the cylindrical net **10**.

[0083] In Fig.6, the cylindrical net **10** is wound once around the attachment site **21**, but the winding method is not limited to the embodiment illustrated in Fig.6. For example, the cylindrical net **10** may be spirally wound around the attachment site **21**.

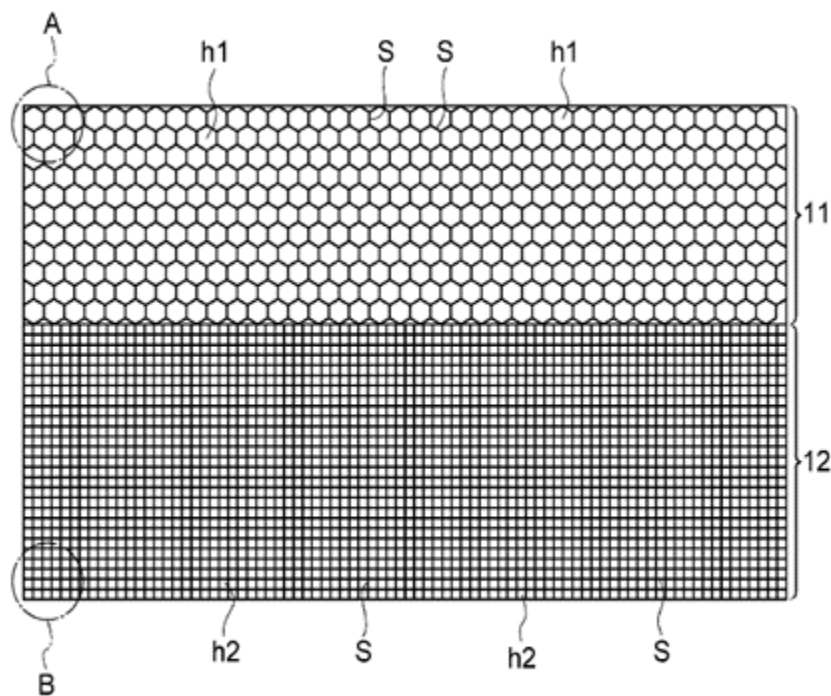
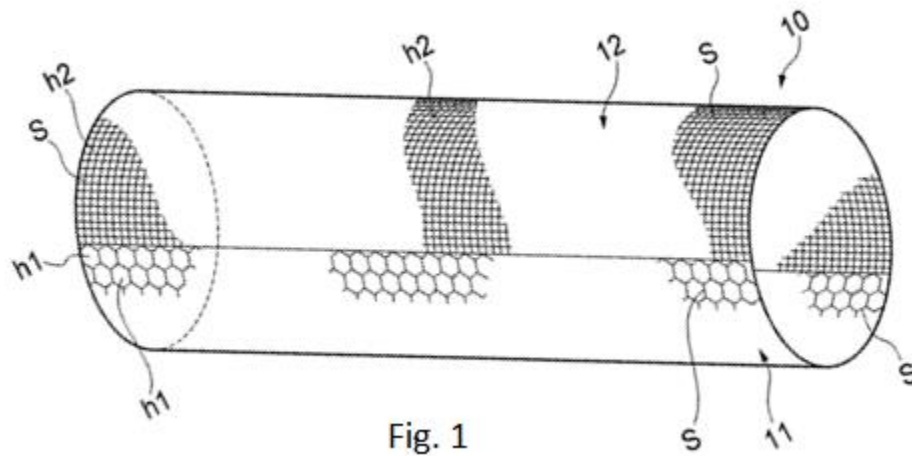
[0084] In the cylindrical net **10** illustrated in Fig.1, the extension direction of the boundary line of the first and second net parts **11**, **12** in the circumferential direction thereof was substantially parallel to the axial direction of the cylinder constituted by the first and second net parts **11**, **12**. However, the extending direction of the boundary line of the first and second net parts **11**, **12** may intersect with the axial direction of the cylinder when viewed from the radial direction of the cylinder. Further, the boundaries of the first and second netting portions **11**, **12** may not be substantially straight. For example, the boundaries of the first and second netting portions **11**, **12** may be formed in a jagged, wavy, or the like.

[0085] The tubular net **10** is configured by joining two nets as the first and second net portions **11**, **12**, but may also be configured by a single net having two different regions of the mesh **h1**, **h2**, for example, as illustrated in Fig.2. In this case, the region having the mesh **h2** is the second net portion **12**, and the region having the mesh **h1** larger than the mesh **h2** is the first net portion **11**.

[0086] In addition, the cylindrical net **10** is configured by combining the first and second net parts **11**, **12** having different meshes, but the cylindrical net **10** may be configured by two or more net parts having different meshes. Therefore, for example, a configuration may be adopted in which three net parts having different meshes are arranged in the circumferential direction. In this case, it is sufficient that a net part having a small mesh is disposed so that the insect pests do not escape to the protected site side.

[0087] In the previous description mesh **h1** was hexagonal and mesh **h2** was described as square. However, the shape of mesh **h1**, **h2** is not limited thereto. For example, if mesh **h2** is greater than mesh **h1**, mesh **h2** may be hexagonal and mesh **h1** may be rectangular. Typically, mesh **h1**, **h2** is polygonal and may be octagonal, in addition to the illustrated squares and hexagons.

(Claims omitted)



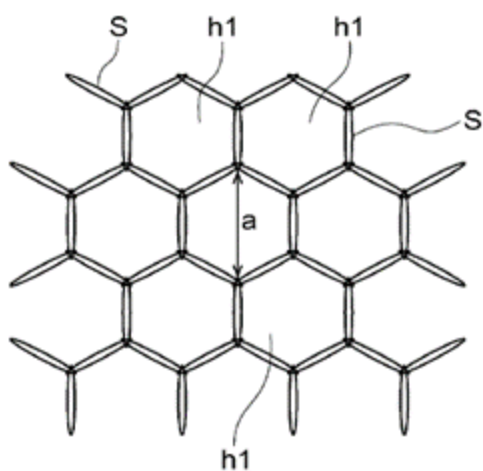


Fig. 3

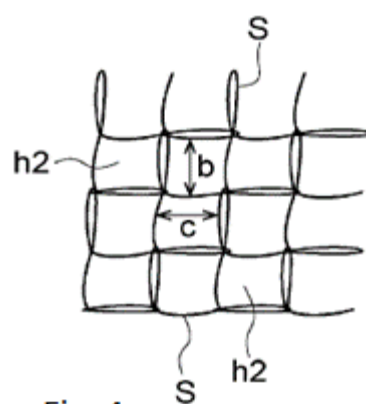


Fig. 4

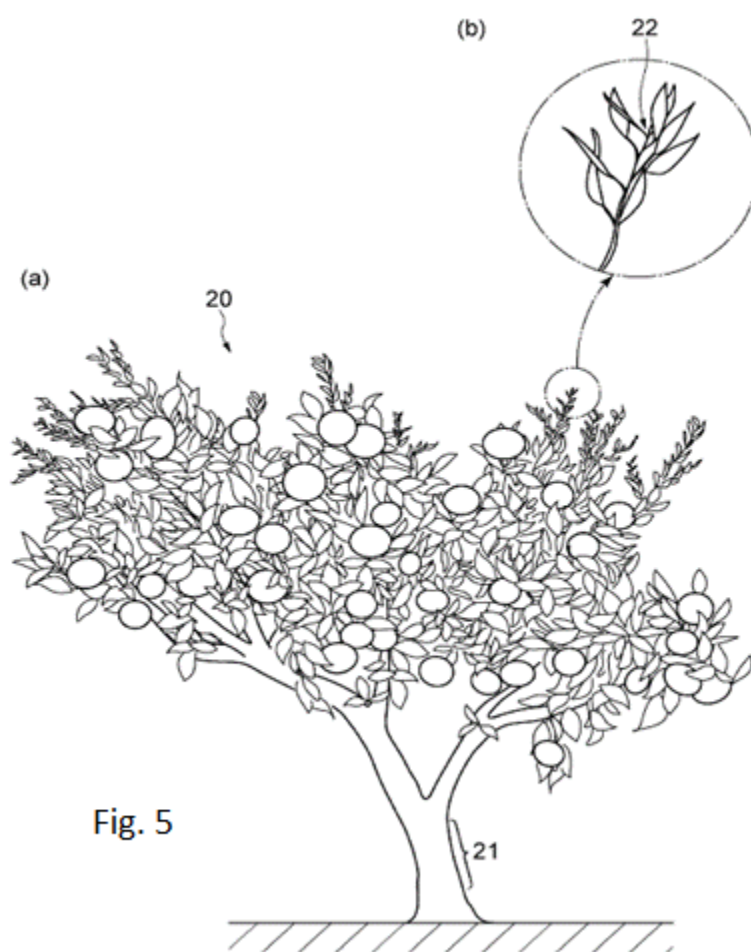
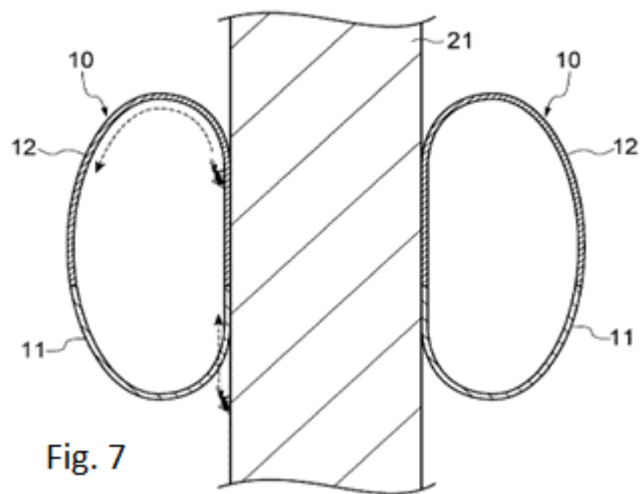
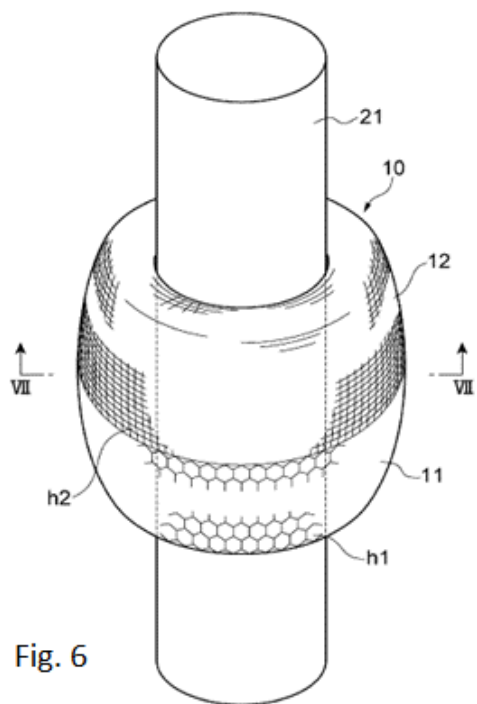


Fig. 5



D2

[19] UNITED STATES PATENT APPLICATION

[10] **US 2003-140222 A1**

[22] Filing Date: 31 January 2002 (31-01-2002)

[43] Publication Date: 31 July 2003 (31-07-2003)

[51] Int. Cl.: A01G 13/02

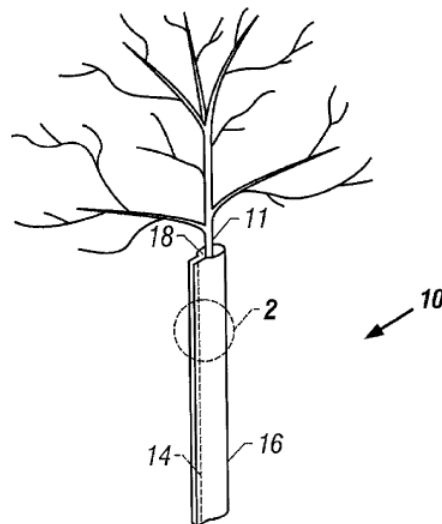
[71] Applicant: Protect Inc.

[76] Inventor: J. Lemaire

[54] Title: Plant shield

Abstract

A shield for use in protecting plants from environmental hazard, most particularly herbicide sprays. The shield is a two-layered structure, comprising an inner layer of a nonabrasive or resilient material secured to an outer layer of a herbicide-impermeable material. The two-layered structure is preferably a flexible composite sheet having two ends coupled together to form a circumferential barrier around the plant stem. The two ends may be coupled together with various fasteners. When a black or dark-colored inner layer is bonded to a white or light colored reflective outer layer, the temperature of the plant inside the shield may be minimized.



Description

FIELD OF THE INVENTION

[0002] This invention relates generally to a shield for protecting a plant, more particularly for protecting the stem of a woody plant, such as a tree or a shrub.

BACKGROUND OF THE RELATED ART

[0004] The stems or trunks of woody plants, such as shrubs and trees, often need to be protected from various forms of insult, such as chemical or mechanical. Other plants, especially when young, are also vulnerable to damage by wind and herbicides. Numerous devices exist to protect trees and stems from various threats in their environment. Protection of tree trunks from mechanical damage is taught by Campbell, U.S. Pat. No. 5,048,229. Allen, U.S. Pat. No. 5,231,793, teaches a ground covering and tree ring for the protection of tree bark from mechanical injury by lawn equipment and growth inhibition of undesired vegetation. Pattyn, U.S. Pat. No. 5,878,528, discloses the use of a rigid plastic shield for use as a tree protector. This device is applied in urban settings where snow, slush and salt applied to roads can damage trees in winter. Taylor, U.S. Pat. No. 4,845,889, teaches a shield for protecting plants from weed and lawn trimming devices. Worzek, U.S. Pat. No. 4,648, 203, discloses a permanently installable plant or tree protection device to guard against mechanical insult, such as that inflicted by lawnmowers and string trimmers. Allen, U.S. Pat. No. 4,700,507, teaches the use of a high impact polyurethane plastic shield to protect tree bark. Graves, U.S. Pat. No. 4,922,052, teaches a flexible tree "shelter" to protect a tree or other plant from the growth of encroaching weeds and weather effects. Scharf, U.S. Pat. No. 4,268,992 discloses a tree protector in the form of a vertical hollow shaft, with a built-in watering device. This protector is for use with young trees and shrubs, to guard against small animals and damage from lawnmowers.

[0005] Weed control around nursery stock (young plants and other plants) grown in the field is a major problem. Weeds compete for water and nutrients with these plants and, if left unchecked, the weeds can often grow taller than the young plants, thereby restricting light access and causing stunting and even plant death. To control weeds among young plants without disturbing the soil and without getting contact herbicides on the stem of the plant is highly desirable. The stems of young plants and trees contain chlorophyll and are subject to damage from contact with such post-emergent herbicides as Roundup®, Gramoxone®, Dilic, or Scythe®. While these products are effective and economical for controlling weeds, they may also damage or kill the stems of young plants. For example, when a paraquat spray, such as Gramoxone®, is sprayed down each side of tree rows in the field, stem growth is restricted on the sides exposed to the greatest quantity of herbicides. Growth of the affected stems is then elliptical and weakened, in contrast to a normal round or near-round stem configuration. When a glyphosate, such as Roundup®, is applied, damage to nursery crop plants is primarily due to stem absorption, which stunts plant growth.

[0006] The use of products that are either dark-colored or translucent or clear or nearly so results in substantial heating around the stem of the plant. This heating results in additional height growth accompanied by reduced stem diameter and strength, often requiring young trees to be staked, an expensive and laborious process. Also, excessive heating around the stems of young trees and shrubs can produce growth distortion and cause excessive growth of adventitious shoots and suckers. Abnormal heating around the stems of young trees also encourages insect and mite infestation. Concomitant enlargement of cells due to the effects of heat also results in thinner cell walls and an increased likelihood of pathogen entry. These problems occur when using the devices taught by Pattyn, U.S. Pat. No. 5,878,528, which suggests the use of a green-colored shield, or the use of the device taught by Allen, U.S. Pat. No. 5,231,793, which recommends the use of a black colored ground covering.

[0007] Additionally, most devices sold as stem protectors are rigidly formed and, when the wind blows, the plant stem, the protector, or both move sufficiently as to cause abrasion damage to the

plant stem at the top of the device. This is seen in the devices taught by Campbell, U.S. Pat. No. 5,048,229, and others.

[0008] Therefore, a need exists for a chemical shield for preventing post emergent herbicides being sprayed in the vicinity of young plants from contacting the stems of those plants in order to maximally exploit the economic and environmental benefits of such herbicides. It would be desirable if the plant shield prevented overheating and deleterious thermal effects and did not cause physical damage to the plant.

SUMMARY OF THE INVENTION

[0009] The present invention provides a shield for protecting a plant, for example, a woody plant, such as a shrub or tree. The shield comprises a flexible composite sheet having a first layer of non-abrasive, porous material that is secured to a second layer of a water or chemical impermeable material. Although the second layer may be water or chemical impermeable, it must be herbicide impermeable. In a preferred embodiment, two layers form the shield, but any number of layers may be used. Two ends of the flexible composite sheet may be wrapped around the plant stem or trunk and coupled to form the shield with the first layer facing the plant stem or trunk. Ideally, the flexible composite sheet is sufficiently stiff that the shield formed around the plant is more or less self-supporting, but not so rigid as to damage the plant. The flexible composite sheet may also form a generally circumferential barrier, such as a generally cylindrical ring, by securing together two ends of the flexible composite sheet. The two ends may be secured together by a fastener selected from staples, adhesives, snaps, clasps, hook and loop fasteners, and combinations thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] So that the above recited features and advantages of the present invention can be understood in detail, a more particular description of the invention, briefly summarized above, may be had by reference to the embodiments thereof that are illustrated in the appended drawings. It is to be noted, however, that the appended drawings illustrate only typical embodiments of this invention and are therefore not to be considered limiting of its scope, for the invention may admit to other equally effective embodiments.

[0011] FIG. 1 is a perspective view of a young tree in the ground, with the plant shield of the instant invention encircling the trunk.

[0012] FIG. 2 is a cross-sectional side view of the plant shield, depicting its bilayer construction.

[0013] FIG. 3 is a graph of temperature differences using various chemical shields.

DETAILED DESCRIPTION OF THE INVENTION

[0014] The present invention provides a shield for protecting young plants, more particularly, woody plants such as trees and shrubs. The shield comprises a two-layered structure that protects the plant from damage by herbicides and other chemicals, as well as creates a healthful environment for the plant by safeguarding it from excessive heat, moisture and physical damage.

The two-layered structure comprises an inner layer bonded or otherwise coupled or secured to an outer layer.

[0015] The primary requirement for the material of the inner layer is that the material be resilient and non-abrasive, to avoid any stem damage or chafing. This material may be any fabric that, when coupled to a layer of a herbicide-impermeable material on one side surface (i.e. face-to-face), will provide the resulting two-layered structure with the capacity to deflect light and not subject the shielded plant to overheating. Preferably the fabric is thick enough so that the fibers can hook on to or attach to any rough surface of bark. The material of the inner layer need not be porous, although it can be.

[0016] While the fabric of the inner layer may be made from various materials, the fabric is preferably a polymer such as polypropylene, polyester, nylon, or other polyolefin. Preferably, a spun bonded needle punched fabric may be used. Preferably, the fabric has a weight ranging from 1 to 10 ounces per square yard, and more preferably ranging from 4 to 6 ounces per square yard. To shield the plant stem from the effects of light and UV radiation, the inner layer is preferably a dark color, most preferably black. Using a dark color ensures that light does not penetrate the inner layer, but rather any light penetrating the outer layer is absorbed by the inner layer before the light reaches the stem to cause direct radiant heating of the plant stem.

[0017] The outer layer is a herbicide-impermeable material, which may also be water-impermeable or chemical-impermeable. This material may be any material that does not permit herbicides, or other chemicals or water respectively, to penetrate the material and make contact with the plant stem, including such materials as films, dense fabrics, aluminum or other metal foil, and plastic sheets. The herbicide-impermeable layer may also be formed by any material or composition, including polymers, inorganics, and composites, with polymers being the most preferred. Polymers such as vinyl (PVC), or polyolefins such as polyethylene, polypropylene, polyisobutene, and others may be used. Preferably, the herbicide-impermeable material is reflective and light colored or has a reflective and light colored coating or surface. The most recommended material is white polyethylene, which is suitable to reflect light and reduce the temperature in the cylinder around the plant. The white outside color reflects light and reduces the temperature inside the shield, which avoids problems with adventitious bud growth, insects, and mites, as might occur with translucent plant stem protectors.

[0018] The composition of the herbicide-impermeable material may also comprise additives. For example, where the herbicide-impermeable material is a polymer, the polymer will preferably include UV inhibitors to provide high UV stability. In a most preferred embodiment, the herbicide-impermeable material forming the outer layer of a two-layered plant shield comprises white polyethylene having a thickness of between 2 and 6 mils (1 mil = 0.001 inch = 0.0254 mm) and with UV inhibitors for stability. Additionally, the herbicide-impermeable material may be rigid or flexible and have any desired thickness, preferably between 2 and 6 mils, more preferably between 3 and 5 mils. Further, the herbicide-impermeable material is preferably resistant to decay. Such materials resistant to decay include, without limitation, polymers such as vinyl polymers or polyolefins.

[0019] As mentioned, the herbicide-impermeable material and non-abrasive material may be attached, coupled, or secured together by various means, including lamination, use of an

adhesive, stitching, stapling, hook and loop fasteners (Velcro®), snaps and the like. For example, a white polyethylene material may be adhered to an inner fabric material, such as a spun bonded and needle punched fabric or a woven or knitted fabric. Any adhesive may be used, but preferably the adhesive is water-insoluble. Furthermore, any lamination techniques may be used, provided that the lamination temperature employed does not melt the non-abrasive material, or completely dissolve the herbicide-impermeable materials. Alternatively, one of the materials may be formed directly onto the other material, such as the herbicide-impermeable material being sprayed over the non-abrasive material. The materials forming the two layers may also be secured together at spaced apart intervals, for example, every inch or two.

[0020] Another embodiment of the invention includes the use of composite material, comprising one or more of the non-abrasive layers and one or more herbicide-impermeable layers, to form a protective shield, wherein a herbicide spray is prevented from contacting the stem of a plant. The protective shield may have any shape or size, provided that the non-abrasive layer faces the stem. In a preferred embodiment of the invention, the shield is generally cylindrical in shape, formed from a rectangular sheet of the composite material. Such shields should be made to fit around the stems of young plants such as trees and extend sufficiently high to prevent herbicide sprays from contacting the sensitive tissue of the stem.

[0021] The shields are preferably assembled in the field by stapling or otherwise coupling a flat sheet of the composite material along two opposing edges. Alternatively, the two-layered shield may be assembled by wrapping the material around a plant stem and securing it by taping across the overlapping surfaces or by tying a string or flexible band around the shield. The two opposing edges may also be coupled with hook and loop fasteners, or an adhesive with a protective covering that is removed just prior to use. In a preferred embodiment of the invention, the shield is assembled from pieces of the composite material that measure 15 inches wide by 24 inches tall. The shield is installed around the stem of a young plant using a heavy-duty hand stapler. Such a composite material shield is sufficiently rigid to form a freestanding shield around the stem. A shield of this size protects the young plant stem from chemicals 24 inches above the soil surface and allows the plant to grow to a stem diameter of about 3.5 inches. Suitably, when the stem diameter of a tree reaches about 3 inches, the mature bark is sufficiently developed to prevent chemical absorption and damage from post-emergent herbicides. At this stage the shield may be removed and either discarded or reused around other plant stems. Therefore, the shield provides temporary protection of a plant during an early, crucial phase of development. If the shield is not removed by the time the plant reaches the inside diameter of the shield, the pressure of the expanding stem will cause the staples to release with no damage to the plant.

[0022] The composite material may be used to make protective shields of various sizes for use in protecting various types and sizes of plants. The size or volume of the shield may be enlarged for use in protecting larger plants, or plants at a later state of development. In one embodiment (not illustrated), the shield may be enlarged in its top portion to protect the lower branches, for example.

[0023] The present invention further provides methods of using the plant shield in horticulture and recreational gardening. Rolls of the bilayer material may be produced and kept available so that the material may be cut and formed into shields having shapes and sizes desirable for a variety

of applications as the need arises. Particularly, the material may be formed into a ring that can protect trees and other plants when coupled to form tree protectors.

[0024] It is preferred, for purposes of economy and efficiency, that the composite material used in forming the protective shield is also suitable as a root-growth barrier.

[0025] FIG. 1 is a perspective view of a protective shield **10** of the invention disposed around a plant stem **11**. The shield **10** is shown having a vertical seam **14** where two opposing edges of a composite material are joined. Such a seam may be formed by stapling, or any other method of fastening the material in place around the stem. The herbicide-impermeable material **16** is preferably white polyethylene to provide reflectivity. The non-abrasive material **18** is preferably a dark colored spun bonded fabric that becomes hooked onto the rough edges of the bark to prevent excessive movement of the shield that could cause abrasion. In some embodiments, the different layers of materials **16** and **18** have different dimensions such that, for instance, the herbicide-impermeable material **16** only partially covers the non-abrasive material **18**.

[0026] FIG. 2 is a cross-sectional side view of the shield **10** in FIG. 1, showing the composite material in greater detail. The herbicide-impermeable material **16** is coupled to the non-abrasive material **18**. In a preferred embodiment of the invention, the bonding interface or region **22** between the layers is formed by laminating the herbicide-impermeable material **16**, such as a polyethylene film, onto a fabric non-abrasive material **18**.

EXAMPLE 1

[0027] A two-layered material was prepared by laminating a 4 mil thick sheet of white polyethylene to a 6 ounce per square yard sheet of spun bonded needle punched black polypropylene. The material was cut to dimensions of 24 inches tall by 15 inches wide, wrapped around the stem of a young tree, and fastened up the vertical seam using a hand stapler to form a shield. The wire staples held the shield in place. Lacebark elm trees of similar size and condition were given shields, with a first group of the trees receiving clear or opaque, corrugated, double wall tree shelters and a second group receiving the foregoing two-layered shield, white on the outside. A third group of trees received no shields, and served as a control group. The tree stems with clear or opaque stem coverings had a high incidence of coral spot Nectria canker, *Nectria cinnabarina* (47%) (Group I), whereas stems protected by the two-layered shield (Group II) had no canker and stems that were unprotected by any covering (Group III) also had no canker. Following removal of the clear or opaque coverings, the stem wounds caused by the canker in the trees in Group I began to be covered by callous growth and some were completely covered over within three months. Although this growth resulted in the canker wounds being covered in some cases, the appearance of the tree stem was such that the trees would not be of salable quality. Furthermore, the trees of Group I displayed the emergence of numerous adventitious buds. None of the trees in Groups II or III displayed such undesirable growths.

EXAMPLE 2

[0028] Trees were arranged in the same groups as in Example 1. Temperatures were monitored a number of times during the growing season. Temperatures inside the laminated material, white on the outside, were consistently 4 to 6 degrees above the ambient air temperature, but the

temperatures inside other types of plant shields were much higher. These temperatures are depicted graphically in FIG. 3. Further, as the sun shifted southward in the summer sky and the sunlight contact became more direct, the heating inside the laminated shield of the present invention increased, but not to as high of a temperature as with other shields.

[0029] The term "comprising" means that the recited elements or steps may be only part of the apparatus or method and does not exclude additional unrecited elements or steps.

[0030] It will be understood that certain combinations and sub-combinations of the invention are of utility and may be employed without reference to other features in sub-combinations. This is contemplated by and is within the scope of the present invention. As many possible embodiments may be made of this invention without departing from the spirit and scope thereof, it is to be understood that all matters hereinabove set forth or shown in the accompanying drawings are to be interpreted as illustrative and not in a limiting sense.

(Claims omitted)

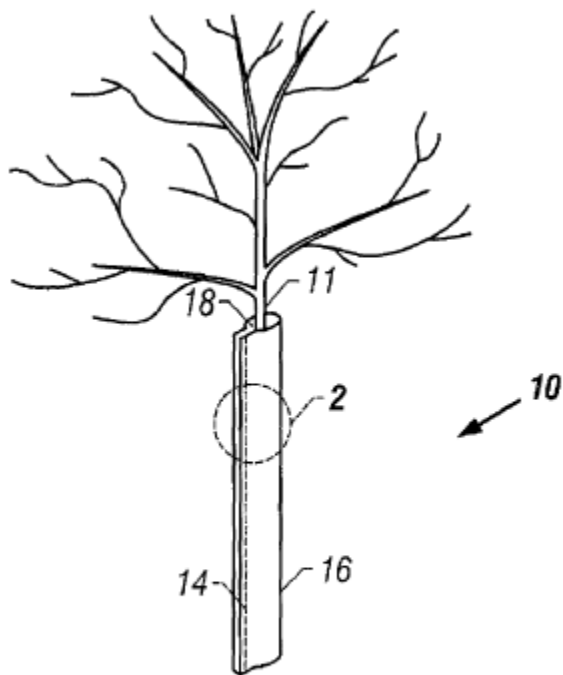


FIG. 1

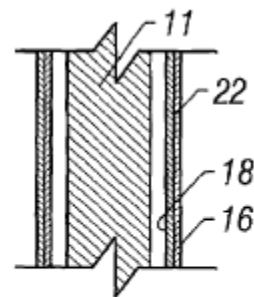


FIG. 2

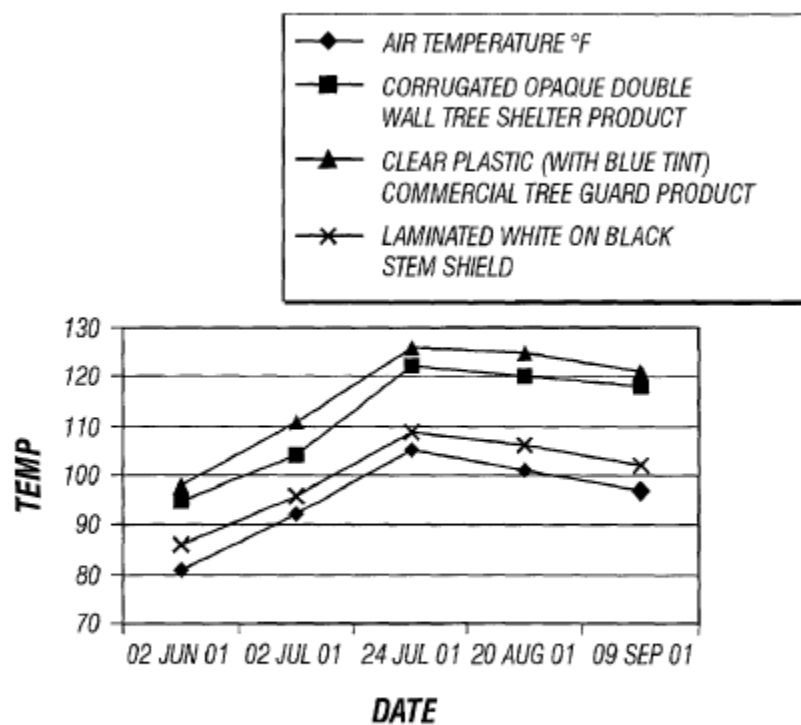


FIG. 3

D3

[19] UK PATENT APPLICATION

[11] **GB 2519333 A**

[22] Filing Date: 31 October 2013 (31-10-2013)

[43] Publication Date: 6 May 2015 (06-05-2015)

[51] Int. Cl.: A61G 13/02

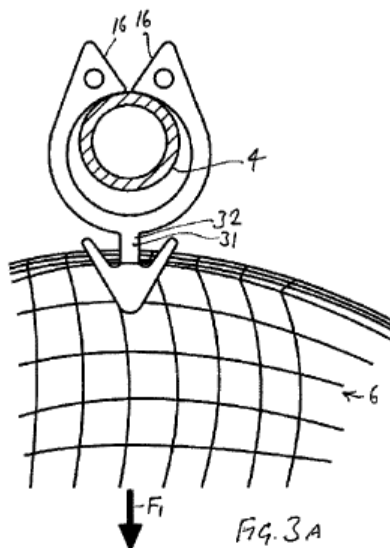
[71] Applicant: Masks and More Inc.

[72] Inventor: S. Shutt

[54] Title: Attachment clip

Abstract

A horticultural cage **1** comprises a mesh, net or fabric enclosure attached to a frame or support **2** by means of clips **3**. The clips comprise of a support portion and a fixture portion. The support portion holds the frame in an aperture defined between a pair of arms. The fixture portion has a pair of barbs in an anchor like structure that engage and hold the mesh. The arms of the support portion are resiliently deformable which allows for release of the clip without damage from the frame, the mesh **6**, or another portion of the clip when the force applied by the mesh to the clip reaches a threshold limit, so that the clips can afterwards be re-engaged in the use position to re-suspend the mesh from the frame. The clips prevent weather damage to the frame and are preferably slidable along the frame for ease of access to the plants within the enclosure.



Description

[0001] This invention relates in particular to horticultural fruit or vegetable cages comprising a frame supporting an enclosure of mesh or other fabric for excluding animals such as birds or insects from growing plants.

[0002] The enclosure is typically a rectilinear assembly of four sides and a roof which is suspended at intervals from the frame. It may comprise panels of mesh or netting, which is a flexible, permeable fabric comprising a plurality of apertures defined by intersecting filaments and having a mesh size corresponding to the pest species which is to be excluded, ranging from fine, woven mesh with a mesh size of 0.25 mm x 0.8 mm or even less for excluding small insects, up to knitted or knotted netting with a mesh size of 80 mm x 80 mm or more for excluding pigeons and the like. Other fabrics such as fleece or transparent plastics sheeting can also be used, which, like fine mesh, provide protection against wind and cold.

[0003] The dimensions of the frame are selected according to the size of the growing plants to be enclosed by the cage. Fruit bushes and small fruit trees will generally require a frame which is high enough to allow the user to walk beneath the upper panel of mesh defining the roof of the cage, whereas a lower cage may be used to enclose vegetables and flowers. Low cages are less expensive and less visually obtrusive, and also less prone to damage in windy conditions, but can be inconvenient in use, requiring the user to stoop and reach under the mesh in order to access the growing plants. Higher cages are easier to access if a door is provided in the frame, but the wind resistance of the mesh or other fabric forming the sides of the enclosure can be sufficient to cause damage to the frame in high winds. Snow accumulating on the enclosure can also cause the collapse of the frame due to the increase in weight and wind resistance. It is therefore often necessary to remove the mesh from the frame in the winter.

[0004] It is the object of the present invention to mitigate the above-mentioned problems so that a fruit or vegetable cage may be more convenient in use.

[0005] According to the present invention there are provided a clip, a horticultural cage, and an assembly as defined in the claims.

[0006] Further features and advantages will be evident from the following illustrative embodiments which are described, purely by way of example and without limitation to the scope of the claims, and with reference to the accompanying drawings, in which:

[0007] Fig. 1A shows a horticultural cage having a mesh suspended from a plurality of clips;
Fig. 1B shows the cage with the mesh released from the frame;
Fig. 1C shows the cage with the mesh slid back along the frame;
Fig. 2 shows a first clip in accordance with a first embodiment;
Figs. 3A - 3C show the first clip respectively in the use position (Fig. 3A), partially disengaged from the support (Fig. 3B), and fully disengaged from the support (Fig. 3C);
Fig. 4B is a front view of the first clip engaged with the support in a rest condition;
Fig. 4D is a section at D — D of Fig. 4B;
Fig. 5A shows the first clip in a strained condition arising during insertion into an aperture of the mesh;
Fig. 5B is a section at B — B of Fig. 5A;
Fig. 6A shows the section of Fig. 4D when the first clip is engaged with the mesh in a rest condition;
Fig. 6B shows the section of Fig. 5B when the first clip is inserted into an aperture of the mesh in a strained condition;

Figs. 16 - 17C show a third clip in accordance with a third embodiment, wherein: Fig. 16 shows the fixture portion engaged with the support portion; and Figs. 17A - C show the fixture portion and support portion respectively fully engaged (Fig. 17A), partially disengaged (Fig. 17B), and fully disengaged (Fig. 17C).

[0008] Referring to Figs. 1A - 1C, a horticultural cage **1** is assembled from a rectilinear frame **2**, an enclosure made from panels of fabric, and a plurality of clips **3** attached to each of the bars **4** of the frame for suspending and stretching the fabric within the frame so that the enclosure surrounds a group of growing plants **5**. In the illustrated example, the fabric is a mesh **6** of a mesh size suitable for excluding insects and the like. Each clip includes a fixture portion for engaging the clip with the fabric, and a support portion for engaging the clip with the support so as to suspend the fabric from the support in a use position of the clip (Fig. 1A) wherein the fabric applies a force in a force direction to the fixture portion, as further described below. The bottom edge of the mesh can be left free, clipped to a bottom bar of the frame, or pegged to the ground, as preferred.

[0009] Each clip is configured to release the mesh from the frame when the force applied to the fixture portion by the mesh in the force direction increases to a predetermined magnitude, hereinafter termed the release force. In the example shown, the release force is in a range from about 30 N to about 100 N, and the clips are spaced apart along the bars of the frame by about 0.5 m. The release force and the spacing of the clips are selected so that the mesh will detach from the frame when the wind force on the side panels or the weight of snow on the roof panel reaches a desired threshold limit and before causing damage to the frame (Fig. 1B). Advantageously, the user can thus leave the enclosure attached to the frame in all weathers.

[0010] Further advantageously, each clip is also freely slidable along a length axis **X1** of the respective bar **4** of the frame. By disengaging the clips on the vertical bars and one horizontal bar at one end of the cage, the mesh enclosure can thus be slid back along the length of the cage while the clips supporting the roof panel slide along the other horizontal bars (Fig. 1C). In this manner the user can gain full access from all directions to the plants while the enclosure remains suspended from the frame.

[0011] Referring to Figs. 2 - 6, in a first embodiment, each clip comprises a support portion **10** and a fixture portion **30**, formed as integral parts of a single plastics moulding (for example, polypropylene, nylon or other suitable material) as best seen in Fig. 2, with the composition of the material being selected for the desired elastic modulus, flexural modulus, and other mechanical properties. The clip has a first plane of symmetry **P1** which bisects it in its thickness direction, so that it can be formed in a simple two-part injection mould, and a second plane of symmetry **P2** orthogonal to the first plane **P1** and bisecting the clip along its length direction. The force direction **F1** lies along the length axis **X2** of the clip defined by the line of intersection of these two planes.

[0012] The first plane of symmetry **P1** is hereinafter referred to as the reference plane, and it will be understood that the reference plane is aligned with the force direction.

[0013] The support portion **10** is resiliently deformable, comprising a pair of resilient arms **11**, each arm having a proximal end region **12** and a distal end region **13**, the proximal end regions being joined to the fixture portion **30**.

[0014] An aperture **14** is defined between the arms **11** for receiving the support **4**, the aperture having a distal end region defined by the distal end regions **13** of the arms, which preferably define a smoothly curved boundary **15** at least in the distal end region of the aperture **14** when considered in the reference plane **P1** which contains the aperture. In the example shown, the entire aperture is circular with a smoothly curved boundary, which is also rounded in the thickness direction, so that the clip can slide freely along the frame. The aperture is large enough to permit the support portion to rotate freely around the bar or other support **4** when the support is received in the aperture in a rest condition of the clip, wherein the longitudinal axis **X1** of the support is normal to the reference plane **P1** (Fig. 4B). This means that the clip can rotate somewhat around the support as the wind direction changes so that the force direction **F1** is always aligned with its length axis **X2**.

[0015] The support, which in the illustrated embodiment comprises a tubular steel or aluminium bar **4** of the frame with a circular cross-section as shown, is received in the aperture **14** between the arms **11** in the use position of the clip as shown in Fig. 3A, wherein the mesh is attached to the fixture portion **30** so that the mesh applies a force corresponding to the weight and static tension of the mesh in the force direction **F1** to the fixture portion.

[0016] The arms are symmetric about the plane of symmetry **P2** which bisects the aperture **14** and the fixture portion **30** and passes between the arms, with the force direction **F1** being aligned with this plane of symmetry. This balances the forces between the two arms with respect to the force direction so that the clip operates smoothly and consistently, irrespective of which way round it is engaged with the support.

[0017] The distal end regions **13** of the arms define a pair of opposed engagement surfaces **16** which diverge when considered in an engagement direction **F2** opposite to the force direction. The engagement surfaces are arranged to slidably engage the bar or other support **4** so as to urge the arms **11** apart to engage the clip with the support when the support is received between the engagement surfaces of the arms and the clip is pushed towards the support in the engagement direction **F2**.

[0018] The arms **11** are progressively elastically deformable by application of the release force so that the distal end regions of the arms are resiliently urged apart by sliding contact with the bar or other support **4** as further explained below, so as to disengage the support portion from the support when the release force is applied to the fixture portion in the force direction **F1**.

[0019] - [0028] (deleted)

[0029] The clip can be pushed towards the support in the engagement direction **F2** so that the engagement surfaces **16** slidably engage the bar or other support **4** so as to urge the arms apart to engage or re-engage the clip with the support.

[0030] (deleted)

[0031] Referring particularly to Fig. 6A, the mesh **6** defines a plurality of equal apertures **61**, and the fixture portion **30** is configured to retain the mesh to the fixture portion when the support

portion **10** is disengaged from the bar or other support **4** or from the fixture portion, as further described below.

[0032] As shown in Figs. 3A, 3C and 4B, the fixture portion comprises a stem **31**, which has a proximal end **32** attached to the support portion **10**, and a retaining portion **33** attached to the stem. The retaining portion includes a pair of barbs **34** arranged on opposite sides of the stem, a recess **35** being defined between each barb and the stem, each recess opening towards the support portion so as to receive a respective filament **62** (Fig. 6A) of the mesh to retain the mesh securely to the fixture portion in the use position (Fig. 3A) and when the fixture portion is released from the frame (Fig. 3C). The pair of barbs divide the load between two parallel filaments of the mesh, which minimises distortion.

[0033] In the illustrated embodiment, the barbs **34** are slightly compressible relative to the stem, although they might alternatively be rigid. The mesh is of course locally deformable and in addition the filaments may be elastically stretchable, for example where each filament comprises a braided or knitted bundle of smaller fibres. The margins **63** of each aperture **61** are bounded and defined by respective portions of the filaments **62** of the mesh. The retaining portion is inserted by force through any selected one of the apertures **61** in a strained condition of the retaining portion and the mesh (Figs. 5A, 5B, 6B) so as to attach the fixture portion to the mesh.

[0034] Fig. 4D shows a corresponding cross-section of the retaining portion in the plane **P3** normal to the force direction **F1** in the rest condition wherein the barbs are relaxed. In this condition, a continuous line **35'** of least possible length has a total length which is preferably greater than a total length of the margins **63** of each aperture of the mesh in the rest condition of the mesh as shown in Fig. 6A. This ensures that the retaining portion can be forced through an aperture **61** of the mesh in the strained condition of the retaining portion and the mesh, wherein either one or both of the retaining portion and the mesh is elastically deformed, but cannot pass through the aperture in the rest condition. Preferably, the envelope defined by the line **35'** is of a different shape to the aperture of the mesh in the rest condition of the mesh, as shown, so that the mesh has to be distorted as well as stretched in order to insert the retaining portion. This gives a very secure attachment.

[0035] In the rest condition of the retaining portion and the mesh (Figs. 4B, 6A), the retaining portion **33** has a maximum linear dimension **D1** in the plane **P3** which is greater than an average maximum linear dimension **D2** of each aperture of the mesh in the same plane. As a rule of thumb, for a generally flat retaining portion as shown, the dimension **D1** is preferably at least 200%, more preferably at least 220% of the average distance **D4** between adjacent filaments of the mesh in each direction normal to the filaments. It must be noted that **D4** is taken between the centre lines of the filaments and will usually have either one or two values depending on whether the mesh is square or not; 200% of the average of these values corresponds to the diagonal dimension of an aperture of a rectilinear mesh in a maximally distorted condition but before the filaments begin to extend elastically. For the square mesh illustrated in the rest condition in Fig. 6A, the total length of the four margins **63** of each aperture will be 4 x **D4**.

[0036] Since the retaining portion is configured with ramped surfaces **36** to spread the filaments of the mesh when it is inserted through the mesh, and backwardly facing barbs **34** to engage the mesh to prevent it from being withdrawn, this ensures that the retaining portion is easy to insert

but afterwards remains securely fastened to the mesh. A maximum (width) dimension of the support portion in the reference plane **P1** transverse to the force direction **F1** is larger than a maximum dimension of the mesh, so that after detachment from the frame, the mesh is trapped between the support portion and the retaining portion.

[0037] In alternative embodiments, one or more than two barbs might be provided. Also, rather than recesses, the barbs might have flat surfaces normal to the force direction to retain the mesh.

[0038] The first clip may be used also for square or other non-circular tubing, in which case the circular aperture **14** allows the clip to rotate freely around the tubing so that the length axis of the clip is always aligned with the force direction **F1**. However, the problem then arises that the geometric relationship between the contact surfaces of the clip and the frame is variable according to the direction of the wind relative to the orientation of the frame, so that the release force may vary with the orientation of the clip.

[0039] - [0042] (deleted)

[0043] Referring to Figs. 16 - 17, the third embodiment also comprises a support portion **310** which is disengageable from the fixture portion **330** by application of the release force in the force direction **F1**. The support portion includes a ring **311** which is slidably fed onto the tube **4** of the frame when the frame is assembled, and an insert element formed as a ball **312** which is attached to the ring by a stem **313**.

[0044] The fixture portion **330** includes a pair of capture elements **331**, each comprising a resilient arm **332** terminating in a ring **333**. When the fixture portion is urged towards the support portion, the arms **332** are urged apart so that the ball is received between the capture elements and the rings **333** engage the outer surface of the ball **312** to engage the two parts together in the use position of the clip in a manner similar to a ball-and-socket joint (Fig. 16, Fig. 17A). In the use position the fixture portion can rotate around the length axis **X5** of the rings **333**, and also about the length axis **X2** of the support portion along which the force direction **F1** lies. The arms are urged apart by sliding engagement with the ball when the release force is applied to the fixture portion (Fig. 17B) so as to release the fixture portion from the support portion (Fig. 17C).

[0045] In other respects the fixture portion **330** of the third embodiment is similar to the fixture portion **30** of the first embodiment, having a stem **31** with a proximal end **32** attached to the support portion in the use position of the clip, and a barbed retaining portion **33**. Although not shown in the drawings, the fixture portion preferably also includes an outwardly extending part having at least one dimension transverse to the force direction **F1** which is larger than a corresponding dimension of the mesh, e.g. a flange or tabs forming extensions of the rings **333**, to prevent the stem and capture elements from passing through the mesh after detachment from the support portion. The mesh is trapped between this outwardly extending part (not shown) and the barbed retaining portion **33**, which together are configured to retain the mesh to the fixture portion when the support portion **310** is disengaged from the fixture portion.

[0046] In further alternative embodiments, the insert element and capture elements could take any desired form. For example, the capture elements could engage in recesses in the insert element, or the insert element could have compressible parts which engage resiliently in the

capture elements. There could be more than two capture elements. The capture elements could be opposite walls of a cavity. Of course, the insert element could be arranged on the fixture portion and the capture elements on the support portion.

[0047] In summary, a preferred embodiment provides a horticultural cage comprising a mesh enclosure attached to a frame by means of clips, each clip including a portion which is released without damage from the frame, the mesh, or another portion of the clip when the force applied by the mesh to the clip reaches a threshold limit, so that the clips can afterwards be re-engaged in the use position to re-suspend the mesh from the frame. The clips prevent weather damage to the frame and are preferably slidable along the frame for ease of access to the plants within the enclosure.

[0048] In each of the illustrated embodiments, the support portion is configured to disengage from the support or from the fixture portion when the release force is applied to the fixture portion in the force direction, and at least the fixture portion remains securely attached to the mesh when the mesh is released from the support. This makes it easy to identify the correct point on the mesh to re-attach to the frame, simply by locating the fixture portion of the clip. Preferably the clip is made in a bright or fluorescent colour so that the fallen portion of the clip is easy to locate.

[0049] Rather than achieving this by means of a pair of symmetric, resilient arms which engage a bar of the frame as illustrated in the first embodiment or a ball-and-socket type joint which connects the two portions together as illustrated in the second and third embodiments, any other suitable releasable mechanical connection may be adopted.

[0050] For example, the support portion might comprise a flexible hook which is distorted to a release position by application of the release force. Alternatively, the support portion might comprise two asymmetric arms defining an aperture between them, wherein one of the arms is resiliently deformable and the other either resiliently deformable or substantially rigid.

[0051] Alternatively, a pair of magnetic elements (e.g. a first magnet and a ferrous material or second magnet) may be provided, respectively on the support portion and the fixture portion, to hold the two parts together and to disengage at the release force.

[0052] Alternatively, the support portion may comprise a hinged or flexible bar which retains the support in an aperture of the clip. The bar is opened by hand and then closed again to engage the clip with the support, and is then held in the closed position by a suitable mechanism such as a pair of magnetic elements or a mechanical catch, releasable by application of the release force.

[0053] Alternatively, the support portion may comprise a recessed magnetic shoe which receives a steel support such as a bar of the cage and holds the clip to the cage until it is disengaged by application of the release force.

[0054] Alternatively, the support portion or fixture portion may comprise a clamp, a hook with a snap closure similar to a carabiner, or a strap closeable by a buckle, complementary portions of hook-and-loop material, or other convenient closure means. The portions of hook-and-loop material may be arranged to peel apart at the release force to release the clip from the support.

[0055] In yet further alternative embodiments, the fixture portion may be configured to disengage from the fabric without damaging the fixture portion or the fabric when the release force is applied to the fixture portion in the force direction, in which case the clip will remain attached to the support. This configuration is less preferred however, since it makes it more difficult for the user to identify the margins of the respective panels of the fabric, particularly where the fabric is a mesh, so as to re-attach the enclosure to the frame in the correct position.

[0056] Alternatively, the mesh may be sandwiched between two portions of complementary hook-and-loop material which are peeled apart at the release force. Alternatively, the fixture portion may comprise a pair of jaws which are resiliently or magnetically biased together so as to retain a portion of the fabric by friction between the jaws and to release the fabric undamaged when a release force is applied, sufficient to overcome the friction.

[0057] In each of the embodiments, the clip comprises disengagement means configured to release the fabric from the support without damage to the clip, the support or the fabric, so that after disengagement the fixture portion and/or support portion is re-engageable to re-suspend the fabric at the same point from the support in the same use position of the clip.

[0058] The novel clip may be applied in any situation where it is desired to release a fabric from a support when a predetermined force is applied via the fabric to the clip. For example, the clips may be used to attach a mesh to a frame so as to form a cricket practice net, wherein the mesh will disengage from the frame without damage if a player inadvertently steps or falls on it. In yet further alternative embodiments, rather than engaging a linear bar of a frame, the support portion of the clip could be configured to engage any suitable support. Alternatively, the support portion could be left unused if it is only desired to hold together layers of fabric or mesh. The fabric could be a woven textile, a transparent plastics film, a fleece, or any other desired flexible sheet material. For example, the novel clip could be used to attach a shower curtain to a rail so that the curtain detaches if the user sits or steps on it without damaging the fabric or the rail. The support portion may be configured for example with a slider to engage in a slot in the rail. The support portion could incorporate more than one material, comprising for example a body portion with a PTFE lining which slidably engages the bars of the frame.

(Claims omitted)

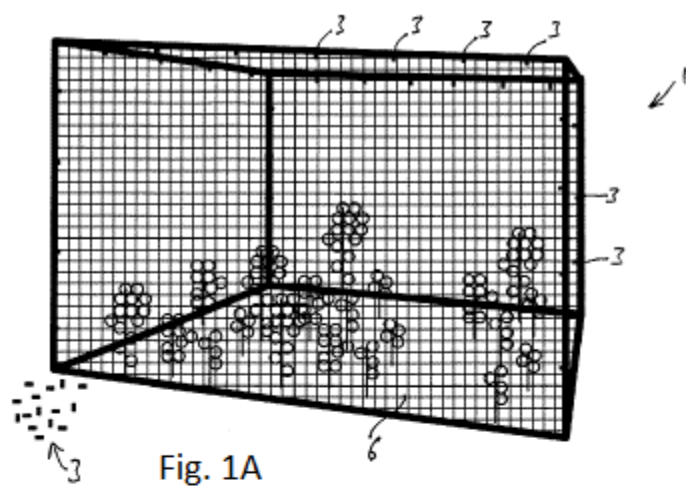


Fig. 1A

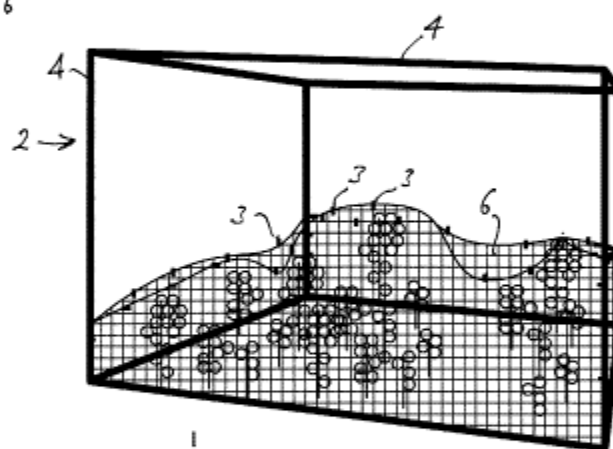


Fig. 1B

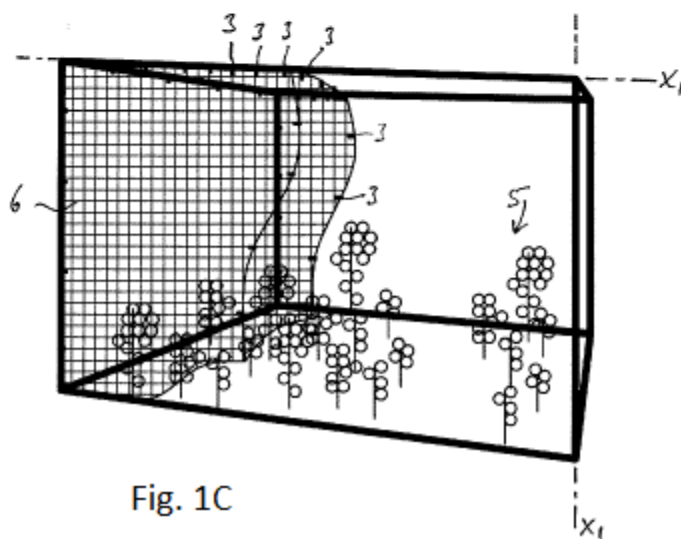
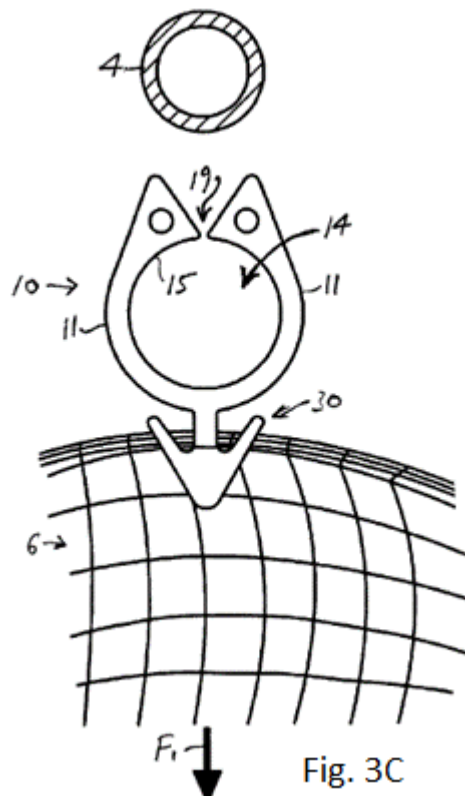
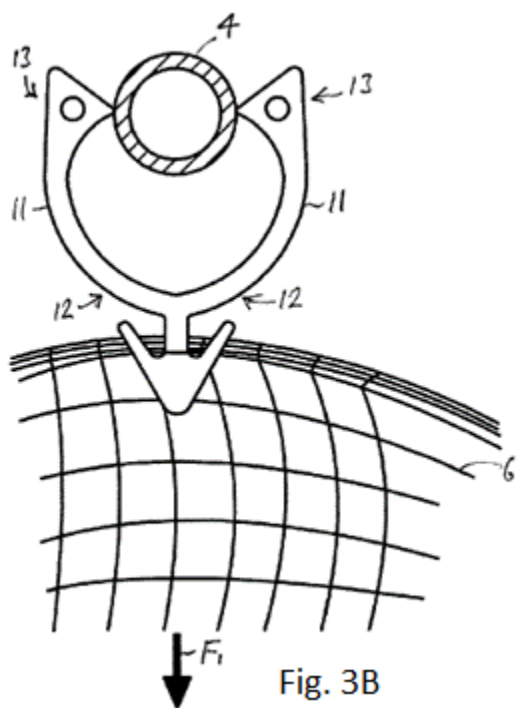
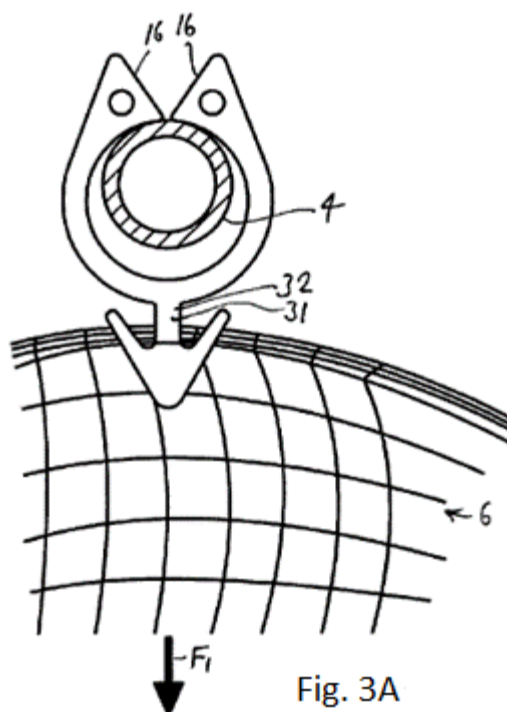
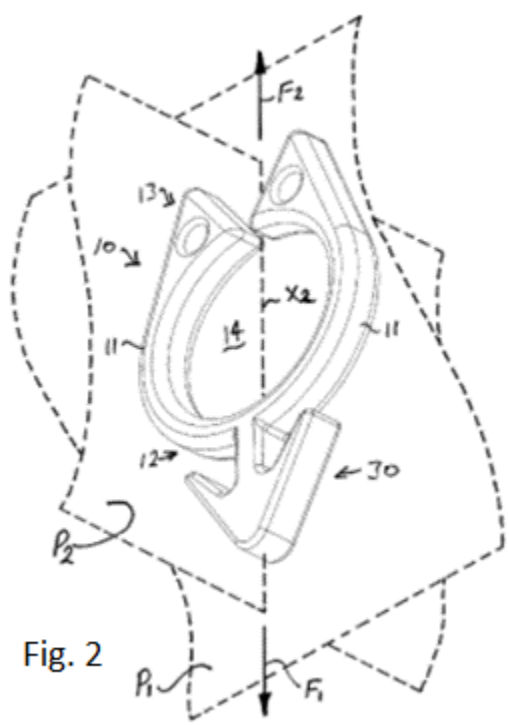
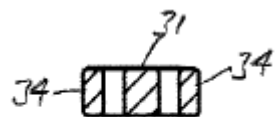
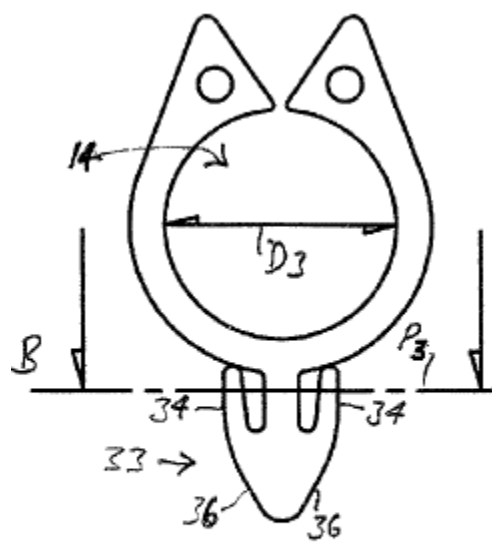
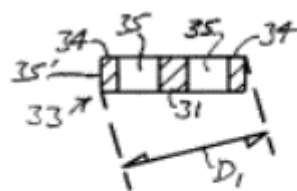
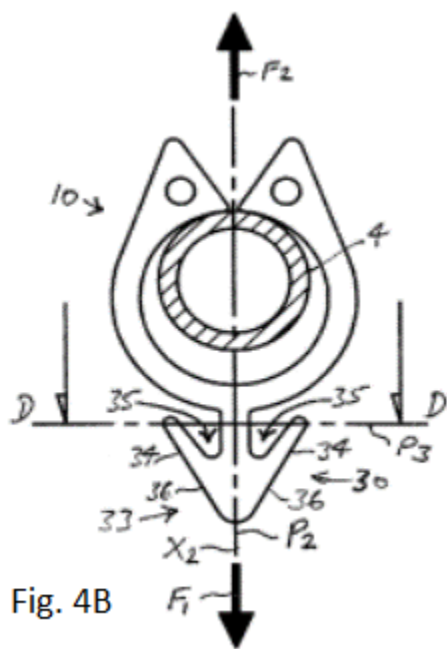


Fig. 1C





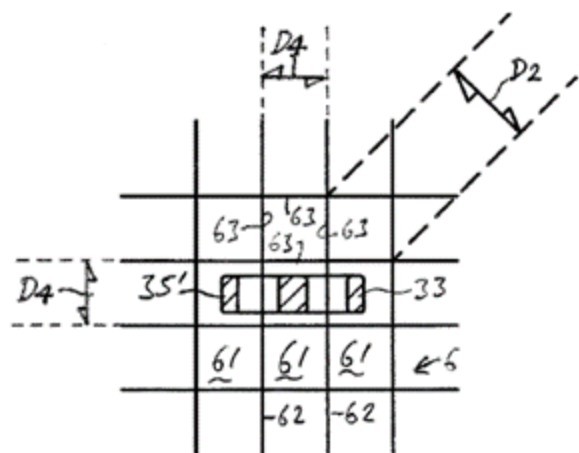


Fig. 6A

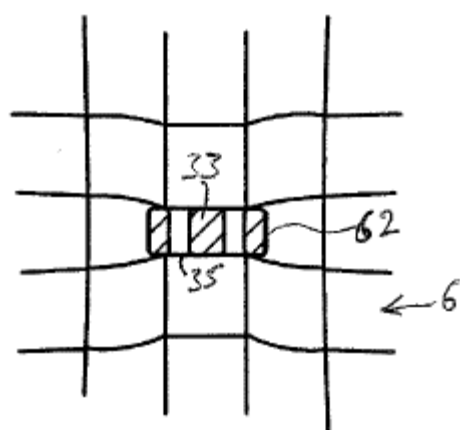


Fig. 6B

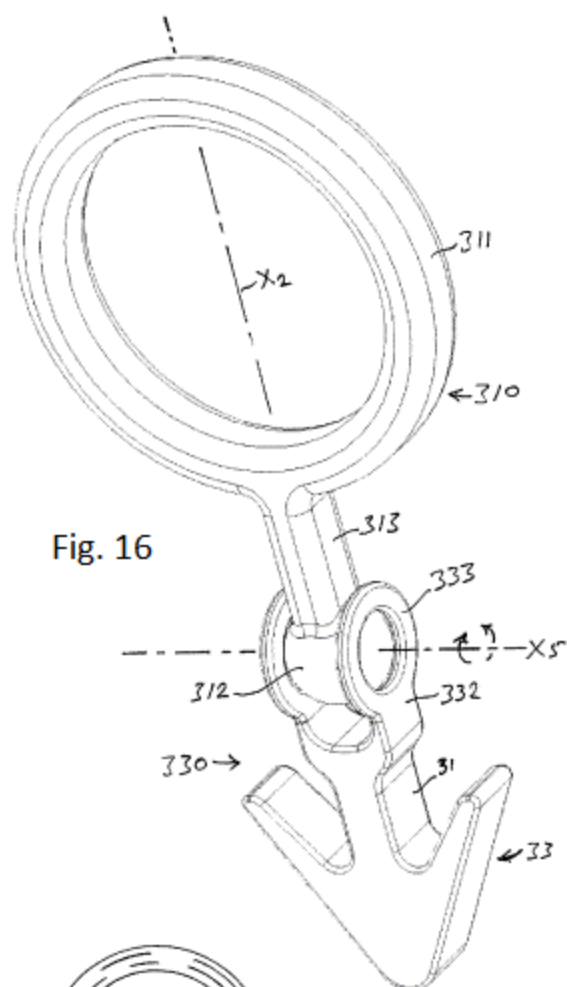


Fig. 16

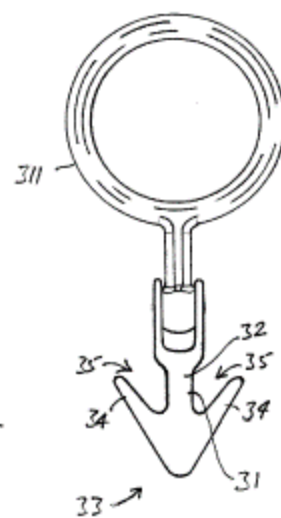


Fig. 17A

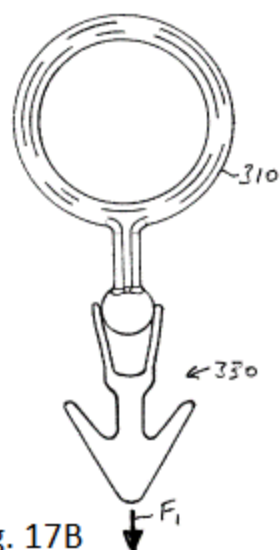


Fig. 17B

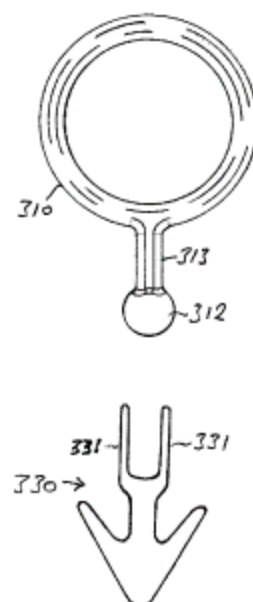


Fig. 17C

PART B: Questions C2 to C9 (20 pts)

C2. Consider the following Canadian patent application and prior art document, and state whether or not the prior art document would be citable with regards to (i) anticipation and (ii) obviousness. If citable, indicate the relevant section of the *Patent Act*. [1 pt each]

- Patent application CA 3,XXX,001 filed by applicant A on September 6, 2017, with a valid priority date of September 16, 2016, and a publication date of March 16, 2018.
- Prior art: a patent application filed in Canada by a different applicant B on September 14, 2017, having a valid priority date of September 15, 2016 and published on March 22, 2018.

C3. Consider the following Canadian patent application and prior art document, and state whether or not the prior art document would be citable with regards to (i) anticipation and (ii) obviousness. If citable, indicate the relevant section of the *Patent Act*. [1 pt each]

- Patent application CA 3,YYY,001 filed by applicant Z and inventors A. Brown, B. Grey, C. Green and D. Troutman on August 17, 2017, with a valid priority date of August 15, 2016, and a publication date of February 22, 2018.
- Prior art: a scientific article published on August 16, 2016 by multiple authors including one of the inventors of CA 3,YYY,001, and disclosing the claimed invention.

C4. When considering the requirements for unity of invention, two aspects of a given set of claims must be considered. One of these aspects is the need for a common set of elements among the claims. Name the other aspect. [2 pts]

C5. Name two of the three conditions that must be satisfied for a patentable selection. [2 pts]

C6. What are the time limits to perform the following actions:

- (a) Filing an application for reissue of a patent. [1 pt]
- (b) Requesting a correction in the name of patentee or inventor after a patent is issued. [1 pt]

C7. List two requirements that a registered foreign practitioner must fulfill in order to act on behalf of an applicant or patentee. [2 pts]

C8. Name two of the three kinds of fee that must be paid in connection with every international application. [2 pts]

C9. True or False [1 pt each]

- (a) Upon the refusal of an application by the Commissioner, the applicant has four months from the date of the decision to appeal to the Federal Court.
- (b) A party filing a protest or a filing of prior art can request that the protest or filing of prior art remain confidential.
- (c) Applicants have three months from the earliest date on which the Commissioner receives any document or information required for establishing a filing date, to add the missing part to the application.
- (d) Disclaimer is a mechanism whereby a patentee may, at any time during the life of a patent, amend a patent to claim less than that which was claimed in the original patent.
- (e) The document describing the invention (the description) does not need to be in English or French to establish a filing date.

- (f) The description of a patent application must provide a theory explaining why the invention works.

CANADIAN PATENT AGENT QUALIFYING EXAMINATION 2022
MARKING GUIDE for PAPER C – PATENT OFFICE PRACTICE

Part A – Question C1 [total of 80 pts]

EXAMPLE CLAIM SET

1. A tree protection system comprising:
a flexible UV-stable first layer including a plurality of openings with a maximum dimension between about 5 mm and about 9 mm formed therein, the first layer configured to protectively surround at least the base of a tree;
and a unitary fastener adapted to secure overlapping opposed portions of the first layer together during protectively surrounding at least the base of the tree in response to application of a single force directed toward the opposed portions;
wherein the fastener comprises:
a head at a first end;
a shaft extending from the first end to a second end defining a tip; and
at least two resilient prongs extending from the tip toward the first end; [orig. claim 5]
wherein the at least two resilient prongs form a V shape [par. 42], each prong including a radially inwardly directed tapered portion formed between opposed ends of the prongs; [par. 45]
and wherein the difference in length between the shaft and the prongs creates a prong-head gap that is sufficiently large to ensure that the first layer is fastened securely [or, eg.: wherein a predetermined spacing between the head and the prongs ensures that the first layer is fastened securely.] [par. 44]
2. The tree protection system of claim 1, wherein the maximum dimension of the plurality of openings of the first layer is between about 6 mm and about 8 mm. [orig. claim 1]
3. The tree protection system of claim 1, wherein the maximum dimension of the plurality of openings of the first layer is between about 6 mm and about 7 mm. [orig. claim 1]
4. The tree protection system of any one of claims 1 to 3, further comprising:
a flexible UV-stable second layer overlying and secured to the first layer, the second layer impervious to herbicides, the first layer and the second layer configured to protectively surround at least the base of the tree. [orig. claim 2]
5. The tree protection system of claim 4, further comprising:
a flexible UV-stable third layer at least partially overlying and secured to one of the second layer and the first layer, the third layer configured to protect the tree from frost cracking by reflecting light. [orig. claim 3; par. 38]

6. The tree protection system of claim 4, wherein the second layer is a film having a thickness between about 0.001 mm and about 0.3 mm. [orig. claim 4]
7. The tree protection system of any one of claims 1 to 6, wherein the tip is rounded. [orig. claim 6]
8. The tree protection system of any one of claims 1 to 7, wherein the first layer has a thickness between about 1 mm and about 5 mm. [orig. claim 7]
9. The tree protection system of any one of claims 1 to 8, wherein the first layer is composed of high density polyethylene, low density polyethylene, acrylonitrile-butadiene-styrene copolymer, polypropylene, nylon or combination thereof. [orig. claim 8; par. 22]

Amendment to the claims [total of 34 pts]

... claim 1 [24 pts]:

- Incorporation of feature that confers novelty to the claimed subject matter (SM) (6 pts)
 - If claimed SM is disclosed by any one of D1-D3: 0 pt
- Incorporation of feature that confers inventiveness (18 pts)
 - If claimed SM is disclosed by any one of D1-D3 (i.e. not novel): 0 pt
 - If claimed SM is obvious having regard to any one or more of D1-D3: 0 pt
 - If claimed SM defines features not disclosed in D1-D3, but SM would be considered obvious having regard to common general knowledge (CGK): 4 pt
 - Note: if multiple unrelated features are added to the claims (the additional features not working together to provide a useful combination), only the “main feature” added will be considered for the above point attributions

Examples of marking for claim 1

Claim 1: “A tree protection system comprising: a flexible UV-stable first layer including a plurality of openings with a maximum dimension between about 5 mm and about 9 mm formed therein, the first layer configured to protectively surround at least the base of a tree; and a unitary fastener adapted to secure overlapping opposed portions of the first layer together during protectively surrounding at least the base of the tree in response to application of a single force directed toward the opposed portions; wherein the fastener comprises: a head at a first end; a shaft extending from the first end to a second end defining a tip; and at least two resilient prongs extending from the tip toward the first end; wherein the at least two resilient prongs form a V shape, each prong including a radially inwardly directed tapered portion formed between opposed ends of the prongs; and wherein the difference in length between the shaft and the prongs creates a prong-head gap that is sufficiently large to ensure that the first layer is fastened securely.”

- The feature “each prong including a radially inwardly directed tapered portion formed between opposed ends of the prongs” is not found in any one of D1-D3 : 6 pts (out of 6 pts max).
- The feature “each prong including a radially inwardly directed tapered portion formed between opposed ends of the prongs” is inventive having regard to any one or more of D1-D3, and would

not be considered obvious have regard to CGK; the advantages of this feature are discussed in par. 45 of the description : 18 pts (out of 18 pts max).

- Note: the “prong-head” gap is not necessary to establish novelty and inventiveness, but may be added to claim 1 for “utility” purposes (see paragraph 44 of the description).

Claim 1: “A tree protection system for protecting trees against rodents, comprising: a flexible UV-stable first layer including a plurality of openings with a maximum dimension between about 5 mm and about 9 mm formed therein, the first layer configured to protectively surround at least the base of a tree; a second layer overlying and secured to the first layer; and a unitary fastener adapted to secure overlapping opposed portions of the first layer together during protectively surrounding at least the base of the tree in response to application of a single force directed toward the opposed portions; wherein the fastener comprises: a head at a first end; a shaft extending from the first end to a second end defining a tip; and at least two resilient prongs extending from the tip toward the first end; wherein the at least two resilient prongs form a V shape, each prong including a radially inwardly directed tapered portion formed between opposed ends of the prongs; and wherein the difference in length between the shaft and the prongs creates a prong-head gap that is sufficiently large to ensure that the first layer is fastened securely.”

- As in the preceding example, the “tapered portion” feature confers novelty and inventiveness to claim 1 (24 pts).
- The following two features are unnecessary limitations (-5 pts): “for protecting trees against rodents” and “a second layer overlying and secured to the first layer”.

Claim 1: “A tree protection system comprising: a flexible UV-stable first layer including a plurality of openings with a maximum dimension between about 5 mm and about 9 mm formed therein, the first layer configured to protectively surround at least the base of a tree; and a unitary fastener adapted to secure overlapping opposed portions of the first layer together during protectively surrounding at least the base of the tree in response to application of a single force directed toward the opposed portions; wherein the fastener comprises: a head at a first end; a shaft extending from the first end to a second end defining a tip; and at least two resilient prongs extending from the tip toward the first end; wherein the at least two resilient prongs form a V shape.”

- The combination of features is not found in a single document (i.e. SM is novel with respect to each one of D1-D3): 6 pts (out of 6 pts max).
- The claim defines an aggregation of features found in D1 and D3 (i.e. not inventive): 0 pt (out of 18 pts max).

Claim 1: “A tree protection system comprising: a flexible UV-stable first layer including a plurality of openings with a maximum dimension between about 5 mm and about 9 mm formed therein, the first layer composed of a UV absorber-doped plastic configured to protectively surround at least the base of a tree; and a unitary fastener adapted to secure overlapping opposed portions of the first layer together during protectively surrounding at least the base of the tree in response to application of a single force directed toward the opposed portions.”

- All features of the claimed system are found in D2 (i.e. SM is not novel): 0 pts (out of 6 pts max).
- The claim also defines an aggregation of features found in D1 and D3 (i.e. not inventive): 0 pt (out of 18 pts max).

Claim 1: “A tree protection system comprising: a flexible UV-stable first layer including a plurality of openings defining a circle with a maximum dimension between about 5 mm and about 9 mm formed therein, the first layer configured to protectively surround at least the base of a tree; and a unitary fastener adapted to secure overlapping opposed portions of the first layer together during protectively surrounding at least the base of the tree in response to application of a single force directed toward the opposed portions.”

- The combination of features is not found in a single document (i.e. SM is novel with respect to each one of D1-D3): 6 pts (out of 6 pts max).
- The feature added to claim 1 provides no new or unexpected result; this is just one of the different but equivalent options presented in paragraph 31 of the description (i.e. not inventive): 0 pt (out of 18 pts max).

... dependent claims [7 pts]:

- Claim 1: correction of “preferably” and “more preferably” (1 pt)
- Claim 3: correction of antecedent problem for “second layer” (1 pt)
- Claim 3: addition of the feature necessary for protection from frost cracking (eg. white, light color, to reflect light, positioned on a sunlit side of the tree) (1 pt)
- Claim 4: correction of antecedent problem for “second layer” (1 pt)
- Claim 8: correction of “of claims...” (1 pt)
- Claim 8: correction of claim referring to itself (1 pt)
- Claim 8: replacement of “Novodur” by “acrylonitrile-butadiene-styrene (ABS) copolymer” (1 pt)

Clarity [3 pts]:

- Any defect introduced in the claims that contravenes to subsection 27(4) of the *Patent Act* or section 63 of the *Patent Rules*; examples include: claim numbering defects, claim dependency problems, antecedent problems, syntax errors, etc.
 - 0 clarity defect: 3 pts
 - 1 clarity defect: 2 pts
 - 2 clarity defects: 1 pt
 - ≥ 3 clarity defects: 0 pt

Response to examination report [total of 46 pts]

Prior Art Objections

- Discussion of the prior art documents [3 pts]
 - The disclosures of each one of D1, D2 and D3 must be at least briefly discussed (1 pt for each document)
- Discussion of novelty [5 pts]
 - Discuss key feature(s) distinguishing the amended claims from the cited prior art.

- Statement alleging novelty of claim 1 (1 pt)
- Statement alleging novelty of all remaining claims (1 pt)
- Valid argument explaining that the new feature(s) of claim 1 are not found in D1 (3 pts)
 - Eg. the first two conditions are met, but argument is wrong: 2 pts
 - Eg. the first and third conditions are met, but it is not explicitly stated that the dependent claims are also novel (for instance, at least through their dependence of claim 1) 4 pts
- Discussion of obviousness [10 pts]
 - Discuss what makes the novel feature(s) inventive (advantages, improved functions, etc.)
 - Statement alleging inventiveness of claim 1 (1 pt)
 - Statement alleging inventiveness of all remaining claims (1 pt)
 - Discussion of unexpected/inventive result (5 pts)
 - The discussed unexpected/inventive result is factual (3 pts)

Non-Prior Art Objections

- Discussion of support for claim amendments [5 pts]
 - Points awarded proportional to completeness of discussion:
 - if eg. 100% of added features are correctly covered by discussion: 5 pts
 - if eg. 50% of added features are correctly covered by discussion: 3 pts
 - marks deducted for overly broad support references (eg. mentioning support from par. 34-38 for feature X when X is not actually discussed in par. 35 and 37)
 - no more than 2 pts (total) for a general statement encompassing all added features (eg. “support for the features added to claim 1 is found in paragraphs 34, 38 and 42”)

Example based on “Example Claim 1” above

- “wherein the fastener comprises: ... extending from the tip toward the first end”
 - Support: original claim 5; or par. 42, Fig. 4
- “... two resilient prongs form a V shape”
 - Support: par. 42
- “... tapered portion formed between opposed ends of the prongs”
 - Support: par. 45
- “... creates a prong-head gap that is sufficiently large to ensure that the first layer is fastened securely”
 - Support: par. 44

*** Full marks (5 pts) for all references mentioned here; at least 1 pt deducted for each missing or incorrect reference; at least one pt deducted for each overly broad reference.

- Discussion of how the following defects have been corrected [13 pts]
 - Claim 1 : “preferably”, “more preferably” (1 pt)
 - Claim 3: antecedent problem for “second layer” (1 pt)
 - Claim 3: “configured to protect the tree...” (1 pt)

- Claim 4: antecedent problem for “second layer” (1 pt)
- Claim 8: “of claims...” (1 pt)
- Claim 8: claim referring to itself (1 pt)
- Claim 8: “Novodur” (1 pt)
- Subsection 57(2) of the *Patent Rules*: mention that the internet address in par. 37 was removed (2 pts)
- Section 52 of the *Patent Rules*: mention that “Novodur” in par. 22 of the description has been identified as a TM (2 pts)
- Section 59 of the *Patent Rules*: mention that one of the “66” in Figure 4 has been replaced with “68” (2 pts); not more than 1 pt awarded for any other correction such as amending the description
- Provision of new abstract [10 pts]
 - Technical field, e.g. tree-protection (1 pt)
 - Technical problem & Gist of the solution that reflect the claimed invention (6 pts)
 - Not more than 150 words (1 pt; 0 if no abstract submitted)
 - Clarity (0, 1 or 2 pts); examples of clarity issues:
 - Poor syntax/grammar
 - Invention not clear from abstract (i.e. confusing abstract)
 - Optional elements (eg. “the invention may comprise...”; “in one embodiment, the invention comprises...”)
 - Note: if no new abstract is provided: 0 out of the 10 points

EXAMPLE ABSTRACT

A tree protection system includes a first layer configured to protectively surround the base of a tree and having a plurality of openings formed therein, and a unitary fastener adapted to secure overlapping opposed portions of the layer together. The fastener comprises a head at a first end, a shaft extending from the first end to a second end defining a tip, and at least two resilient prongs extending from the tip toward the first end. The resilient prongs define a V shape, and each prong includes a radially inwardly directed tapered portion formed between opposed ends of the prongs. The fastener also includes a prong-head gap capable of accommodating at least the thickness of the first layer to ensure secure fastening of said layer. The invention prevents inadvertent removal of the fastener and permits its easy temporary removal from the overlapping portions.

Part B – Questions C2-C9 [20 pts]

C2. Consider the following Canadian patent application and prior art document, and state whether or not the prior art document would be citable with regards to (i) anticipation and (ii) obviousness. If citable, indicate the relevant section of the *Patent Act*. [1 pt each]

- Patent application CA 3,XXX,001 filed by applicant A on September 6, 2017, with a valid priority date of September 16, 2016, and a publication date of March 16, 2018.
- Prior art: a patent application filed in Canada by a different applicant B on September 14, 2017, having a valid priority date of September 15, 2016 and published on March 22, 2018.

(i) Novelty: citable under paragraph 28.2(1)(d) of the *Patent Act*.

(ii) Obviousness: not citable.

C3. Consider the following Canadian patent application and prior art document, and state whether or not the prior art document would be citable with regards to (i) anticipation and (ii) obviousness. If citable, indicate the relevant section of the *Patent Act*. [1 pt each]

- Patent application CA 3,YYY,001 filed by applicant Z and inventors A. Brown, B. Grey, C. Green and D. Troutman on August 17, 2017, with a valid priority date of August 15, 2016, and a publication date of February 22, 2018.
- Prior art: a scientific article published on August 16, 2016 by multiple authors including one of the inventors of CA 3,YYY,001, and disclosing the claimed invention.

(i) Novelty: not citable.

(ii) Obviousness: not citable.

C4. When considering the requirements for unity of invention, two aspects of a given set of claims must be considered. One of these aspects is the need for a common set of elements among the claims. Name the other aspect. [2 pts]

Answer: The requirement that the common set of elements be new [1 pt] and unobvious (or inventive) [1 pt] over the prior art. [MOPOP 21.06]

C5. Name two of the three conditions that must be satisfied for a patentable selection. [2 pts]

Answer:

- The selection be based on some substantial advantage;
- The whole of the selection must possess the advantage; and
- The advantage must be in respect of a quality of a special character peculiar to the whole selection. [1 pt each, maximum 2 pts] [MOPOP 18.07]

C6. What are the time limits to perform the following actions:

- (a) Filing an application for reissue of a patent. [1 pt]
- (b) Requesting a correction in the name of patentee or inventor after a patent is issued. [1 pt]

Answers:

- (a) Four years from the grant of the original patent. [1 pt] [MOPOP 31.01.01]
- (b) Twelve months after the day the patent is issued. [1 pt] [MOPOP 28.04]

C7. List two requirements that a registered foreign practitioner must fulfill in order to act on behalf of an applicant or patentee. [2 pts]

Answer:

- Be explicitly allowed to take the requested action under the *Patent Rules*.
- Be given authorization by the applicant, patentee or other person as specified in the *Rules*.
- Be listed on the College's list of registered foreign practitioners. [1 pt each, maximum 2 pts] [MOPOP 5.02.02]

C8. Name two of the three kinds of fee that must be paid in connection with every international application. [2 pts]

Answer:

- Transmittal fee
- Search fee
- International filing fee [1 pt each, maximum 2 pts] [PCT Applicant's Guide - International Phase; https://www.wipo.int/pct/en/guide/ip05.html#_fees]

C9. True or False [1 pt each]

- (a) Upon the refusal of an application by the Commissioner, the applicant has four months from the date of the decision to appeal to the Federal Court. Answer: False [MOPOP 26.08.02]
- (b) A party filing a protest or a filing of prior art can request that the protest or filing of prior art remain confidential. Answer: False [MOPOP 24.04]
- (c) Applicants have three months from the earliest date on which the Commissioner receives any document or information required for establishing a filing date, to add the missing part to the application. Answer: False [MOPOP 3.02.05a]
- (d) Disclaimer is a mechanism whereby a patentee may, at any time during the life of a patent, amend a patent to claim less than that which was claimed in the original patent. Answer: True [MOPOP 29.01]
- (e) The document describing the invention (the description) does not need to be in English or French to establish a filing date. Answer: True [MOPOP 3.02.03]
- (f) The description of a patent application must provide a theory explaining why the invention works. Answer: False [MOPOP 14.02.06]

PATENT AGENT EXAMINATION 2022

PAPER D – PATENT INFRINGEMENT

This examination comprises **Part A** (analytical questions) and **Part B** (short questions).

Part A comprises Questions A1 to A5 and also includes documents D1 and D2.

Part B comprises Questions B1 to B9.

Instructions

Provide an appropriate answer to the following questions. Answers in point form are acceptable.

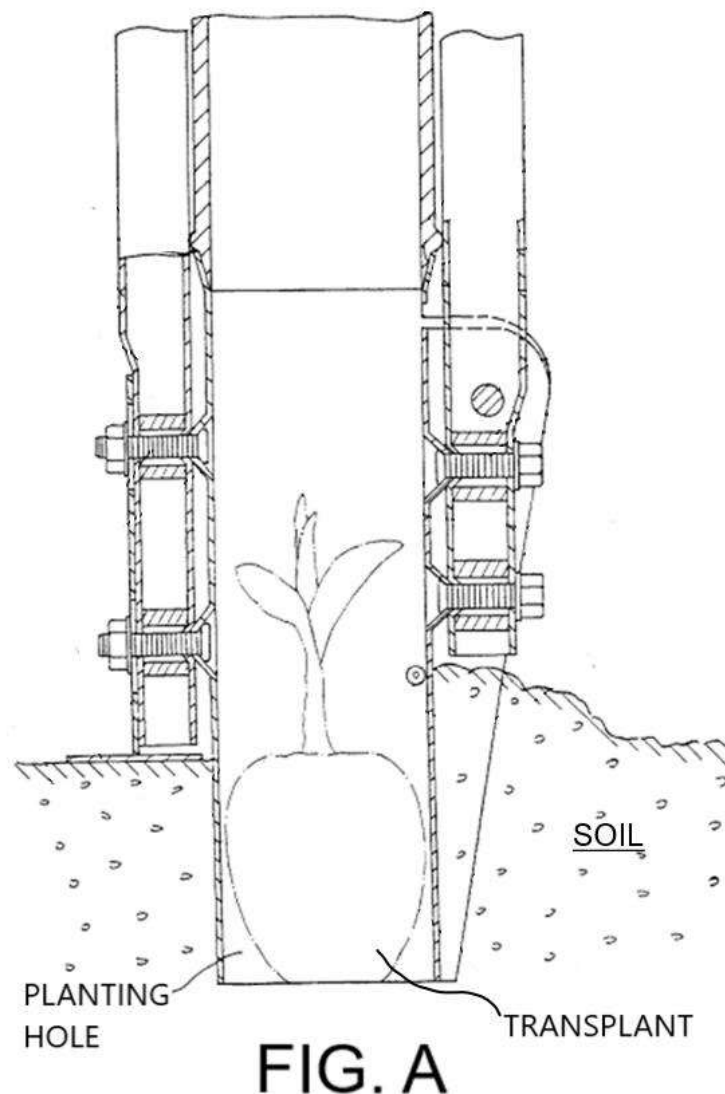
Unless expressly indicated otherwise, every answer must include a discussion and/or reasoning appropriate to the mark allocation. Do not provide irrelevant or extraneous commentary. Answer only what is asked and do not assume any facts that are not expressly stated.

Citations to legal authority (case law, statutory provisions, and/or regulatory provisions) are only required when explicitly requested and should be clear and precise. No marks will be awarded for boilerplate language.

Your infringement analyses must address all elements of the claims on their own merits. Do not simply conclude that a claim is not infringed by virtue of its dependency on an uninfringed claim. However, when a claim refers to a previous claim by number, you may incorporate your earlier analysis of the previous claim by reference rather than repeat your analysis. Any incorporation must be specific and relevant to the question at hand, and the location of the incorporated matter in your earlier analysis must be clearly and unambiguously identified.

By way of background, the invention that is the subject of this examination relates to a stand-up transplanter for moving transplants (i.e. small plants) from their starting pots (usually started indoors or in a greenhouse) to their final growing position outdoors in a field. As can be imagined, the process of taking small plants out of their starting pots, bending over to create a planting hole, inserting the transplant into the planting hole, and pressing the soil around the transplant into place can cause serious back strain for the person doing the transplanting.

Consequently, stand-up transplanter devices such as that shown in FIG. A below have been developed, to allow a planting hole to be formed and the transplant to be dropped into position without the need for a user of the transplanter to bend over. After removing the stand-up transplanter from its installation position, the user can then use their foot to press the soil into place around the transplant, avoiding a need to bend over and considerably reducing back strain on the user while also speeding up the transplanting process.



PART A – TOTAL 80 MARKS

The following two documents are included in Part A:

- D1: Canadian Patent No. 2,XXX,123 (the ‘123 PATENT) issued to Twin Flowers Growing Implements Inc.
- D2: Description and Drawings of the Bad Guys Wicked Plant Transplanter (the allegedly infringing device).
-

Question A1 [32 Marks Total]

A1A. For each of the following elements of the ‘123 PATENT, provide a **mapping** of that element to the corresponding element described in the ‘123 PATENT and a brief explanation of the **function** of that element. **[2 Marks Total]**

- (i) planting lever (claim 1) **(1 mark)**
- (ii) depth gauge (claim 3) **(1 mark)**

A1B. Provide a construction of each of the following terms that you would present if representing the indicated party in an infringement action, and after providing such construction, explain how your construction supports a finding that the construed term is present in the WICKED PLANT TRANSPLANTER (if representing the patentee) or is not present in the WICKED PLANT TRANSPLANTER (if representing the alleged infringer). **[30 Marks Total]**

Support your construction with appropriate explanation, having regard to the essential elements of each claim term as construed, explaining why an element is considered to be essential or non-essential. If you rely on a citation to a specific portion of the ‘123 PATENT to support your construction, you must specifically cite the relevant portion and explain how that citation supports your construction. No marks are awarded for merely citing portions of or repeating passages of the ‘123 PATENT without explaining how and why they support your answer.

No marks are awarded for mapping to the corresponding element of the ‘123 PATENT in this sub-question.

- (i) representing the patentee, construe “a planting lever” (claim 1) and explain how your construction supports a finding this element is present in the WICKED PLANT TRANSPLANTER **(7.5 marks)**;
- (ii) representing the alleged infringer, construe “a foot lever” (claim 2) and explain how your construction supports a finding this element is not present in the WICKED PLANT TRANSPLANTER **(7.5 marks)**;
- (iii) representing the alleged infringer, construe “vertically” (claim 6) and explain how your construction supports a finding this element is not present in the WICKED PLANT TRANSPLANTER **(7.5 marks)**;
- (iv) representing the alleged infringer, construe “a depth gauge” (claim 3) and explain how your construction supports a finding this element is not present in the WICKED PLANT TRANSPLANTER **(7.5 marks)**.

Question A2 [20.5 Marks Total]

- A2. Using the claim constructions from Part A1B(i)-(iv) (regardless of which party you were representing), explain whether claim 1 **(6.5 marks)**, claim 2 **(2 marks)**, claim 3 **(2 marks)**, claim 5 **(2.5 marks)** or claim 6 **(7.5 marks)** of the ‘123 PATENT are infringed, including a mapping of the corresponding component of the allegedly infringing device to each element of these claims and a brief explanation of how that element is or is not present. No further exposition on claim construction needs to be provided for the additional claim elements (i.e. you may assume a literal construction for any claim elements not already construed in question A1B).

Question A3 [12 Marks Total]

You are counsel for Bad Guys Planters, Inc. (“Bad Guys”), manufacturer of the Bad Guys WICKED PLANT TRANSPLANTER described in D2. Bad Guys has contacted you as it has just been served with a Statement of Claim for a Federal Court action for patent infringement of

Canadian patent No. 2,XXX,123 commenced against them on October 1, 2022 by Twin Flowers Growing Implements Inc. (“Twin Flowers”).

Bad Guys tells you it was aware of the ‘123 PATENT, and had licensed the invention for manufacture, promotion and sale pursuant to a non-exclusive license agreement with Twin Flowers dated October 1, 2020. That agreement did not include any release for any infringement that may have been conducted prior to the effective date of the license, although Bad Guys had been selling the WICKED PLANT TRANSPLANTER prior to entering the license agreement. However, based on advice from its previous counsel obtained after the ‘123 PATENT issued, Bad Guys had terminated that license on October 1, 2021 after selling off all of its remaining stock of the WICKED PLANT TRANSPLANTER. Bad Guys’ previous counsel had advised Bad Guys that there was no way that Bad Guys’ WICKED PLANT TRANSPLANTER infringed any claim of the ‘123 PATENT and advised it did not need to pay royalties going forward and could terminate the agreement. Bad Guys validly terminated the license agreement and paid all royalties required during the term of the agreement, so that there is no issue of breach of contract, and Bad Guys recommenced production and sale of the WICKED PLANT TRANSPLANTER on March 1, 2022. Since then, it has sold about 800 units, and continues to sell about 50 units per month on average.

Bad Guys assembles the WICKED PLANT TRANSPLANTER at a factory in Orillia, Ontario, from parts that are manufactured in China by Happy Sun Manufacturing Co., Ltd. (“Happy Sun”) to Bad Guys’ specifications and shipped to Canada by Happy Sun. Bad Guys sells its product directly to consumers in Canada through a website, and ships the product from its factory direct to the consumer.

A3A. Assuming that the WICKED PLANT TRANSPLANTER infringes at least one claim of the ‘123 PATENT, advise Bad Guys as to what activities it engages in that may give rise to liability for patent infringement, and the damages potentially available to Twin Flowers. Cite statutory authority. In explaining the available damages, specify only the general nature of the damages available and the period during which they would accrue—do not explain in detail how those damages would be quantified. **(7 marks)**

A3B. Is Happy Sun liable for patent infringement? Does your answer change if Happy Sun assembles the parts in China and ships the assembled parts to a warehouse in Vancouver and stores them there on behalf of (i) Bad Guys or (ii) for possible sale to other third parties? Cite case law authority. **(5 marks)**

Question A4 [8 Marks Total]

While Twin Flowers used to manufacture and sell its patented plant transplanter in Canada, it stopped doing so at the end of December, 2021. Twin Flowers stopped selling its product in Canada due to the introduction to the Canadian market of the Super Transplanter Plus, a product sold in Canada by Cheap Transplanters Inc. for less than 50% of the cost of both the WICKED PLANT TRANSPLANTER and the Twin Flowers product. The Super Transplanter Plus does not infringe the ‘123 PATENT, so Twin Flowers could not use its patent rights to stop the sale of the Super Transplanter Plus. The Super Transplanter Plus so undercut Twin Flowers’ market share due to its success that Twin Flowers determined its Canadian sales were not economically viable and discontinued them.

Cheap Transplanters Inc. had approached Bad Guys about becoming a Canadian distributor for the Super Transplanter Plus at around the time that Bad Guys elected to terminate its license agreement with Twin Flowers. However, since Bad Guys had been advised that its own product did not infringe the ‘123 PATENT, it instead elected to continue selling the WICKED PLANT TRANSPLANTER rather than shifting to sell the Super Transplanter Plus.

Advise Bad Guys as to how this factual matrix may affect the remedies available to Twin Flowers should it be successful in its infringement action. Cite case law authority.

Question A5 [7.5 Marks Total]

For the purposes of this question, you represent Twin Flowers. Twin Flowers is concerned about the presence of the limitation “vertically” in claim 6 of the ‘123 PATENT. The inventors feel that they had explained to the patent agent who prepared the ‘123 PATENT that the transplanter could be driven into the soil at an angle and then tilted into a vertical position to create the planting hole, and that this concept was not fully captured in claim 6 due to a possible misunderstanding.

Suggest two claim amendments that Twin Flowers could have made to result in a construction of claim 6 that differs from the answer you arrived at in question A1B(iii), briefly explaining why each amendment would have the intended effect of fully capturing the concept referred to in the paragraph above. Is there a way that Twin Flowers can make such claim amendments now? Advise as to how Twin Flowers could do this and any applicable deadlines, citing statutory authority.

END OF QUESTIONS IN PART A

PART B – TOTAL 20 MARKS**Question B1 [2 Marks Total]**

In July 2015, Company A obtained Canadian patent 2,XXX,334 containing claims covering the use of chemical X as a fire suppressant as well as a fire suppression system using chemical X. In March 2016, Company B developed and installed its own in-house fire suppression system in its New Brunswick manufacturing plants, which fire suppression system uses chemical X. Company B has never made the fire-suppression system commercially available.

B1A. Company A learned in June of this year that Company B had installed a fire suppression system that uses chemical X. Can Company A bring an action against Company B for infringement of the '334 patent? Cite statutory authority. **(1 mark)**

B1B. In August 2018, there was a fire at one of Company B's manufacturing plants and the fire suppression system was used to extinguish the fire. Can Company A bring an action against Company B for infringement of the '334 patent? Cite statutory authority. **(1 mark)**

Question B2 [2 Marks Total]

In March of 2020, Company C developed and installed an in-house fire suppression system in its Quebec manufacturing plants, which fire suppression system uses chemical Y. In September 2019, Company D obtained patent 2,XXX,871 for a fire suppression system using chemical Y, for which the scope of the claims covers the fire suppression system of Company C, and this patent is still in force.

B2A. In April 2022, after a maintenance check, Company C found that its fire suppression systems were susceptible to failure because of aging fire sensors, which are known to suffer performance degradation over time. Company C then proceeded to replace all of the fire sensors in their fire suppression systems. Can Company C be liable to Company D for infringement of the '871 patent? Cite case law authority. **(1 mark)**

B2B. In June 2022, there was a false fire alarm caused by one of the replaced fire sensors, which in turn caused the fire suppression system to activate and deploy all of its reserves of chemical Y. After replacing the faulty fire sensor, Company C refilled its fire

suppression system with chemical Y. Can Company C be liable to Company D for infringement of the '871 patent? Cite case law authority. **(1 mark)**

Question B3 [2 Marks Total]

Company E plans to open a facility in Brampton, Ontario to manufacture bicycle helmets. They have just found out that the manufacturing method they are planning on using at their facility is the subject of Canadian patent 3,XXX,257 owned by Company F. The first claim of the '257 patent recites the exact five steps of their method. Company E is concerned that Company F may bring an action against it for infringement of the '257 patent. They are contemplating making some changes to their plan such that only the first three of the five steps will be carried out by Company E in Brampton and the last two steps will be carried out by Company E in the United States. Ultimately, the helmets will be re-imported by Company E into Canada for sale by Company E in Canada.

B3A. Briefly outline your advice to Company E. Cite case law authority. **(1.5 marks)**

B3B. Would your answer change if the helmets were sold by Company E directly in the United States after completing the last two steps there? **(0.5 mark)**

Question B4 [2 Marks Total]

Company G is the holder of Canadian patent 2,XXX,586 for a water filtering system. Company H developed a work around competing filtering system based on an old water filtering system design that their patent agent believes lies outside the scope of the '586 patent. Soon after Company H's filtering system entered the Canadian market, Company G initiated infringement proceedings against Company H alleging that Company H's filtering system infringes the '586 patent. Company G's patent agent recognizes that Company H's filtering system could be viewed as falling outside the scope of the claims of the '586 patent. Accordingly, Company G's patent agent proposes to construe the claims broadly so as to capture the filtering system of Company H.

B4A. What is the risk to Company G if it adopts such an approach? **(1 mark)**

B4B. What is this specific risk commonly referred to as? **(1 mark)**

Question B5 [2 Marks Total]

Kelly lives in Calgary, Alberta, and having seen a new paintbrush at the hardware store decides to make one for herself. However, as it happens, Company I, the producer of the paintbrush, is the holder of Canadian Patent 3,XXX,172, for which the scope of the claims covers the paintbrush made by Kelly.

B5A. Is Kelly liable to Company I for infringement of the '172 patent if Kelly uses the paintbrush Kelly made to paint Kelly's parents' house in Edmonton, Alberta? Cite statutory authority. (1 mark)

B5B. Does your previous answer change if Kelly was aware there was a Canadian patent? Briefly explain why. (1 mark)

Question B6 [2 Marks Total]

Company J is the owner of Canadian patent 3,XXX,567 with claims covering a pharmaceutical product used to combat COVID-19. While the pharmaceutical product is widely available in Canada, its access is very limited for people living in developing countries, and Company K wants to manufacture the patented pharmaceutical product in St. John's, Newfoundland and distribute it to people in those developing countries. Can Company K do this without infringing the '567 patent? Is there anything Company K must do before proceeding? Cite statutory authority.

Question B7 [2 Marks Total]

Briefly explain the "promise" doctrine and its standing under Canadian law. Cite case law authority.

Question B8 [2 Marks Total]

Company L is located in Summerside, PEI and has just learned of the issuance of Canadian patent 3,XXX,456 to Company M. The claims of the '456 patent cover a composition that Company L has been making and selling in Summerside for many years now. Company L has two (2) Canadian licensees who have also been making and selling the composition in Canada for many years and has just started negotiations for a third Canadian license. You are consulted

by Company L as to a potential infringement lawsuit by Company M. Briefly outline your advice to Company L regarding:

B8A. Their own activities in Summerside. Cite statutory authority. **(1 mark)**

B8B. The activities of their two existing Canadian licensees. **(0.5 mark)**

B8C. The activities of the potential third Canadian licensee. **(0.5 mark)**

Question B9 [4 Marks Total]

A Chemistry professor from a well-known Canadian university has contacted you because they have received a cease and desist notice from Company N, the holder of Canadian Patent 2,XXX,789, alleging that the professor is inducing infringement. The '789 patent covers a method of producing a chemical compound that smells like roses. In the professor's chemistry course, the professor has included the exact method covered by the claims of the '789 patent in the course notes and talks through the method and answers questions about it in one of the professor's lectures.

B9A. Can the chemistry professor be held liable to Company N for inducing infringement of the '789 patent? Cite case law authority. **(3 marks)**

B9B. Would your answer change if the course includes a lab component where the students make the chemical compound through the method covered by the '789 patent? **(1 mark)**

END OF QUESTIONS IN PART B

CA 2XXX123 C 2021/06/15

(11)(21) **2 XXX 123**(12) **BREVET CANADIEN****CANADIAN PATENT**(13) **C**

(22) Date de dépôt/Filing Date: 2018/08/22	(72) Inventeurs/Inventors:
(41) Mise à la disp. pub./Open to Public Insp.: 2019/02/23	JOHNSON, IRIS, CA
(45) Date de délivrance/Issue Date: 2021/06/15	JOHNSON, POPPY, CA
(30) Priorité/Priority: 2017/08/23	(73) Propriétaires/Owners:
	TWIN FLOWERS GROWING
	IMPLEMENTS INC., CA

[REMAINDER OF COVER PAGE, ABSTRACT AND SUMMARY OMITTED]**STAND-UP TRANSPLANTER DEVICE AND METHOD**Field of the Invention

[0001] The subject invention relates to a stand-up transplanter to facilitate the planting of young transplants out into a growing field while minimizing physical strain on the operator of the transplanter.

Background

[0002] In regions of the world that experience colder winters, it is a common practice for farmers to start plants from seed in a greenhouse, basement, or other heated structure early in the growing season. The plants can be grown indoors while the weather outside is too cold to permit plant growth, so that the farmer can start young plants germinating and growing early in the season. Once warmer weather conditions arrive in spring, the young plants can be transplanted out into a field and will be ready for harvest considerably earlier than if the plants had been planted from seed directly in the field only after the arrival of suitable weather conditions. Such young plants that are moved from an indoor growing setting out into a field are often referred to as “transplants”.

[0003] While the practice of starting plants from seed indoors and then transplanting young plants out into the field as soon as weather conditions are suitable is highly advantageous for increasing the period during which a farm can be productive, it is highly labour intensive for the farmer. In particular, the process of planting out transplants one-by-one in the field requires the farmer to be stooped over for several hours at a time, and takes a considerable amount of time for each individual plant. Thus, planting out several thousand transplants into a field requires a major investment of labour.

[0004] It is an object of the present invention to decrease the amount of labour required to transplant young plants out into the field. It is a further object of the present invention to decrease the amount of physical strain on the farmer involved in transplanting young plants out in the field.

[0005] A preferred embodiment of the invention will be illustrated in the following with the aid of the accompanying drawings.

Description of the Drawings

[0006] FIG. 1A shows the planting tube with the jaws closed, and

[0007] FIG. 1B shows the same tube with the jaws open.

Detailed Description of the Invention

[0008] The present invention provides a planting tube that can be manipulated by a farmer to (a) form a planting hole into which a transplant can be placed out in the field and (b) allow the farmer to insert the transplant into the planting hole while remaining in a standing position. To complete the planting process, after the transplant has been deposited into the planting hole and the apparatus of the present invention has been removed, the farmer can use their foot to press the soil around the transplant into place. In this way, the farmer can remain standing during the entire process of forming a planting hole, placing the transplant in the planting hole, and pressing soil into place around the transplant. This considerably reduces the physical wear experienced by the farmer while transplanting, as well as speeding up the process.

[0009] The main parts of the planting tube are the frame tube **1**, the blade part **2**, and the catch and releasing device **3**. The frame tube **1** is a tube of circular cross-section whose top and bottom are open. At the top end of the tube, there is a funnel-shaped widening **4**, which facilitates the placing of a transplant into the tube. Also, at the top end of the tube, there is a handle **5**. The diameter of the tube is chosen so that it is somewhat larger than the diameter of the ball of the plants to be planted. The height is preferably such that the user of the device can work without bending.

[0010] The blade part **2** consists of a stationary jaw **6** and of a pivoting jaw **7** with foot lever **8**.

[0011] The stationary jaw **6** is fixed as an extension of the bottom portion of the tube at the side of the tube where the handle **5** is, i.e. at the rear side. Its shape is that of a wedge-shaped piece cut off out of a cylinder face, the tip being directed downwards.

[0012] On the stationary jaw **6**, in its top portion, there are two horizontal pins **9** at opposite sides. On these pins, a bracket **10** is mounted, one of whose branches is considerably longer and forms a foot lever **8**, which extends to the rear side of the tube.

[0013] To the loop of the bracket **10**, the pivoting jaw **7** is attached, whose shape corresponds to the shape of the stationary jaw **6**. The jaws are placed so that, when in the closed position, they form a wedge-shaped blade. When the pivoting jaw **7** is opened, an opening corresponding to the diameter of the tube is formed.

[0014] The catch and discharge device **3** comprises a rod **11**, a trigger lever **12**, and a draw spring **13**.

[0015] The trigger lever **12** is a piece having substantially a shape of a wide V, which is mounted by its angle point, with the branches directed downwards, on the top portion of the tube at the left side of the handle **5**. The lever **12** can revolve rearwards only up to the point where the rear branch of the lever meets a trigger limiter **14** projecting from the frame.

[0016] The shape of the rod **11** is curved, and its top end is mounted by means of a fork **17** on the front branch of the trigger lever **12**, and the bottom end by means of a fork **18** on the foot lever **8** at the rear side of the tube.

[0017] The bottom end of the spring **13** is attached to the rod **11**, and the top end to an ear **15** on the tube. The spring **13** attempts to pull the rod **11** upwards and, in this way, to close the jaws **6** and **7** of the blade and, at the same time, to lock the lever **12** at either one of its extreme positions. The rod **11**, the trigger lever **12**, and the limiter **14** are dimensioned and placed in such a way that, when the trigger lever **12** rests on the limiter **14**, the pivoting jaw **7** is open over a distance equalling the width of the planting pit.

[0018] The parts of the catch and discharge device may, of course, also be placed in a sequence different from that described above, and they may have different shapes. In particular, the shape and the place of location of the trigger lever may also be varied. The spring may also be chosen and located in different ways.

[0019] On the planting tube, in the top portion of the stationary jaw **6**, there is a projecting limiter **16** of the planting depth, which may also be used as a pedal when the tube is pushed into the ground. In use, the limiter **16** is positioned level with the soil surface to set the position of the jaws **6** and **7**. The limiter **16** is displaceable in the vertical direction, e.g. via adjustable screws (not shown) that allow the limiter **16** to be moved vertically upwardly or downwardly. In this way, it is possible to adjust the depth of the planting pit by adjusting the vertical distance between limiter **16** and the distal tips of jaws **6** and **7**.

[0020] In use when transplants are being planted, the tube is pressed vertically into the ground with the blade closed (FIG. 1A). It is important to insert the tube vertically into the ground approximately perpendicular to the soil surface, to ensure proper vertical orientation of the planted transplant. If the tube is not inserted directly vertically into the ground, the tube must be straightened into a vertical orientation prior to proceeding with the remaining steps in planting the transplant, or the transplant will be oriented at an angle and its growth will suffer.

[0021] As the blade is inserted into the soil, the soil will be displaced around either side of the blade. Once the blade has been pressed into the desired depth, the foot lever **8** is depressed until the pivoting jaw **7** is open (FIG. 1B), which forces the soil on the outer edge of the pivoting jaw **7** further outwardly to thereby form a planting hole of sufficiently wide diameter to receive the transplant.

[0022] After pivoting jaw 7 is pushed fully outwardly, the spring 13 locks the trigger lever 12 in the rear extreme position against the limiter 14. In this way, the pivoting jaw 7 is locked in the open position, and the plant can be dropped through the tube into the planting pit.

[0023] After the plant has been dropped into the pit, the tube 1 is lifted up and the soil is compacted around the plant, e.g. by the farmer using foot pressure to compact the surrounding soil against the root ball of the transplant, thereby backfilling the planting hole. While the tube 1 is being lifted away from the transplant, it is important that jaws 6 and 7 remain in the fully open position, to avoid closing against, and thereby potentially damaging, the fragile transplant. Trigger lever 12 thus remains locked in place against limiter 14 through the action of spring 13 to hold jaws 6 and 7 in the fully open position during this process.

[0024] When the rear branch of the trigger lever 12 is depressed slightly, the lever 8 is returned by means of the spring 13 to its front extreme position, and the jaw 7 is closed. The planting tube is thus ready for use to plant the next transplant.

[0025] While various embodiments of the present invention have been described above, it should be understood that they have been presented by way of example only, and not of limitation.

Fig.1a.

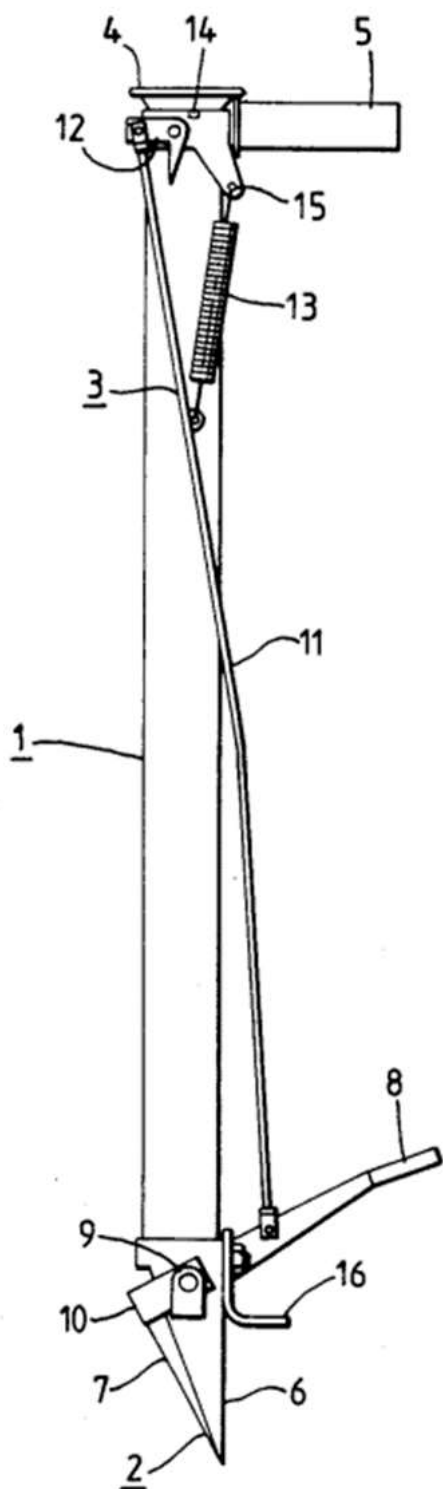
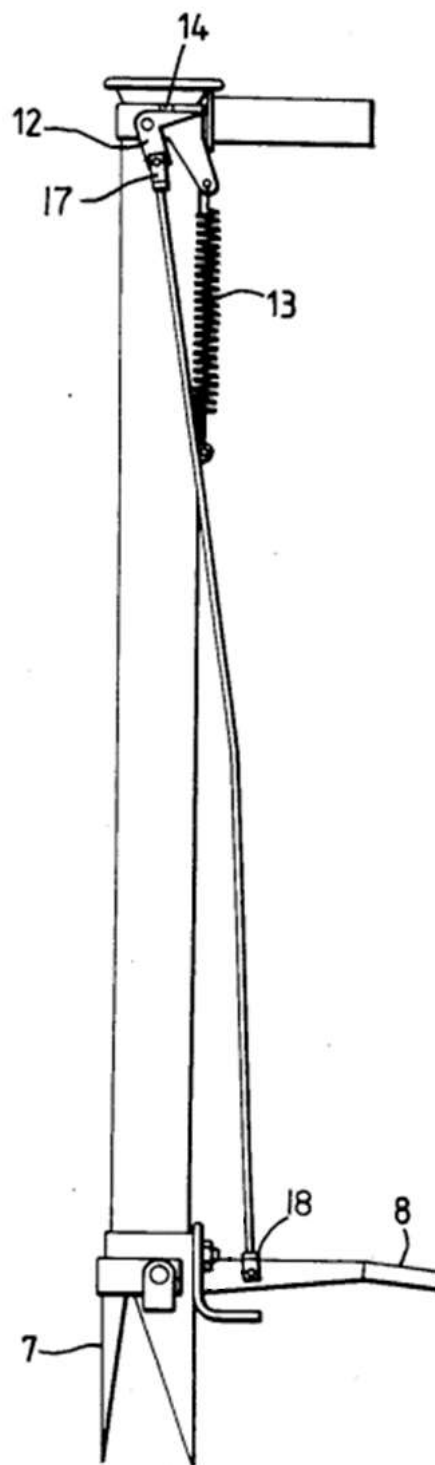


Fig.1b.



Claims

1. A stand-up transplanter for planting transplants in soil, the transplanter comprising:
 - a frame tube open at its top and bottom ends;
 - a stationary jaw positioned at the bottom end of the frame tube;
 - a pivoting jaw rotatably mounted to the bottom end of the frame tube, the pivoting jaw and the stationary jaw having a closed position in which the stationary jaw and the pivoting jaw form a wedge-shaped blade and an open position in which the stationary jaw and the pivoting jaw form an extension of the frame tube having a diameter at least as large as a diameter of the frame tube;
 - a planting lever operably connected to the pivoting jaw and adapted to rotate the pivoting jaw from the closed position to the open position;
 - a rod operably connected between the planting lever and a trigger lever; and
 - a spring connected to the rod and positioned to urge the pivoting jaw toward the closed position.
2. A stand-up transplanter as defined in claim 1, wherein the planting lever comprises a foot lever.
3. A stand-up transplanter as defined in claim 1, comprising a depth gauge for positioning the wedge-shaped blade relative to a surface of the soil.
4. A stand-up transplanter as defined in claim 3, wherein the depth gauge is adjustable to vary a depth of a planting hole formed by the blade.
5. A stand-up transplanter as defined in either claim 1 or claim 2, comprising a handle.
6. A method of planting transplants in soil using a stand-up transplanter, the method comprising steps of:
 - inserting a wedge-shaped blade at a base of the stand-up transplanter vertically into the soil to a desired depth, the wedge-shaped blade having a pivoting jaw rotatably coupled to a stationary jaw;

rotating the pivoting jaw relative to the stationary jaw to form a planting hole;
dropping a transplant through a tube-shaped housing of the stand-up transplanter
and through the pivoting jaw;
lifting the stand-up transplanter away from the transplant; and
pressing the soil around the transplant.

7. A method as defined in claim 6, wherein the step of inserting the wedge-shaped blade into the soil to the desired depth comprises aligning a depth gauge provided on the wedge-shaped blade with a surface of the soil.

8. A method as defined in claim 6, wherein the step of rotating the pivoting jaw relative to the stationary jaw to form the planting hole comprises using a foot lever to rotate the pivoting jaw.

THE BAD GUYS WICKED PLANT TRANSPLANTER

FIG. B is a side view of the Bad Guys WICKED PLANT TRANSPLANTER, which is used for planting out transplants into a field. FIG. C is a detail view of a portion of FIG. B showing the angular latch restraint and upper end of the drawbar thereof.

The WICKED PLANT TRANSPLANTER comprises an upwardly open tube **E** of such a diameter that a transplant will fall unaidedly through it by its own weight. A beak half **F** is fixedly attached to the lower end of the tube, and a hinged beak half **G** is hingedly attached to the tube by a shaft **H**. At least one foot plate **I** rigidly extends from the tube in a direction parallel to the shaft **H**.

Joined fixedly to the hinged beak half are a lever **J** pointing towards the operator and a ground plate **K** normally pointing away from the operator. The lever **J** is connected to a drawbar **M** which is pulled upwards by a spring **N**. The drawbar **M** is surrounded by a vertical protective rail **O** attached along an outside surface of the tube **E**. The drawbar **M** is made such that its upper end **P** has a free equilibrium position spaced some distance from the outside surface of the tube either because of a slight elastic curvature of that upper end or because of the action of a separate spring (not shown), which facilitates the interaction of upper end **P** with latch restraint **Q** as described below and as shown in more detail in FIG. C.

A latch restraint **Q** is attached to the upper end of the rail **O**. In a lower position of the drawbar **M**, corresponding to a fully open beak, an upper end **P** of the drawbar does not extend above a reference edge of the restraint **Q**, but rather rests against an inside corner of the restraint **Q** under the influence of the spring **N** in order to latch the beak in the open condition. When the beak is partly or fully closed, the upper end **P** of the drawbar **M** will extend above the restraint **Q** by extending through an opening formed between the tube **E** and the inner reference edge of the restraint **Q**.

A handle **R** is attached to the rail **O**. Pivotably mounted on the handle **R** is a trigger **S** which includes a bridge portion carrying a tongue **T**. When the trigger **S** is rotated downwardly by the thumb of the operator (i.e., rotated clockwise in FIG. B), the bridge moves horizontally within a slot (not shown) formed between the rail **O** and the handle **R** whereby the tongue **T** presses the

29 drawbar **M** radially inwardly towards the tube **E**. This allows the upper end **P** of the drawbar to
30 slide past the edge of the restraint **Q** under the action of the spring **N** which closes the beak.

31 For planting a transplant, the beak is initially closed with the fixed beak half **F** in tight contact
32 with the hinged beak half **G** to form a wedge shape. With one foot on the foot plate **I** and the
33 lower end of the tube **E** pointing slightly forward at an angle relative to the soil surface so that
34 the ground plate **K** extends approximately parallel to the soil surface, the beak is pressed into the
35 ground so deeply that the ground plate **K** touches the soil surface, still extending generally
36 parallel to the soil surface.

37 Then, the upper end of the tube with the handle **R** is rotated forward by the operator to a vertical
38 position. During this process, the ground plate **K** remains in contact with and generally parallel
39 to the soil surface and thereby exerts a force that prevents the hinged beak half **G** from any
40 rotational motion. The hinged beak half **G** thus remains fixed in position, extending
41 approximately perpendicularly to the soil surface. Rotation of handle **R** thus results in the
42 rotational movement of the fixed beak half **F**, which results in the opening of the beak. In so
43 doing, the fixed beak half **F** thereby loosens some soil towards the operator to make a planting
44 hole.

45 When the tube has been brought so far forward that the beak is fully open (i.e. so that both
46 hinged beak half **G** and fixed beak half **F** extend generally perpendicularly downwardly from the
47 soil surface), a transplant falling through tube **E** will not catch in the beak because the beak is at
48 least as wide in diameter as the tube **E**. At this point, the upper end **P** of the drawbar **M** will
49 have been pulled downwardly below the edge of the restraint **Q** and the drawbar **M** of the
50 restraint, thereby latching the beak in the open position due to the return of the upper end **P** to its
51 equilibrium position spaced radially outwardly from tube **E**.

52 The transplant is then dropped through the tube and into the hole. The operator may then check
53 to verify that the upper indicator portion of the drawbar **M** is still not visible, indicating that the
54 wedge-shaped blade is still in its open position so that the planting tube can be lifted out of
55 position without damaging the plant. Thereafter, the soil loosened by the fixed beak half **F** on the
56 side of the hole towards the operator can be compacted with the foot. By pressing the trigger **S**
57 with the thumb, the upper end **P** of the drawbar **M** is freed from the corner of the restraint **Q**.

58 To allow the beak halves **F** and **G** to be inserted into the ground to a variety of different depths,
59 ground plate **K** is provided with a perpendicular extension **U**, which is affixed to hinged beak
60 half **G** via a removable screw **V**. A user can unscrew screw **V** and slide perpendicular extension
61 **U** upwardly or downwardly relative to hinged beak half **G** in order to change the relative
62 elevation at which ground plate **K** is positioned.

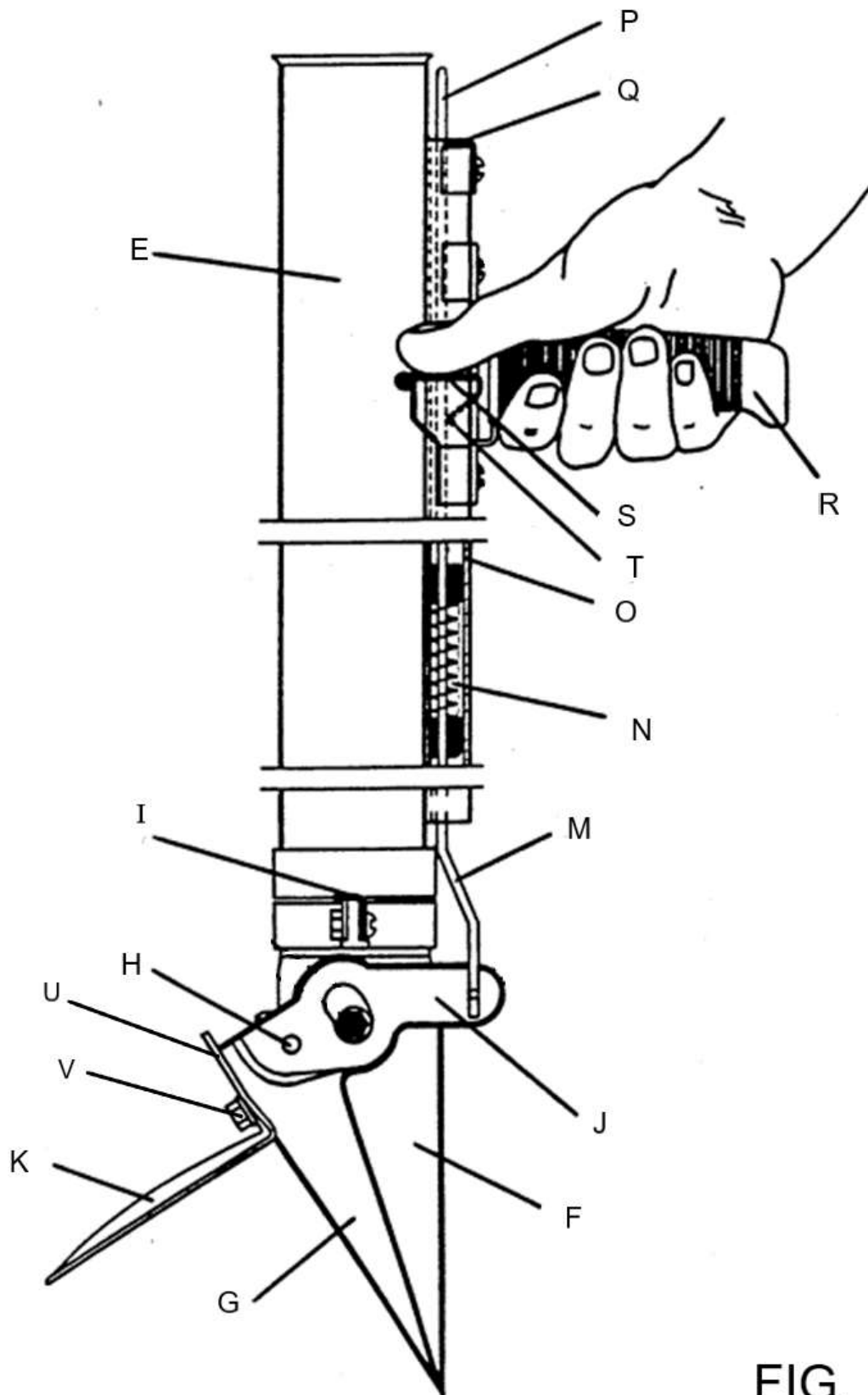


FIG. B

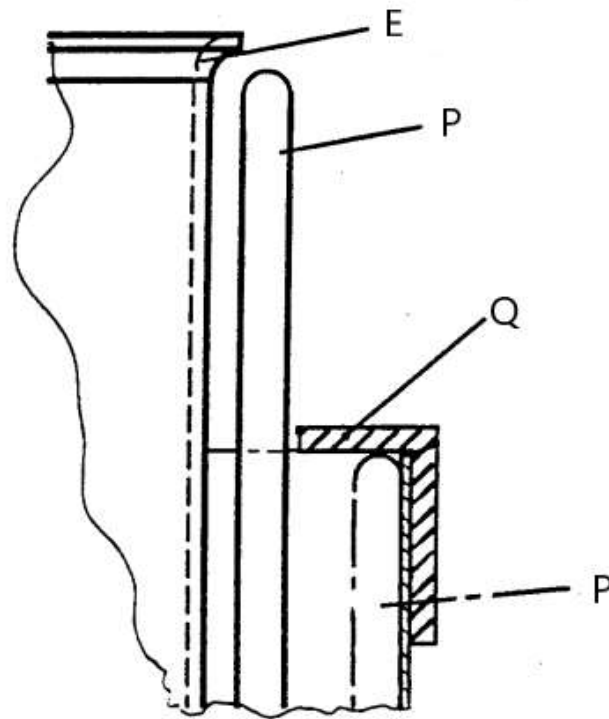


FIG. C

END OF PAPER D

MARKING GUIDE

2022 PAPER D

Question A1A Mapping [2 Marks Total]

Element	Mapping	Function
(i) planting lever (claim 1);	Foot lever 8 [0.5 marks]	Can be depressed to open the rotatable jaw [0.5 marks]
(ii) depth gauge (claim 3);	Limiter 16 [0.5 marks]	To determine the depth of a planting hole formed by the device by being positioned level with the soil surface [0.5 marks]

Question A1B Claim Construction [30 Marks Total]

(i) “a planting lever” for the patentee **[7.5 marks]**

- Patentee will argue that it is an essential feature that the planting lever be any kind of lever that can actuate the rotatable jaw **[0.5 marks]** specifically this is not limited to a lever that is actuated by the foot **[0.5 marks]** – must expressly mention foot actuation to receive mark]
- Supported by inventor’s intent as inferred from the language of the claims, claim differentiation **[0.5 marks]**
 - Language of claim 1 says “planting lever” **[0.5 marks]** while language of claim 2 says the planting lever comprises a “foot lever” **[0.5 marks]**
 - Suggests a difference in meaning between “planting lever” and “foot lever” is intended **[0.5 marks]**, so the planting lever is not limited to a foot-actuated lever **[0.5 marks]**
- Material effect **[0.5 marks]**
 - Person skilled in the art would recognize that the purpose of the planting lever is to rotate the pivoting jaw to the open position **[1.0 marks]**
 - Any lever that can be manipulated to rotate the pivoting jaw would provide this function **[1.0 marks]**
- This construction supports a finding of infringement because this essential feature is present in the Wicked Plant Transplanter **[0.5 marks]** – ground plate K **[0.5 marks]** can be used to rotate the pivoting jaw to the open position **[0.5 marks]**

(ii) “a foot lever” for the infringer **[7.5 marks]**

- The infringer will argue that it is essential that a foot lever is actuated using a user's foot **[1.0 marks]**
- This interpretation is supported by the inventor's intent as inferred from the language of the claims/claim differentiation **[0.5 marks]**
 - Language of claim 1 says "planting lever" **[0.5 marks]** while language of claim 2 says the planting lever comprises a "foot lever" **[0.5 marks]**
 - Suggests a difference in meaning between "planting lever" and "foot lever" is intended **[0.5 marks]**, so the foot lever is narrower than a planting lever **[0.5 marks]**
- Material effect **[0.5 marks]**
 - The purpose of the foot lever is to allow a user to use their foot to apply the force necessary to open the pivoting jaw **[1 mark]**
 - Use of soil to apply the force to open the pivoting jaw is performing the same function but in a materially different manner because the user is not directly applying the force **[1 mark]**
- This interpretation supports a finding of no infringement because this essential feature is not present in the Wicked Plant Transplanter **[0.5 marks]** – the user does not use their foot **[0.5 marks]** to actuate ground plate K **[0.5 marks]**

(iii) "vertically" for the infringer **[7.5 marks]**

- Infringer will argue that it is an essential feature that vertically means essentially perpendicular to the ground **[1 mark]**
- Inventor's intent based on the language of the claims **[0.5 marks]**
 - Whether "vertically" means strictly vertical is not clear from the claim language, so recourse to the specification for interpretation is permissible **[1 mark]**
 - Paragraph [0020] teaches that "vertically" means approximately perpendicular to the soil surface **[1 mark]**
- Supported by material effect **[0.5 marks]**
 - Invention is taught as displacing the soil by pivoting the pivoting jaw 7 relative to the stationary jaw 6 which is inserted perpendicular to soil surface **[1 mark]**, citations to 6 and 7 not required for marks]
 - The concept of holding the pivoting jaw in a fixed position while rotating the stationary jaw by rotating the tube performs the same function but in a materially different way **[1 mark]**

This construction supports a finding of no infringement because this essential feature is absent **[0.5 marks]**, the Wicked Plant Transplanter is inserted into the soil at an angle, not vertically **[1 mark]**

(iv) "a depth gauge" for the infringer **[7.5 marks]**

- Infringer will argue that it is an essential feature that the depth gauge be provided as a separate component of the transplanter [**1 mark**]
- Inventor's intent based on the language of the claims [**0.5 marks**]
 - The planting lever and the depth gauge are recited as two separate elements [**0.5 marks**], suggesting that these components must be provided by two different physical structures [**0.5 marks**]
 - There is no indication in the language of any of the claims that these two elements could be provided by the same structure [**1 mark**]
- Supported by material effect [**0.5 marks**]
 - Although the person skilled in the art would recognize that alternative structures that are not necessarily a separate element could perform the function of setting the depth of the planting jaws [**1 mark**]
 - on balance the inventor's intent prevails and this is a self-inflicted wound because of the language used in the claims [**1 mark**]
- This construction supports a finding of no infringement because this essential feature is absent [**0.5 marks**], the depth gauge K is also the planting lever [**1 mark**, must cite K for full marks]

Question A2 Analysis of Claim Infringement [20.5 Marks Total]

Claim 1 [6.5 marks]

A stand-up transplanter for planting transplants in soil	Wicked Plant Transplanter is for transplanting out transplants into soil [0.5 marks]
a frame tube open at its top and bottom ends	Present: tube E [0.5 marks]
a stationary jaw positioned at the bottom end of the frame tube	Present: fixed beak half F [0.5 marks]
a pivoting jaw rotatably mounted to the bottom end of the frame tube	Present: hinged beak half G [0.5 marks]
the pivoting jaw and the stationary jaw having a closed position in which the stationary jaw and the pivoting jaw form a wedge-shaped blade	Present: initial position in which fixed beak half is in tight contact with hinged beak half to form a wedge shape [0.5 marks]
and an open position in which the stationary jaw and the pivoting jaw form an extension of the frame tube having a diameter at least as large as a diameter of the frame tube	Present: when beak is fully open, diameter of beak is at least as wide as tube E [0.5 marks]
a planting lever	Present: ground plate K [0.5 marks]
operably connected to the pivoting jaw and adapted to rotate the pivoting jaw from the closed position to the open position	Present: when the tube is rotated by an operator to the vertical position, ground plate K remains in contact with the soil surface and prevents rotation of hinged beak half G [0.5 marks] so fixed beak half F can move to the open position [0.5]

	marks] [citations to letters not required for full marks]
a rod operably connected between the planting lever and a trigger lever	Present: drawbar M [0.5 marks]
a spring connected to the rod	Present: spring N [0.5 marks]
and positioned to urge the pivoting jaw toward the closed position	Present: drawbar M is pulled upwards by spring N [0.5 marks] , citations to letters not required for mark]
Conclusion	Infringed [0.5 marks]

Claim 2 [2 marks]

A stand-up transplanter as defined in claim 1	Present: all elements of claim 1 are present [0.5 marks]
wherein the planting lever comprises a foot lever	Not Present [0.5 marks] As construed in A1B(ii), ground plate K is not a “foot lever” [or accept explanation that foot lever must be actuated by foot] [0.5 marks]
Conclusion	Not infringed [0.5 marks]

Claim 3 [2 marks]

A stand-up transplanter as defined in claim 1	Present: all elements of claim 1 are present [0.5 marks]
comprising a depth gauge for positioning the wedge-shaped blade relative to a surface of the soil	Not present [0.5 marks] as construed in A1B(iv), it was determined that ground plate K is not a depth gauge [or accept explanation that depth gauge must be a separate element from the planting lever] [0.5 marks]
Conclusion	Not infringed as not all elements present [0.5 marks]

Claim 5 [2.5 marks]

A stand-up transplanter as defined in either claim 1	Present: all elements of claim 1 are present [0.5 marks]
or claim 2	Not present: not all elements of claim 2 are present [0.5 marks]
comprising a handle	Present: handle R [0.5 marks]
Conclusion when dependent on claim 1	Infringed as all elements present [0.5 marks]
Conclusion when dependent on claim 2	Not infringed as not all elements present [0.5 marks]

Claim 6 [7.5 marks]

A method of planting transplants in soil using a stand-up transplanter, the method comprising the steps of	Present: transplanter is used for planting out transplants into a field [0.5 marks]
inserting a wedge-shaped blade at a base of a stand-up transplanter	Present: beak halves F and G can be in tight contact to form a wedge shape [0.5 marks] and this is at the base of tube E [0.5 marks]
vertically into the soil	Not present. [0.5 marks] As construed in A1B(iii), the Wicked Plant Transplanter is inserted into the soil at an angle, not vertically [0.5 marks]
to a desired depth	Present: ground plate K sets depth of blade insertion [0.5 marks] . Notwithstanding construction of depth gauge in A1B(iv), claim 6 does not include any limitation on the structure that sets the depth of insertion needing to be a separate element [or otherwise explicitly recognizing limitation of apparatus claim is not the same as limitation of the method claim] [0.5 marks]
the wedge-shaped blade having a pivoting jaw rotatably coupled to a stationary jaw	Present: fixed beak half F [0.5 marks] has hinged beak half G hingedly attached thereto [0.5 marks]
rotating the pivoting jaw relative to the stationary jaw to form a planting hole	Present: ground plate K holds hinged beak half G in place [0.5 marks] while fixed beak half F is rotated relative to G via rotation of the body of the transplanter [0.5 marks]
dropping a transplant through a tube-shaped housing of the stand-up transplanter and through the pivoting jaw	Present: transplant is dropped through tube E [0.5 marks]
lifting the stand-up transplanter away from the transplant	Present: planting tube is lifted out of position [0.5 marks]
pressing the soil around the transplant	Present: operator can compact the soil with the foot [0.5 marks]
Conclusion	Not infringed as not all elements are present [0.5 marks]

Question A3 [12 Marks Total]

A3A Is Bad Guys liable for patent infringement and what are the potential damages? **[7 marks]**

- Section 42 of the *Patent Act* grants the exclusive right to make, use and sell the invention in Canada **[0.5 marks]**
- Bad Guys infringes this exclusive right by assembling the transplanter in Canada **[0.5 marks]** and by selling the infringing transplanter in Canada **[0.5 marks]**
- Bad Guys would not be liable for damages during the period they held a non-exclusive license **[0.5 marks]** since the license grants the permission to manufacture and sell the invention **[0.5 marks]**
- The '123 application published on February 23, 2019 **[0.5 marks]**, so Bad Guys would be liable for reasonable compensation from the publication date to the date of the license [October 1, 2020] **[0.5 marks]**, section 55(2) of the *Patent Act* **[0.5 marks]**
- Bad Guys would be liable for damages for patent infringement **[0.5 marks]** for any units made after they restarted production of the Wicked Plant Transplanter on March 1, 2022 **[0.5 marks]**, section 55(1) of the *Patent Act* **[0.5 marks]** since the patent was granted by this time **[0.5 marks]**
- This means Bad Guys would be liable for damages for the 800 units sold to date **[0.5 marks]**, as well as for the ~50 units/month being sold on an ongoing basis **[0.5 marks]**

A3B Liability of Happy Sun. **[5 marks]**

- Happy Sun is not liable for infringement **[0.5 marks]**, since they do not assemble the final product but only ship the parts **[0.5 marks]**
- While inducing infringement is a possibility **[0.5 marks]**, here Happy Sun makes the parts to Bad Guys' specifications so they are not directing or influencing Bad Guys' **[0.5 marks]**
- The answer changes if Happy Sun assembles the parts in China **[0.5 marks]** and ships them to/stores them in Vancouver **[0.5 marks]**, as then Happy Sun is importing the assembled transplanters and the sale to Bad Guys would then be considered to occur in Canada **[0.5 marks]** *Domco v. Mannington Mills* **[0.5 marks]**
- If Happy Sun stores the items for sale to other third parties, that would also be an infringement, as it is employing a stand-by utility for the invention **[0.5 marks]**, *Monsanto v. Schmeiser* **[0.5 marks]**

A4. Election of Remedies and Non-Infringing Alternative **[8 marks]**

- If Twin Flowers is successful in an infringement action, it would be entitled to elect between its own damages and an accounting of Bad Guys' profits **[0.5 marks]**. The fact Twin Flowers is not practicing the invention weighs in favour of electing an accounting of profits **[0.5 marks]**, since Twin Flowers would have stopped suffering damages when it stopped selling its product **[0.5 marks]**.
- In calculating an accounting of profits, the fact that the Super Transplanter Plus was available as a non-infringing alternative would be considered **[0.5 marks]**, *Apotex v.*

Merck 2015 FCA 171 (lovastatin) or other authority applying NIA to reduce an account of profits **[0.5 marks]**

- Assessment of whether the NIA should reduce an accounting of profits requires:
 - The NIA must be a true substitute and thus a real alternative **[0.5 marks]**; here, the Super Transplanter Plus took so much market share that Twin Flowers stopped producing its own product so it was appealing to consumers **[0.5 marks]**
 - The NIA must be economically viable **[0.5 marks]**; here the Super Transplanter Plus was less expensive than either the patentee's product or Bad Guys' product so it is economically viable **[0.5 marks]**
 - The infringer must have a sufficient supply of the NIA such that it could have sold the NIA **[0.5 marks]**; here Bad Guys was approached to become a distributor of the NIA so there must have been a sufficient supply available **[0.5 marks]**
 - It must be established that the infringer would have actually sold the NIA **[0.5 marks]**; here Bad Guys was approached to become a distributor and would likely have become a distributor for the Super Transplanter Plus had they not determined their own product likely did not infringe the '123 patent **[0.5 marks]**
- Injunction is also available to Twin Flowers **[0.5 marks]**, as a final injunction after a determination of patent infringement is still available to a patentee who does not practice the invention **[0.5 marks]**, e.g. *Uponor v. Heatlink*, 2016 FC 320 **[0.5 marks]**

A5 Modifying Granted Patent [7.5 marks]

- Possible amendment 1: instead of reciting "vertically" in claim 6, recite "approximately vertically" OR remove "vertically" from claim 6 **[1 mark]**. This would make clear that a strictly vertical orientation is not an essential feature of claim 6 **[1 mark]**.
- Possible amendment 2: add a dependent claim that specifies that "vertically" in claim 6 refers to inserting the tube approximately perpendicular to the soil surface OR accept adding a dependent claim with a step of straightening the tube to a vertical position after insertion **[1 mark]**. The doctrine of claim differentiation would then assist in arguing that "vertically" in claim 6 is broader than simply directly perpendicular **[1 mark]**.
- ****NOTE:** no marks are awarded for amending claim 6 to specify that insertion is done at an angle unless amendment also allows for vertical insertion, since claim would be unduly narrowed by such an amendment.
- Twin Flowers can still make this amendment to the '123 patent **[0.5 marks]** by requesting reissue **[0.5 marks]**, section 47 *Patent Act* **[0.5 marks]**
- The deadline for requesting reissue is four years from the issue date **[0.5 marks]**, which is June 15, 2025 **[0.5 marks]**
- Twin Flowers would need to show error arose from inadvertence, accident or mistake without any fraudulent or deceptive intention **[0.5 marks]**, which may be met

here because the failure to claim more broadly than strictly vertical was due to a misunderstanding [0.5 marks]

QUESTION B1 Limitation Period [2 Marks Total]

B1A No, no remedy may be awarded for an act of infringement committed more than six years before the commencement of the action for infringement [0.5 mark]

Section 55.01 of the Patent Act [0.5 mark]

B1B Yes, the infringing act. i.e. the use of chemical X to suppress a fire, was committed within six years before the commencement of the action for infringement [0.5 mark]

Section 55(1) of the Patent Act [0.5 mark]

QUESTION B2 Repair vs Reconstruction [2 Marks Total]

B2A No, repairing a patented system does not amount to infringement [0.5 mark]

Rucker Co. v. Gavel's Vulcanizing Ltd. (1986), 7 C.P.R. (3d), 6 C.I.P.R. 137 (F.C.T.D.) [0.5 mark]

B2B Yes, this amounts to reconstruction [0.5 mark]

MacLennan v. Produits Gilbert Inc., 2006 FCA 204 [0.5 mark]

QUESTION B3 Territoriality of Patents [2 Marks Total]

B3A advise that Company F can bring an action in Canada against Company E for infringement [0.5 mark]

since importation of a product made by a patented process, even fully conducted abroad, infringes a Canadian patent [0.5 mark]

Saccharin Corporation Ltd. v. Anglo-Continental Chemical Works, [1901] 1 Ch. 414 (Eng. Ch. D.) or other suitable case law authority such as Monsanto Canada Inc. v. Schmeiser, 2004 SCC 34 [0.5 mark]

B3B No infringement of the '257 patent because no infringing act took place in Canada [0.5 mark]

QUESTION B4 Gillette Defense [2 Marks Total]

B4A The broadly construed claims can run the risk of Company H pleading that the claims are invalid by being anticipated by, or being obvious in light of, the prior art due to Company G's choice to construe the claims broadly [1 mark]

B4B Gillette Defense [1 mark]

QUESTION B5 Non-Commercial Use [2 Marks Total]

B5A No, since it is a non-commercial use **[0.5 mark]**

Section 55.2(6) of the Patent Act **[0.5 mark]**

B5B No, there is no requirement for knowledge of a patent as an element of infringement **[1 mark]**

QUESTION B6 Government Use of Patented Invention [2 Marks Total]

Yes, Company K can make the pharmaceutical in Newfoundland to export to developing countries **[0.5 mark]**

Ss. 21.01 and following of the Patent Act provide a regime to allow this **[0.5 mark]**

Company K must first apply for authorization from the Commissioner of Patents **[0.5 mark]**

Section 21.04 Patent Act **[0.5 mark]**

QUESTION B7 Utility/Promise Doctrine [2 Marks Total]

The subject matter of a claim of a patent not demonstrated at the time of filing is assessed in light of any promises made in the patent **[1 mark]**

The promise doctrine no longer applies in Canada **[0.5 mark]**

Astra Zeneca v. Apotex, 2017 SCC 36 **[0.5 mark]**

QUESTION B8 Prior Use Exception [2 Marks Total]

B8A Company L has a prior use exception **[0.5 mark]**

Sections 56(1) and (2) of the Patent Act **[0.5 mark]**

B8B The current two licensees have a prior use exception **[0.5 mark]**

B8C No prior use exception for the potential third licensee **[0.5 mark]**

QUESTION B9 Inducing Infringement [4 Marks Total]

B9A MacLennan v. Produits Gilbert [2008 FCA 35] or other suitable case law authority **[0.5 mark]**

Contributory infringement elements:

(1) direct infringement by another party **[0.5 mark]**

(2) defendant knew that infringement would take place **[0.5 mark]**

(3) defendant encouraged the infringing conduct **[0.5 mark]**

no inducement because none of (1) – (3) are present **[1 mark]**

B9B yes, there is inducement **[0.5 mark]**

because (1)-(3) are all present **[0.5 mark]**