PATENTS EXAMINATION BOARD

Subject: The Drafting of Patent Specifications - Paper 1

Date: November 2025

Time: 09h00 - 13h00 (although candidates requiring extra time are entitled to an additional two hours)

Examiner: TH Doubell

Moderator: JD Whittaker

Question 1

Your client writes to you as follows:

"*I have invented a new blast hole liner.*

In modern mining or earth moving operations, blasting is typically conducted by firstly drilling blast holes (also known as blasting holes, boreholes or shot holes) to predetermined depths at discrete locations or in predetermined patterns into ground to be moved or ore bodies containing mineral resources. The drilled blast holes are then loaded with predetermined charges of explosive compositions, typically in solid, particulate, slurry, emulsion or gel form, and up to predetermined depths, volumes or masses. This predetermination is aimed at ensuring that the ground is moved or the ore body is broken down in the desired manner, leaving earth, rubble and/or fragmentation that is easily removed from the earth moving or mining location after detonation of an explosive composition.

Of the various explosive compositions that are utilized, ammonium nitrate based explosive compositions (also referred to as ANFO) are of the more commonly used compositions today. Most of the explosive compositions used, including ammonium nitrates, must however be retained in the hole and be kept free of water contamination in order to ensure that the detonation quality is satisfactory. While the bulk of the contamination water that collects in blast holes is typically pumped out before the holes are loaded

with predetermined charges of the explosive compositions, some water ordinarily remains in or flows back into the holes.

In addition to unwanted water, fissures can form in the blast hole walls due to adjacent blasts and/or natural causes, causing the explosive compositions to leak or drain out through the fissures, thereby affecting the blast outcome negatively and leading to the loss of explosive composition.

Water resistant blast hole liners, aimed at avoiding water contamination and/or loss of the explosive composition, are commonly utilised to line the blast holes and hold the explosives. The liner is usually placed with its sealed or closed end downwardly in the blast hole, often loaded down with dirt and/or stemming to assist in locating and retaining the liner at a sufficient or predetermined depth in the blast hole. The liner is often further sealed, just above the dirt or stemming, so as to separate the stemming from the explosive composition, before the explosive charge is loaded into the liner.

A first type A of prior art blast hole liners generally comprise of a simple polymer or plastic tubing in an array of lengths and/or diameters to suit blast holes of differing depths and diameters and/or explosive charges of differing volumes or masses. The liners are typically of predetermined length, sealed or closed-off at one end and open at the opposing end.

A type A liner 100, as shown in Question 1 (Prior Art A) of the accompanying drawings, includes a sleave 200, having an elongate body 205, an open top end 220 and a closed bottom end 225, for receiving and holding an explosive charge therein; and a support 400, having a cross-member 405 and a set of liner-fasteners 410, for securing and supporting the loaded liner in a drilled hole (not shown). A known improvement to the type A liner further includes a seal 230, providing a secondary compartment 235 for receiving and holding stemming therein, and a shaped bottom end 245, to assist in avoiding jamming when feeding the (still empty) liner down the drilled hole (not shown). A further known improvement to these liners includes an air tubing 300, having an elongate body 305, extending co-extensively with the liner, an air filler-opening 310 and an elongate passageway 315 for receiving and holding compressed air therethrough to assist with unjamming, untwisting and straightening of the liner when feeding it down the drilled hole.

A second type B of prior art blast hole liners is provided in a relatively endless roll, allowing a user to determine and cut off the requisite length and to seal it off at one end based on the specific depth of the blast hole

and/or volume or mass of the charge of the explosive. These liners are typically closed or sealed off on site with cable ties, knots and/or adhesives.

A type B liner, as shown in Question 1 (Prior Art B) of the accompanying drawings, comes in a roll 14, allowing a blaster to cut off the required sleeve length 16, make a first knot 28, usually about 1 meter from the free end 30, load a suitable amount of sand or other particulate material into the free end and make a second knot 34, thereby providing a weight towards the free end of the liner to assist in feeding the (still empty) liner down the drilled hole 26.

The known type A and B liners are however often inadequate to block the ingress of water or to provide protection against the loss of explosive compositions, especially at elevated temperatures over prolonged periods, leading potentially to inadequate and even premature or uncontrolled detonation of explosives, thereby presenting a serious safety risk to minging operations and surrounding activities and resources. Elevated temperatures are typically prevalent in open cast, coal mining operations, deep-mining operations or near volcanic formations. In many of these operations, elevated temperatures in blast holes are usually caused by geothermal heating (e.g. volcanic activity), geothermal gradients or burning coal seams, while in deep-mining, rock face temperatures commonly increase relative to the depth of the blast hole into the rock face and the depth of the mining operation underground. In addition, blast holes and rock face environments might contain sulphides that can cause reactive, exothermic ground conditions through oxidation in which explosive material can inadvertently ignite or even detonate. Thus, even in conditions where rock face and/or blast hole temperatures are believed to be below the safety threshold temperature limit for explosives, chemical reactions within the geological formation can cause localized hot spots within the formation that exceed the allowable temperatures.

Under elevated temperatures, the above known type A and B blast hole liners often lose their structural strength and even melt, especially at higher temperatures, as many of these liners are simply not strong enough to contain the amount of explosive composition under such conditions, causing the liners to open, burst, rip or split, leading to unwanted water contamination and/or loss of the explosive compositions.

In addition, the side walls of blast holes can be relatively irregular, uneven and even jagged at times, with various protrusions, edges or particles

disparately located along the length of the hole. In turn, the known type A and B blast hole liners comprise thin-walled material so as to conform substantially to the irregularities within the blast hole and provide suitable compaction of the contained explosive composition and load the bulk of the interstices in the wall of the hole. The known type A and B blast hole liners, once loaded, are accordingly susceptible to tearing or perforating, especially at higher temperatures over prolonged periods.

The known type A and B blast hole liners are further not suitable for blast holes with elevated temperatures, even without an ingress of water or loss of explosive compositions, as these liners do not insulate the explosive compositions sufficiently from the elevated temperatures inside or around the blast hole, leading to elevated temperatures of the explosive compositions themselves that, in turn, especially with the more temperature-sensitive compositions, can affect the stability of the explosive charge adversely and similarly lead to premature or uncontrolled detonations.

My invention in turn is shown in Figure 1 (a two-dimensional side view of a hot-hole, blast sleeve of composite material); Figure 2 (a cross sectional view of the sleeve, cut along the line A – A, as illustrated in Figure 1); Figure 3 (a cross sectional side view of the sleeve, wherein the sleeve is suspended at a preselected depth within a blast hole and loaded with an explosive charge); and Figure 4 (a cross sectional side view of the sleeve as illustrated in Figure 3, wherein the sleeve is provided with a temperature sensor).

My sleeve 1 is suitable for use in cold-hole blasting and in hot-hole blasting especially. It consists of a thin-walled, hollow body with a wall of composite flexible sheet material. The material has a flexible, liquid-impermeable outer layer 2, a flexible woven, thermally-insulating middle layer 3 and a flexible liquid-impermeable inner layer 4, the respective layers having preselected, liquid-impermeable and thermally-insulating capabilities.

The hollow body defines an inner load-bearing chamber 5, extending between a first, leading end 6 and a second, trailing end 7, the chamber being suitably sized and shaped to receive and retain a specific charge of explosives in a drilled hole 12. It is envisaged that the explosive charge could be in a powder, particulate, slurry or gel form, such as ammonium nitrate–fuel oil (ANFO).

The outer layer 2 comprises a high tensile strength, yet flexible

thermoplastic material of polyvinyl chloride (PVC) to block the ingress of liquid through it. PVC has inherent thermal insulation characteristics that allow the outer layer 2 to be resistant to the elevated temperatures that is present in a hot blast hole. The outer layer 2 is further resistant to the abrasions that are caused by the sharp, uneven and jagged edges within the hole 12 while the sleeve 1 is being lowered therein.

The middle layer 3 comprises a woven, thermally-insulating material of polyester that is resistant to elevated temperatures. The middle layer 3 serves to provide further resistance to the elevated temperatures that are present in a hot blast hole.

The inner layer 4 comprises high tensile strength, yet flexible material of polyvinyl chloride (PVC) that blocks the loss of explosive composition loaded within the chamber 5 from the sleeve 1.

The thermal-insulating properties of the three layers 2, 3, 4 enable the blast sleeve 1 to maintain a stable temperature within the inner chamber of below about 60°C, while being exposed to elevated external temperatures of between about 80°C and 150°C for prolonged periods of time, without compromising its structural integrity.

The collective thickness of the three layers 2, 3, 4 is between about 0.35 mm and 0.75 mm. The sleeve 1 is further configured to have a minimum weight of between about 300 g/m2 and 850 g/m2. The sleeve 1 is further configured to have a minimum tensile strength measured in accordance with ISO 1421:1998 of between about 1500 N / 50 mm and 3000 N / 50 mm in the warp direction, and between about 1000 N / 50 mm and 3000 N / 50 mm in the weft direction. The sleeve 1 is further configured to have a minimum tear strength measured in accordance with ISO 4674-1:2016 (Method B) of between about 200 N and 400 N in the warp direction, and between about 150 N and 350 N in the weft direction. The sleeve 1 is additionally configured to have a minimum adhesion strength measured in accordance with ISO 2411:2017 of between about 20 N / 25 mm and 50 N / 25 mm.

In use, the leading end 6 is defined by a closure, operatively located towards the bottom of the drilled hole 12, while the training end 7 is defined by an opening, typically located towards the top of the hole.

The closure 6 is configured to ensure that there is no ingress of liquid into the sleeve and the explosive composition that might be present in the hot

blast hole, as well as blocking the loss or discharge of the explosive charge that is retained in the chamber 5. The closure 6 is constructed by welding the bottom of the sleeve 1 shut. The weld on the closure 6 has a minimum width of between about 20 mm and 60 mm. Alternatively and due to the relatively flexible materials that the sleeve 1 comprises of, I envisage that the closure 6 can also be created by simply tying a knot at the bottom of the sleeve 1 such as with the prior art types A and B liners.

The opening 7 is configured to receive the explosive charge once the sleeve has been lowered sufficiently into a hot blast hole. The opening 7 is configured and dimensioned to receive a loading device such as a hose end (not shown) therein, and for the charge of an explosive charge to be loaded directly into the chamber 5.

The sleeve 1 is provided with a set of retaining formations in the form eyelets 8, located in the upper portion of the sleeve and configured to retain conventional securing means such as rope, strap, cord or the like securely therein. The eyelets 8 have a minimum diameter of between about 5 mm and 25 mm. The opening 7 of the sleeve 1 has a rim 9, reinforced with a rib 10, extending around the opening to ensure, in association with the eyelets 8, that the sleeve can hold the weight of a preselected charge of explosives.

The sleeve 1 is further provided with a reinforcing rib weld 11, extending longitudinally substantially along the length of the sleeve to ensure further structural strength. The reinforcing rib weld 11 has a minimum width of between about 20 mm and 60 mm.

In operation, the sleeve 1 of a preselected length is inserted leading end 6 first and lowered up to a preselected depth before it securely suspended within a hot blast hole 12 with its opening 7 sufficiently exposed to receive a charge of explosives therethrough, respectively as illustrated in Figure 3. In such operation, with the sleeve 1 being lowered into the blast hole 12, a rope 13 (normally nylon ski rope with a diameter of about 6 to 10 mm) is threaded through the eyelets 8 and tied to an anchor rod 14 (normally a wooden stick with a diameter of about 30 to 50 mm), the rod having a length beyond the diameter of the blast hole. Once secured, the inner chamber 5 is loaded with a preselected charge of an explosive composition 15 via the opening 7, up to a predetermined level, volume or mass of explosives. Once the chamber 5 has been loaded as required, a booster-and-detonator arrangement 16 is typically lowered into the explosive composition 15 for detonation.

As illustrated in Figure 4, the sleeve 1 is further provided with a temperature sensor arrangement 17, configured to measure the temperature within the inner chamber 5 along the length of the sleeve 1 in substantially real-time during the period after the explosive charge has been loaded and prior to detonation. The temperature sensor arrangement 17 comprises a temperature display module 17a and a plurality of temperature measuring probes 17b, spaced apart and connected electrically to a flexible electric cable 17c at between 2 m and 10 m intervals and, typically, at about 5 m intervals. The cable 17c is secured towards the trailing end 6 and attached to the inner chamber at between 2 m and 10 m intervals and, typically, at about 5 m intervals along the length of the inner chamber. The temperature sensor arrangement 17 is further provided with an alarm (not show) able to generate an alert, should the temperature as measured by any of the probes exceed a predetermined value"

The candidate is required to identify the inventive feature(s) of the above invention, and to draft up to three claims to protect the invention and its primary inventive features.

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Question 2

Your client writes to you as follows:

"I have designed a new pallet for transporting goods.

It has become commonplace in industries such as transport and manufacturing to use pallets when moving and/or storing goods. Generally, a pallet comprises of a rectangular platform that supports goods above a support surface such as a floor or in a rack. Pallets typically include openings in or below at least one side for receiving the forks of a material handling vehicle such as a forklift or crane attachment and provides a means for securing and strapping goods to the pallet. For improved working flexibility, more modern or advanced pallets are typically designed to have fork access from all four sides.

Pallets are traditionally constructed from wood and/or composite wood materials, as shown in Prior Art A hereto. A prior art A wooden pallet typically comprises a load bearing panel 1, made up of a conventionally dimensioned rectangular frame 2 with intermediate support members 3, and a number of top and bottom decking planks 4, all secured with conventional, removable fasteners 5 such as nails, screws, bolts or the like. These pallets are typically constructed to define openings 6 to render the pallets compatible with conventional forklifts and cranes.

Despite their extensive use, these conventional wooden pallets present various shortcomings that limit their utilisation and useful life, including being susceptible to developing cracks, splits and clearances in and between the pieces or components especially at or around their respective fixing points. This causes the pieces or components to become mis-aligned after repetitive use and even break or collapse, rendering them fragile and unstable over extended periods. Some of the wood pieces or components can be replaced to extend the useful life of these pallets, but continuous and increasing misalignment and instability diminish the useful life of these pallets.

Further shortcomings of wooden pallets relate to the wood itself. Wood might offer satisfactory mechanical strength for certain applications, at least initially, but it has a low resistance to ambient conditions, especially with relatively high levels of moisture, as it causes decay in the wood and, as a consequence, the loss of the pallet as a whole. Moreover, when exposed to moisture, wooden pallets can warp, becoming uneven and often unsuitable

for its intended uses. Wood as a material is also susceptible to an attack and infestation of pests such as termites that lead to further decay in the wood pallets. This susceptibility also leads to an increase in the associated manufacturing and running costs of these pallets, as they need to be fumigated or otherwise treated to mitigate the risks of these pests. Wooden pallets further pose a significant fire hazard in large storage and manufacturing facilities due to their flammable nature. In the event of a fire outbreak, these pallets can ignite quickly and intensify the flames, potentially leading to substantial damage and endangering the safety of both personnel and valuable goods or other assets.

The conditions under which many modern pallets are used are particularly hazardous and robust. Pallets are not only subjected to heavy loads and stresses from strapping but are also regularly impacted, and slid and moved around storage and/or manufacturing facilities. Such usage regularly results in damage that might render a pallet unusable. In addition, splintered wood and loose fasteners such as nails can also damage the goods loaded on the pallets during the loading and/or unloading process. Lastly, the final disadvantage of wooden pallets concerns sustainability and environmental preservation. The use of wood in the construction of pallets causes deforestation and negatively impacts the environment.

In an effort to address the above shortcomings with the conventional wooden pallets, alternative materials such as moldable plastic and rubber materials have been used in the construction of molded pallets, as shown in Priar Art B hereto.

A prior art B pallet typically comprises a load bearing panel 100, having a rectangular frame 110 with a top face 115 and a bottom face 170, extending across the top and the bottom of the frame, at least some of the frame having weight reducing cavities 130 running partially along the frame, four downwardly protruding conner legs 145, 155, 255 and 265, four downwardly protruding side legs 150, 240, 250 and 260, and a downwardly protruding center leg 245, at least some of the legs having inner weight reducing reducing cavities 125, the respective cavities to reduce the overall weight of the panel.

However, attempts to overcome the drawbacks of ordinary wooden pallets with molded pallets of plastic or rubber materials have also faced shortcomings. While pallets made of materials such as plastic or rubber might have the advantage of potentially being lighter and/or easier to keep clean, hygienic and even sterile, their known prior art designs have had to

deal with issues such as the trade-off between material and manufacturing costs versus weight bearing capability. Typically, plastic and rubber pallets designed with a significant weight bearing capability tend to be both heavy and expensive. In the same manner, inexpensive lightweight plastic and rubber pallets have typically lacked both strength and durability. Plastic and rubber pallets have also exhibited limitations in terms of temperature resistance, making them susceptible to deformation when exposed to relatively high ambient temperatures. In addition, the existing especially plastic pallets often have slippery surfaces, due to the inherent nature of the plastics materials that have traditionally been used for this purpose.

Moreover, and unlike wooden pallets, integrally molded pallets are exceedingly difficult to repair and, once unusable, are typically disposed of and replaced. Furthermore, and although plastic and rubber products are inherently recyclable, studies have shown that relatively low percentages of recycled materials make their way back into products.

Pallets made of metal alloy have also seen the market and offer certain advantages such as durability and strength, but they are not without their own drawbacks. One significant disadvantage lies in their high cost, making them an expensive option for businesses seeking cost-effective, goods handling solutions. Metal alloy pallets further often lack resilience and flexibility, rendering them vulnerable to warping and/or deformation under heavy loads or harsh environmental conditions. Once warped, these pallets tend to become unusable, leading to additional expenses and wastage.

In recent times, society has further demanded significant efforts to save natural resources such as wood and metals and to develop more environmentally friendly products by reusing less biodegradable synthetic plastic and rubber waste materials.

It is therefore desirable to provide a long-life pallet that is relatively inexpensive, can be manufactured with relative ease from waste materials, allows for the selective repair or replacement of specific defective components and meets the conventional design standards and physical attributes for conventional loading, lifting and transporting of goods while being able to stack and rack during periods of non-use or transportation.

In addition and in today's modern manufacturing and storage facilities, efficient tracking and seamless identification of goods and materials is also becoming a preference. Conventional pallets on the market fail to provide for or incorporate intelligent technologies that enable real-time tracking

and compatibility with automated systems, such as scanners and robots. As a result, businesses face challenges in optimizing their material handling processes and have resorted to the manual identification and/or management of the goods in these facilitates and/or retro-fitting of suitable tracking devices.

My new design pallet is shown in the following drawings, wherein:

Figure 1 is a perspective view of my pallet;

Figure 2 is an exploded view of the pallet, cut along the line A-A, as illustrated in Figure 1;

Figure 3 is a side view of the pallet, as illustrated in Figure 1;

Figure 4 is an exploded side view of the pallet, as illustrated in Figure 1;

Figure 5 is an exploded side view of the pallet, cut along the line A-A, as illustrated in Figure 1;

Figure 6 is a further exploded view of the pallet, as illustrated in Figure 1;

Figure 7 is a perspective view of my reinforcing internal frame of the load bearing member of the pallet, as illustrated in Figure 1;

Figure 8 is a perspective view of the reinforcing internal frame of the supporting base of the pallet, as illustrated in Figure 1;

Figure 9 is a cross-sectional view of the reinforcing internal frame, as illustrated in Figure 1;

Figure 9a is a perspective view of an inner member of the reinforcing internal frame, as illustrated in Figure 1;

Figure 10 is a perspective view of the corner support member of the pallet, as illustrated in Figure 1;

Figure 10a is a perspective view of the middle support member of the pallet, as illustrated in Figure 1; and

Figure 10b is a perspective view of the central support member of the pallet, as illustrated in Figure 1.

My new pallet 1 as illustrated in Figures 1 to 10b is assembled from a substantially planar, upper load bearing member 2, provided with a reinforcing internal frame 3 and a substantially planar, lower supporting base 4, provided with a reinforcing internal frame 5, wherein both of the internal frames are configured to improve the structural rigidity and load bearing capacity of the pallet and, in turn, to improve the pallet's weight bearing capability relative to its material and manufacturing costs and the weight of the pallet itself.

The pallet 1 is further provided with a number of spaced apart support members 6, 6a, 8 that are sandwiched and pillared between the load bearing member 2 and the base 4, defining apertures 7 between the load bearing member and the base. The apertures 7 are configured to be releasably engageable with conventional and compatible load transporting apparatuses, such as the forks of conventional forklifts or crane attachments, and provide a means for securing and strapping goods to the pallet 1.

The support members 6, 6a, 8 comprise of four corner support members 6, four side support members 6a and an extended central support member 8 that further improves the structural rigidity and load bearing capacity of the pallet 1.

The four corner support members 6 are each provided with a 90-degree, stepped upper formation 9, while the four side support members 6a are each provided with a 180-degree, stepped upper formation 9a that are configured to counteract any rotational forces that could arise when the pallet 1 bears substantial loads. The support members 6, 6a each incorporates further enlarged central cavities 10, 10a that are configured to reduce their overall weight while maintaining structural strength and robustness.

The pallet 1 is designed and configured to be dismantlable and modular wherein the load bearing member 2, support members 6, 6a and base 4 are removably attachable to one another, thereby facilitating dismantlability, assembly, disassembly, replacement of defective components and some customization of the pallet. The load bearing member 2 with its reinforcing internal frame 3, the support members 6, 6a, 8, and the supporting base 4 with its reinforcing internal frame 5 are securely yet releasably fastened to each other with a conventional nut-and-bolt arrangement 11, with the bolts traversing from the load bearing member through to the base. The nut-and-bolt arrangement 11 allows the pallet 1 to be easily assembled or

disassembled to enable efficient replacement of individual defective components and optimizing storage utilization and transportation.

The reinforcing frames 3, 5 preferably comprise longitudinally extending members, with wide, U-beam shaped cross-sections, in use orientated in a substantially vertical plane, to resist bending and buckling under load-bearing forces and provide increased structural support and stability to the pallet, while simultaneously reducing both the frame material as well as the rubber compound needed. This, in turn, reduces the manufacturing costs and the overall weight of the pallet itself. In a more preferred format, the U-beam configuration includes a substantially concave channel 12 along the inner surface, further bolstering the members' ability to resist bending and buckling under load-bearing as well as other external forces. Preferably, the opposed, open-ends of the U-beam shaped members 3, 5 include flanges 13 that extend perpendicularly outwardly and, in use, upwardly and downwardly, relative to the main body of the members, bolstering the members' abilities and hence the abilities of the frames 3, 5 to resist deformation and increase the load bearing capacity even further. The reinforcing frames 3, 5 are constructed from a suitable rigid material such as steel and/or an alternative metal alloy. While the use of steel or metal alloy reinforcement in general, and the use of belts, beads and cords of such materials in rubber products such as vehicle pneumatic tyres in particular, is well known in the prior art to improve structural strength and loadbearing capability, my searches did not reveal any information about the use or configuration of reinforcement in plastic and rubber pallets.

My pallet is further constructed using a resilient, flexible, high tensile strength, abrasion resistant, temperature resistant, high-density compressed rubber compound. The rubber compound comprises a mixture of a recycled rubber compound, such as the recycled rubber obtained from discarded pneumatic tyre materials, and a medium viscosity, solvent free, moisture curing isocyanate binder. The rubber compound has preselected physical properties including, hardness, tensile strength, tear resistance, abrasion resistance, temperature resistance, impact resistance, slip resistance and moisture resistance.

The present invention utilizes recycled tyre rubber as a key material in the manufacturing of the pallet 1, offering significant environmental advantages over conventional production methods. By repurposing discarded tyre rubber, the invention contributes to reducing the environmental burden associated with tyre waste disposal, thereby

promoting sustainable waste management practices. Recycling tyre rubber also helps in conserving valuable natural resources such as wood that would have been used in the production of traditional pallets. Moreover, the incorporation of recycled tyre rubber into the manufacturing process leads to a reduction in greenhouse gas emissions and energy consumption, aligning with eco-friendly initiatives and minimizing the overall carbon footprint.

The pallet 1 is also provided with an acrylic-based anti-microbial coating. The coating prevents the growth and spread of harmful microorganisms, such as bacteria and viruses, thereby making the pallet suitable for storing items that are sensitive to contamination, such as food and medical products, as it prevents contamination and ensures a hygienic environment for storing such goods.

The pallet 1 is typically configured to have a maximum load bearing capacity between 5 and 20 tonnes. Furthermore, the pallet 1 is configured to withstand ambient temperatures between -100 °C and 120 °C without undergoing substantial structural degradation and loss of performance.

The pallet 1 is further provided with an integrated cavity (not shown) configured to securely house a conventional electronic communication device (not shown) therein. The electronic communication device (not shown) is configured to transmit and receive data including, GPS signals to determine and transmit the geographical location of the pallet 1, and store and transmit identification data associated with the pallet. This enables the pallet 1 to be tracked in real time and to be compatible with automated systems, such as RFID scanners and industrial robots used in various manufacturing, goods handling and storage applications. The electronic communication device (not shown) enables users to optimize their material handling and management processes and systems"

The candidate is required to identify the inventive feature(s) of the above invention, and to draft up to three claims to protect the invention and its primary inventive features.

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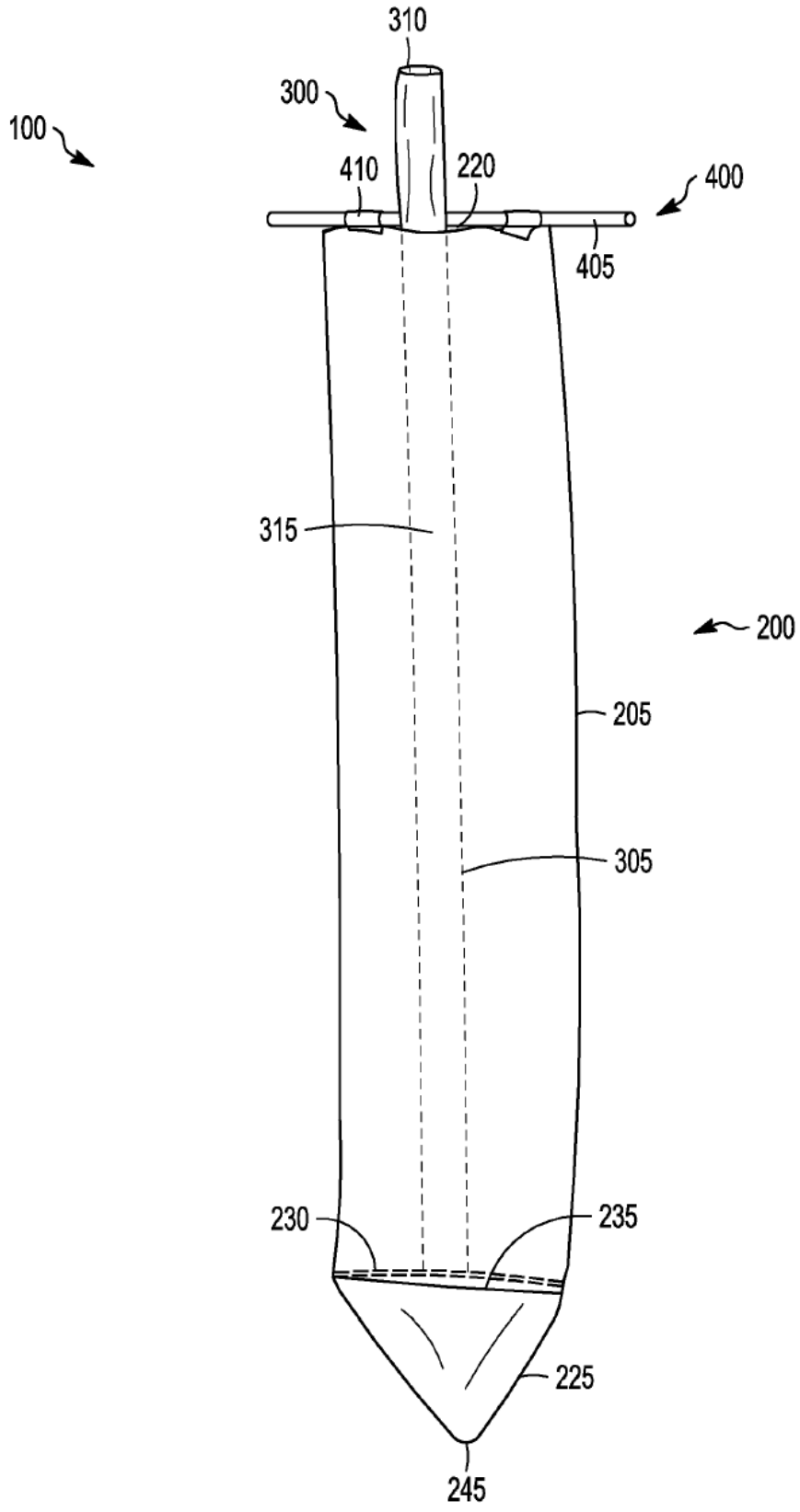
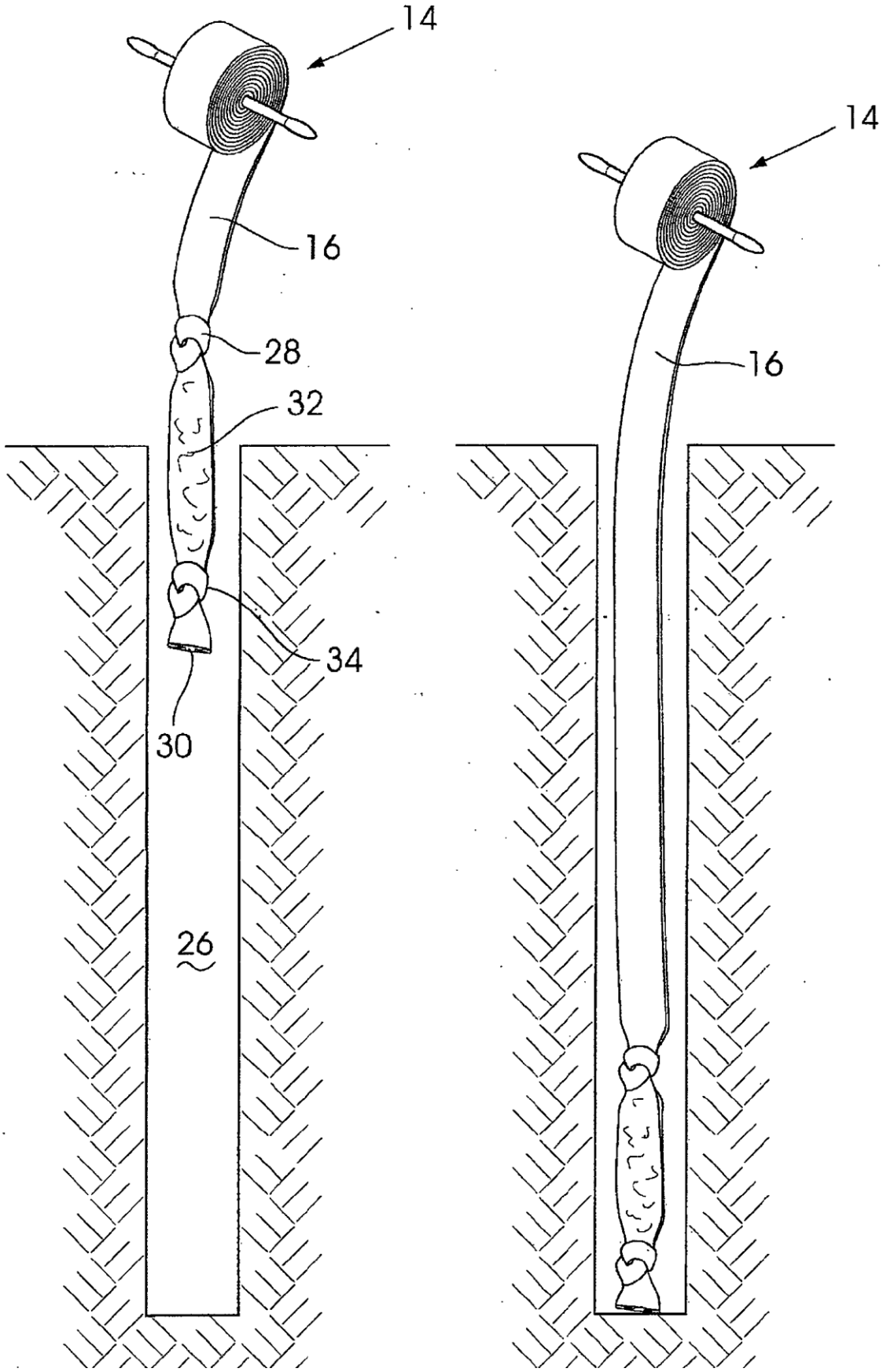
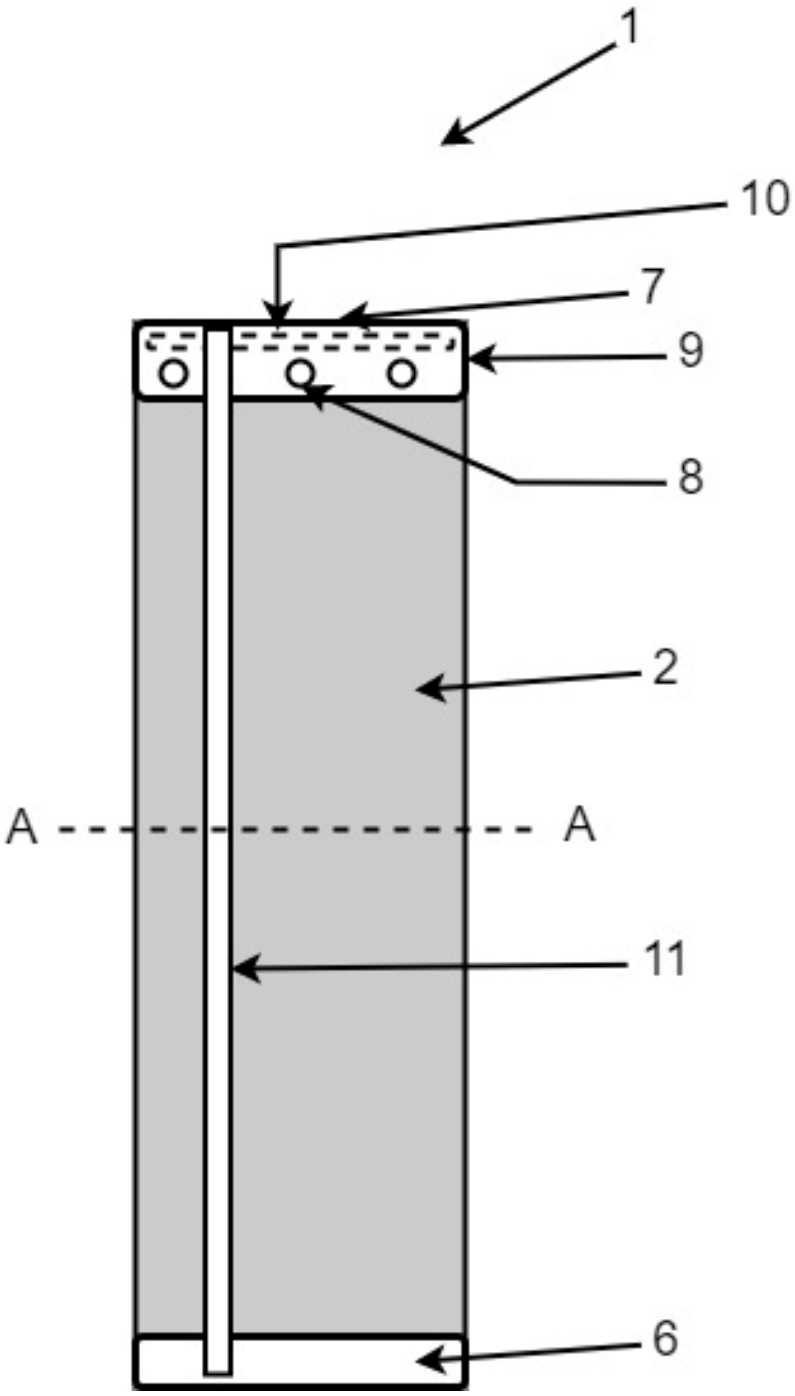
Question 1
Prior Art A



Question 1
Prior Art B



Question 1 – My Invention
Figure 1



Question 1 – My Invention
Figure 2 & 3

Figure 2

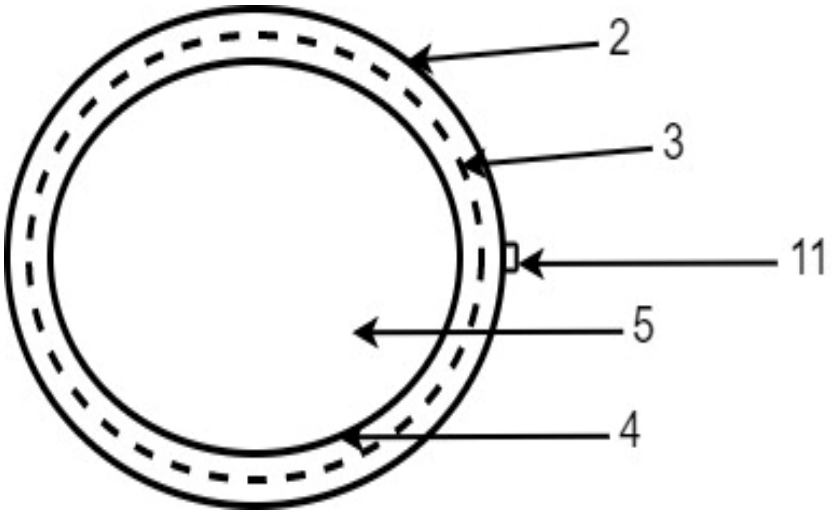
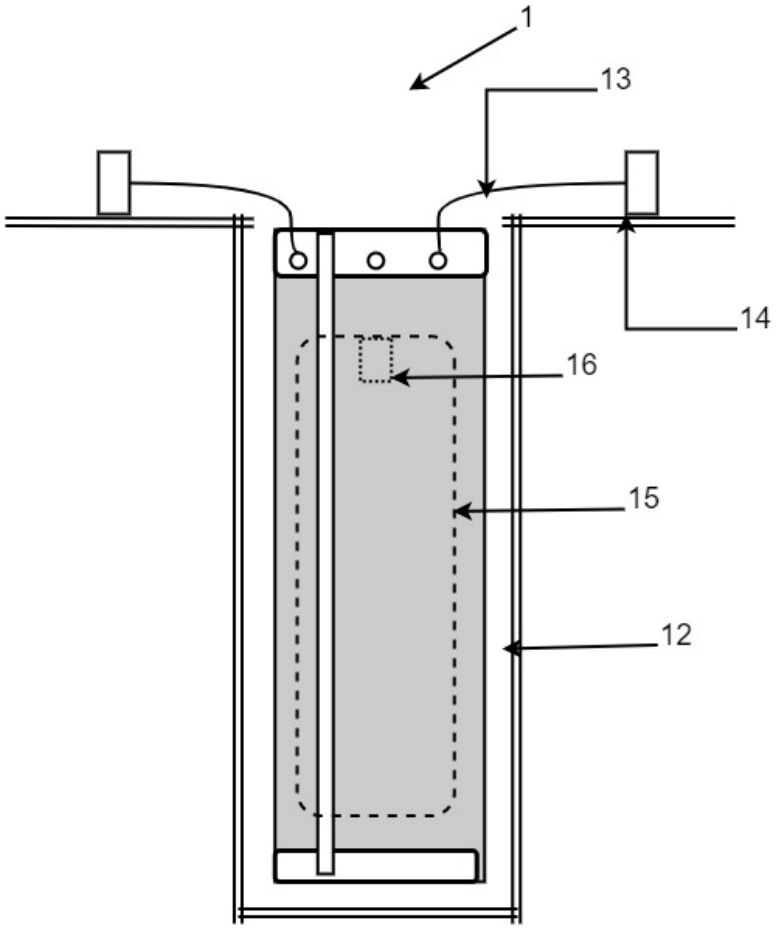
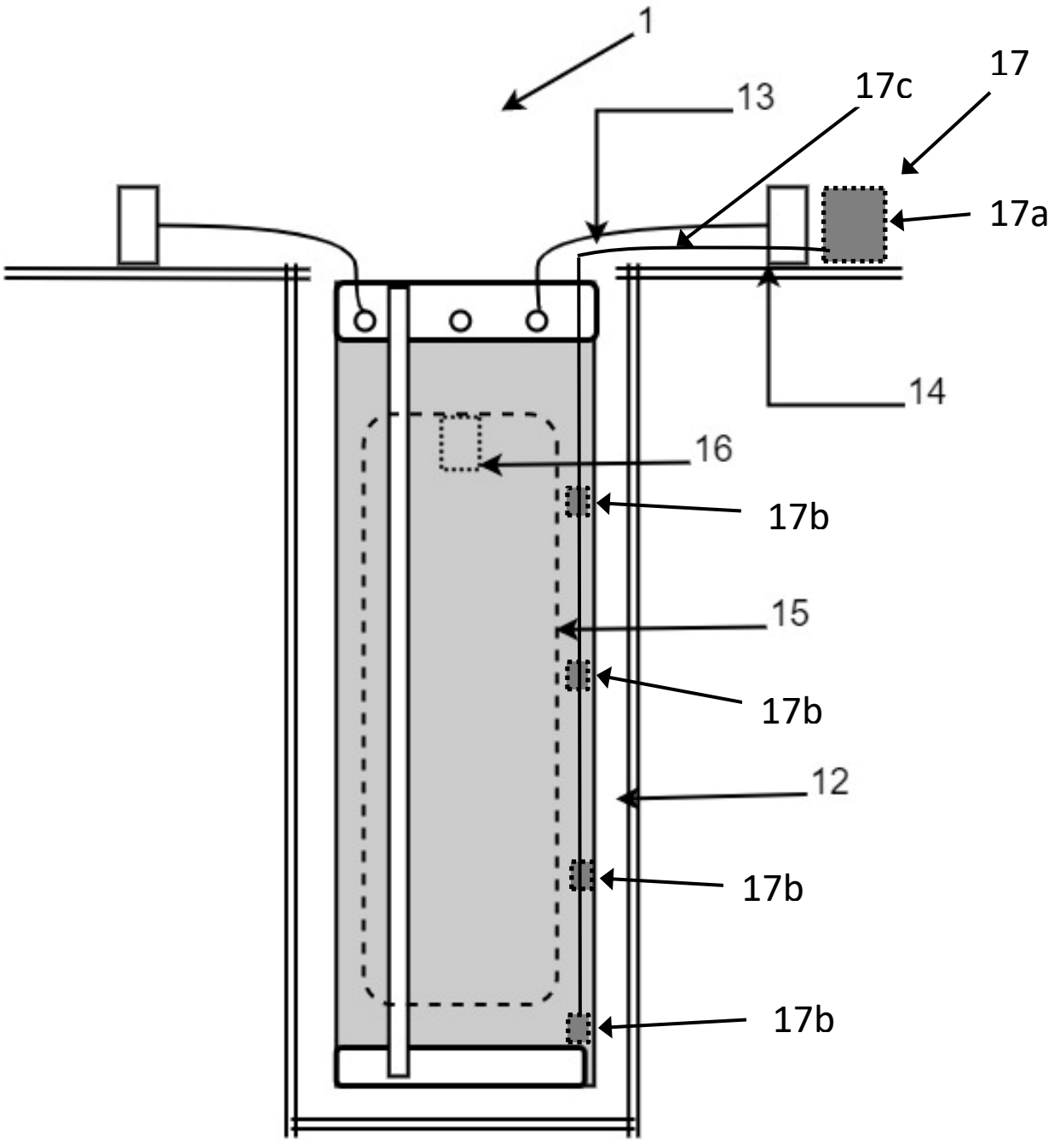


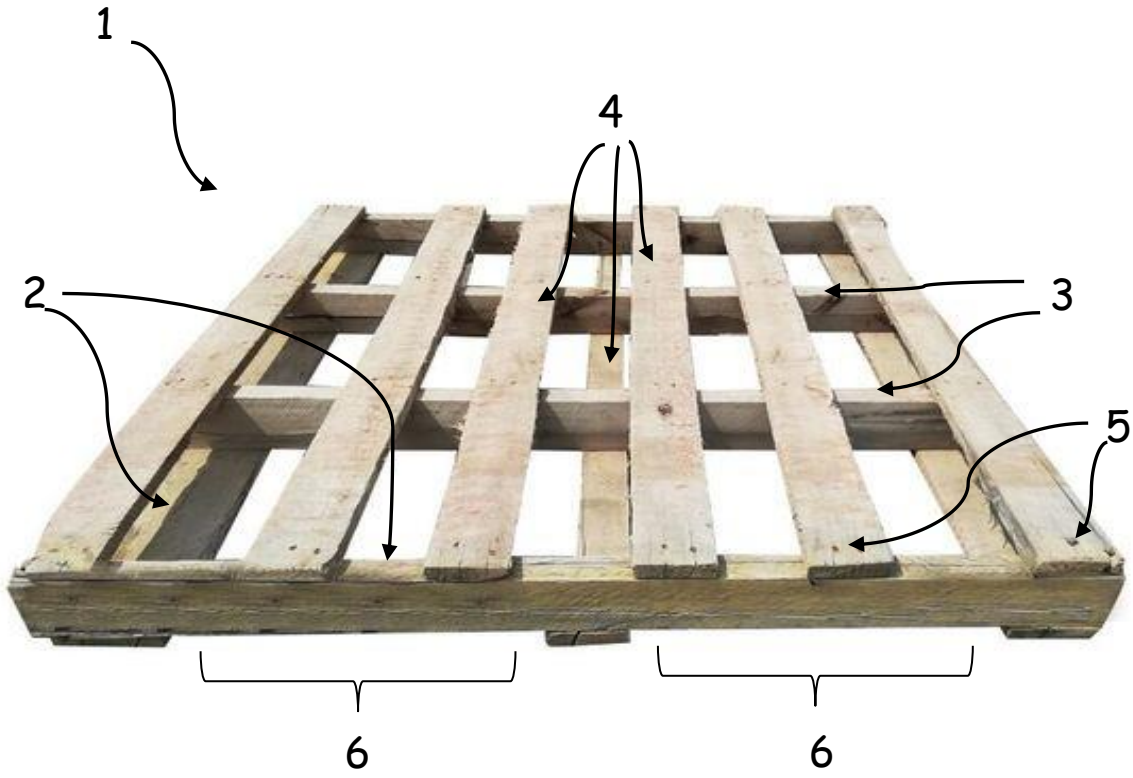
Figure 3



Question 1 – My Invention
Figure 4



Question 2
Prior Art A



Question 2
Prior Art B
Figures 1A to 2B

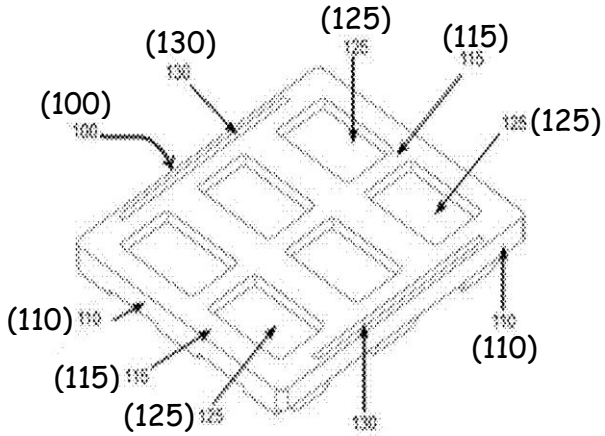


Fig.1A.

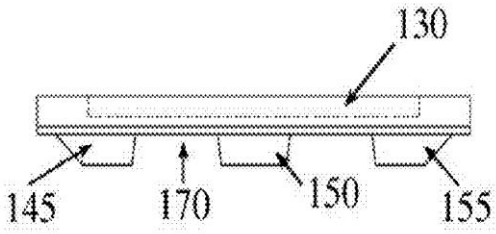


Fig.1B.

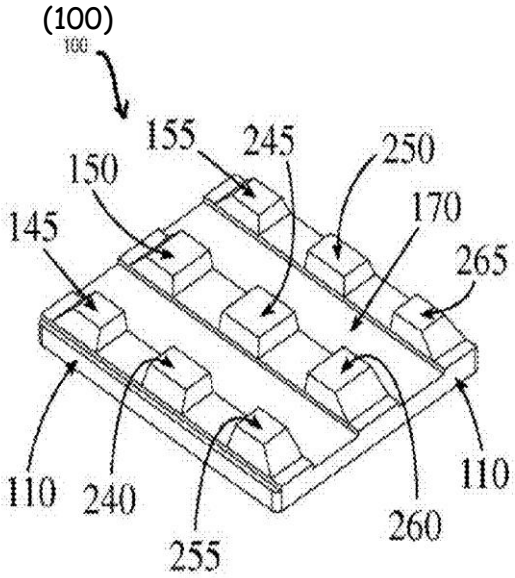


Fig.2A.

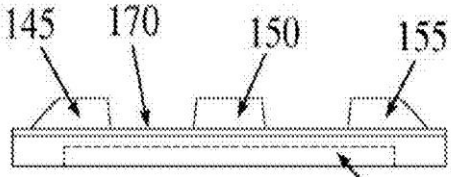


Fig.2B.

Question 2 – My Invention
Figures 1 & 2

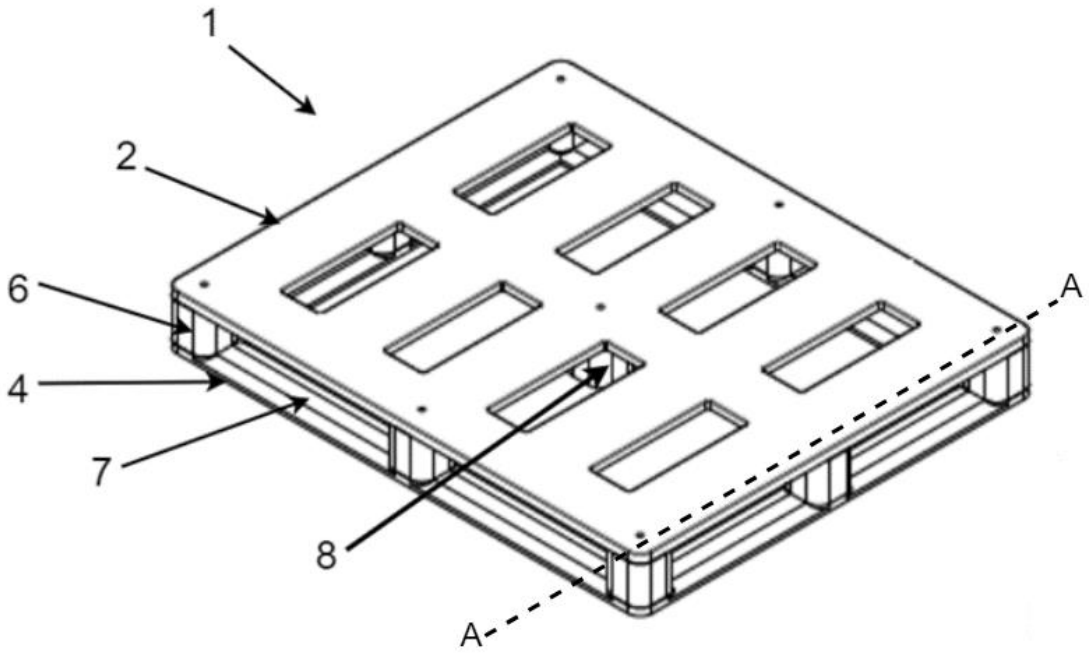


Figure 1

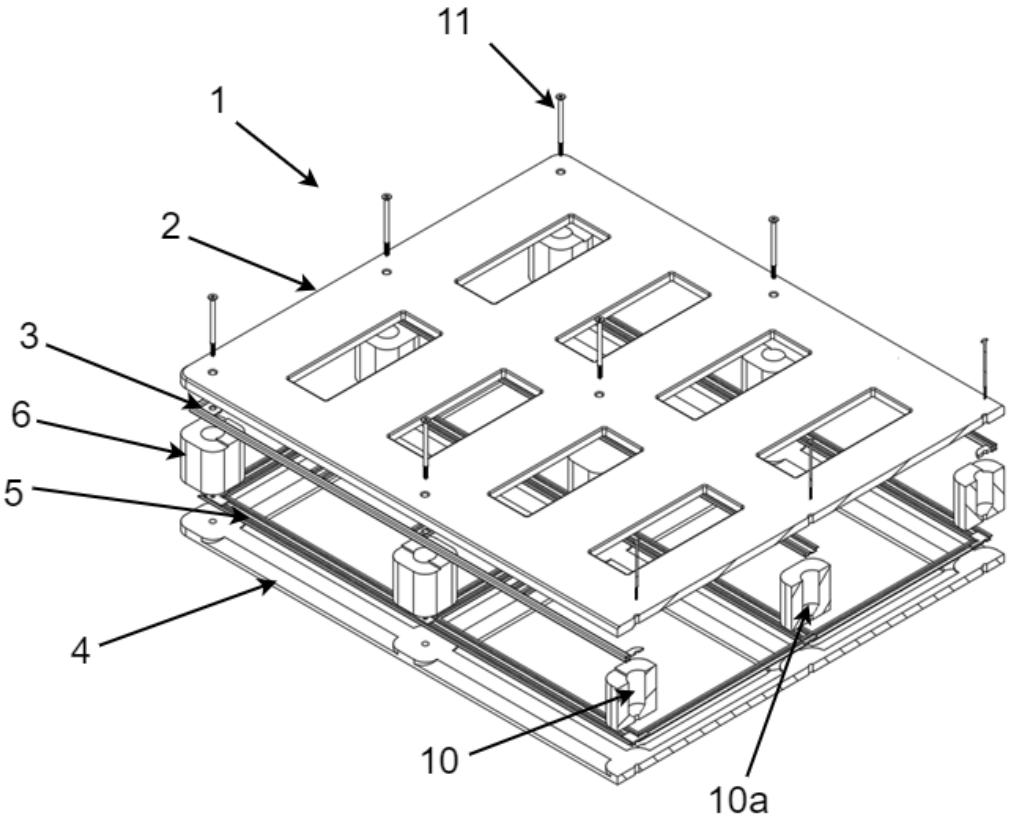


Figure 2

Question 2 – My Invention
Figure 3 & 4

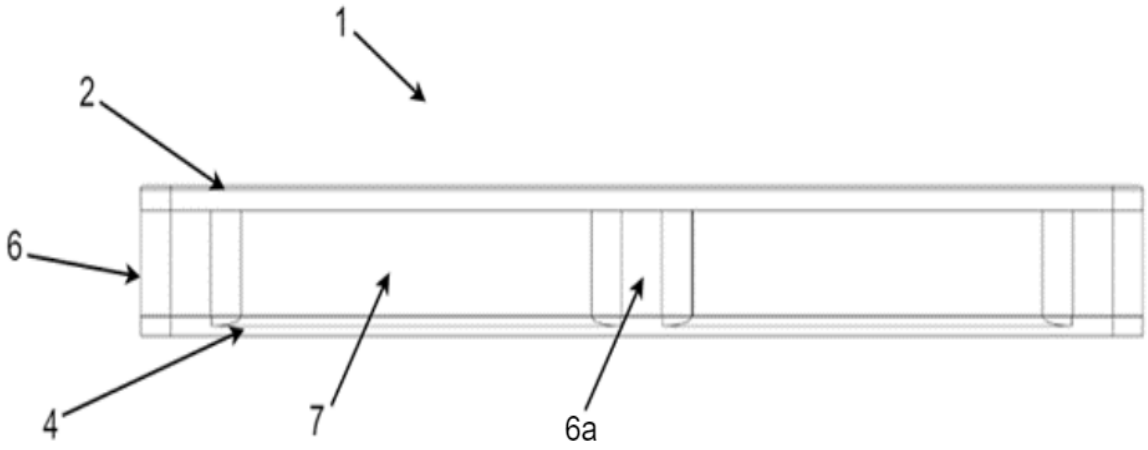


Figure 3

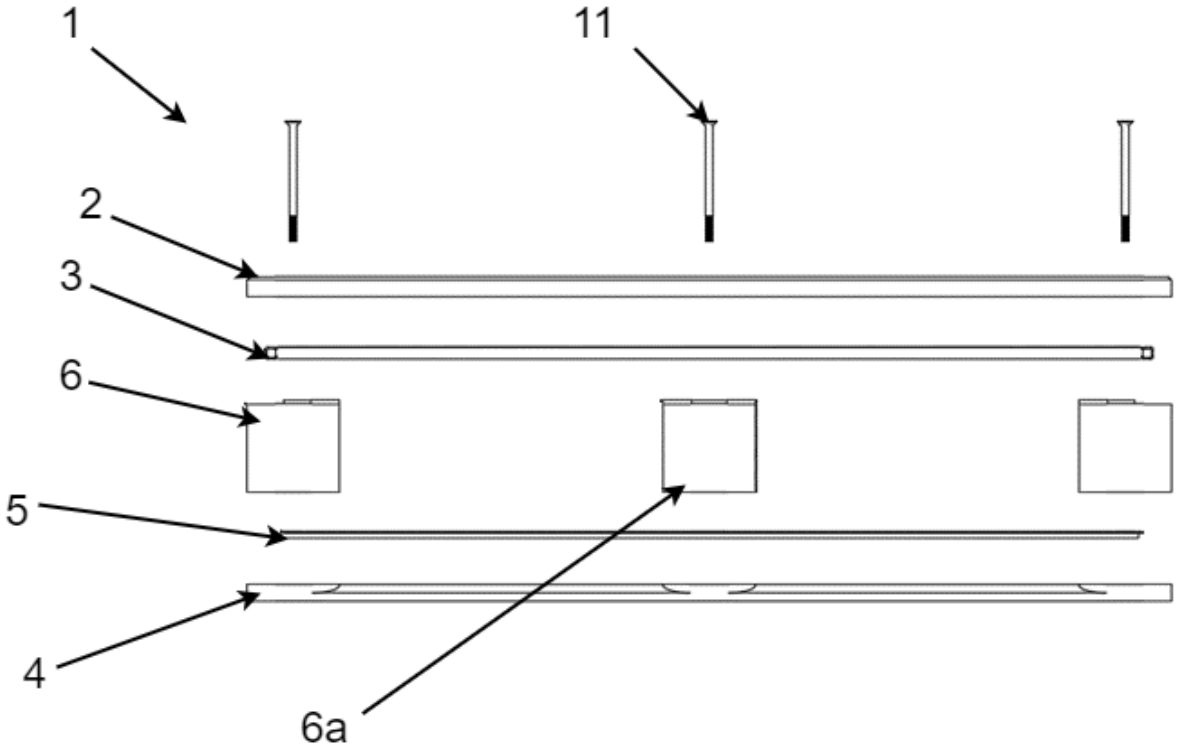


Figure 4

Question 2 – My Invention
Figure 5 & 6

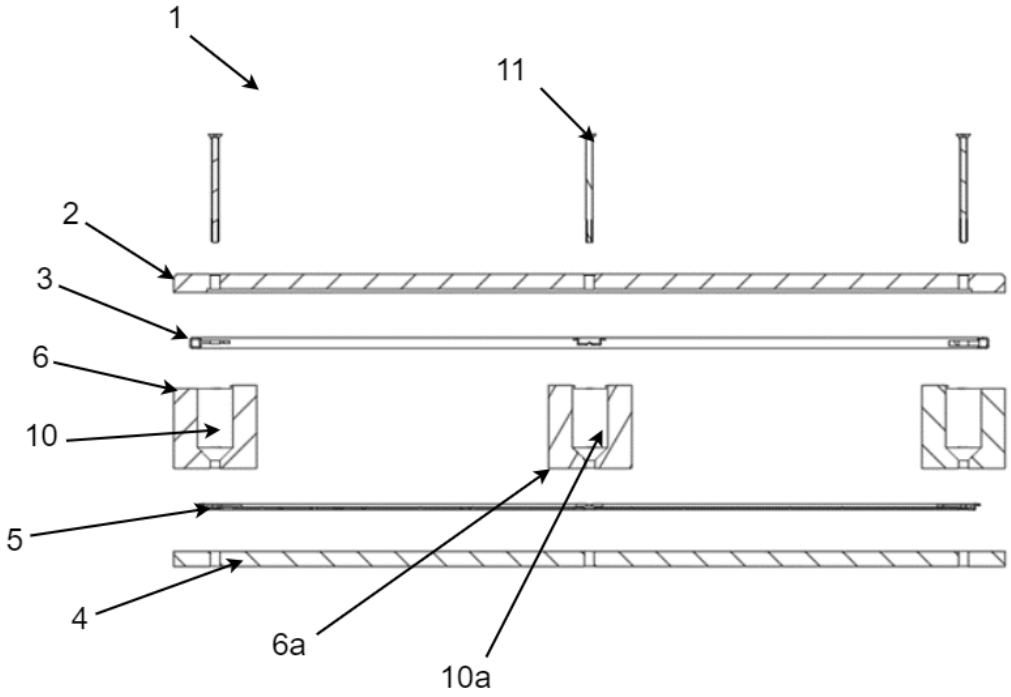


Figure 5

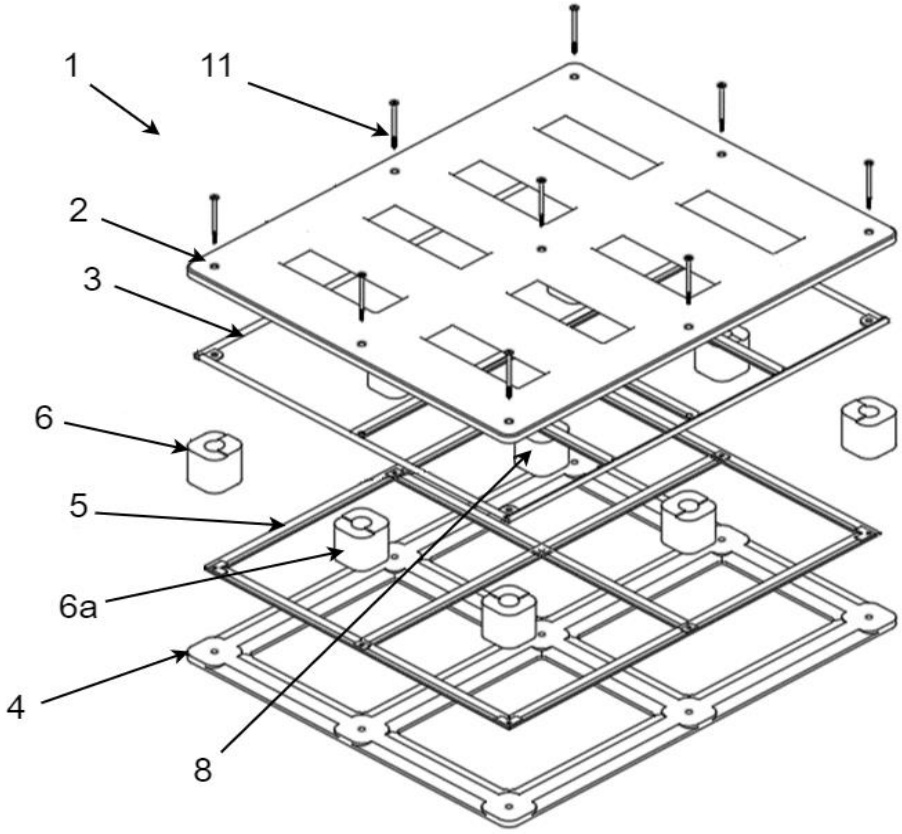


Figure 6

Question 2 – My Invention
Figures 7 & 8

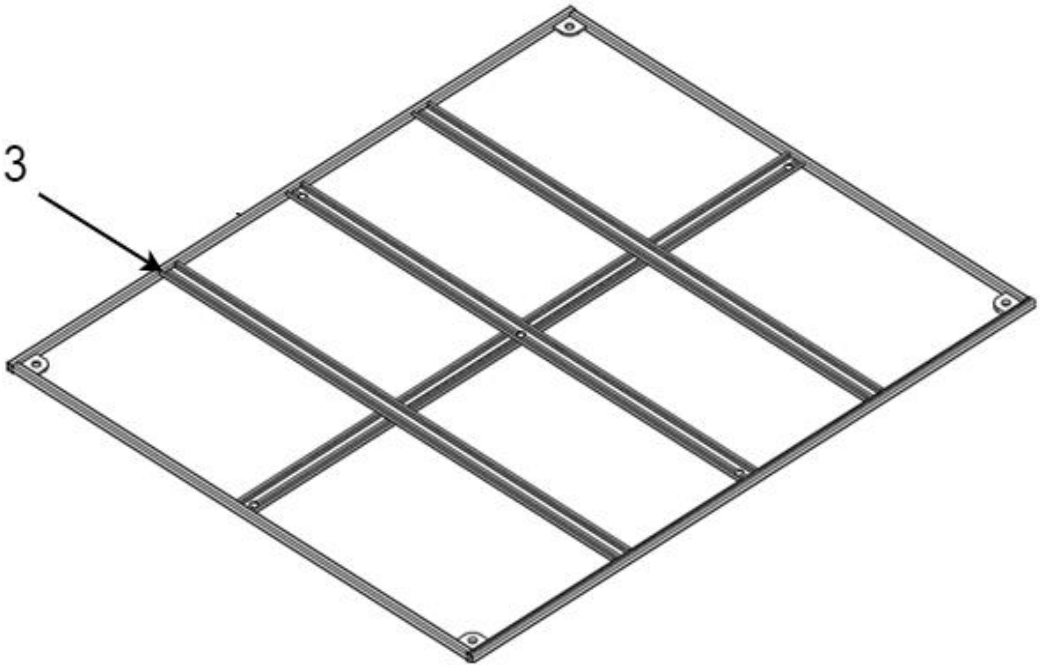


Figure 7

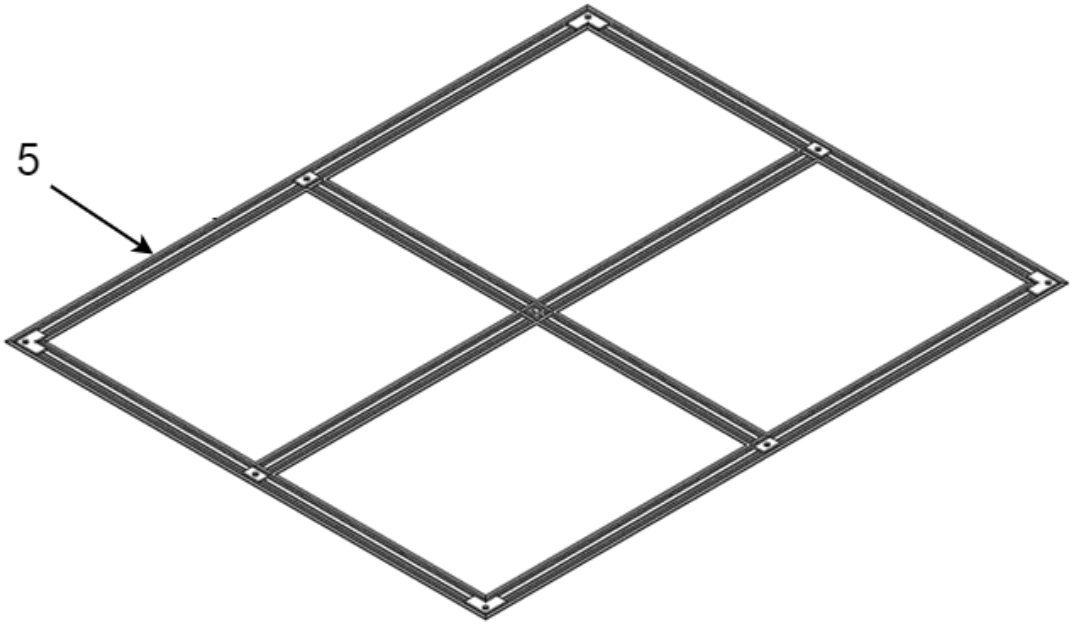


Figure 8

Question 2 – My Invention
Figures 9 & 9a

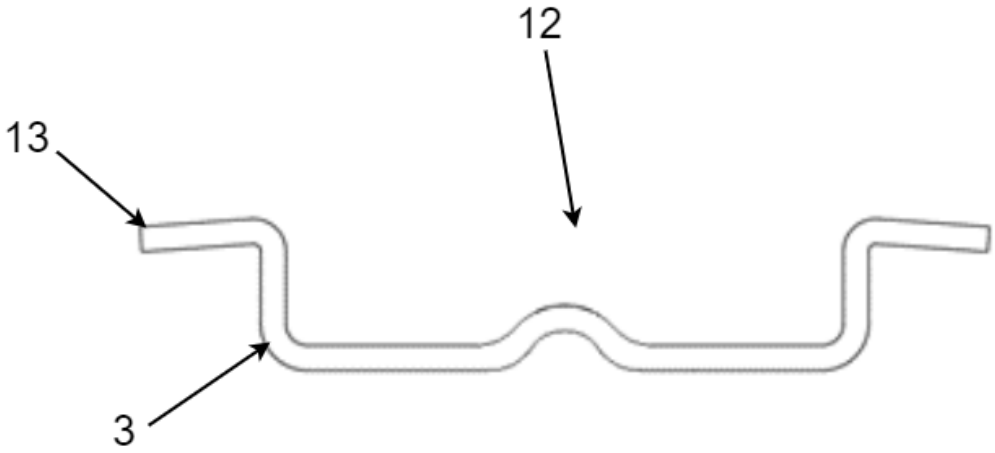


Figure 9

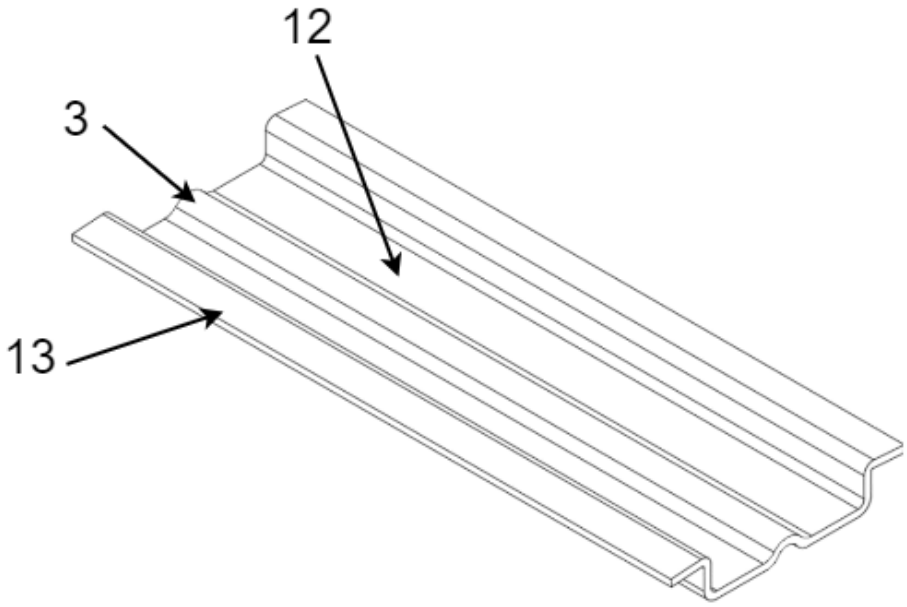


Figure 9a

Question 1 – My Invention
Figure 10 to 10b

Figure 10

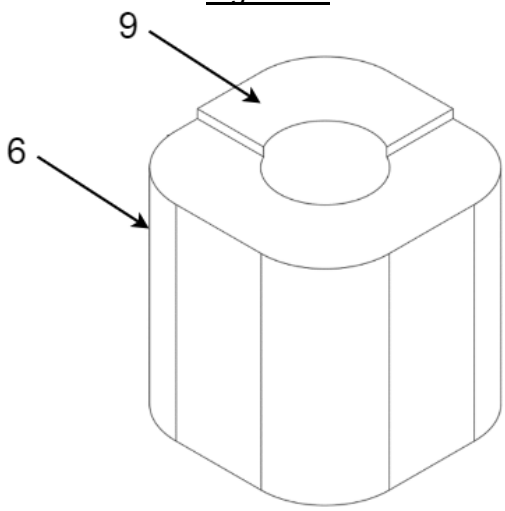


Figure 10a

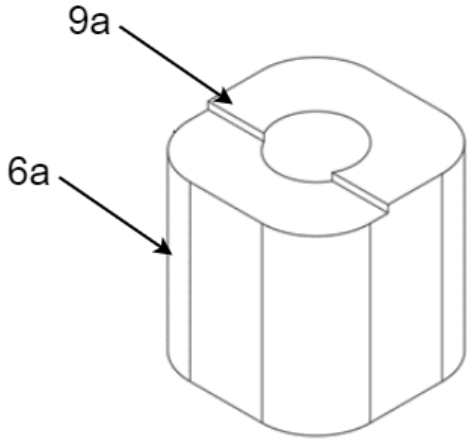


Figure 10b