

## PATENTS EXAMINATION BOARD

Subject: Drafting of Patent Specifications - Paper 1

Date: November 2015

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

Examiners: J Fiandei  
V Williams

Moderator: J D Whittaker

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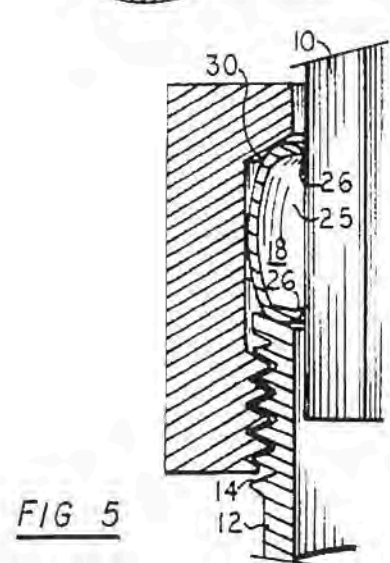
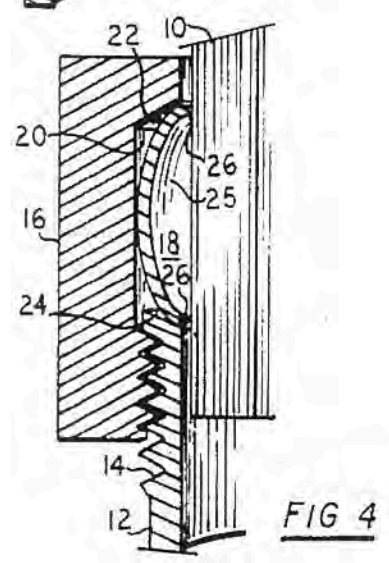
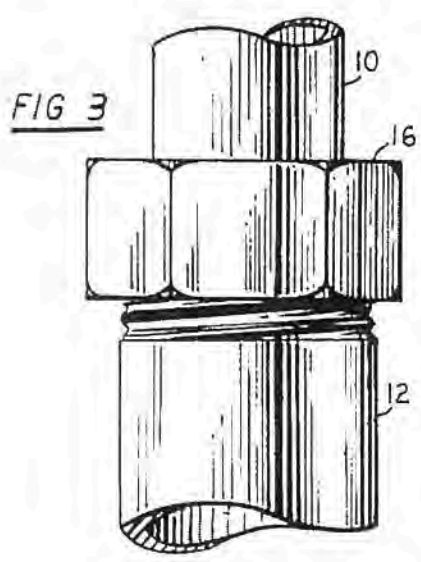
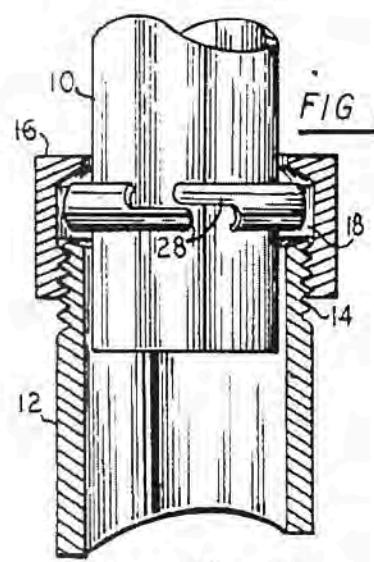
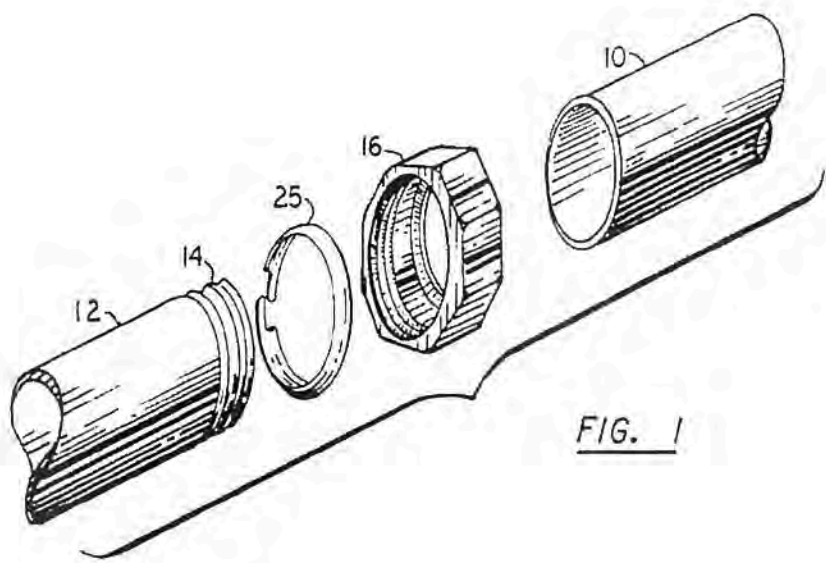
### Question 1

Your client Mr Twist, a solar panel installer, tells you that he has identified a need for a solar panel to be easily rotatable so as to allow it to track the position of the sun in the sky through the seasons from spring all the way to winter. He says that, traditionally, solar panels are mounted on a telescopically displaceable sleeve-and-rod support post arrangement similar to that of a beach umbrella. Unfortunately however, once the height is set and the rod is locked in position relative to the sleeve via a conventional umbrella cam lock mechanism, rotational displacement of the panel is not possible without first unlocking the locking mechanism. The problem with this system is that, when unlocked, the sheer weight of the panel will cause the rod to retract into the sleeve if it is not supported at the same time. Consequently, if one wants to rotate the panel between the spring and summer positions, one has to hold and support the panel at the desired height whilst simultaneously rotating the panel to its desired orientation. Mr Twist says that his invention overcomes this problem because he is able to rotate the panel without having to support it during its rotational adjustment.

Mr Twist also hands you a set of drawings numbered Figures 1 to 5 which illustrates the adjustable part of his invention. This adjustable part includes an inner tube 10 which is telescopically slideable within an outer tube 12, the latter having a threaded end 14 which engages a gland nut 16

in a manner similar to a packing gland. The gland nut 16 has a relieved interior to define a seating area 18 and a rear seating thread-free, smooth surface 20. Adjoining the surface 20 are first, a ramp 22 defined by an inturned lip of the gland nut 16 and second, a ramp 24 defined by the outer tube 12. Inside the seating area 18 is an annular bearing ring 25 which is C-shaped in cross section (as best seen in Figures 4 and 5), and which defines sharp edges at the tips of the C, as indicated at 26. The annular bearing ring 25 is split, as shown in Figures 1 and 2, with overlapping tabs 28 to define 360° continuity of the gripping action. The overlapping tabs 28 of course permit the bearing ring to contract and expand to a certain extent which is required under the action of the gland nut 16. As can be seen in Figure 4, before the gland nut 16 is tightened down onto the outer tube 12, there is space in the seating area 18 for the bearing ring to seat without purchasing on the inner tube 10 to any significant degree (or to any degree at all for that matter). In the loose condition illustrated in Figure 4, there is no significant resistance to relative longitudinal displacement of the inner tube 10 and the outer tube 12. However, as shown in Figure 5, as the gland nut 16 is tightened down onto the outer tube 12, the ramps 22 and 24 in effect close in on the rims of the convex rear surface 30 of the bearing ring, longitudinally compressing the bearing ring 25 slightly (although tolerances are fairly close), and causing the edges 26 of the bearing ring to dig into the inner tube 10. The effect this has on the joint is to enable rotation to take place fairly easily (by simply twisting the inner tube 10 relative to the outer tube 12 by hand), and at the same time offering a much greater resistance to longitudinal displacement of the tube 10 relative to the tube 12. In this example of the invention, the bearing ring 25 grips the inner tube 10 and rotates with the inner tube relative to the outer tube. However, the bearing ring may be designed to grip the outer tube 12 and to rotate with the outer tube relative to the inner tube. Mr Twist envisages that his invention will also have application in fields beyond that of solar panel mounting arrangements.

You are required to identify the inventive feature(s) of the invention, and to draft up to three claims to protect the invention.



## Question 2

Your client Mr Safety, an electrician, tells you that he has designed a new safety device for preventing water from coming into contact with the terminals of electric connectors, such as connectors on extension cables and the like. Mr Safety also hands you some drawings showing an embodiment of his invention. The safety device 10 comprises a flexible bag 12 formed from an opaque or transparent, waterproof material. The bag 12 has a first end 16 which defines a mouth, and a second end 18. Both ends 16 and 18 of the bag 12 are capable of being opened. Preferably, the end 16 is designed to open and close without the use of tools. For example, the end 16 may have quick release fasteners which will be described in more detail below. Typically, the end 18 is closed with screws 19 (see Figure 4) so as to capture an electrical cable 48 carrying a connector 52 within the bag 12. The second end 18 includes two plate members 20 and 22 (as best seen in Figure 4) which, when joined together by the screws 19, form a channel 24 therein for receiving the electrical cable 48, as shown in the drawings. Although the plate members 20 and 22 are joined together with the screws 19 in the illustrated embodiment, any other suitable fasteners, such as a snap fastener, may be used.

Between the two plates 20 and 22, a seal 25 is formed preventing water from entering the interior of the bag 12. Also, a circular seal 26 locates in the channel 24 (see, for example, Figure 4 of the drawings) to seal between the electrical cable 48 and the channel 24. Preferably, the material of the seal 26 is a formable, non-resilient sealant. In a preferred form, the seal 26 is formed from a material such as a gum/rubber compound, and is compliant or deformable by hand so as to assume the shape of the space between the electrical cable 48 and the channel 24 and thereby form a watertight seal between the electrical cable and the channel 24. However, it will be appreciated that any suitable material which is moldable, non-resilient, non-flowable and water impervious may be used. It is also possible to use a resilient material which is suitably sized to form a seal with the electrical cable 48, or a flexible, apertured diaphragm formed in two segments.

At the end 16, the mouth includes two opposed members 16A and 16B which carry a seal. The seal may comprise a sealing member 16AA which is disposed on the mouth member 16A, and/or a sealing member 16BB which is disposed on the mouth member 16B. The sealing members

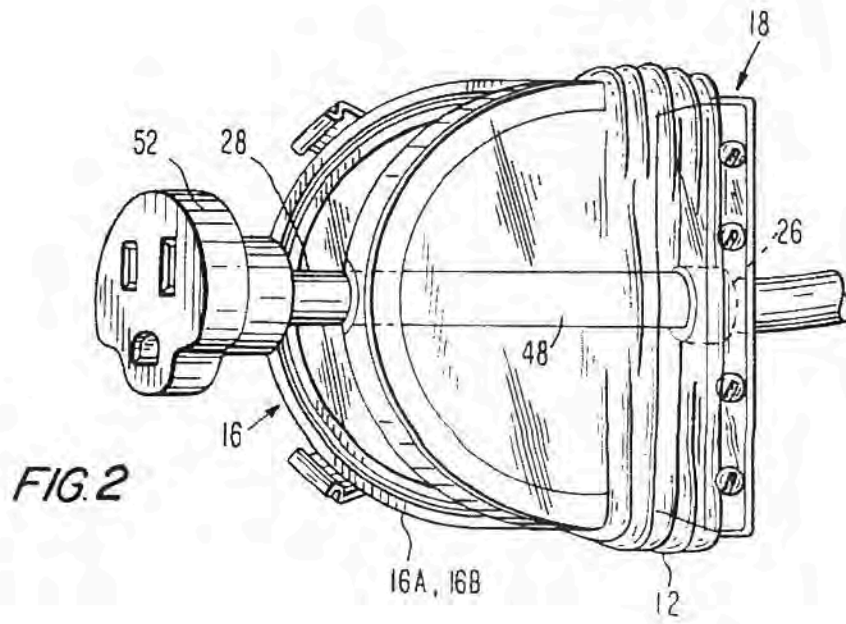
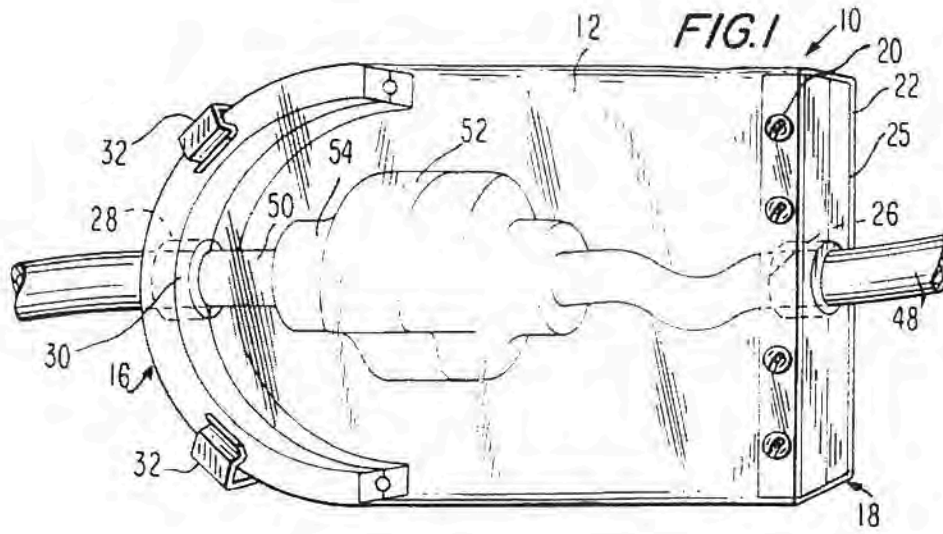


16AA/16BB are preferably formed from neoprene, rubber or a plastics material which is easy to clean so as to maintain a proper seal. At the center of each of the mouth members 16A and 16B, a semi-circular opening 28A and 28B, respectively, is provided. When the members 16A and 16B are closed upon each other, a circular channel 28 is formed for receiving a second electrical cable 50 which carries a connector 54 (see Figure 1). As with the channel 24 at the end 18, a sealing member 30 is provided in each of the semi-circular openings 28A and 28B. The seal 30 is preferably formed from an inelastic, moldable material similar to that of the seal 26 so that it can be molded to the electrical cable 50 each time the end 16 is closed. As for the seal 26, it will be appreciated that the seal 30 may also be formed from a resilient or elastic material which is sized to fit varying sizes of electrical cables. The various seals are designed so that, when the two mouth members 16A and 16B are brought together into the closed condition as shown in Figure 1 of the drawings, a waterproof seal is formed. To hold the mouth members 16A and 16B together, releasable latches or snap fasteners 32 may be provided.

In operation, the flexible bag 12 is folded or pushed back much like an accordion towards the end 18 so that the mouth members 16A and 16B move past the connector 52 on the cable 48 and expose this connector, as shown in Figure 2. The connector 54 of the cable 50 is then connected to the connector 52, and the bag 12 is released so as to cover the connectors 52 and 54. The two mouth members 16A and 16B are then closed and sealed thereby capturing the electrical cable 50 in a sealing fashion. In the closed condition of the bag 12, the connected electrical cables 48 and 50 and the connectors 52 and 54 are sealed from ambient conditions, thereby minimizing the risk of electrical shock.

If desired, the bag may be formed from a material which resists impacts so as to also protect the connectors 52 and 54 from impact damage.

You are required to identify the inventive feature(s) of the invention, and to draft up to three claims to protect the invention.



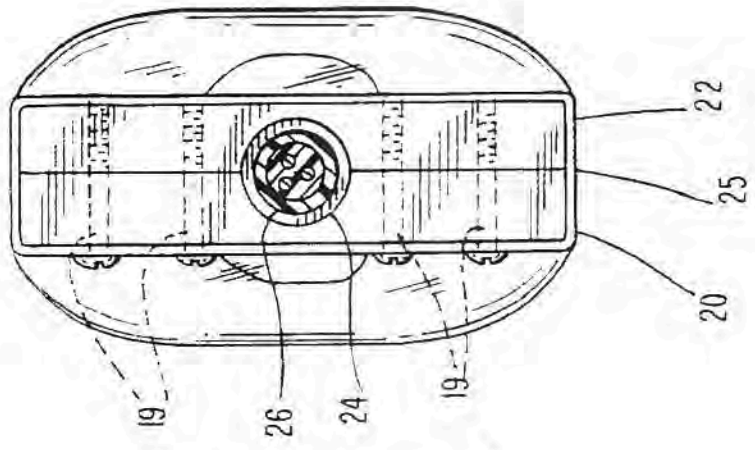
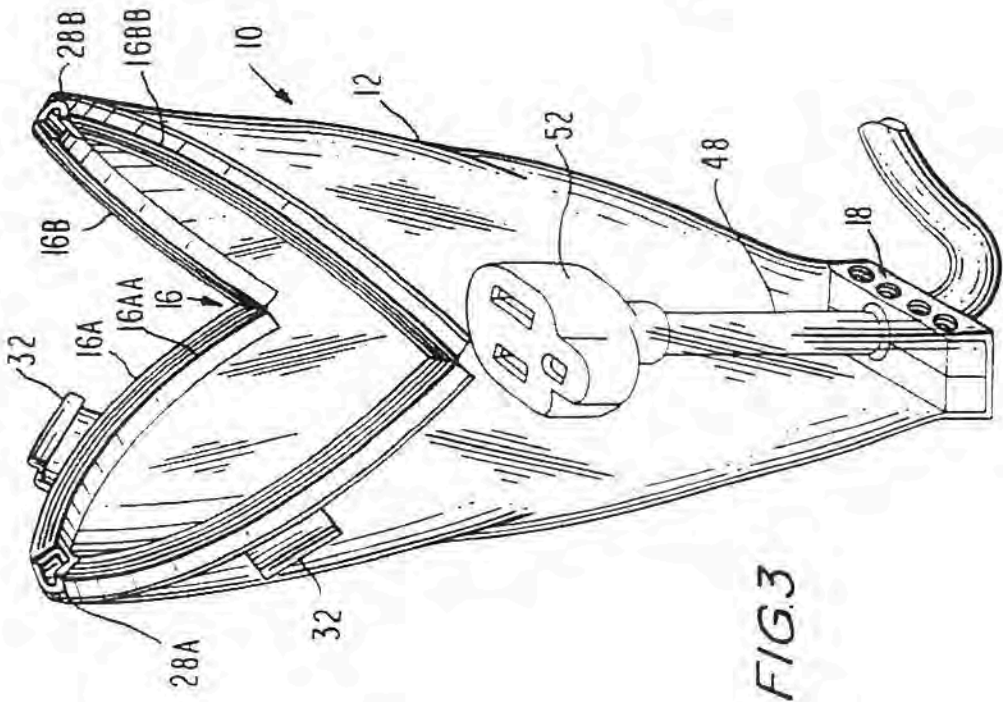


FIG. 3

FIG. 4