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(71) Applicant: **Fox International Group Limited**
Hainault,
Essex IG6 3UT (GB)

(72) Inventor: **McSpadden, Shaun Michael**
Chelmsford, Essex CM3 4EU (GB)

(74) Representative: **Crouch, David John et al**
Bromhead Johnson
Sovereign House
212-224 Shaftesbury Avenue
London WC2H 8HQ (GB)

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(54) **A CANOPY**

(57) A canopy (10) comprising a hub (16) from which extend a plurality of ribs (18), and sheet material (20) which is supported by the ribs (18) when the canopy (10) is in use. The sheet material (20) has an aperture (54) over the hub (16) and is clamped by a cap (22) also over the hub (16) with edges (52) of the sheet material (20) which define the aperture (54) being sandwiched between the cap (22) and the hub (16). A fixing device (71) extends from the cap (22), through the aperture (54), to the hub (16). Yieldable material (60) has portions (62, 64) extending on both sides of the sheet material (20) at

the said edges (52) thereof. The said fixing device (71) extends through the yieldable material (60) so that the said edges (52) of the sheet material (20) are sandwiched between the said portions (62, 64) and so that the said portions (62, 64) are also sandwiched between the cap (22) and the hub (16), and are squashed therebetween by means of the fixing device (71) when the canopy (10) is in use to form a seal that inhibits ingress of water from an intended outside of the canopy (10) to an intended inside thereof.

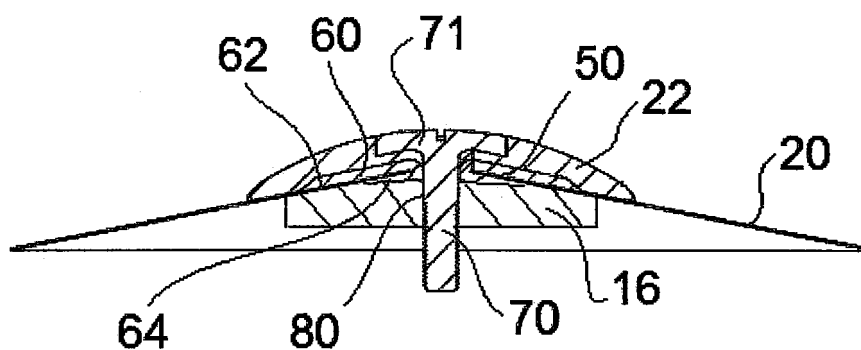


Fig. 5

Description

[0001] The present invention relates to a canopy, especially but not exclusively for use in angling.

[0002] Such a canopy is described in GB-A-1190691. Figure 1 thereof shows a notch 2 and a bell cap 3 between which are sandwiched an unlabelled portion of sheeting material which constitutes an awning. Although this particular aspect of the umbrella illustrated is not described in detail in the specification, the cap 3 is screwed down onto the notch 2 with the sheet material sandwiched therebetween to provide a seal between the exterior and the interior of the umbrella. However, this has not been found to provide an adequate seal, and requires the application of a silicone gel, or waterproofing tape, or a foam to assist with the sealing action of the cap 3 against the notch 2. Not only is this relatively messy, it is also likely to fail after a relatively short period of time, and furthermore the screwing action of the bell cap 3 on to the notch 2 can damage the sheet material trapped between them.

[0003] The present invention seeks to provide a remedy.

[0004] Accordingly, the present invention is directed to a canopy comprising a hub from which extend a plurality of ribs, sheet material which is supported by the ribs when the canopy is in use, the sheet material having an aperture over the hub and being clamped by a cap also over the hub with edges of the sheet material which define the aperture sandwiched between the cap and the hub, characterised in that a fixing device extends from the cap, through the aperture, to the hub, and yieldable material having portions extending on both sides of the sheet material at the said edge thereof and also through which extends the said fixing device so that the said edges of the sheet material are sandwiched between the said portions of and so that the said portions are also sandwiched between the cap and the hub, is squashed therebetween by means of the fixing device when the canopy is in use to form a seal that inhibits ingress of water from an intended outside of the canopy to an intended inside thereof.

[0005] Such a construction provides an effective seal between the exterior and the interior of the canopy against ingress of water, for example rainwater. Assembly of the construction is easier, and repair and maintenance are facilitated.

[0006] The portions of yieldable material may be provided by a single piece grommet, or by respective pieces to enable them to be more easily moulded.

[0007] The sheet material may be made of sections arranged so that adjacent sections are held together along their adjacent edges, with respective inner edges of each section defining the said aperture.

[0008] The present invention is especially applicable to such a construction of sheet material, especially because it is difficult to manufacture such an awning without having such an aperture in it.

[0009] At least one of the said portions of the grommet

may comprise a flange thereof.

[0010] This provides an effective sealing arrangement.

[0011] The said portions of the grommet may comprise respective flanges.

5 [0012] This provides a more effective sealing arrangement.

[0013] At least one of the flanges may be generally conical in shape.

10 [0014] This provides a grommet which will yield uniformly around the said edges of the sheet material which define the aperture.

[0015] An intended upper one of the flanges may be received in a recess in the underside of the cap.

15 [0016] This provides an effective manner of retaining the relative positioning of the cap and parts of the grommet.

[0017] The fixing device may comprise a bolt.

20 [0018] Such a device is especially effective if it screws into a correspondingly internally screw threaded hole or recess in the hub such that rotation of the bolt brings the cap and the hub together without rotating those parts relative to the sheet material, or the grommet, so that those parts are less likely to be damaged during assembly.

25 [0019] The head of the bolt may be recessed in the cap so that the upper faces thereof are smooth and are less likely to be unintentionally worked free or undone.

30 [0020] Alternatively, the head of the bolt may be provided with a protruding eyelet to provide means for attaching respective ends of guy ropes to the bolt.

[0021] The fixing device may alternatively comprise at least one part which is movable relative to a lever part provided with a cam, or it may comprise a ratchet device.

35 [0022] This provides a construction which can be assembled in a speedy fashion.

[0023] The cap may be wider than the hub. This protects the sheet material if the canopy is inverted and pressed against the ground during erection or folding of the canopy.

40 [0024] An example of a canopy made in accordance with the present invention will now be described in greater detail with reference to the accompanying drawings, in which:

45 Figure 1 shows an axial sectional diagrammatic view of a canopy embodying the present invention, in an erected condition;

Figure 2 shows a perspective view from above of a cap with a bolt and a portion of sheet material, the cap being represented as see-through to show other parts of the construction, which forms a part of the canopy shown in Figure 1;

Figure 3 shows an axial sectional view of the parts shown in Figure 2;

55 Figure 4 shows an exploded diagrammatic view of the parts shown in Figures 2 and 3; and

Figure 5 shows an axial sectional view of the parts shown in Figure 3 secured to a further part of the

canopy shown in Figure 1.

[0025] A canopy in the form of an umbrella 10 is shown in Figure 1. It comprises a central shaft 12 having secured to its upper end 14 a hub 16 which is generally disc-shaped, and radially outwardly from which extend a plurality of ribs 18, only two of which are shown in Figure 1. Eight others are not visible in Figure 1, and they are equi-angularly spaced apart around the hub 60. An awning or cover of sheet material 20 is secured between the hub 16 and a moulded plastics disc-shaped cap 22 at its centre, and is stretched over the arms 18 to provide a dome shaped canopy. Pockets 24 of the sheet material 20 spaced apart around the outer periphery thereof receive distal ends 26 of the rods 18 respectively, to maintain the sheet material 20 in a stretched state over the ribs 18. The cap 22 is wider than the hub 16.

[0026] Respective struts 28 support the ribs 18 in their extended condition, and extend from a slider 30 located on the shaft 12 to the ribs 18. Each strut 28 is pivotably connected to its associated rib 18 at one end, and is also pivotably connected to the slider 30 at its other end. In the open condition of the umbrella 10 shown in Figure 1, the slider 30 is urged towards the hub 16 by virtue of it being over centre action in the sense that is beyond the position in which the the tension in the nylon sheet material 20 changes the direction I which it urges the slider 30 from downwards to upwards. However, the slider 30 is inhibited from further movement along the shaft 12 towards the hub 16 under the force of the stretched material 20 and the weight of the ribs 18, by an abutment ring 32 which is fixed to the shaft 12.

[0027] With the umbrella 10 in its open condition as illustrated in Figure 1, a lower portion 34 of the shaft 12, the upper end 36 of which is below the slider 30, can be disconnected from the upper part 38 of the shaft 12 by unscrewing a screw connector 35 at the junction between those two parts 34 and 38. This removes the obstacle created by the lower part 34 of the shaft 12, to make more of the interior under the canopy or umbrella 10 available to the user when the latter is rested on the ground.

[0028] To fold the umbrella 10 ready for stowage, the lower part 34 of the shaft 12 is screwed back onto the upper part 38 of the shaft 12, and the slider 30 is slid downwardly away from the hub 16 at the same time drawing the ribs 18 towards the shaft 12 via the struts 28, such movement been facilitated by the pivotal connection of each strut 28 to its associated rib 18 and also to the slider 30.

[0029] Further details of the construction of the umbrella 10 at its hub 16 and cap 22 are shown more clearly in Figures 2 to 5. Thus it can be seen that the sheet material 20 comprises a number of sectors 50 having respective inner edges 52 defining a central aperture 54 of the sheet material. Adjacent sectors 50 are joined together along seams 56 by stitching and/or fusing of the sheet material along the seams.

[0030] A grommet 60 of readily yieldable and resilient

material such as rubber has the form of two frustoconical flanges 62 and 64. The upper flange 62 is more planar than the lower flange 64, and is received in a recess 66 on the underside of the cap 22.

[0031] Both the cap 22 and the grommet 60 are provided with respective central holes through which extends the shaft 70 of a moulded plastics bolt 71 having a bolthead 72 fitting within a recess 74 in the upper side of the cap 22. The edges 52 of the sectors 50 of the sheet material 20 are received within the grommet 60 where its flanges 62 and 64 meet, such that those flanges are respectively on opposite sides of the inner parts of the sectors 50 of the sheet material 20. It will be appreciated in this respect that what is illustrated here in Figure 3 is the grommet 60 in a relaxed condition, before the shank 70 of the bolt 71 engages the hub 16 shown in Figures 1 and 5.

[0032] When the assembly shown in Figure 3 is secured to the hub 16, the shank 70 of the bolt 71 is screwed into and internally screwthreaded central aperture 80 of the hub 16. It will be appreciated that in this process, as the head 72 of the bolt 71 is rotated, the whole of the bolt 71 rotates while the cap 22, the grommet 60, the sheet material 20 and the hub 16 do not rotate. As the hub 16 and the cap 22 are brought closer together by the screwing action, the lower flange 64 of the grommet 60 is pushed upwardly against the underside of the inner regions of the sectors 50 of the sheet material 20 until the grommet 60 is compressed with the lower flange 64 expanded between the cap 22 and the hub 16, so that the inner portions of the sectors 50 of the sheet material 20 are sandwiched between the squashed flanges 62 and 64 of the grommet 60, and the grommet 60 itself is sandwiched between the hub 16 and the cap 22. This ensures a watertight seal around the inner edges 52 of the sectors 50 of the sheet material 20, inhibiting ingress of rainwater or other fluids from the exterior of the opened umbrella 10 to the interior thereof.

[0033] Numerous variations and modifications to the illustrated umbrella 10 may occur to the reader without taking the resulting construction outside the scope of the present invention. For example, in its relaxed condition, the grommet 60 may comprise two frustoconical flanges extending from a central part of the grommet 60 in opposite directions to the axis thereof. Thus the upper flange 62 does not have to be more planar than the lower flange 64. The two flanges could be made as separate pieces to facilitate moulding. The number of sectors 50 of the sheet material 20 may be less than 10, or it may be more than 10. Instead of a bolt 71 securing the cap 22 to the hub 16, there could be provided a different fixing device comprising a shaft which extends through the aperture through the cap 22, the grommet 60 and the hub 16, with a flange on its underside abutting the underside of the hub 16, and at its upper end a lever pivotably attached thereto and having a cam which engages the upper side of the cap 22 such that as the lever is pushed down on to the upper side of the cap 22, it draws its lower

flange upwardly to compress the grommet 60 as the upper side of the hub 16 is pressed against the lower side of sheet material 22 and the cap 22. Another form of fixing device that could be used instead of the bolt 71 is a ratchet device. The grommet 60 may be made of a resilient material other than rubber. A locking bolt (not shown) may be used to temporarily secure the slider in the position it adopts when the umbrella 10 is in the open condition as shown in Figure 1.

Claims

1. A canopy (10) comprising a hub (16) from which extend a plurality of ribs (18), sheet material (20) which is supported by the ribs (18) when the canopy (10) is in use, the sheet material (20) having an aperture (54) over the hub (16) and being clamped by a cap (22) also over the hub (16) with edges (52) of the sheet material (20) which define the aperture (54) sandwiched between the cap (22) and the hub (16), **characterised in that** a fixing device (71) extends from the cap (22), through the aperture (54), to the hub (16), and yieldable material (60) having portions (62, 64) extending on both sides of the sheet material (20) at the said edges (52) thereof through which yieldable material extends the said fixing device (71) so that the said edges (52) of the sheet material (20) are sandwiched between the said portions (62, 64) and so that the said portions (62, 64) are also sandwiched between the cap (22) and the hub (16), and are squashed therebetween by means of the fixing device (71) when the canopy (10) is in use to form a seal that inhibits ingress of water from an intended outside of the canopy (10) to an intended inside thereof.
2. A canopy according to claim 1, **characterised in that** the portions (62, 64) of yieldable material are provided by a single piece grommet (60).
3. A canopy according to claim 1, **characterised in that** the portions (62, 64) of yieldable material are provided by respective pieces (62, 64) together constituting a grommet (60).
4. A canopy according to claim 2 or claim 3, in which at least one of the said portions (62, 64) of the grommet (60) comprises a flange (62 or 64) thereof.
5. A canopy according to claim 4, **characterised in that** the said portions (62, 64) of the grommet (60) comprise respective flanges (62, 64).
6. A canopy according to claim 5, **characterised in that** at least one of the flanges (64) is generally conical in shape.
7. A canopy according to claim 5 or claim 6, **characterised in that** an intended upper one of the flanges (62) is received in a recess (66) in the underside of the cap (22).
8. A canopy according to any preceding claim, **characterised in that** the sheet material (20) is made of sections (50) arranged so that adjacent sections (50) are held together along their adjacent edges (56), with respective inner edges (52) of each section (50) defining the said aperture (54).
9. A canopy according to any preceding claim, **characterised in that** the fixing device (71) comprises a bolt (71).
10. A canopy according to claim 9, **characterised in that** the bolt (71) screws into a correspondingly internally screw threaded hole (80) or recess in the hub (16) such that rotation of the bolt (71) brings the cap (22) and the hub (16) together without rotating those parts relative to the sheet material (20), or the grommet (60).
11. A canopy according to claim 9 or claim 10, **characterised in that** the head (72) of the bolt (71) is recessed in the cap (22) so that the upper faces thereof are smooth and are less likely to be unintentionally worked free or undone.
12. A canopy according to claim 9 or claim 10, **characterised in that** the head (72) of the bolt (71) is provided with a protruding eyelet to provide means for attaching respective ends of guy ropes to the bolt (71).
13. A canopy according to any one of claims 1 to 8, **characterised in that** the fixing device comprises at least one part which is movable relative to a lever part provided with a cam.
14. A canopy according to any one of claims 1 to 8, **characterised in that** the fixing device comprises a ratchet device.
15. A canopy according to any preceding claim, **characterised in that** the cap (22) is wider than the hub (16).

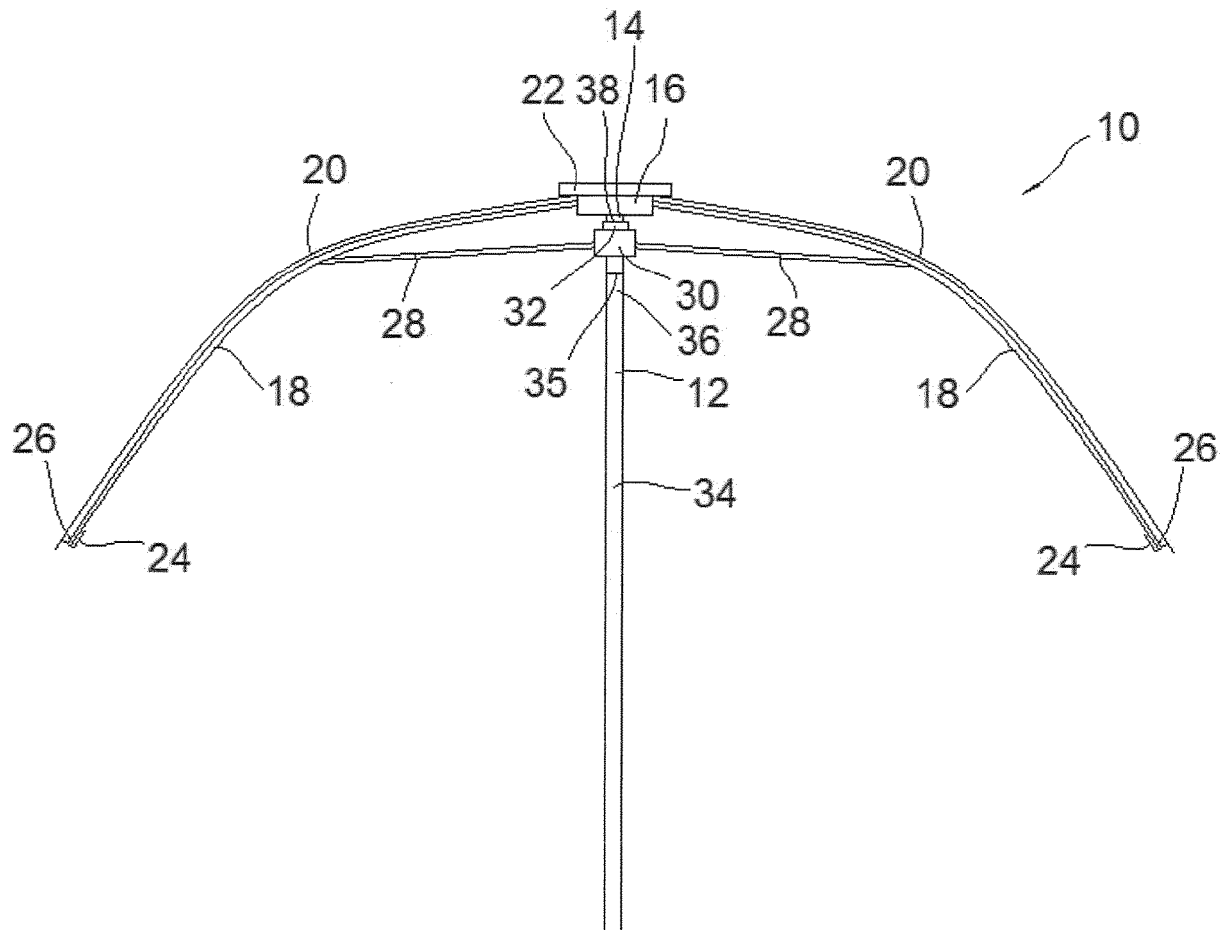


Fig. 1

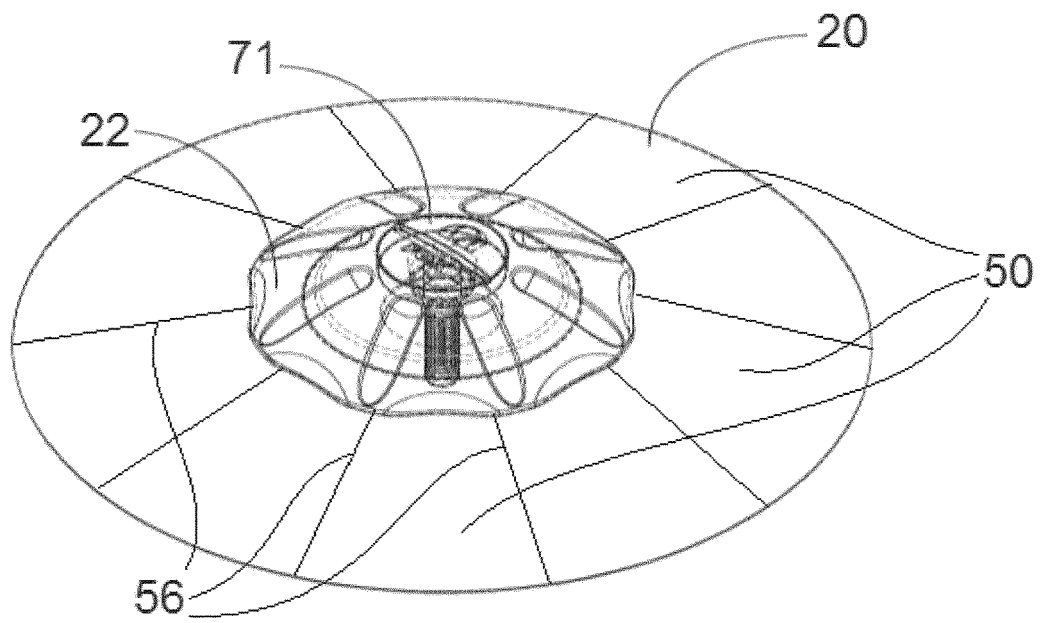


Fig. 2

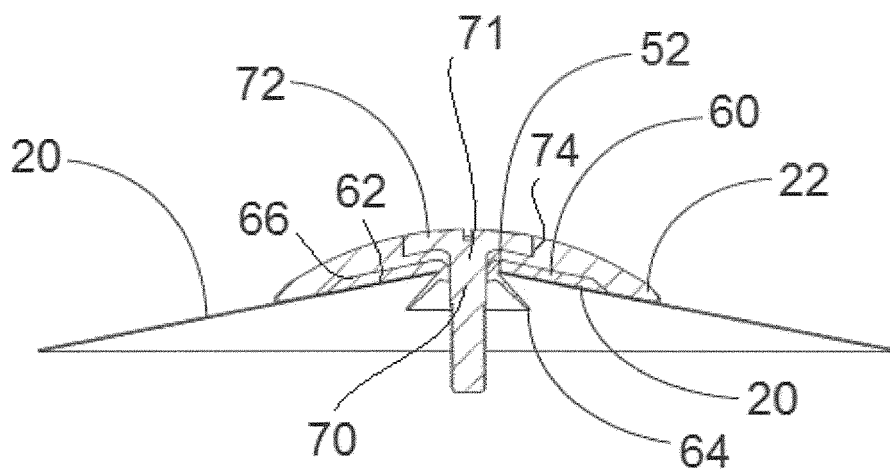


Fig. 3

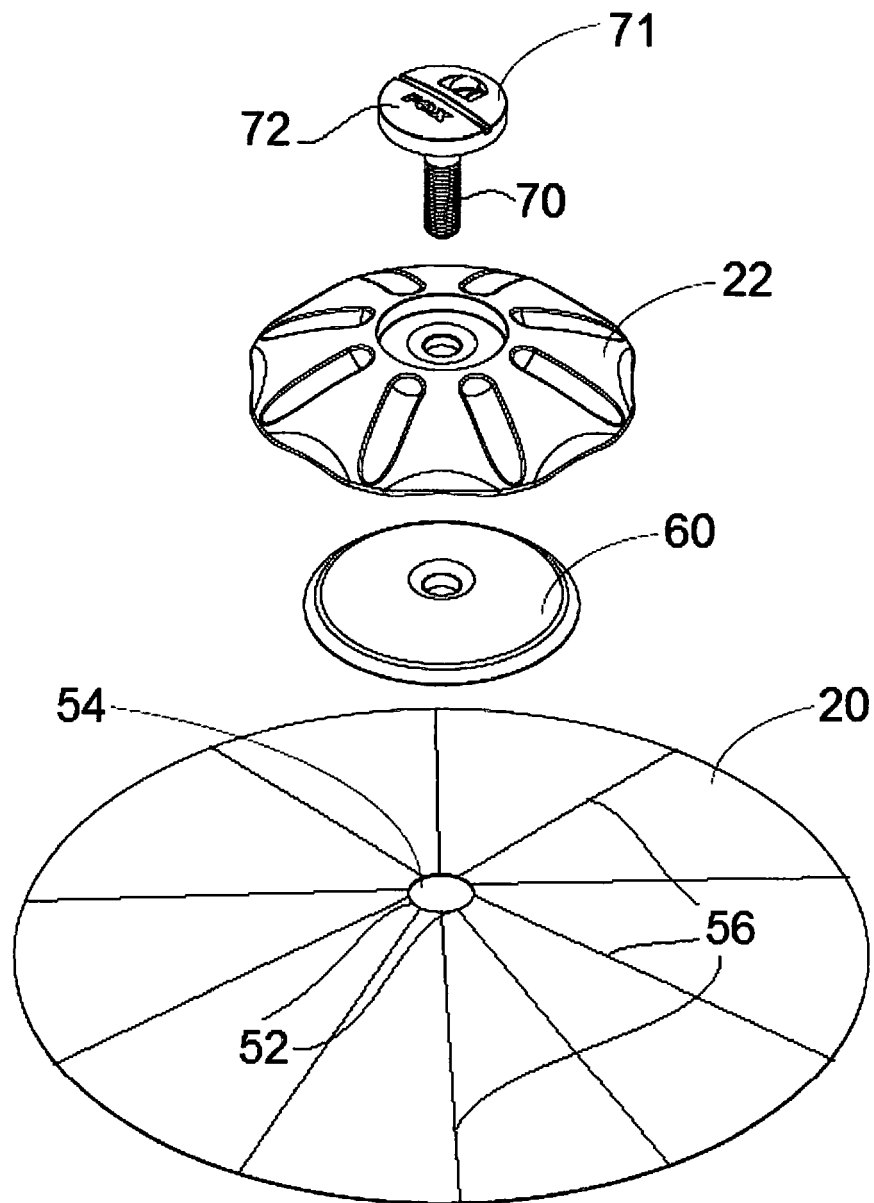


Fig. 4

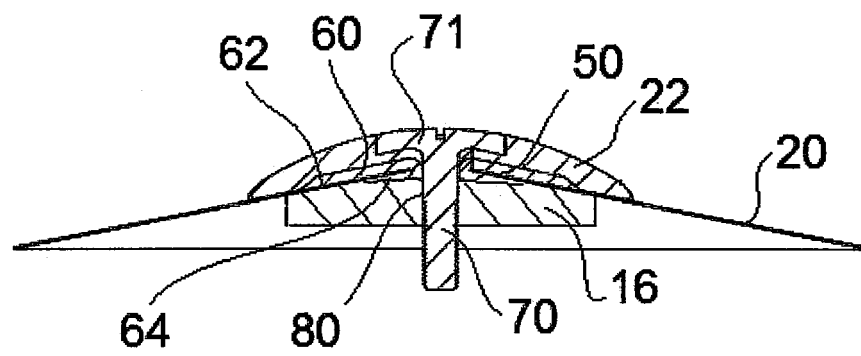


Fig. 5



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 Application Number
 EP 15 02 0228

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Place of search The Hague		Date of completion of the search 17 May 2016	Examiner Ionescu, C
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
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