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(54) **SYSTEM FOR STABILISING A PARASOL**

(57) The invention relates to a system for stabilisation of a parasol, comprising a parasol base tube with an upper end provided with a thread on the outside, a cap comprising an inner thread which is configured to cooperate with the thread of the parasol base tube; and an adapter which is configured to be at least partially received within the parasol base tube, wherein the system is configured such that a screw movement of the cap around the upper end of the parasol base tube causes a clamping engagement.

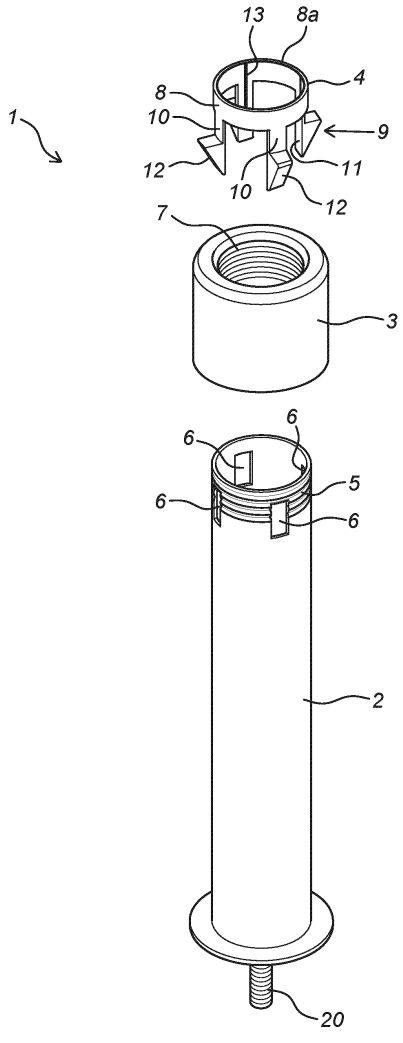

Fig. 1b

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Description

[0001] The invention relates to a system for stabilising a parasol. The invention further relates to a parasol base, a cap and an adapter for use in such system. The invention further relates to a method for manufacturing of a parasol base for a system for stabilising a parasol.

[0002] During summer parasols are used to create artificial shade where desired. The parasols are usually placed in a parasol base and stabilised in a parasol base tube. The parasol is ideally placed centrally and then fixated to keep the parasol in its place. In practice this is not easy to do because due to wind the parasol easily is forced out of the parasol base tube. Problems that occur during stabilising parasol poles are that the wind can cause a parasol to be lifted out of the parasol base tube. This usually happens due to a lifting force and lifts the parasol out of the parasol base tube in a vertical direction. Furthermore, the parasol can start spinning due to effects of the wind. The spinning can cause damages to the parasol pole and reduces the lifetime of the parasol. Another challenge for stabilising parasol poles is that the thickness of parasol poles differs. Known types of devices for stabilising a parasol in a parasol base tube comprise a screw. Downside of this screw is that users tend to apply a lot of force to it that causes damages to the typically aluminium, steel or wooden parasol poles. The use of such a screw to stabilise a parasol pole by definition causes that the parasol pole is not centered within the parasol base tube, but slanted, and thus difficult to put in the desired position for creating artificial shade.

[0003] It is an object of the invention to provide a system for an improved stabilization of a parasol in a parasol tube.

[0004] The invention thereto provides a system for stabilising a parasol, comprising:

- A parasol base tube with an upper end provided with a thread on the outside;
- a cap comprising an inner thread which is configured to cooperate with a thread of a parasol base; and
- an adapter which is configured to be at least partially received within the parasol base tube, comprising:
    - a ring-shaped element comprising a top surface; and
    - at least two flexible fingers, wherein at least one of the fingers extend from the ring-shaped element at least in a direction away from the top surface of the ring-shaped element,
      wherein at least one finger, preferably at least two fingers, more preferably at least three fingers and even more preferably each finger, comprises an outwardly facing surface and an inwardly facing surface and at least one first protrusion on the outwardly facing surface;

wherein at least part of the upper end of the parasol base tube comprises at least one slot, and preferably multiple slots, wherein the at least one slot, and preferably each slot, is configured for receiving at least part of a first protrusion of at least one finger of the adapter; and

wherein a screw or twisting movement of the cap around or on the upper (threaded) end of the parasol base tube forces at least two fingers of the adapter inwards towards each other.

[0005] The present invention is in particular advantageous to position a parasol pole in an upright position. The present invention provides for a stable and robust positioning of a parasol pole. The parasol pole is kept in its place by the fingers of the adapter system of the present invention. The inside surface of the fingers is in abutting and/or pressing contact with the parasol pole during use. Depending on the dimensions of the parasol pole the fingers are more or less firmly forced against the parasol pole. The present invention moreover provides particular benefits in use with parasol poles. Especially since damage to the pole is to be avoided as much as possible. The fingers are forced inwards and thus towards each other and towards the parasol pole during use due to a (at least partly) downward force applied from the cap onto the adapter. This downward force can be applied in various ways. An advantage of the system is that the system is compatible with various sizes of parasol poles. The adapter can be referred to as a universal adapter for various sizes. It is not needed to use various sizes of adapters for different sizes of parasol poles. This universal aspect of the present invention is convenient and avoids redundant parts. Several adapters could be used to make a parasol stabilising system suitable for different thicknesses of parasol poles. The adapter of the present invention can be used for almost all different thicknesses of currently used parasol poles. Depending on the thickness of the parasol pole used the fingers are forced further inwards as appropriate. This saves spare parts or even redundant parts to make the system compatible with the desired parasol pole. This has an advantageous effect on cost, material use and thus on the environmental footprint. Additionally, the adapter can be reused repetitively which is beneficial if a user wants to, occasionally, remove the parasol pole. Since the fingers may allow for releasing the clamping (i.e., by unscrewing the cap) the parasol can be removed without breaking the adapter. Hence the adapter is configured for long-term use. When no parasol pole is inserted, it is possible to remove the adapter

[0006] During use of the system according to the present invention at least part of the adapter is positioned in the parasol base tube and the cap is placed on top of the adapter. Preferably, the cap is arranged such that a screw movement of the cap around the upper end of the parasol base tube forces at least two fingers of the adapter inwards towards each other. Optionally the cap is already twisted a few times to keep it in place. A parasol pole is inserted into the parasol base tube (through an opening in the cap and through the adapter). Preferably

the thread on the outside of the parasol base tube and the inner thread of the cap are configured to cause an upward or downward movement of the cap relative to the parasol base tube, in particular wherein said upward or downward movement of the cap is causes displacing of the at least two, in particular all, fingers outwardly or inwardly (i.e., in a direction away from or towards each other). This allows for an efficient clamping of a parasol pole. It is imaginable that a part of the cap is configured to contact the adapter, in particular for displacing the adapter in a downward direction, wherein said downward direction causes the at least two fingers of the adapter to move inwards towards each other. After insertion of the parasol pole the cap can be twisted (or screwed). During a twisting movement of the cap at least two fingers of the adapter are forced inwards towards each other and thus abutting the parasol pole. Preferably the fingers are not in abutting contact with each other. The more the cap is twisted, the more the fingers are forced inwards. The threaded connection between the cap and the parasol tube ensures that the fingers remain in its inwardly forced position. A pressure force is applied from the fingers onto the parasol pole ensuring the pole is stabilised and centered within the parasol base tube. As such, twisting or turning due to wind forces of the pole within the parasol base tube is greatly reduced because the pole is kept in its place by the (clamping force of the) fingers of the adapter.

[0007] Typically the inner diameter of the cap is larger than the inner diameter of the adapter. When assembled, the outer diameter of the ring-shaped element can be in abutting contact with the inner diameter of the cap. Typically, the dimensions of the outer diameter of the ring-shaped element is at least similar or smaller than the inner diameter of the inner diameter of the cap. The adapter comprises a ring-shaped element. This ring-shaped element can also comprise a circular element with an L-shaped cross section. It is also conceivable that the ring shaped element is formed by a collar.

[0008] The upper end provided with a thread on the outside of the base tube can also be referred to as threaded end. The threaded end and the inner thread of the cap are complementary to each other.

[0009] The adapter is preferably configured to fit at least partly in a parasol base tube. The cap can be configured to fit over and around the parasol base tube. Preferably, the ring-shaped element comprising a top surface is connected to the at least two, preferably each, flexible fingers, preferably forming integral part of the adapter. The adapter and the cap are formed by separate components. It is imaginable that the cap is connectable to a part of the cap, wherein said connection allows for a relative rotational movement of the cap and adapter and causes a mutual vertical displacement. Alternatively, it is imaginable that a part of the cap contacts a part of the adapter such that a vertical displacement of the cap relative to the adapter causes the adapter to be displaced. Preferably a part of the cap is configured to contact the adapter, in particular for displacing the adapter in a downward direction, wherein said downward direction causes the at least two fingers of the adapter to move inwards towards each other.

[0010] The adapter is typically at least partly inserted into the parasol base tube during use. The adapter may comprise at least an upper ridge. Such upper ridge can rest on the upper edge of the parasol base tube. This upper ridge can be formed by the ring-shaped element and/or the ring-shaped element may comprise an additional ridge for resting on the upper edge of the parasol base tube. The upper ridge may also be formed by several smaller extended parts from the ring-shaped element. The ring-shaped element may be formed for example by a collar, a cylinder or the like.

[0011] At least one finger, preferably at least two, more preferably at least three and even more preferably all fingers of the adapter extend from the ring-shaped element in a direction away from the top surface of the ring-shaped element. The top surface is preferably substantially flat. The top surface is preferably complementary to an inner surface of the cap. By top surface it is meant the surface that is facing away from the parasol base during use. At least one finger, preferably at least two, even more preferably at least three, and even more preferably all, fingers comprise at least one first protrusion on the outwardly facing surface. At least one finger, preferably at least two, more preferably at least three and even more preferably each, finger(s) comprises preferably at least two opposing surfaces, an inwardly facing surface and an outwardly facing surface. Preferably, at least one, in particular each, of the flexible fingers is resilient, at least in an inward and/or outward direction. Said finger is in particular resilient with respect to the base tube and/or ring-shaped element.

[0012] The fingers of the adapter are at least partly locked into place due to the first protrusions that fit within the slots of the parasol base tube. Preferably, the at least one first protrusion on the outwardly facing surface protrudes with respect to the outwardly facing surface of the finger. At least one, preferably each, protrusion, at least in a coupled condition with the base tube, protrudes through at least one slot, wherein said slot preferably is formed by an opening in the wall of the base tube. This may allow for an easy click connection of the adapter in the base tube. At least one slot in the base tube forms an opening in the base tube. Preferably said base tube is formed by a hollow cylinder. The slots limit the rotational movement around the (vertical) axis of the parasol base tube, at least in upward direction. The fingers can move freely towards and from center and/or(vertical) axis of the parasol base tube. The fingers are typically at least partly made from a flexible material. The fingers also center the parasol keeping it in an upright position. Preferably the position of the at least two fingers is evenly divided over the ring-shaped element. This ensures that the applied force on a parasol pole is applied evenly. Furthermore, the fingers make the use of a screw for

fixating a parasol pole redundant. This is advantageous for preventing the parasol from slanting. The system according to the present invention improves stabilising of a parasol tube by applying a pressure force from the fingers onto the parasol pole.

[0013] Another advantage of the locking effect of the protrusions in the slots is that if the wind tries to turn the parasol and indirectly the parasol pole, the fingers and thus the adapter is locked in its position and cannot turn in the parasol base tube. This reduces the risk of a parasol twisting loose and coming out of the parasol base tube 'flying out' due to external wind forces.

[0014] Throughout this document, by "inwardly facing" it is meant that the faces are facing each other and that the surfaces are facing towards the footprint of the ring-shaped element. And by "outwardly facing" it is meant that the surfaces are facing at least in a direction away from each other and are facing away from the footprint of the ring-shaped element. As such, the at least one, preferably at least two, and even more preferably each, finger comprises an inwardly facing surface and an outwardly facing surface wherein the outwardly facing surface and the inwardly facing surface are opposing surfaces.

[0015] The slots in the parasol base tube can be openings that extend from the top of the base tube in a vertical direction along the base tube. Alternatively and preferably, the slots can be openings that are positioned at a distance from the top of the base tube. The slots are preferably positioned at least partly in the threaded upper part of the base tube. At least one slot is configured for receiving at least part of a first protrusion. Preferably, the outer circumference of the footprint of the protrusion on the finger is of similar shape as the outer circumference of the slot (or opening). The slots can be rectangular shaped.

[0016] The first protrusion cooperates with a slot in the parasol base tube. The slots guide the users to a correct assembly of the adapter within the system. The slots provide for an easy assembly. Another advantage of the first protrusions in combination with the slots in the parasol base tube is that the adapter cannot twist or turn within the parasol base tube. Thus during assembly of a parasol pole within the adapter, the adapter stays in its place. This results in a stable, stiff and strong positioning of the adapter in the parasol base tube and consequently of a stable, strong positioning of a parasol pole within the system.

[0017] The cap can be twisted or screwed onto the base tube during use. Due to this movement the fingers are forced towards each other. The cap and the adapter are cooperating to force the fingers towards the center of the base tube (vertical axis). The cap can be twisted as many times as needed, depending on the thickness of the parasol pole used.

[0018] In a preferred embodiment, the cap of the system according to the present forces the adapter into the tube during twisting of the cap. Once the adapter is forced further into the tube in such an embodiment, the fingers are forced downwards and will slide inwards towards each other. If applied, the adapter is forced further into the tube a little further upon each turn of the cap. The first protrusions of the fingers are forced towards the bottom side of a slot and thus move inwards. At least part of the first protrusion is configured to slide in the slot inwards and outwards, depending on the twisting direction of the cap. In such an embodiment, the surface of the first protrusion that is in contact with the bottom side of a slot is preferably a (smooth) flat surface. The outer surface of the first protrusion may comprise a curve and/or be straight, as long as it is configured to guide the finger inwards upon a downward force applied to the adapter and/or the protrusion itself.

[0019] In addition, or alternatively, the cap may comprise at least one contact surface for contacting at least part of at least one first protrusion of at least one finger of the adapter such that during a twisting movement of the cap at least two fingers are forced inwards towards each other

[0020] The cap of the system according to an embodiment of the present invention comprises preferably at least one contact surface for contacting at least part of at least one protrusion of at least one finger. The contacting surface contacts the protrusion directly such that during a twisting movement of the cap at least two fingers are forced inwards towards each other. Upon twisting an at least partly downward force is applied to the protrusion and this forces the protrusion to move inwards (towards the center or vertical axis of the parasol base tube). With an easy twisting movement of the cap the user can gradually force the fingers more towards each other to fixate a parasol pole in between the fingers and thus within the parasol base tube.

[0021] In a preferred embodiment of the system according to the present invention at least one finger, preferably at least two fingers, more preferably at least three fingers, and even more preferably each finger, comprise(s) at least one second protrusion on the inwardly facing surface. Such a second protrusion can be configured to to be in (abutting and/or pressing) contact with a parasol pole during use. Said second protrusion can be positioned on the opposite side of the finger than the first protrusion.

[0022] The second protrusion is preferably at least half as wide as the finger. It is also possible that the second protrusion is substantially as wide as the finger. A wider protrusion provides a wider and thus larger contact surface with the parasol pole during use and thus increases grip, which is advantageous for a stable positioning of the parasol pole within the system. If applied, such second protrusion can also be a thickening, an add-on or the like. Alternatively, it is possible that the adapter comprises a complementary second inner adapter comprising secondary fingers with such a second protrusion on the inwardly facing surface. In this alternative embodiment the secondary fingers may or may not have a first

protrusion. Further described features of the second protrusion can also be applied to an embodiment where secondary fingers are used. Such second protrusion, or equivalent, increases the grip and contacting surface of the fingers with the parasol pole during use. Thus increasing strength and increasing stability. The increased grip also further reduces the risk of rotating, spinning or twisting of the parasol pole during use. If applied, at least one, preferably each, second protrusion extends over part of the length of the inwardly facing surface of the finger. This results in an optimal use of space available and sufficient contact surface for stabilising a parasol pole during use. In a preferred embodiment, at least one, preferably each, second protrusion, if applied, varies in thickness over its length. Such second protrusion preferably comprises a thicker middle part. This is advantageous for increasing the contact surface, when the second protrusion is in contact with a parasol pole during use of the system. For an optimal balance between grip, stability and ease of use it is preferred that at least one, preferably each, second protrusion is positioned spaced apart from the end of the finger. For an improved grip and easy to use system, preferably all second protrusions are positioned at the same distance relative to the ring-shaped element. As an alternative alternating heights in positions of the second protrusions are also possible.

[0023] For an improved grip it is preferred that the adapter is provided with a layer of material for increasing friction and/or is partly made of material with increasing friction. Preferably only parts and/or surfaces that are facing inwards towards the parasol pole during use, are provided with such friction increasing material.

[0024] Friction increasing material can be a rough material, or a material with a softer material than an other type of material whereof the adapter is made. Preferably the second protrusion, if applied, can be provided with such material. In an embodiment, at least one, preferably each, second protrusion is provided with a layer of material for increasing friction.

[0025] It is beneficial for an improved grip and stability of a parasol pole positioned in the system that at least part of at least one finger can be made of a first component and at least part of the inwardly facing surface is made of a second component. The first and/or second component refer to material components, wherein the first component is a different (material) component than the second component. The first and second component may be formed by injection moulding and/or may be put together by the use of an adhesive. If applied, the first and second component for at least part of at least one, preferably each, finger ensures that two different materials with different material properties can be used for different functional parts of the adapter and/or finger. In an embodiment a finger can be made of a first component and a second component. In an alternative embodiment, the primary finger is made from a first material and a secondary finger is made of a second material.

[0026] Preferably, the friction increasing material is applied up to the end of the finger. For best results, the friction increasing material, if applied, is applied up to the end of the finger on the inwardly facing surface where the surface is in contact with the parasol pole during use. Optionally, the friction increasing material can be applied at maximum 2 mm away from the end of the finger. In this embodiment the part that is not covered by the friction increasing material is preferably not in contact with the parasol pole during use.

[0027] Preferably the first component can be made from a first material and the second component can be made from a second material. In such embodiment, the second component may have a different hardness than the first component. The second component may have a less smooth surface than the first component.

[0028] The first and second component, if applied, can be assembled by an adhesive and/or hot melting and/or injection molding.

[0029] For an increased grip on the parasol pole, it is preferred that the second component, if applied, is made from a material with a hardness of less than Shore A 90, preferably with a hardness in the range of Shore A 60 - 90, more preferably with a hardness in the range of Shore A 70-80.

[0030] At least part of the inwardly facing surface of at least one finger is preferably at least partly made of a material for increasing friction between the protrusion and the parasol pole during use. Preferably the inwardly facing surface of the finger is made from a material with a hardness of less than Shore A 90, preferably with a hardness in the range of Shore A 60 - 90, more preferably with a hardness in the range of Shore A 70-80. It is conceivable that a second component may include this inwardly facing surface. Preferably the hardness value of the first component is higher than the hardness value of the second component.

[0031] The cap is preferably at least partially made from a material chosen from the group: PP, ABS, ABS-PC, PC, PA-GF, PA or a combination thereof. The adapter is preferably at least partially made from a material chosen from the group: PA-GF, ABS, ABS-PC, PC, PP, PA.

[0032] In an embodiment of the present invention at least one first protrusion comprises a smooth outer surface and wherein the at least one first protrusion comprises an inclined lower part, preferably a substantially flat slope. In an embodiment at least one first protrusion can comprise a substantially flat upper surface and/or a substantially flat (smooth) lower surface. When assembled, the lower surface preferably extends from the inside of the base tube through the slot to the outside of the base tube. In an embodiment, each first protrusion may comprise a substantially flat upper surface that is positioned substantially parallel to the top surface of the ring-shaped element, preferably such that each flat upper surface is positioned at a similar relative distance to the ring-shaped element. In this embodiment, a click connection is provided between the (first protrusions of the) finger

and the (slots in the) base tube. This is beneficial for a correct positioning of the adapter in the base tube.

[0033] In a preferred embodiment, the cap comprises an opening for receiving part of a parasol pole. Typically the top surface of the cap comprises such an opening. Preferably the cap comprises a central opening (in the top surface), wherein the diameter of such opening is larger than the diameter of a parasol pole and smaller than the inner diameter of the parasol base tube. This is advantageous for shielding the inner side of the base tube.

[0034] The first protrusions can extend through the slots outwards. Preferably the first protrusions comprise rounded and/or smooth surfaces. Possibly dirt or water can thus get inside the parasol base tube. There is also a small risk that cords get stuck behind the protrusions. To shield the protrusions from outside elements, the cap may comprise a shielding part. Such a shielding part, if applied, may be formed by a circular outer wall, that during use is configured for surrounding/shielding the first protrusions.

[0035] The parasol base tube preferably comprises a number of slots which is at least equal to or larger than the number of fingers of the adapter. In an optimal configuration of the system according to the present invention, the number of slots in the base tube correspond to the amount of fingers of the adapter. If this is applied, the adapter can only be positioned correctly within the parasol base tube. The slots are preferably evenly distributed around the circumference of the parasol base tube. And for a good fit, the fingers are distributed evenly around the ring-shaped element of the adapter. An even distribution results in an evenly distributed pressure on the parasol pole which is advantageous for stability.

[0036] Preferably the adapter comprises at least three fingers. In a preferred embodiment the system comprises an adapter with five fingers which are evenly distributed around the circumference of the ring-shaped element.

[0037] Preferably, the slots in the base tube are positioned at a distance from the top of the parasol base tube. This configuration can result in a click connection between the first protrusion and the slot. This is advantageous for an easy and intuitive assembly of the adapter in the base tube. It also results in increased rigidity stiffness and strength.

[0038] In a preferred embodiment the adapter, the cap and the parasol base tube are separate parts. Preferably the separate parts are mutually detachable. This is advantageous for ease of manufacturing. It is also advantageous for the strength of the device.

[0039] The system according to the present invention may comprise a mutually connected adapter and cap. Preferably the adapter and the cap are mutually connected by a click connection in such embodiment. In addition to, or alternatively, the adapter and the parasol base tube can be mutually connected by a click connection. This click connection can be made between a first protrusion of at least one finger of the adapter and a slot in the parasol base tube. This has the advantage that the fingers, and thus the adapter, cannot rotate within the parasol base tube.

[0040] In a preferred embodiment of the system according to the present invention, comprising a click connection between the adapter and the cap, the adapter can be provided with at least one protruding rim. In particular the ring-shaped element of the adapter can be provided with a protruding rim on the outer circumference of the ring-shaped element. Such a protruding rim, if applied, can be provided along the circumference. The rim can be circular. Or alternatively, at intermittent places at the circumference. This can be seen as multiple rims protruding along the circumference of the ring-shaped element of the adapter. A protruding rim, if applied, cooperates with a corresponding recess within the cap to form a click connection when assembled together. In particular, the cap may comprise a circular shaped recess on the inner surface that is configured to cooperate with at least one protruding rim from the adapter. Preferably the upper part of the adapter is provided with such a protruding rim, if applied. While the adapter cannot rotate within the parasol base tube, the cap can rotate while being connected to the adapter through the click connection via the protruding rim. Another advantage of the protruding rim is that the cap can lift the adapter from the parasol base tube in a vertical direction.

[0041] The system according to the present invention may further comprise a parasol and/or a parasol pole. The parasol may comprise a parasol pole. The parasol pole may be made of aluminium, steel or wood or a combination thereof. The combination can be advantageous for an optimal combination of materials and thus coefficient of friction between the parasol pole and the fingers of the adapter of the system according to the present invention.

[0042] The invention further relates to an adapter for use in a system according to the present invention. The invention further relates to a cap for use in a system according to the present invention. The adapter and cap can be configured according to any of the described embodiments.

[0043] The parasol base tube may further comprise a connection element for connection with a parasol base plate. This connection element may for example be formed by a threaded pin. Other examples of a suitable connection element are: threaded complementary parts on the parasol base plate and the parasol base tube, click systems, and the like.

[0044] The invention further relates to a parasol base comprising a system according to the invention further comprising a parasol base plate. The system may further comprise a parasol pole and parasol. This provides a complete ready to create artificial shade for the users of the system.

[0045] The present invention also relates to a method for fabricating the parasol base tube of a system according to the present invention, comprising the following

steps:

a) Providing a parasol base tube;
b) Applying thread to the upper end of the parasol base tube forming a threaded upper part;
c) Laser cutting slots at least partly in the threaded upper part, preferably at a distance from the top.

[0046] In an alternative method, steps a and b can be performed by 3D printing. Step c) would then be replaced by programming the 3D printer to provide slots at least partly in the threaded upper part, preferably at a distance from the top.

[0047] The invention will be further elucidated by means of non-limiting exemplary embodiments illustrated in the following figures, in which:

- figure 1a shows an embodiment of a system according to the present invention
- figure 1b shows an exploded view of this embodiment;
- figure 2 shows a cross-section of an upper part of an embodiment of a system according to the present invention;
- figure 3a shows a cross-section of an embodiment of the present invention with a relatively thin parasol pole positioned within the system;
- figure 3b shows a cross-section of an embodiment of the present invention with a relatively thick parasol pole positioned within the system;
- figure 4 shows a cross-section of a second embodiment of the system according to the present invention;
- figure 5a shows a cross-section of a second embodiment of the present invention with a relatively thin parasol pole positioned within the system;
- figure 5b shows a cross-section of a second embodiment of the present invention with a relatively thick parasol pole positioned within the system; and
- figure 6 shows an exploded view of a cross-section of a detail of the present invention.

[0048] Within these figures, similar reference numbers correspond to similar or equivalent elements or features.

[0049] Figure 1a shows a perspective view of an embodiment of the system 1 according to the present invention and figure 1b shows the exploded view of this embodiment. The shown system 1 comprises a parasol base tube 2, an cap 3 and an adapter 4. The shown system 1 for stabilizing a parasol (not shown) comprises a parasol base tube 2 with an upper end provided with a thread 5 on the upper part of the outside of the tube. The threaded part is interrupted by slots 6. The base tube 2 is provided with a connection element 20 for connection with a parasol base plate. In this embodiment shown, the connection element 20 is a threaded pin.

[0050] The system 1 comprises a cap 3, which cap 3 comprises an inner thread 7 which is configured to cooperate with the thread 5 from the parasol base tube 2.

[0051] The figures show an adapter 4 comprises a ring-shaped element 8 comprising a top surface 8a. The shown adapter 4 in the figure comprises four flexible fingers 9. The fingers 9 extend from the ring-shaped element 8 in a direction away from the top surface 8a. Each finger shown comprises an outwardly facing surface 10 and an inwardly facing surface 11. The inwardly facing surface 11 is provided with a friction increasing material 13. In the shown embodiment each finger 9 comprises a first protrusion 12 on the outwardly facing surface 10.

[0052] In figure 1a the fingers 9 are positioned within the slots 6. The system 1 shown comprises four slots 6 and four fingers, wherein each slot 6 is configured for receiving at least part of a first protrusion 12 of the fingers 9 of the adapter 4. The system 1 is configured such that a screw or twisting movement of the cap 3 around the upper threaded end 5 of the tube 2 forces the fingers 9 inwards towards each other.

[0053] Figure 2 shows a cross-section of the upper part of a system 21 according to the present invention. The figure provides a closer view on the inner side and the cooperation between the parasol base tube 2, the cap 3 and adapter 4. The system 21 shows a parasol base tube 2 wherein an adapter 4 is positioned and a cap 3 is positioned on top. The embodiment comprises a cap 3 with a threaded inner part 7 that cooperates with a threaded outer part 5 of the parasol base tube 2.

[0054] The flexible fingers 9 of the adapter 4 are locked by a click mechanism within the slots 6. The fingers 9 of this embodiment comprise a second protrusion 14 on the inwardly facing surface 11 of the fingers 9. The slots 6 receive the first protrusions 12 of each finger. The slots 6 have a similar shape as the circumference of the foot print of the first protrusions 12 on the finger 9. The first protrusions extend from the inside of the tube 2 through the slots to the outside of the tube 2. The first protrusions 9 can slide within the slot further inwards or outwards. The cap 3 applies a downward force onto the adapter 4 forcing the fingers 9 inwards during use. This is explained further in figures 3 and 4.

[0055] The second protrusion 14 comprises a thickening and varies in thickness along the length of the finger 9, or in other words in vertical direction V. Each finger 9 is at least partly made from a first component and the second protrusion 14 is made from a second component. The second component comprises a friction increasing material 13.

[0056] The cap 3 further comprises a shielding part 15 formed by a circular outer wall. As can be seen from the figure, the shielding part 15 is configured for surrounding/shielding the first protrusions 12 of the fingers 9 of the adapter 4.

[0057] Figure 3 shows an embodiment 31 of the present invention during use. Figure 3a shows an embodiment 31 during use with a relatively thin parasol pole 32a. Figure 3b shows the same embodiment of the system according to the present invention 31 during use with

a relatively thick parasol pole 32b. Figure 3 shows the same embodiment as shown in figure 1.

[0058] Due to the twisting movement of the cap 3 onto the parasol base tube 2, the adapter 4 is pressed further into the tube 2. The fingers 9 slide into the slots inwards towards each other. The cap is twisted as long as is necessary for the fingers to stabilise the parasol pole 32a or 32b. In figure 3a the cap 3 is twisted further and more often than in figure 3b, pushing the adapter 4 further and thus the fingers 9 slide further downwards and inwards due to the first protrusions 12. This compensates for the difference in the diameter thickness of the parasol poles 32a, 32b used.

[0059] The cross-sections also show that a second component 13 is used in the fingers on the inwardly facing surface 11. This second component 13 is in contact with the parasol pole 32a, 32b respectively. The outer side of the fingers 9 is made of a first component 16.

[0060] Figure 4 shows a cross-section of another embodiment of the system 41 according to the present invention during use with a parasol pole 32c. This embodiment 41 shows a different embodiment of the cap 33 compared to figures 3a and 3b. This embodiment differs in that from the embodiment shown in figures 3a and 3b, that the force ensuring that the fingers 9 are forced towards each other is applied from the cap 33 to the fingers 12 in a different manner. In this embodiment, the cap 33 comprises a contact surface 33a for contacting and pushing downwards the top flat surface 22 of each first protrusion 12 of each finger 9. During a twisting movement of the cap 33, the cap moves downwards and the contacting surface 33a comes into contact with the top surface 22 of the first protrusions 12. During a further twisting movement, the fingers 9 are pushed further downwards and thus slide inwards within the slots 6 and towards each other.

[0061] Figure 5a shows a cross-section of a second embodiment of the system 51 present invention with a relatively thin parasol pole 52a positioned within the system 51. Figure 5b shows a cross-section of the same second embodiment of the present invention with a relatively thick parasol pole 52b positioned within the system 51. The second embodiment comprises a parasol base tube 52 with an upper end 55 provided with a thread on the outside. The system 51 further comprises a cap 53 comprising an inner thread 57 which is configured to cooperate with the thread 55 of the parasol base tube 52. The system 52 also comprises an adapter 54. The adapter 54 and cap 53 are separate parts and are connected by a click connection. The click connection is made by a protruding rim 67 that clicks behind an upper rim 69 of the cap 53. The cap 53 comprises a recess 68 for allowing the click connection to be made. The protruding rim 67 runs around the circumference and as such the cap 53 can rotate around the adapter 54.

[0062] The second embodiment further has the same working principle as the first embodiment shown in the previous figures. The figures 5a and 5b show an adapter 54 which is configured to be at least partially received within the parasol base tube 52. The adapter 54 comprises a ring-shaped 58 element comprising a top surface and is provided with a protruding rim 67 for establishing a click connection with the cap 53 in the shown embodiment. The adapter 54 further comprises six flexible fingers 59, wherein the fingers 59 extend from the ring-shaped element 58 at least in a direction away from the top surface of the ring-shaped element towards the parasol pole 52a, 52b respectively. Each finger 59 comprises an outwardly facing surface 56 and an inwardly facing surface 61. The inwardly facing surface 61 is provided with a friction increasing material 63. Each finger 59 comprises a first protrusion 62 on the outwardly facing surface. The parasol base tube 52 is provided with six slots 56, corresponding to the first protrusions 62 of the fingers 59. The first protrusions 59 fit partly within the slots 56 and form a click connection. As a result the adapter cannot rotate within the parasol base tube. The shown system 51 is further provided with a shielding part 65.

[0063] Similar as with the first embodiment, a screw movement of the cap 53 around the upper end of the parasol base tube 52 forces all fingers 59 of the adapter 54 inwards towards each other and clamping the parasol pole 52a, 52b respectively.

[0064] Figure 6 shows a cross section exploded view of an embodiment according to the invention. On the bottom side, the parasol base tube 52 is shown, indicating two slots 56, and the threaded outer surface 55. Said threaded outer surface 55 is configured to co-act with a threaded inner surface of the cap 53. In this embodiment an adapter 54 is located at least partially inside the cap 53. The adapter 54 is preferably locked, or configured to be locked, or at least to co-act with the cap 53. In this embodiment, the adapter 54 comprises a protruding rim 67, in particular an outwardly protruding rim 67. Said rim 67 configured to co-act with a recess 68 provided in the cap 53. The protruding rim 67 is preferably arranged at an upper portion of the adapter 54. The recess 68 is preferably arranged at or near a top portion of the cap 53. The protruding rim 67 comprises at least one sloped and/or inclined surface 70, preferably wherein said inclined surface 70 of the protruding rim 67 inclines downwardly in a direction away from the centre of the adapter 54. The inclined or sloped surface 70 is configured to co-act with a sloped or inclined surface of the cap 53. Preferably said sloped or inclined surface 72 of the cap is upwardly inclined in a direction from the outside of the cap 53 towards the inside of the cap 53. This may allow, during coupling of the cap 53 and adapter 54, said respective inclined surfaces 72, 70, to slide or about each other. Upon exerting a predetermined force, the adapter 54 will click in the cap 53. This may be noticeable to a user by a clicking sound. After clicking, or coupling the cap 53 and the adapter 54, a downward facing surface 71, in particular a flat downward facing surface 71 of the (outwardly) protruding rim 68 will lie against, or in any case close to, an upward surface 73, in particular a flat

upward surface 73 of the cap 53. Said respective downward facing and upward facing surfaces 71, 73 of the adapter 54 and cap 53 mutually establish a locking of the two. It is conceivable that, during installation, the adapter 54 is first clicked into the cap 53, prior to inserting the two into the parasol base tube 52, or the adapter 54 may first be inserted into the parasol base tube 52 and subsequently clicked into the cap 43. Preferably, an upward facing rim 75 of the adapter 54 is configured to, at least in coupled condition, to be in contact with a downward facing surface 74 of the cap 53. Said downward facing surface 74 of the cap 53 may as such form an upper boundary of the at least one recess 68. In order to make sure the adapter 54 fits in the cap 53, it is preferred that the outer diameter, at least of an upper portion of the adapter 54, is smaller than an inner thread diameter Di of the inner thread 57 of the cap 53. The inclined surface 72 preferably protrudes with respect to the inner thread 57, such as to be able to establish a co-acting locking with the protruding rim 67. The fingers 59 of the adapter 54 are arranged to co-act with the openings 56 of the parasol base tube 52, as elucidated before. Similarly friction increasing material 63, or a bulge 63 is provided on inward facing sides of the fingers 59. It is preferred that the cap 53, once coupled to the adapter 54, forces the adapter downwardly. To this end, it is conceivable that the downward facing surface 74 of the cap 53, that is in contact with an upward facing surface 75 of the adapter 54, pushes the adapter 54 downwardly, or upwardly, depending on the rotation (e.g., tightening or untightening). By pushing the adapter 54 further into the parasol base tube 52 a parasol stem that is inserted will be clamped. In order to advance easy entry of a parasol stem, the cap comprises a downwardly inclined surface 76, said surface inclined downward in a direction from the outside to the inside of the cap 53, which allows a parasol stem to self-centre into the parasol base tube 52.

[0065] It will be clear that the invention is not limited to the exemplary embodiments which are illustrated and described here, but that countless variants are possible within the framework of the attached claims, which will be obvious to the person skilled in the art. In this case, it is conceivable for different inventive concepts and/or technical measures of the above-described variant embodiments to be completely or partly combined without departing from the inventive idea described in the attached claims.

[0066] The verb 'comprise' and its conjugations as used in this patent document are understood to mean not only 'comprise', but to also include the expressions 'contain', 'substantially contain', 'formed by' and conjugations thereof.

Claims

1. System for stabilisation of a parasol, comprising:

- a parasol base tube with an upper end provided with a thread on the outside;
- a cap comprising an inner thread which is configured to cooperate with the thread of the parasol base tube; and
- an adapter which is configured to be at least partially received within the parasol base tube, comprising:

    ◦ a ring-shaped element comprising a top surface; and
    ◦ at least two flexible fingers, wherein the fingers extend from the ring-shaped element at least in a direction away from the top surface of the ring-shaped element, wherein at least one finger comprises an outwardly facing surface and an inwardly facing surface and at least one first protrusion on the outwardly facing surface;

wherein at least part of the upper end of the parasol base tube comprises at least one slot, and preferably multiple slots, wherein at least one slot, and preferably each slot is configured for receiving at least part of a first protrusion of at least one finger of the adapter; and
wherein a screw movement of the cap around the upper end of the parasol base tube forces at least two fingers of the adapter inwards towards each other.

2. System according to any of the previous claims, wherein during twisting of the cap, the adapter is forced further into the tube.

3. System according to any of the previous claims, wherein the cap comprises at least one contact surface for contacting at least part of at least one first protrusion of at least one finger of the adapter such that during a twisting movement of the cap at least two fingers are forced inwards towards each other.

4. System according to any of the previous claims, wherein at least one finger, preferably at least two fingers, comprises at least one second protrusion on the inwardly facing surface, wherein said second protrusion is configured to be in abutting contact with a parasol pole during use preferably wherein at least one, preferably each, second protrusion extends over part of the length of the inwardly facing surface of the finger.

5. System according to claim 4, wherein at least one, preferably each, second protrusion varies in thickness over its length and preferably comprises a thicker middle part.

6. System according to any of the preceding claims 4-5,

wherein at least one, preferably each, second protrusion is positioned spaced apart from the end of the finger, preferably wherein all second protrusions are positioned at the same distance relative to the ring-shaped element.

7. System according to any of the preceding claims 4-6, wherein at least one, preferably each, second protrusion is provided with at least one friction increasing material, preferably wherein the friction increasing material is applied up to the end of the finger.

8. System according to any of the previous claims, wherein at least part of at least one finger is made of a first component and at least part of the inwardly facing surface is made of a second component preferably wherein the second component is a friction increasing material and/or wherein the second component has a different hardness than the first component, wherein the second component is made from a material with a hardness of less than Shore A 90, preferably with a hardness in the range of Shore A 60 - 90, more preferably with a hardness in the range of Shore A 70-80.

9. System according to any of the preceding claims, wherein at least one first protrusion comprises a smooth outer surface and wherein the at least one first protrusion comprises an inclined lower part, preferably a substantially flat slope.

10. System according to any of the preceding claims, wherein each first protrusion comprises a substantially flat upper surface that is preferably positioned substantially parallel to the top surface of the ring-shaped element, preferably such that each flat upper surface is positioned at a similar relative distance to the ring-shaped element and/or wherein the cap comprises an opening for receiving part of a parasol pole and/or wherein the cap comprises at least one shielding part, preferably formed by a circular outer wall, that during use is configured for surrounding and/or shielding the first protrusions.

11. System according to any of the previous claims, wherein the number of slots of the parasol base tube correspond to the amount of fingers of the adapter and/or wherein the slots in the base tube are positioned at a distance from the top of the parasol base tube and/or wherein the adapter, the cap and the parasol base tube are separate parts.

12. System according to any of the previous claims, wherein the adapter and the cap are mutually connected by a click connection and/or wherein the adapter and the parasol base tube are mutually connected by a click connection preferably, wherein the adapter is provided with at least one protruding rim, in particular wherein the ring-shaped element is provided with a protruding rim on the outer circumference.

13. Adapter and/or cap for use in a system according to any of the claims 1-12.

14. Parasol base comprising a system according to any of the claims 1-12 further comprising a parasol base plate.

15. Method for fabricating the parasol base tube of a system according to any of the claims 1 - 12, comprising the following steps:

d) Providing a parasol base tube;
e) Applying thread to the upper end of the parasol base tube forming a threaded upper part;
f) Laser cutting slots at least partly in the threaded upper part, preferably at a distance from the top.

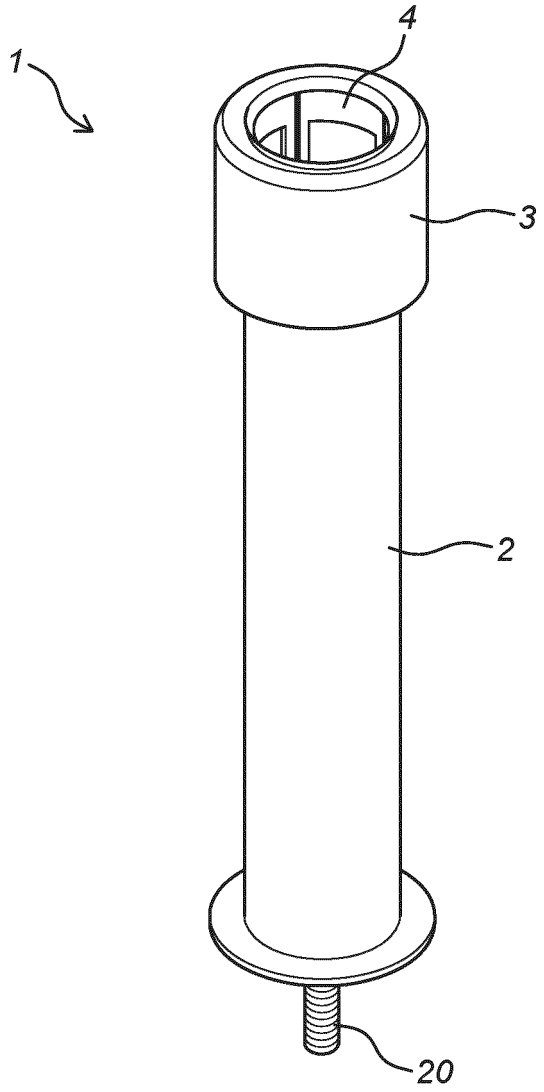

Fig. 1a

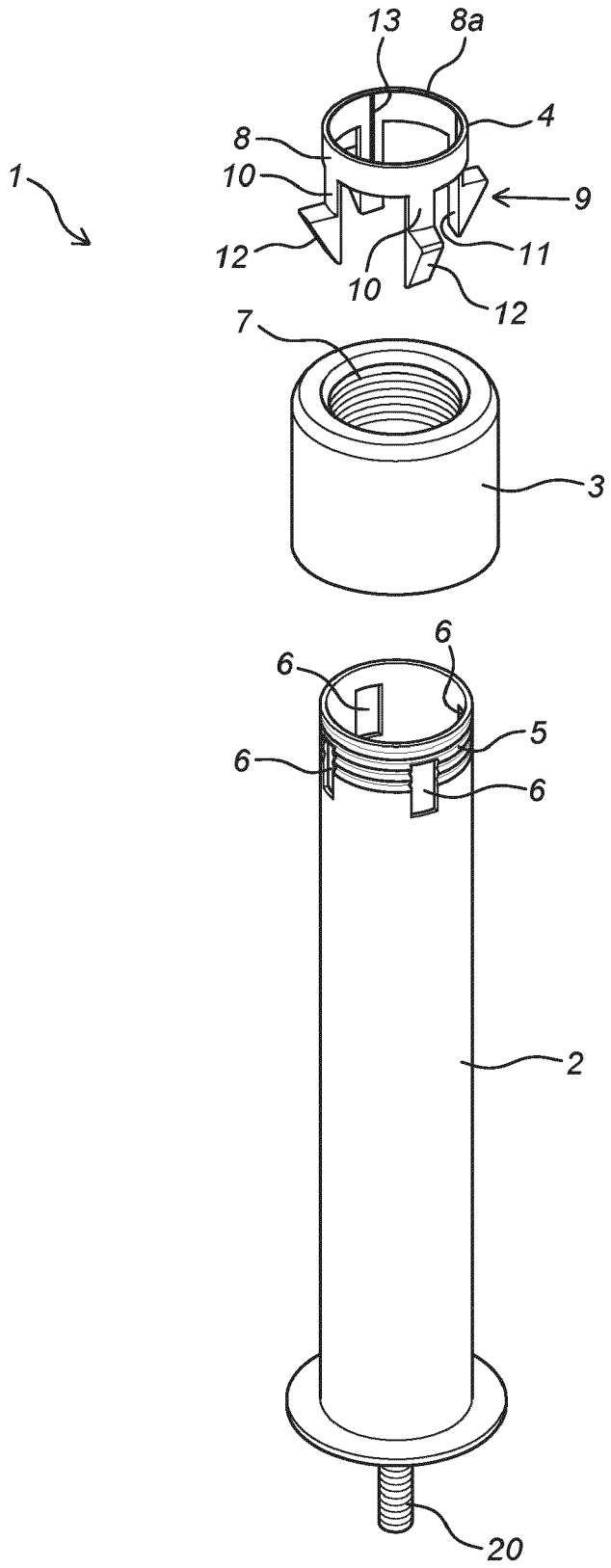

Fig. 1b

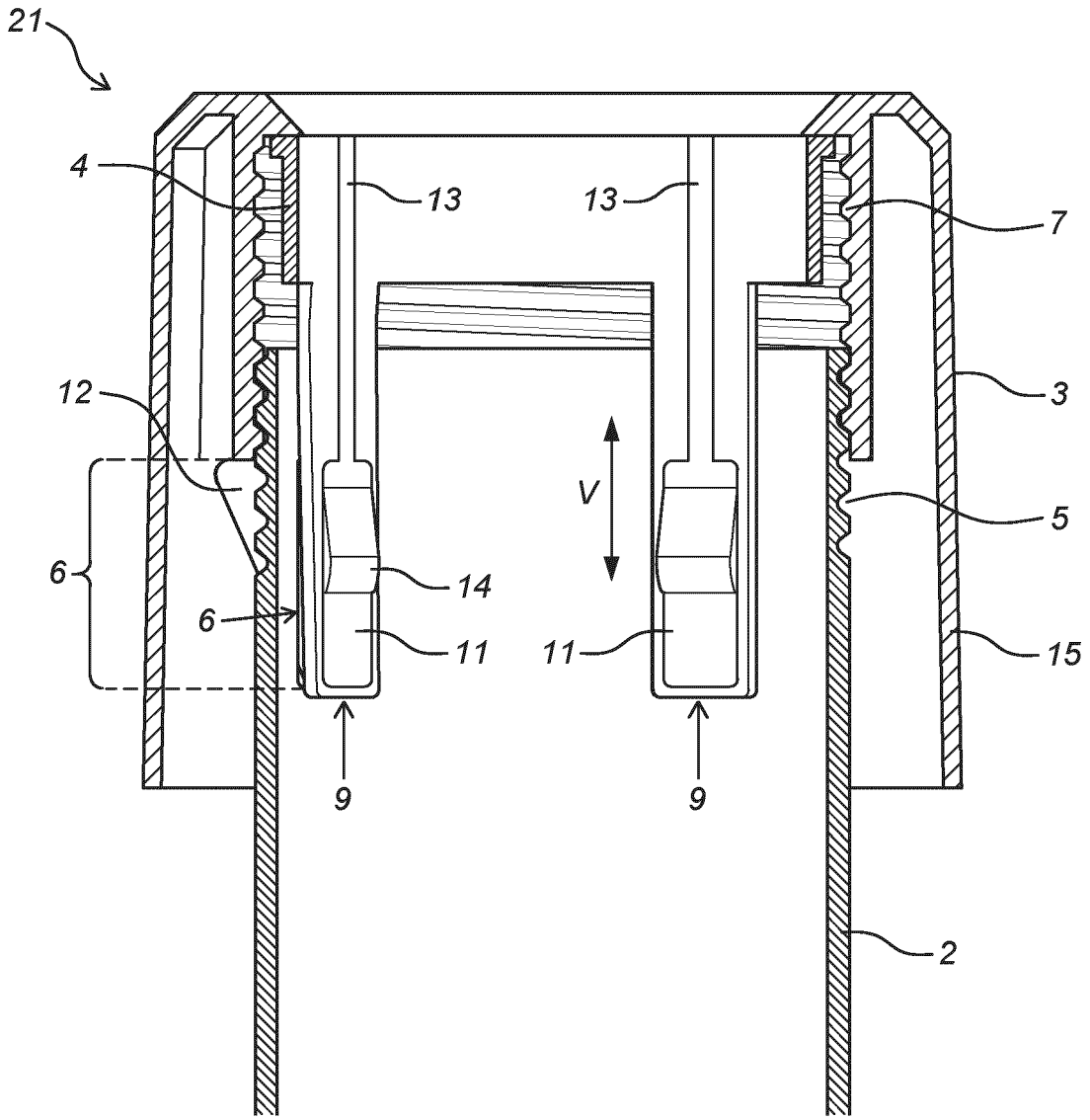

Fig. 2

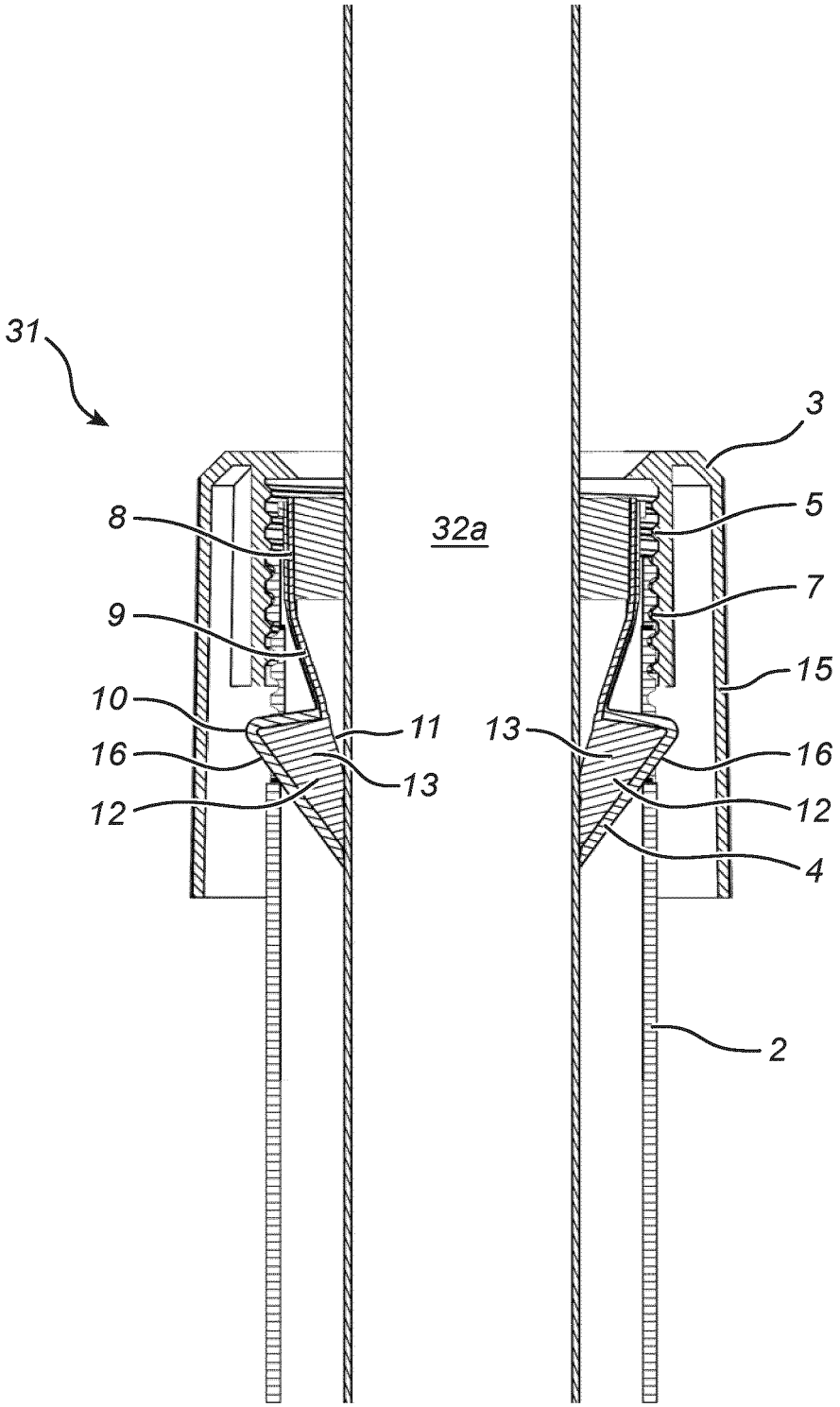

Fig. 3a

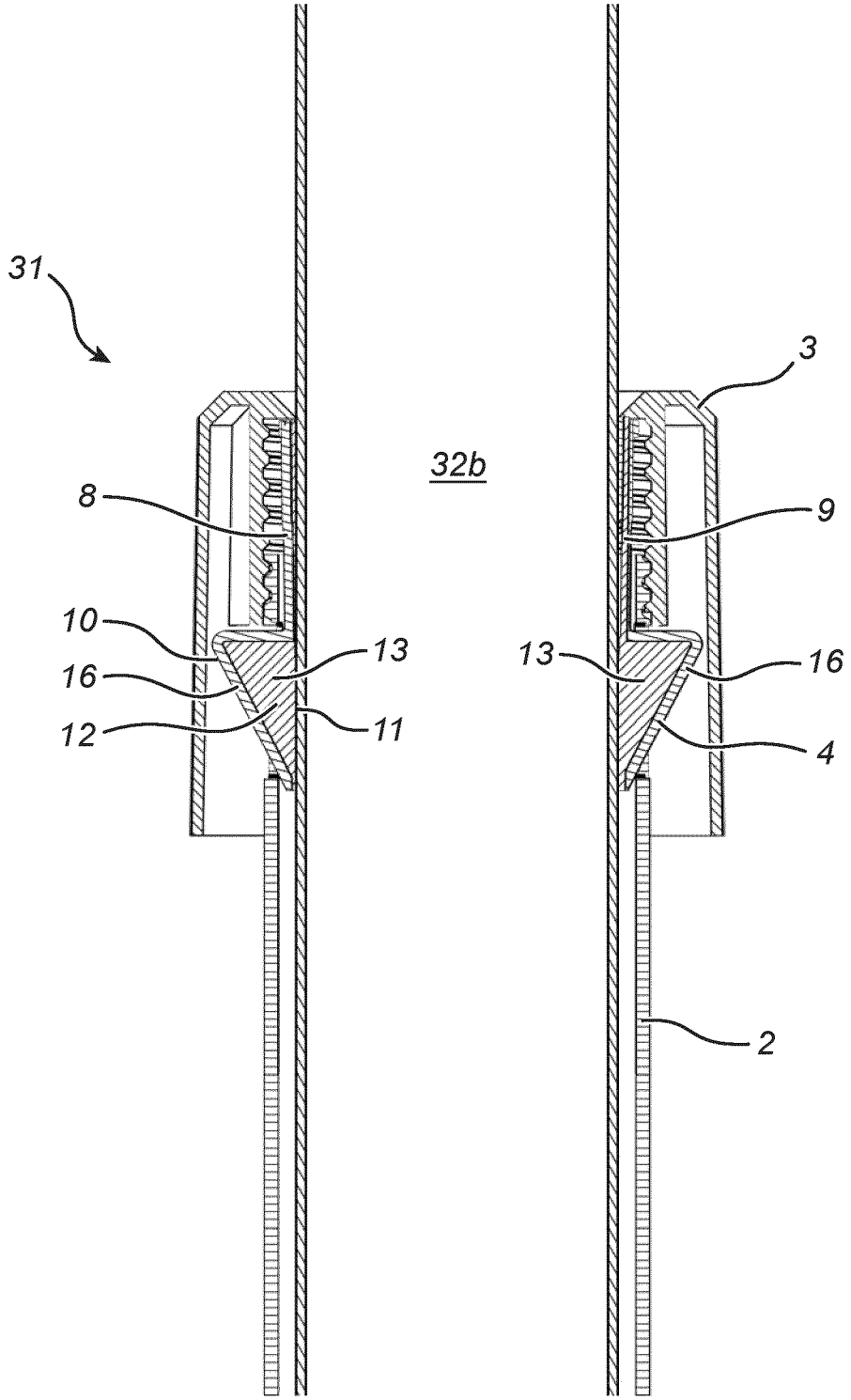

Fig. 3b

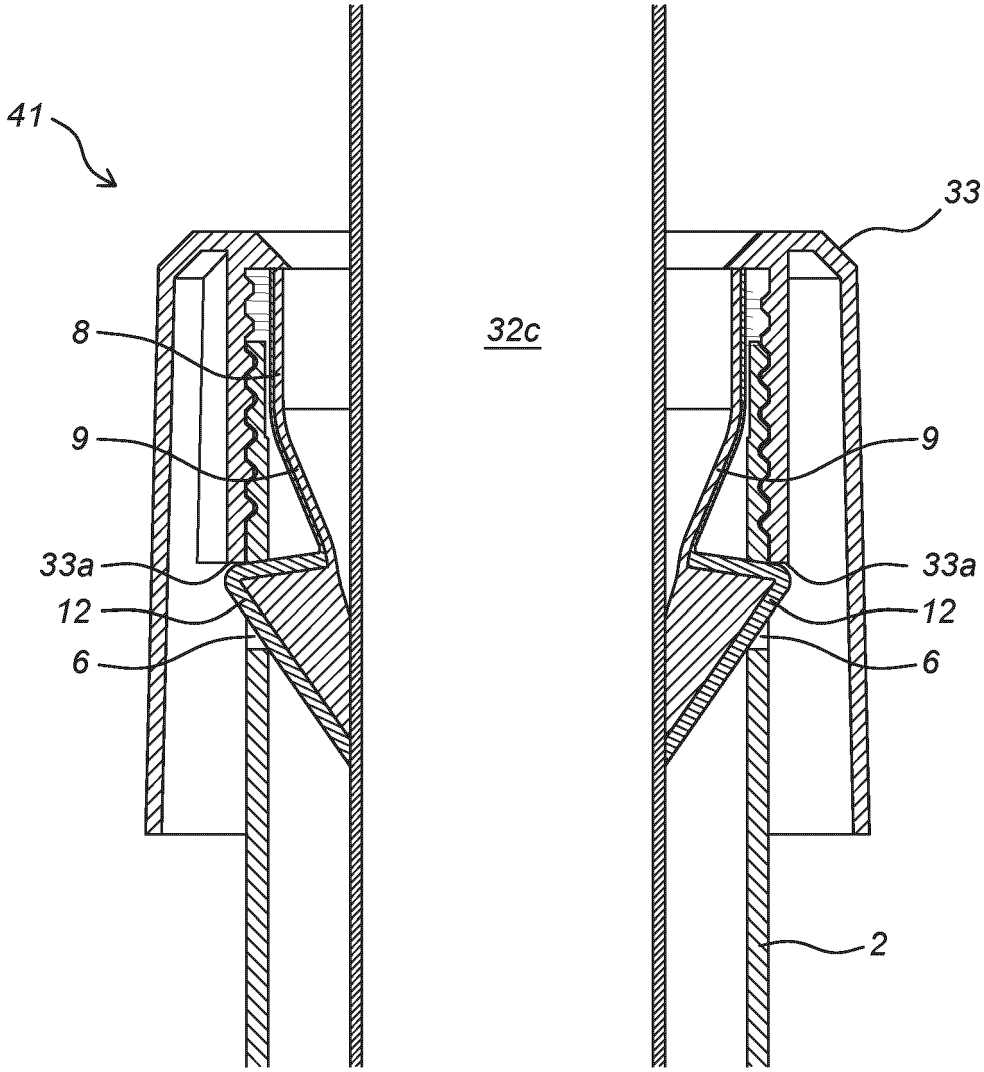

Fig. 4

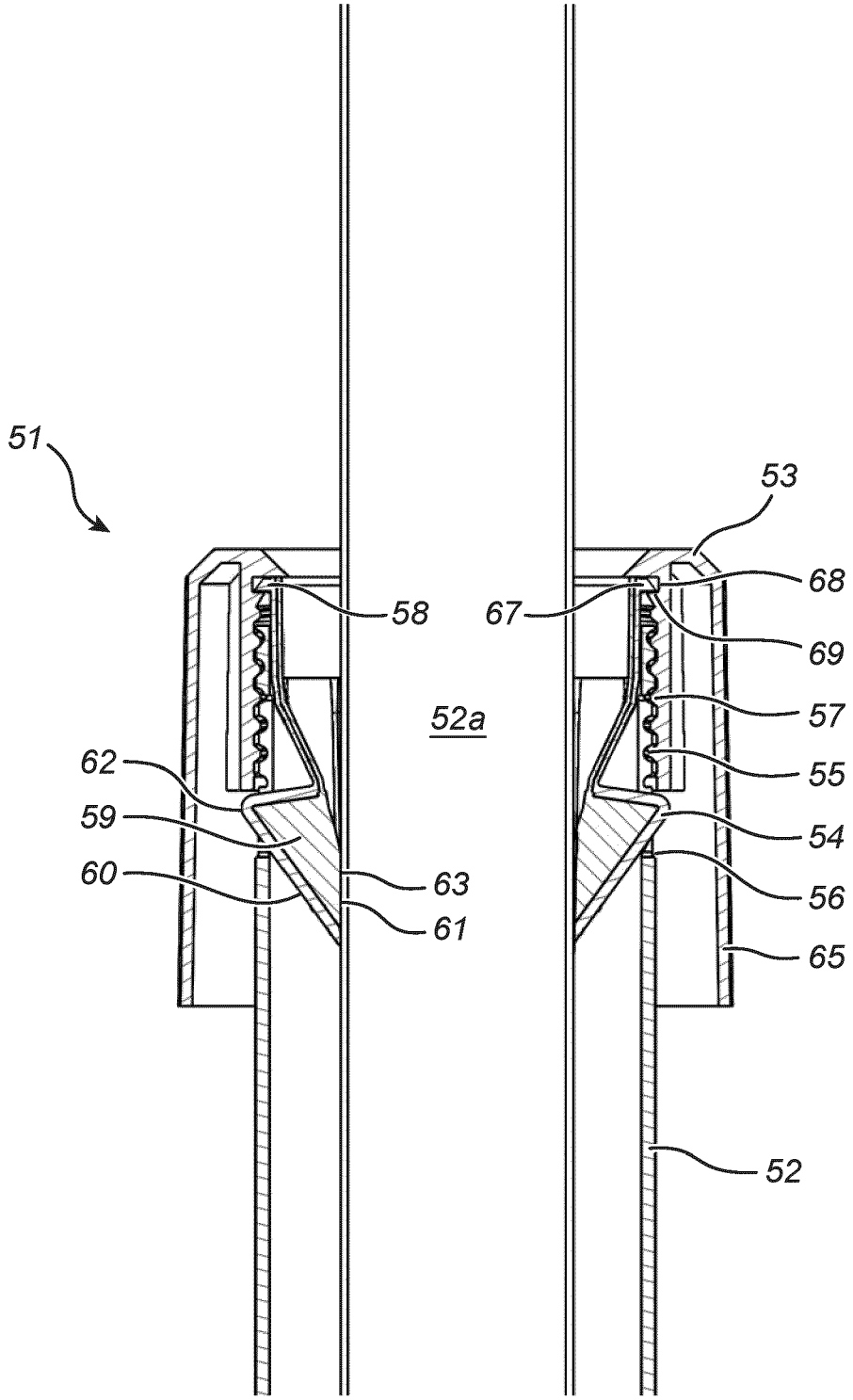

Fig. 5a

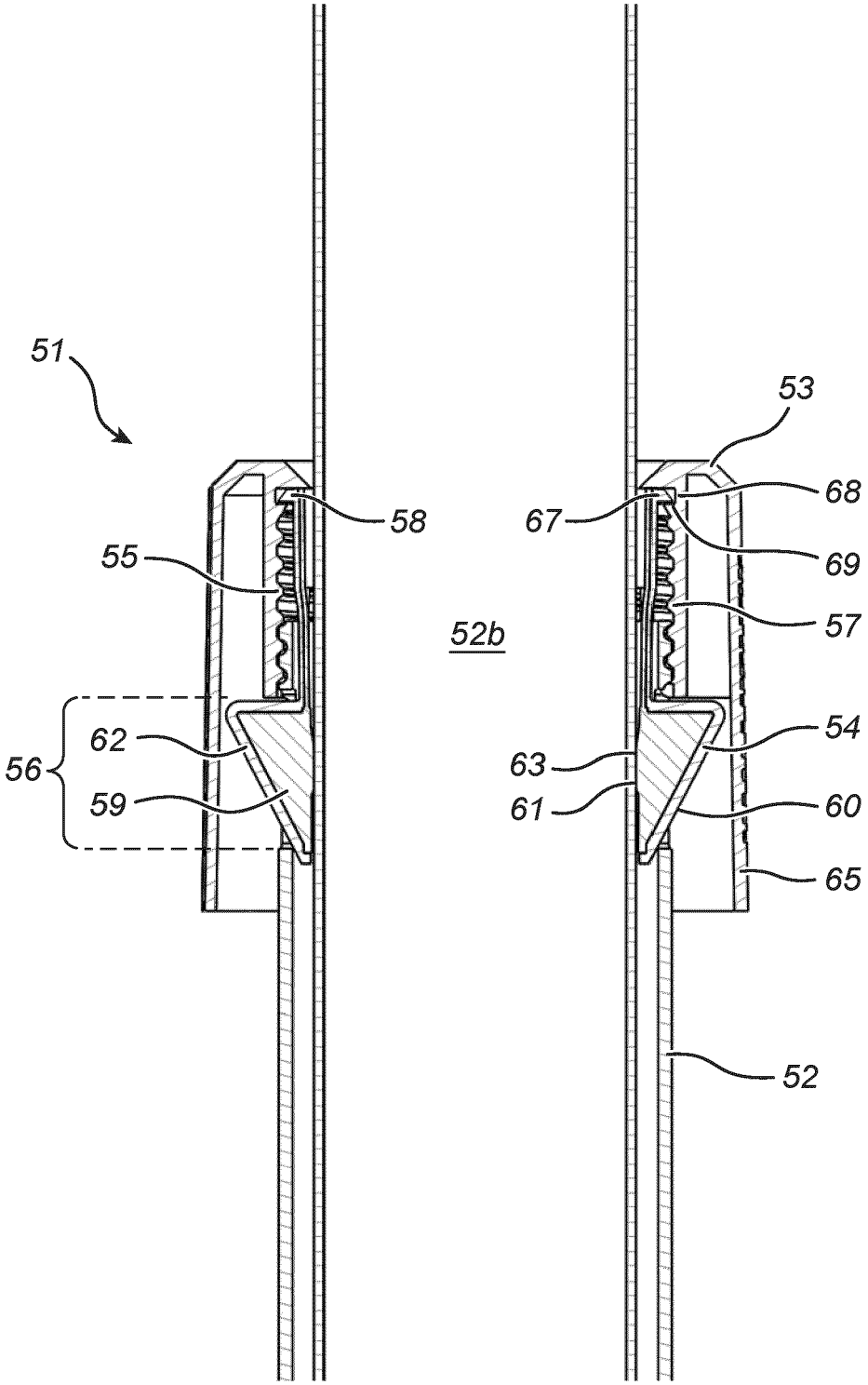

Fig. 5b

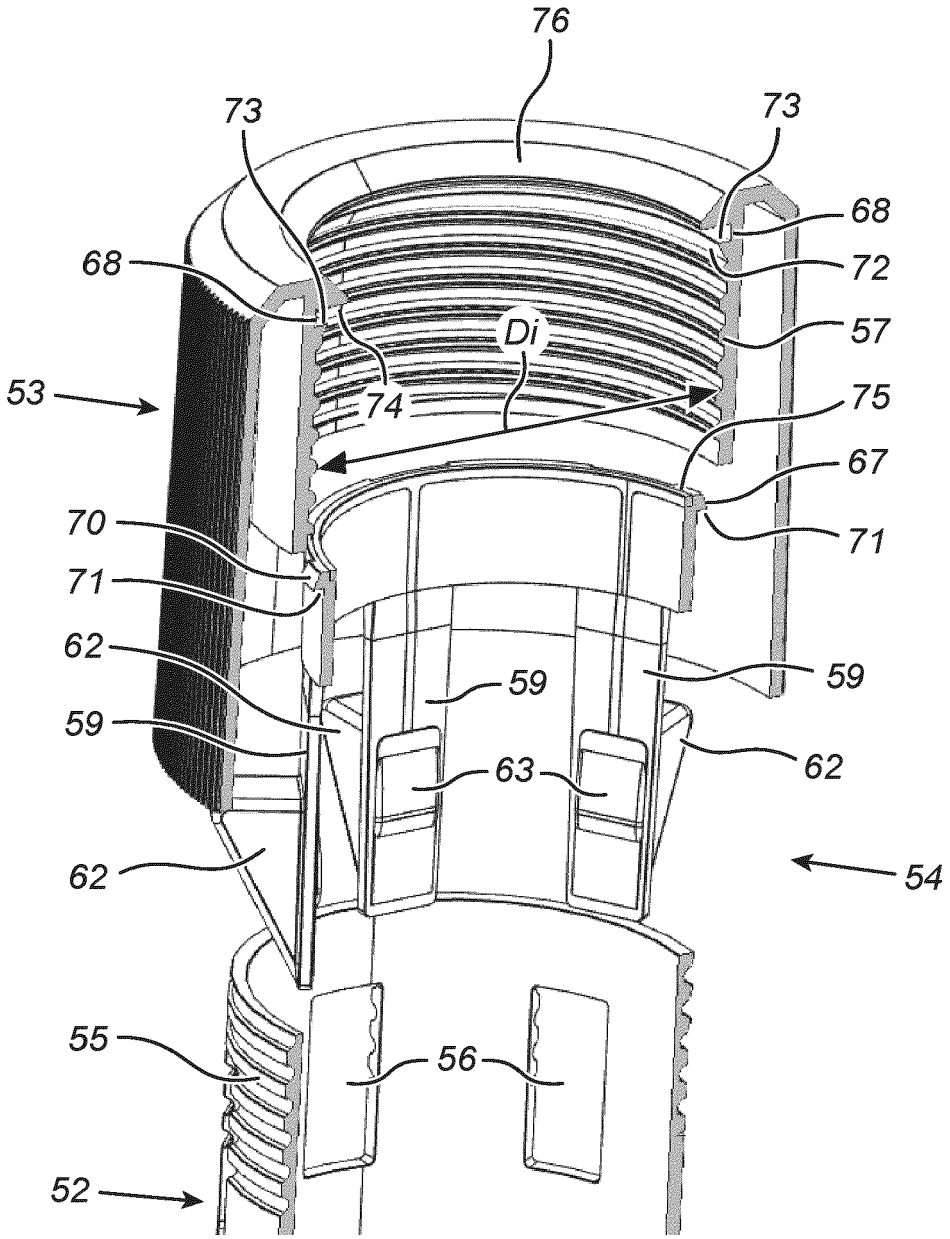
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Fig. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 24 18 1505

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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A	* abstract * * page 2, line 34 - page 4, line 9 * * claims * * figures *	4-8,12	

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A	* abstract * * figures 3-5 *	4-8	

TECHNICAL FIELDS SEARCHED (IPC)
A45B
A47G
E04H
F16B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	1 August 2024	Zetzsche, Brigitta

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