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(54) **Latch piece**

(57) A cylindrical latch piece 6, 15 for an umbrella frame includes at least one stud 7 which clips into an aperture or notch 2 of the shaft once fully introduced to hold the latch piece securely to the shaft. At the bottom the latch piece has a shoulder 5 over which a detent 13 of the umbrella runner may locate to hold the umbrella frame fully extended. By this means a push-button-type runner can be used on, say, a metal frame. The latch piece can be either an additional part 15 or can itself constitute the upper section 6 of the shaft.

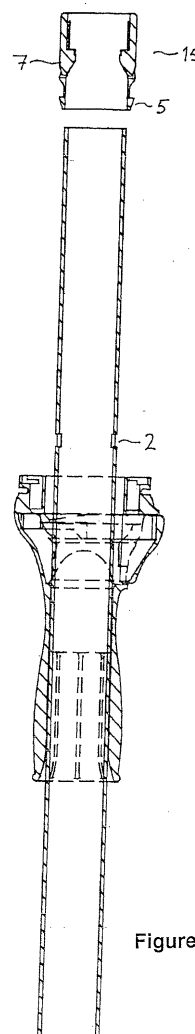


Figure 9

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Description

[0001] The invention relates to a latch piece for an umbrella or parasol. The latch concerned holds the runner (that is, the sliding part to which the stretchers of the umbrella frame are attached) in its upper position on the shaft so as to hold the umbrella frame in its deployed (open) configuration; it is released to close the umbrella. Such latches are used for all different shapes and sizes of umbrella or parasol in which the frame is not held in its extended position by spring force (so-called automatic umbrellas). In particular, the invention finds application with larger umbrellas of the type that is used to provide shade at tables and so on. These umbrellas may be tilted to an angle as required by the position of the sun.

[0002] Two widely used constructions of latch exist. Evidently, the latch mechanism acts between the umbrella runner and the umbrella stem or shaft in both cases.

[0003] In one construction, the relevant part on the umbrella shaft (or stem) is a spring loaded detent fixed within the umbrella shaft, such as a simple spring formed by a piece of wire or plastic bent to form a leading sloping surface along which an inner surface of the runner can slide and a return surface against which the runner or a part of the runner rests. The spring is pushed in by the runner and resumes its normal extended position once the runner has moved past it along the umbrella shaft. The spring must be pushed in by a user to allow closing of the umbrella.

[0004] The second, more recent, known construction is a fixed shoulder on the umbrella shaft which co-operates with a detent built into the runner. The detent on the runner is released by the user (for example by pushing a button) to allow the umbrella to be closed from its extended position and possibly also to allow the detent to pass over the shoulder on its way up to the fully extended position clipped behind the shoulder.

[0005] This second construction is commonly used in more modern style frames and has the advantages of easier assembly and improved operability (of special interest, for example, for children and pensioners) with less likelihood of trapping the user's fingers.

[0006] However, there may be some difficulty in using this second style of latch with certain umbrellas. For example, some tilting umbrellas have a pivot mechanism below the end position of the runner so that the runner first slides over the pivot to the upper shaft part and then tilts with it. Normally, such tilting umbrellas (known as standard or metal-tilt umbrellas) cannot be fitted with the modern moulded shoulder and must rely on the more old fashioned spring in the shaft. In contrast, umbrellas in which the pivot is located above the runner, even when the runner is slid to its operating position (head-tilt umbrellas - see EP-A-0368539) may be more easily provided with the moulded shoulder which may be, for example, formed as an integral part of the shaft section

carrying the pivot.

[0007] Furthermore, if the stem is to be made of metal, or even wood, it may be difficult to form the required shoulder on the stem in an aesthetic and cost effective way.

[0008] It is an aim of the present invention to overcome or at least mitigate some of the disadvantages of the prior art construction.

[0009] According to the invention there is provided a cylindrical latch piece for fitting to the shaft of an umbrella frame, comprising at least one stud which clips into an aperture of the shaft once fully introduced to hold the latch piece securely to the shaft; and a shoulder over which a detent of the umbrella runner may locate to hold the umbrella frame fully extended.

[0010] The special latch piece provides the latch and is not an integral part of the umbrella shaft. Thus the shoulder is available also for metal and wood shaft constructions as well as for plastic or composite shafts. A further advantage is that manufacture of a variety of umbrella frames can be simplified since they can all use the same latching mechanism, and hence the same runner, and possibly even be manufactured on the same line.

[0011] The stud is preferably resilient or resiliently mounted to allow fitting to the umbrella shaft (for example, introduction of the umbrella shaft into the cylinder). Advantageously it is flexibly mounted (and biased) to clip into its aperture and to this end the stud may be mounted on a tongue, the tongue and stud together forming a tab. The tongue advantageously extends longitudinally along the cylinder and hence the umbrella shaft when fitted.

[0012] The stud and aperture may be of any suitable shape and size and are usually of approximately the same shape and cross section so that the stud can fit snugly through the aperture. The aperture (and therefore the stud) is usually substantially rectangular or cylindrical in section.

[0013] The stud may furthermore be shaped to allow easier introduction of the umbrella shaft. For example it may include a leading surface sloping towards the aperture in the direction of insertion. Preferably the stud further comprises a locating surface which abuts an edge of the aperture once the stud is clipped into the aperture. Preferably this locating surface is at right angles to the axis of the cylindrical latch piece.

[0014] More than one stud may be provided, each on a separate tongue for example. In a preferred embodiment two opposing tabs extend along the cylindrical latch piece parallel to its axis. However three or more tabs could equally be provided.

[0015] Each stud is located towards the free end of its tongue, which may be located towards the shoulder end of the latch piece.

[0016] The direction of radial projection of the stud depends to some extent on whether the latch piece is introduced within the umbrella shaft or vice versa. In many

constructions, the latch piece is introduced over the umbrella shaft and in this case the projections usually extend inwardly (towards the umbrella shaft) from tongues cut out from the bulk of the latch piece body.

[0017] If the latch piece is narrow and elongate, in particular if it tapers, such a construction may not be easy to mould because removal of one of the cores becomes difficult, and an alternative construction, preferred in this case, has the stud or studs projecting outwardly from a tongue or tongues provided inside the main body of the latch piece. In this alternative construction, the tongue, but not the stud, is inside the umbrella shaft when in position. The attachment of the tongue to the latch piece main body extends radially outwardly and the latch piece body projects through the aperture of the main umbrella shaft.

[0018] In addition to the tab or tabs, additional securing means may be provided between the shaft and latch piece. These may include pinning (particularly for metal frames), adhesive (which sets once the latch piece has been positioned using the tabs) or welding of the parts or other additional mechanical means.

[0019] The shoulder may be a flange around the cylindrical latch piece and preferably of the same cross section as the latch piece, usually circular. It may comprise a sloping introduction portion or surface for the detent of the umbrella runner to gradually retract the detent and a positioning surface over which the detent clips. The detent may clip into a recess, which may be of the same height as the detent to prevent further movement along the umbrella shaft.

[0020] In some cases a heavy-handed user may force the runner and detent beyond the normal extended position in the recess. To limit such over extension and thus avoid damage to the umbrella, a stop may be constructed beyond the position of the shoulder in the direction towards the umbrella head. Such a stop may comprise one or more discrete projections all at the same level or a further flange.

[0021] The latch piece is usually hollow but may be solid if it is introduced into (within) the umbrella shaft. In either case a sliding surface may be provided which conforms to the shape of the umbrella shaft for easy introduction of one into the other. For the more usual hollow construction of the latch piece, the sliding surface is an internal surface normally of continuous circular cross section along its longitudinal extent.

[0022] The latch piece may be a part which is slotted over the umbrella shaft so that the umbrella shaft continues to either side of it in use and it forms a separate part or ring.

[0023] Alternatively, the latch piece may be a latch stem which forms a continuation of the umbrella shaft. For example, it may be an elongate piece and may extend to form the remainder of the shaft beyond the runner's uppermost position as far as the umbrella notch.

[0024] The latch stem may be of circular cross-section along its entire length. However, in one construction it

may be advantageously formed to provide correct alignment of the ribs to the runner as required. For example, it may have a shaped cross section (such as square or octagonal) at its upper portion which corresponds to a shaped cross section of the notch, so that their relative radial orientation is limited to a number of fixed positions. Further attachment means such as barbs, adhesive, welding or pinning may secure the notch and latch stem together.

[0025] Alternatively, the latch stem may be formed to provide the notch itself. In both cases the construction allows the ribs to be suitably positioned, for example to provide two ribs at an equidistant radial spacing from a uni-directional hinge-type tilt mechanism.

[0026] The present invention also relates to an umbrella frame assembly comprising a cylindrical latch piece as herein defined, and a kit of parts for an umbrella frame comprising a cylindrical latch piece as hereinbefore defined.

[0027] The present invention furthermore relates to a method of assembly of a latch piece for an umbrella to an umbrella shaft, comprising the steps of introducing the cylindrical latch piece onto the umbrella shaft until a stud of the latch piece clips into an aperture of the shaft to hold the latch piece securely to the shaft.

[0028] For a better understanding of the invention embodiments of it will now be described, by way of example, with reference to the accompanying drawings, in which:

Figure 1 shows an exploded view of a latch piece embodiment in the form of a latch stem, the runner and the umbrella shaft;

Figure 2 shows a sectional view of the latch stem runner and shaft according to the embodiment shown in Figure 1 from the side;

Figure 3 shows the assembly of Figure 2 from the front;

Figure 4 shows the Figure 2 assembly partly in section from the other side;

Figure 5 shows a detail of the assembly illustrated in Figure 1;

Figure 6 shows a detail of the cross section shown in Figure 2;

Figure 7 is a cross sectional detail of the tab construction;

Figure 8 shows an exploded view of a latch piece embodiment in the form of a latch ring, the runner and the umbrella shaft from the front;

Figure 9 is a cross section of the assembly shown in Figure 8;

Figure 10 shows a view of the latch ring of Figure 8 in its assembled position; and

Figure 11 shows a cross section of the Figure 10 view.

[0029] Figure 1 shows a metal umbrella shaft 1 having two apertures or cutouts 2, a runner 3 and a latch

stem 6. To put the parts in context, at the top of the latch stem there is the usual head (known as a notch) with ribs extending radially and supporting a cover. The notch may be an integral part of the latch stem. Stretchers extend radially from the top of the runner 3 or slider when the umbrella frame is fully assembled. These stretchers (not shown) meet the ribs of the umbrella frame at a joint called a git somewhere along their length so as to hold them extended with the cover taut when the umbrella is in use. To fold the umbrella the runner is slid down the shaft 1 in the usual way. The stretchers, ribs, head and cover may be standard parts and are not shown in the Figures.

[0030] The runner 3 is shown on the shaft with a button 4 which may be pressed by the user to release a detent mechanism (not shown in detail) inside the runner to allow the runner to latch/unlatch over a shoulder 5 of the latch stem 6.

[0031] Opposing studs 7 are just visible on the latch stem in Figure 1. A stop 8 in the form of a circular shoulder which prevents overtravel of the runner can be seen above the shoulder 5.

[0032] Figure 2 demonstrates the final positioning of the parts with the latch stem now overlapping with and continuing the shaft 1. As can be seen, the interior of the latch stem matches and fits snugly around the shaft. The tabs 9 and studs 7 are now clearly visible in section, on the inside of the shaft, the studs protruding outwardly into the holes 2. The metal umbrella shaft can extend as far as the tongue end, where the tongue is attached to the latch stem.

[0033] Figure 3 demonstrates more clearly the outwardly protruding stud 7. The tongue of the tab is here concealed behind the wall of the umbrella shaft.

[0034] Figure 4 shows a side view of the latch stem. An outer octagonal formed portion 16 is provided at the top of this latch stem embodiment, to match the octagonal inner cross section of a separate notch. These matching shaped cross sections of the latch stem and notch allow known relative radial positioning of the notch (and ribs) with respect to parts of the latch stem and shaft, such as the runner button 4 and any tilt mechanism. The latch stem formed portion 16 is further provided with two barbs 17 which click over corresponding parts of the notch when the notch is in its final position on the latch stem. Equivalent attachment means such as pinning, adhesive or welding may also be used.

[0035] Figure 5 demonstrates more clearly the relative positioning and sizes of the shoulder 5 and stop 8. A recess 10, in which the detent of the runner fits, is provided beyond the shoulder. This Figure also clearly shows the sloping introduction surface 11 and positioning surface 12 of the shoulder.

[0036] The relationship between the shoulder 5 and the runner detent 13 is illustrated in Figure 6. The detent part is positioned in the recess 10, beyond the positioning surface 12. In this embodiment the detent part is not held rigidly but its movement is limited by the far end of

the recess and positioning surface.

[0037] Finally for this latch stem embodiment, the construction of tab 9 with tongue 14 and outwardly protruding stud 7 is shown in Figure 7. The two opposing tongues are each recessed within the latch stem body, allowing the umbrella shaft to slide along the introduction surface and over the tongues, before the studs spring into their apertures.

[0038] Figure 8 shows an alternative embodiment, in which the latch piece is a latch ring 15 and its sole function is to fit a shoulder 5 to the shaft. The shaft 1 with its aperture 2 and runner 3 slidably mounted on the shaft is illustrated before assembly of the latch ring 15. The ring (shown in cross section in Figure 9) with its inwardly directed studs 7 and external shoulder 5 is designed to fit over the shaft 1 as shown in Figures 10 and 11, with the shaft continuing to either side of it.

[0039] The function of the latch ring shoulder is identical to that described for the latch stem embodiment, but the ring does not form any part of the length of the shaft. The ring itself and shoulder are shown as wider than for the latch stem, but this is not necessarily the case.

[0040] The inwardly directed studs 7 extend from tongues which form part of the wall of the latch ring. This is possible in the case of the simple ring because it has no internal taper. In the latch stem case the internal taper at the upper end would prevent the upper mould core being removed after moulding if radially inwardly protruding tabs were present. In this embodiment the stop 8 is provided as two opposed projections rather than a complete ring.

[0041] A further alternative embodiment would be a latch stem designed to fit within the umbrella shaft rather than outside it. This alternative is not shown but its working principle would be the same as the two previous embodiments with the alteration of constructional details as necessary and as obvious to the man skilled in the art. For example, the latch stem could be solid, whereas the externally fitted latch stem must be hollow. The tabs of the internal latch stem would probably extend outwardly towards the shaft. The shoulder would, of course, be provided on the part of the latch stem extending beyond and continuing the shaft.

[0042] The latch piece is generally of circular cross-section to match the shaft, though of course if the shaft were of a different shape the latch piece should correspond.

Reference numerals

[0043]

1. Umbrella shaft
2. Aperture
3. Runner
4. Button
5. Shoulder

- 6. Latch stem
- 7. Stud
- 8. Stop
- 9. Tab
- 10. Recess
- 11. Introduction surface
- 12. Positioning surface
- 13. Detent
- 14. Tongue
- 15. Latch ring
- 16. Formed portion of latch stem
- 17. Barb

Claims

- 1. A cylindrical latch piece (6, 15) for introduction onto the shaft of an umbrella frame, the latch piece including at least one stud (7) which clips into an aperture (2) of the shaft once fully introduced, in order to hold the latch piece securely to the shaft; and a shoulder (5) over which a detent (13) of the umbrella runner may locate to hold the umbrella frame fully extended. 20
- 2. A latch piece according to claim 1, wherein the stud is flexibly mounted so as to clip into position into the aperture in the shaft. 25
- 3. A latch piece according to claim 2, wherein the stud is mounted on a tongue to form a resilient tab (9) extending along the axis of the cylinder. 30
- 4. A latch piece according to any preceding claim and having two or more opposing studs at the same axial location. 35
- 5. A latch piece according to any preceding claim and having a circular flange or a lip with a sloping portion (11) and an approximately right-angled portion (12) forming the shoulder (5) over which the runner locates. 40
- 6. A latch piece according to any preceding claim, further including a stop (8) to prevent a runner from overshooting the in-use position. 45
- 7. A latch piece according to any preceding claim, in which the latch piece is integrally moulded of plastics material. 50
- 8. A latch piece according to any preceding claim, in which the latch piece is hollow or open-ended, having a cylindrical sliding surface on the inside. 55
- 9. A latch piece according to claim 8, in the form of a latch ring (15) designed to fit over a shaft.
- 10. A latch piece according to any of claims 1 to 7, in the form of a latch stem (6) designed to form part of a shaft.
- 11. A latch piece according to claim 10, in which the stem is elongate and extends to an umbrella head or notch.
- 12. An umbrella frame, comprising a shaft (2), a runner (3) and a latch piece according to any preceding claim, fitted to the shaft.
- 13. An umbrella frame according to claim 12 and having additional securing means such as adhesive between the shaft and the latch piece.

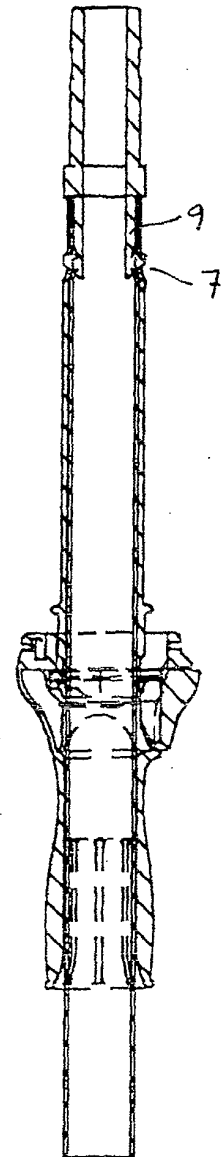
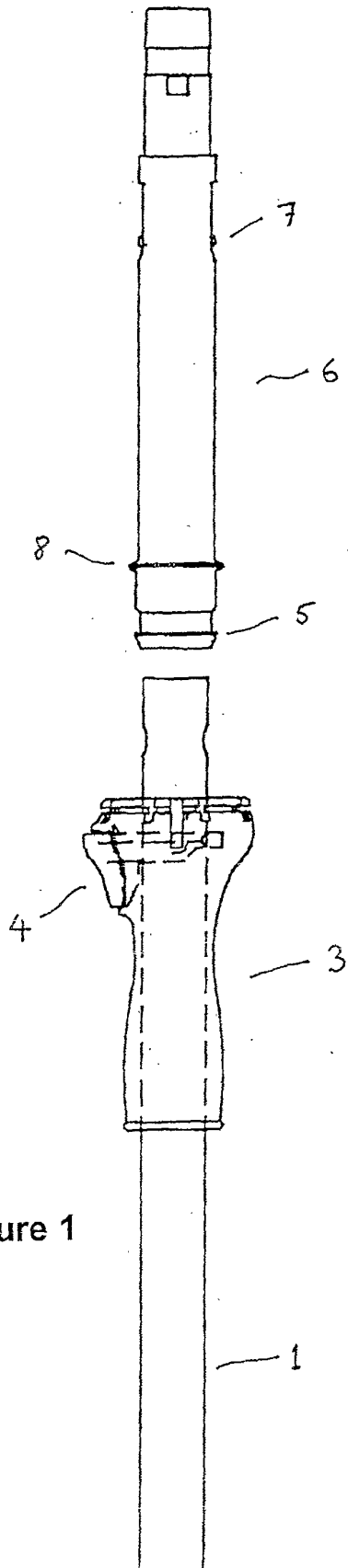


Figure 3

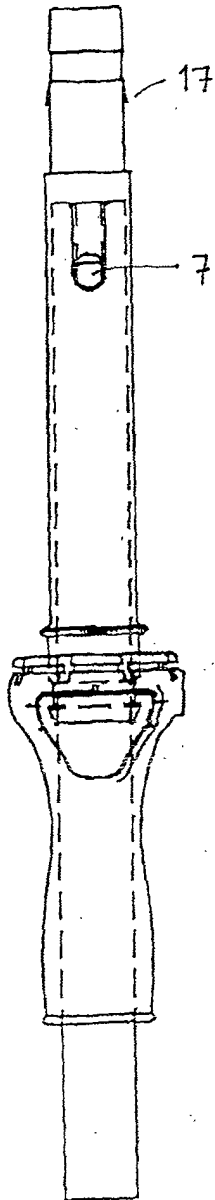
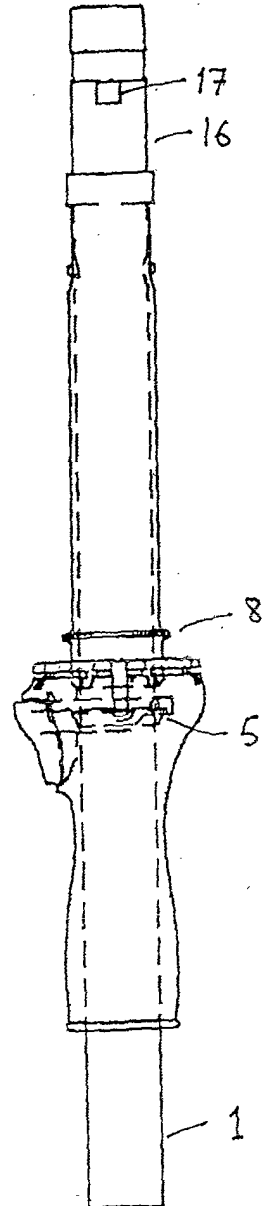


Figure 4



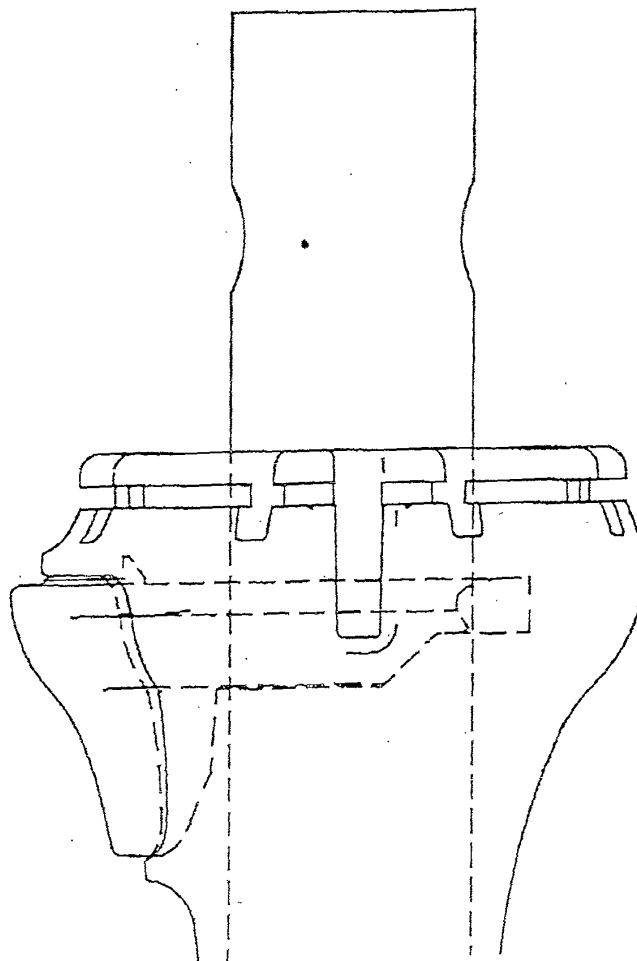
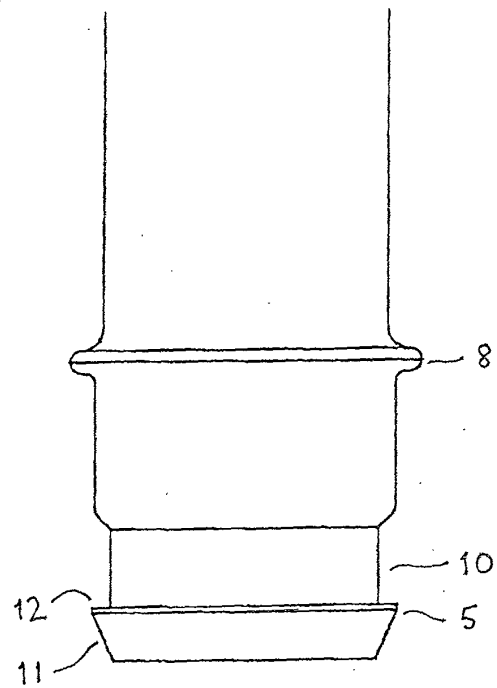


Figure 5

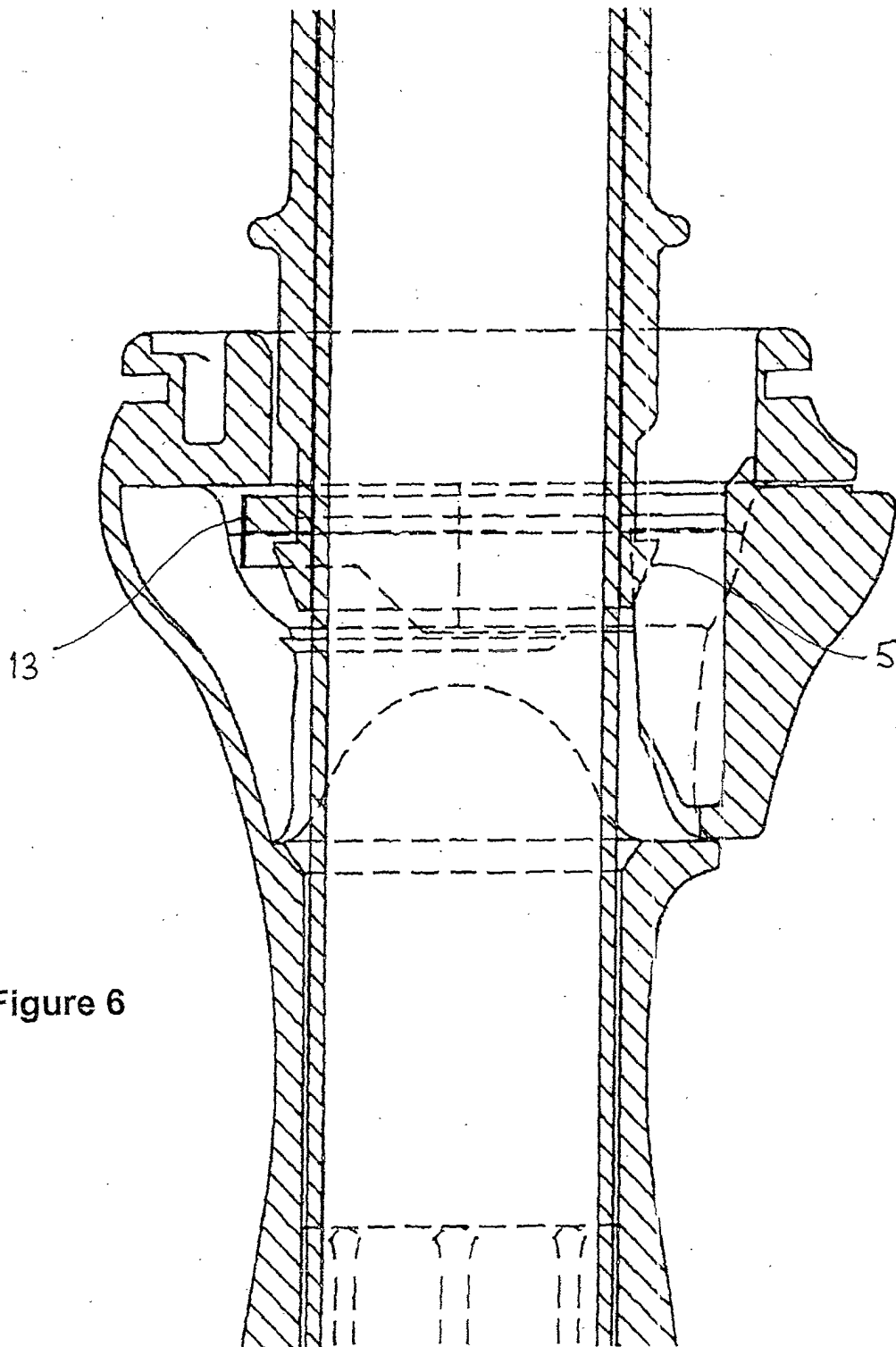


Figure 6

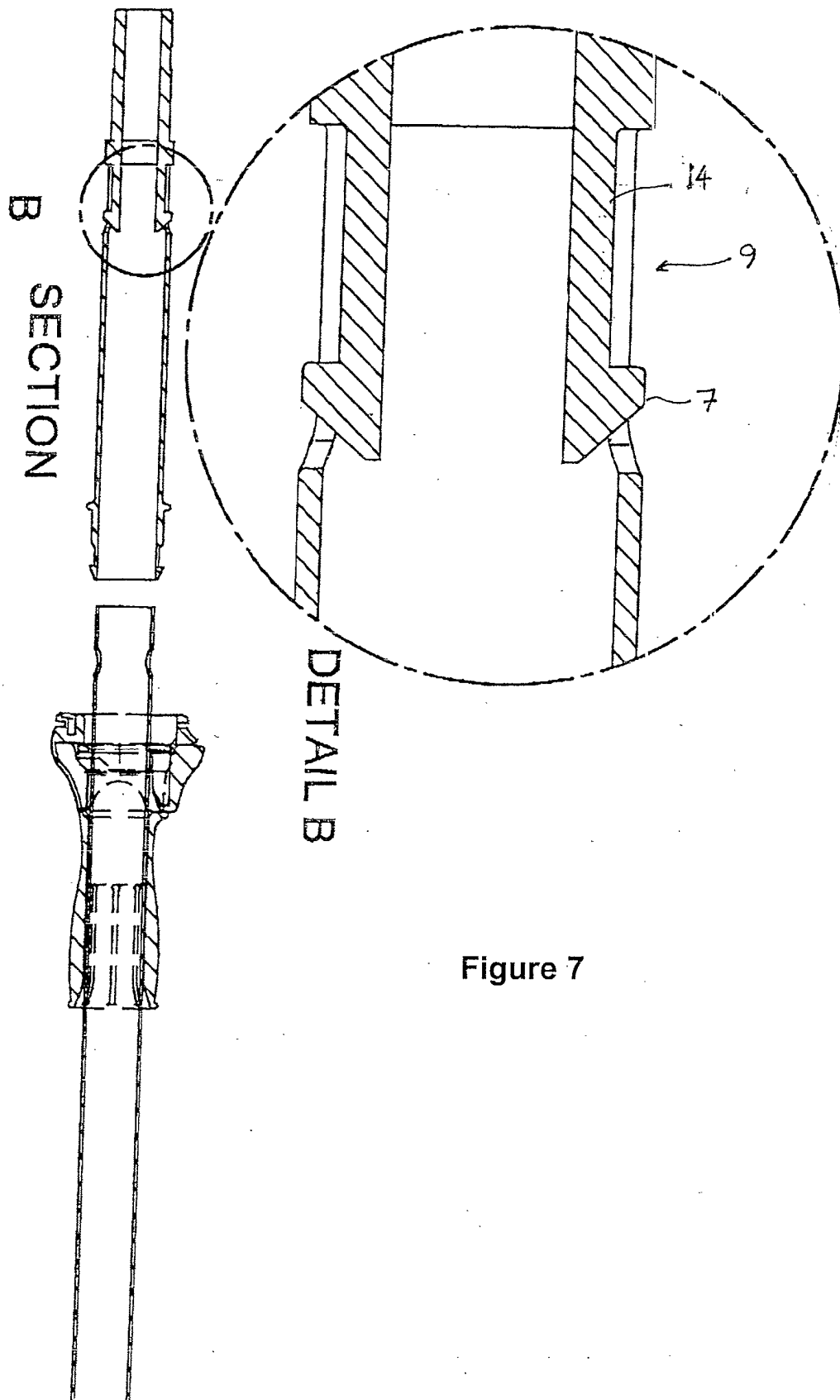
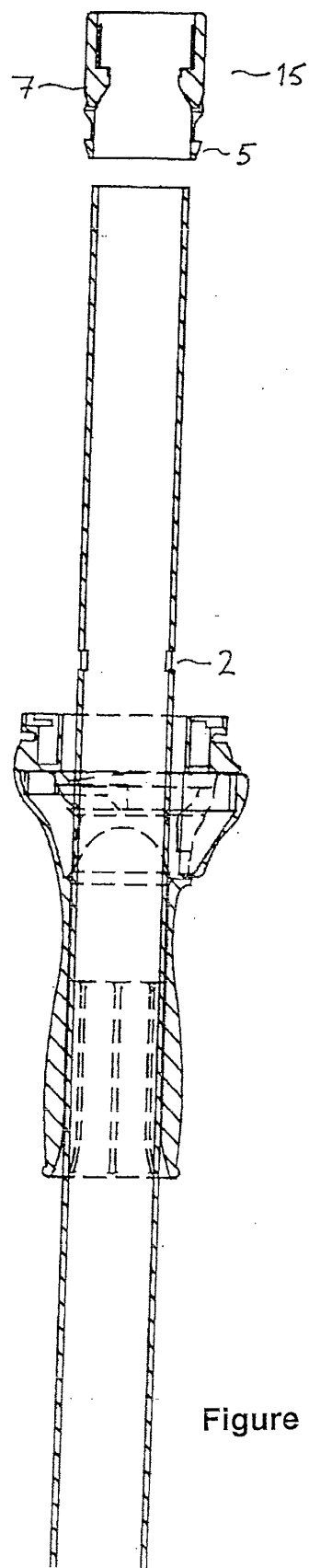
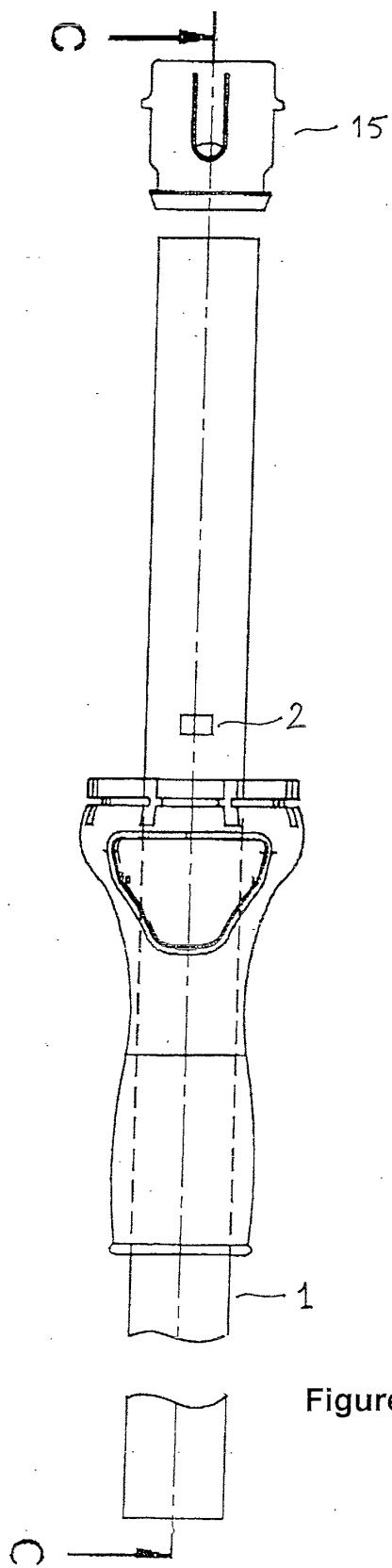


Figure 7



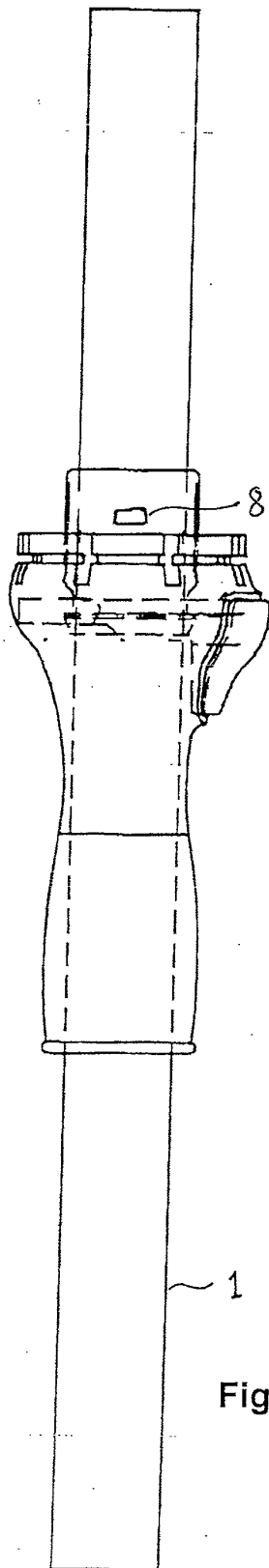


Figure 10

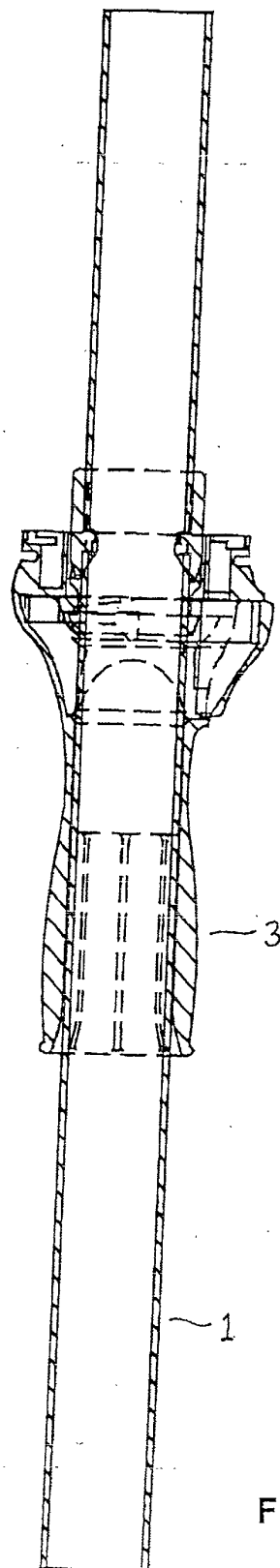


Figure 11