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ASSEMBLY GROUP FOR A PRESS FITTING FOR A PIPE CONNECTION

The invention relates to a mounting unit for a press fitting, having a press sleeve and a stop ring. In addition, the invention relates to a press fitting for a pipe connection, having a fitting body and a mounting unit of this type.

Press fittings for pipe connections are known from the prior art. For example, DE 10 2018 109 555 B3 discloses a press fitting 101 for a pipe connection, illustrated in Figure 12.

The press fitting 101 according to Figure 12 has a fitting body 102 for connecting the press fitting 101 to a pipe, two press sleeves 103 fixed to the fitting body 102, each with a substantially cylindrical pressing region 104 and at least one projecting element in the form of a flange 105, which delimits the substantially cylindrical pressing region 104 in the axial direction, and a tubular band 114 made of a plastic material film. As shown in Figure 12, each of the press sleeves 103 is fixed to the fitting body 102 by means of a holding ring 106. For this purpose, the press sleeve 103, at the proximal end, has a slightly widened region 107, which is latched to the holding ring 106. In addition, the holding ring 106 is latched to the fitting body 102 via two opposing latching lugs 108 and 109.

In addition, EP 1 790 896 A1 discloses a press fitting 210 for a pipe, in particular a plastic material pipe or a pipe made of a plastic material-metal composite, this press fitting being shown in Figure 13.

The press fitting 210 in Figure 13 is provided with a fitting body 212 having a support body 216, onto which a pipe 220 to be attached can be pushed, a press sleeve 230 having a compression region 266 in which a pressing tool acts on the press sleeve 230 when the latter is compressed, and a compression indicator ring 252, which is held on an outer bead 244 of the press sleeve 230. The press fitting 210 in Figure 13 differs from the press fitting 101 in Figure 12 in that, inter alia, an inner projection 248 of the press sleeve 230 protrudes directly into an outer circumferential recess 228 of the fitting body 212.

EP 1 933 073 A1 discloses a press fitting for a pipe which is provided with a fitting body having a support body onto which a pipe to be attached can be pushed. The press fitting further has a press sleeve having a holding end at which the press sleeve is held on the fitting body. The press sleeve, at the holding end thereof, has edge recesses which are open towards the end face of the press sleeve. A plastic material ring rests against the exterior of the press sleeve and is secured thereon against movement in the axial direction of the press sleeve, wherein the plastic material ring has at least one axially projecting projection which extends into the compression region of the press sleeve and

is secured so as to be destructible and/or separable from the plastic material ring when the pressing tool acts on the press sleeve.

The present invention is based on the object of describing an improved press fitting which is preferably particularly simple to produce. In particular, a press fitting is to be described which makes it possible to produce a permanent connection which is resistant to impact, for example from a lateral direction, between a press sleeve and a stop ring, even during the production of the press fitting and before the latter is compressed, and/or in which damage to individual parts, such as the fitting body, during production can be reduced or avoided.

The invention is laid down in the appended claims.

According to a first aspect of the disclosure, a press fitting for a pipe connection is disclosed. The press fitting has a fitting body for connecting the press fitting to a pipe, a substantially cylindrical press sleeve which is fixed to the fitting body and has a pressing region, and a stop ring which is fixed to the press sleeve and delimits the pressing region in an axial direction of the press sleeve. The stop ring has a substantially cylindrical inner contour with projecting first regions and second regions which are recessed relative to the first regions. The first regions of the first stop ring engage in a clamping manner around an outer contour of the press sleeve. The second regions of the stop ring are located at a distance from the outer contour of the press sleeve.

A stop ring designed in this way, with an inner contour having projecting and recessed regions, makes it possible to produce a secure clamping connection, even allowing for the possible tolerances of a press fitting. Clamping of this type holds the stop ring securely in place against a press sleeve, even before the press sleeve is mounted on the fitting body itself. This ensures, inter alia, that the stop ring does not become unintentionally detached from the press sleeve before the press sleeve is mounted on the fitting body or before compression.

In accordance with the claims, the press sleeve has a predetermined external diameter d_3 with a predetermined tolerance range. A clear internal diameter d_1 between the first regions is smaller than a predetermined external diameter d_3 of the press sleeve, less a negative tolerance, and a clear internal diameter d_2 between the second regions is greater than the predetermined external diameter d_3 , plus a positive tolerance. The predetermined tolerance range is approximately 1% of a diameter of a pipe to be connected to the press fitting and/or at least 0.2 mm. The clear internal diameter d_1 between the first regions is approximately 0.5% and/or at least 0.1 mm smaller than the predetermined external diameter d_3 , less the negative tolerance, and the clear internal

diameter d_2 between the second regions is approximately 0.5% and/or at least 0.1 mm greater than the predetermined external diameter d_3 , plus the positive tolerance.

In at least one design, the fitting body has a circumferential groove, and the press sleeve has, at a fitting-side (or proximal) first axial end, a first projection which points inwards in the radial direction and engages in the groove when fixed to the fitting body, so that the press sleeve is fastened directly on the fitting body. A direct connection of this type between the press sleeve and the fitting body, for example by latching the first projection to the circumferential groove, increases the stability of the press fitting, for example against impacts from a lateral direction, after the press sleeve has been mounted on the fitting body.

In at least one design, the press sleeve has one or a plurality of slots which extend from the first axial end in the direction of the pressing region. Slots of this type make it easier to apply the press sleeve to the fitting body. The recessed second regions of the stop ring make it easier to bend open the first end of the press sleeve when the latter is mounted on the fitting body.

According to a possible design, the first and second regions are connected to one another by curved transitional regions. A shape of this type is relatively simple to produce and simultaneously ensures that the stop ring is securely clamped to the press sleeve.

According to an alternative design, the second regions are formed by a substantially cylindrical inner surface of the stop ring, and the first regions are formed by webs protruding from the inner surface. A design of this type is particularly economical in terms of the material required for production and likewise ensures that the stop ring is securely clamped.

According to a second aspect of the disclosure, a mounting unit for the press fitting according to the first aspect is described. The mounting unit has a substantially cylindrical press sleeve with a pressing region, and a stop ring which is fixed at a first axial end of the press sleeve and delimits the pressing region in an axial direction of the press sleeve. The stop ring has a substantially cylindrical inner contour with projecting first regions and second regions which are recessed relative to the first regions, wherein the first regions of the stop ring engage in a clamping manner around an outer contour of the press sleeve, and the second regions of the stop ring are located at a distance from the outer contour of the press sleeve.

In a mounting unit of this type, a stop ring is fixed to a press sleeve in a particularly secure manner. The mounting unit can therefore be stored, and optionally transported, without complications, before it is applied to a corresponding fitting body of a press fitting.

Further advantageous designs are disclosed in the appended claims and in the following detailed description of exemplary embodiments.

The invention is explained in detail below on the basis of different exemplary embodiments with reference to the appended figures. In the figures, identical reference signs denote identical or similar components in different exemplary embodiments. In the drawings:

- Figure 1 shows an exploded view of a press fitting with a stop ring,
- Figures 2 to 4 show different views of a stop ring according to Figure 1,
- Figure 5 shows the press fitting according to Figure 1 in the mounted state,
- Figure 6 shows a cross section through the press fitting according to Figure 5,
- Figure 7 shows an alternative design of a stop ring,
- Figures 8 and 9 show different views of a further stop ring,
- Figure 10 shows a mounting unit being mounted on a fitting body,
- Figure 11 schematically shows a method for mounting a press fitting,
- Figure 12 shows a first press fitting according to the prior art, and
- Figure 13 shows a second press fitting according to the prior art.

Figure 1 shows an exploded view of a press fitting 1. The press fitting 1 has a fitting body 2, a stop ring 3 and a press sleeve 4.

In the exemplary embodiment, the fitting body 2 is a straight, substantially cylindrical coupling for connecting two pipes with the same diameter. Other fitting bodies, such as angle connections, tees or couplings for connecting pipes with different diameters, are of course also possible.

The fitting body 2 may be manufactured from a plastic material too, such as a polymer substance, or from a metal substance. The surface of the fitting body 2 has a plurality of raised portions and grooves which ensure that a pipe (not shown in Figure 1), for example a plastic material, metal or composite pipe, is compressed in a secure, tight manner by the fitting body 2. For this purpose, further sealing elements (not shown in Figure 1 for clarity) may be applied to the fitting body 2.

The fitting body 2 comprises a central region 5 and two opposing attachment regions 6a and 6b. Provided in the central region 5 are grooves 7a and 7b, which are located so as to be adjacent, respectively, to the respective attachment region 6a and 6b and which act to latch with first projections, which project inwards from the press sleeve 4 in the form of lips 8.

The press sleeve 4 is typically manufactured from a metal substance, in particular stainless steel. In order to reduce the force required to latch the press sleeve 4 to the

fitting body 2, a first axial end 9 of the press sleeve 4 is provided with a plurality of slots 10. The slots 10 make it easier to widen the first axial end 9 when the press sleeve 4 is pushed onto the fitting body 2. The first axial end 9 of the press sleeve 4 points in the direction of the central region 7 of the fitting body 2 and may therefore also be referred to as the proximal end. Before the press sleeve 4 is applied to the fitting body 2, the stop ring 3 is first mounted thereon.

The stop ring 3 is typically manufactured from a plastic material tool, in particular a polymer substance, and delimits a pressing region 11 of the press sleeve 4 at the first axial end 9 of the press sleeve 4. In the exemplary embodiment illustrated, at the opposing, distal or second axial end 12 of the press sleeve 4, the pressing region 11 is delimited by a second projection in the form of a flange 13 of the press sleeve 4 itself. When the press fitting 1 is compressed, pressing jaws of a pressing tool (not shown in the figures) act on the pressing region 11 of the press sleeve 4 and thus produce a form-fitting connection between the fitting body 3, a pipe end introduced into the press fitting and the press sleeve 4.

In order to fasten the stop ring 3 securely to the press sleeve 4, even before the press sleeve 4 is mounted on the fitting body 2, the stop ring 3 has a sleeve-side inner contour 14 which serves to produce a clamping connection.

As shown in Figures 2 to 4, the inner contour 14 in the exemplary embodiment illustrated has a total of eight projecting first regions 15. Located between these first regions are eight second regions 16 which are recessed relative thereto. The stop ring 3 can deform slightly when it is pushed onto the first axial end 9 of the press sleeve 4. In so doing, the first regions 15 in particular create a clamping fit.

For this purpose, a first internal diameter d_1 of a remaining clear region between the first regions 15 is dimensioned such that it is smaller than an external diameter d_3 , shown in Figure 6, of the press sleeve 4, plus a possible negative production tolerance. For example, a press sleeve for a pipe diameter of 25 mm may have a tolerance range of approximately 0.25 mm, i.e. approximately 1% of the nominal diameter. In this case, the first internal diameter d_1 between end faces of the first regions 15 is dimensioned in such a way that, even in the case of a minimum permissible external diameter of the press sleeve 4, there is still an overlap of 0.1 mm to provide a clamping force. Conversely, in the case of a maximum permissible external diameter of the press sleeve 4, there is an overlap of 0.35 mm.

In contrast, a second internal diameter d_2 between two opposing, most recessed parts of the second regions 16 is dimensioned so that there remains in each case a clear distance

between a lateral surface of the press sleeve 4 and a corresponding second region 16 of the inner contour 14 of the stop ring 3. For example, a minimum clearance of 0.1 mm remains in the case of a maximum external diameter of the press sleeve 4 within the tolerance range, and a maximum clearance of 0.35 mm remains in the case of a minimum external diameter of the press sleeve 4.

In the exemplary embodiment according to Figures 1 to 3, the first regions 15 are connected to the second regions 16 by transitional regions 30 which are curved in cross section and in which the internal diameter of the stop ring 3 increases continuously. The advantage of this configuration is that the curved transitional regions 30 are particularly stable from a mechanical perspective. In addition, the projecting first regions 15 are designed to be so wide that they do not protrude completely into the slots 10 of the press sleeve 4 when the stop ring 3 is mounted.

The cross section according to Figure 4 shows that a first side 17 of the stop ring 3, facing the pressing region 11 in the mounted state, has a first bevel 18. The first bevel 18 allows the attachment ring 3 to be centred and fitted in a simple manner onto the first axial end 9 of the press sleeve 3.

In addition, the figure shows that an opposing second side 19 of the stop ring 3, which faces the central region 6 of the fitting body 2 in the mounted state, has a fitting-side inner contour 20 with a second bevel 21. The second bevel 21 serves, inter alia, to centre a mounting unit comprising the stop ring 3 and the press sleeve 4 when this mounting unit is mounted on the fitting body 2. A curved outer contour 22 of the stop ring 3 continuously connects the external diameter of the first side 17 to the external diameter of the second side 19, so that there are no steps in cross section. The sleeve-side inner contour 14 and the fitting-side inner contour 20 are separated from each other by an inwardly protruding third projection which forms an open base surface 23 of the sleeve-side inner contour 14 and simultaneously delimits a maximum insertion depth of the press sleeve 4.

In the mounted state according to Figures 5 and 6, the third projection or open base surface 23 of the stop ring 3, as shown in the cross section in Figure 6, may engage fully or partially in the groove 7 of the fitting body 2. If dimensioned accordingly, the third projection or open base surface may also rest on a surface of the fitting body 2 outside the groove 7. In the exemplary embodiment, it delimits the fitting depth of the assembly when the press sleeve 4 is applied to the attachment region 6a, in that the second side 19 of the stop ring 3 abuts an end face 35 of the central region 5.

Figure 7 shows an alternative design of a sleeve-side inner contour 14 of a stop ring 3. In contrast to the stop ring 3 according to Figures 1 to 4, the inner contour 14 according to

Figure 7 comprises a substantially cylindrical inner surface 24 and webs 25 arranged thereon. In the exemplary embodiment, there is a total of eight such webs 25, which form the first regions 15 of the stop ring 1. The portions of the cylindrical inner surface 24 located between these webs form the second regions 16. With regard to the dimensions thereof, reference is made to the above.

In the following, a further aspect of the fitting-side inner contour 20 according to a further design of an attachment ring is described with reference to Figures 8 to 10. In this exemplary embodiment, the fitting-side inner contour 20 has a projecting element 26 which is arranged in a relatively small circle segment 27 of the stop ring 3. In the other, remaining part, which corresponds to a larger circle segment 31, the stop ring 3 has a uniform cross section. In this context, "projecting" means that a surface of the element 26 pointing towards the centre of the stop ring 3 projects beyond a surrounding surface of the fitting-side inner contour 20 or of the uniform cross section in the circle segment 31.

For example, as illustrated in Figure 10, the element 26 may be configured as a tab 33 which projects radially, i.e. perpendicularly to the axis of symmetry thereof, inwards from the inner circumference of the stop ring 3. Alternatively, it is also possible to design the element 26, as illustrated in Figures 8 and 9, as an insertion slope 32, which may also form part of the second bevel 21. In this case, in the region of the smaller circle segment 27, in which the element 26 is configured, an obliquely inwardly inclined surface of the insertion slope 32 is, relative to a surface of the bevel 21, either shifted inwards in a parallel manner, or has a greater incline in the direction of insertion than the second bevel 21 of the fitting-side inner contour 20.

When the press sleeve 4, with the attachment ring 3 fitted thereto, is placed on an attachment region 6 of the fitting body 2, the element 26 acts in particular to cause a relative tilting of the axes thereof.

In the exemplary embodiment shown in Figure 10, a mounting unit 28, having the press sleeve 4 and the attachment ring 3, is positioned upright on a planar surface, such as a holding device of a machine tool, with the first axial end 9 of the mounting unit pointing upwards. A fitting body 2 with a downward-pointing attachment region 6 is then inserted substantially vertically from above into the opening of the mounting unit 28. The axial directions of the mounting unit 28 and the fitting body 2 are initially congruent.

As soon as the second side 19 of the attachment ring 3 meets a circumferential rib 29 located before the groove 7, the element 26, in the form of a tab 33 in Figure 10, brings about an asymmetrical distribution of force which, as illustrated, causes the central axis A_F of the attachment region 6 to tilt slightly relative to the axis A_S of symmetry of the

mounting unit 28 or the press sleeve 4. For example, the fitting body 2 may be tilted by approximately 2 to 5°.

As a result, the segments 34 of the press sleeve 4, which are formed between the slots 10 of the press sleeve 4 and have lips 8 integrally formed thereon, widen slightly in succession during the latching process. This considerably reduces the forces required to connect the mounting unit 28 to the fitting body 2 and thus facilitates the insertion of the attachment region 6 into the mounting unit 28.

Under test conditions, by inserting the attachment region 6 into the mounting unit 28 in an offset or tilted position, it is possible to reduce the forces required to mount a press fitting 1, for a nominal pipe diameter of 25 mm, to a press-in force of 242 N, compared to a press-in force of approximately 2100 N when the components are pressed in coaxially, which makes mounting the press fitting 1 considerably easier. For a nominal pipe diameter of 32 mm, the press-in force was reduced from 1500 N to 314 N. This reduction in the forces arising during the mounting process has the additional advantage that damage to the fitting body 2 can be avoided, especially if plastic materials are used for the fitting body 2.

As soon as the mounting process is complete, i.e. as soon as the second side 19 of the stop ring 3 makes contact with an end face 35 formed by the central region 5, the press sleeve 4 and the fitting body 2 are again coaxially aligned. The offset or tilted application of the mounting unit 28 therefore does not adversely affect the alignment thereof or the secure fastening of the press sleeve 4 to the fitting body 2.

Figure 11 schematically shows the steps of a method for mounting a press fitting 1.

Firstly, a press sleeve 4 with a predetermined nominal diameter is provided in a step S1. This diameter may vary according to the invention within a predetermined tolerance range by a specific negative and/or positive tolerance value. Preferably, the press sleeve 4 has one or more protrusions, such as, in particular, lips 8, for directly latching to a fitting body 2.

In a subsequent step S2, a stop ring 3 is fitted onto the press sleeve 4 at a first axial end 9. Preferably, the stop ring is fastened to the press sleeve 4, for example by the provision according to the invention of raised first regions 15 and recessed second regions 16, which cause the stop ring 3 to lock in position on the press sleeve 4. Alternatively, other connections not according to the invention, in particular form-fitting connections, are also possible. In a further step S3, the resulting mounting unit 28 of the press sleeve 4, with the stop ring 3 attached thereto, is applied to an attachment region 6 of a fitting body 2. This can be achieved, for example, by an industrial pick-and-place machine.

In a step S4, the longitudinal axes of the fitting body 2 and the mounting unit 28 are tilted relative to each other. This can be achieved, for example, by appropriately activating a pick-and-place machine or a pressing plunger or, as previously described with reference to Figures 8 to 10, by providing an appropriate fitting-side inner contour 20 with a protruding element 26.

In a step S5, the mounting unit 28 is subsequently pushed or pressed further onto the fitting body 2, and the press sleeve 4 is latched to the fitting body 2, for example as the result of lips 8 engaging in a corresponding groove 7 of the fitting body 2.

In the exemplary embodiments described, the stop ring 3 remains intact during the actual compression of the press sleeve 4 with a pipe end, as the pressing tool does not exert any force on the stop ring 3 in a radial pressing direction. Should it be desirable to indicate that compression has taken place, the press fitting 1 described may for example be provided with a tubular band as a compression marker. The application and advantages of a band 114 of this type, as illustrated for example in Figure 12, have already been described in detail in DE 2018 109 555 B3. To avoid repetition, reference is made to the disclosure in this regard in the above document and it is incorporated by reference into the present description.

The previously described sleeve-side inner contour 14 on the side of the stop ring 3 facing the pressing region 11 and the fitting-side inner contour 20 on the side of the stop ring 3 facing the fitting body 2 may be combined with each other as previously described. However, the inner contours 14 and 20 in themselves also each achieve the described effects and advantages and may therefore also be implemented individually.

List of reference signs

1	press fitting
2	fitting body
3	attachment ring
4	press sleeve
5	central region
6, 6a, 6b	attachment region
7, 7a, 7b	groove
8	lip (first projection)
9	first axial end
10	slot
11	pressing region
12	second axial end
13	flange (second projection)
14	(sleeve-side) inner contour
15	first region
16	second region
17	first side
18	first bevel
19	second side
20	(fitting-side) inner contour
21	second bevel
22	outer contour
23	open base surface (third projection)
24	inner cylindrical surface
25	web
26	element
27	(small) circle segment
28	mounting unit
29	rib
30	transitional region
31	(larger) circle segment
32	insertion slope
33	tab

- 34 segment (of the press sleeve)
- 35 end face

MONTAGEENHED TIL EN PRESSEFITTING TIL EN RØRFORBINDELSE**Patentkrav**

1. Montageenhed (28) til en pressefitting (1), som har:

- en grundlæggende cylinderformet pressebøsning (4) med et presseområde (11), hvorved pressebøsningen (4) har en på forhånd fastsat udvendig diameter d_3 med et på forhånd fastsat toleranceområde; og
- en fastlagt anslagsring (3) på en første aksial ende (9) af pressebøsningen (4), der begrænser presseområdet (11) i en aksial retning af pressebøsningen (4), hvorved
 - anslagsringen (3) har en grundlæggende cylinderformet, indvendig kontur (14) med udragende, første områder (15) og bagudrettede, sekundære områder (16) over for de første områder (15),
 - en fri indvendig diameter d_1 mellem de første områder (15) er mindre end den på forhånd fastsatte udvendige diameter d_3 minus en negativ tolerance, således at de første områder (15) af anslagsringen (3) griber klemmende om en udvendige kontur af pressebøsningen (4), og
 - en fri indvendig diameter d_2 mellem de sekundære områder (16) er større end den på forhånd fastsatte udvendige diameter d_3 plus en positiv tolerance, således at de sekundære områder (16) af anslagsringen (3) har afstand til den udvendige kontur af pressebøsningen;
- hvorved det på forhånd fastsatte toleranceområde udgør mindst 0,2 mm og i særdeleshed cirka 1 % af en diameter på et rør, der skal forbindes med pressefittingen;
- den frie indvendige diameter d_1 mellem de første områder (15) er cirka 0,5 % og/eller mindst 0,1 mm mindre end den på forhånd fastsatte udvendige diameter d_3 minus den negative tolerance; og
- den frie indvendige diameter d_2 mellem de sekundære områder (16) er cirka 0,5 % og/eller mindst 0,1 mm større end den på forhånd fastsatte udvendige diameter d_3 plus den positive tolerance.

2. Pressefitting (1) til en rørforbindelse, som har:

- et fitting-legeme (2) for forbindelse af pressefittingen (1) med et rør; og

- en montageenhed (28) i henhold til krav 1, hvorved den grundlæggende cylinderformede pressebøsning (4) på montageenheden (28) er fastlagt på fitting-legemet (2).

3. Pressefitting (1) ifølge krav 2, hvorved

- fitting-legemet (2) har en omkredsnot (7); og
- pressebøsningen (4) har et første fremspring, der peger indad i radial retning på en første aksial ende (9) på fittingsiden, der i fastlagt tilstand på fitting-legemet (2) griber ind i noten (7), således at pressebøsningen (4) er fastgjort umiddelbart på fitting-legemet (2).

4. Pressefitting (1) ifølge krav 3, hvorved det første fremspring, der peger indad i radial retning, er udformet som en læbe (8).

5. Pressefitting (1) ifølge krav 3 eller 4, hvorved pressebøsningen (4) har et sekundært fremspring, der peger udad i radial retning, på en sekundær aksial ende (12) på rørsiden, der begrænser presseområdet (11) i retning mod den sekundære aksiale ende (12) af pressebøsningen (4).

6. Pressefitting (1) ifølge krav 5, hvorved det sekundære fremspring, der peger udad i radial retning, er udformet som en flange (13).

7. Pressefitting (1) ifølge et af kravene 3 til 6, hvorved pressebøsningen (4) har en eller flere slidser (10), der strækker sig fra den første aksiale ende (9) i retning mod presseområdet (11).

8. Pressefitting (1) ifølge et af kravene 3 til 7, hvorved

- anslagsringen (3) er anbragt på den første aksiale ende (9) af pressebøsningen (4) og begrænser presseområdet (11) i retning mod den første aksiale ende (9) af pressebøsningen (4); og
- anslagsringen (3) har et tredje fremspring, der peger indad i radial retning, der i fastlagt tilstand på fitting-legemet (2) griber ind i noten (7) på fitting-legemet (2).

9. Pressefitting (1) ifølge krav 8, hvorved det tredje fremspring, der peger indad i radial retning, er udformet som en åben bundflade (23).

10. Pressefitting (1) ifølge et af kravene 2 til 9, hvorved de første områder (15) er forbundet via bueformede overgangsområder (30) med de sekundære områder (16).

11. Pressefitting (1) ifølge et af kravene 2 til 9, hvorved de sekundære områder (16) dannes af en grundlæggende cylinderformet indvendig flade (24) af anslagsringen (3), og de første områder (15) dannes af udstående forbindelsesstykker (25) fra den indvendige flade (24).

12. Pressefitting (1) ifølge et af kravene 2 til 11, hvorved anslagsringen (3) omfatter et kunststofmateriale, i særdeleshed et polymermateriale.

13. Pressefitting (1) ifølge et af kravene 2 til 12, hvorved pressebøsningen (4) omfatter et metalemne, i særdeleshed rustfrit stål.

14. Pressefitting (1) ifølge et af kravene 2 til 13, hvorved fitting-legemet (2) omfatter et metalemne og/eller et kunststofemne.

15. Pressefitting (1) ifølge krav 14, hvorved fitting-legemet (2) omfatter et polymeremne.

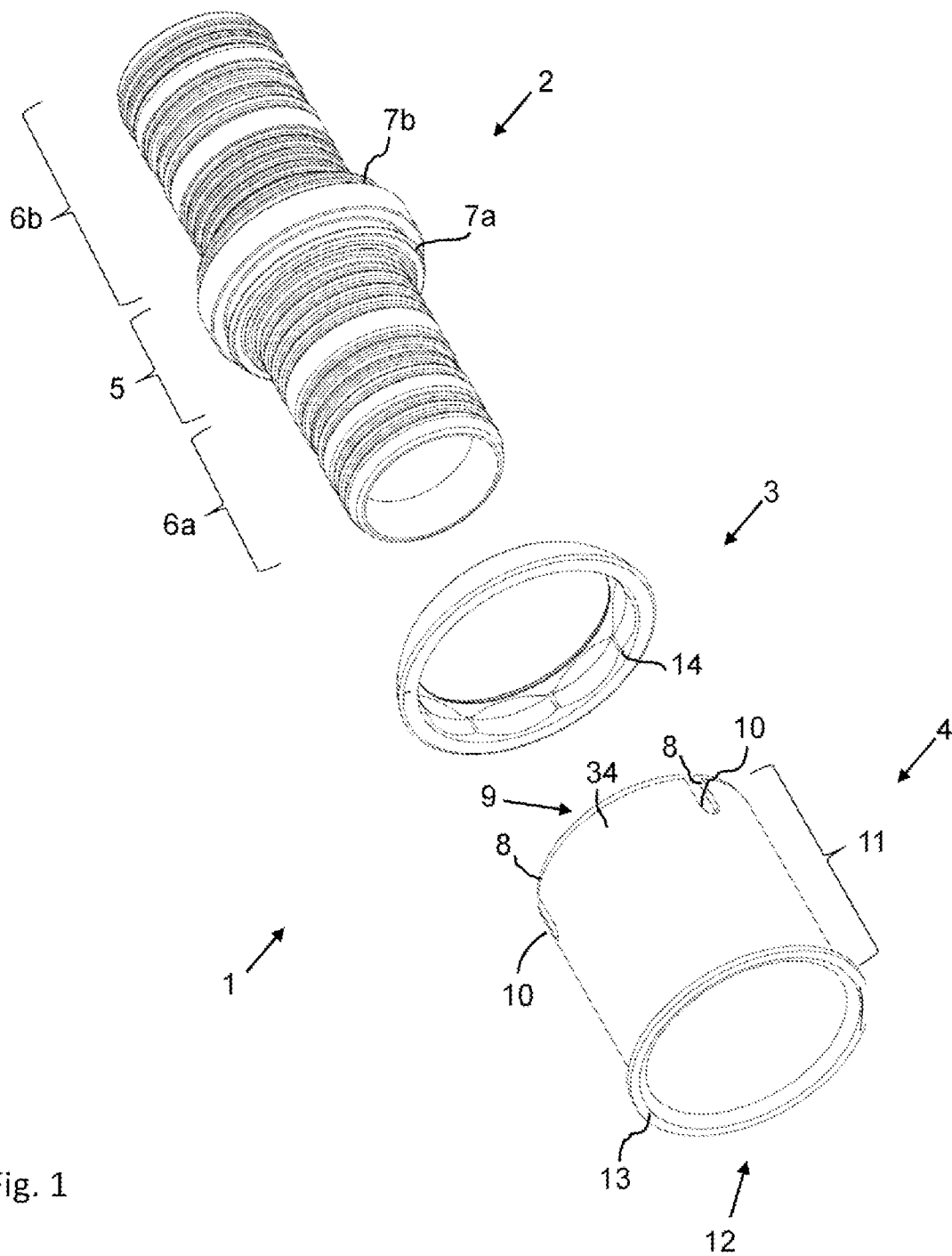


Fig. 1

Fig. 2

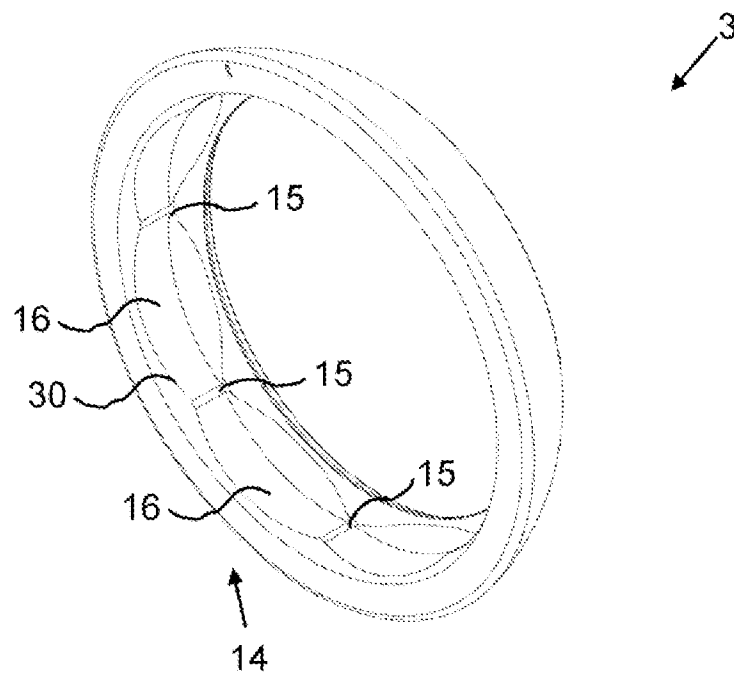


Fig. 3

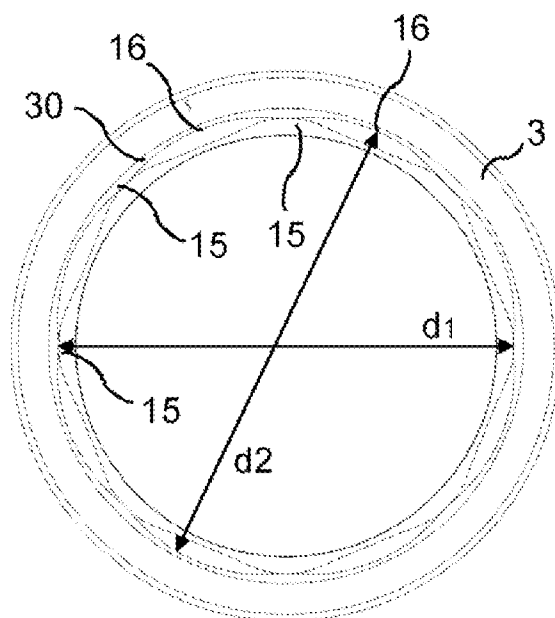


Fig. 4

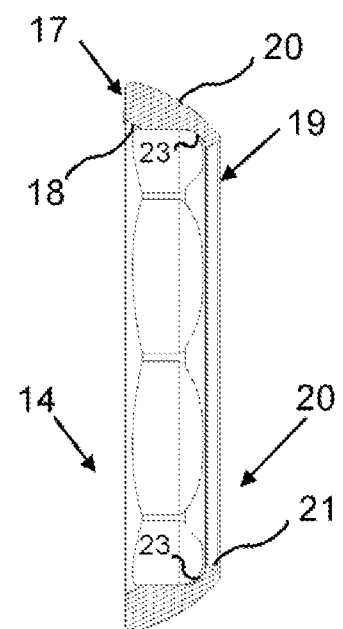


Fig. 5

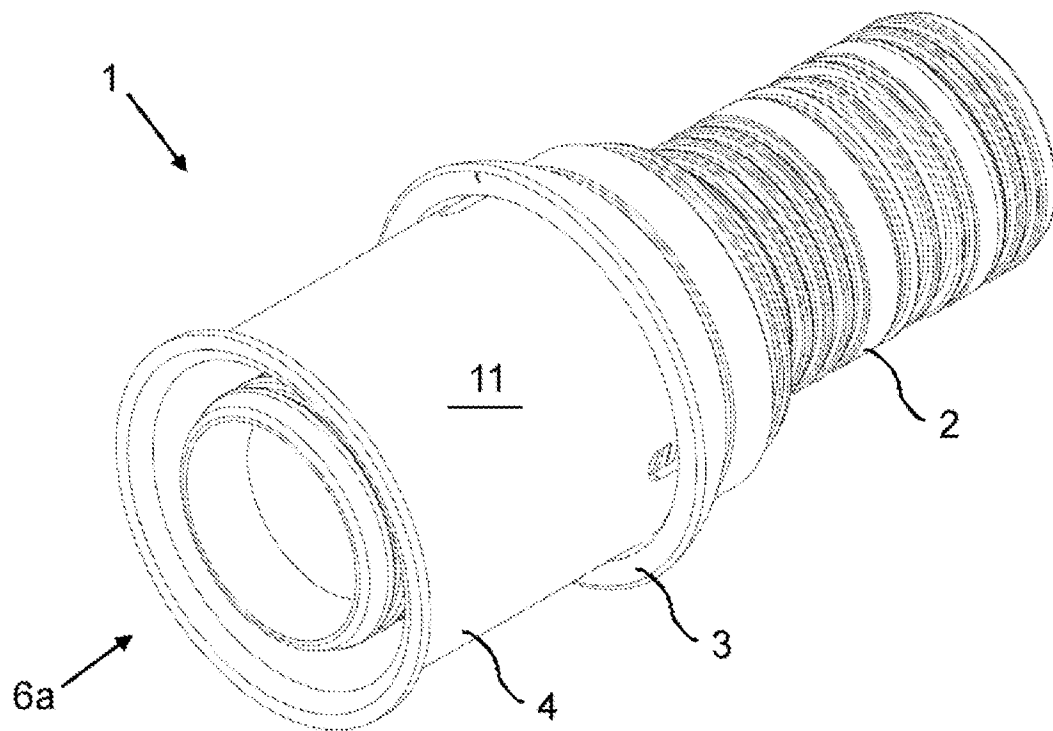


Fig. 6

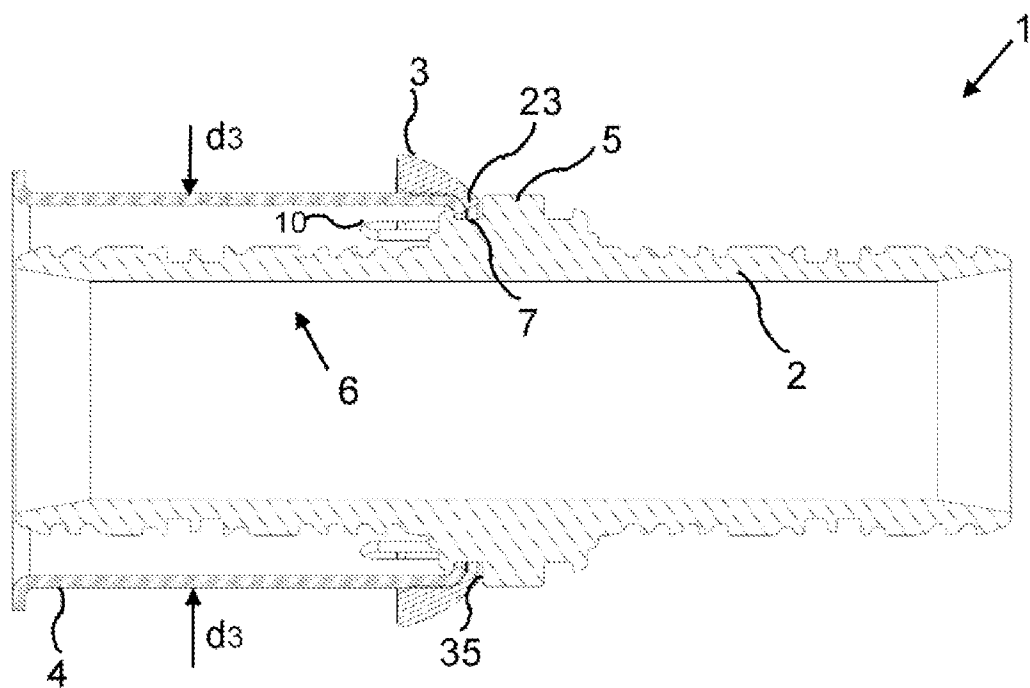


Fig. 7

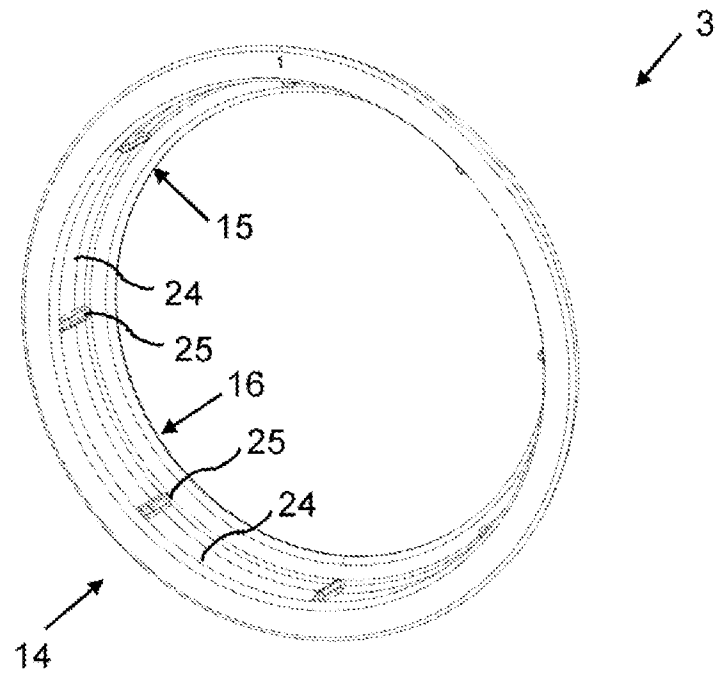


Fig. 8

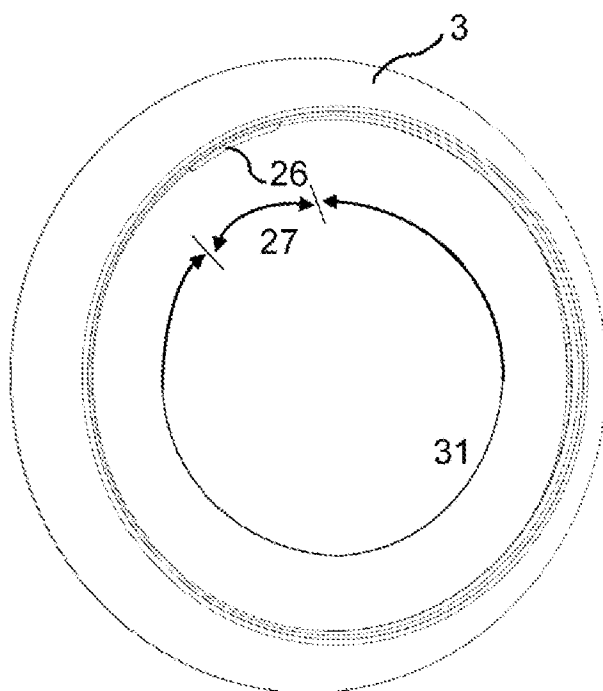


Fig. 9

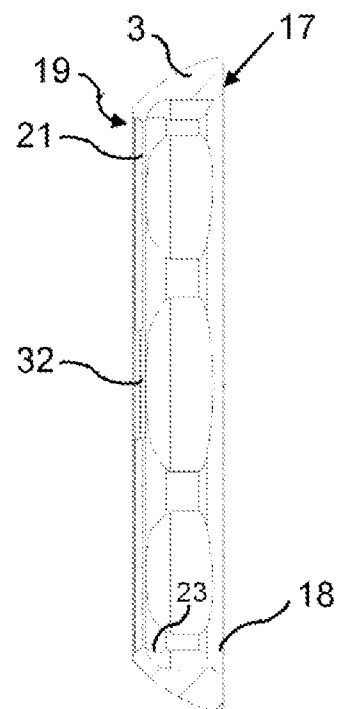


Fig. 10

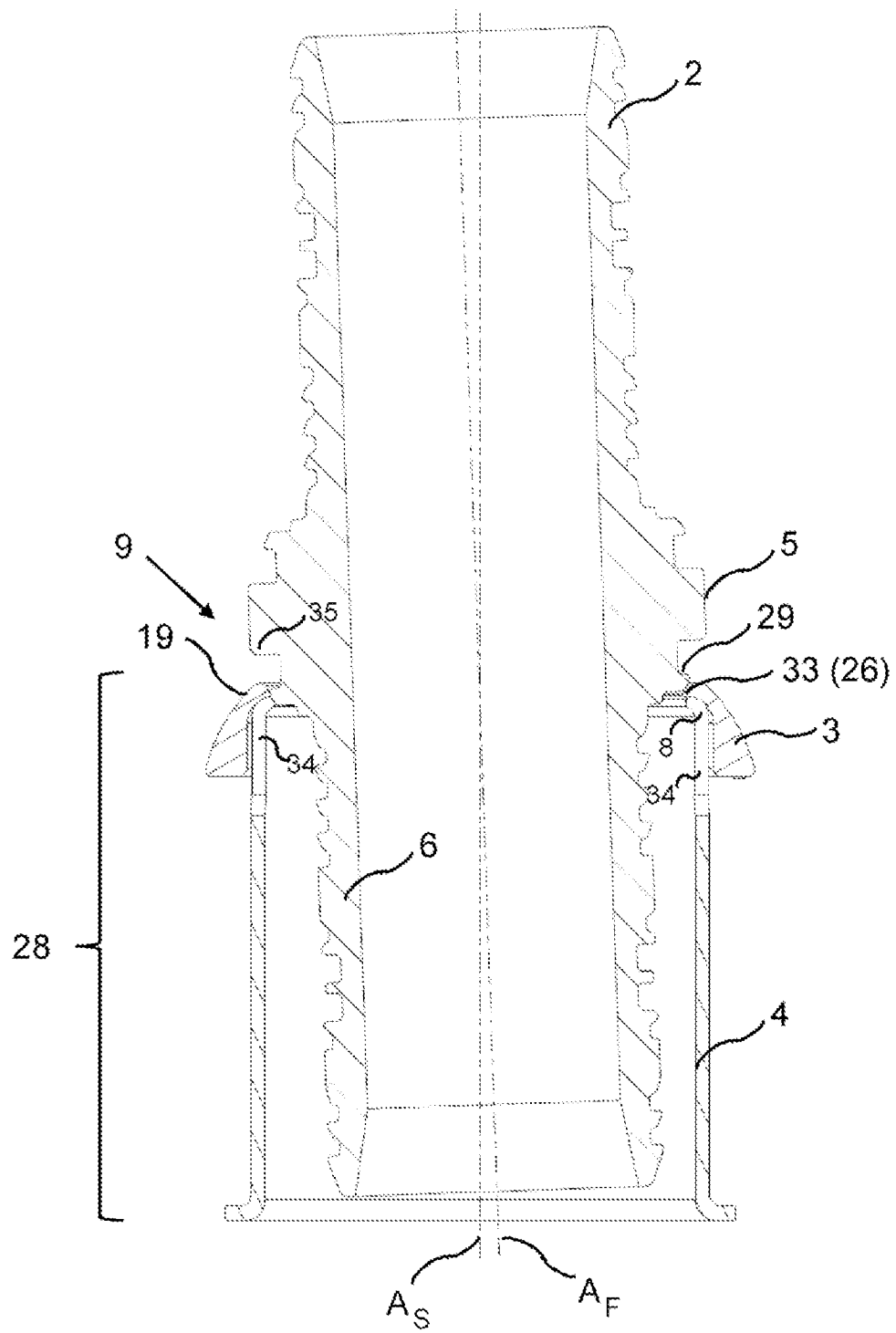
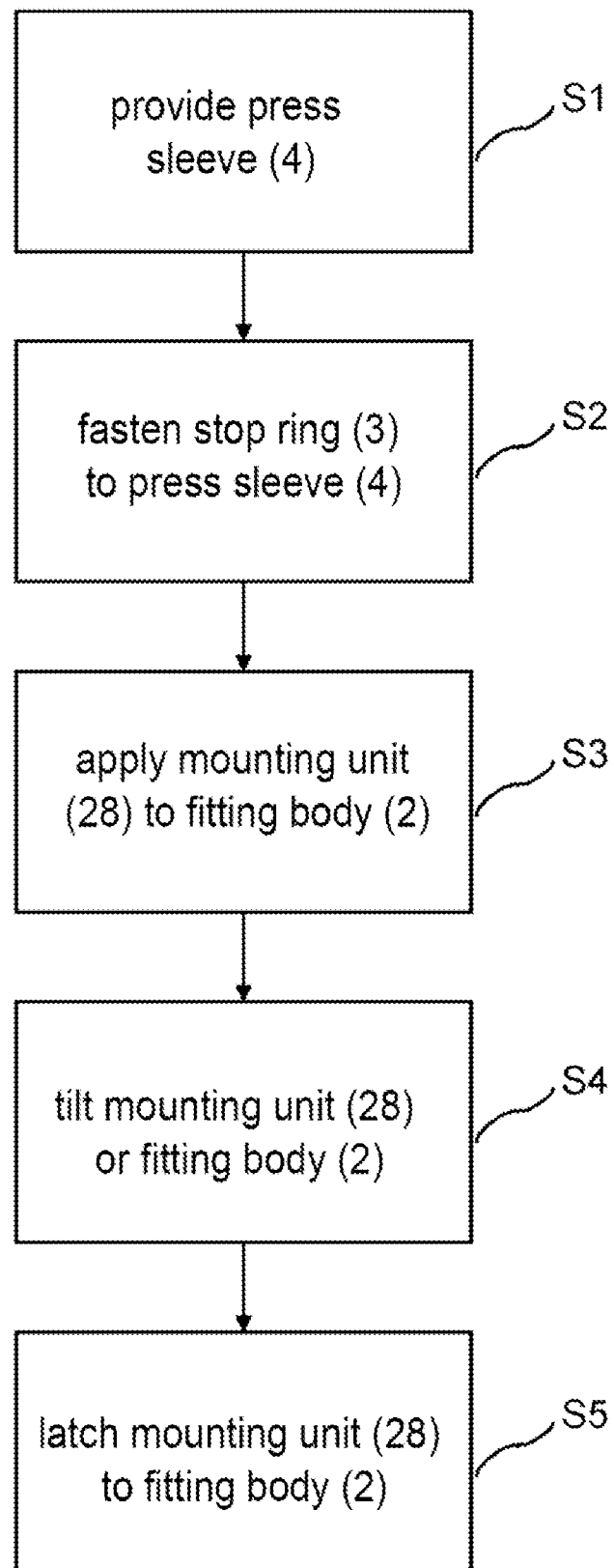
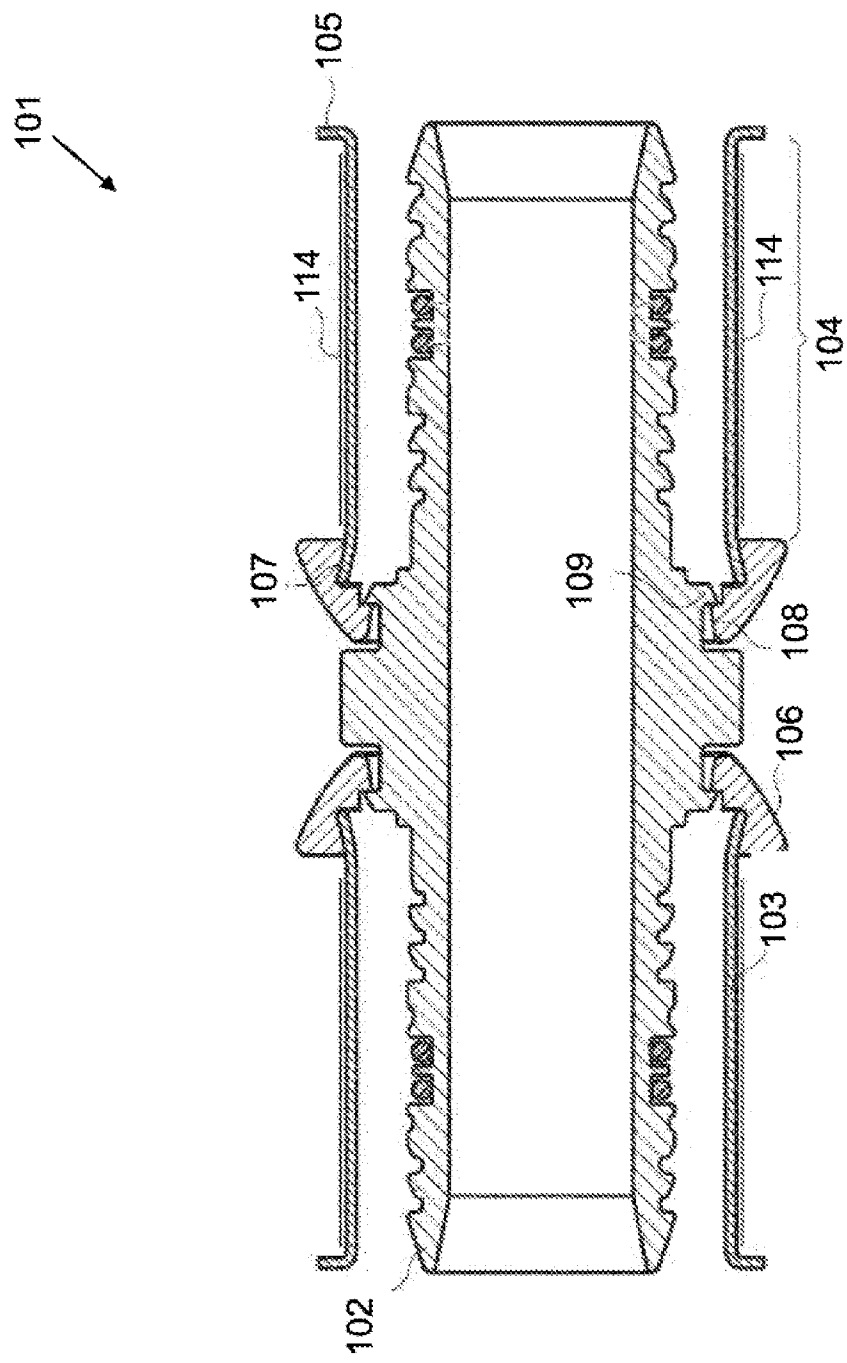


Fig. 11





prior art

Fig. 13

