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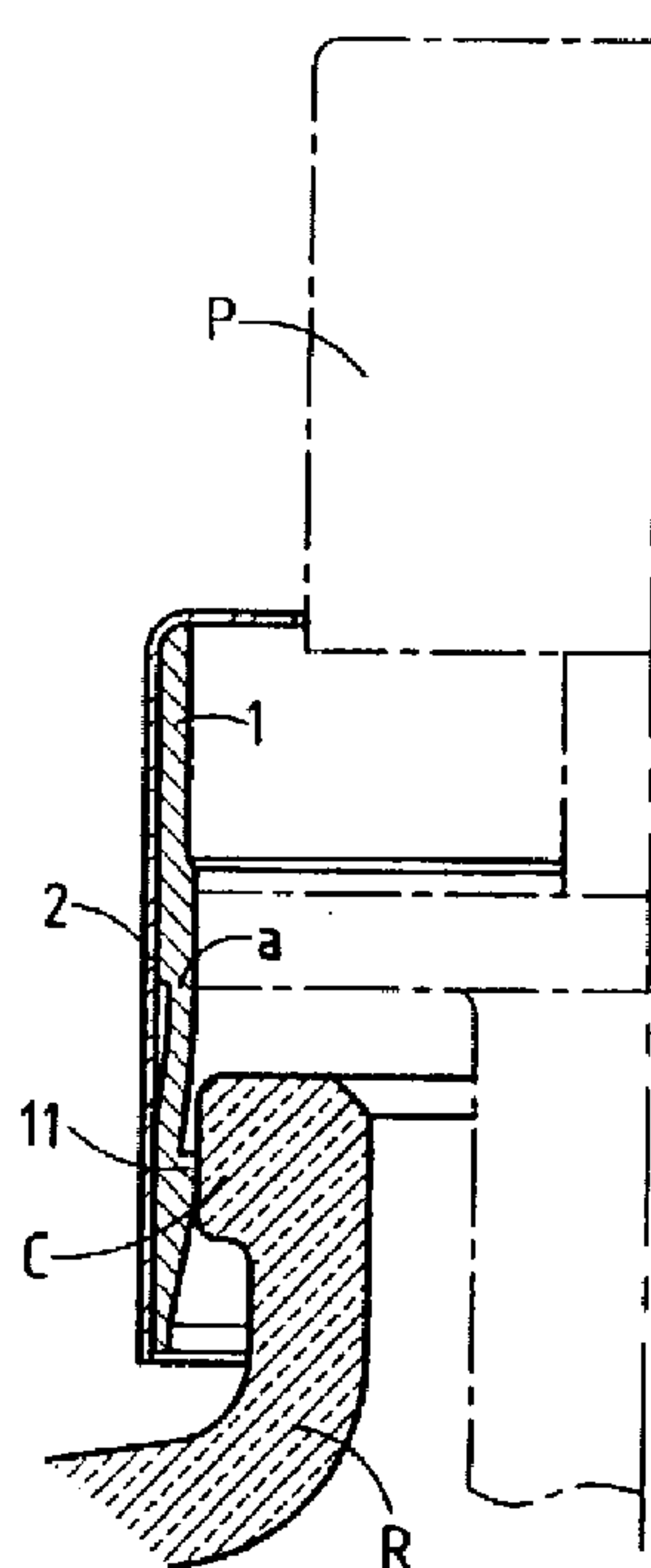
(71) REXAM SOFAB, FR

(51) Int.Cl.⁶ B05B 11/00

(30) 1997/10/16 (97/12962) FR

(54) **DISPOSITIF POUR L'ASSEMBLAGE D'UNE POMPE SUR UN
RECIPIENT**

(54) **DEVICE FOR ASSEMBLING A PUMP ON A CONTAINER**



(57) L'invention concerne un dispositif pour l'assemblage et l'habillage d'une pompe (P) et d'un récipient (R) du type comprenant, d'une part, une douille de fixation (1) pourvue sur sa paroi interne d'éléments (11) élastiquement déformables pour l'accrochage sous une collerette (C) du col du récipient (R) et, d'autre part, d'une jupe d'habillage (2) malléable au moins partiellement, en serrage radial contre la paroi externe de ladite douille (1), caractérisé en ce que ladite douille (1) comporte un rétreint (10) ménagé sur sa paroi externe au niveau des éléments d'accrochage (11), en délimitant une zone libre intercalaire où ladite jupe (2) n'est pas susceptible d'être déformée par lesdits éléments (11).

(57) The invention concerns a device for assembling and fitting a pump (P) and a container (R) comprising, a retaining bush (1) provided on its inner wall with elastically deformable catching elements (11) under the container (R) collar flange (C) and a fitting skirt (2) at least partially malleable, to be radially clamped on said bush (1) outer wall. The invention is characterised in that said bush (1) comprises a reduction (10) provided on its outer wall at the catching elements (11), defining a free interspersed zone where said skirt (2) is not capable of being deformed by said elements (11).

A B S T R A C T

A DEVICE FOR ASSEMBLING A PUMP ON A RECEPTACLE

5 The invention relates to a device for assembling and
packaging a pump (P) and a receptacle (R) of the type
comprising firstly a fixing bush (1) provided on its
inside wall with elastically deformable elements (11) for
fastening beneath a collar (C) of the neck of the
10 receptacle (R), and secondly with a packaging skirt (2)
that is malleable, at least in part, clamped radially
against the outside wall of said bush (1), the device
being characterized in that said bush (1) has setbacks
(10) formed in its outside wall in register with the
15 fastener elements (11), defining an intermediate empty
zone in which said skirt (2) is not liable to be deformed
by said elements (11).

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35 Translation of the title and the abstract as they were when originally filed by the
Applicant. No account has been taken of any changes that may have been made
subsequently by the PCT Authorities acting ex officio, e.g. under PCT Rules 37.2,
38.2, and/or 48.3.

DEVICE FOR ASSEMBLING A PUMP ON A RECEPTACLE

The present invention relates to a device for and a method of assembling and packaging a pump and a receptacle.

5 In some cases, pumps can be assembled on receptacles or flasks, for example by means of a fixing bush provided on its inside wall with elastically deformable elements for fastening beneath a collar secured to the neck of the receptacle, and packaging is performed by means of a skirt designed at least in part
10 to clamp radially against the outer wall of said bush.

By way of example, the packaging skirt is made out of a malleable material making it possible to obtain clamping that fits and is durable, but that is not elastically deformable.

Thus, a subsequent force or shock on said skirt can give
15 rise to remanent deformation which is unsightly.

Unfortunately, mounting the bush on the neck of the receptacle necessarily implies temporarily flaring at least some of the bottom portion of the bush as it passes over the projecting collar. If the skirt is already clamped in position on the bush, the fastener
20 elements move apart, thereby applying force to the skirt with the direct consequence of deforming it.

One solution consists in putting the skirt into place later on. The fastener elements can then move freely, but it becomes necessary to perform a subsequent and additional operation in order
25 to mount the skirt on the bush.

A variant described in EP-A-0 707 895 consists in initially engaging the skirt on the top portion only of the bush, prior to locking it on the receptacle by elastically deforming the fastener elements, and then in lowering the skirt fully while radially clamped on the bush.

30 To this end, the bush has setbacks formed in its outside wall in register with the fastener elements. These setbacks serve to thin the wall of the bush so as to make it easier to deform.

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1a

One of the consequences of that disposition is that the skirt is not in contact with the outside wall of the bush over the setbacks.

In addition, in that document, the skirt is rigid so as to be capable of applying force to the bush and it is therefore not liable to
5 become deformed.

However, all of the solutions implemented in the past lead to an increase in the cost of the assembly method and, in addition, they are not satisfactory technically speaking or in terms of appearance.

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In all cases, locking the bush leaves a small amount of remanent deformation in its bottom portion, thereby making it difficult to fit the outer skirt subsequently.

5 In particular, lowering of the skirt is braked or even stopped by resistance from the bottom portion of the bush.

Under such conditions, final assembly can be obtained only after careful adjustment and by exerting axial thrust on the skirt, which runs the risk of giving rise to harmful deformation of said skirt and/or to shavings of material being removed from the wall of the
10 bush.

An object of the present invention is to resolve those technical problems in satisfactory manner by providing an empty zone in association with the fastener elements and in which the bush is not liable to come into deforming contact with the skirt.

15 According to the invention, this object is achieved by means of a device for assembling and packaging a pump and a receptacle of the type comprising firstly a fixing bush provided on its inside wall with elastically deformable elements for fastening beneath a collar of the neck of the receptacle, and secondly with a
20 packaging skirt that is malleable, at least in part, in contact with the outside wall of said bush, the device being characterized in that, before the assembling and packaging stage, said skirt clamps radially against the outside wall of the bush over its entire height, setbacks being formed in the outside wall of the bush in register with
25 the fastener elements, defining respective intermediate empty zones to enable said elements to be displaced without deforming said skirt.

In a particular embodiment, said setback corresponds to the wall of the bush being offset radially inwards.

30 In an advantageous variant, said setback corresponds to a reduction in the thickness of the wall of the bush.

In a variant, said fastener elements are constituted by catches carried by the inside wall of the bush and designed to snap-fasten beneath the collar of the neck of the receptacle.

35 In a variant, said catches are topped by respective abutment and wedging faces of profile that matches the collar of the neck.

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2a

According to yet another characteristic, said setback is formed over a height that is not less than the height of the neck of the receptacle.

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According to other characteristics, said bush carries elements for supporting the pump and elements for sealing the assembly.

5 The invention also provides a method of assembling and packaging a pump and a receptacle whose neck is provided with a retaining collar, the method being characterized in that respective setbacks are formed in the outside wall of an internal fixing bush in register with elastically deformable elements for fastening beneath the collar of the receptacle, a malleable outer skirt is engaged on the
10 internal bush so that at least part of said skirt clamps radially against the outside wall of said bush over its entire height, and then by pressing the bush inside the skirt axially onto the collar of the receptacle, said fastener elements are deformed by force and locked beneath the collar without altering the outside appearance of said
15 skirt because of the presence of said setbacks.

The device of the invention makes it possible to perform assembly in a single operation since the outer skirt and the inner bush can remain united and radially clamped to each other at least in part, while they are being locked on the collar of the receptacle,
20 without the locking giving rise to any kind of deformation of the skirt, and a fortiori to any change in its external appearance.

In addition, the bush performs functions that are essentially technical functions concerned with supporting and locking the pump and possibly also with sealing the assembly, while the skirt which
25 forms an outer envelope performs a function that is associated essentially with appearance for packaging the bush.

Separating functions in this way makes it possible to optimize the characteristics specific to each component (bush or skirt) in order to obtain the best result (technical or appearance).

30 Where appropriate, the bush could even be directly integrated in the pump.

The invention will be better understood on reading the following description, which is accompanied by drawings in which:

Figures 1A, 1B, and 1C are fragmentary section views of the
35 prior art during assembly on a receptacle;

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3a

Figures 2A, 2B, and 2C are fragmentary section views showing the principle of the invention;

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performs a function that is associated essentially with appearance for packaging the bush.

Separating functions in this way makes it possible to optimize the characteristics specific to each
5 component (bush or skirt) in order to obtain the best result (technical or appearance).

Where appropriate, the bush could even be directly integrated in the pump.

The invention will be better understood on reading
10 the following description, which is accompanied by drawings in which:

- Figures 1A, 1B, and 1C are fragmentary section views of the prior art during assembly on a receptacle;
- Figures 2A, 2B, and 2C are fragmentary section
15 views showing the principle of the invention;
- Figures 3A and 3B are views respectively in vertical section and in horizontal section through a first embodiment of a bush of the invention;
- Figures 4A and 4B are views respectively in
20 vertical section and in horizontal section through a second embodiment of a bush of the invention;
- Figures 5A and 5B are views respectively in vertical section and in horizontal section through a third embodiment of a bush of the invention; and
- 25 • Figure 6 is a vertical section view of a variant embodiment of the bush of the invention.

The device shown in Figures 1A to 1C corresponds to the prior art and is for assembling a pump P on a receptacle R whose neck is provided with a retaining
30 collar C.

The device comprises a fixing bush 1 provided on its inside wall with elastically deformable elements 11 that serve to lock onto the receptacle R by snap-fastening or hooking under the collar C.

35 In addition, the device has a packaging skirt 2 placed over the bush 1.

The skirt 2 is made of a malleable material (preferably a metal such as aluminum) and it is designed to be clamped radially against the outside wall of the bush 1 so as to give the appearance of a covering.

5 To this end, the skirt 2 covers all of the visible outside surfaces of the bush 1 and it has a wall of thickness that is smaller than that of the bush 1.

In Figure 1B it can be seen that passage over the collar C forces the fastener elements 11 outwards, thereby locally deforming the skirt 2.

10 In Figure 1C, the bottom portion of the bush 1 has returned to its initial shape and the fastener element 11 is now in a locking position where it has snapped under the collar C. However, the skirt 2 has retained the deformation it acquired previously because the skirt 2 is malleable so that any deformation of the skirt is remanent, which gives rise to a bulge 20 that spoils the appearance of the device.

Figure 2A is a diagram that is partially in section showing the device of the invention in a preliminary stage of the assembly and packaging method. In this stage, the skirt 2 covers the bush 1 and is radially clamped on all of its outside surfaces except in its bottom portion situated in the vicinity of the fastener element 11 where a setback 10 is formed so as to leave an intermediate empty zone.

20 As shown in Figure 2B, passage over the collar C is performed by pressing the bush 1 inside the skirt 2 axially onto the neck of the receptacle R. This force has the effect of locally deforming the element 11, and more precisely of causing this element to move radially outwards into the empty zone that it occupies at least in part by coming flush with the inside face of the skirt 2.

30 However, the dimensions of the empty zone 10 and in particular the width e of the setback are predetermined as a function of the expected amplitude of the displacement so as to avoid deforming the skirt 2 in any

way. Contact between the bush 1 and the inside wall of the skirt 2 is acceptable providing this contact is not suitable for deforming said skirt and does not modify its consequent external appearance. The displacement of the
5 element 11 is equivalent to pivoting about a hinge formed by the discontinuity in the side wall of the bush that is defined by local narrowing.

In Figure 2C, the fastener element 11 has passed beneath the collar C and it is locked thereto by its top
10 face 11a being retained against the bottom face of said collar.

The intermediate empty zone is again open at its bottom where it can optionally be closed by the shoulder E of the receptacle R.

15 Figures 3A and 3B show a first embodiment of the bush 1. In this embodiment, the bush 1 has four fastener elements 11 that are diametrically opposite in pairs on perpendicular axes.

The setback 10 forms the intermediate empty zone
20 between the skirt 2 and the bush 1 in the bottom portion of the bush. In this case, the setback corresponds to the outer wall of the bush 1 being offset inwards without any significant change to the thickness of the side wall. The height of the setback 10 is not less than the height
25 of the collar C above the shoulder E of the receptacle (see Figure 2C).

In a variant embodiment (not shown), the setback may also correspond to a reduction in the wall thickness of the bush.

30 In an embodiment, the setback is 0.60 mm deep for a skirt that is 0.30 mm thick, and for a bush whose minimum thickness is 0.60 mm and whose maximum thickness is 1.30 mm at the fastener elements.

In this case, the fastener elements 11 are
35 constituted by catches carried by the inside wall of the bush 1 and topped by respective abutment and wedging

faces 11a of profile matching the bottom face of the collar C.

The side faces 11b and 11c of the catches 11 in this case project from the cylindrical inside wall of the bush 1 and they lie in vertical planes. The setbacks 10 are centered on the elements 11 and extend over a width l that is greater than or equal to the width of said catches, being defined laterally by straight edges 10b and 10c. The setbacks 10 are defined towards the top by respective sloping flanks 10a that slope at an angle α of about 45° relative to a diametral plane so as to facilitate outward pivoting of the bottom portion of the bush.

Figures 4A and 4B show a second embodiment of the bush 1 having three fastener elements 11 disposed at 120° intervals.

In this embodiment, the fastener elements 11 are constituted by sloping flanks backing onto the inside cylindrical wall of the bush 1, and defining abutment and retaining top faces 11a for engaging beneath the collar C of the receptacle.

In cross-section in a diametral plane, these elements are substantially identical to the catches of Figures 3A and 3B, but unlike those catches, they do not have any projecting side face.

In this case, the setbacks 10 are formed by flats centered on the flanks 11.

In the embodiment of Figures 5A and 5B, the bush has six fastener elements 11 and six setbacks 10 that are substantially identical to those shown in Figures 4A and 4B and are located at 60° intervals around the perimeter of the bush 1.

However, since there are more of them, the junctions between the setbacks 10 and the cylindrical outer wall of the bush 1 can be provided without discontinuity.

Figure 6 is a section view of the assembly device of the invention shown in full together with an inner bush 1

and an outer skirt 2 for packaging. In this case, the skirt 2 has a top rim 21 which completely masks the bush 1 and which defines the outline of the opening 20 in which the dispenser head T or pushbutton of the pump P is
5 received.

In addition to the fastener elements 11, the bush 1 has elements 12 for supporting the pump P.

In this case, the support elements 12 are constituted by a central sleeve 12a having snap-fastener
10 members 12b co-operating with complementary members carried by the body K of the pump P.

The assembly is sealed, for example, by means of fitted gaskets (not shown) or by a flange 13 secured to the inside wall of the bush 1 bearing directly on the rim
15 of the receptacle.

CLAIMS

1/ A device for assembling and packaging a pump (P) and a receptacle (R) of the type comprising firstly a fixing bush (1) provided
5 on its inside wall with elastically deformable elements (11) for fastening beneath a collar (C) of the neck of the receptacle (R), and secondly with a packaging skirt (2) that is malleable, at least in part, in contact with the outside wall of said bush (1).

the device being characterized in that, before the
10 assembling and packaging stage, said skirt clamps radially against the outside wall of the bush (1) over its entire height, setbacks (10) being formed in the outside wall of the bush in register with the fastener elements (11), defining respective intermediate empty zones to enable said elements (11) to be displaced without deforming said
15 skirt.

2/ A device according to claim 1, characterized in that said setback (10) corresponds to the wall of the bush (1) being offset radially inwards.

3/ A device according to claim 1 or 2, characterized in that said
20 setback (10) corresponds to a reduction in the thickness of the wall of the bush (1).

4/ A device according to any preceding claim, characterized in that said fastener elements (11) are constituted by catches carried by the inside wall of the bush and designed to snap-fasten beneath the
25 collar (C) of the neck of the receptacle.

5/ A device according to claim 4, characterized in that said catches are topped by respective abutment and wedging faces (11a) of profile that matches the collar (C) of the neck.

6/ A device according to any preceding claim, characterized in that
30 said setback (10) is formed over a height that is not less than the height of the neck of the receptacle.

7/ A device according to any preceding claim, characterized in that said bush (1) carries elements (12) for supporting the pump.

8/ A device according to any preceding claim, characterized in that said bush carries elements (13) for sealing the assembly.

9/ A method of assembling and packaging a pump (P) and a receptacle (R) whose neck is provided with a retaining collar (C), the method being characterized in that respective setbacks (10) are formed in the outside wall of an internal fixing bush (1) in register with elastically deformable elements (11) for fastening beneath the collar of the receptacle, a malleable outer skirt (2) is engaged on the internal bush (1) so that at least part of said skirt clamps radially against the outside wall of said bush over its entire height, and then by pressing the bush inside the skirt axially onto the collar of the receptacle, said fastener elements (11) are deformed by force and locked beneath the collar (C) without altering the outside appearance of said skirt (2) because of the presence of the setbacks (10).

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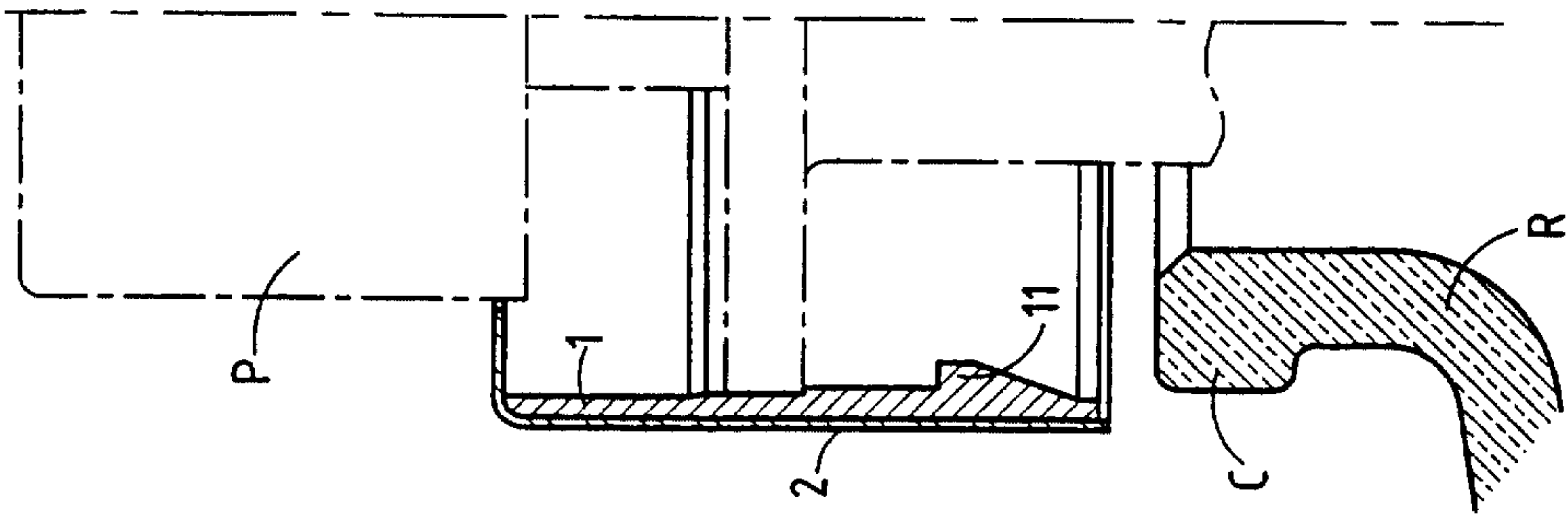


FIG. 1A

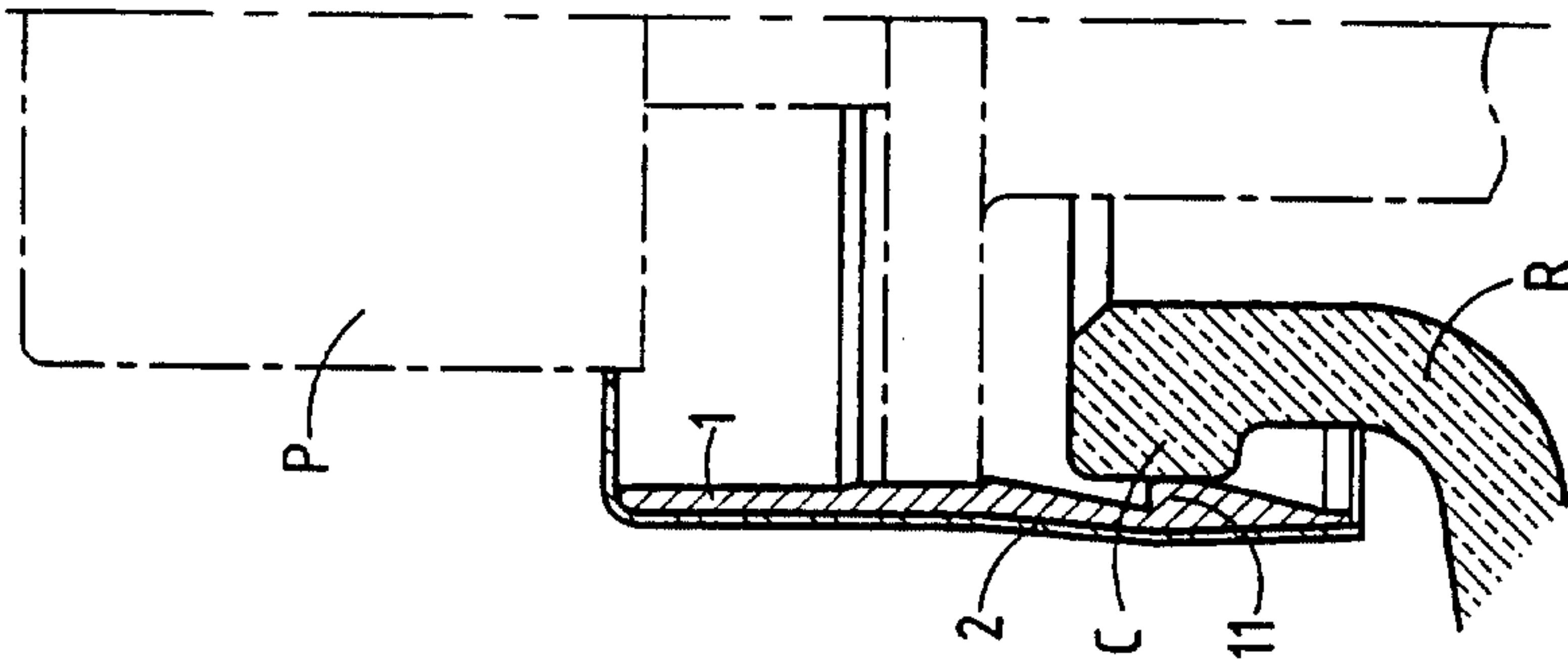


FIG. 1B

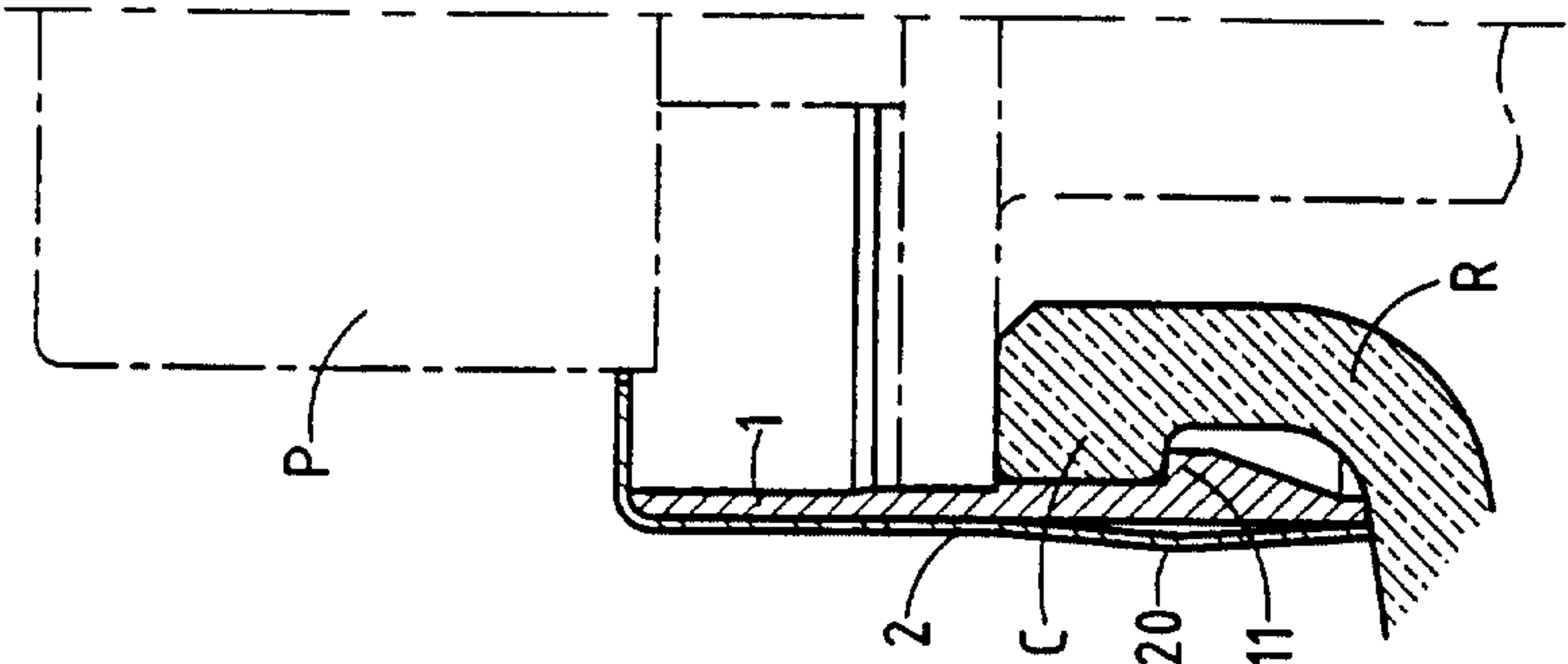


FIG. 1C

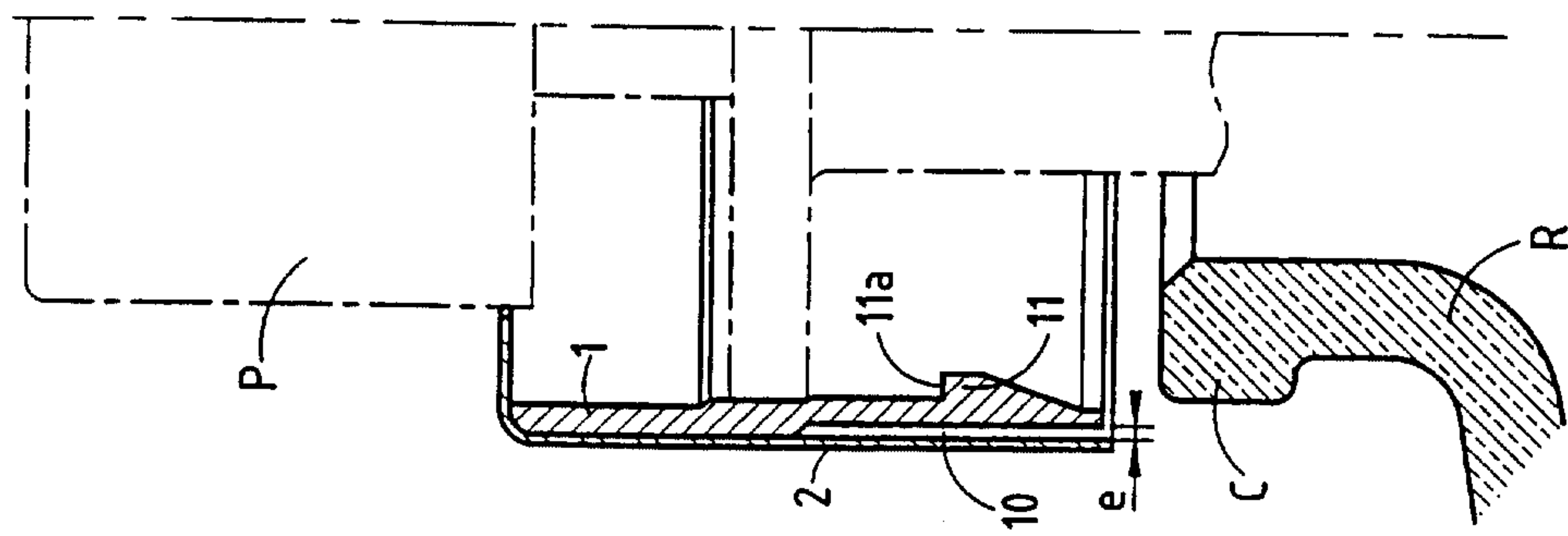


FIG. 2A

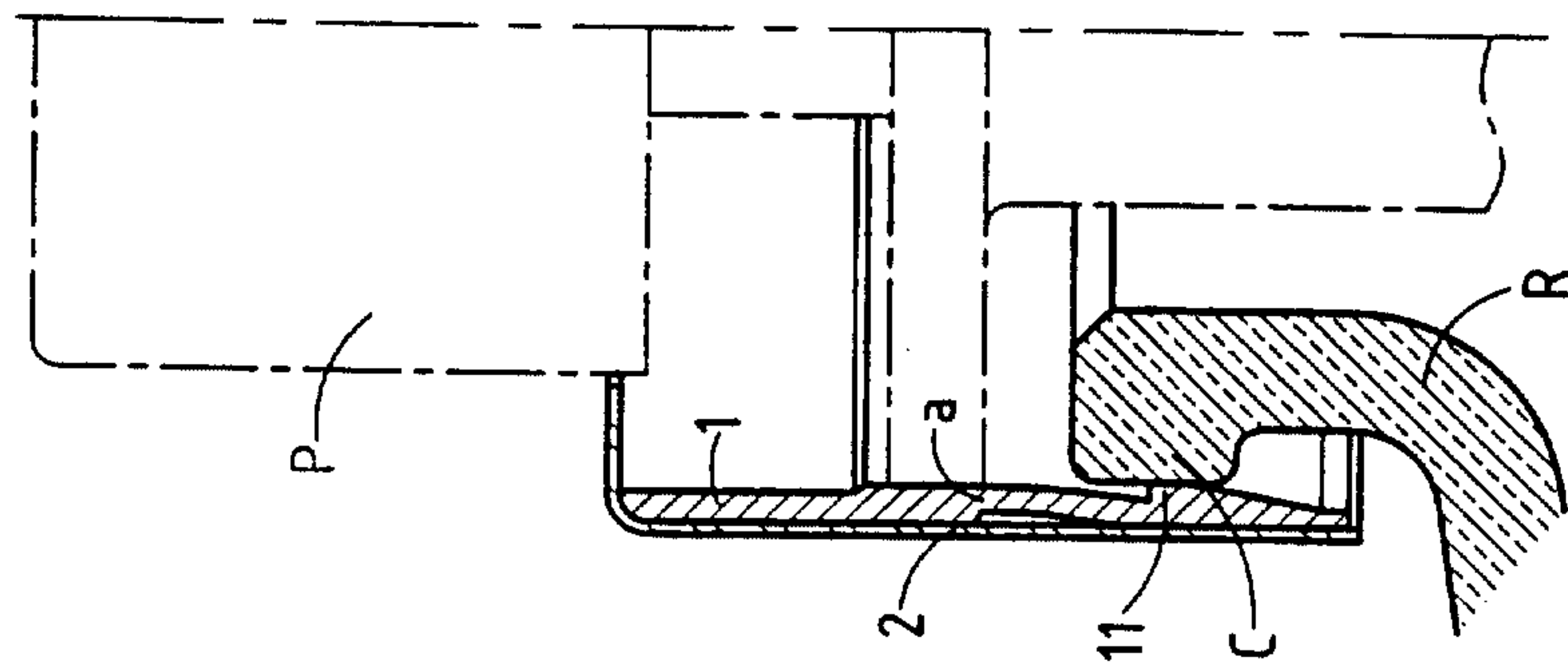


FIG. 2B

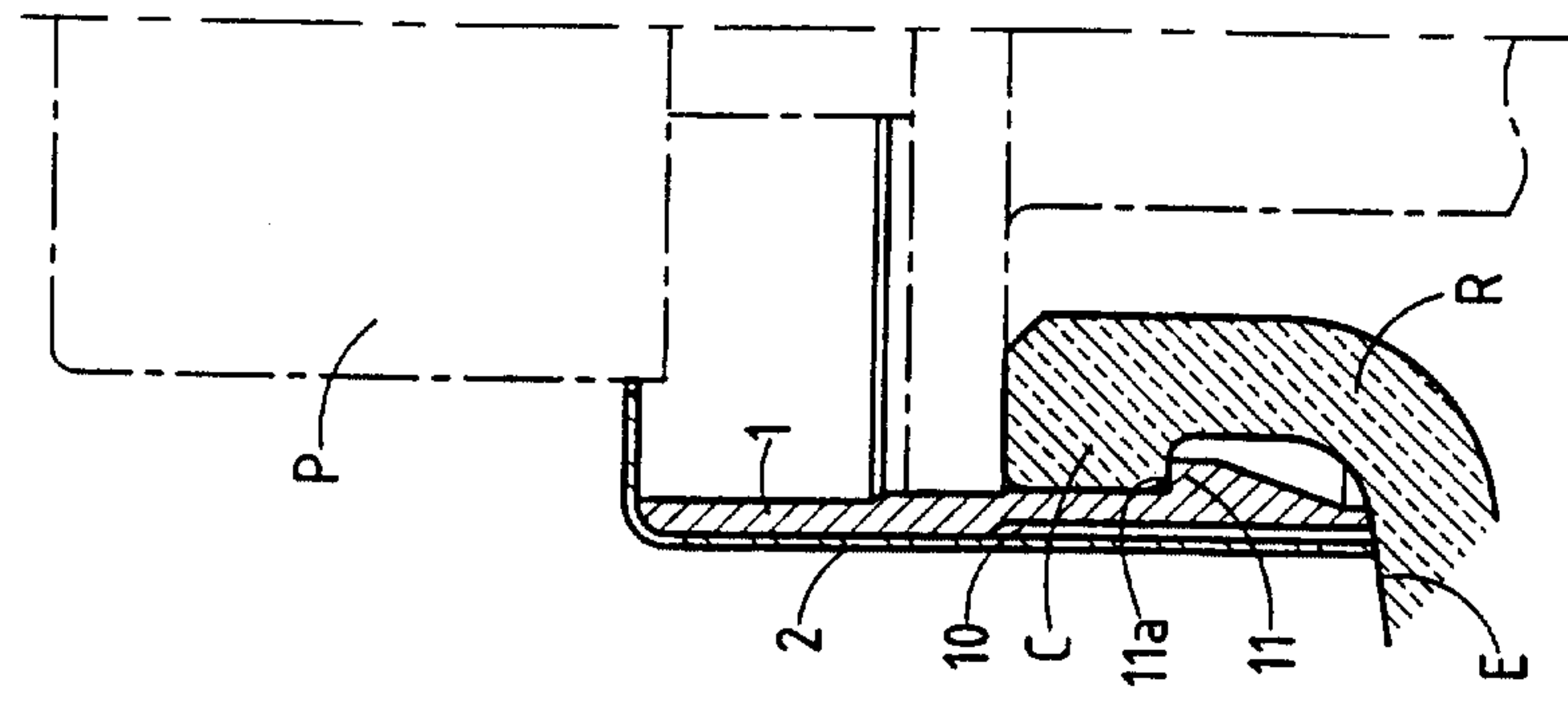


FIG. 2C

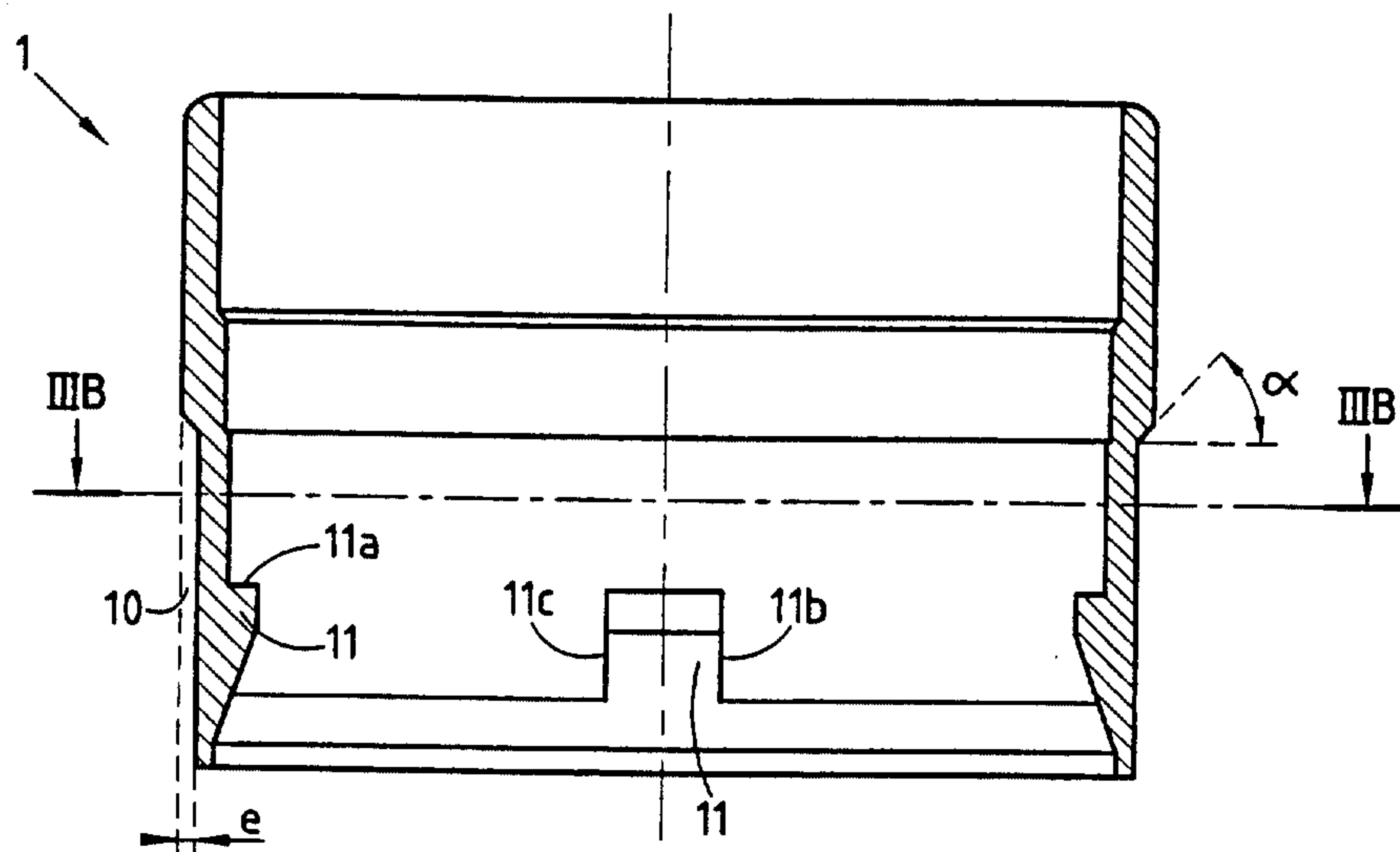


FIG. 3A

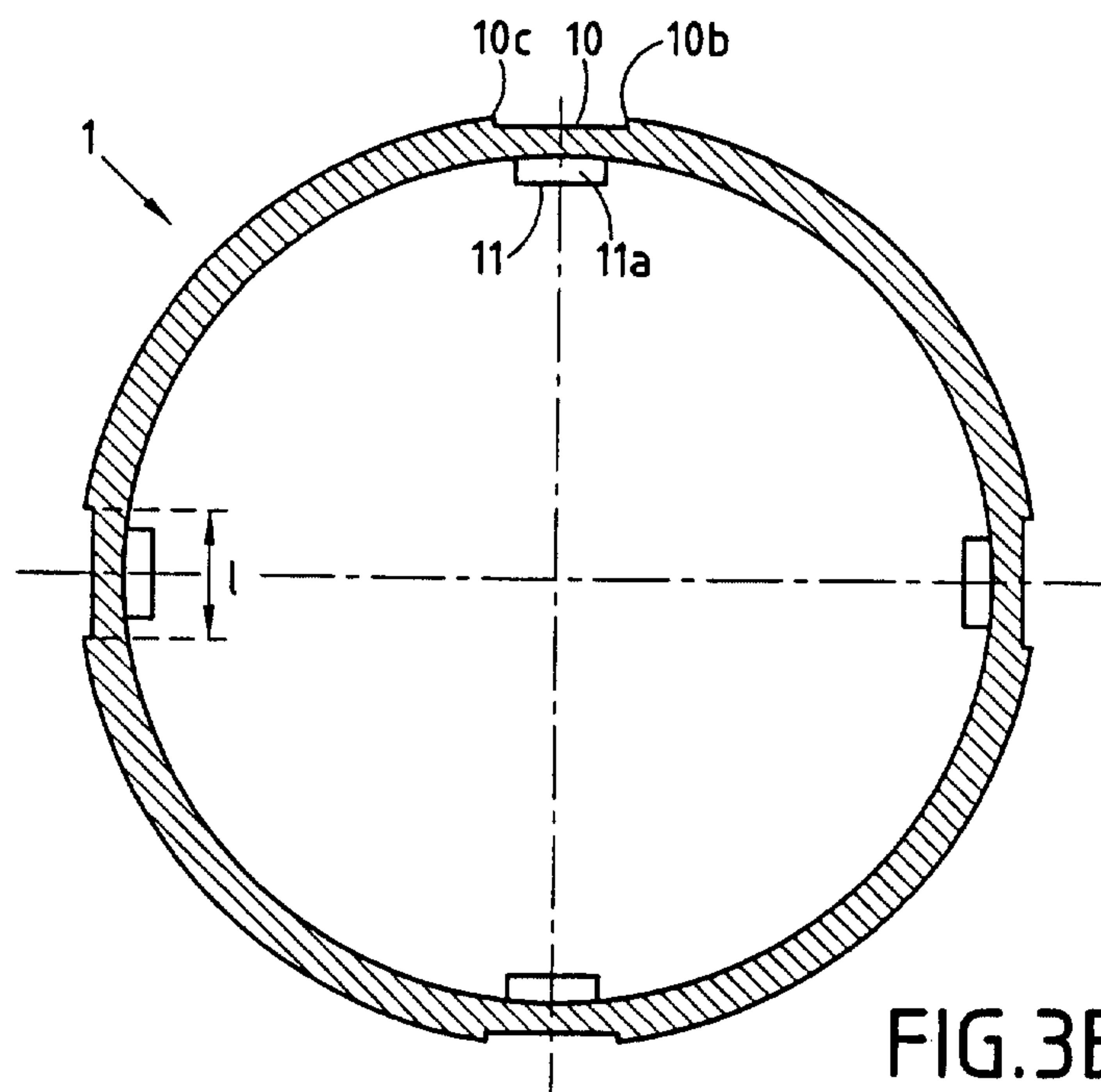


FIG. 3B

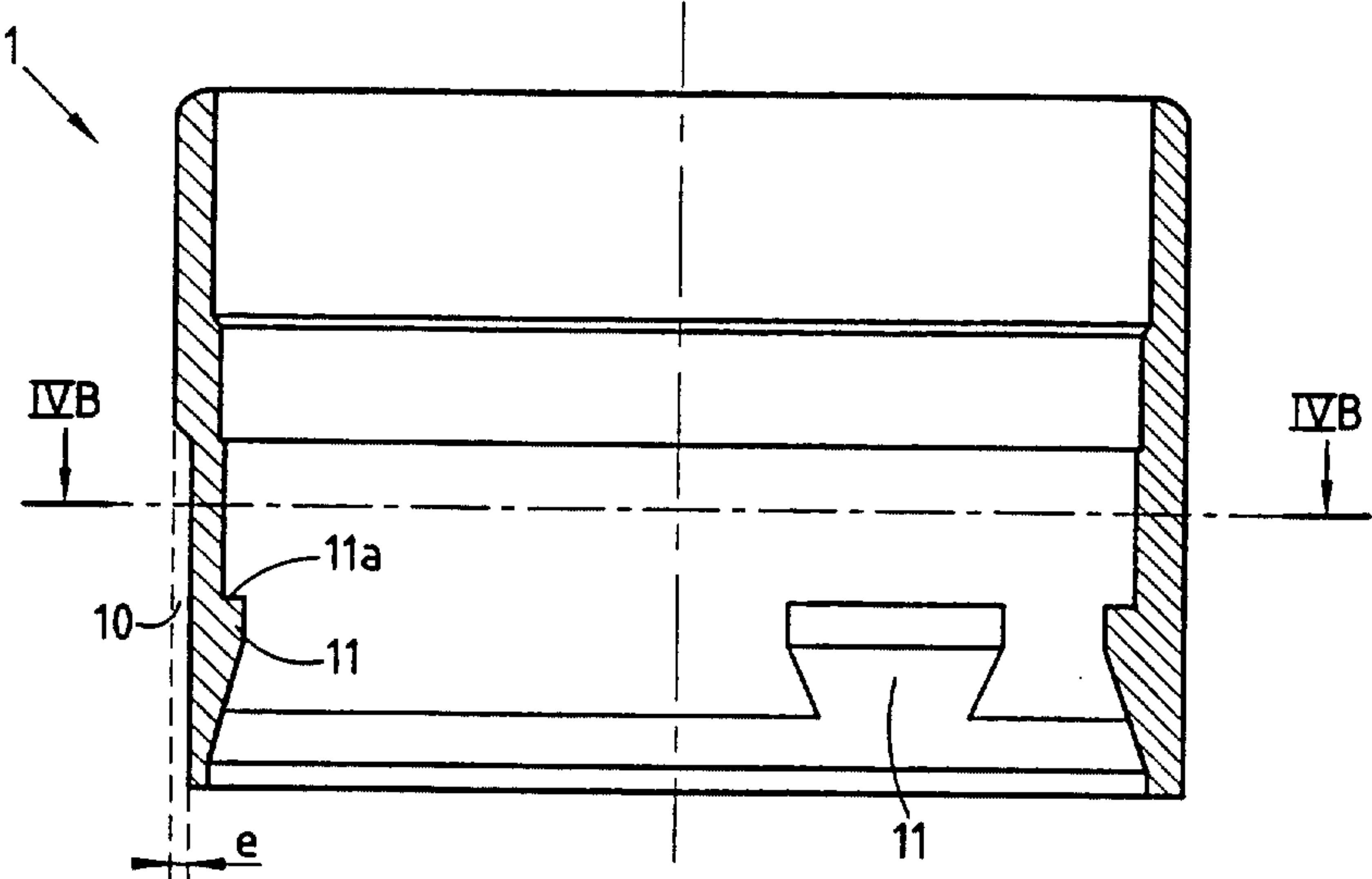


FIG. 4A

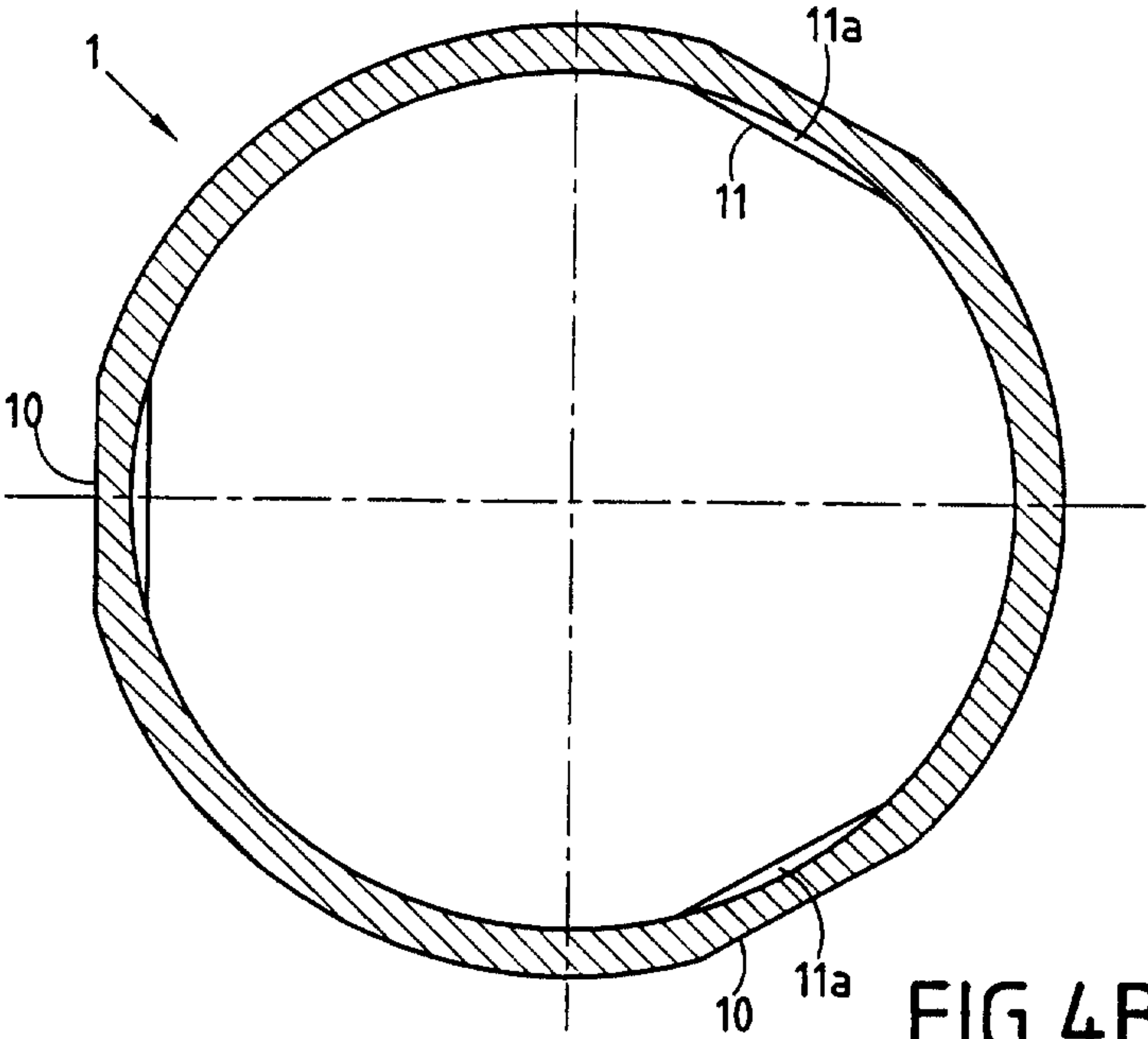


FIG. 4B

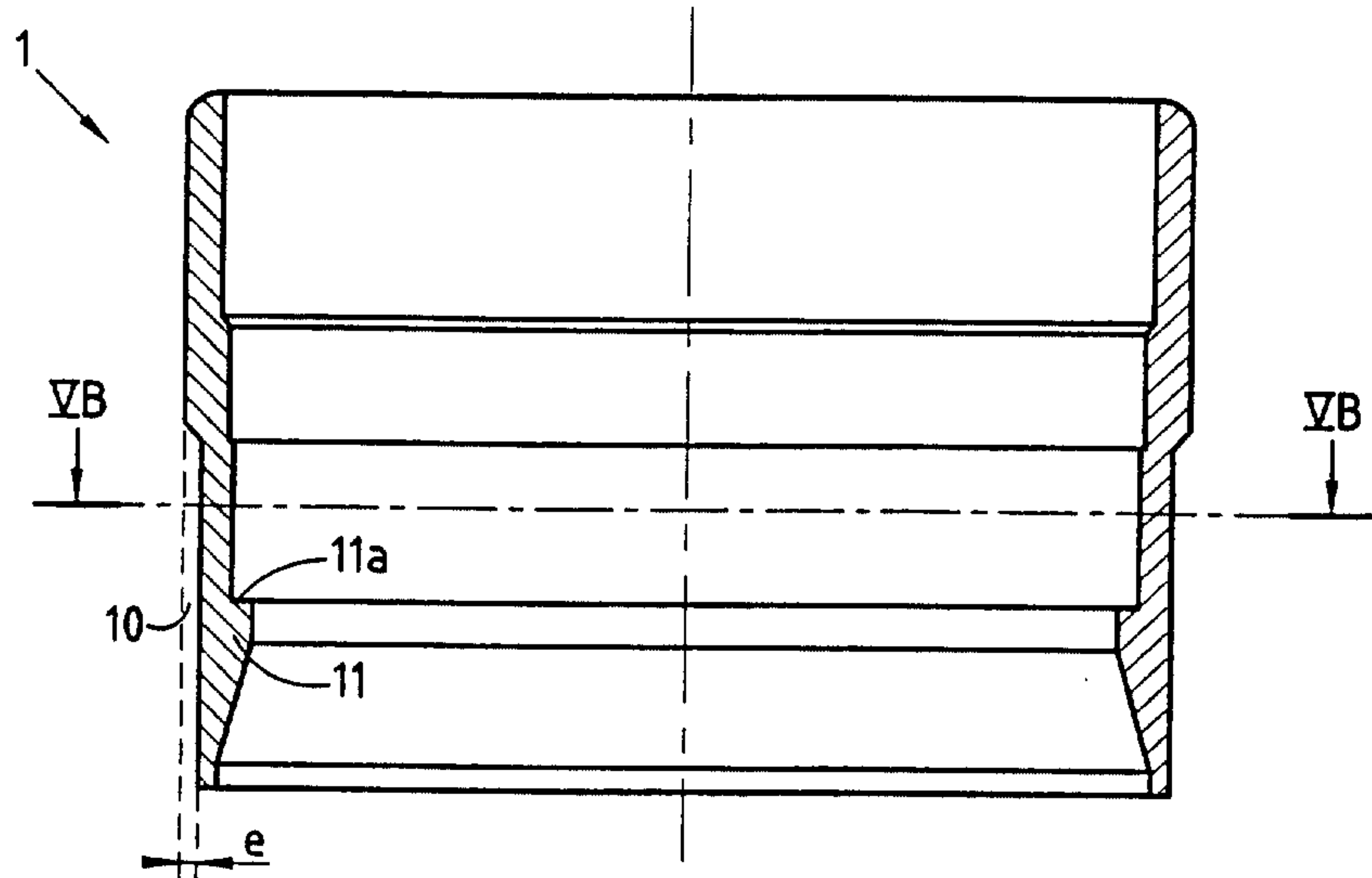


FIG. 5A

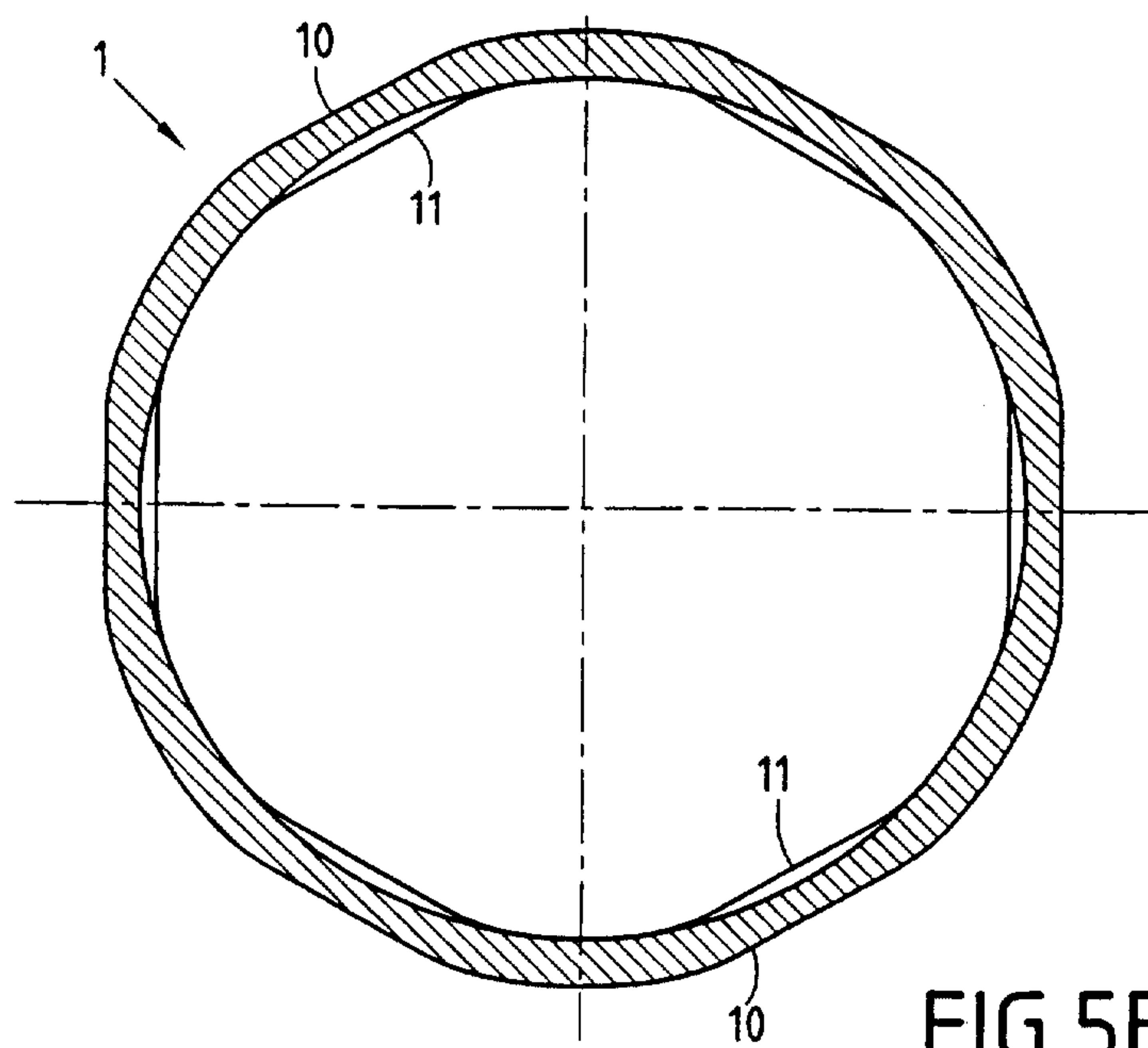


FIG. 5B

