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(54) **CAN CLOSURE ARRANGEMENT**

DOSENVERSCHLUSSANORDNUNG

DISPOSITIF DE FERMETURE DE CANETTE

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Description

Field of the Invention

[0001] The present invention refers to a closure arrangement for cans obtained in sheet metal and of the type which comprises a tubular body inferiorly closed and carrying an annular upper wall, having an inner edge which defines an upper opening for the can and which is configured to define a closure seat in the form of a convex arc, in which is removably seated and axially retained a single piece lid made of plastic material or sheet metal. A can of that kind is, for example, disclosed in US3,268,106A1.

Prior Art

[0002] Determined products, such as certain food products, require packages that can remain hermetic for long periods of storage, avoiding the entrance of air, as well as the contamination and oxidation of the stored product.

[0003] Apart from the requirements above, determined products, such as certain food products, are of progressive consumption and require the can lid to be of the reclosable type, so that it may be reclosed as many times as needed during the progressive consumption of the stored product, in order to guarantee the tightness of the can and protect the remaining content thereof.

[0004] Furthermore, in certain cases, besides the tightness required for long periods of storage and the characteristics of progressive consumption, it is desired that the can lid may be easily opened with no need of using auxiliary tools or instruments, such as keys, cutlery handles, etc., the first opening thereof being achieved by breaking a tamper evident seal.

[0005] The known lids which are press-fitted in a structural ring double-seamed to an upper edge of the side wall of the can tubular body do not present the tightness required to guarantee, by themselves, long periods of storage, and many times it is necessary to provide a hermetic tamper evident seal until the occurrence of the first opening, said seal being generally defined by an aluminum foil or other suitable material that is double-seamed to the upper edge of the side wall of the can jointly with the annular upper wall.

[0006] This known solution requires tools for opening the lid, as well as for cutting the tamper evident seal upon the first opening of the can.

[0007] There are also known from the prior art the lids constructed in sheet metal or in plastic material and which are peripherally provided with a circumferential groove with its cross section generally in the form of a concave arc turned outwardly and which is seated and axially retained in a closure seat provided in the peripheral inner edge of the annular upper wall of the tubular body of the can. The seating of the circumferential groove of the lid on the closure seat in the form of a concave arc allows

obtaining a sealing region that also operates as a region for axially retaining the lid to the tubular body of the can.

[0008] Although the solution cited above, which is described in Brazilian patent application PI0203950-8 of the same applicant, guarantees a safe axial retention of the lid to the tubular body of the can with a high degree of tightness in this sealing region, said sealing region does not guarantee a degree of tightness sufficient to comply with the storage requirements of certain products for long shelf periods, as it occurs with food products to be exported and which present hygroscopic characteristics and become easily oxidized when in contact with the oxygen of the ambient air.

15 Summary of the Invention

[0009] Due to the limitations found in the known constructive solutions, it is an object of the invention to provide a can closure arrangement which guarantees a high degree of tightness for long periods of storage, as well as the facility for opening the lid without using special tools and for manually reclosing it, guaranteeing the same degree of tightness until the first opening.

[0010] It is a further object of the invention to provide a closure arrangement as mentioned above, which evidences the first opening of the can.

[0011] In order to meet the above objects, the present invention provides a can closure arrangement as defined in claim 1.

[0012] The present closure arrangement is applied to cans comprising a tubular body made of sheet metal and which is inferiorly closed and carries, by double-seaming or deformation or any other fixation means, an annular upper wall having an inner edge which defines an upper opening for the can and which is bent in such a way as to define a closure seat in the form of a convex arc.

[0013] The closure arrangement object of the present invention further comprises a lid generally formed in a single piece and comprising a base portion dimensioned to cover said upper opening, a peripheral portion provided with a circumferential cradle, whose cross section is in the form of a concave arc and which is dimensioned to be fitted and axially retained against the closure seat when the lid is seated on the upper opening of the can, and an annular portion projecting radially outwardly from the peripheral portion and to be seated onto the annular upper wall upon closure of the lid.

[0014] According to the invention, at least one of the parts of annular upper wall of the tubular body and annular portion of the lid carries an annular gasket to be pressed by the other part upon closure of the lid, so as to define a respective annular sealing region between the lid and the tubular body.

[0015] The provision of said second annular sealing region between the lid and the tubular body, generally positioned radially externally to the closure seat, allows reaching a high degree of tightness upon closing the lid to the tubular body of the can.

Brief Description of the Drawings

[0016] The invention will be described below with reference to the enclosed drawings, given by way of example of possible constructions of the invention and in which:

Figure 1 represents a perspective view of a possible construction for a plastic lid to be used in a closure arrangement and incorporating a seal portion;
 Figure 1a represents an exploded perspective view of the lid of figure 1 after its first opening;
 Figure 2 represents a partial diametrical cross-sectional view of the lid illustrated in figure 1 and mounted to the upper end of a can, taken along line II-II of figure 1 and illustrating a construction for the closure arrangement;
 Figure 3 represents a view similar to that of figure 2, but illustrating an alternative construction of the closure arrangement ;
 Figure 4 represents a view similar to those of figures 2 and 3 , but illustrating an alternative construction of the closure arrangement ;
 Figure 5 represents a view similar to those of figures 2, 3 and 4, but illustrating an alternative construction of the present closure arrangement, in which the annular gasket is carried by the lid;
 Figure 6 represents a view similar to that of figure 5, but illustrating an alternative construction of the present closure arrangement;
 Figure 7 represents a diametrical sectional view of another can-lid construction in sheet metal utilizing the closure arrangement of the present invention according to the embodiment of figure 2;
 Figure 7a represents a view similar to that of figure 7, but illustrating a metallic lid with its annular portion incorporating a circumferential rib;
 Figure 7b represents a sectional view showing enlarged details of the closure arrangement of the can-lid construction illustrated in figure 7a;
 Figure 8 represents a diametrical sectional view of a metallic can - plastic lid construction incorporating a seal portion and utilizing the closure arrangement illustrated in figure 2;
 Figure 8a represents a view similar to that of figure 8, but illustrating the application of a plastic lid provided with a seal and with its annular portion incorporating a circumferential rib;
 Figure 8b represents a sectional view with enlarged details of the closure arrangement of the can-lid construction illustrated in figure 8a; and
 Figure 9 represents a view similar to that of figure 8a, but presenting a constructive variant for the upper edge of the side wall of the can.

Detailed Description of the Invention

[0017] Figures 1-6 illustrate a can construction with a

tubular body 10 of sheet metal, to be superiorly closed by a lid 20 made in a single piece of plastic material, said can being provided with a closure arrangement object which is not part of the present invention but demonstrates the technological background.

[0018] As illustrated in the sectional views of figures 2-6, the generally cylindrical tubular body 10 comprises a side wall 11 presenting an upper edge 11a, said tubular body 10 being inferiorly closed by a bottom wall (not illustrated) that is incorporated in a single piece, or double-seamed, or otherwise affixed to the side wall 11.

[0019] According to figures 2-6, the tubular body 10 of the can further comprises an annular upper wall 12 peripherally affixed to the upper edge 11a of the side wall 11 through a double-seam 13, said annular upper wall 12 having an inner edge 12a defining an upper opening A in the can and which is generally upwardly and radially outwardly bent, defining a tubular rib 14 defining a closure seat S presenting a cross section in the form of a convex arc.

[0020] As it will be better understood with the description of the embodiments according to the invention illustrated in figures 7 and 8, there is no need for the inner edge 12a of the annular upper wall 12 to be bent to define the tubular rib 14, it being suffice that said bending forms a seat S, having a cross section in the form of a convex arc. The can, which is illustrated in a partial sectional view in figures 2-6, further includes a lid 20 made in a single piece of plastic material, such as polypropylene, comprising a base portion 21 which carries a peripheral portion 22 presenting a generally cylindrical outer face 22a provided with a circumferential cradle 23, whose cross section is in the form of a concave arc turned radially outwardly and which is dimensioned to be fitted and axially retained against the closure seat S when the lid 20 is seated on the upper opening A of the can. The lid 20 further comprises an annular portion 24 projecting radially outwardly from the peripheral portion 22 and to be seated onto the annular upper wall 12 upon closure of the tubular body 10 by the lid 20.

[0021] In the illustrated constructions, the cylindrical outer face 22a of the peripheral portion 22 of the lid 20 incorporates a circumferential projection 23a which defines, superiorly and jointly with the cylindrical outer face 22a, the circumferential cradle 23 presenting a cross section in the form of a concave arc. Nevertheless, it should be understood that the circumferential cradle 23 can be constructed in different shapes such as, for example, in the form of an outer circumferential groove provided in the generally cylindrical outer face 22a of the peripheral portion 22 of the lid 20 and presenting its cross section in the form of a concave arc turned radially outwardly.

[0022] Figures 1-6 illustrate a lid 20 made of plastic material and with its annular portion 24 peripherally incorporating, by means of breakable bridges 26, a seal portion 25 which comprises a skirt 25a to be generally tightly seated around the tubular body 10, under the double-seam 13, so as to remain axially retained under the

latter or under any other deformation defined in the region of the upper edge 11a of the side wall 11 of the tubular body 10, said seal portion 25 further comprising an upper ring 25b disposed over an outermost portion of the annular upper wall 12 of the tubular body 10 of the can and internally incorporating the breakable axial bridges 26. The breakable bridges 26 are disposed so as to unite, in angularly spaced apart points, an inner edge 25g of the upper ring 25b and a peripheral outer edge of the annular portion 24 of the lid 20.

[0023] The breakable bridges 26 are ruptured when submitted to a certain traction force for separating the seal portion 25 from the annular portion 24 upon the first opening of the lid 20.

[0024] In the construction of the exemplary plastic lid, the seal portion 25 presents an interruption 25c in its circumferential extension and which extends along at least part of the height of the skirt 25a, said interruption 25c defining a certain circumferential spacing between respective confronting edges of the skirt 25a, on both sides of the interruption 25c. The annular portion 24 incorporates a grip tab 27 projecting axially upwardly, radially outwardly and also axially downwardly through said interruption 25c of the seal portion 25, for example, remaining substantially leveled with the skirt 25a, the grip tab 27 being manually operable only when part of the seal portion 25 is broken.

[0025] In the illustrated construction, the skirt 25 incorporates the ends of a seal bridge 25d, circumferentially extending over both the interruption 25c of the seal portion 25 and the grip tab 27. The seal bridge 25d presents a first end 25e, which is incorporated to the skirt 25a by connecting means 25f to be broken when said first end 25e is forced away from the skirt 25a, for example, by being radially outwardly pulled to liberate the manual access to the grip tab 27.

[0026] The provision of the grip tab 27 allows the base portion 21 to be easily removed from its seating condition on the closure seat S, as well as a controlled and progressive opening of the can, first in the region adjacent to the grip tab 27 and then in the remaining part of the seat, preventing the stored product from being inadvertently pulled outwardly from the can.

[0027] The grip tab 27 can present either a solid form or at least a partially hollow form, defining a handle, as in the illustrated construction.

[0028] It should be understood that the grip tab 27 may be solid and formed from a respective portion of the skirt 25a, remaining substantially leveled with the latter and maintaining a gap 29 therefrom.

[0029] As illustrated, the skirt 25a may incorporate an inner circumferential projection 25h axially spaced from the peripheral edge of the annular portion 24 and dimensioned to be seated and axially locked under the double-seam 13 in the upper end of the tubular body 10 and around the latter.

[0030] According to the closure arrangement object of the present invention, one or both parts defined by the

annular upper wall 12 of the tubular body 10 and by the annular portion 24 of the lid 20 carries an annular gasket 30 that is disposed and dimensioned to be pressed by the other of said parts upon closure of the lid, in order to define a respective annular sealing region between the lid 20 and the tubular body 10.

[0031] In the construction illustrated in figures 2, 3 and 4, the annular gasket 30 is affixed onto the annular upper wall 12 of the tubular body 10, so as to remain in a radially external positioning in relation to the closure seat S. In figure 2, there is illustrated an annular gasket 30 directly affixed onto the upper face of the annular upper wall 12. In a constructive form, the annular gasket 30 may be made of a suitable polymeric resin, such as plastisol, which is melted and molded directly onto the annular upper wall of the tubular body 10.

[0032] It should be understood that the annular gasket 30 may be formed of different materials compatible with the products to be packaged and which present a certain compressibility, in order to guarantee the formation of a second sealing region, besides that one defined by the seating of the peripheral portion 22 of the lid 20 against the closure seat S.

[0033] Thus, upon closure of the lid 20, its peripheral portion 22 has the circumferential cradle 23 seated against the closure seat S of the tubular body 10, guaranteeing the formation of a first sealing region, which also operates as an axial retention region for the lid 20 seated on the annular upper wall 12 of the tubular body 10. In this closed condition of the lid 20, the annular gasket 30 is axially pressed, in order to guarantee the formation of a respective or second sealing region, which is sufficiently tight to guarantee the tightness of the interior of the can for long periods of storage, as those required for certain food products, particularly when they are intended to be exported.

[0034] Figure 3 illustrates a constructive form in which the annular portion 24 of the lid 20 incorporates two circumferential ribs 28 that are configured and dimensioned to press the annular gasket 30 affixed to the annular upper wall 12 of the tubular body 10, upon closure of the lid 20, guaranteeing a more intense deformation of the annular gasket 30 and a more reliable sealing. It should be understood that the annular portion 24 of the lid 20 can incorporate only one circumferential rib 28 or more than two, or also no circumferential ribs 28 at all, as illustrated in figures 2, 4, 5, 7 and 8.

[0035] Figure 4 illustrates a construction in which the annular gasket 30 is formed or otherwise attached in a circumferential recess 19 provided on the annular upper wall 12 of the tubular body 10, the annular gasket 30 being generally dimensioned to axially project slightly outwardly from the circumferential recess 19, to be pressed by the annular portion 24 of the lid 20. The circumferential recess 19 is preferably dimensioned to better limit, with its radially inner and outer walls, the expansion of the annular gasket 30 upon its application, in a melted state, directly to the annular upper wall 12 of the

tubular body 10.

[0036] Figures 5-6 illustrate constructions in which the annular gasket 30 is attached under the annular portion 24 of the lid 20, to be pressed against the annular upper wall 12 of the tubular body 10, in an inverted position in relation to that illustrated in figures 2, 3 and 4.

[0037] In figure 5, the annular gasket 30 is affixed into a circumferential recess 29 provided in the annular portion 24 of the lid 20, said annular gasket 30 axially projecting slightly outwardly from said circumferential recess 29, to be pressed by the annular upper wall 12 of the tubular body 10 upon closure of the lid 20. The dimensioning of the circumferential recess 29 must be made in such a way as to contain the radial expansion of the annular gasket 30 when it is molded on the annular portion 24 of the lid 20 in an inverted position.

[0038] Figure 6 illustrates a construction in which the annular gasket 30 is affixed to the annular portion 24 of the lid 20 to be pressed by a circumferential rib 18 defined by deformation of the annular upper wall 12 of the tubular body 10. As discussed above regarding the circumferential rib 28 of the lid 20, an annular upper wall 12 of the tubular body 10 may incorporate more than one circumferential rib 18.

[0039] Figures 7, 7a, 8 and 8a illustrate a constructive variant according to the invention in which the annular upper wall 12 of the tubular body 10 is defined by a radial circumferential rib 16 formed by a recess defined by deformation of the side wall 11 of the tubular body 10, said radial circumferential rib 16 projecting to the interior of the tubular body 10, under the upper edge 11a of the side wall 11.

[0040] Figure 7 illustrates an embodiment of the present invention in which the annular gasket 30 is attached onto the annular upper wall 12 of the tubular body 10 or, more precisely, onto the radial circumferential rib 16 which defines the annular upper wall 12, the lid 20 being made of plastic or sheet metal and presenting the same base portion 21, peripheral portion 22 and annular portion 24 already described in relation to the plastic lid constructions illustrated in figures 1-6. In this construction, the annular portion 24 of the lid 20, upon closure of the latter, presses the annular gasket 30, defining a respective sealing region, apart from that defined by the seating of the circumferential cradle 23 of the lid 20 on the closure seat S, as already described above regarding the constructions of figures 1-6.

[0041] As it can be noted, the radial circumferential rib 16 presents an inner edge 12a configured to define the upper opening "A" of the can and the closure seat "S", in the form of a preferably circular convex arc, against which is seated and retained the circumferential cradle 23 having its cross section in the form of a concave arc and provided in the peripheral portion 22 of the lid 20, as described in relation to the constructions illustrated in figures 1 to 6. The radial circumferential rib 16 may present a cross section having any shape adequate to define the closure seat S. In figures 7 and 7a, the radial circumfer-

ential rib 16 presents a cross section in the form of a horizontal "V", whereas in figures 8 and 8a the cross section takes the form of a horizontal "U".

[0042] Figure 7a illustrates a closure arrangement similar to that of figure 7, although having the annular portion 24 of the sheet metal lid 20 deformed to incorporate at least one circumferential rib 28 turned downwardly and dimensioned to press the annular gasket 30, as described in relation to the arrangement illustrated in figure 3.

[0043] As it can be seen in the construction illustrated in figure 7a, the inner edge 12a of the annular upper wall 12, defined by the radial circumferential rib 16, is configured to define not only the closure seat S in the form of a convex arc, but also an upper circumferential projection 12b projecting upwardly from the annular upper wall 12 of the tubular body 10, to define a barrier against the undue inward radial expansion of the material of the annular gasket 30 when the latter is molded directly onto said annular upper wall 12, preventing the still melted material of the annular gasket 30 from flowing to the interior of the tubular body 10 through the closure seat S. It should be understood that the upper circumferential projection 12b need not be obligatorily formed close to the inner edge 12a of the radial circumferential rib 16. It may be defined in other radially outermost regions of the upper wall 12, as it occurs in the arrangement illustrated in figure 4, in which the upper circumferential projection 12b can be defined by the radially inner wall of the circumferential recess 19. However, it should be understood that, besides the circumferential recess 19, the annular upper wall 12 may be provided with an upper circumferential projection 12b disposed radially spaced from the circumferential recess 19 to operate as an additional barrier against the radial inward expansion of the material of the annular gasket 30 when the latter is directly molded on the annular upper wall 12 of the tubular body 10.

[0044] As illustrated in figure 8, the lid 20, generally made of plastic material, can have its annular portion 24 peripherally incorporating, by means of breakable bridges 26, a seal portion 25 with a construction similar to that described for the lid illustrated in figures 1-6, but taking into consideration that the skirt 25a is shaped to provide a step 25x to be seated under the end edge 11a of the side wall 11 of the tubular body 10, which end edge 11a may take the form of an outer curl operating as a structural element for the tubular body 10, as well as an ascending axial stop for the skirt 25a of the seal portion 25.

[0045] Figure 8a illustrates a closure arrangement similar to that of figure 8, but having an upper wall 12 inferiorly incorporating at least one circumferential rib 18 dimensioned to press an annular gasket 30, upon closure of the lid 20, as described in relation to figure 6.

[0046] As illustrated in the arrangement of figure 7a, the arrangement of figure 8a has the inner edge 12a of the radial circumferential rib 16 configured to define, besides the closure seat S in the form of a convex arc, an

upper circumferential projection 12b projecting upwardly from the annular upper wall 12 of the tubular body 10, to define a barrier against the undesired radial expansion, to the closure seat "S", of the material of the annular gasket 30, when the latter is applied onto the annular upper wall 12 of the tubular body 10.

[0047] It should be understood that the circumferential rib 28 of the annular portion 24 of the lid 20, as illustrated in figures 7a and 9, may be substituted by one or more circumferential ribs superiorly incorporated to the annular upper wall 12 of the tubular body 10, as illustrated in figure 6 of the enclosed drawings, to press an annular gasket 30 attached under the annular portion 24 of the lid 20. Figure 9 illustrates a closure arrangement of the type shown in figures 8 and 8a and in which the upper edge 11a of the side wall 11 of the tubular body 10 is outwardly, downwardly and inwardly bent to define a tubular rib 17 externally incorporated to the upper edge 11a of the side wall 11 and extending downwardly, beyond the radial circumferential rib 16, covering the recess that forms the latter. In figure 9, the annular portion 24 of the lid 20 inferiorly incorporates at least one circumferential rib 28 dimensioned to press the annular gasket 30, upon closure of the lid.

[0048] According to the illustrated construction, the tubular rib 17 presents a free lower end portion 17a that is inwardly and upwardly bent and disposed adjacent to the side wall 11 of the tubular body 10, below the radial circumferential rib 16. The tubular rib 17 is generally oblong in the direction of the can axis, presenting a median extension 17b substantially parallel to the side wall 11 of the tubular body 10, in the region in which the radial circumferential rib 16 is incorporated.

[0049] In the constructions illustrated in figures 7, 7a, 8 and 8a, the peripheral portion 22 of the lid 20 externally carries a circumferential cradle 23 having its cross section in the form of a concave arc, to be fitted and axially retained against the closure seat S, as already described above in relation to figures 2-6.

[0050] While only some embodiments of the present invention have been described and illustrated herein, it should be understood that alterations can be made in the form and physical arrangement of the elements, without departing from the constructive concept defined in the claims accompanying the present specification.

Claims

1. Can closure arrangement of the type which comprises: a tubular body (10) made of sheet metal and which is inferiorly closed and carries an annular upper wall (12) having an inner edge (12a) defining an upper opening (A) for the can and which is bent so as to define a closure seat (S) in the form of a convex arc; and a lid (20) comprising, in a single piece: a base portion (21), a peripheral portion (22) provided with a circumferential cradle (23), whose cross sec-

tion is in the form of a concave arc and which is dimensioned to be fitted and axially retained against the closure seat (S), upon the seating of the lid (20) on the upper opening (A) of the can; an annular portion (24) projecting radially outwardly from the peripheral portion (22) and to be seated onto the annular upper wall (12), upon closure of the lid (20); and an annular gasket (30) carried by at least one of the parts of annular upper wall (12) of the tubular body (10) and annular portion (24) of the lid (20) and pressed by the other part, upon closure of the lid (20), in order to define a respective annular sealing region between the lid (20) and the tubular body (10), the tubular body (10) comprising a side wall (11) provided with an upper edge (11a), the annular upper wall (12) being defined by a radial circumferential rib (16) formed by a recess on the side wall (11), radially projecting to the interior of the tubular body (10) under the upper edge (11a) of the side wall (11), **characterized in that** the radial circumferential rib (16) presents an inner edge (12a) configured to define a closure seat (S) in the form of a convex arc, wherein the inner edge (12a) of the radial circumferential rib (16) is configured to define an upper circumferential projection (12b) projecting upwardly from the annular upper wall (12) of the tubular body (10), so as to define a barrier against the radial expansion of the material of the annular gasket (30) to the closure seat (S), upon molding said annular gasket (30) directly onto the annular upper wall (12).

2. The arrangement as set forth in claim 1, **characterized in that** the annular gasket (30) is pressed by at least one circumferential rib (18, 28) incorporated to the other of said parts of annular upper wall (12) of the tubular body (10) and annular portion (24) of the lid (20), upon closure of the latter.
3. The arrangement as set forth in claim 2, **characterized in that** the annular gasket (30) is attached to the annular portion (24) of the lid (30), the circumferential rib (18) being defined by deformation of the annular upper wall (12) of the tubular body (10).
4. The arrangement as set forth in claim 1, **characterized in that** the lid (20) is molded in a single piece of plastic material, with the annular portion (24) inferiorly incorporating a circumferential rib (28) to be pressed against the annular gasket (30) affixed to the annular upper wall (12) of the tubular body (10).
5. The arrangement as set forth in claim 1, **characterized in that** the peripheral portion (22) of the lid (20) presents a generally cylindrical outer face (22a) incorporating a circumferential projection (23a) which defines, superiorly and jointly with said outer face (22a), the circumferential cradle (23) whose cross section is in the form of a concave arc.

6. The arrangement as set forth in claim 1, **characterized in that** the upper edge (11a of the side wall (11) of the tubular body (10) is outwardly, downwardly and inwardly bent, so as to define a tubular rib (17) externally incorporated to the upper edge (11a of the side wall (11) and extending downwardly, beyond the radial circumferential rib (16), covering the recess which forms the latter. 5
7. The arrangement as set forth in claim 6, **characterized in that** the tubular rib (17) presents a free lower end portion (17a) that is inwardly and upwardly bent and disposed adjacent to the peripheral side wall (11) of the tubular body (10), under the circumferential rib (16). 10 15
8. The arrangement as set forth in claim 1, **characterized in that** the lid (20) is molded in a single piece of plastic material, with the annular portion (24) peripherally incorporating, by means of breakable bridges (26), a seal portion (25) comprising a skirt (25a) to be seated around the tubular body (10) and axially retained under the upper edge (11a) of the side wall (11). 20 25
9. The arrangement as set forth in claim 8, **characterized in that** the seal portion (25) presents an interruption (25c) extending by at least part of the height of the skirt (25a), the annular portion (24) of the lid (20) radially incorporating a grip tab (27) extending over said interruption (25c), the skirt (25a) incorporating the ends of a seal bridge (25d) circumferentially extending over the interruption (25c) of the seal portion (25) and over the grip tab (27), one of the ends of the seal bridge (25d) being incorporated to the skirt (25a) by connecting means (25f) to be ruptured when said end is forced away from the skirt (25a). 30 35
10. The arrangement as set forth in claim 1, **characterized in that** the annular gasket (30) is formed in polymeric resin, such as plastisol, directly molded to one of the parts of annular upper wall (12) and annular portion (24) of the lid (20). 40 45

Patentansprüche

1. Dosenverschlussanordnung des Typs, der umfasst: einen rohrförmigen Körper (10), der aus Metallblech hergestellt ist und unten verschlossen ist und eine ringförmige obere Wand (12) trägt, die eine Innenkante (12a) besitzt, die eine obere Öffnung (A) für die Dose definiert und die so gebogen ist, dass ein Verschlusssitz (S) in Form eines konvexen Bogens definiert wird; und einen Deckel (20), der einteilig umfasst: einen Basisabschnitt (21), einen Umfangsabschnitt (22), der mit einer Umfangsaufnahme (23) versehen ist, deren Querschnitt die Form eines kon-

kaven Bogens hat und die so bemessen ist, dass sie an dem Verschlusssitz (S) angebracht und axial gehalten wird, wenn der Deckel (20) auf der oberen Öffnung (A) der Dose sitzt, und einen ringförmigen Abschnitt (24), der von dem Umfangsabschnitt (22) radial auswärts vorsteht, um auf der ringförmigen oberen Wand (12) zu sitzen, wenn der Deckel (20) verschlossen ist; und eine ringförmige Dichtung (30), die durch wenigstens eines der Teile der ringförmigen Wand (12) des rohrförmigen Körpers (10) und des ringförmigen Abschnitts (24) des Deckels (20) getragen wird und durch das andere Teil gepresst wird, wenn der Deckel (20) geschlossen wird, um einen jeweiligen ringförmigen Dichtungsbereich zwischen dem Deckel (20) und dem rohrförmigen Körper (10) zu definieren, wobei der rohrförmige Körper (10) eine Seitenwand (11) umfasst, die mit einer Oberkante (11a) versehen ist, wobei die ringförmige obere Wand (12) durch eine radiale Umfangsrippe (16) definiert ist, die durch eine Vertiefung in der Seitenwand (11) gebildet ist und zum Innenraum des rohrförmigen Körpers (10) unter der Oberkante (11a) der Seitenwand (11) radial vorsteht, **dadurch gekennzeichnet, dass** die radiale Umfangsrippe (16) eine Innenkante (12a) aufweist, die konfiguriert ist, um einen Verschlusssitz (S) in Form eines konvexen Bogens zu definieren, wobei die Innenkante (12a) der radialen Umfangsrippe (16) konfiguriert ist, um einen oberen Umfangsvorsprung (12b) zu definieren, der von der ringförmigen oberen Wand (12) des rohrförmigen Körpers (10) nach oben vorsteht, um eine Sperre gegenüber der radialen Ausdehnung des Materials der ringförmigen Dichtung (30) zu dem Verschlusssitz (S), wenn die ringförmige Dichtung (30) direkt auf die ringförmige obere Wand (12) gegossen wird, zu definieren.

2. Anordnung nach Anspruch 1, **dadurch gekennzeichnet, dass** die ringförmige Dichtung (30) durch wenigstens eine Umfangsrippe (18, 28), die am anderen der Teile der ringförmigen oberen Wand (12) des rohrförmigen Körpers (10) und des ringförmigen Abschnitts (24) des Deckels (20) ausgebildet ist, gepresst wird, wenn der Letztere geschlossen wird. 45
3. Anordnung nach Anspruch 2, **dadurch gekennzeichnet, dass** die ringförmige Dichtung (30) an dem ringförmigen Abschnitt (24) des Deckels (30) befestigt ist, wobei die Umfangsrippe (18) durch Verformen der ringförmigen oberen Wand (12) des rohrförmigen Körpers (10) definiert ist.
4. Anordnung nach Anspruch 1, **dadurch gekennzeichnet, dass** der Deckel (20) einteilig aus Kunststoff gegossen ist, wobei der ringförmige Abschnitt (24) unten eine Umfangsrippe (28) aufweist, die gegen die ringförmige Dichtung (30) gepresst werden

soll, die an der ringförmigen oberen Wand (12) des rohrförmigen Körpers (10) befestigt ist.

5. Anordnung nach Anspruch 1, **dadurch gekennzeichnet, dass** der Umfangsabschnitt (22) des Deckels (20) eine im Allgemeinen zylindrische Außenfläche (22a) aufweist, die einen Umfangsvorsprung (23a) aufweist, der oberhalb der äußeren Fläche (22a) und verbunden mit dieser die Umfangsaufnahme (23) definiert, deren Querschnitt die Form eines konkaven Bogens besitzt. 5
6. Anordnung nach Anspruch 1, **dadurch gekennzeichnet, dass** die Oberkante (11a) der Seitenwand (11) des rohrförmigen Körpers (10) nach außen, nach unten und nach innen gebogen ist, um so eine rohrförmige Rippe (17) zu definieren, die außen an der Oberkante (11a) der Seitenwand (11) angebracht ist und sich nach unten über die radiale Umfangsrippe (16) hinaus erstreckt und die Vertiefung, die die Letztere bildet, abdeckt. 10
7. Anordnung nach Anspruch 6, **dadurch gekennzeichnet, dass** die rohrförmige Rippe (17) einen freien unteren Endabschnitt (17a) aufweist, der nach innen und nach oben gebogen ist und benachbart zu der Umfangsseitenwand (11) des rohrförmigen Körpers (10) unter der Umfangsrippe (16) angeordnet ist. 15
8. Anordnung nach Anspruch 1, **dadurch gekennzeichnet, dass** der Deckel (20) einteilig aus Kunststoff gegossen ist, wobei der ringförmige Abschnitt (24) am Umfang über zerbrechbare Stege (26) einen Dichtungsabschnitt (25) aufweist, der eine Schürze (25a) besitzt, die um den rohrförmigen Körper (10) sitzen soll und unter der Oberkante (11a) der Seitenwand (11) axial gehalten wird. 20
9. Anordnung nach Anspruch 8, **dadurch gekennzeichnet, dass** der Dichtungsabschnitt (25) eine Unterbrechung (25c) aufweist, die sich wenigstens über einen Teil der Höhe der Schürze (25a) erstreckt, wobei der ringförmige Abschnitt (24) des Deckels (20) radial eine Greifflasche (27) aufweist, die sich über die Unterbrechung (25c) erstreckt, wobei die Schürze (25a) die Enden eines Dichtungsteigs (25d) aufweist, der sich in Umfangsrichtung über die Unterbrechung (25c) des Dichtungsabschnitts (25) und über die Greifflasche (27) erstreckt, wobei eines der Enden des Dichtungsteigs (25d) an der Schürze (25a) durch Verbindungsmittel (25f) angebracht ist, die zu zerbrechen ist, wenn das Ende von der Schürze (25a) weggedrängt wird. 25
10. Anordnung nach Anspruch 1, **dadurch gekennzeichnet, dass** die ringförmige Dichtung (30) aus einem Polymerharz wie etwa Plastisol gebildet ist, 30

das direkt auf einen der Teile der ringförmigen oberen Wand (12) und des ringförmigen Abschnitts (24) des Deckels (20) gegossen ist.

Revendications

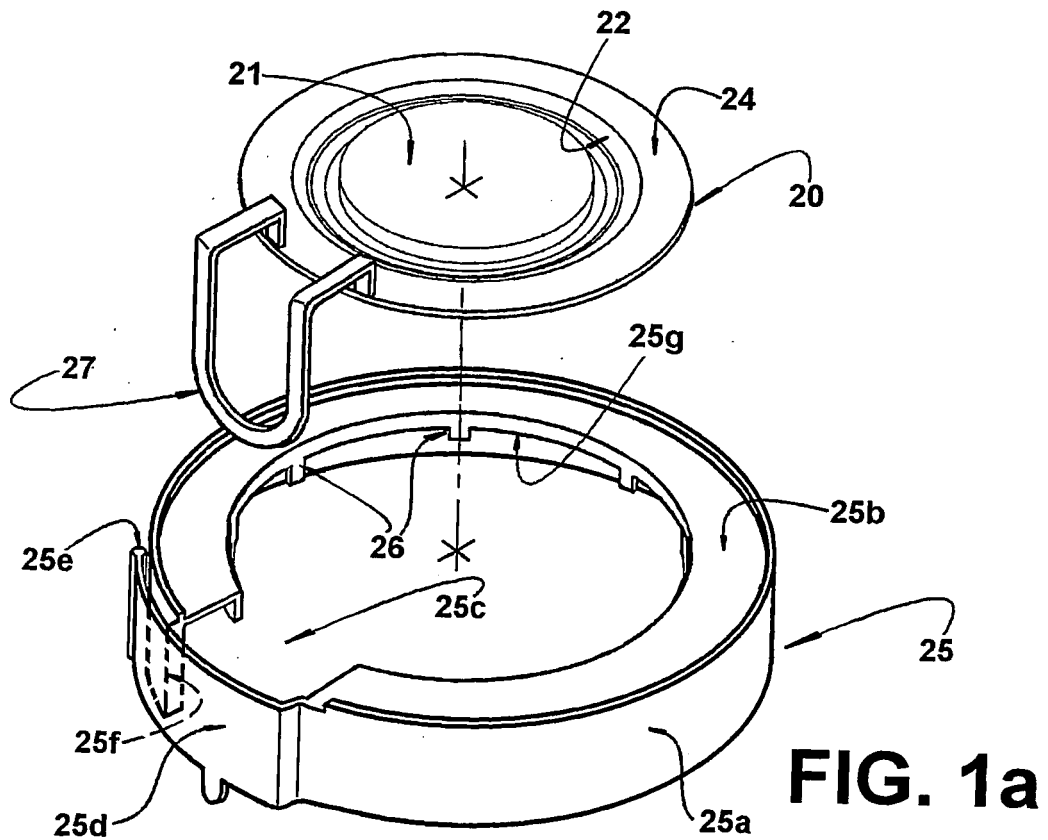
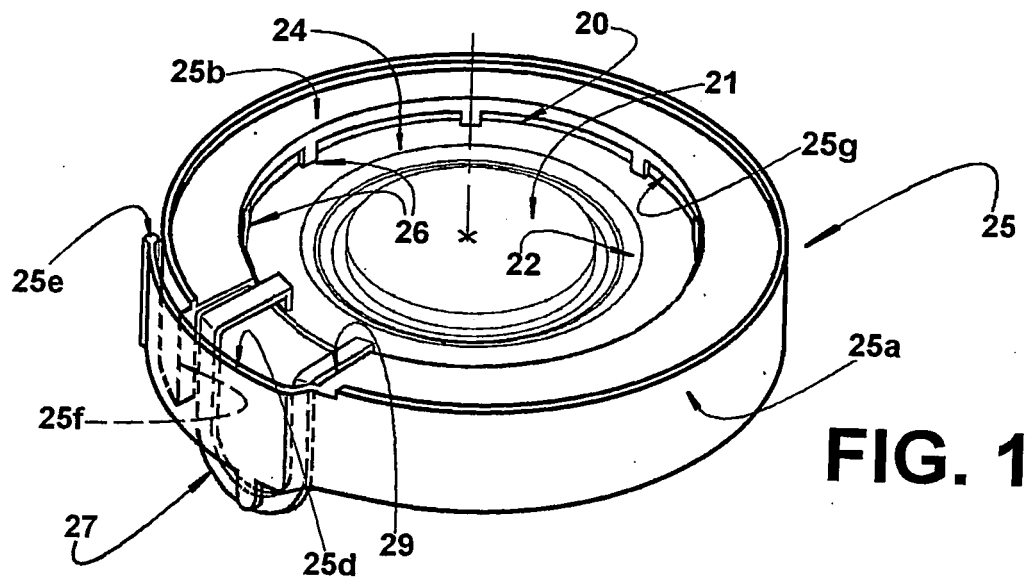
1. Agencement de fermeture de boîte métallique du type qui comprend : un corps tubulaire (10) fait de métal en feuille et qui est fermé en sa partie inférieure et supporte une paroi supérieure annulaire (12) comportant un bord interne (12a) définissant une ouverture supérieure (A) pour la boîte et qui est recourbé afin de définir un siège de fermeture (S) sous la forme d'un arc convexe ; et un couvercle (20) comprenant, d'un seul tenant : une partie de base (21), une partie périphérique (22) pourvue d'un berceau circonférentiel (23), dont la section transversale a la forme d'un arc concave et qui est dimensionné pour être ajusté et retenu axialement contre le siège de fermeture (S), lors de l'assise du couvercle (20) sur l'ouverture supérieure (A) de la boîte ; une partie annulaire (24) faisant saillie radialement vers l'extérieur depuis la partie périphérique (22) et destinée à être assise sur la paroi supérieure annulaire (12) lors de la fermeture du couvercle (20) ; et un joint d'étanchéité annulaire (30) supporté par au moins l'une des parties de la paroi supérieure annulaire (12) du corps tubulaire (10) et une partie annulaire (24) du couvercle (20) et pressé par l'autre partie lors de la fermeture du couvercle (20), afin de définir une région d'étanchéité annulaire respective entre le couvercle (20) et le corps tubulaire (10), le corps tubulaire (10) comprenant une paroi latérale (11) pourvue d'un bord supérieur (11a) la paroi supérieure annulaire (12) étant définie par une nervure circonférentielle radiale (16) formée par un évidement sur la paroi latérale (11), faisant saillie radialement jusqu'à l'intérieur du corps tubulaire (10) sous le bord supérieur (11a) de la paroi latérale (11), **caractérisé en ce que** la nervure circonférentielle radiale (16) présente un bord interne (12a) configuré pour définir un siège de fermeture (S) sous la forme d'un arc convexe, le bord interne (12a) de la nervure circonférentielle radiale (16) étant configuré pour définir une saillie circonférentielle supérieure (12b) faisant saillie vers le haut depuis la paroi supérieure annulaire (12) du corps tubulaire (10), afin de définir une barrière contre l'expansion radiale du matériau du joint d'étanchéité annulaire (30) jusqu'au siège de fermeture (S), lors du moulage dudit joint d'étanchéité annulaire (30) directement sur la paroi supérieure annulaire (12). 35
2. Agencement selon la revendication 1, **caractérisé en ce que** le joint d'étanchéité annulaire (30) est pressé par au moins une nervure circonférentielle (18, 28) incorporée à l'autre desdites parties de la paroi supérieure annulaire (12) du corps tubulaire 40

(10) et de la partie annulaire (24) du couvercle (20) lors de la fermeture de ce dernier.

3. Agencement selon la revendication 2, **caractérisé en ce que** le joint d'étanchéité annulaire (30) est fixé à la partie annulaire (24) du couvercle (20), la nervure circonférentielle (18) étant définie par déformation de la paroi supérieure annulaire (12) du corps tubulaire (10). 5
4. Agencement selon la revendication 1, **caractérisé en ce que** le couvercle (20) est moulé dans un seul morceau de matière plastique, la partie annulaire (24) incluant, dans sa partie inférieure, une nervure circonférentielle (28) destinée à être pressée contre le joint d'étanchéité annulaire (30) fixé à la paroi supérieure annulaire (12) du corps tubulaire (10). 10
5. Agencement selon la revendication 1, **caractérisé en ce que** la partie périphérique (22) du couvercle (20) présente une face externe généralement cylindrique (22a) incluant une saillie circonférentielle (23a) qui définit, dans sa partie supérieure et conjointement à ladite face externe (22a), le berceau circonférentiel (23) dont la section transversale a la forme d'un arc concave. 20 25
6. Agencement selon la revendication 1, **caractérisé en ce que** le bord supérieur (11a) de la paroi latérale (11) du corps tubulaire (10) est recourbé vers l'extérieur, vers le bas et vers l'intérieur, de façon à définir une nervure tubulaire (17) incorporée extérieurement au bord supérieur (11a) de la paroi latérale (11) et s'étendant vers le bas, au-delà de la nervure circonférentielle radiale (16), recouvrant l'évidement qui forme ce dernier. 30 35
7. Agencement selon la revendication 6, **caractérisé en ce que** la nervure tubulaire (17) présente une partie d'extrémité inférieure libre (17a) qui est recourbée vers l'intérieur et vers le haut et disposée adjacente à la paroi latérale périphérique (11) du corps tubulaire (10), sous la nervure circonférentielle (16). 40 45
8. Agencement selon la revendication 1, **caractérisé en ce que** le couvercle (20) est moulé dans un seul morceau de matière plastique, la partie annulaire (24) incluant à la périphérie, au moyen de ponts susceptibles de rupture (26), une partie d'étanchéité (25) comprenant une jupe (25a) destinée à être assise autour du corps tubulaire (10) et retenue axialement sous le bord supérieur (11a) de la paroi latérale (11). 50 55
9. Agencement selon la revendication 8, **caractérisé en ce que** la partie d'étanchéité (25) présente une interruption (25c) s'étendant sur au moins une partie

de la hauteur de la jupe (25a), la partie annulaire (24) du couvercle (20) incluant radialement une patte de préhension (27) s'étendant sur ladite interruption (25c), la jupe (25a) incluant les extrémités d'un pont d'étanchéité (25d) s'étendant de manière circonférentielle sur l'interruption (25c) de la partie d'étanchéité (25) et sur la patte de préhension (27), une des extrémités du pont d'étanchéité (25d) étant incorporée à la jupe (25a) par des moyens de connexion (25f) destinés à être rompus lorsque ladite extrémité est éloignée de force de la jupe (25a).

10. Agencement selon la revendication 1, **caractérisé en ce que** le joint d'étanchéité annulaire (30) est formé en résine polymère, telle que du plastisol, moulée directement sur l'une des parties de la paroi supérieure annulaire (12) et la partie annulaire (24) du couvercle (20).



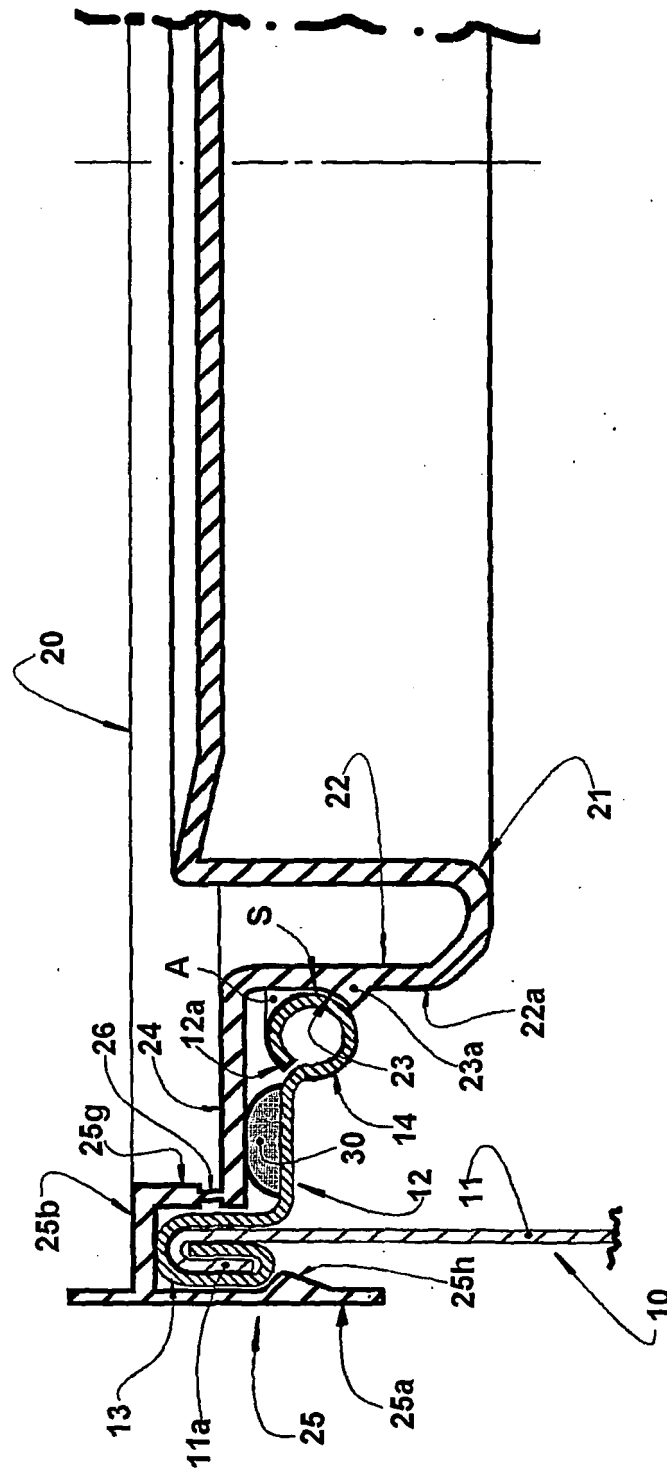


FIG. 2

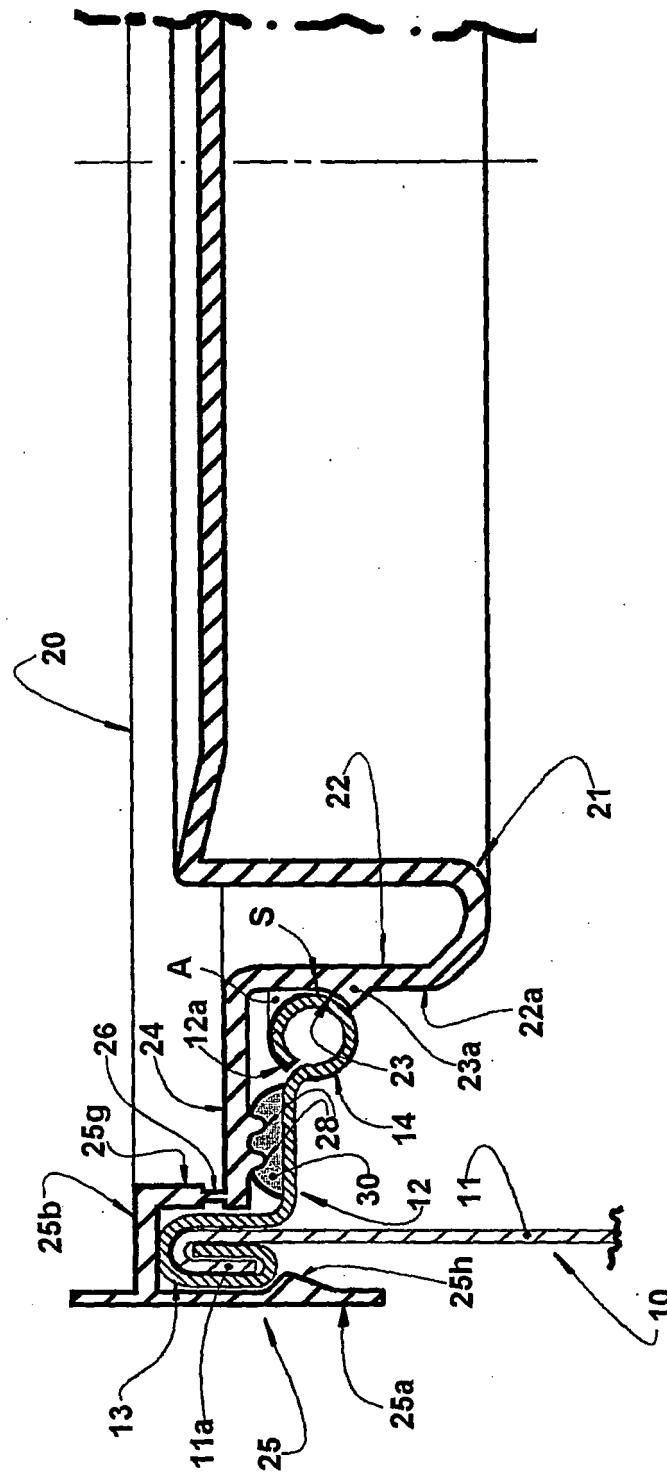


FIG. 3

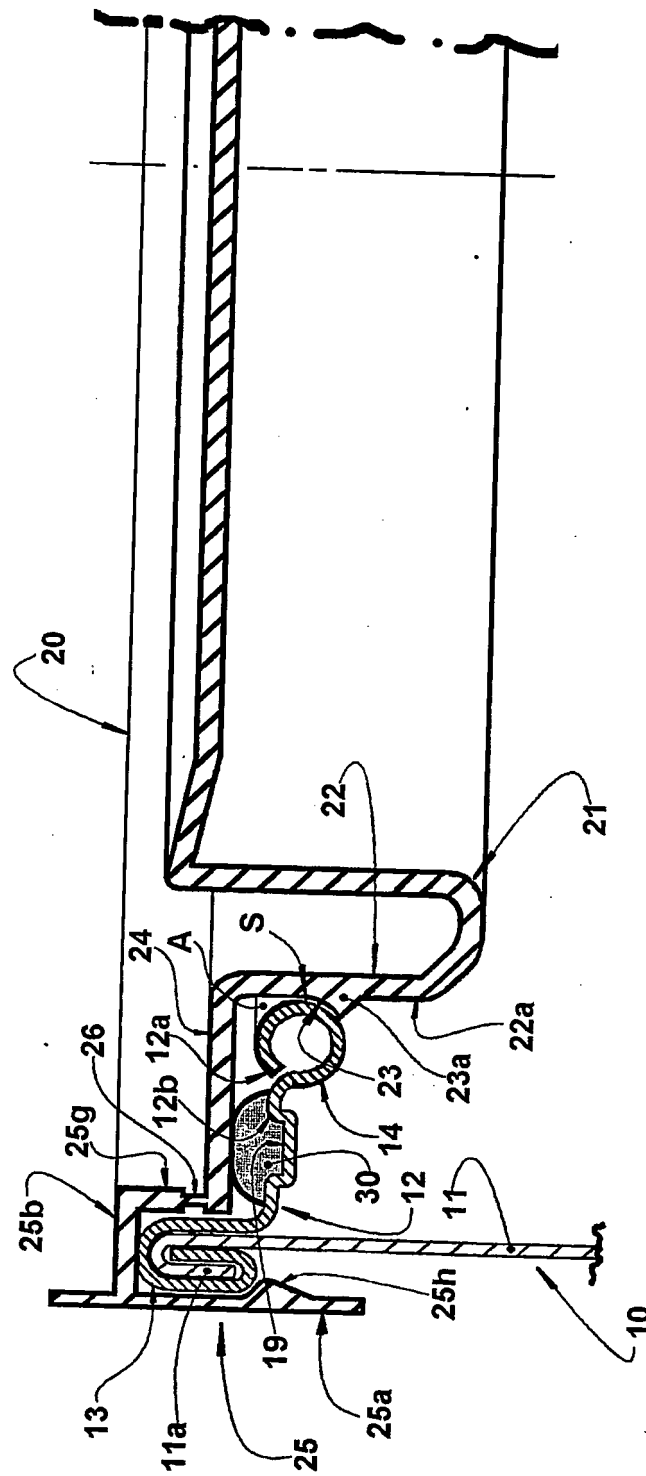


FIG. 4

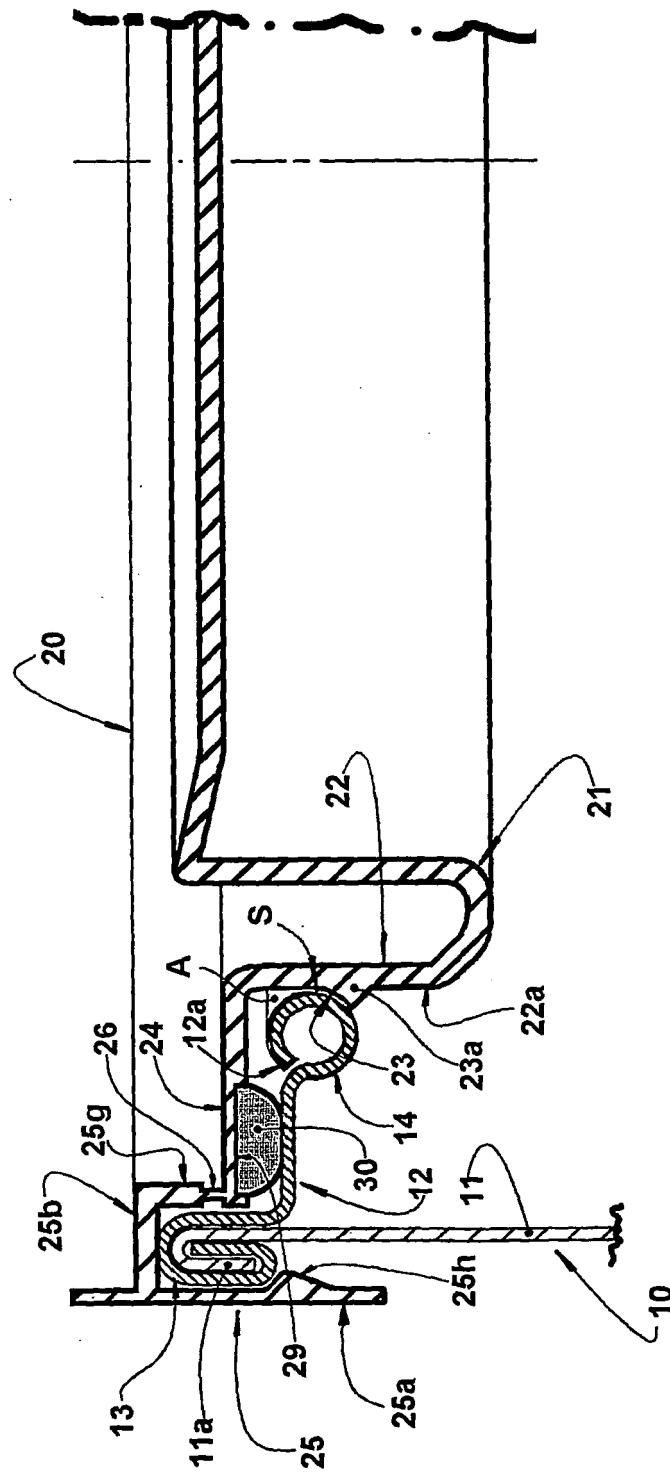
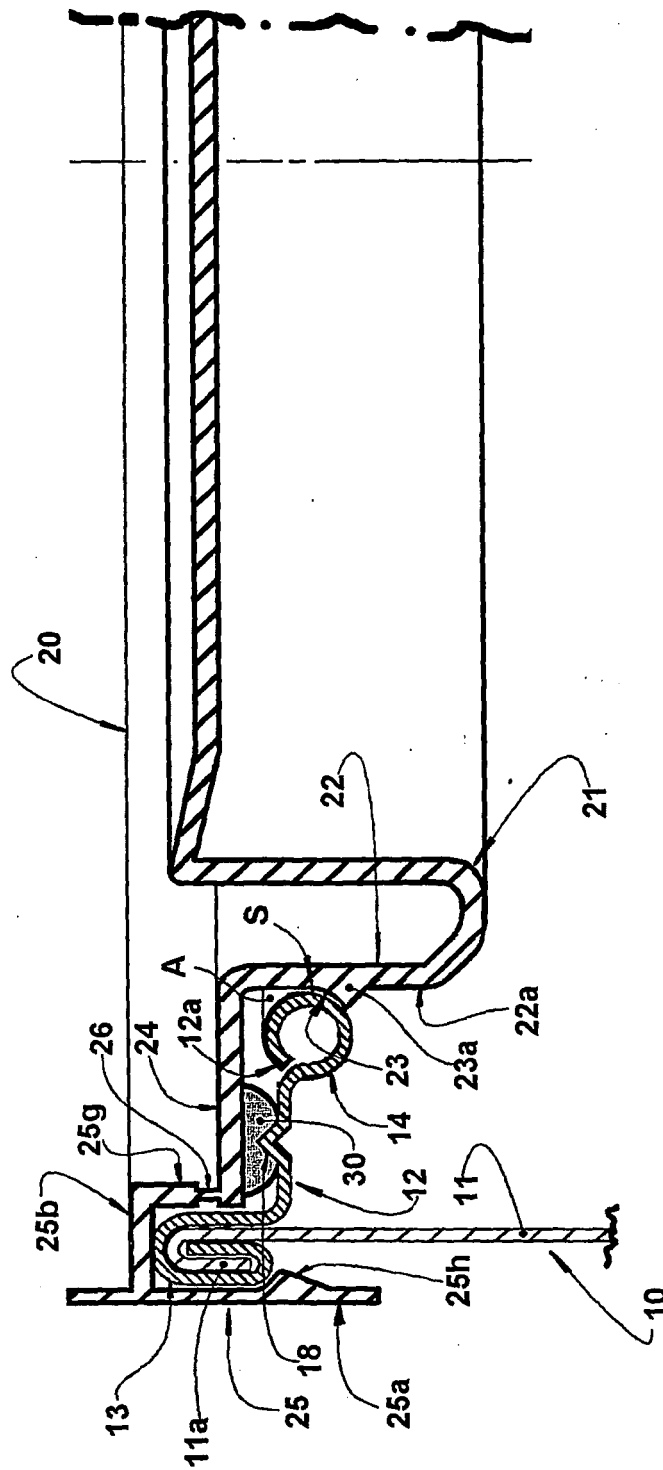


FIG. 5



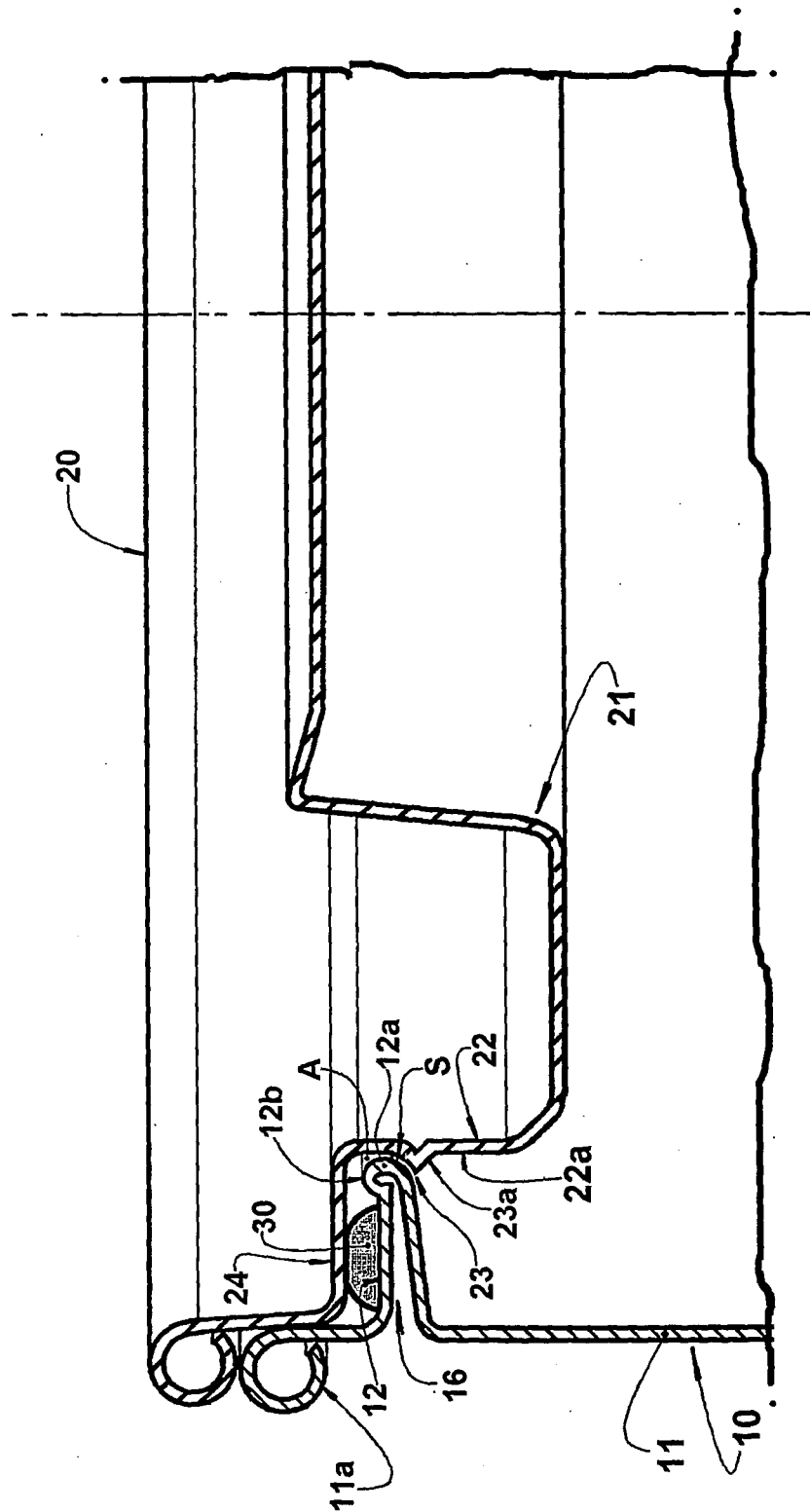


FIG. 7

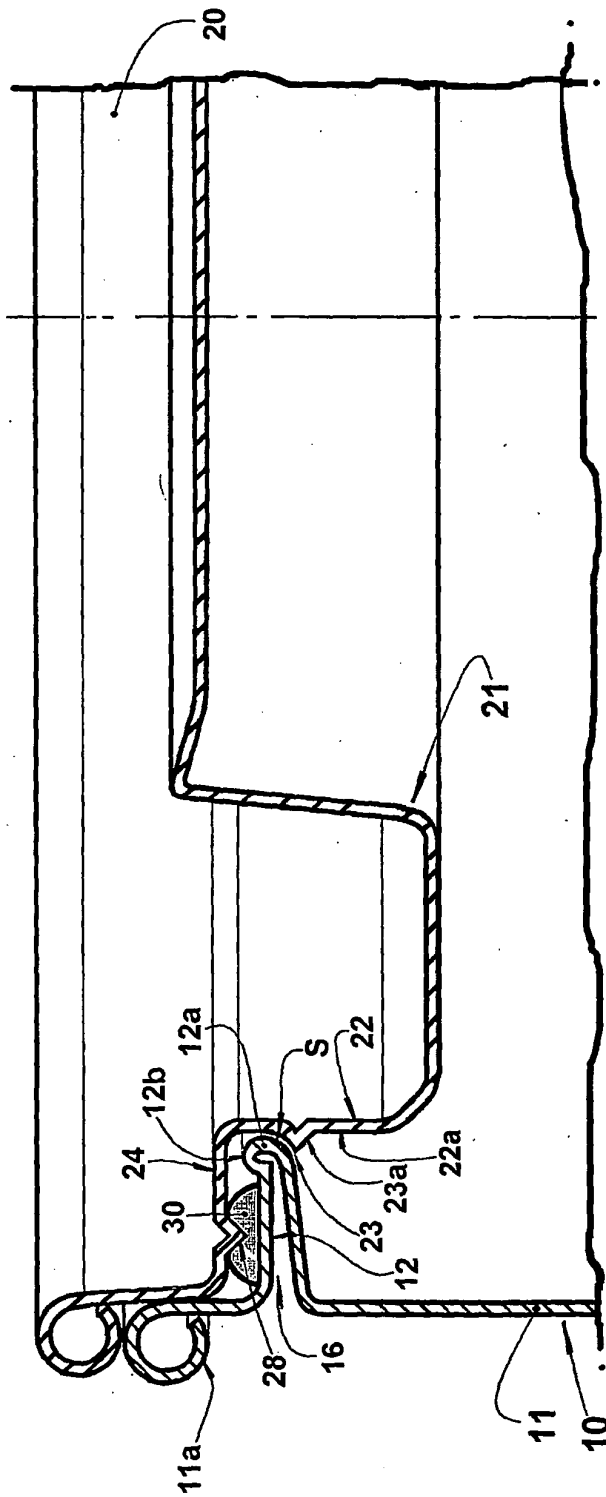


FIG. 7a

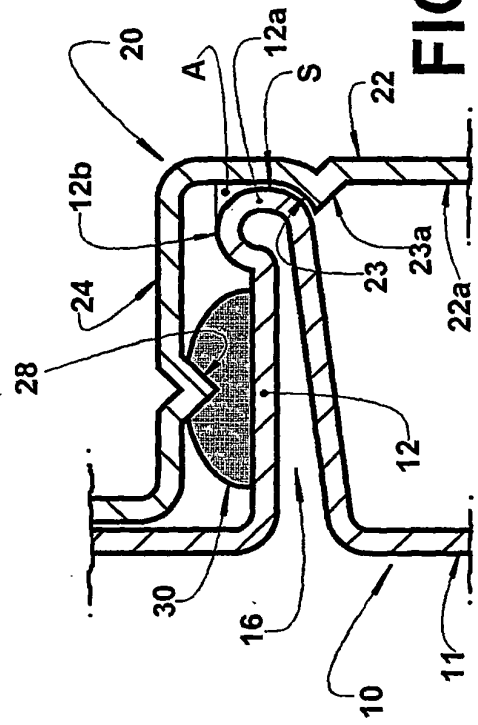


FIG. 7b

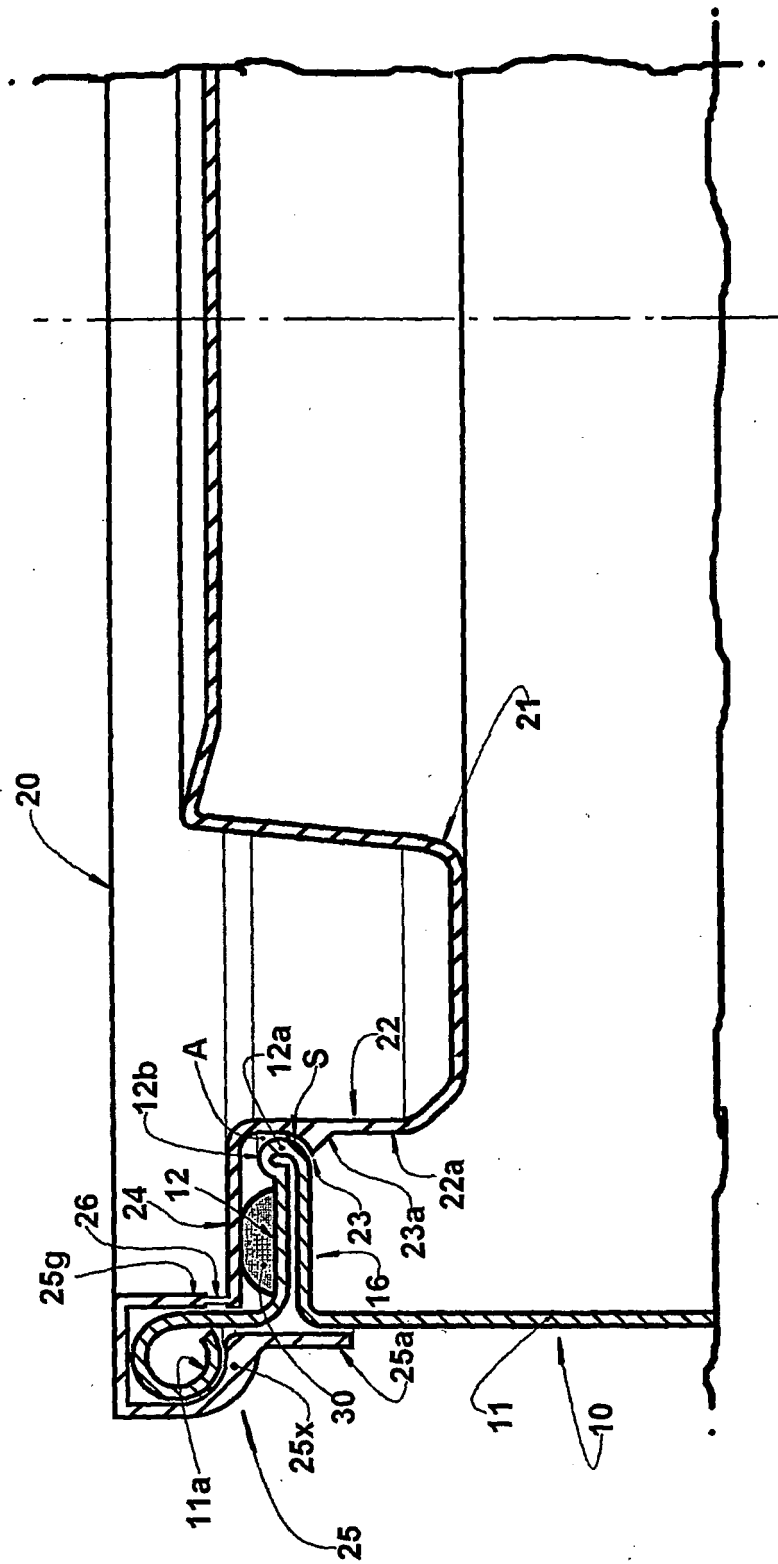


FIG. 8

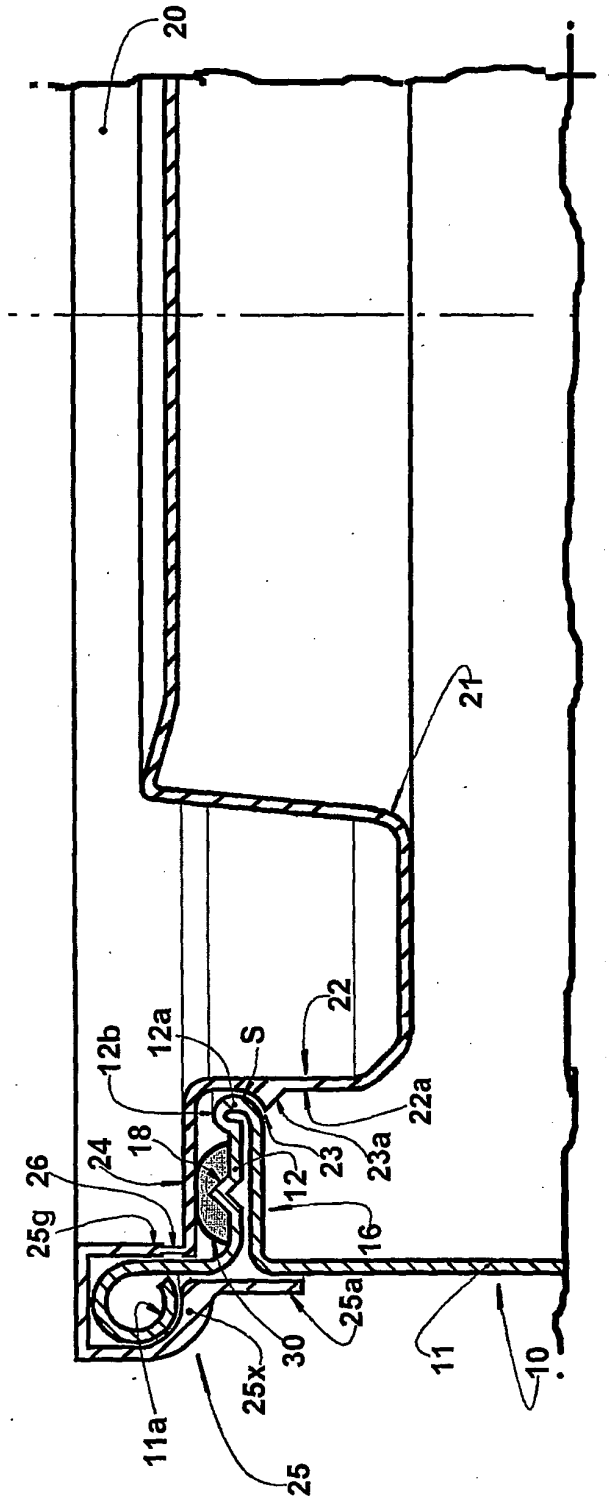


FIG. 8a

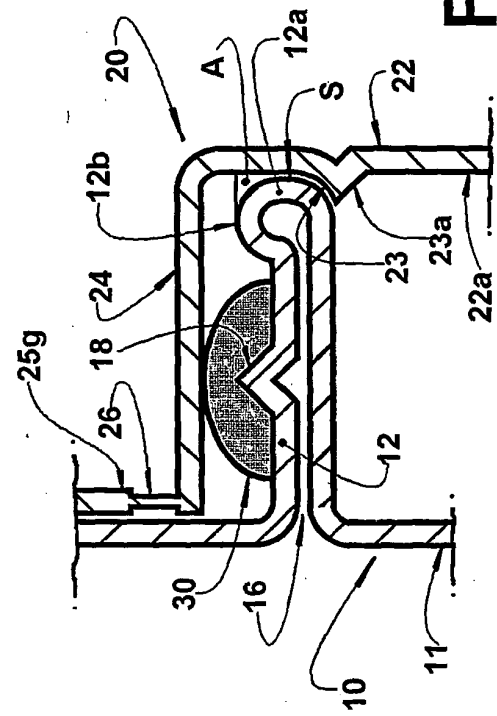


FIG. 8b

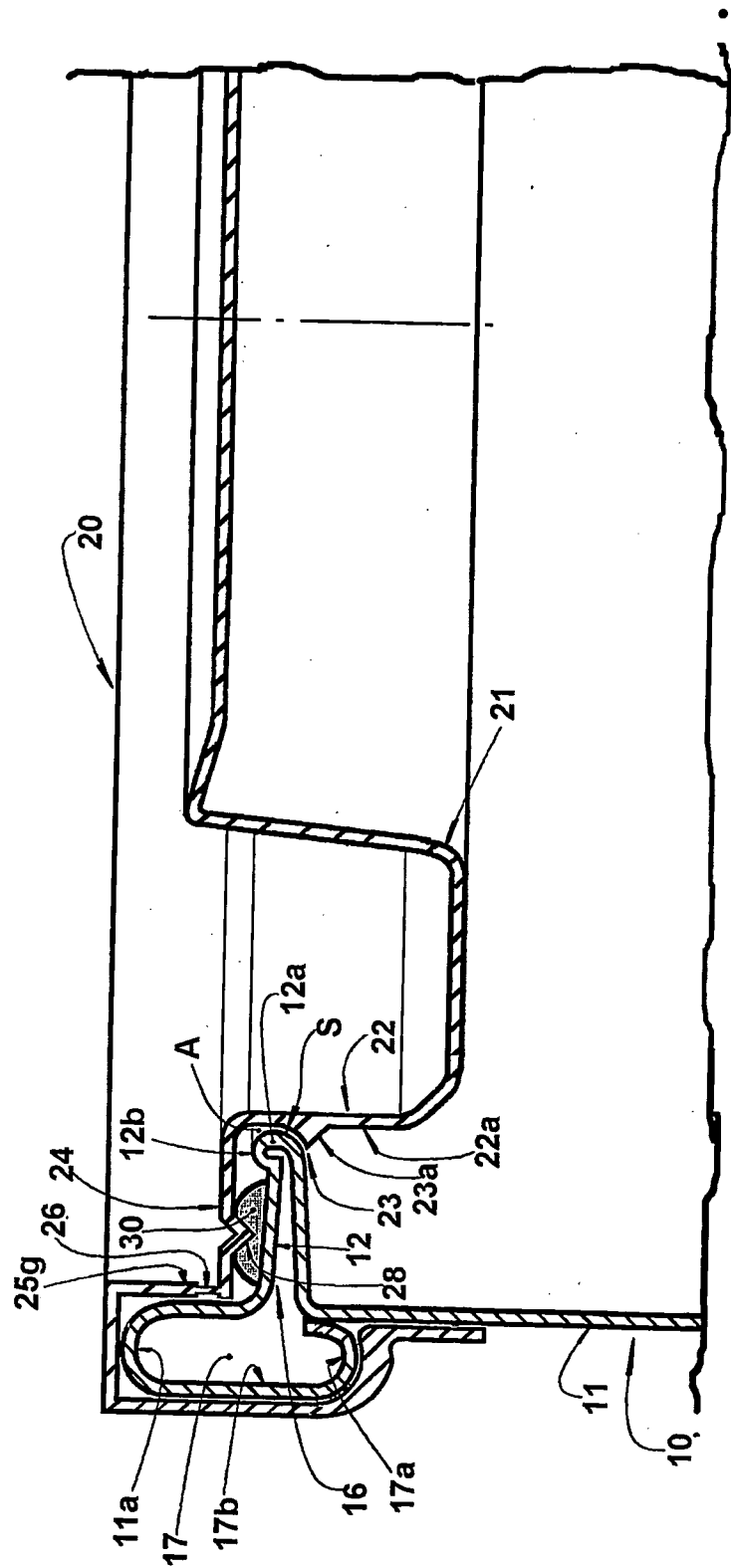


Fig. 9

REFERENCES CITED IN THE DESCRIPTION

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- BR PI02039508 [0008]