

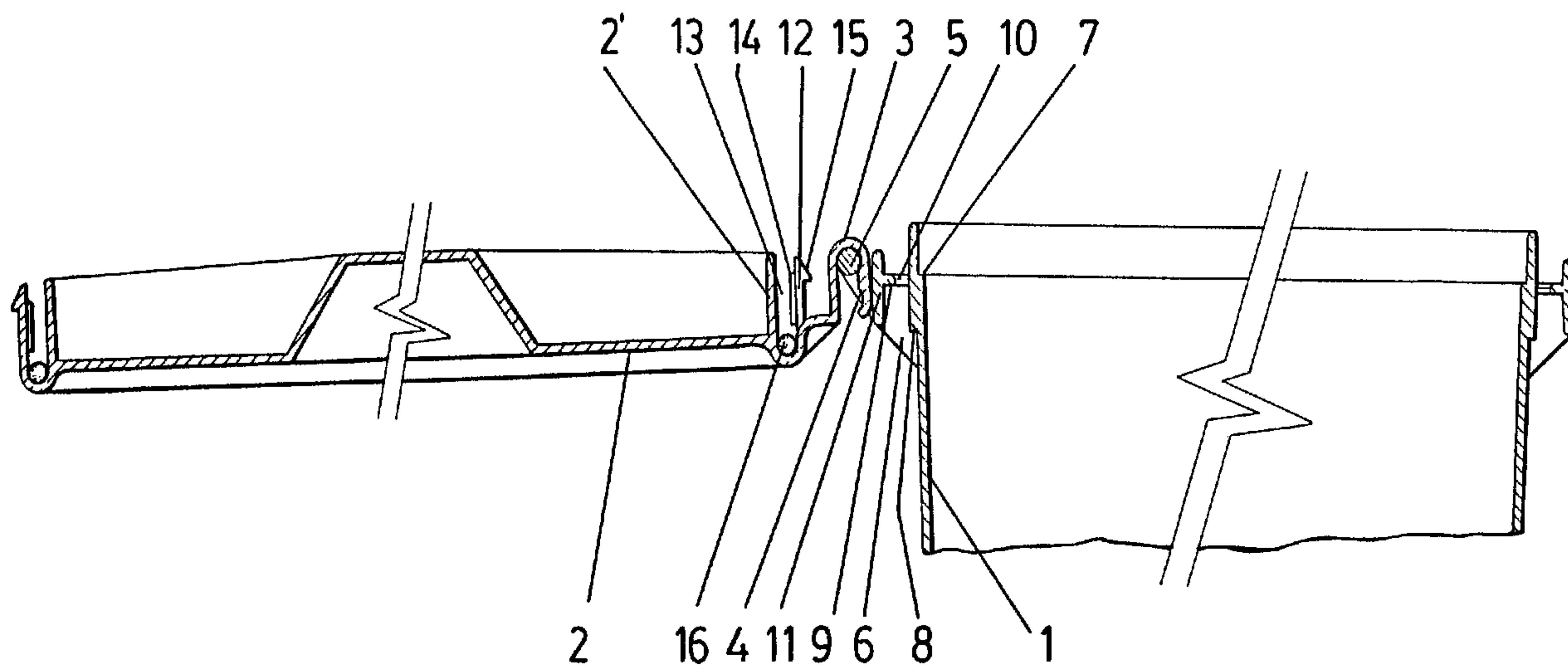


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(54) Title: IMPROVED CLOSURE AND HINGE SYSTEM FOR WASTE-CONTAINING CASES AND IMPLEMENT FOR INSPECTION OPENING



(57) Abrégé/Abstract:

The closure and hinge system is applicable between the lid (2) and the relevant waste-containing case (1), the lid (2) being provided with a pair of wings (2) having a slotted window (4) to be mounted on a transverse bolt (5) being the articulation and hinge element for the lid (2) proper, which has a perimetric skirt (12) having flanges (12') with heels (15) which upon the definitive closure are housed and locked in windows (10) provided in a perimetric wing (9) of the case (1). The bolt (5) may be positioned in a deep area (17) of the window (4), allowing the lid (2) to be opened and closed (2) as many times as desired, or in an outermost position being the area (18), in which the lid (2) is definitively closed upon the heels (15) being locked in the windows (10). Although the system is designed to achieve an inviolable closure of the case, an accessory implement allows it to be opened, to eventually inspect its contents.

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IMPROVED CLOSURE AND HINGE SYSTEM FOR WASTE-
CONTAINING CASES AND IMPLEMENT FOR INSPECTION OPENING

A B S T R A C T

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The closure and hinge system is applicable between the lid (2) and the relevant waste-containing case (1), the lid (2) being provided with a pair of wings (2) having a slotted window (4) to be mounted on a transverse bolt (5) being the articulation and hinge element for the lid (2) proper, which has a perimetric skirt (12) having flanges (12') with heels (15) which upon the definitive closure are housed and locked in windows (10) provided in a perimetric wing (9) of the case (1). The bolt (5) may be positioned in a deep area (17) of the window (4), allowing the lid (2) to be opened and closed (2) as many times as desired, or in an outermost position being the area (18), in which the lid (2) is definitively closed upon the heels (15) being locked in the windows (10). Although the system is designed to achieve an inviolable closure of the case, an accessory implement allows it to be opened, to eventually inspect its contents.

Figure 2.

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IMPROVED CLOSURE AND HINGE SYSTEM FOR WASTE-
CONTAINING CASES AND IMPLEMENT FOR INSPECTION OPENING

S P E C I F I C A T I O N

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OBJECT OF THE INVENTION

10 The present invention relates to a closure and hinge
system for waste-containing cases and particularly the
means with which the lid of a case is provided in order
for it to be articulately mounted on the mouth of said
container, and for said lid to be sealed, the above based
upon a perimetric edge of the lid having a pair of wings
that are mounted upon a bolt of the container which
15 constitutes the hinge or articulation system of the lid
proper, which is further perimetrically provided with a
skirt in which special wings are formed to be locked in
appropriate openings provided to such end in a perimetric
wing of the case proper.

20

The invention also relates to an implement allowing
the lid and the body to be disengaged once the case is
closed, i.e. the case to be opened, in the event of its
contents having to be inspected.

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BACKGROUND OF THE INVENTION

Some waste-containing cases require a sealing system
and further that once the appropriate lid is closed, the
30 same be locked in order to prevent not only that it may
be opened but to moreover any manipulation whatsoever
tending to open said lid.

Containers of this kind are clearly designed for
35 special waste, namely waste originating in hospitals or

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elsewhere which may be contaminating or even result in accidents or injuries, for instance syringes, sanitary materials, chemical products used in medicine, and in general waste of any other kind whatsoever requiring the container to be sealed, because of its bad smell or the risk of contamination or accident, ruling out any chance of the case housing said products being opened.

European patent number 0168877 describes a container with a closure system based upon its lid being provided with a perimetric skirt with outwardly arcuately and divergently projecting flanges that are inserted by resilient deformation in windows purposely provided in an inner perimetric wing located at the top mouth of the actual container, such that once the lid flanges extend beyond said container windows, they are retained due to their resilient springback, whereupon there is no chance of opening taking place.

The closure system described in said European patent 0168877 does not however include lid hinge means enabling the lid to be opened and not definitively closed until the container is full of waste products.

Furthermore, the flanges constituting the means for locking the lid after it is definitively closed can be manipulated and the lid opened by manually effected resilient deformation.

In conclusion, although the lid of European patent 0168877 meets the requirement of effecting a seal, and the closure achieved may indeed be deemed to be effective against potential attempts to open it, its drawback is nevertheless that there are no hinge means enabling the lid to be opened and closed to place the waste, before it

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is definitively closed, nor indeed are there suitable means to fully preventing manipulation and attempted opening of the lid after it is definitively closed as aforesaid.

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DESCRIPTION OF THE INVENTION

10 The system subject hereof, which applies to all containers having a lid for certain waste products as explained in the preceding section, is particular in that the lid is provided with a system hinging it to the case, enabling the lid to be opened as many times as desired before it is definitively locked, for the hinge system allows the lid to be opened and closed, even if closure
15 is not definitive, since the lid will fit on the mouth of the case without being closed and definitively locked unless the actual user so desires.

20 In particular, the closure system of the invention is based upon the lid having its corresponding perimetric skirt provided with a pair of wings arranged parallel to one another and having a slotted window or deep groove in which a bolt crosswise thereto and provided in the actual case or container is positioned, said bolt to be arranged
25 between two brackets projecting perpendicularly from the lateral surface of the case, close to its mouth.

30 A means is thus obtained for mounting and hinging the lid, which is moreover provided with a number of flanges formed on the perimetric skirt, said flanges having a sloped projection that allows them to be easily inserted in windows purposely provided in a perimetric wing of the case, and being locked when such projections extend beyond said windows, although when they do not so

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extend beyond the same, the lid may be opened and closed without being locked.

5 As for the perimetric wing emerging from the lateral surface of the case, said wing containing the windows for locking the flanges on the perimetric skirt of the lid, such has a crosswise upward and downward expansion which defines an upright sector perpendicular to the horizontal sector in which the said windows are provided, the above
10 in order for the upright sector to constitute a means preventing the insertion of tools with which the closure means could potentially be prised to open the lid.

15 It should also be noted in this respect that right above the perimetric wing of the case, the wall of such case is substantially weakened on its inner surface and thus it is the case that is deformed, specifically its mouth is radial contracted, in a lid engagement operation and until such engagement is definitively achieved. This
20 deformation of the mouth of the case is intermittent, at each of the flanges on the lid, since in addition to an inner weakening of the mouth of the case, strengthening ribs are located on its outside around the windows on the perimetric wing of the case body.

25 The invention also deals with an implement that, as aforesaid, allows the case to be opened once it has been definitively closed in order that its contents may be inspected. Said implement comprises a ring the shape and
30 size of which are suited to the periphery of the body, close to the perimetric wing of said body, which it approaches from the bottom of the case body, said ring having a plurality of teeth, their number and position matching those of the windows on the perimetric wing,
35 each tooth defining an inner inclined plane to internally

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deform the flanges on the lid, and an inner ledge for it to be axially displaced with respect to the body.

In accordance with an aspect of the present invention, there is provided an improved closure and hinge system for waste containers wherein each container comprises a closure lid that must be locked to the container in the definitive position of closure to render opening thereof impossible, adjusting a top edge of the container proper in a perimetric groove purposely formed on the lid, the groove having a sealing gasket that is pressed by said top edge of a mouth of the case for the same to be sealed, wherein a side surface of the lid is provided with wings having a slotted window, in which a bolt provided on the container and lying close to an outer lateral surface of said container is arranged crosswise, said lid having a number of arcuate flanges projecting from a lower edge of a perimetric skirt, which flanges are provided with a claw-like heel constituting a locking means when the lid is definitely closed on the container, whereupon said heels cross through windows provided on a perimetric wing of the lateral surface of the container.

In accordance with another aspect of the present invention, there is provided a closure system for a waste container, which comprises (A) a container body having a mouth defining an edge, and a wall of the container, having an interior surface, and an exterior surface, (B) a lid having a covering surface for covering said mouth, a peripheral first groove in the circumference of said lid, said first groove being open in a direction away from said covering surface and defining (Bi) an inner peripheral wall having an outer free end, and (Bii) an outer peripheral wall having an outer free end with peripherally spaced lockable detent projections at said outer free end thereof, said

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inner and outer peripheral walls being substantially perpendicular to said covering surface, (C) a sealing gasket within said first groove for having said edge contacting said gasket when said lid is tightly closed over said mouth, 5 (D) a lateral extension at a periphery of said lid outwardly of said first groove and having a second groove in said extension, said second groove being open in a direction that is opposed to the direction of the opening in said first groove, said second groove being provided for accommodating 10 a hinge for attaching the lid to said mouth, said hinge comprising a hinge pin that is attached to the exterior of said container, (E) a peripheral lateral extension formed on said container adjacent to its mouth and extending horizontally outwardly therefrom, said extension having a 15 horizontal extension part ranging outwardly from the exterior surface and terminating in an outer end, and having an upper and a lower surface, and peripherally spaced openings therein, whereby, upon closing the lid over said mouth for firmly locking it in place, said peripherally 20 spaced locking detent projections enter said peripherally spaced openings and said detent projections firmly lock said lid in place by said detent projections engaging said lower surface of said horizontal extension.

DESCRIPTION OF THE DRAWINGS

25 In order to provide a fuller description and contribute to the complete understanding of the characteristics of this invention, a set of drawings is attached to the specification which, while purely illustrative and not fully comprehensive, shows the 30 following:

Figure 1. - Is a side elevation section view of the top, namely the mouth, of a case on which the relevant

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closure lid is mounted, in an open position, showing the actual hinge means.

Figure 2. - Is a close-view of the lid hinge system, with the lid in a non-definitive closed position, i.e. without the flanges provided thereon locked in the relevant windows of the body.

Figure 3. - Is a close-view resembling that of the preceding figure, albeit with the lid in the definitive closed position, i.e. with its flanges locked in the windows provided on the perimetric wing of the case.

Figure 4. - Is a side view of the lid, showing the locking flanges and the two wings constituting the lid hinge means to the relevant case or container in which said lid is applicable.

Figure 5. - Is a partial perspective close-view of the mouth of the body, showing the strengthening ribs around the weakened areas.

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Figure 6.- Is a sectional sequence of the various case closing stages, showing the resilient deformation and subsequent springback of the case body.

5 Figure 7.- Is a partial side elevation close-view of the case opening implement.

Figure 8.- Is a sectional close-view of said implement.

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Figure 9.- Is the implement of the preceding figure at the case body deformation stage, for the lid to be disengaged.

15 **PREFERRED EMBODIMENT OF THE INVENTION**

With reference to the figures aforesaid, the closure and hinge system of the invention is applicable to a case (1) of the type containing certain waste products that must be closed with the relevant lid (2) when full, the definitive closure having to be seal which cannot be opened by undue manipulation.

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Now then, the hinge system comprises a pair of lateral wings (3) on the actual lid (2), said wings having a slotted window or deep groove (4) in which a bolt (5) is positioned, located crosswise between both wings (3) and which is provided on the actual case (1), which bolt (5) will be located, for instance, between a pair of brackets (6) provided on the actual lateral surface of the case (1). The bolt (5) will logically be arranged closed to the mouth of the case (1), such mouth having a pair of ledges (7) and (8), the first one being an inner ledge and the second one an outer ledge, their function to be explained hereinafter.

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Furthermore, the lateral surface close to the actual top edge of the mouth of the case (1) has a perimetric wing (9) provided with windows (10), such wing extending into another wing (11) crosswise thereto, which will result in an outer upright stiffening portion (11) and an inner horizontal portion (9) where the windows (10) are precisely provided.

For its part, the lid (2) has a perimetric skirt (12) defining with another inner skirt (2') a groove (13) which with the lid (2) closed will constitute the means for positioning the top sector of the mouth of the actual case (1), as shown in figures 2 and 3. The skirt (12) has arcuate flanges (12') having a claw-like projection or heel (15) and the flanges (12') are internally provided with strengthening ribs (14) on their underside. The heel (15) defines a slope and a ledge to enable insertion and locking of the perimetric wing (9) of the case (1) in the windows (10). A sealing gasket (16) is provided on the bottom of the groove (13).

The arcuate configuration of the edge of the flanges (12') at the ends of the perimetric skirt (12) of the lid brings about a self-centering effect when the lid (2) is being closed over the mouth of the case (1).

As for the window (4) for positioning the bolt (5) constituting the hinge pin of the lid (2) proper, such has two distinct areas, one between the bottom (17) of such groove, and another one being an area (18) close to the opening of the groove (4) proper, thereby for the lid to remain stable, upon being mounted on the bolt or hinge pin (5) in any of such areas (17) and (18), due to their configuration.

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In accordance with the characteristics described above, the open lid (2) will be located with the bolt (5) on the deepest area (17) of the groove (4) of the wings (3) of the lid (2) proper.

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This position allows the lid (2) to be mounted and swung with respect to the case (1), and opened and closed without the closed position, as shown in figure 2, being definitive, i.e. the top sector of the mouth of the case (1) will be partly positioned in the groove (13) but not fully, and the projections or heels (15) of the flanges (12') will not therefore enter the windows (10) and there will therefore be no definitive locking, thereby allowing waste to be placed in the container (1) until it is full.

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Definitive closure takes place when the container (1) is full, or when desired, to which end from the provisionally closed position shown in figure 2, the lid (2) is pushed down, thereby for the bolt (5) to move to the relevant position at the area (18) of the window (4) of the wings (3) forming part of the hinge system, in which position the flanges (12') will logically have been downwardly displaced upon the lid (2) being lowered and the projections or heels (5) will cross through the windows (10) and be locked, upon extending beyond the same, on the ledge defined externally on each of the projections or heels (15), whereupon the lid (2) will be definitively closed and may not be opened, for not even the flanges (12') may be manipulated, since this will be prevented by the transverse perimetric wing (11) emerging perpendicularly to the wing (9) where the windows (10) housing the locking heels (15) are provided.

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This operation takes place due to a resilient deformation of the mouth of the body (1), as shown

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particularly in the operative sequence of figure 6, to which end the mouth of the body (1) is weakened above the inner ledge (7) aforesaid, thereby for a lesser thickness to allow said resilient deformation, which takes place zonally, specifically at each of the flanges (12') on the lid, since the mouth of the body (1) in this weakened sector is stiffened by means of ribs (19), as may be clearly seen in figure 5, around the windows (10).

In this definitively closed position, the top edge of the mouth of the case (1) will push against the seal (16) provided on the bottom of the groove (13), as shown in figure 3, thereby establishing a total seal preventing the exit of smells.

The double ledge (7) and (8) on the lateral surface, both inside and outside the container (1), allows the lid to be self-centered in the groove (13), the perimetric inner skirt (2') on the actual lid assisting this, as shown in figures 2 and 3.

Although the case is designed so that, once it is definitively sealed, since full, it cannot be opened, it has been provided that if its contents should eventually need to be inspected, it may be opened, specifically with the assistance of the implement shown in figures 7 and 8, which in turn acts as shown in figure 9.

More specifically, said implement comprises a ring (20) capable of receiving therewithin the body (1) of the case, said ring (20) moving axially from the bottom of the case towards its mouth, the ring having a plurality of teeth (21), their number and position matching that of the windows (10) where the flanges (12') are locked, each of said teeth (21) being provided with an outer inclined

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plane (22) designed to impinge upon the ring associated to the mouth of the case body (1) to internally deform the flanges (12') and thereby allow the heels (15) to be released from the wing (9), for its front (23) impinges on the inclined plane of said heels (15), also pushing them inwards, and finally an inner ledge (24) pushes the front of said flanges (12') to cause the lid to be definitively disengaged from the body (1).

We feel that the description need not be extended any longer for any expert in the art to have grasped the full scope of the invention and the advantages it offers.

The materials, shape, size and layout of the elements may be altered provided that this entails no modification of the essential features of the invention.

The terms used to describe the invention herein should be taken to have a broad rather than a restrictive meaning.

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CLAIMS:

1. An improved closure and hinge system for waste containers wherein each container comprises a closure lid that must be locked to the container in the definitive position of closure to render opening thereof impossible, adjusting a top edge of the container proper in a perimetric groove purposely formed on the lid, the groove having a sealing gasket that is pressed by said top edge of a mouth of the case for the same to be sealed, wherein a side surface of the lid is provided with wings having a slotted window, in which a bolt provided on the container and lying close to an outer lateral surface of said container is arranged crosswise, said lid having a number of arcuate flanges projecting from a lower edge of a perimetric skirt, which flanges are provided with a claw-like heel constituting a locking means when the lid is definitely closed on the container, whereupon said heels cross through windows provided on a perimetric wing of the lateral surface of the container.

2. An improved closure and hinge system for waste-containers, as in claim 1, wherein the window for mounting and hinging the lid to the container has two areas at different heights, in either of which the bolt being stably positioned and thus when the latter is positioned in a deepest area, the lid is openable and closable as many times as desired to place waste in the container, whereas when the bolt is positioned in an outermost area, the lid will take up the definitely closed position, the heels crossing through and being locked in the windows of the perimetric wing of the container.

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3. An improved closure and hinge system for waste-containers claimed in any one of claim 1 or claim 2, wherein the perimetric wing of the container where the windows are provided for the heels on the flanges of the lid to pass and be locked, has a transverse upright wing located externally to define a means preventing access of prising tools to attempt to open the case after the lid is definitively closed, a wall of the container being substantially weakened on its inner face and following a ledge right above the perimetric wing in order that the lid be engaged by a resilient contraction of the mouth of the body.

4. An implement for opening a waste-container fitted with the closure and hinge system as claimed in any one of claims 1 to 3, wherein said implement comprises a ring having a size and shape to fit about a circumference of the container, reaching the circumference of the container from a bottom end of the container, which ring has a plurality of teeth, their number and position matching those of the windows of the perimetric wing of the container, each of such teeth being provided to have a slope or outer inclined plane through which to impinge on an outer ring of the body as the implement is moved up, having a front impinging upon the inclined plane defined on the heels on the flanges of the lid and an inner ledge for pushing such flanges and ejecting the lid after they are deformed.

5. A closure system for a waste container, which comprises

(A) a container body having a mouth defining an edge, and a wall of the container, having an interior surface, and an exterior surface,

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(B) a lid having a covering surface for covering said mouth, a peripheral first groove in the circumference of said lid, said first groove being open in a direction away from said covering surface and defining

5 (Bi) an inner peripheral wall having an outer free end, and

(Bii) an outer peripheral wall having an outer free end with peripherally spaced lockable detent projections at said outer free end thereof,

10 said inner and outer peripheral walls being substantially perpendicular to said covering surface,

(C) a sealing gasket within said first groove for having said edge contacting said gasket when said lid is tightly closed over said mouth,

15 (D) a lateral extension at a periphery of said lid outwardly of said first groove and having a second groove in said extension, said second groove being open in a direction that is opposed to the direction of the opening in said first groove, said second groove being provided for
20 accommodating a hinge for attaching the lid to said mouth, said hinge comprising a hinge pin that is attached to the exterior of said container,

(E) a peripheral lateral extension formed on said container adjacent to its mouth and extending horizontally
25 outwardly therefrom, said extension having a horizontal extension part ranging outwardly from the exterior surface and terminating in an outer end, and having an upper and a lower surface, and peripherally spaced openings therein, whereby, upon closing the lid over said mouth for firmly
30 locking it in place, said peripherally spaced locking detent

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projections enter said peripherally spaced openings and said detent projections firmly lock said lid in place by said detent projections engaging said lower surface of said horizontal extension.

5 6. The closure system of claim 5, wherein said second groove has two lateral interior depressions vertically spaced from one another in a side of the second groove, for accommodating said hinge pin, whereby upon a temporary closing of the lid said hinge pin is moved to one of said
10 depressions, and upon the firmly locked closing of the lid said hinge pin is moved to the other one of said depressions.

7. The closure system of claim 5, further comprising a vertical extension integrally joined at said outer end of
15 and ranging above and below said horizontal peripheral lateral extension for preventing the possibility of prying open said lid when it is firmly closed over said mouth.

8. The closure system of claim 7, wherein an edge portion of said container wall in the vicinity of said mouth
20 is deformable by bending said edge portion toward the interior of the container, and said outer peripheral wall of said first groove has means on its surface facing the interior of said first groove, for temporarily deforming said edge portion during the firm closing of said lid over
25 said container mouth.

9. The closure system of claim 7, further comprising an implement for opening the container when the lid is firmly closed over the container mouth, the implement comprising an annular member of a dimension to fit about a
30 circumference of said waste container body, a plurality of peripherally spaced teeth, said teeth being integral with

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said annular member, said teeth being of a same number and width as the number and width of said peripherally spaced openings in said horizontally extending peripheral lateral extension, each of said teeth having an end formed for
5 pushing from below against one of said locked detent projections in said outer peripheral wall, whereby upon an upward movement of said implement said lockable detent projections are is deformed by being forced out of engagement with said lower surface of said horizontally
10 extending peripheral lateral extension and said lockable detent projections are becomes released from their locked position to permit easy removal of said lid from over said mouth.

10. The closure system of claim 9, wherein each of
15 said teeth is formed with an outwardly sloping vertical surface for contacting said vertical extension that is below said horizontal lateral extension, for facilitating the release of said detent projections from their locked position.

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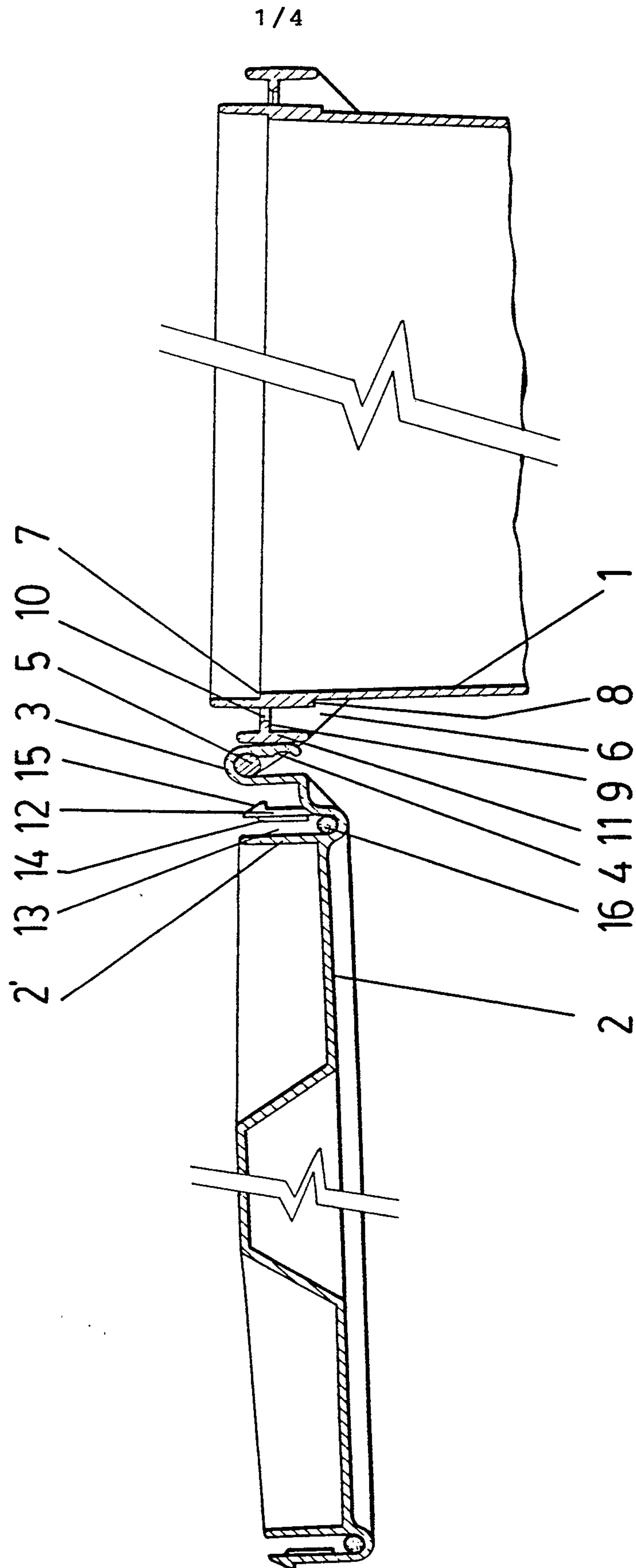


FIG. 1

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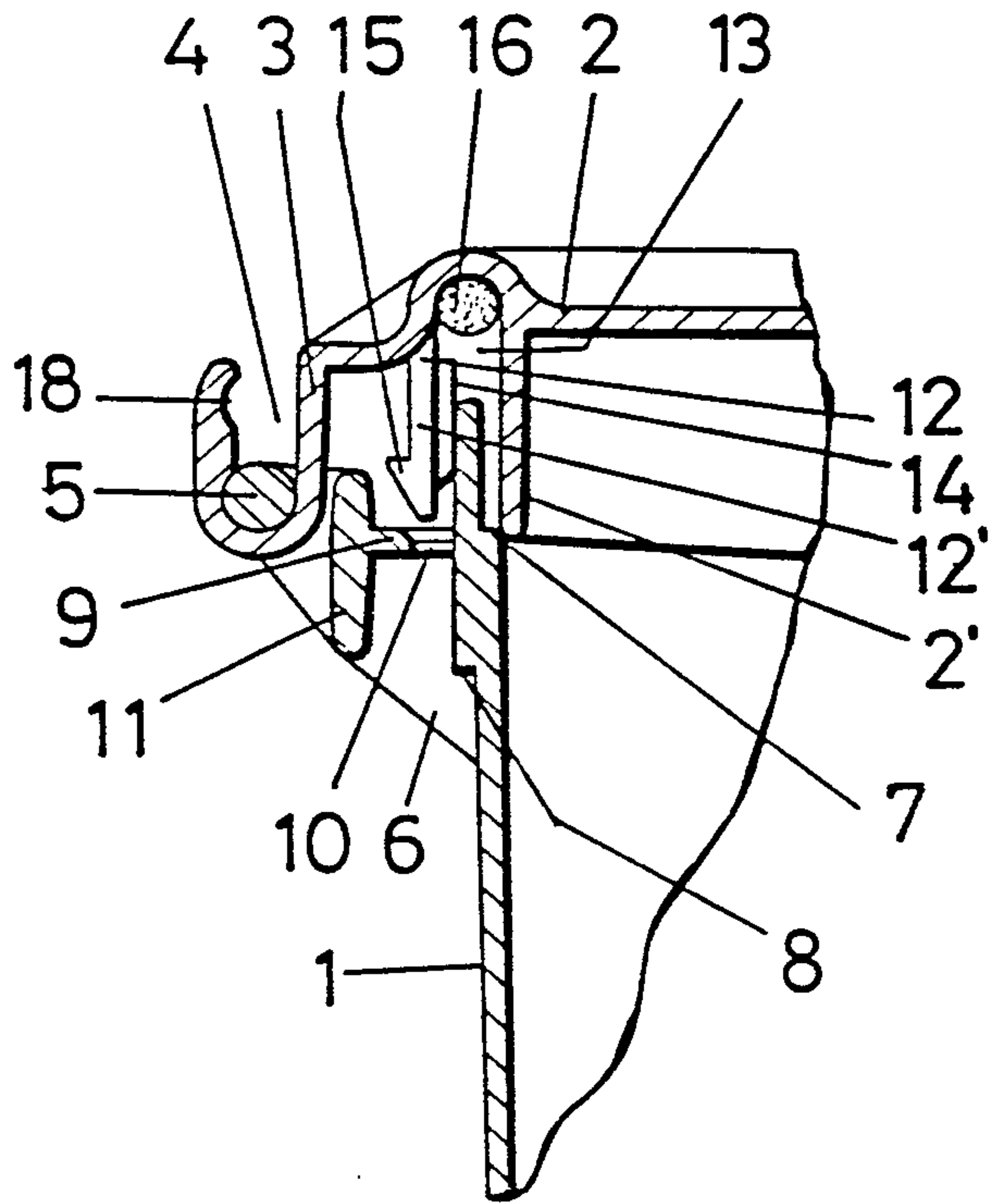


FIG.-2

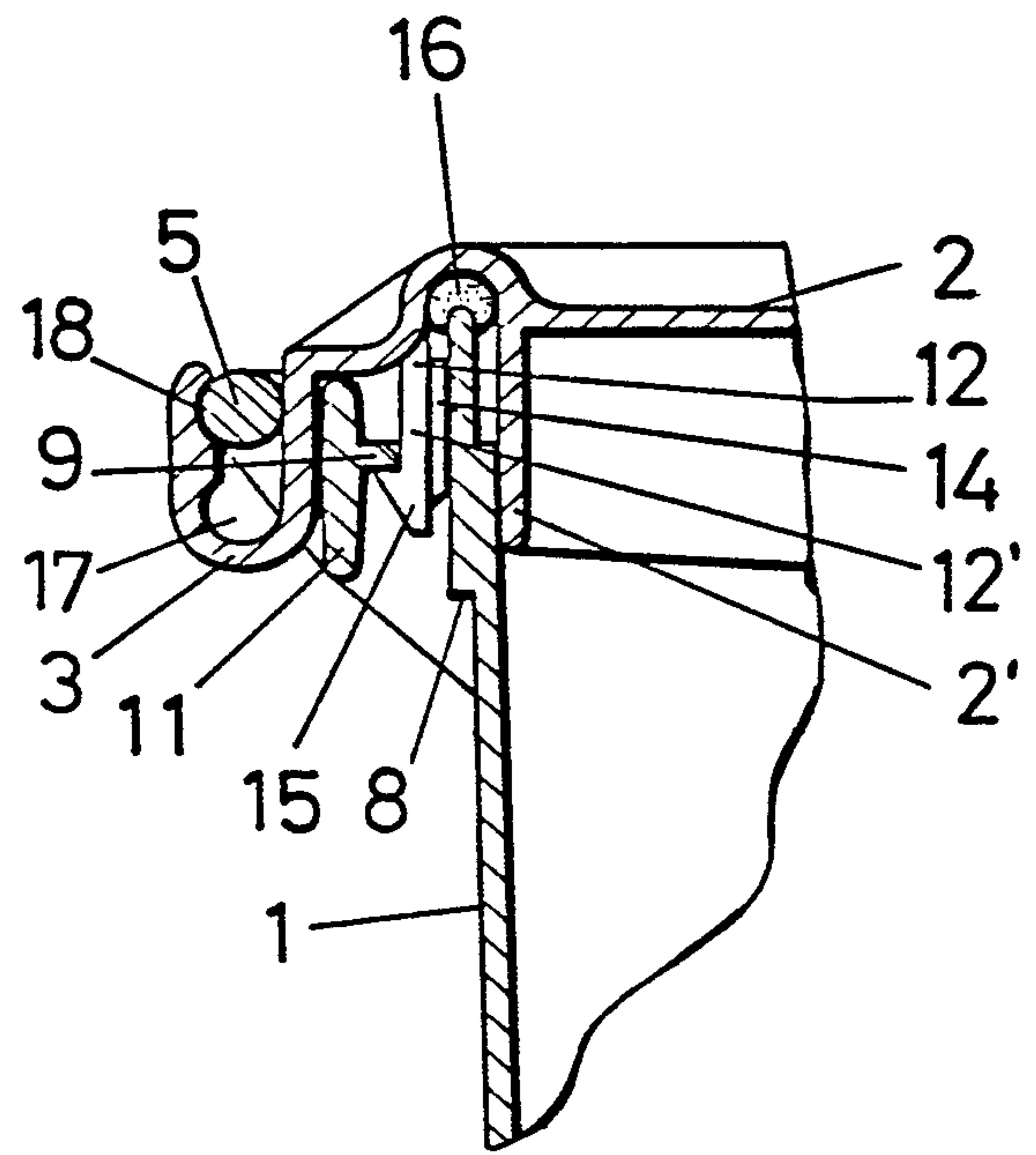


FIG.-3

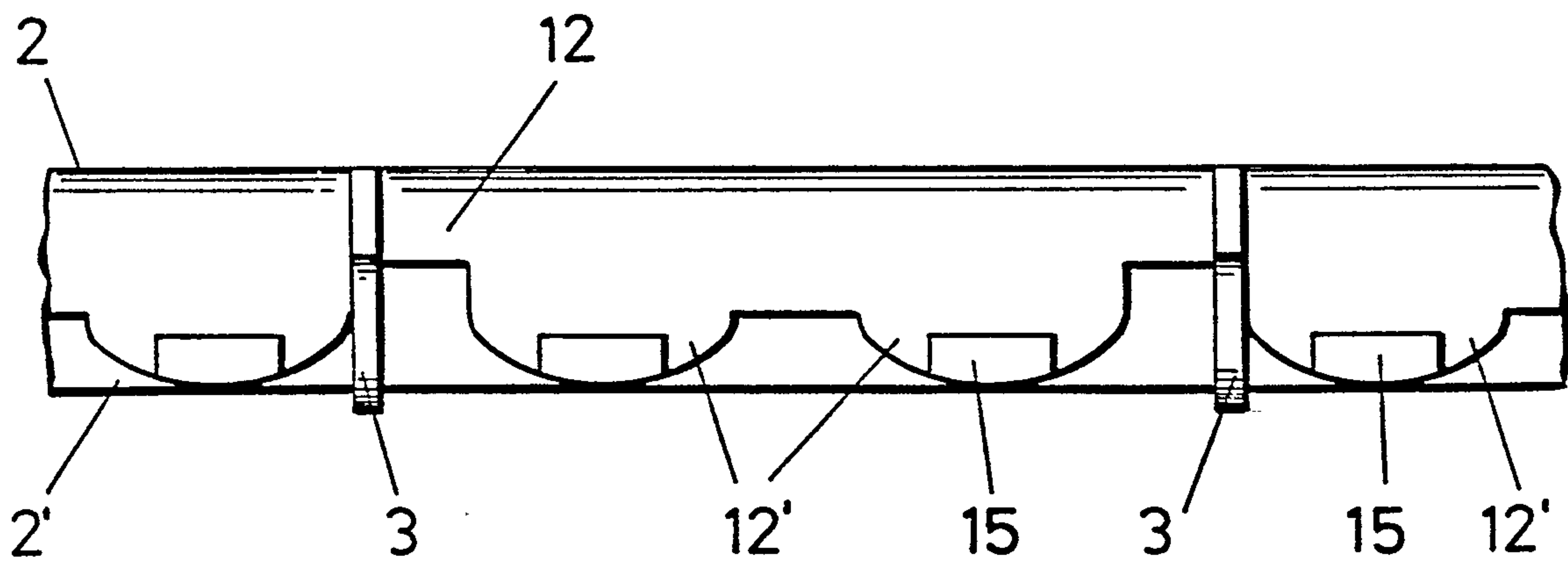
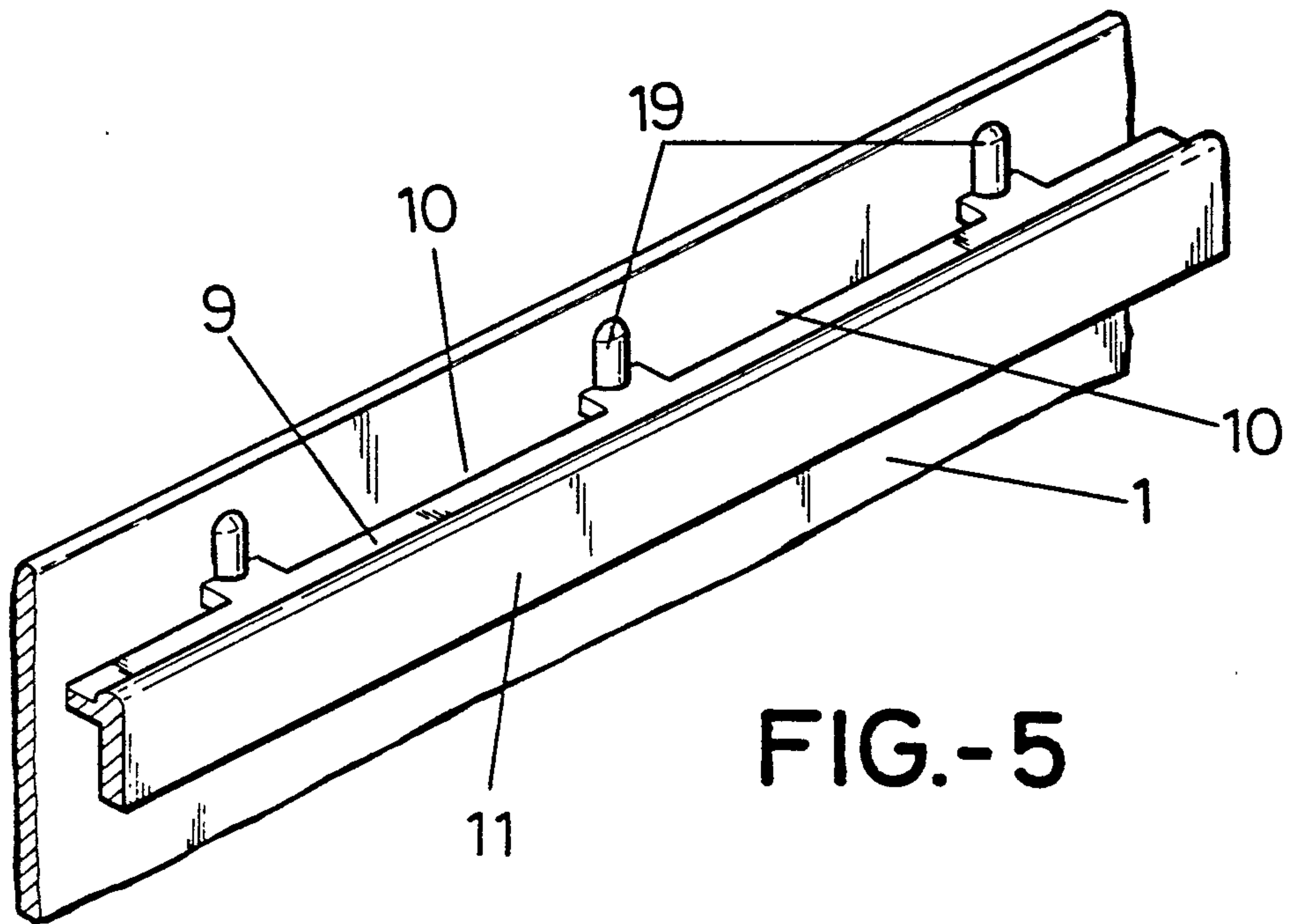
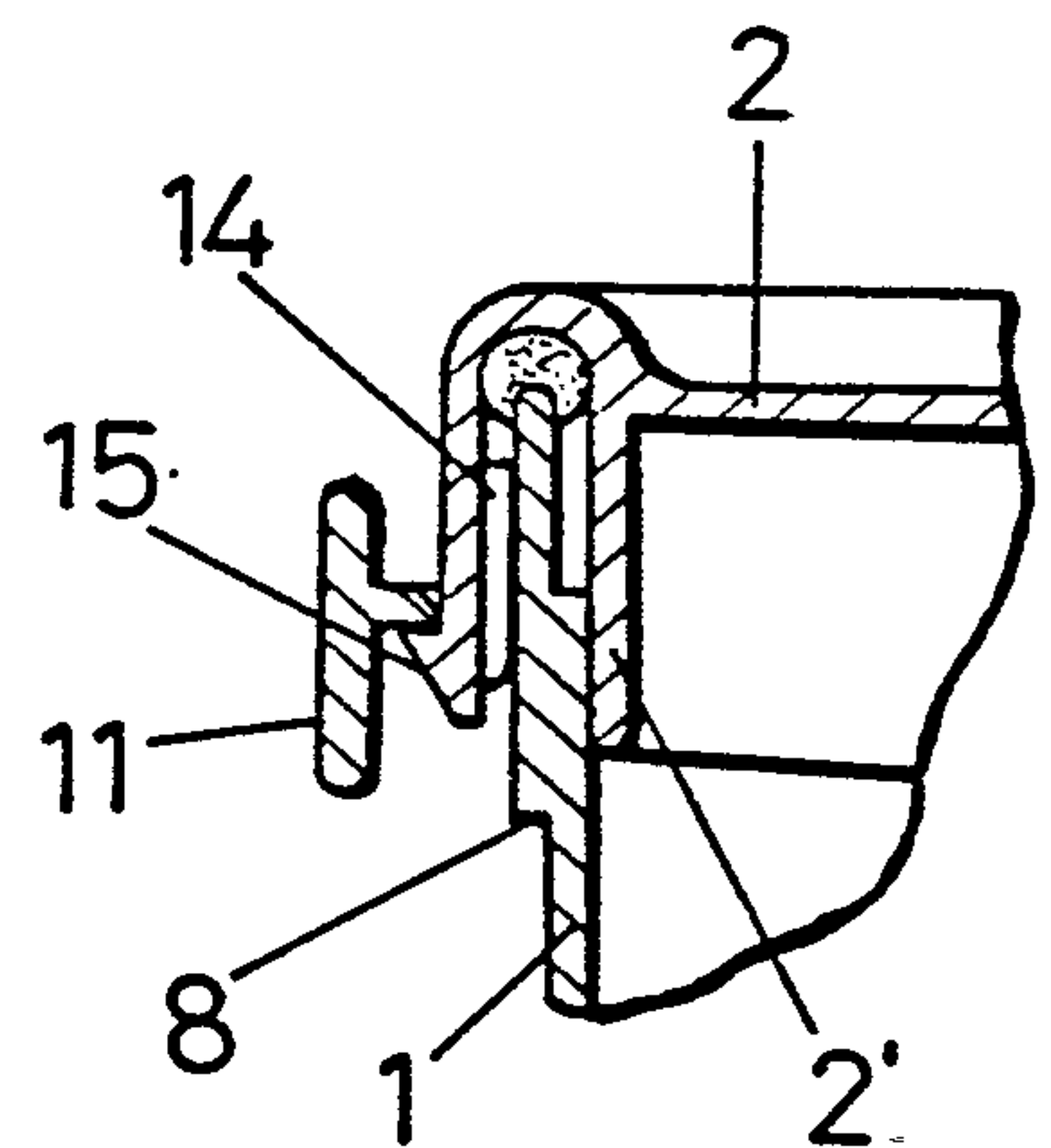
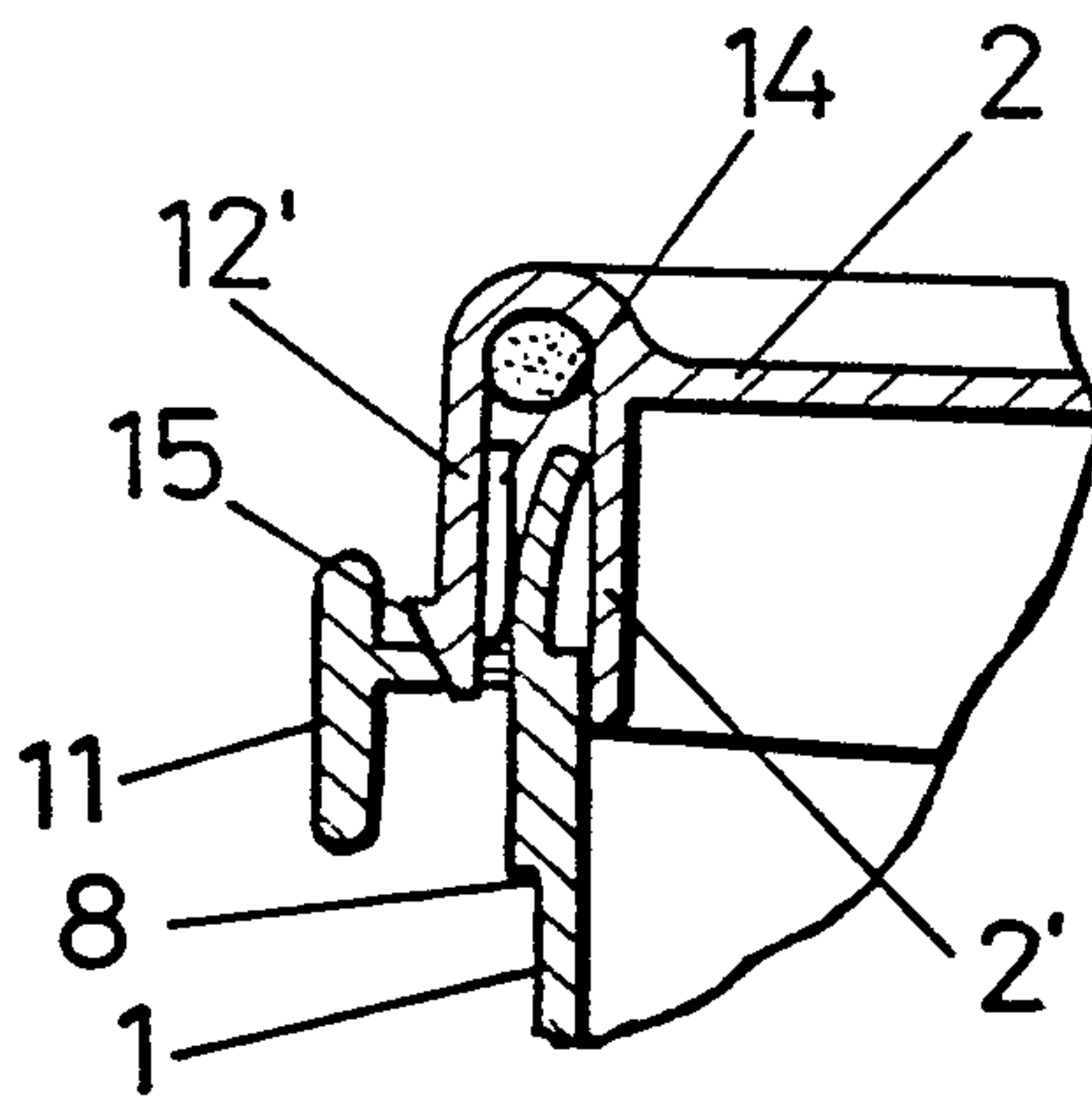
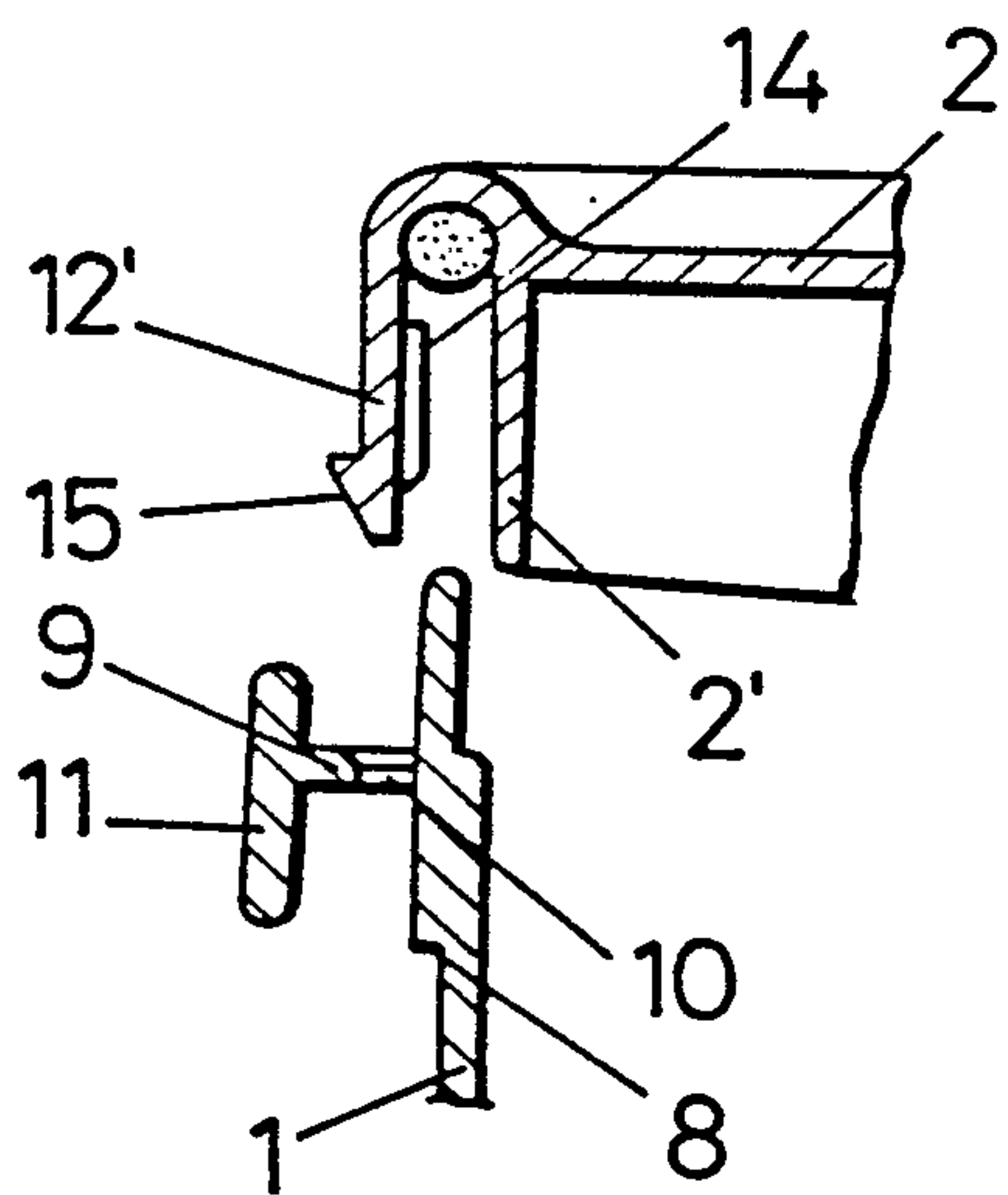
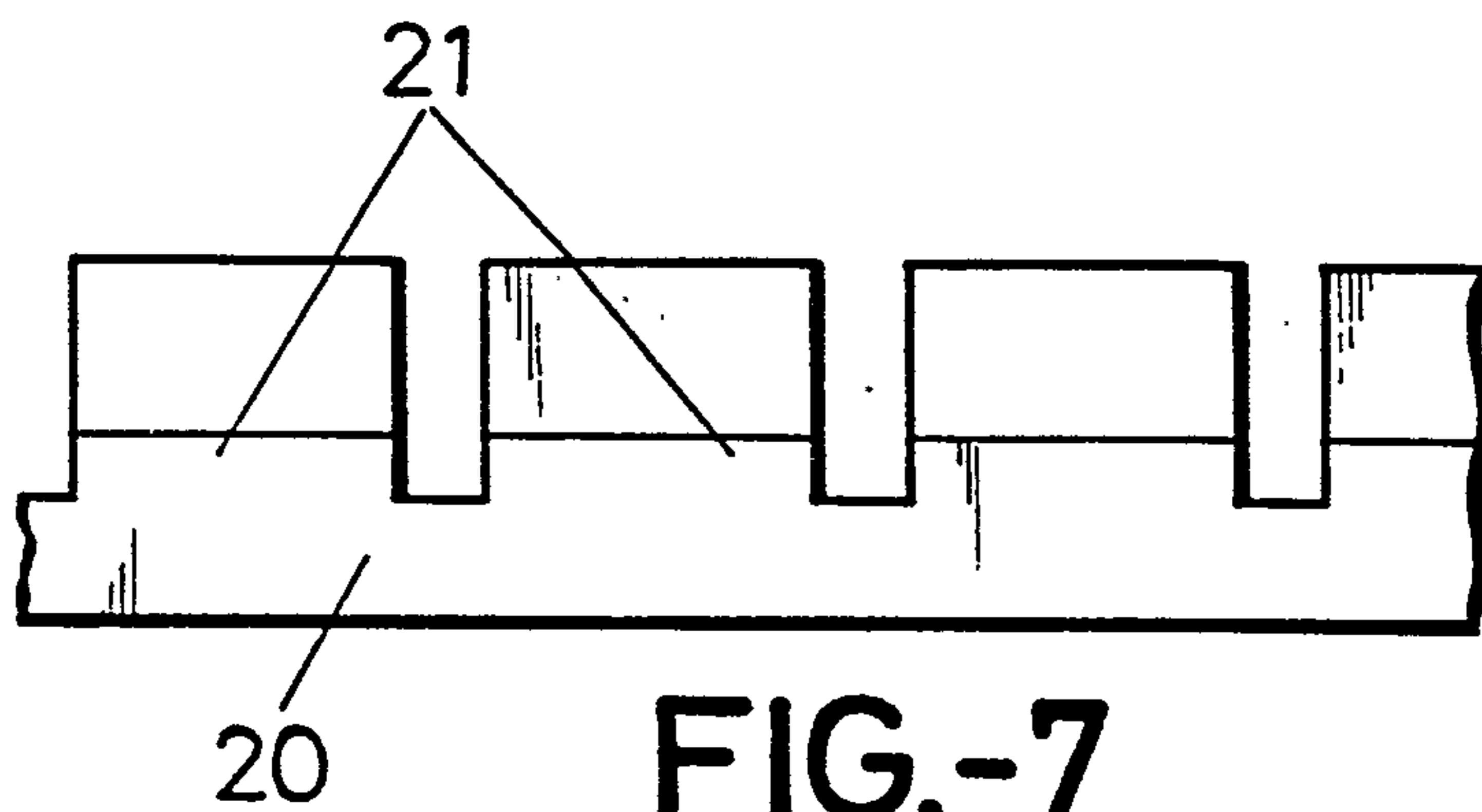
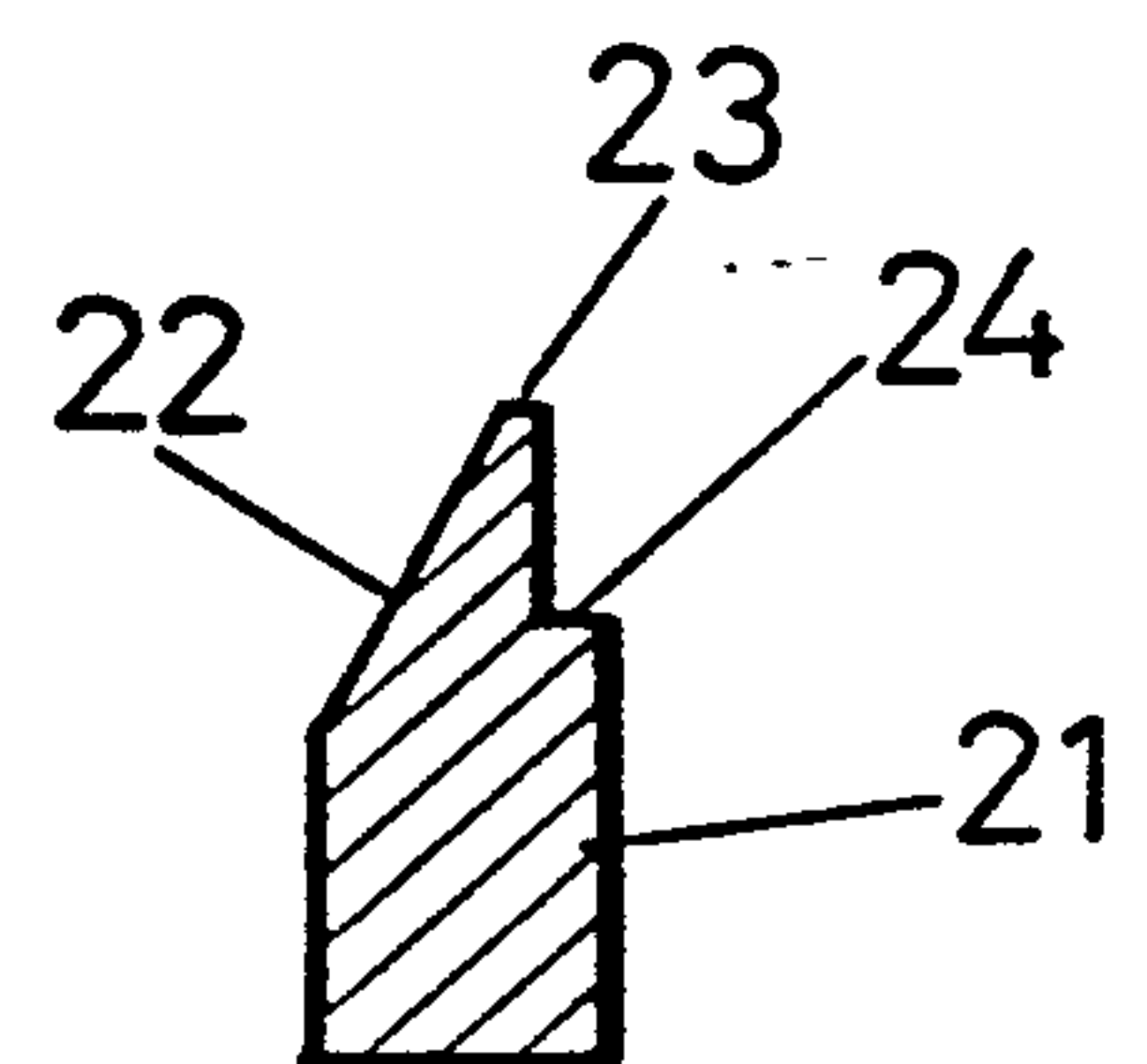


FIG.-4

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**FIG.-5****FIG.-6****FIG.-7****FIG.-8**

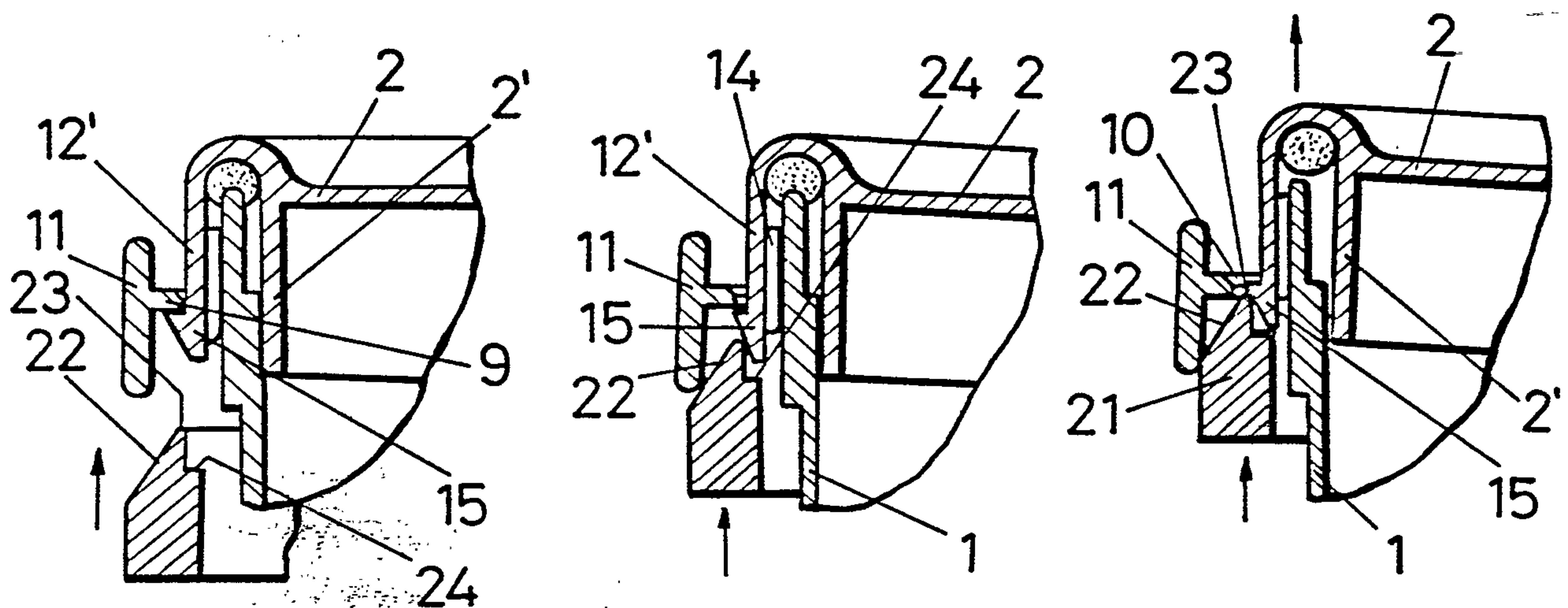


FIG.-9

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