

12

# EUROPEAN PATENT APPLICATION

21 Application number: 85105911.3

51 Int. Cl.<sup>4</sup>: **B 65 D 41/48**  
**B 65 D 55/08**

22 Date of filing: 14.05.85

43 Date of publication of application:  
 20.11.86 Bulletin 86/47

84 Designated Contracting States:  
 BE DE FR GB IT NL

71 Applicant: **ACI AUSTRALIA LIMITED**  
**Level 31 200 Queen Street**  
**Melbourne, VIC 3000(AU)**

72 Inventor: **Granat, Rodney John**  
**22 Blake Street**  
**Caulfield(AU)**

74 Representative: **Perani, Aurelio et al,**  
**c/o JACOBACCI-CASETTA & PERANI S.p.A 7, Via**  
**Visconti di Modrone**  
**I-20122 Milano(IT)**

## 54 A closure for an open necked container.

57 The closure is adapted to extend over the opening of a container and to this end it comprises a container cover member (10) and a cover holding member (16).

The cover member (10) has a central panel portion (11) extending over the open end of the container and a peripheral skirt portion (12) to extend at least marginally over the container neck (13).

Between the peripheral skirt portion (12) and the central panel portion (11) is located a sealing recess in which a sealing material (14) may be placed. The cover member (10) is made of a substantially resilient material such as a sheet metal.

The cover holding member includes a cover encapsulating portion (16) and a depending ring portion (17) adapted to extend over the annular peripheral edge portion of the container cover member (10) and to hold it downwardly on the container.

By the use of the invention it is possible to obtain the advantages of a metal closure and the advantages of a plastics closure without substantially increasing the cost.

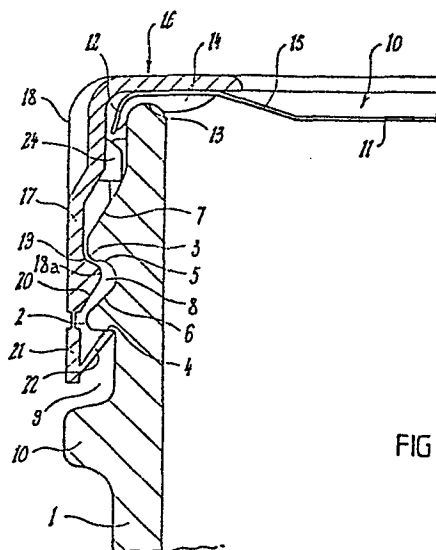


FIG 1

"A closure for an open necked container"

This invention relates to a closure means for open neck containers such as jars and the like.

5 A large variety of open top containers of glass and other materials are known and a large number of tops, caps or other closures are known for use in conjunction with them.

10 Open-topped containers such as jars of the type that may be used subsequently as a drinking glass are well known in the packaging art. Such containers are used widely for the sale of food items. The jars are provided with an outwardly-flanged or thickened portion surrounding the upper edge of the jar to provide an abutment for a jar closure. Where the container is to be subsequently used as a glass, the thickened portion or flange must not be of a substantial dimension. However, this makes it difficult to provide a suitable closure.

15 Metal closures are known that are provided with a substantially resilient annular skirt adapted to lock beneath the jar flange. However, these closure can be difficult to remove by hand. If a tool is used the closure may be deformed and may not be reusable. The tool may slip, causing lacerations. These deficiencies have caused a limitation to the use of containers of the type described.

20 For other applications jars are known having on their necks, ribs or screw threads by which closures may be connected. Metal or plastic closures

can be used. In recent times resilient metal closures have been provided that move between an outer position at atmospheric pressure and an inner position when the jar is under vacuum. Such a closure is described in Australian patent specification 538613.

In recent times there has also developed the need to provide tamper proof closures for containers and generally these comprise plastic type closures having a tear away portion that is removed before or during opening to indicate that the container has been opened. Generally these closures will be made of a plastics material since when plastics materials are used it is relatively easy to provide a tear away ring portion.

Thus in the packaging art there are a large number of conflicting objectives. Small differences may render a product commercially acceptable or not acceptable as far as utility is concerned and may also render the product economic or non-economic. Accordingly, it is difficult to provide a container and closure arrangement that meets with a wide range of objectives of the art and yet remains economic.

The object of the present invention is to provide a new and improved container closure that provides benefits over known container closures but yet which may be manufactured economically and simply.

The present invention provides a closure for an open necked container, characterized by the fact that it comprises a container cover member adapted to extend over and close the opening of the container and a cover holding member to hold said container cover member in sealing abutment with

the opening, said cover holding member including a cover encapsulating portion extending over the peripheral edge of said cover member, retaining means extending beneath said peripheral edge to hold said cover member within said cover holding member and a depending portion including container gripping means by which said cover holding member may be retained on the container.

The closure means includes a container cover member and a cover holding member. The invention also provides a cover member for use in the closure means and a cover holding member for the use therein as separate components.

The container cover member of the present invention is adapted to extend over the opening of the container and to this end is preferably a substantially planar member having a central panel portion extending over the open end of the container and a peripheral skirt portion to extend at least marginally over the container neck.

Between the peripheral skirt portion and the central panel portion may be located a sealing recess in which a sealing material may be placed such that the sealing material will abut against the container neck in use to provide an hermetic seal between the container cover member and the container neck.

The container cover may be made of any suitable material. In one preferred example the container cover member is made of a substantially resilient material such as a sheet metal. Preferably the central panel portion is formed with excess material so that it may move between two positions such as a concave position,

a central flat position or a convex position or any combination of them.

5 The cover holding member of the present invention includes a cover encapsulating portion adapted to extend over the annular peripheral edge portion of the container cover member and to hold it downwardly on the container.

10 The cover encapsulating portion may be of any suitable configuration as will be further discussed below. The cover encapsulating portion preferably includes an upper portion adapted to extend over the upper surface of the container cover member and a depending portion adapted to extend around the outer upper rim or neck of the container. The preferred upper  
15 portion and preferred depending ring portion may be joined in any suitable manner and by any suitable means. Preferably a plurality of joining web portions are provided for this purpose to define a plurality of expansion gaps between the upper portion and the  
20 depending ring portion. In one example of the present invention there are provided four joining web portions to define four expansion gaps but it will be appreciated that any number of joining web portions and expansion gaps may be provided without departing from the spirit  
25 of the present invention.

The web portions may include a plurality of substantially perpendicular ribs that extend between the preferred upper portion and depending ring portion as above discussed.

30 The cover encapsulating portion of the present invention includes cover retaining means. The cover

retaining means may be provided by a plurality of cover retaining projections or ribs extending inwardly from the preferred depending portion and are adapted to extend beneath the edge of the peripheral skirt portion of the container cover member as will further discussed below.

The cover encapsulating portion may also include container gripping means. The container gripping means may be provided by one or more container gripping projections extending inwardly from the preferred depending ring portion. In a preferred embodiment a container gripping rib is provided that extends circumferentially around the inner surface of the depending ring portion and is adapted to fit within a complementary holding groove in the container neck.

Alternatively, the container gripping means may be provided by a generally sinusoidal zone of the depending portion or other resilient means to abut against the container neck. This arrangement is particularly suitable for use with containers that do not have ribs or grooves on the container neck - such as those for subsequent use as drinking glasses. The sinusoidal gripping portions may be of substantially concertina form. The abutment peaks may be provided with abutment surfaces to increase the area of contact with the container wall. The legs of the preferred sinusoidal gripping means may be set at any desirable angle. An angle of between 35-77°, preferably between 45-70°, has been found satisfactory. In one example an angle of 58° has been used.

The cover encapsulating portion preferably includes tamper proof means. Preferably the tamper proof

means is provided by a tear strip which may be in the form of a tear strip extension to the preferred depending portion which may be severably connected thereto as a depending tear strip. The tear strip may be connected thereto by a plurality of severable connections or may be partly severed or may be connected through a weakened zone as is known in the art. The tear strip portion preferably includes an inwardly extending retaining member. The retaining member may be in the form of a retaining rib that extends annularly around the inner surface thereof. Preferably the retaining extension is adapted to extend within a retaining groove extending around the container neck as will be further discussed below.

The tear strip portion may include a tab by which it may be gripped and be severed manually from the depending ring portion.

The container to which the closure means of the present invention is applied may include an annular holding groove and an annular retaining groove defined between a plurality of ribs extending around the container neck. Those ribs may take the form of helical ribs if it is desired that the closure means of the present invention be removed by a screw threaded arrangement. In the preferred form of the present invention the ribs are annular ribs from which the closure means may be removed as will be further discussed below.

The closure means of the present invention preferably includes cover distortion means whereby to assist in removing the cover from the container. To this end, the cover distortion means may include one

or more distortion members on the inside surface of the depending ring portion and one or more complementary distortion members on the container neck whereby together to push a portion of the ring portion outwardly as the cover is turned. The distortion members may be provided by the cover gripping projections if desired and are preferably provided by a plurality of lugs adapted to perform both functions as further explained below.

The container may include guide means complementary to the distortion members and for example may be in the form of ramps to push the ring portion outwardly when contacted by a distortion member. Preferably as fully discussed below, the spacing between the distortion members is different to the spacing between guide members so that only one contact is made at any position.

The invention will now be further described with reference to the accompanying drawings in which:

Figure 1 is a cross-sectional view of one form of container and closure;

Figure 2 shows the container and closure of claim 1 in partial cross-section;

Figure 3 shows the container neck of figures 1 and 2;

Figure 4 shows in cross-section a container cover member;

Figure 5 shows in plan an alternative cover holding member;

Figure 6 is an inverse plan of the cover holding member of Figure 5;

Figure 7 is an elevation of the cover holding member of Figures 5 and 6; and



Figure 8 is an expanded view of a portion of the cover holding member of Figure 6.

In reference to the container and closure shown in Figures 1 to 3, there is shown a container neck 1. The container neck of this embodiment includes substantially annular ribs 2 and 3. The ribs 2 and 3 preferably each have a retaining shoulder 4 and 5 respectively and a ramp portion 6 and 7 respectively. The preferred ramp portions are uppermost and the preferred shoulder portions below for a purpose that will be more fully described below. Between the preferred shoulder portion 5 of rib 3 and ramp portion 6 of rib 2 is defined a holding groove 8 and below the shoulder portion 4 of rib 2 is defined the retaining groove 9. An annular rib 10 may also be provided on the container neck if desired.

Preferably the container includes on its neck 1 one or more guide members preferably above the ramp portion 7. Preferably a pair of guide members 23 are provided equally spaced around the container neck, although it will be appreciated that any suitable number of guide members 23 may be provided.

The container cover member shown generally at 10 includes a central panel portion 11 which is shown in a preferred concave position. The container cover members includes a peripheral skirt portion shown at 12 that extends over the upper neck portion of the container at 13. Sealing material as shown at 14 may be included to provide an hermetic seal between the container cover member and the container neck as will be appreciated by those skilled in the art.

The central panel portion 10 may include an

intermediate sloped annular portion as at 15.

5 The cover holding member as above described has a cover encapsulating portion shown generally at 16 and a depending ring portion at 17. The cover encapsulating portion may take any suitable configuration but is preferably provided by an annular portion as shown. The depending ring portion may be 10 continuous or discontinuous and preferably is connected to the encapsulating portion 16 through a plurality of ribs shown at 18 which may be established in sets or groups as shown in the drawings. The depending ring 15 portion 17 may include one or more cover gripping projections. Preferably a plurality of lugs 24 are provided for this purpose, located on the inner surface of the depending ring and adapted to abut against the edge of the 20 peripheral skirt portion 12 thereto to hold the container cover member within the cover holding member. In one example three lugs 24 are provided equally spaced around the ring portion 17 although it will be appreciated that any suitable member may be provided. 25 Preferably a different number of lugs 24 is provided to the number of guide members 23, and so that the spacing is different, for a purpose fully described below.

30 The depending ring portion 17 includes a container gripping rib 18a which preferably

has an upwardly facing shoulder portion 19 and ramp portion 20.

5 The embodiment shown in Figures 1 to 3 includes a tear strip 21 including a retaining extension 22.

10 It will be appreciated that in use the container cover member 11 is held within the cover holding member by the combined action of the encapsulating portion 16 and lugs 19. The cover member 10 may be fitted therein by an easy flexing out of the depending ring portion 17. By this means the central panel portion 11 is free from movement up and down between a concave and convex position and therefore may be used to package materials within the container under vacuum where the central panel portion will be pulled into its concave position and when opened move upwardly and preferably with an audible click or other sound to indicate to the user that the package was under vacuum. This is a most important advantage that is not available in prior art plastic tamper proof closures.

20 In use the closure may be placed downwardly on the container neck. The preferred upwardly sloping extension 22 will ride over the ramp 7 forcing the tear away strip outwardly but not severing it. Similarly, the ramp portion 20 of rib 18a will meet the ramp portion 7 of rib 3 to force the depending ring portion

25

30

17 outwardly. The ramp portion 7 will also assist in the projection 22 riding over rib 2. But it will be seen that when the rib 18a is in position within the groove 8 the shoulder portion 19 of the rib 18a will abut against the shoulder 5 of rib 3 to hold the parts together unless the depending ring portion 17 is pulled outwardly. Similarly the projection 22 abuts against the shoulder 4 of rib 2 to hold the tear away portion in position until removed. In one example the lower portion of the tear away strip 21 may be closely adjacent the rib 10 of the container so that it is difficult for persons to apply a grip beneath the tear away portion. 21.

In use the tear away portion 21 should first be removed before the closure can be removed from the container and this may be achieved by any suitable method. The tear away portion may be retained in its moved position or be totally removable as will be appreciated by those skilled in the art. Once the tear away portion has been removed it is possible to rotate the closure. This means that a lug 24 will meet a complementary guide member 23 which will push that portion of the ring portion 17 outwardly breaking the contact between the shoulder 19 and shoulder 5 in that zone. Thus the closure may be pulled upwardly and removed from the container neck. The closure means may be reapplied to the container by pushing it downwardly as before.

It will be seen that by ensuring that the spacing between lugs 24 and guide members 23 is different, only one lug will contact a guide member at any position thus to ensure that the ring portion 17 will be pushed out at one zone only.

Preferably the cover holding member is of deformable material and preferably a plastics material as known in the art.

In the embodiment of the invention illustrated in Figures 4 to 8 of the drawings the cover encapsulating portion shown generally at 26 may be comprised by an inner ring 27 and an outer ring 28. A hinge portion is shown at 29 and a pair of connecting portions at 30 and 30'. The preferred depending ring portion is shown at 31. Joining web portions are shown at 32. The outer ring portion 28 may include an indentation to provide an access means at 33.

Cover gripping ribs are shown at 34 and are preferably located beneath each of the joining web portions 32.

Sinusoidal gripping members are shown at 35 and are located beneath the expansion gaps shown at 36.

Figure 8 shows an expanded view of the sinusoidal gripping member showing flattened contact portion 37 and connecting portion 38 whereby it is connected to the ring 31. The angle  $\theta$  as shown in the drawings is the

angle referred to throughout this description. It will be seen that the container cover member is adapted to be placed over the preferred jar so that the sealing composition in the  
5 sealing recess 42 is located over the jar edge. The preferred flange 43 extends outwardly of the container edge.

The cover holding member is adapted to extend over the cover member. The cover  
10 member is adapted to fit within the cover holding member with the flange 43 located above the preferred cover gripping ribs 34 so that the cover members is retained within the cover holding member but removable therefrom  
15 as may be desired.

The gripping members 35 are adapted to abut against the container wall at points  
37 to cause an outwardly extending expansion of the concertina members 35 and the associated  
20 ring 31 thus to create an inwardly directed returning force firmly to hold the cover holding member to the container wall as will readily be appreciated by those skilled in the art.

Thus this embodiment provides a simple  
25 and inexpensive closure means for a jar-like container that can be readily removed from and replaced onto the container. It can accommodate a 'pop top' feature. It does not require the use of an opening tool.

30 Figure 4 shows an example of an alternative container cover portion for use in the

present invention. A central panel is shown at 41. 42 shows a sealing recess and 43 shows an outwardly flanged portion. 44 shows sealing composition within the recess 42.

5           In accordance with the present invention there is provided a two piece closure means where the central panel may be made of metal to provide the advantages above described and where the holding member may be made of  
10 plastics material to provide the advantages in the construction of a temper proof closure. Thus by use of the present invention it is possible to obtain the advantages of a metal closure and the advantages of a plastics closure  
15 without substantially increasing the cost.

          It will be appreciated that many variations and modifications may be made to the above described construction and arrangement of parts without departing from the ambit  
20 of the present invention.

## CLAIMS

1. A closure for an open necked container, characterized by the fact that it comprises a container cover member (10) adapted to extend over and close the opening of the container and a cover holding member (16) to hold said container cover member (10) in sealing abutment with the opening, said cover holding member including a cover encapsulating portion (16) extending over the peripheral edge of said cover member (10), retaining means extending beneath said peripheral edge (12) to hold said cover member (10) within said cover holding member (16) and a depending portion (17) including container gripping means (18, 22) by which said cover holding member may be retained on the container.

2. A closure as claimed in claim 1, wherein said cover member (10) includes a resilient central panel portion (11, 41) formed with excess material and movable between its outermost position when the container is at atmospheric pressure and its innermost position when the container is at a pressure lower than atmospheric pressure.

3. A closure as claimed in claim 2 wherein said cover member (10) is a resilient metal member and said central panel (11, 41) includes a plurality of annular zones to provide excess metal.

4. A closure as claimed in any preceding claim, wherein said cover member (10) includes a peripheral skirt portion (17) to extend over the container neck (1).



5. A closure as claimed in claim 4 wherein  
said cover member (10) includes an annular sealing  
recess (42) containing sealing material (14, 44)  
adapted to abut against the container rim (13) for  
sealing therewith.

6. A closure as claimed in any preceding  
claim, wherein said cover holding member (16, 17)  
is an integrally moulded resilient plastic member.

7. A closure as claimed in claim 6 wherein  
said cover encapsulating portion (26) includes a  
central ring portion (27) adapted to abut against  
and support the upper surface of said cover member  
(10).

8. A closure member as claimed in claim 6 or  
claim 7, wherein said retaining means is provided  
by a plurality of retaining ribs (18a) located on  
the inner surface of said depending portion (17).

9. A closure as claimed in claim 8 wherein  
said retaining ribs (18a) are adapted, when the  
closure is rotated, to contact a ramp extension  
(6) on the container neck (1) to twist the closure  
and assist in its removal from the container.

10. A closure as claimed in any one of claims  
6 to 9, wherein, said gripping means includes one  
or more continuous or discontinuous annular ribs  
(18a, 22) located on the inner surface of said  
depending portion (17) and adapted to engage  
beneath a corresponding annular rib (2, 3) on the  
container neck (1).

11. A closure as claimed in any one of claims  
6 to 9, wherein said gripping means is provided by  
a plurality of gripping zones (35) of said

depending portion (31) adapted to grip the outer surface of the container neck (1).

12. A closure as claimed in claim 11, wherein said gripping zones (35) are of generally sinusoidal shape to provide a plurality of peaks (37) to abut the container neck.

13. A closure as claimed in claim 12 wherein the legs of said sinusoidal zone are at an angle of 35° to 77°.

14. A closure as claimed in any preceding claim, including a tear strip (21) severably connected beneath said depending portion (17).

15. A closure as claimed in claim 14 wherein said tear strip (21) includes an annular member (22) on its inner surface adapted to engage beneath a corresponding rib (2) on the container neck (1).

16. A closure as claimed in claim 15, wherein said annular member (22) extends inwardly and upwardly at an acute angle to said depending portion (17).

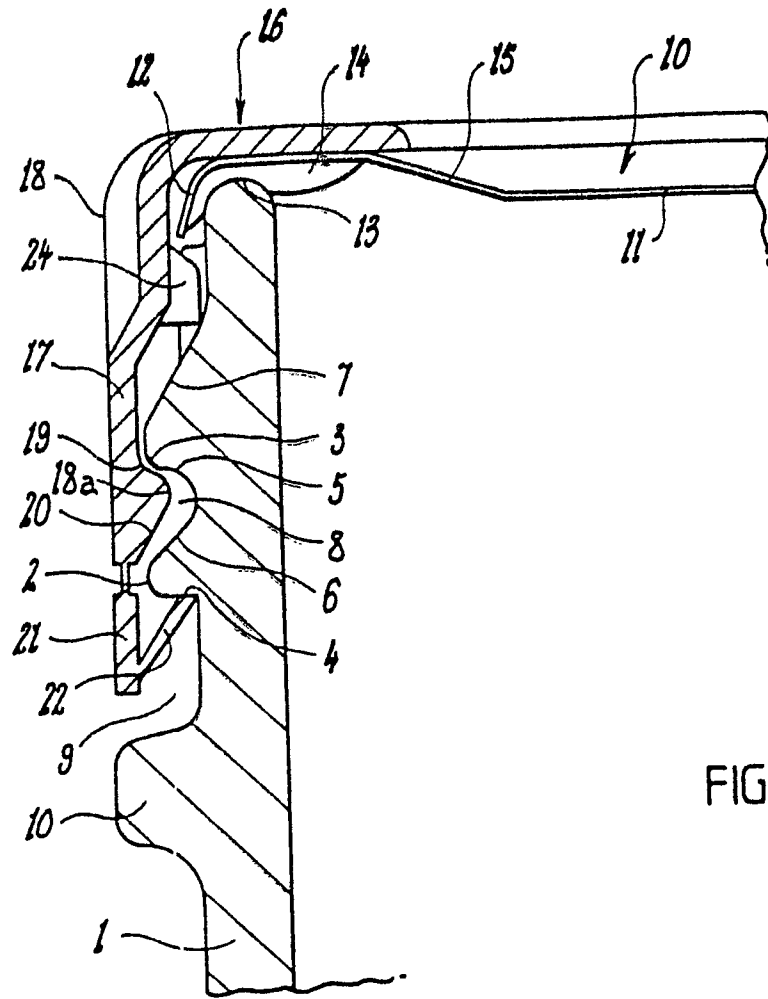


FIG 1

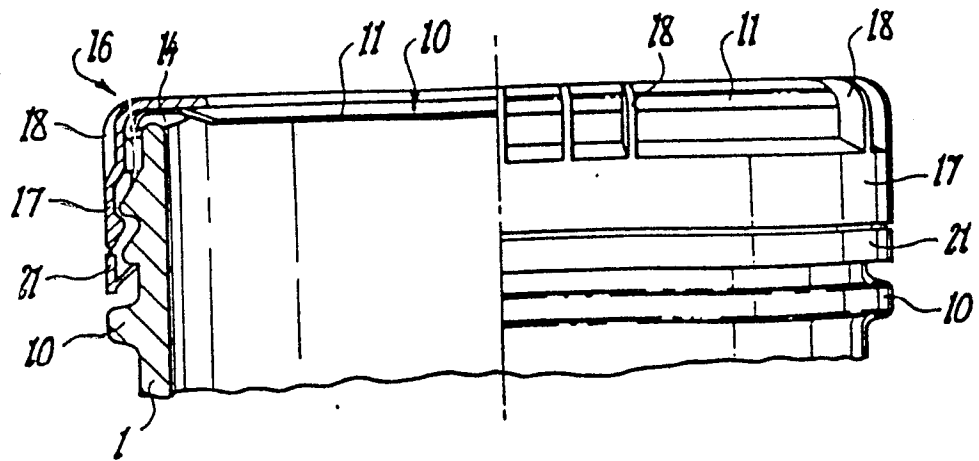


FIG 2

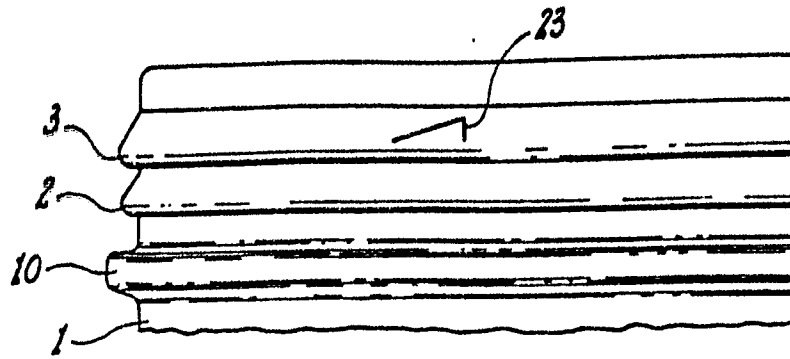


FIG 3

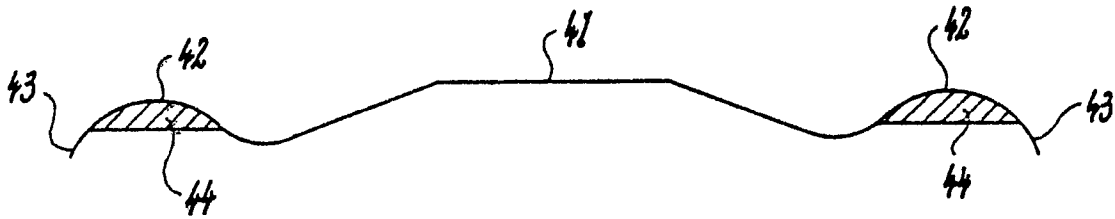


FIG 4

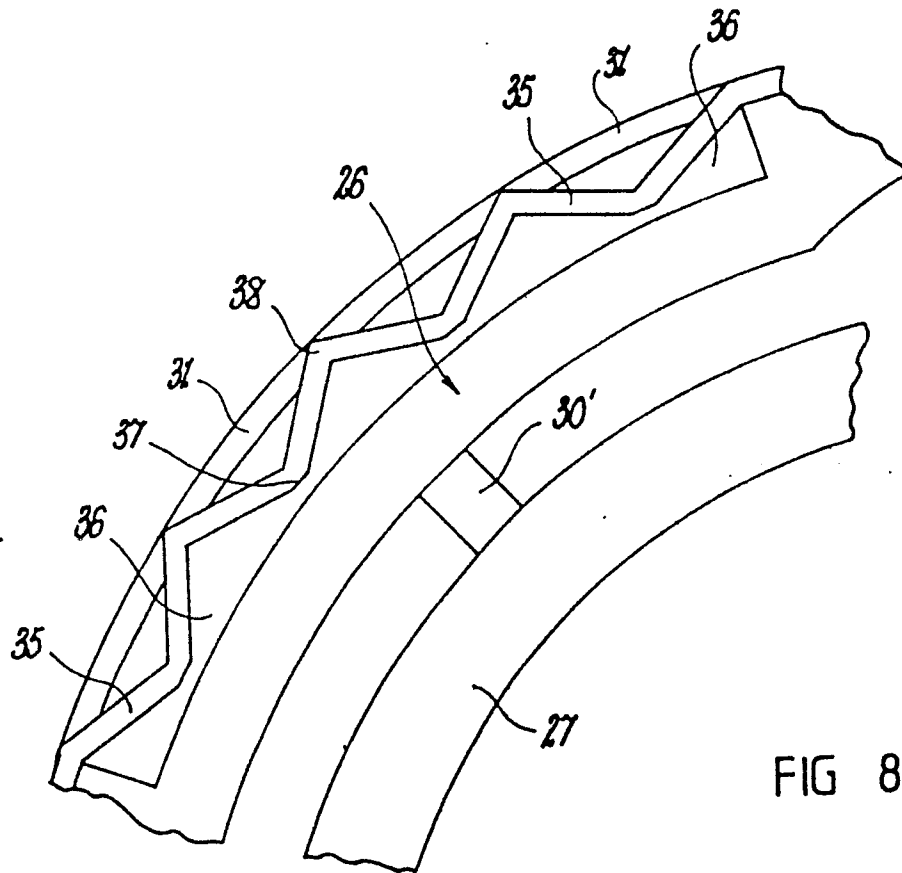
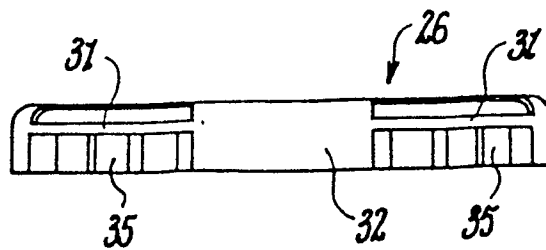
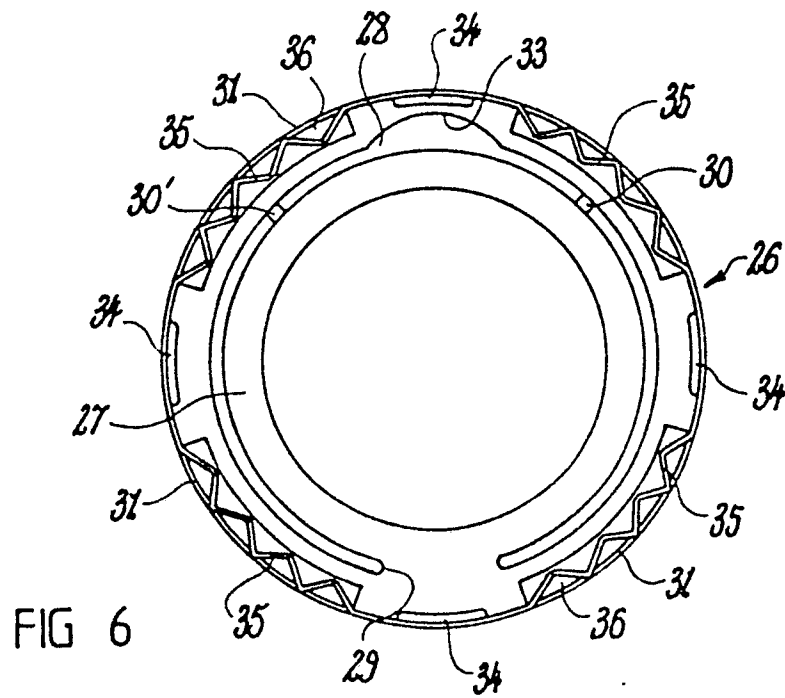
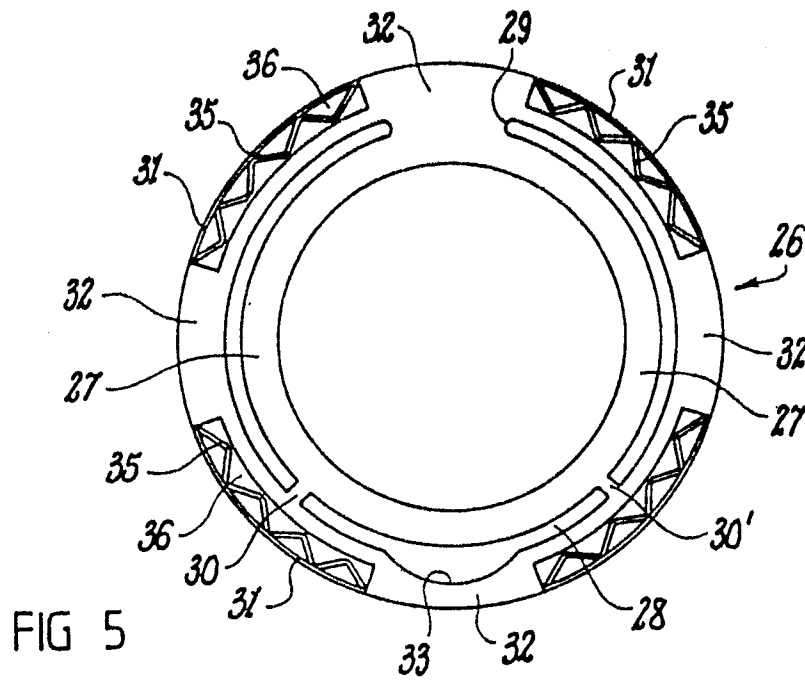


FIG 8





European Patent  
Office

# EUROPEAN SEARCH REPORT

0201613

Application number

EP 85 10 5911

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.4)
X	EP-A-0 092 884 (LINDNER)  * Page 3, lines 11-32; figures 6,7 *	1,4-6, 10,11, 14	B 65 D 41/48 B 65 D 55/08
A		2,3,8	
A	--- FR-A-2 231 577 (ANCHOR) * Figure 1 *	2,3	
A	--- FR-E- 59 826 (KJELDEN) * Page 3, left-hand column, lines 27-33; figure 4 *	12,13	
A	--- GB-A-2 033 350 (V.G. CLOSURES) * Page 2, lines 15-30; figure 1 *	14-16	TECHNICAL FIELDS SEARCHED (Int. Cl.4)
	-----		B 65 D
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 08-01-1986	Examiner GOETZ P.A.
<p><b>CATEGORY OF CITED DOCUMENTS</b></p> <p>X : particularly relevant if taken alone  Y : particularly relevant if combined with another document of the same category  A : technological background  O : non-written disclosure  P : intermediate document</p> <p>T : theory or principle underlying the invention  E : earlier patent document, but published on, or after the filing date  D : document cited in the application  L : document cited for other reasons</p> <p>&amp; : member of the same patent family, corresponding document</p>			