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(54) **TAMPER-PROOF AND UNREFILLABLE CLOSURE WITH OVERTOP**

(57) A stopper for bottles of the tamper proof and non-refillable type which includes an overtop (A), a screwtop (B) of the tamper-proof type, a pourer (C), a valve (D), a valve seat or gasket (E) and a cylindrical tube (F) characterized in that the lower part of the screwtop has a ring (20) with a series of angled teeth (19) that allow it to be turned when being screwed on and prevent it from being turned when being unscrewed. The ring (20) is joined to the body of the top by means of a series of horizontal ribs or bridges which break when the ring is unable to turn when the top is unscrewed for the first time. This ring (20) has two vertical cuts with a separation of 180 degrees that cause the ring to separate into two pieces when the horizontal ribs or bridges are broken. The cylindrical body of the top has a smaller diameter than the ring and is designed in such a way that it can receive an overtop having the same diameter as the ring.

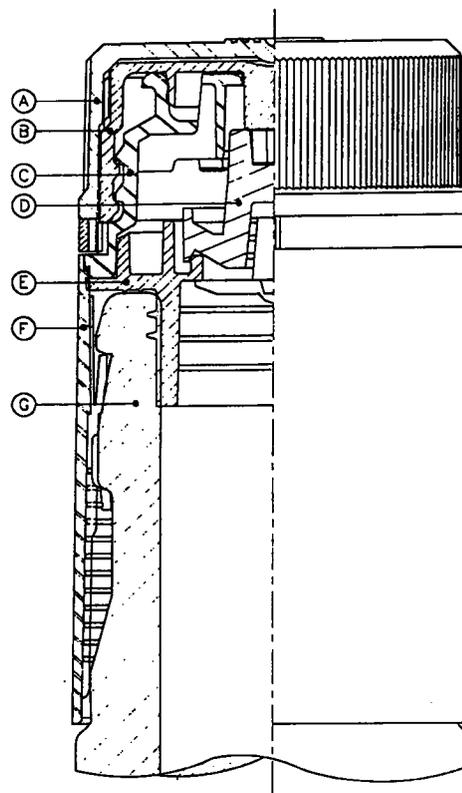


FIG. 1

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## Description

The stopper is provided with a non-refillable mechanism; formed by a pourer, a valve, and a valve seat or gasket, which allow the liquid out but not the entrance of the same.

A tube that forms one single piece with the non-refillable mechanism when it is joined to the base of the pourer by ultrasonic welding or using glue. The tube has on its inner cylindrical surface, a series of angled anchors that lodge themselves in a band on the bottleneck and which does not allow the stopper to be removed once it has been placed on the bottle. On the inner cylindrical surface of the tube, a series of ribs have been designed that avoid the spinning of the stopper when it is placed on the bottle, by being set against a series of teardrops on the bottleneck.

This invention constitutes a stopper improvement for bottles such as those mentioned in Mexican patents No's 156456, 165266, 171075 and 176414.

## SCOPE OF THE INVENTION

This invention refers to stoppers for bottles or containers for liquids such as alcoholic drinks, that require an inviolable top and a non-refillable mechanism that allows the exit of the liquid from inside the bottle, but does not allow the entrance of liquid into the bottle.

## BACKGROUND OF THE INVENTION

There exist on the market various designs of inviolable or non-refillable stoppers or others with both characteristics, that have several faults, which therefore do not fully meet the need, more and more important, to protect the contents of bottles and guarantee to the consumer that the bottle has not been refilled or the original liquid of the bottle tampered with.

The objective of the invention is to get over these faults and provide the bottler with a stopper that meets the requirements of having an inviolable screwtop combined with a non-refillable mechanism.

The design of the screwtop guarantees that, once it has been placed on the bottle, it cannot be unscrewed without removing the lower ring which breaks into two parts, making it obvious that it has been opened and due to the fact that it has a superimposed top of a different color to the screwtop so as to make the absence of the ring more obvious.

In order to assure an airtight seal, a central shank has been placed inside the stopper which presses the valve against the valve seat resulting in the first seal and a circular vertical surface which presses the perimeter of the liquid-exit cavity in the pourer, forming the second seal.

In order to avoid that the stopper can be removed from the bottleneck, the tube for molded using a thermoplastic resin with high heat resistance, such as ABS (acrylo-nitrile-butadienestyrene) or polycarbonate.

## DESCRIPTION OF THE INVENTION

This invention refers to a particular design of stoppers for liquids, of an inviolable and non-refillable nature. The non-refillable characteristic is achieved by means of a mechanism that consists of a valve seat or gasket, a valve, and a pourer. This mechanism allows the liquid out of the bottle and avoids the entrance of the liquid into the bottle.

When the liquid is poured, the valve separates itself from the seat and when it is attempted to refill the bottle, the valve blocks the access to the inside of the bottle. To prevent the valve from sticking to the valve seat, a vertical shank has been placed on the inside of the top which ends in a crosshead which is introduced into an angled vertical cavity in the valve which makes the valve turn when the top is unscrewed.

A tube that forms the lower exterior surface of the stopper is manufactured from highly resistant and flexible thermoplastic resins, with the purpose of preventing the removal of the stopper from the bottleneck for its refilling and later replacement of the stopper in its original position. The upper interior part of the tube has a series of angled anchors that allow it to be slipped onto the bottleneck and which lodge themselves on a band of the bottle, which prevents the stopper from being removed once it has been placed on the bottleneck. The tube also has on the inside surface, a series of vertical ribs that when set against the teardrops on the bottleneck, avoid the stopper from spinning when placed on the bottle. The pourer is secured to the upper inside surface of the tube by welding both parts ultrasonically or by using a glue, which firmly fixes the non-refillable mechanism to the tube.

To achieve an airtight seal, the interior of the top has been provided with a circular vertical shank which ends in the form of a cross that presses the valve against the seat and at the same time makes the valve turn when the top is unscrewed by introducing the crosshead into an angled cavity in the valve. A second seal is achieved by means of a vertical cylindrical surface in the top which comes into close contact with the vertical exterior wall of the pourer through which the liquid comes out of the bottle, blocking this exit.

The screwtop has a ring on its lower outside surface, adhered to the upper body of the top by means of several small ribs or bridges that are broken when the top is unscrewed for the first time as the ring has a series of angled teeth on its inside surface which allow the top to be screwed on and prevent the ring from turning when the top is unscrewed, by hooking onto other set of teeth at an opposite molded into the pourer, at the level of the top's ring.

The vertical cylindrical body of the top has a smaller diameter than the ring with the objective of placing a superimposed top with the same diameter as the ring, giving the possibility that when the top is molded in a different color to the superimposed top, the ring is more noticeable and when the top is removed the absence of

the ring is more obvious.

The sets of teeth on the ring and pourer, by being angled allow the top to be screwed onto the pourer, but prevent the ring from turning when the top is unscrewed as the angle of the two sets of teeth are opposed, which causes the small bridges or ribs to break when the body of the top is turned further. In this way, the inviolable characteristic of the stopper is achieved.

The upper inside part of the pourer has a concentric cylinder whose purpose is to guide the movement of the valve along the vertical axis of the top, when the liquid is poured out. On its exterior vertical cylindrical surface, the pourer has a thread with two entrances onto which the top is screwed.

The upper inside part of the valve seat or gasket has a cylinder with rings on the outer vertical surface, which fit on the lower cylindrical surface of the pourer and form an airtight seal. The lower surface of the valve seat or gasket has been provided with a series of rings that form an airtight seal with the inside of the bottle-neck when the stopper is placed on the bottle.

The central part of the valve seat or gasket has a vertical shank which enters into a cavity on the lower part of the valve and which has the purpose of guiding the valve during its movement along the vertical axis of the stopper. The valve seat or gasket also has a horizontal ring in the center which acts as a valve seat and forms an airtight seal when the valve is pressed by the shank on the stopper, preventing the passage of liquid through the central cavity in the valve seat or gasket.

The novelty, as well as the singular characteristics of this invention and its workings, will be better understood by referring to the description of the pieces by means of the attached drawings, in which:

Figure 1 is a cross section of the non-refillable/inviolable stopper assembled with all its parts and which is shown placed on the neck of the bottle or container.

Figure 2 is a cross section and plan view of the superimposed top.

Figure 3 is a cross section and plan view of the inviolable screwtop.

Figure 4 is a cross section and plan view of the pourer.

Figure 5 is a cross section and plan view of the valve.

Figure 6 is a cross section and plan view of the valve seat or gasket.

Figure 7 is a cross section and plan view of the tube.

Figure 8 is a cross section and plan view of the bot-

tleneck.

With reference to Figure 1, this shows the superimposed top "A"; the top "B"; the pourer "C"; the valve "D"; the valve seat or gasket "E"; the tube "F"; and the bottle-neck "G".

Figure 2 shows the superimposed top "A" that has a vertical wall 1 which may have a series of grooves 2 to better secure the superimposed top "A". The inside vertical wall 1 has a series of vertical ribs 3, which end in angles 4 which are lodged between the vertical ribs 12 (see figure 3), located on the upper exterior wall 14 of the screwtop "B". The object of these vertical ribs 3 and 12 is to join the superimposed top "A" to the top "B" so that both parts turn together. The lower part of the vertical cylinder 1 of the superimposed top "A" ends in a horizontal ring 6 which had a series of braids 5 on its inner face which join between another series of braids 17 on the lower horizontal cylindrical surface 14 with the object of assembling the superimposed top "A" with the top "B" and prevent the separation of the two parts. The lower horizontal cylindrical surface 7 of the top "A" makes contact with the upper cylindrical surface of the ring 20 of the top "B".

The cylindrical surface 14 of top "B" has on its inside a helicoidal thread 2 entrances 18, which screws onto the thread of the pourer "C" in figure 4.

Figure 3 of the horizontal surface 8 shows the vertical shank 13 which ends in the form of a crosshead 16 and which has the object of pressing the valve "D" on the horizontal circular surface 38 and at the same time the valve blocks the cavity 53 in the valve seat or gasket "E" (see figure 6) by the angled surfaces 41 and 42 of the valve "D" being placed into contact with the horizontal circular ring 47 of the valve seat or gasket "E". The crosshead 16 of the shank 13 is introduced into the upper cavity 37 of the valve "D" and has the object of turning the valve "D" when the top "B" is turned, due to the fact that the vertical wall 39 of the cavity 37 is lightly angled so that the crosshead which has a greater diameter, makes contact with the vertical wall 39 of the valve "D". When the top "B" is screwed on the pourer "C", the circular horizontal surface 15 of the shank 13, presses valve "D" onto the horizontal circular surface 38 so that the valve "D" blocks the circular hole 53 in the valve seat or gasket "E".

A second seal is achieved by means of the cylinder 10 of the top "B" which has a braid 11 that is introduced into the cavity 25 of the pourer "C" and results in an airtight seal when the braid 11 of the top "B" comes into contact with the vertical wall 26 of the pourer "C".

The lower part of the top "B" contains the ring 20 which on its inside face has a series of angled teeth 19 which join the ring to the vertical wall 14 of the top "B" and which have the object of allowing the ring 20 to be turned when the top "B" is screwed onto the pourer "C" but which prevents the turning of the ring 20 when the top "B" is unscrewed due to the fact that the angled teeth 31 of the pourer "C" hook on, causing the separa-

tion of the teeth 19 from the cylindrical body 14 of the top "B" and causing the ring 20 to detach, falling off in two parts, due to the fact that it has two vertical cuts 21.

As can be appreciated in figure 4, the center of the horizontal surface 23 of the pourer "C" has a hole 22 through which the shank 13 of the top "B" is introduced.

The upper part of the pourer "C" has a circular hole 25 through which the liquid comes out of the inside of the pourer "C". The vertical wall 26 of the pourer "C" ends in a radius 24 with the aim of returning the liquid to the inside of the pourer when the pouring has ceased.

The upper part of the pourer "C" has a vertical cylinder 27 joined to the outer body by a series of vertical ribs 28 which has the object of guiding the movement of the valve "D" along the vertical axis of the pourer "C".

The lower horizontal surface 32 of the pourer "C" has an angled wall 33 which ends in a horizontal surface 34 which is joined to the horizontal surface 59 of the tube "F" by ultrasonic welding or using glue. When the pourer "C" is fixed to the tube "F", the horizontal surface 32 of the pourer "C" is at the height of the horizontal surface 58 of the tube "F".

The circular surface 36 of the pourer "C" has a small braid 35 which hooks onto a series of braids 48 on the vertical surface of the valve seat or gasket "E" and which result in an airtight seal by joining the pourer "C" to the valve seat or gasket "E".

The valve seat or gasket "E" has in its center a vertical shank 44 with the wall 45 slightly angled which is introduced into the lower cavity 43 of the valve "D" with the object of guiding the movement of the valve "D" along its vertical axis. The shank 44 is joined to the vertical cylindrical surface 49 of the valve seat or gasket "E" by means of the horizontal ribs 54 and form with the cylindrical surface 49 the cavity 53 through which the liquid flows from inside the bottle. The cylindrical surface 49 ends in a horizontal cylindrical surface 47 on which the valve "D" is seated and which form an airtight seal, with surfaces 41 and 42.

The valve seat or gasket "E" has a concentric cylinder 46 which prevents the passage of the liquid with the cylindrical surface 40 of the valve "D" with the objective of making the top even more non-refillable. When the bottle is inclined for pouring the liquid, the valve "D" moves along its vertical axis and frees the passage of the liquid.

The horizontal surface 51 of the valve seat or gasket "E" has on its inner face a series of braid 52 which form an airtight seal with horizontal surface 70 of the bottleneck "G". The vertical cylindrical surface 56 has on its outer face a series of braids 55 which form an airtight seal with the surface 73 of the bottleneck "G".

The vertical cylindrical surface 56 ends in a radius 57 so as to facilitate the introduction of the bottleneck "G", which also has a radius 71 for the same purpose.

The tube "F" has a series of vertical ribs 60 whose purpose is to limit the entrance of the valve seat or gasket "E" by making contact with the horizontal surface 51.

In order to fix the tube "F" to the bottleneck "G", a

series of angled anchors 62 have been placed which are positioned on the ridge 74 when coming into contact with the surface 61 of the anchors 62. Due to the fact that the tube is molded from a flexible material, this allows the angled anchors 62 to slide over the angled surface 72 and to be placed on the ridge of the bottleneck "G".

The inner part of the cylindrical surface 67 has a series of vertical ribs 63 and 64 which end in angles 65 and 66 and which are located between the vertical ribs 75 on the bottleneck "G" with the object of preventing the tube "F" from turning when the top is placed onto the bottleneck "G". In order to guide the positioning of the tube "F" on the bottleneck "G", a series of vertical ribs 68 have been used which end in the radii 69. The lower part of the circular surface 67 ends at the height of the radius 76 of the bottleneck "G", providing a continuous silhouette as they have the same diameter.

#### Assembly of the Top

First of all the non-refillable mechanism is assembled by pressing the valve "D" into the valve seat or gasket "E" and the pourer "C". Once the mechanism has been assembled, the lower part of the pourer "C" is joined to the upper part of the tube "F" by means of ultrasonic welding or by using some kind of glue. The top "B" is assembled by pressure with the superimposed top "A". Finally, the top "B" is screwed onto the pourer "C", turning the top "A" until it meets the upper horizontal surface of the pourer "C".

#### **Claims**

1. A stopper for bottles or similar containers that consist of a cylindrical tube, a valve seat or gasket, a valve, a pourer and a inviolable screwtop characterized because the inside of the tube has a series of anchors that fix the stopper to the bottleneck, when these anchors are set against a horizontal ridge on the bottleneck; the lower part of the top has a ring with angled teeth that join it to the body of the top and which are separated when the top is unscrewed by setting these teeth against another set on the pourer, causing the ring to fall off and a superimposed top which is placed on top of the top and which has the same diameter as the lower ring of the top.
2. A stopper for bottles or similar containers, exactly as claimed in clause 1, characterized because the lower part of the top has a ring joined to the body of the top by a series of angled teeth which allow the top to be screwed on and which separate from the body of the top when the top is unscrewed due to the fact that they hook onto a series of angled teeth on the pourer.
3. A stopper for bottles or similar containers, exactly

- as claimed in clause 1, characterized because the top's ring has two or more vertical cuts which separate the ring into several parts when the ring's angled teeth are separated from the body of the top.
4. A stopper for bottles or similar containers, exactly as claimed in clause 1, characterized because the superimposed top which is placed on the top has a series of vertical ribs on the walls to join them together.
5. A stopper for bottles or similar containers, exactly as claimed in clause 1, characterized because on the horizontal inside wall of the top a ring or skirt is molded that shuts off the passage of the liquid when it is introduced in a horizontal cavity in the pourer.
6. A stopper for bottles or similar containers, exactly as claimed in clause 1, characterized because the top has a vertical central shank that ends in the form of a cross in order to press the valve against the valve seat or gasket, forming an airtight seal and because the crosshead enters an angled cavity in the valve, making it turn when the top is unscrewed, in order to unstick the valve from the valve seat or gasket.
7. A stopper for bottles or similar containers, exactly as claimed in clause 1, characterized because the pourer has a vertical cylindrical surface in its center which acts as a guide for the movement of the valve along its vertical axis.
8. A stopper for bottles or similar containers, exactly as claimed in clause 1, characterized because the pourer has a circular cavity through which the liquid comes out and which makes it difficult to introduce foreign objects in order to lever the valve out of its seat, when the bottle is in a vertical position.
9. A stopper for bottles or similar containers, exactly as claimed in clause 1, characterized because the valve seat or gasket has a series of rings or braids on the upper cylindrical surface with the purpose of forming an airtight seal with the inner cylindrical surface of the pourer when both pieces are assembled and which prevents the passage of liquid between these two surfaces.
10. A stopper for bottles or similar containers, exactly as claimed in clause 1, characterized because the valve seat or gasket has a cylinder or bolt on the upper central part which is introduced into the lower cavity in the valve with the object of guiding the movement of the valve along its vertical axis, when the liquid is poured out from inside the bottle or container.
11. A stopper for bottles or similar containers, exactly as claimed in clause 1, characterized because the valve seat or gasket has a series of rings or braids on the upper cylindrical surface with the purpose of preventing the seat or gasket from being separated from the pourer, when the rings or braids of the seat are set against the ring or braid that the pourer has on its inner cylindrical surface.
12. A stopper for bottles or similar containers, exactly as claimed in clause 1, characterized because the valve seat or gasket has a series of rings or braids on the lower cylindrical surface with the purpose of forming an airtight seal with the inner cylindrical surface of the bottle when the top is put on and which prevents the passage of liquid between these two surfaces.
13. A stopper for bottles or similar containers, exactly as claimed in clause 1, characterized because the valve forms an airtight seal through the contact of two inclined surfaces with a circular surface that forms the central hole of the valve seat or gasket.
14. A stopper for bottles or similar containers, exactly as claimed in clause 1, characterized because the tube has a series of angled anchors on the inner cylindrical surface that prevent the removal of the stopper from the bottleneck by setting it against a ridge with a larger diameter than that of the bottleneck.
15. A stopper for bottles or similar containers, exactly as claimed in clause 1, characterized because the tube has a series of vertical ribs on the inner cylindrical surface that prevent the stopper from turning with respect to the bottle, when these vertical ribs are set against several ribs of a larger diameter on the bottle; the lower part of these vertical ribs terminate in a radius to facilitate the placing of the stopper on the bottleneck.
16. A stopper for bottles or similar containers, exactly as claimed in clause 1, characterized because the tube has a series of vertical ribs on the upper cylindrical part that prevent the valve seat or gasket from moving inside the tube.
17. A stopper for bottles or similar containers, exactly as claimed in clause 1, characterized because the tube has a radius on its lower cylindrical surface that allows the forming of a continuous outline with the bottleneck.

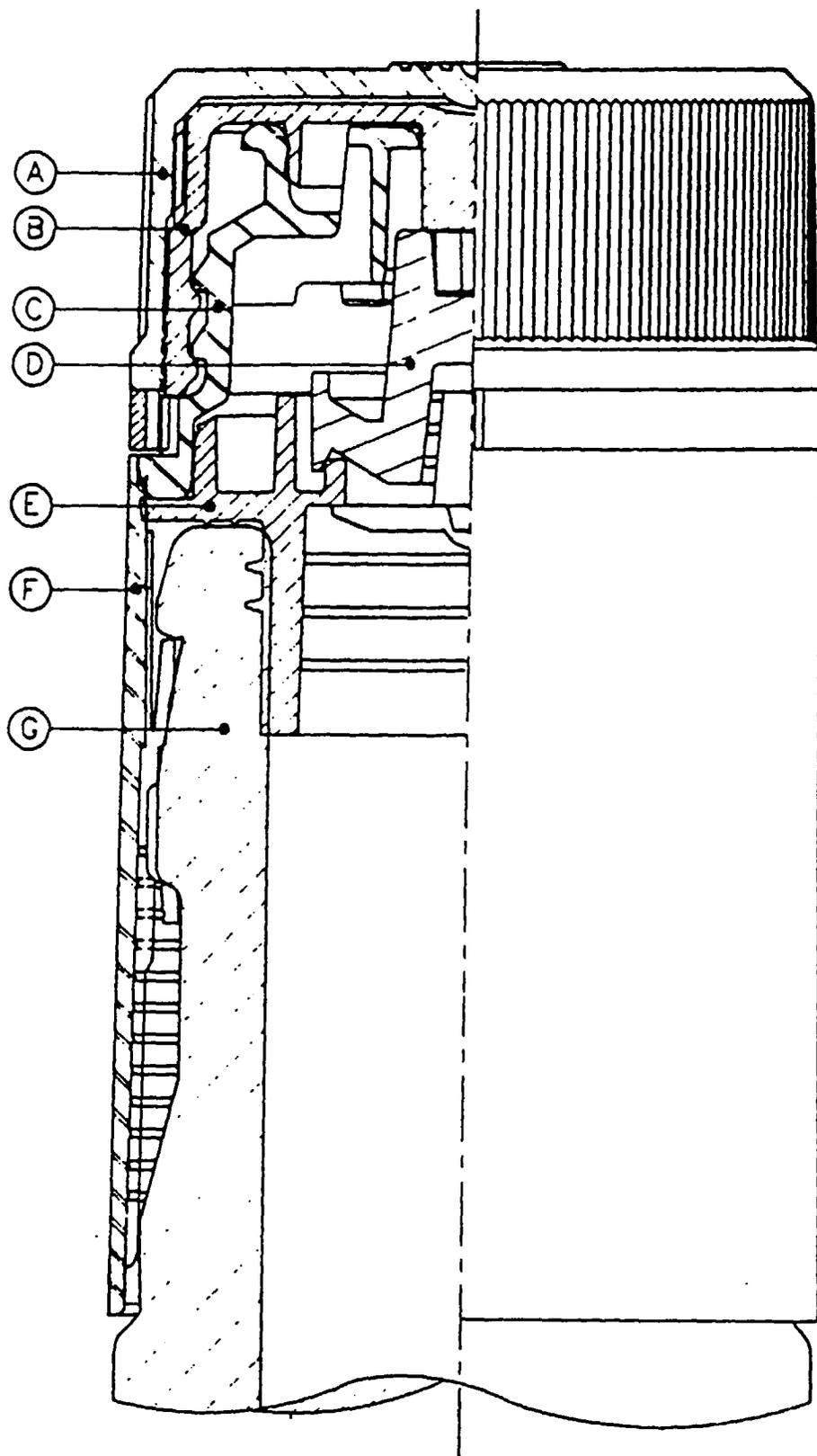


FIG. 1

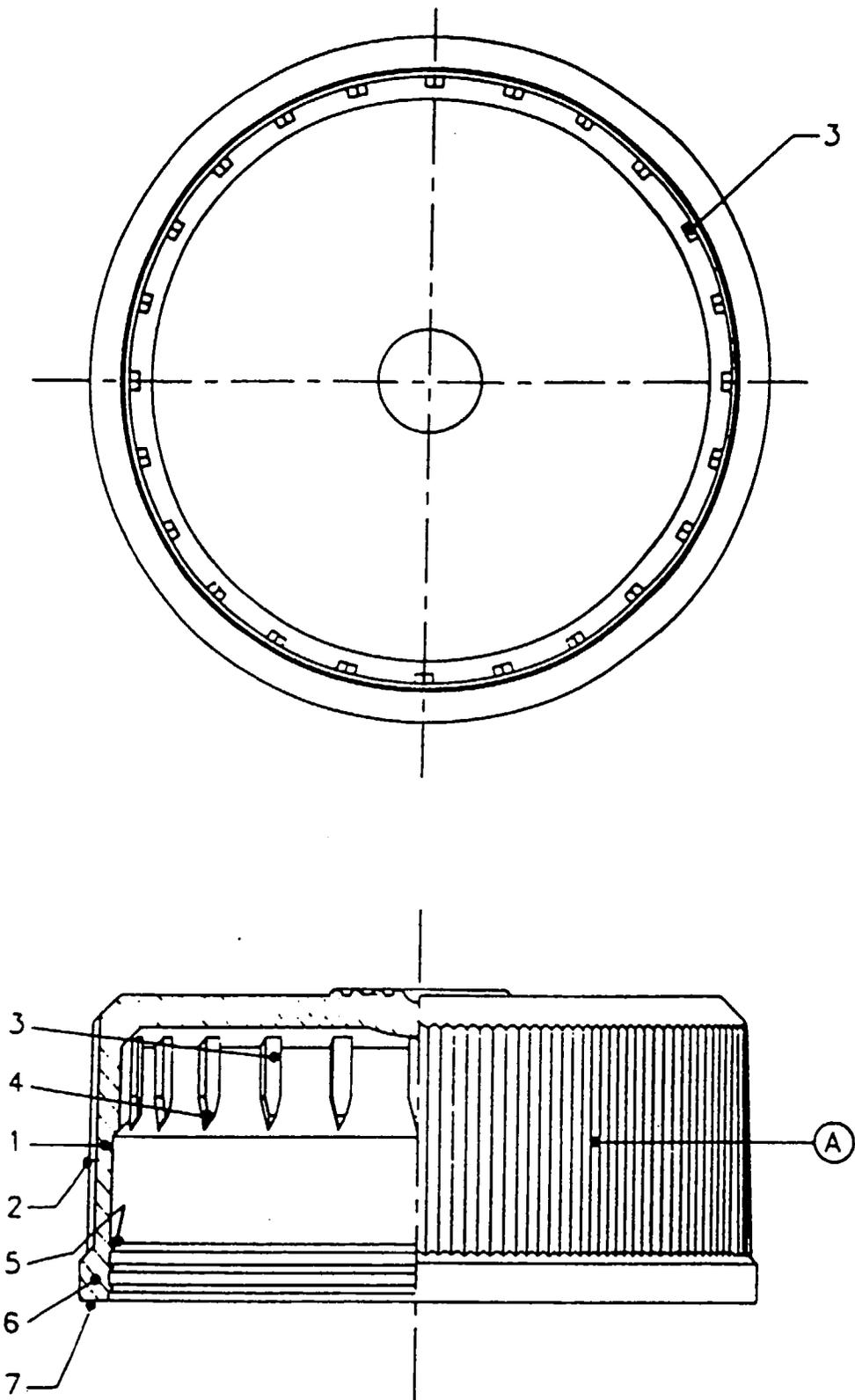


FIG. 2

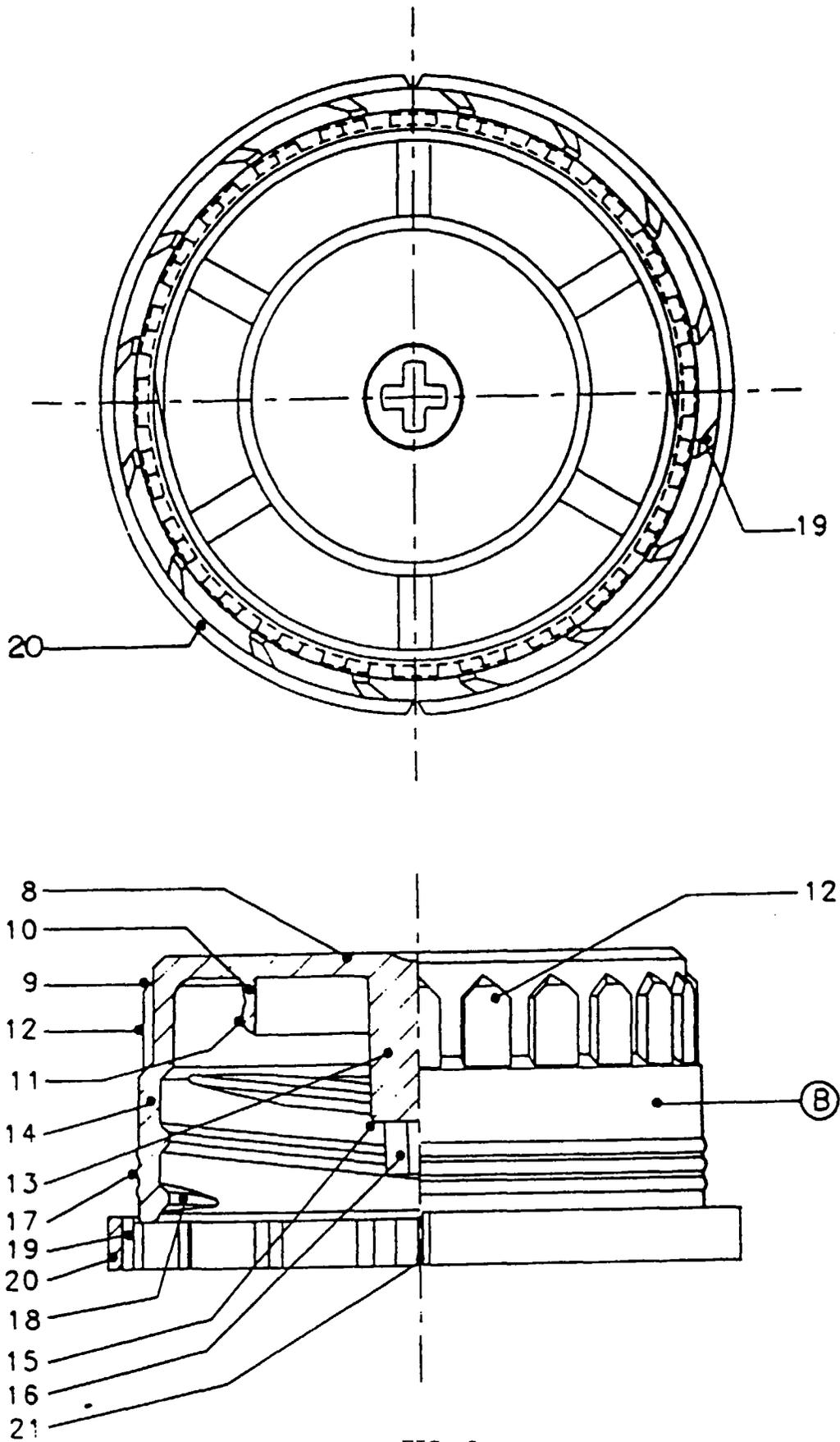


FIG. 3

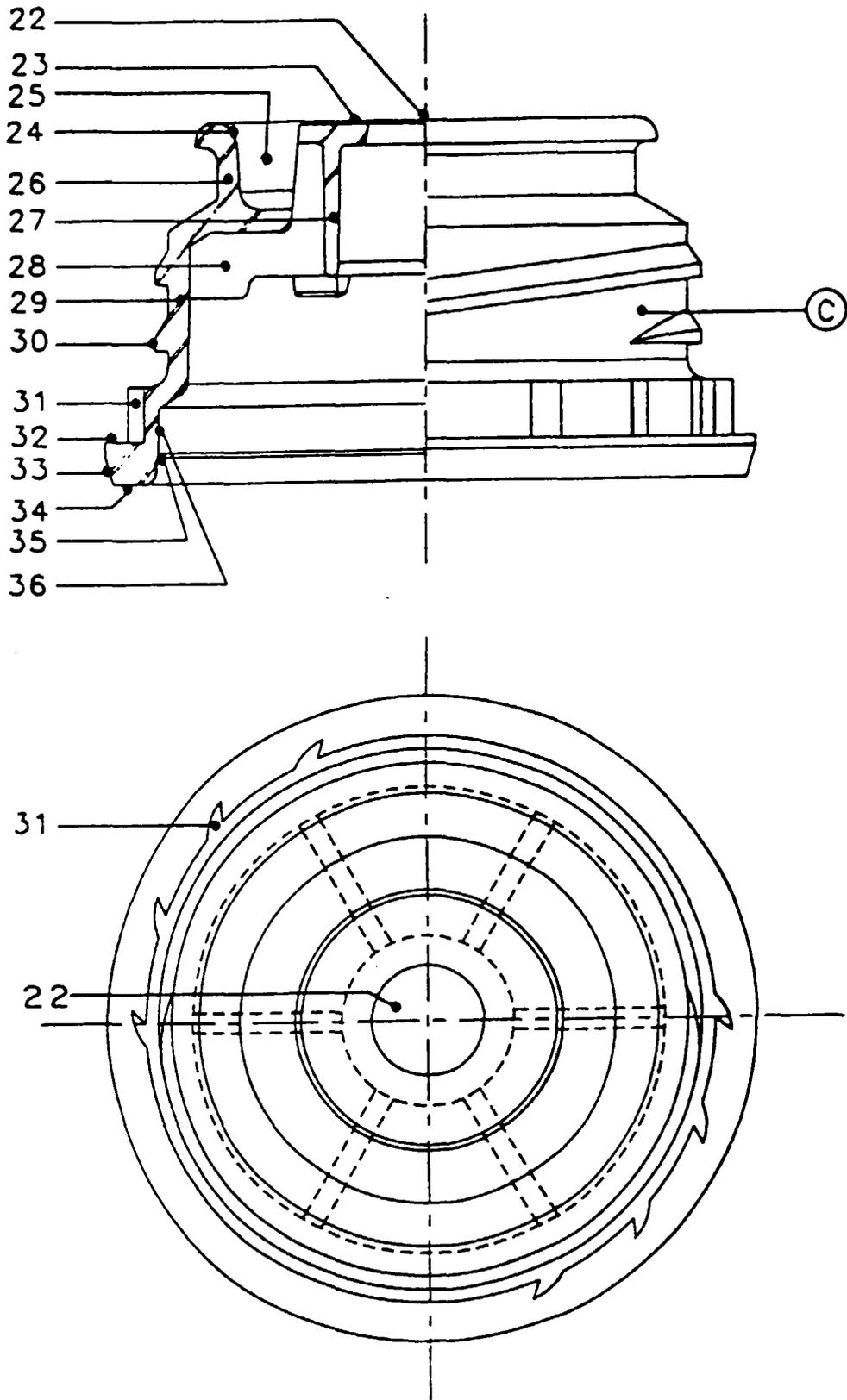


FIG. 4

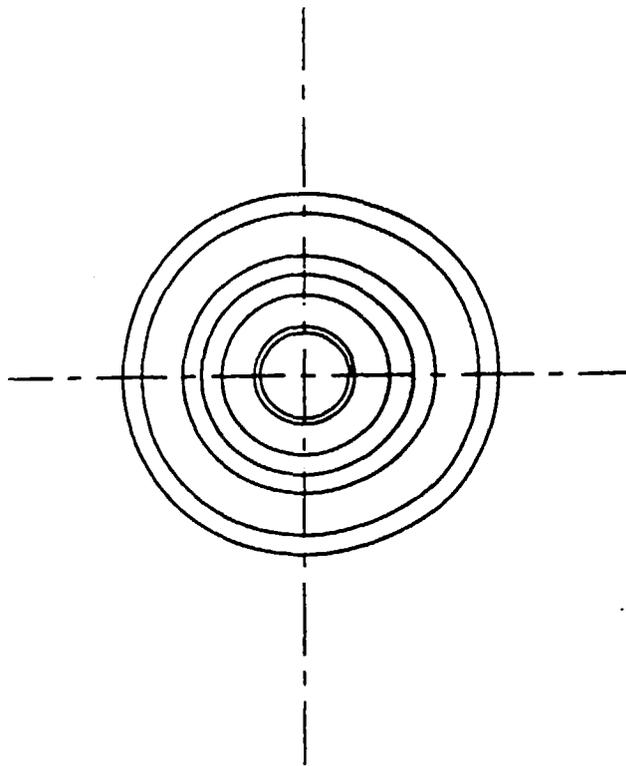
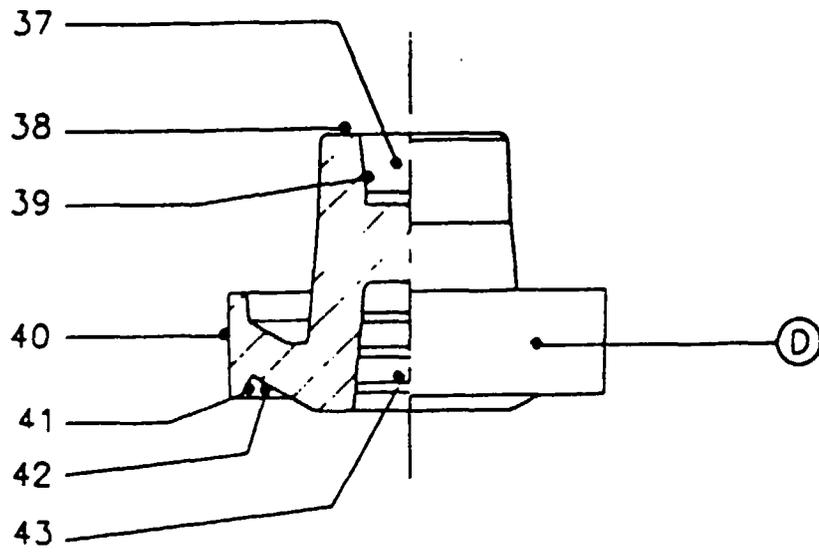


FIG. 5

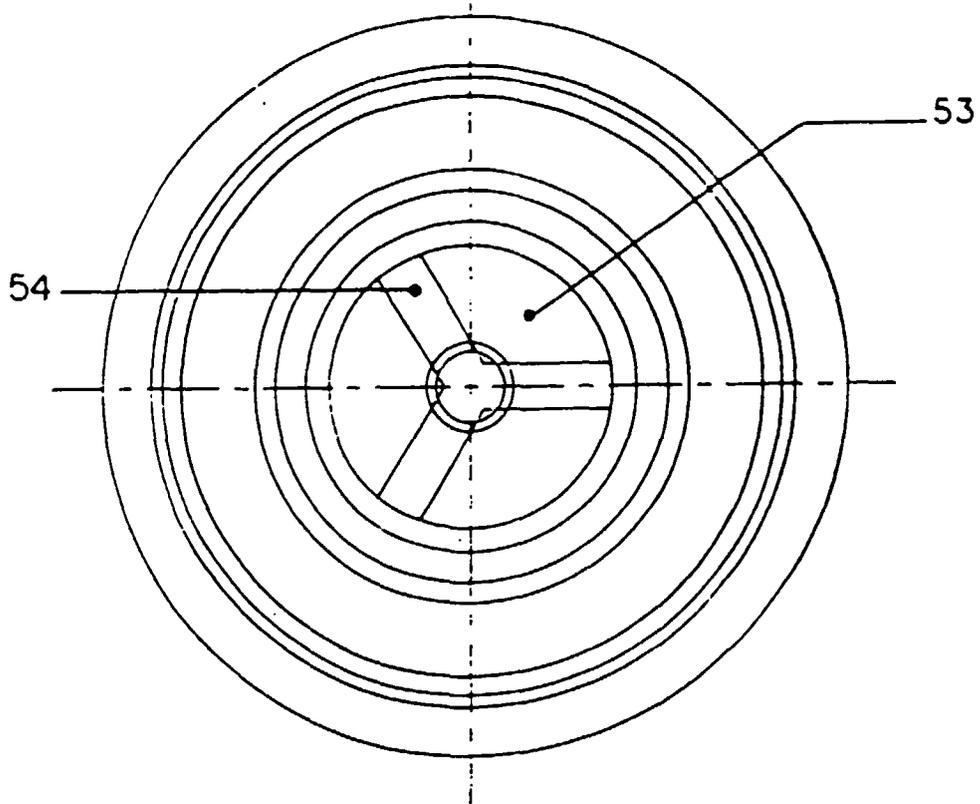
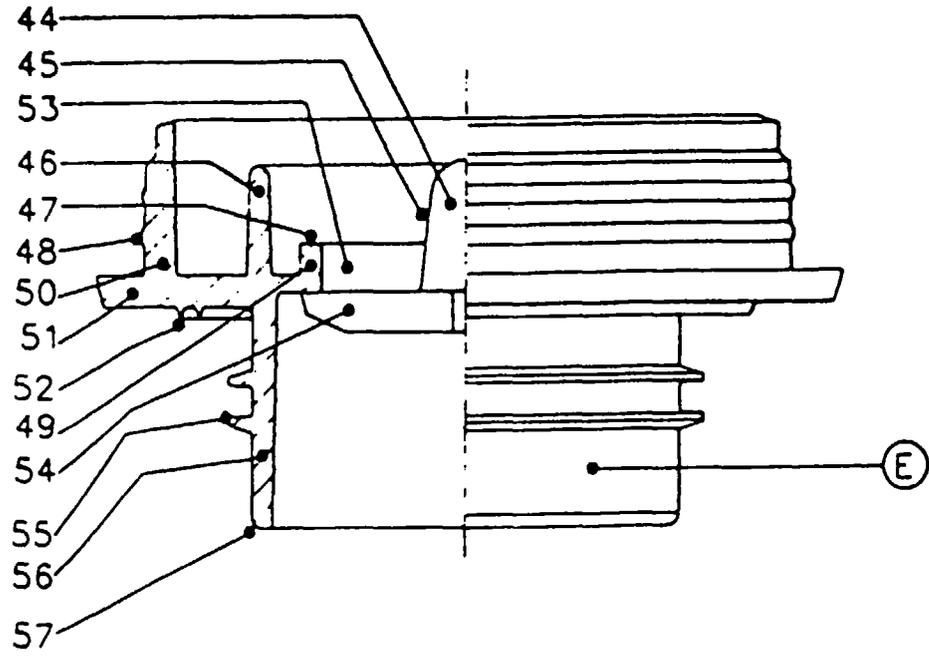


FIG. 6

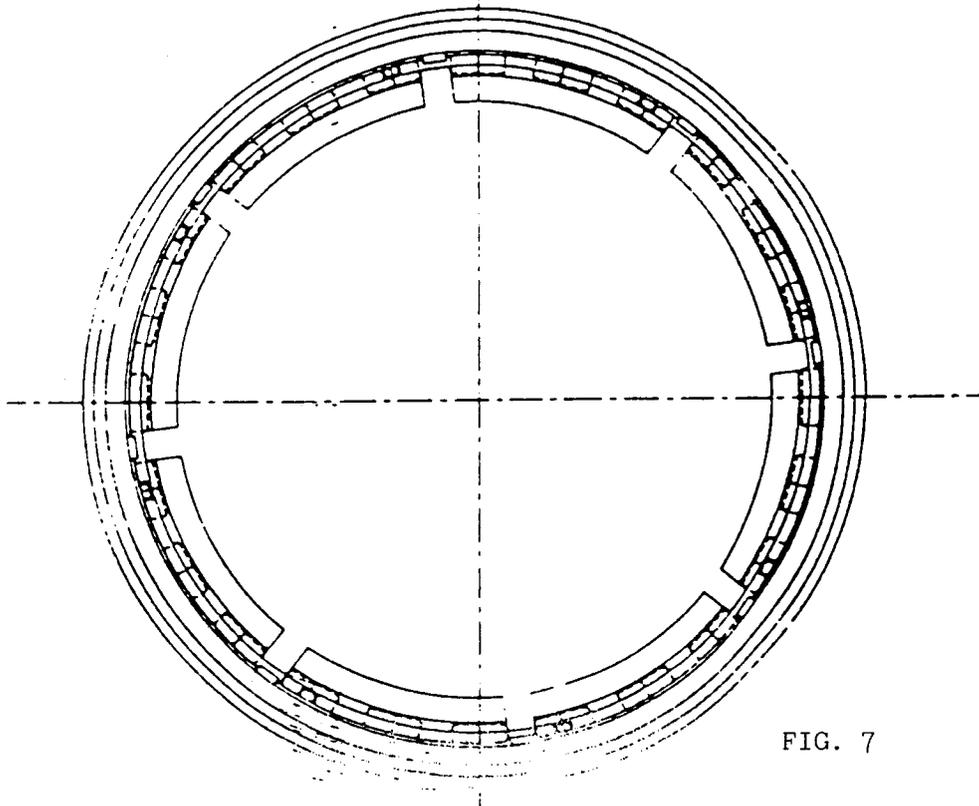
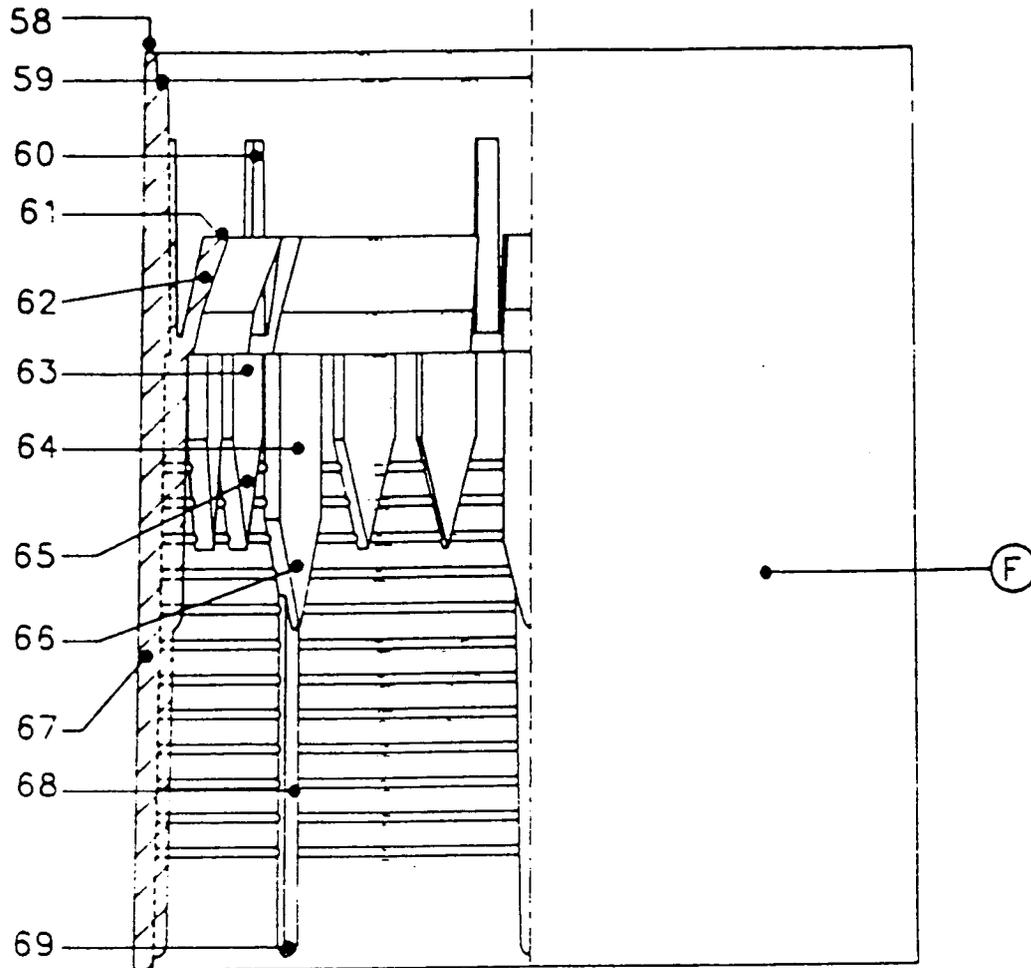


FIG. 7

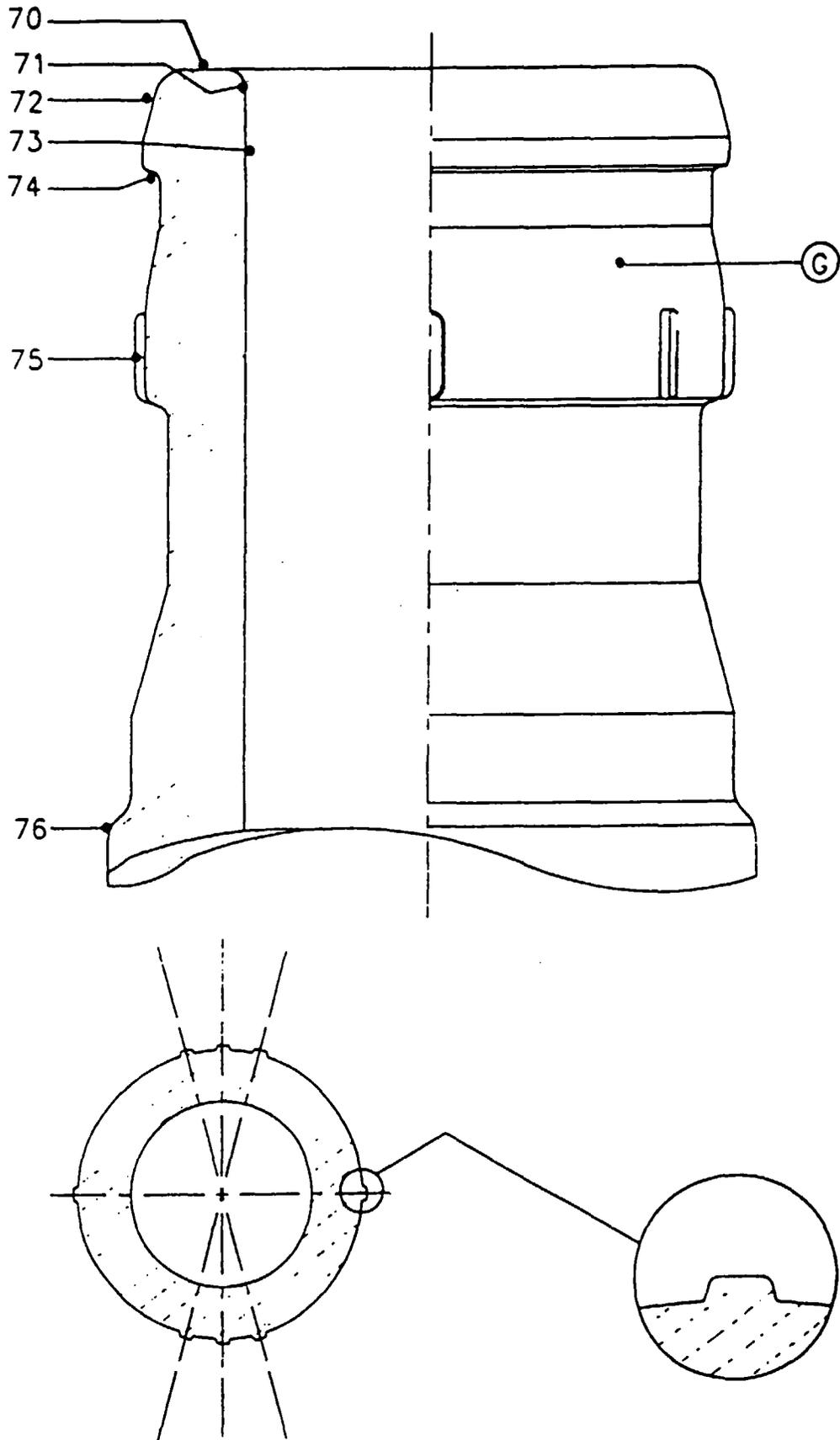


FIG. 8

## INTERNATIONAL SEARCH REPORT

International Application No  
PCT/MX 96/00001

A. CLASSIFICATION OF SUBJECT MATTER IPC 6 B65D49/04 B65D51/18 B65D41/34		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED		
Minimum documentation searched (classification system followed by classification symbols) IPC 6 B65D		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used)		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	FR,A,2 666 307 (GRUPO STEVI) 6 March 1992 see the whole document ---	1-17
Y	GB,A,2 200 619 (VEM DE TAPAS METALICAS) 10 August 1988 see the whole document ---	1-17
A	US,A,4 497 415 (A. DELONGHI) 5 February 1985 see the whole document ---	1
A,P	GB,A,2 285 623 (D. MONTGOMERY & SONS) 19 July 1995 see the whole document ---	1
A	FR,A,2 505 786 (A. GUALA S.P.A.) 19 November 1982 see the whole document ---	1
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<input checked="" type="checkbox"/>	Further documents are listed in the continuation of box C.	<input checked="" type="checkbox"/>
	Patent family members are listed in annex.	
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Date of the actual completion of the international search	Date of mailing of the international search report	
4 June 1996	12.06.96	
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+ 31-70) 340-2040, Tx. 31 651 epo nl, Fax (+ 31-70) 340-3016	Authorized officer Pernice, C	

INTERNATIONAL SEARCH REPORT

International Application No

PCT/MX 96/00001

C.(Classification) DOCUMENTS CONSIDERED TO BE RELEVANT		
Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB,A,1 203 704 (A.GUALA S.P.A.) 3 September 1970 see the whole document -----	1