

March 6, 1951

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2,544,586

BOTTLE CAP

Filed Sept. 16, 1947

FIG. 1.

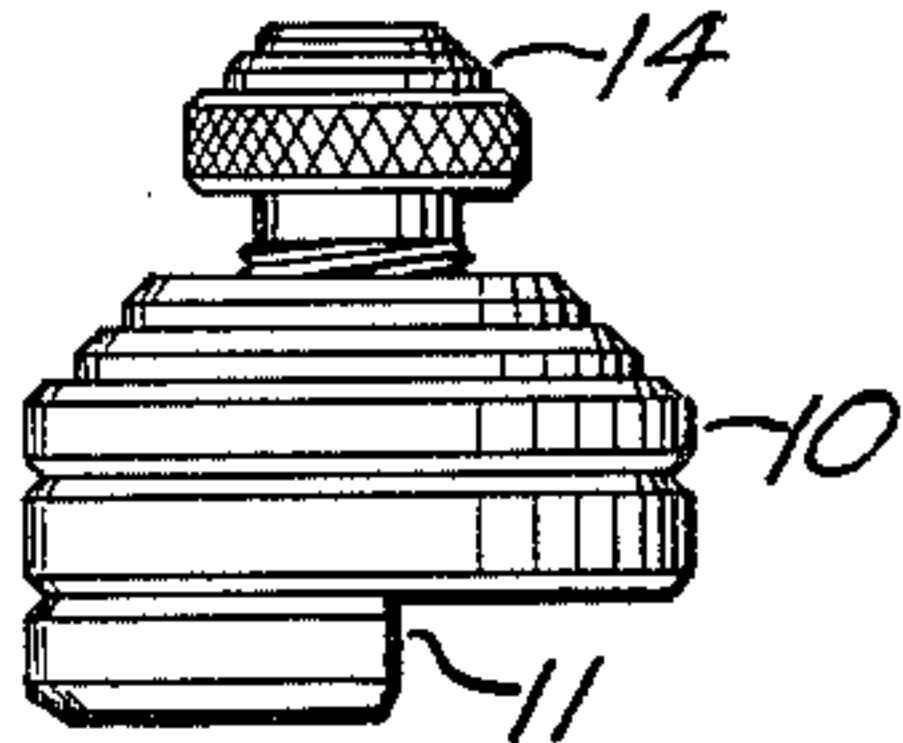


FIG. 2.

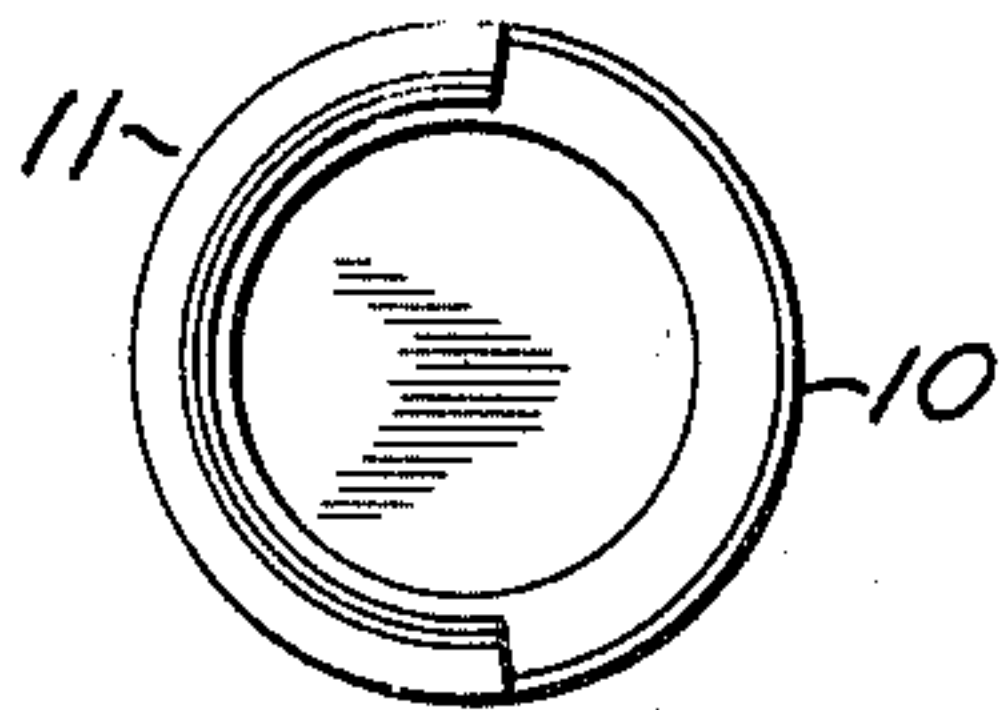


FIG. 5.

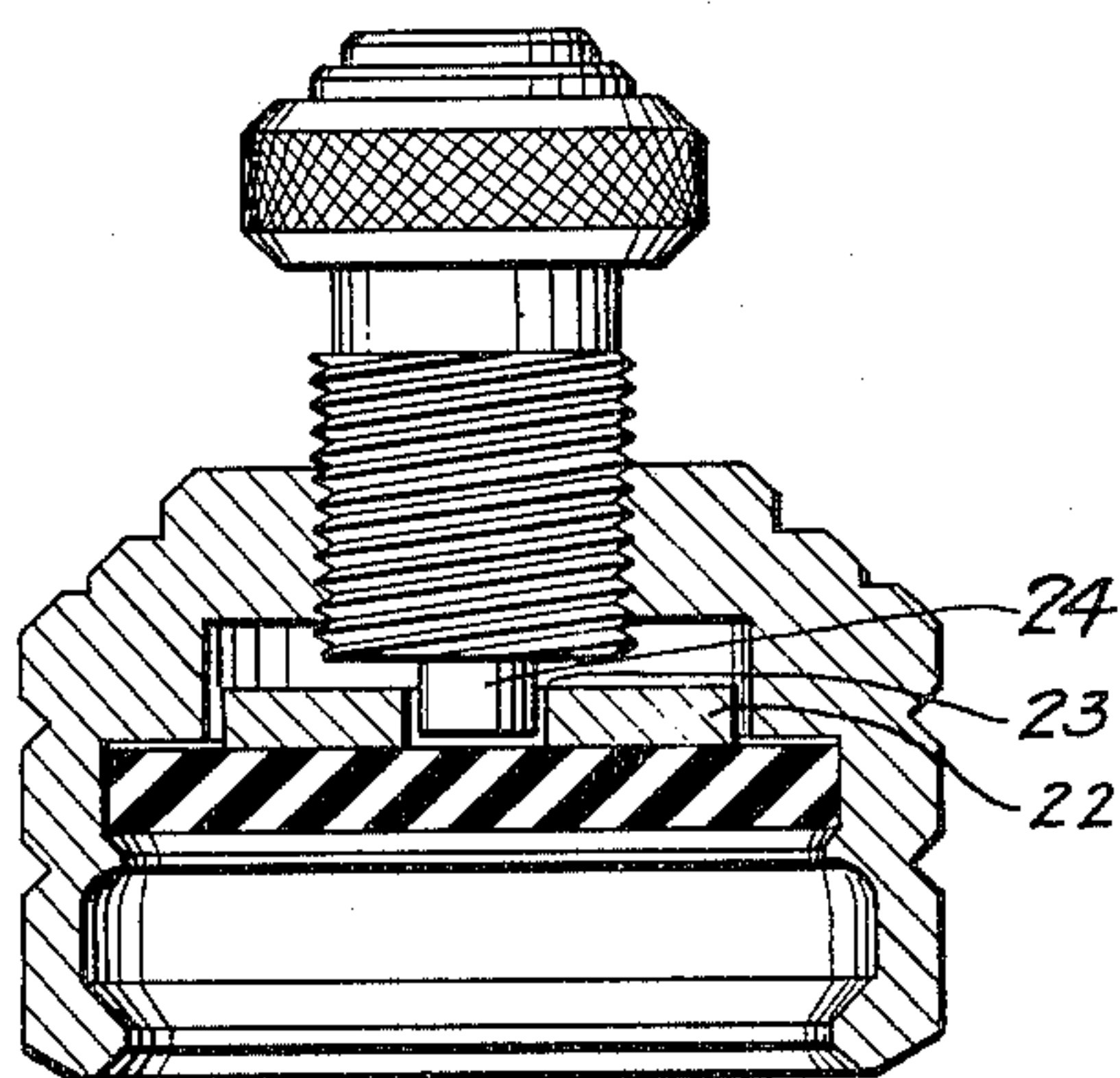


FIG. 3.

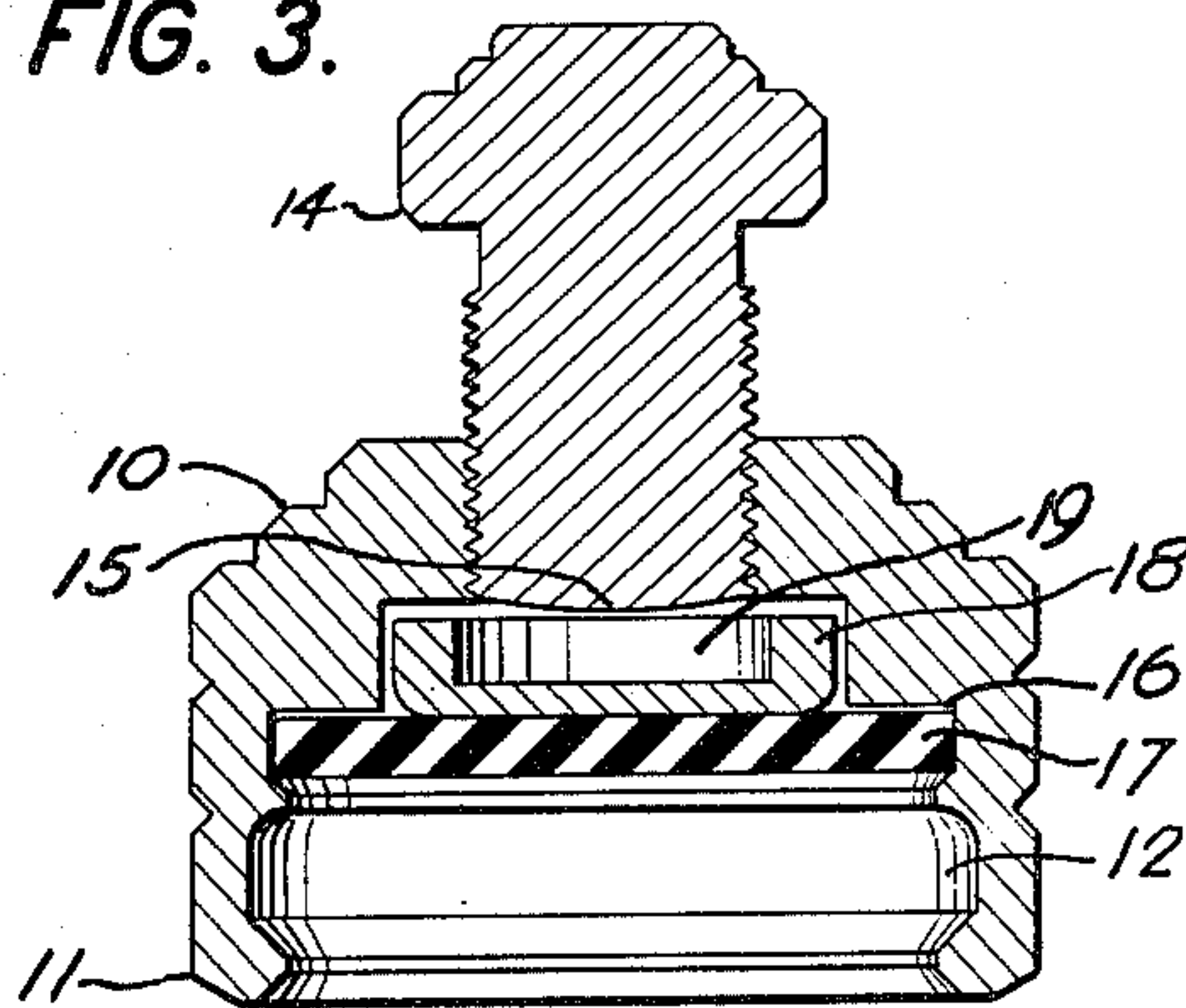
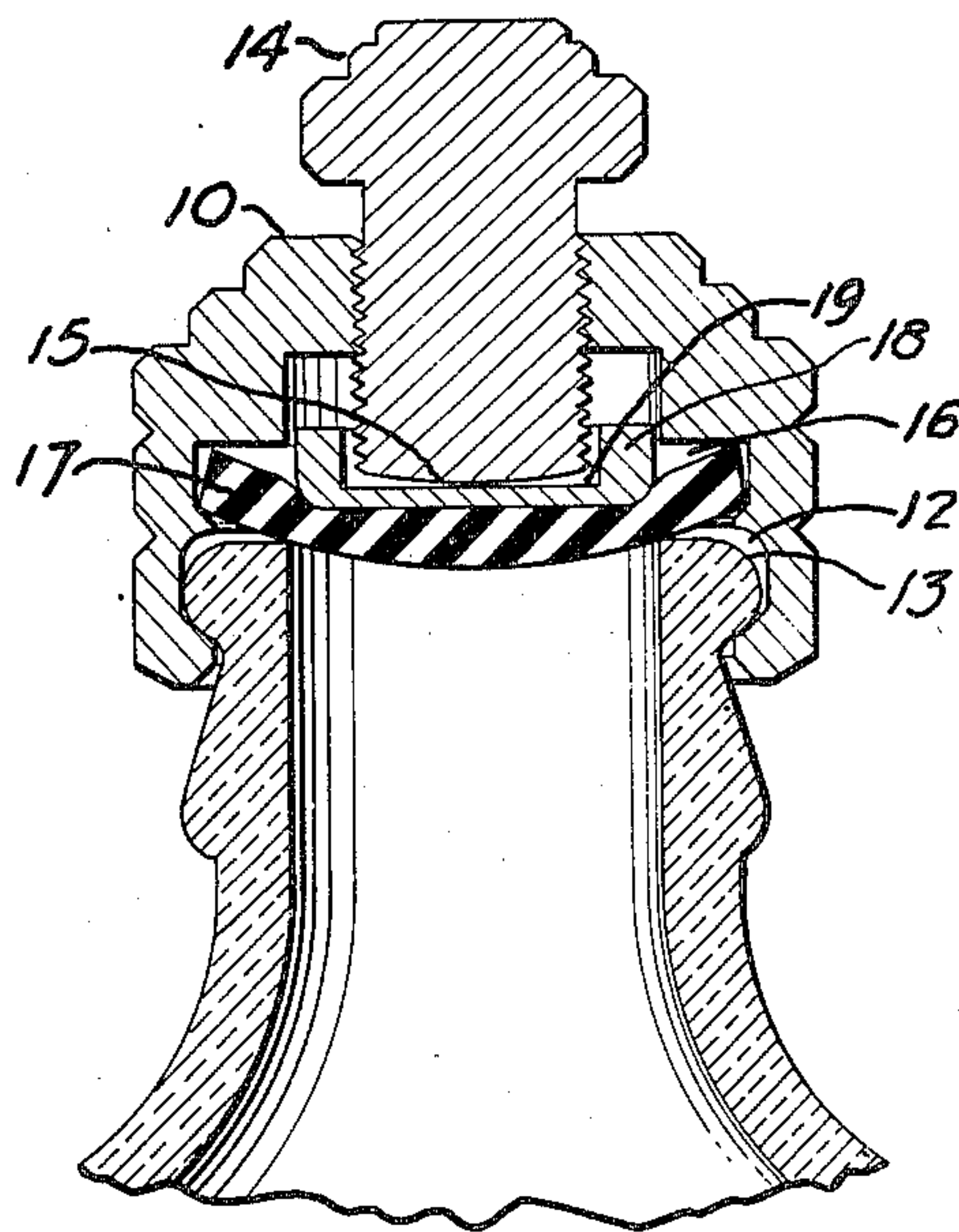


FIG. 4.



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2,544,586

BOTTLE CAP

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Application September 16, 1947, Serial No. 774,276

3 Claims. (Cl. 215—38)

1

This invention relates to bottle caps and particularly to caps for bottles of the type which have a bead around the top of the neck to which "crown" type caps are crimped at the bottling works. This is the type of bottle in which beer, carbonated soft drinks, etc., are sold customarily and after the crimped cap is removed it is impractical to cap the bottle tightly with the crimped cap.

Frequently, for example, when only part of the contents of a bottle of beer or soda water is consumed at one time, it is desirable to reseal the bottle again to prevent the remainder of the contents from "going flat," and a variety of caps have been proposed for this purpose. However, many of these caps are so complicated that their use is not economic and others achieve simplicity through the sacrifice of efficiency or durability, so that there is need for a simple, rugged, easily operated bottle cap which will seal bottles of the type described above. My invention provides such a cap.

In essence, my invention contemplates a bottle cap having a body provided with means for holding it on the "bead" at the top of a bottle neck. This means preferably is a substantially semi-annular projection on the bottom of the body having an internal groove into which the bead may be slipped sidewise. A screw is threaded through the top of the body with its axis transverse to a plane passing through the internal groove of the projection or "holder." A flexible diaphragm of substantial thickness, say a rubber pad is fastened in the body between the holder and the screw and extending transverse to the axis of the latter so that the screw may be screwed down to push down the center portion of the diaphragm against the top of the bead and thus seal it.

Preferably a contact disc is disposed in the body on top of the diaphragm, so that the end of the screw bears on the disc and forces it down against the diaphragm when the screw is rotated in the proper direction. The contact disc eliminates some of the friction which exists if the screw bears directly on the diaphragm. The contact disc, or the end of the screw if the contact disc is eliminated, should be of approximately the same cross section as the interior of the bottle neck at the bead, thus permitting the diaphragm to be squeezed slightly into the neck and improve sealing.

Sealing is further improved if the end of the screw, or of the contact disc if one is employed, has rounded outside lower edges, thus aiding the

2

diaphragm in assuming the contour of the inside of the bead and reducing the possibility of cutting the diaphragm.

Means should be provided for assuring that the contact disc always centers on the neck, and this is preferably accomplished by boring a concentric shallow bore on its top, into which the bottom of the screw is journaled.

To reduce friction, the bottom portion of the screw which is journaled in the contact disc may have a domed end surface which bears against only the center portion of the bore bottom.

The foregoing and other aspects of the invention will be clear in the light of the following detailed description, taken in conjunction with the accompanying drawings in which:

Fig. 1 is an elevation of a preferred form of the bottle cap of the invention;

Fig. 2 is a bottom view of the bottle cap of Fig. 1;

Fig. 3 is a sectional elevation of a preferred form of the bottle cap;

Fig. 4 is another sectional elevation showing the operation of the bottle cap to seal a bottle; and

Fig. 5 is an elevation partly in section, of a modified form of the bottle cap of the invention.

Referring to Figs. 1, 2 and 3, the bottle cap comprises a hollow body 10 having a projection 11 on its bottom. This projection is in the form of approximately half a ring and has a semi-annular internal groove 12. This groove is so shaped that approximately one-half of the bead 13 on a bottle may be slid into it sidewise (see Fig. 4). The cap is provided with a screw 14 which is threaded coaxially into the top of the body. The upper end of the screw is knurled to facilitate turning with the fingers. The lower end 15 of the screw (see Figs. 3 and 4) is slightly domed.

As shown in Figs. 3 and 4, the body has an annular groove 16 lying in a plane perpendicular to the axis of the screw above the groove of the semi-annular projection. A rubber diaphragm or gasket 17 is disposed in the upper annular groove. The gasket may be fitted into the groove through the lower end of the body. The gasket is of substantial thickness so as to give a cushioning action on the bottle top when the seal is applied.

Although I prefer to use a rubber diaphragm, other resilient flexible material may also be employed, for example, leather.

A contact disc 18 of circular plan rests on the top of the diaphragm. In the modification illustrated in Figs. 3 and 4, this contact disc has a

3

shallow bore 19 on its top surface into which the lower end of the screw is in effect journaled when the cap is employed for sealing purposes (see Fig. 4).

The outside diameter of the contact disc should be approximately the same as the inside diameter of the bottle neck (see Fig. 4).

The operation of the apparatus of Figs. 1 to 4 is as follows: With the screw 14 in an open position, so that it exerts no compression on the diaphragm, the body is slid sidewise over the bead of a bottle to be capped. The screw is then turned so that its lower end fits in the bore of the contact disc and pushes the latter down. This in turn distorts the diaphragm and forces it tightly against the top of the bottle neck and also slightly down into the bottle neck to assure a tight seal.

The end of the screw has a very small area of contact with the contact disc, the bottom of the bore in the contact disc being flat. This reduces friction and makes the apparatus easier to apply and also easier to remove.

Referring to Fig. 5 it will be observed that the cap which it illustrates is the same as that of Figs. 1 to 4, save that the contact disc is in the form of an annulus 22 with a central bore 23 of small diameter into which is fitted a central tit 24 on the bottom of the screw. This tit holds the contact disc in a concentric position.

Another important feature of the invention is illustrated in Fig. 2 wherein the projection 11 having the annular groove is shown as occupying slightly more than 180° of the circle. This effectively prevents the cap from being forced off the bottle accidentally, because the pressure is applied "beyond center."

Other modifications of the invention may be made without departing from the inventive concepts.

I claim:

1. In a bottle cap, the combination which comprises a body, a screw threaded into the top of the body, a semi-annular projection on one side of the bottom of the body having an internal groove lying in a plane transverse to the axis of the screw so that the bead of a bottle top may be slid laterally thereinto, an annular groove on the inside of the body spaced above the said internal groove and in a plane parallel thereto, a flexible diaphragm of substantial thickness held inside the body in said annular groove above the projection and extending across the body in a plane transverse to the axis of the screw, and a contact disc disposed in the body between the diaphragm and the lower end of the screw and depressible downward by the screw to distort the diaphragm downward against the bead.

2. In a bottle cap, the combination which comprises a body, a screw threaded into the top of the body, a semi-annular projection on one side of the bottom of the body having an internal

4

groove lying in a plane transverse to the axis of the screw so that the bead of a bottle top may be slid laterally thereinto, an annular groove on the inside of the body spaced above the said internal groove and in a plane parallel thereto, a flexible diaphragm of substantial thickness held inside the body in said annular groove above the projection and extending across the body in a plane transverse to the axis of the screw, and a contact disc disposed in the body between the diaphragm and the lower end of the screw and provided with a bore in which the lower end of the screw is journaled and depressible downward by the screw to distort the diaphragm downward against the bead the screw having a domed end so as to minimize friction between the screw and the contact disk.

3. In a bottle cap, the combination which comprises a body, a screw threaded through the top of the body and into a coaxial bore in the body, a semi-annular projection on one side of the bottom of the body having an internal groove lying in a plane transverse to the axis of the screw so that the bead of a bottle top may be slid laterally thereinto, an annular groove on the inside of said body between said bore and said semi-annular projection and in a plane parallel to said internal groove, a flexible diaphragm of substantial thickness held inside the body and seating in said annular groove, the diaphragm extending across the body in a plane transverse to the axis of the screw, a contact disk disposed in the body between the diaphragm and the lower end of the screw and projecting into said bore so as to be coaxially aligned in the body by said bore, the contact disk being depressible downwardly by the screw to distort the diaphragm against the inner periphery of the bead.

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