

Feb. 28, 1939.

F. J. DAVIS

2,148,440

BOTTLE CLOSURE

Filed Feb. 25, 1937

Fig. 1

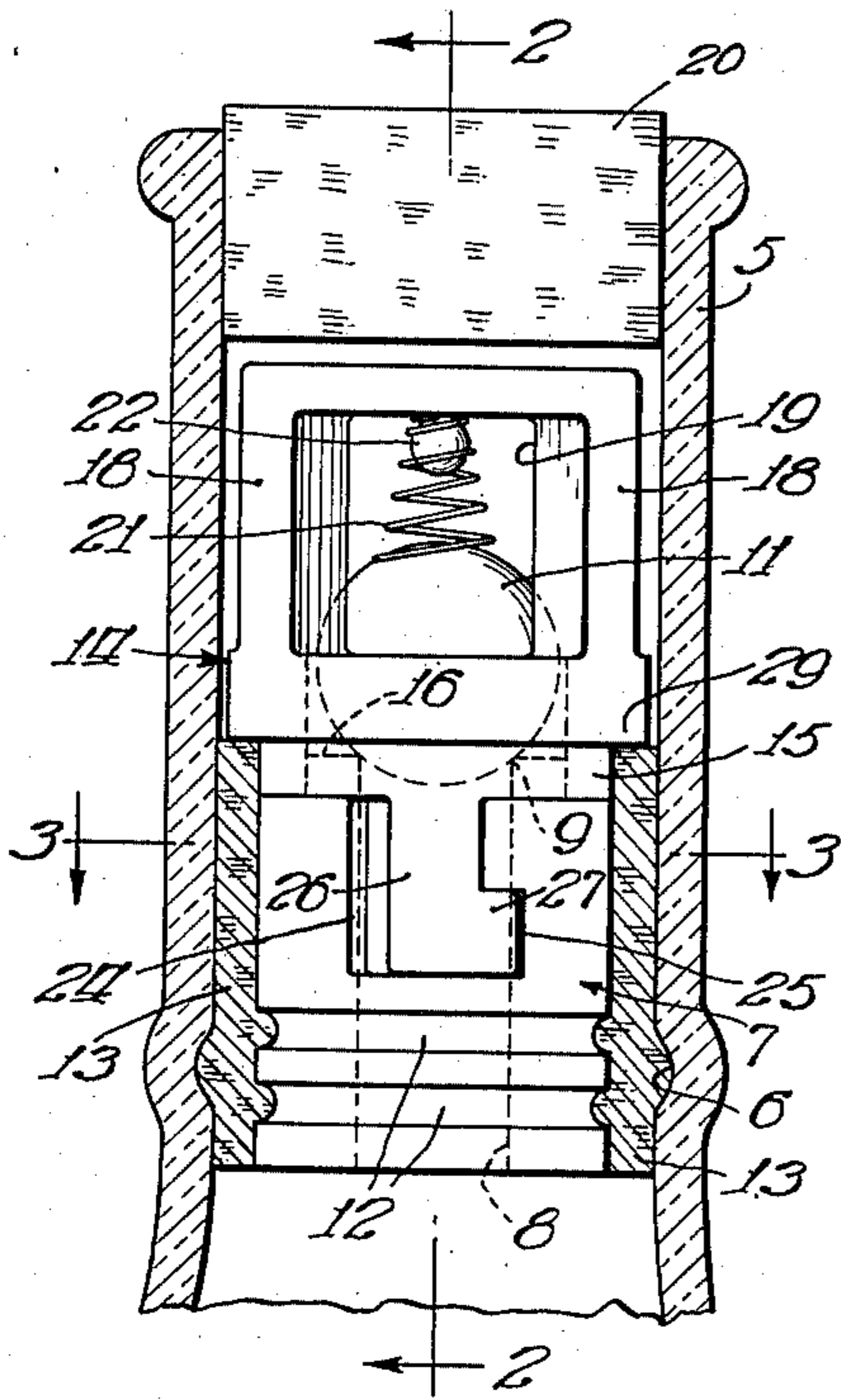


Fig. 2

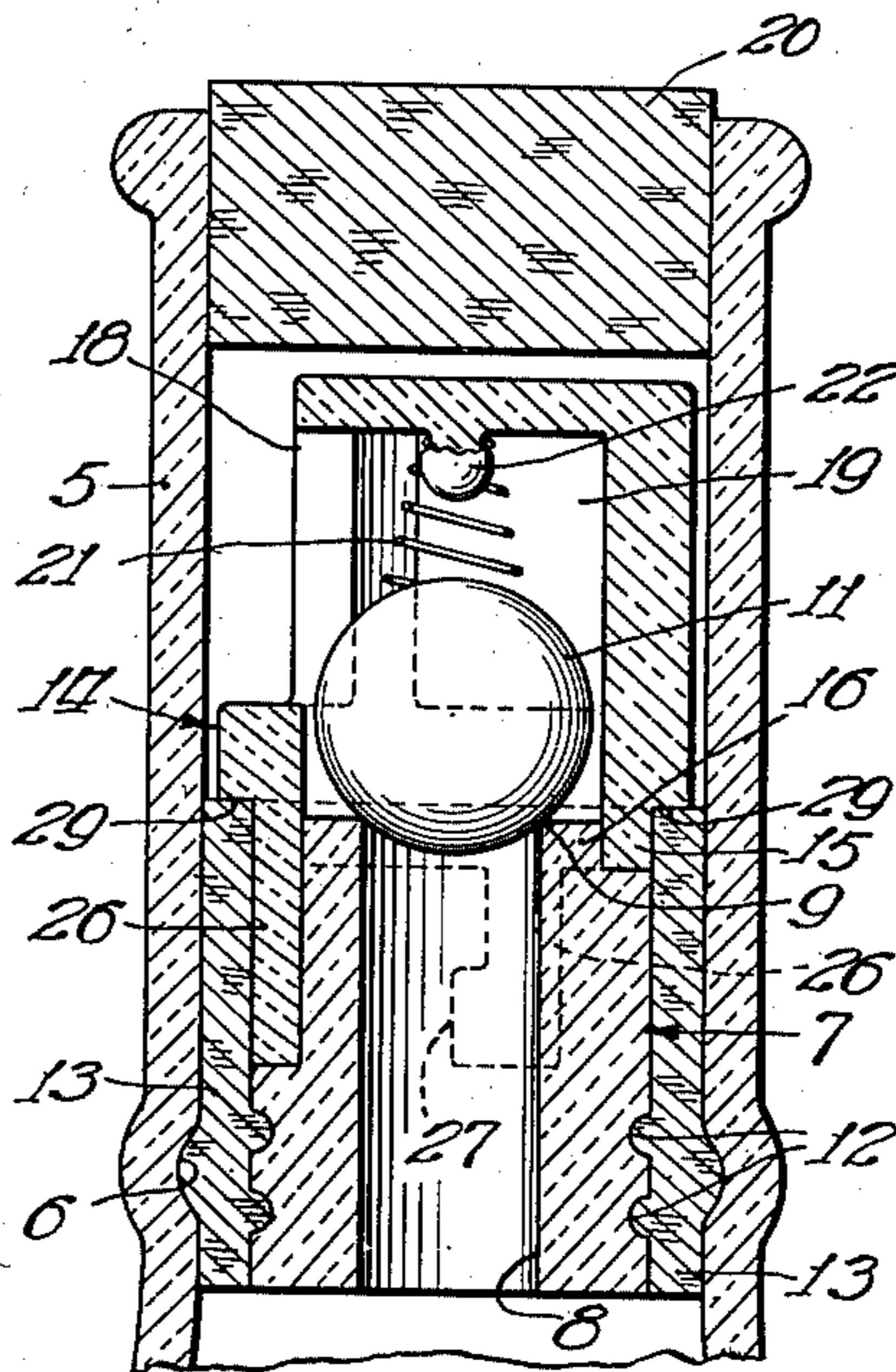


Fig. 3

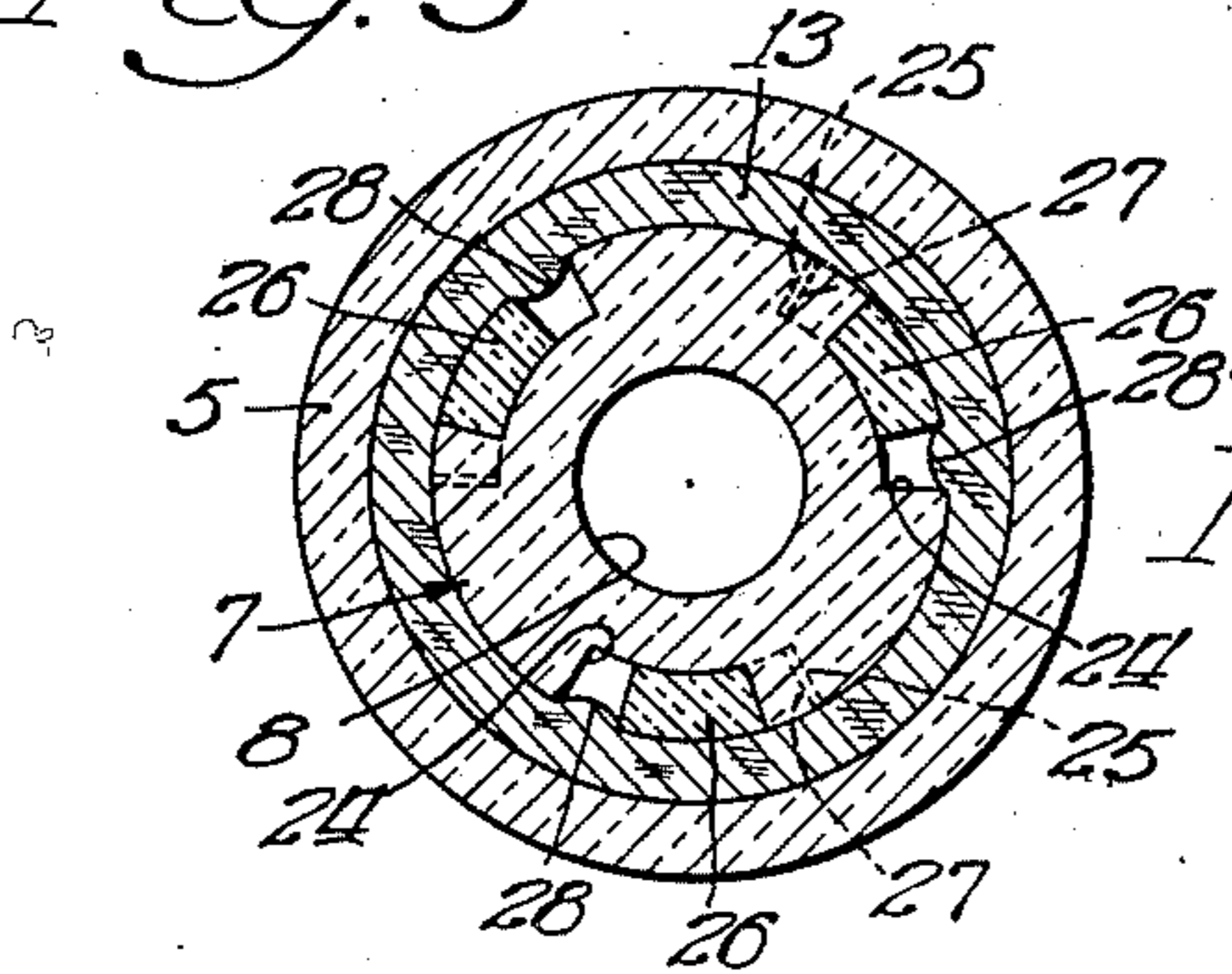


Fig. 4

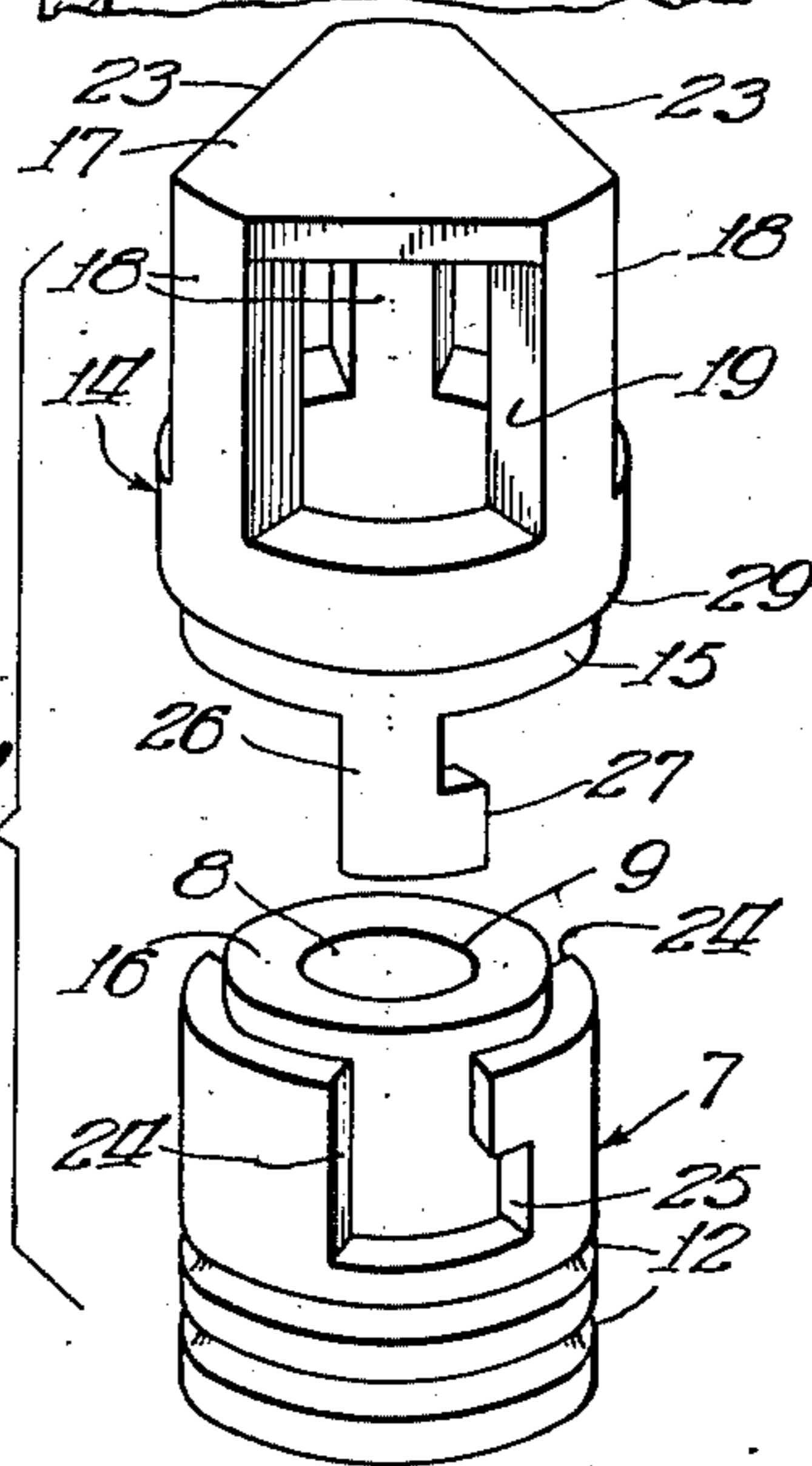
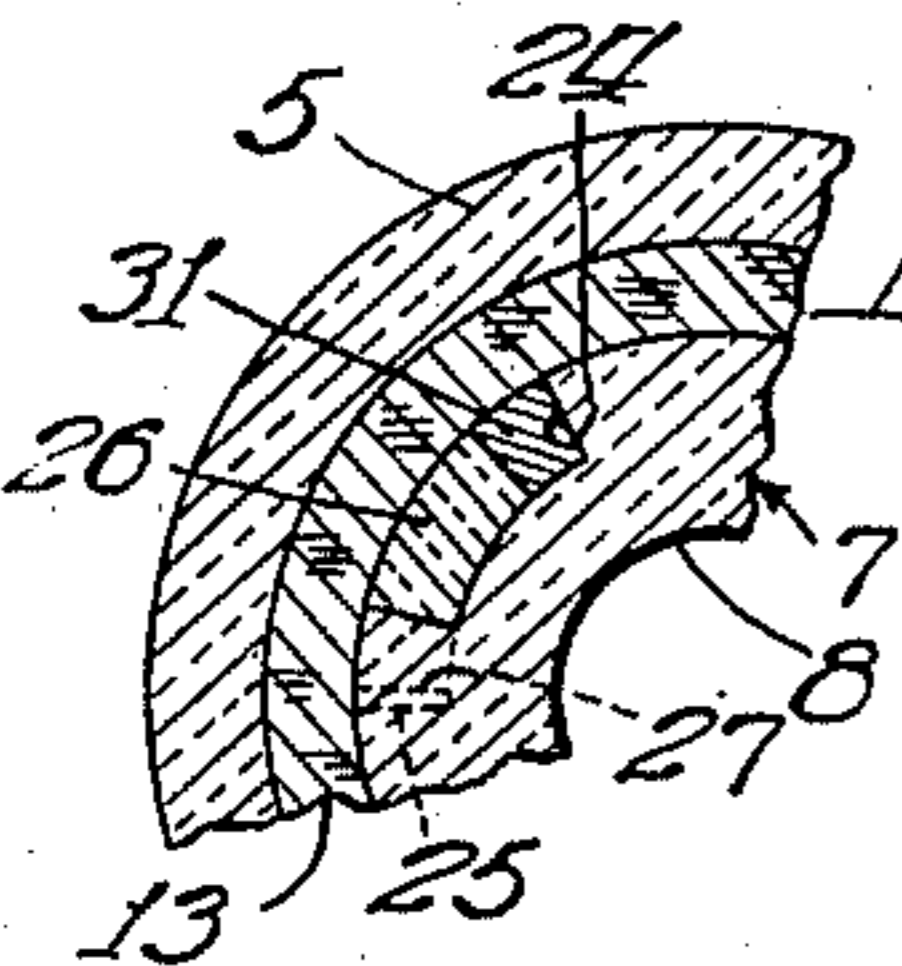


Fig. 5



Witness: V. Silander

Inventor:  
Frank J. Davis  
By: Hill & Hill, Attys.

## UNITED STATES PATENT OFFICE

2,148,440

## BOTTLE CLOSURE

Frank J. Davis, Chicago, Ill., assignor, by direct  
and mesne assignments, to Alfred J. Molden-  
hauer, Chicago, Ill.

Application February 25, 1937, Serial No. 127,678

3 Claims. (Cl. 215—19)

This invention relates to bottle closures or stoppers, and particularly to a stopper for attachment to a bottle to render the bottle non-refillable.

One object of the present invention is to provide a stopper, which may be assembled outside the bottle and inserted complete in the neck of a bottle after the bottle has been filled.

Another object of the invention is to provide a stopper having novel means associated therewith for securing portions of the stopper together, and wherein portions of said means are adapted to cooperate with a binding member positioned in the neck portion of a bottle to prevent relative displacement of the respective portions of the stopper structure.

Another object of the invention is to provide a stopper having a ball valve, and wherein yieldable means are employed for normally retaining the ball on a valve seat in a manner to prevent refilling of the bottle and yet permit the dispensing of fluid therefrom.

Another object of the invention is to provide a novel stopper structure wherein a minimum of metal is employed in its construction and operation.

A further object of the invention is to provide a bottle stopper adapted for attachment to a particular type of bottle neck construction.

A still further object of the invention is to improve devices of the character described in sundry details hereinafter referred to and particularly pointed out in the appended claims.

One embodiment of the present invention is shown for illustrative purposes in the accompanying drawing, in which:

Fig. 1 is a sectional elevational view of a bottle neck illustrating the application of my improved stopper thereto;

Fig. 2 is a sectional elevational view of the structure illustrated in Fig. 1, and taken substantially as indicated by the line 2—2 thereof;

Fig. 3 is a plan sectional view taken substantially as indicated by the line 3—3 of Fig. 1;

Fig. 4 is an exploded view illustrating in perspective certain cooperating elements employed in the construction of my improved stopper; and

Fig. 5 is a fragmentary plan sectional view of a portion of the structure shown in Fig. 3, and illustrating a slightly modified construction of a portion of the structure shown therein.

This invention is, in part, an improvement on the Bottle closure of my copending application, Serial No. 87,029, filed June 24, 1936, and in the drawing of the present application the illustrative embodiment of the invention is shown ap-

plied to a particular form of bottle neck 5 having an internal annular groove or recess 6, the illustrative embodiment of the improved stopper, in the present instance, comprising a body member indicated, as a whole, by the numeral 7 and formed, preferably, of glass, the member 7 having an aperture 8 formed therein communicating with the interior of the bottle and having a valve seat 9 formed adjacent and surrounding one end of the aperture 8, the valve seat 9 being adapted to receive a valve member shown, in the present instance, and preferably, as a glass ball 11, for closing the aperture 8 when the bottle is in upright position.

For securing the body member 7 rigidly within the neck of the bottle, the outer sides of a portion of the body member 7 are provided with a plurality of annular grooves 12 adapted to be engaged by a sleeve 13 formed, preferably, of compressible, resilient material such as cork, rubber or the like adapted to fit snugly within the neck of the bottle and, as in the illustrative embodiment, to extend into the annular groove 6 of the bottle neck 5 in a manner to secure the body member 7 more rigidly therein.

Mounted on the body member 7 and surrounding the ball valve member 11 is a cap member indicated, as a whole, by the numeral 14 and formed, preferably, of glass or the like, the cap member having a cylindrical portion 15 formed thereon adjacent its lower end adapted to rest on the body member 7, and retained in substantial alignment therewith by a boss 16 formed on the body member, the cap member being provided with an upper end portion 17 connected to the cylindrical portion 15 by a plurality of annularly spaced ball retaining bars 18 adapted to cooperate with the portion 17 for retaining the ball valve member 11 against displacement from operative relationship with respect to the valve seat 9, the spacing of the bars 18 providing apertures 19 to permit discharge of fluid from the body of the bottle outwardly to the mouth portion thereof which, in the present instance, is shown as having an ordinary closure member or cork 20 placed therein after the bottle has been filled and my improved stopper has been inserted in proper position, the cork 20 being desirable in the shipping or transporting of the bottles after being filled.

Positioned between the portion 17 of the cap member 14 and the ball valve member 11 is a compression spring 21 of suitable tension and of substantially truncated cone shape having its smaller upper end portion retained in proper position with

respect to the portion 17 by means of the stud 22 and its lower or larger end portion being retained in proper relation with respect to the valve member 11 by reason of the convex or spherical form of the ball 11.

It will be noted particularly by reference to Fig. 4 that the portion 17 of the cap member 14 is cut away as indicated at 23 to permit the passage of fluid from the bottle when dispensing the fluid therefrom, and by reference to Figs. 1 and 2, it will be noted that the cylindrical portion 15 of the cap member 14 extends above the plane of the center of the ball valve member 11 in a manner to prevent the insertion of an implement, tool or other device for raising the ball from its seat in an effort to refill the bottle after the fluid has been dispensed therefrom.

For securing the body member 7 and cap member 14 together, the body member 7 is provided with a plurality of longitudinally extending channels 24 formed in its annular face portion, and with laterally annularly extending recesses 25 adjacent the lower ends of the channels 24 and forming a lateral extension or continuation thereof, while the cap member 14 is provided with a plurality or corresponding number of longitudinally extending fingers 26 extending downwardly from the cylindrical portion 15 of the cap member 14 and provided with laterally extending lugs 27 adjacent their lower ends, the fingers 26 and lugs 27 being adapted to enter the respective channels 24 as illustrated in Fig. 1 and by a slight relative rotation of the body member 7 and cap member 14, the lugs 27 will be positioned in the recesses 25 in a manner to secure the members 7 and 14 against relative displacement longitudinally with respect to each other.

For securing the body member 7 and cap member 14 against relative angular displacement, and for retaining the lugs 27 within the recesses 25, it will be noted by reference to Fig. 3 that when the assembled closure, including the sleeve 13, is forced into the bottle neck 5, a portion of the sleeve material adjacent the channels 24 will be forced or pressed inwardly into the channels as indicated at 28, in a manner to engage the fingers 26 and to resist relative rotation of the body and cap members, thereby securing the lugs 27 against displacement with respect to the recesses 25 after my improved stopper has been positioned within the neck of the bottle.

For protecting the resilient cork or rubber sleeve 13 against tampering from outside the bottle, and for preventing the insertion of a tube or similar implement through the member 13 for the purpose of gaining access to the interior of the bottle, the cylindrical portion 15 of the cap member 14 is provided with an outwardly extending annular shoulder 29 adapted to extend to closely adjacent the inner surface of the neck 5, as clearly illustrated in Figs. 1 and 2, and in a manner to permit the insertion of the stopper within the neck portion of the bottle and at the same time prevent the passage of any implement, tool or the like between the shoulder 29 and the inner surface of the neck 5. The shoulder 29 also serves to facilitate positioning of the assembled stopper and sleeve 13 within the bottle neck by providing a surface for engaging the upper end portion of the sleeve 13 as the stopper and sleeve are forced into the neck 5 of the bottle.

By reference to Fig. 5 it will be observed that in lieu of depending upon the inwardly pressed portion 28 of the sleeve 13 for preventing relative rotary movement of the body member 7 and cap

member 14, a filler block 31 may be positioned in the channel 24 after the members 7 and 14 have been rotated relatively to position the lug 27 within the recess 25, thereby retaining the members 7 and 14 against relative rotary movement. It will be observed also that by reason of the sleeve 13 surrounding the member 7 below the shoulder 29 of the cap member 14, the filler block 31 will be retained against accidental displacement with respect to the channel 24.

It will be observed from the foregoing description that the present invention provides a bottle stopper of novel construction and arrangement, which may be assembled outside the bottle and inserted complete in the neck portion thereof after the bottle has been filled, and in a manner to prevent refilling of the bottle after the contents have been dispensed therefrom.

It will be observed also that the present invention provides novel means for securing certain portions of the stopper together and which are adapted to cooperate with resilient means in the neck portion of the bottle to prevent relative displacement of said means and portions of the stopper structure with respect to each other.

Obviously, the present invention is not limited to the precise construction and arrangement shown and described as the same may be variously modified. Moreover, all the features of the invention need not be used conjointly as the same may be used to advantage in variously different combinations and subcombinations.

What I claim as new and desire to secure by Letters Patent is:

1. In a stopper for attachment to a bottle to render the same non-refillable, the combination of a body member rigidly secured in the neck of a bottle, said member having an aperture formed therein communicating with the interior of the bottle and having a valve seat surrounding said aperture, an apertured cap member engaging said body member, a valve member engageable with said seat, said body member having a plurality of annularly spaced channels formed in the outer face thereof and having laterally extending recesses adjacent the respective lower ends of said channels, a plurality of annularly spaced fingers on said cap member adapted to enter the respective channels, laterally extending lugs on the respective fingers engaging said recesses for securing the cap and body members together, and means positioned in said channels between a side thereof and an adjacent side of said fingers for securing said cap and body members against relative displacement angularly with respect to each other.

2. In a stopper for attachment to a bottle to render the same non-refillable, the combination of a body member rigidly secured in the neck of a bottle, said member having an aperture formed therein communicating with the interior of the bottle and having a valve seat surrounding said aperture, an apertured cap member engaging said body member, a valve member engageable with said seat, said body member having a plurality of annularly spaced channels formed in the outer face thereof and having laterally extending recesses adjacent the respective lower ends of said channels, a plurality of annularly spaced fingers on said cap member adapted to enter the respective channels, laterally extending lugs on the respective fingers engaging said recesses for securing the cap and body members together, and a sleeve of compressible material surrounding said body member and adapted to be pressed into said

channels and into engagement with said fingers for securing said cap and body members against relative displacement with respect to each other.

5 3. In a stopper for attachment to a bottle to render the same non-refillable, the combination of a body member rigidly secured in the neck of a bottle, said member having an aperture formed therein communicating with the interior of the bottle and having a valve seat surrounding said  
10 aperture, an apertured cap member rotatably mounted on and with respect to said body member, a valve member movably mounted in said cap and engageable with said seat, said body member having a plurality of annularly spaced channels  
15 formed in the outer face thereof and having laterally extending recesses adjacent the respective lower ends of said channels, a plurality of

annularly spaced fingers on said cap member adapted to enter the respective channels, laterally extending lugs on the respective fingers engageable with said recesses when the cap member and fingers are rotated on the body member for securing the cap and body members against displacement longitudinally with respect to each other, and a sleeve of compressible resilient material surrounding said body member and adapted to be pressed into said channels and into engagement with said fingers for securing the fingers and cap member against angular movement with respect to said body member and for securing said lugs against displacement with respect to said recesses.

FRANK J. DAVIS.

15