

W. J. FREY.
BOTTLE CLOSURE.
APPLICATION FILED JUNE 26, 1906.

Fig. 1.

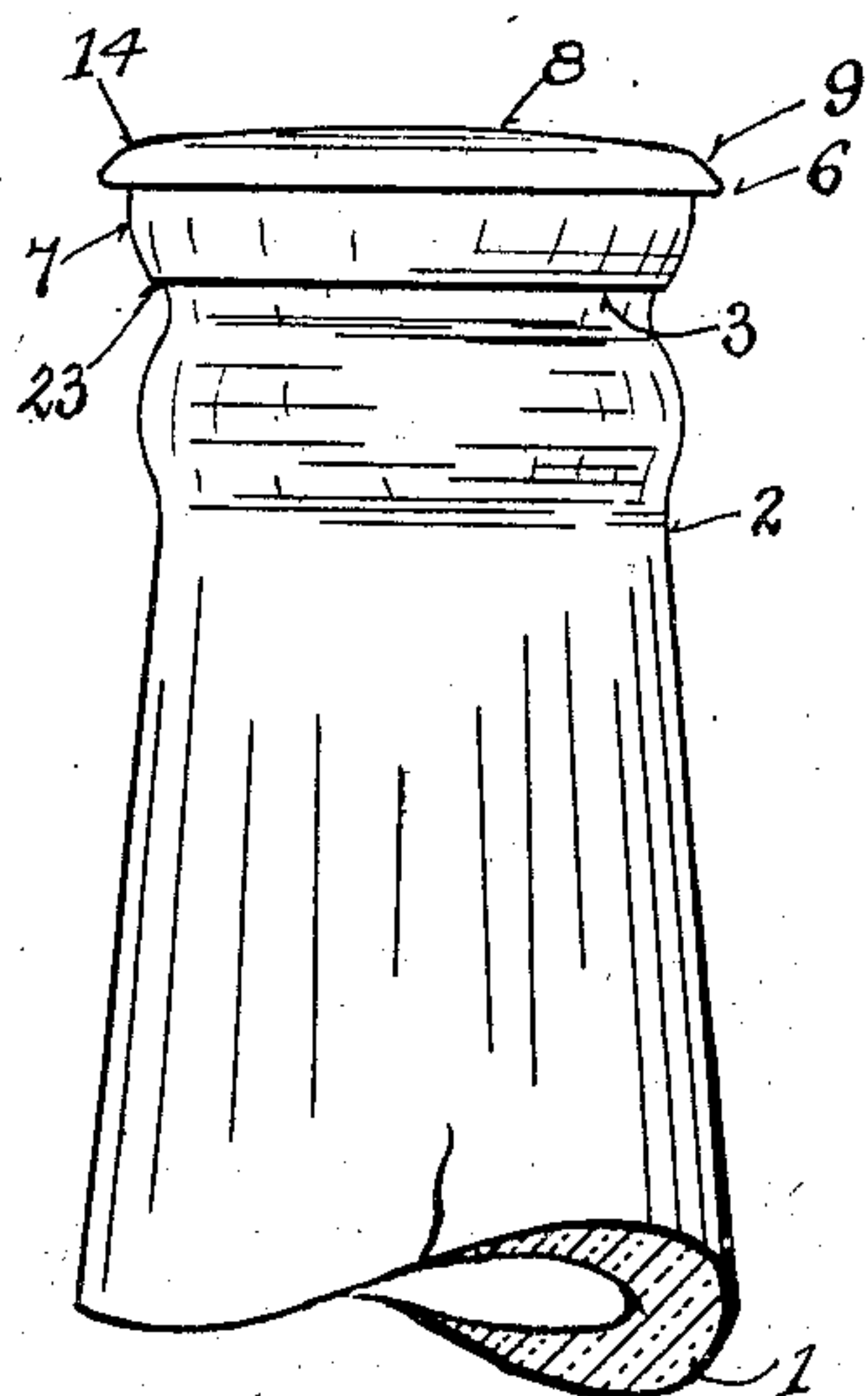


Fig. 6.

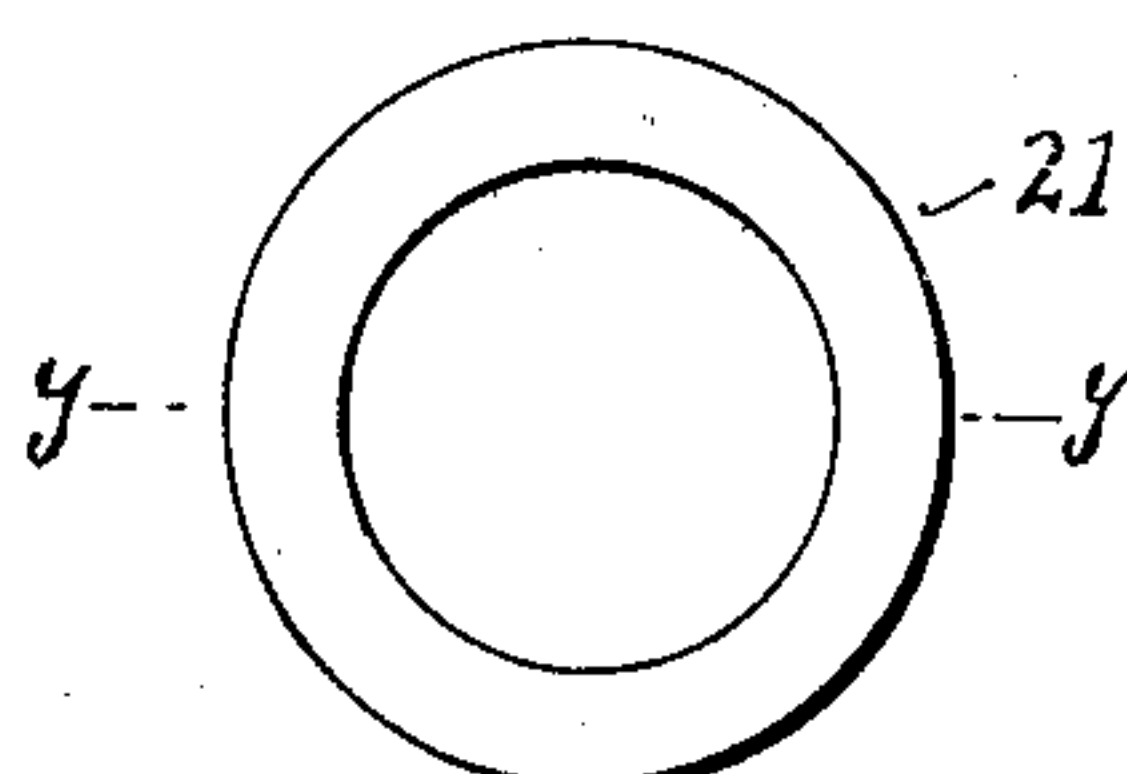


Fig. 2.

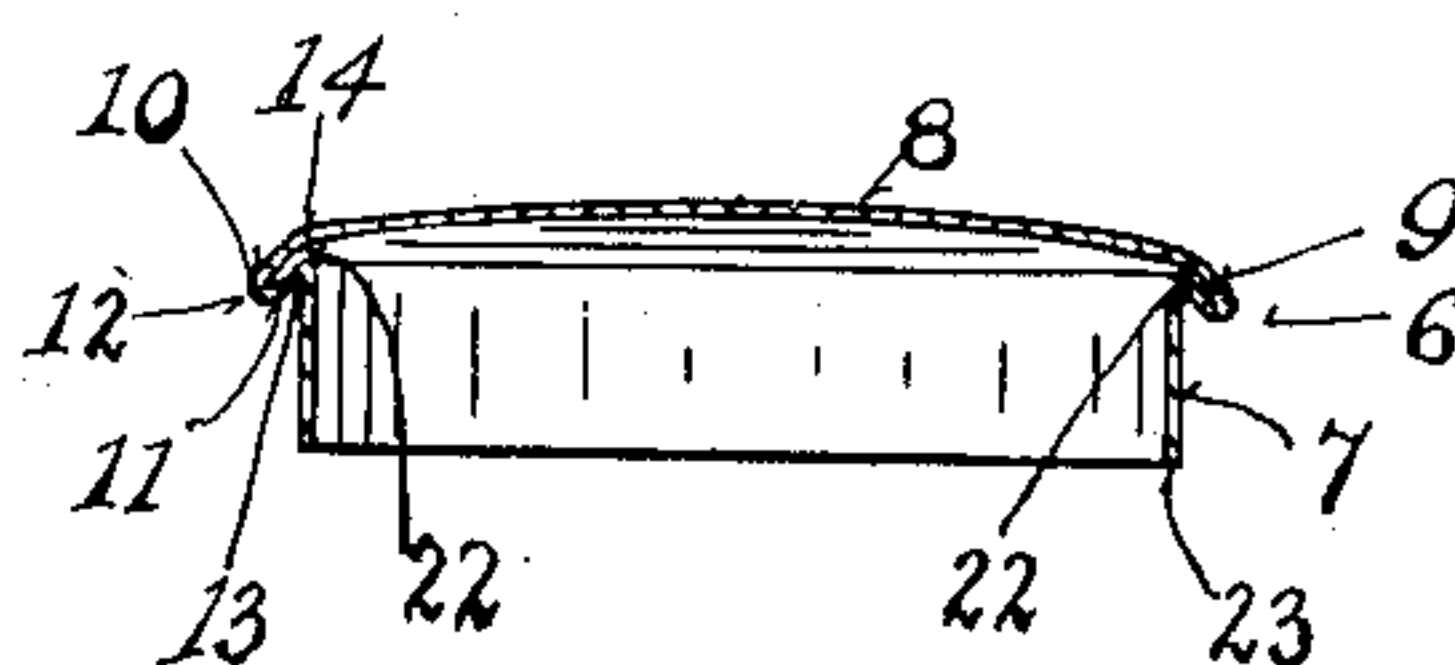


Fig. 4.

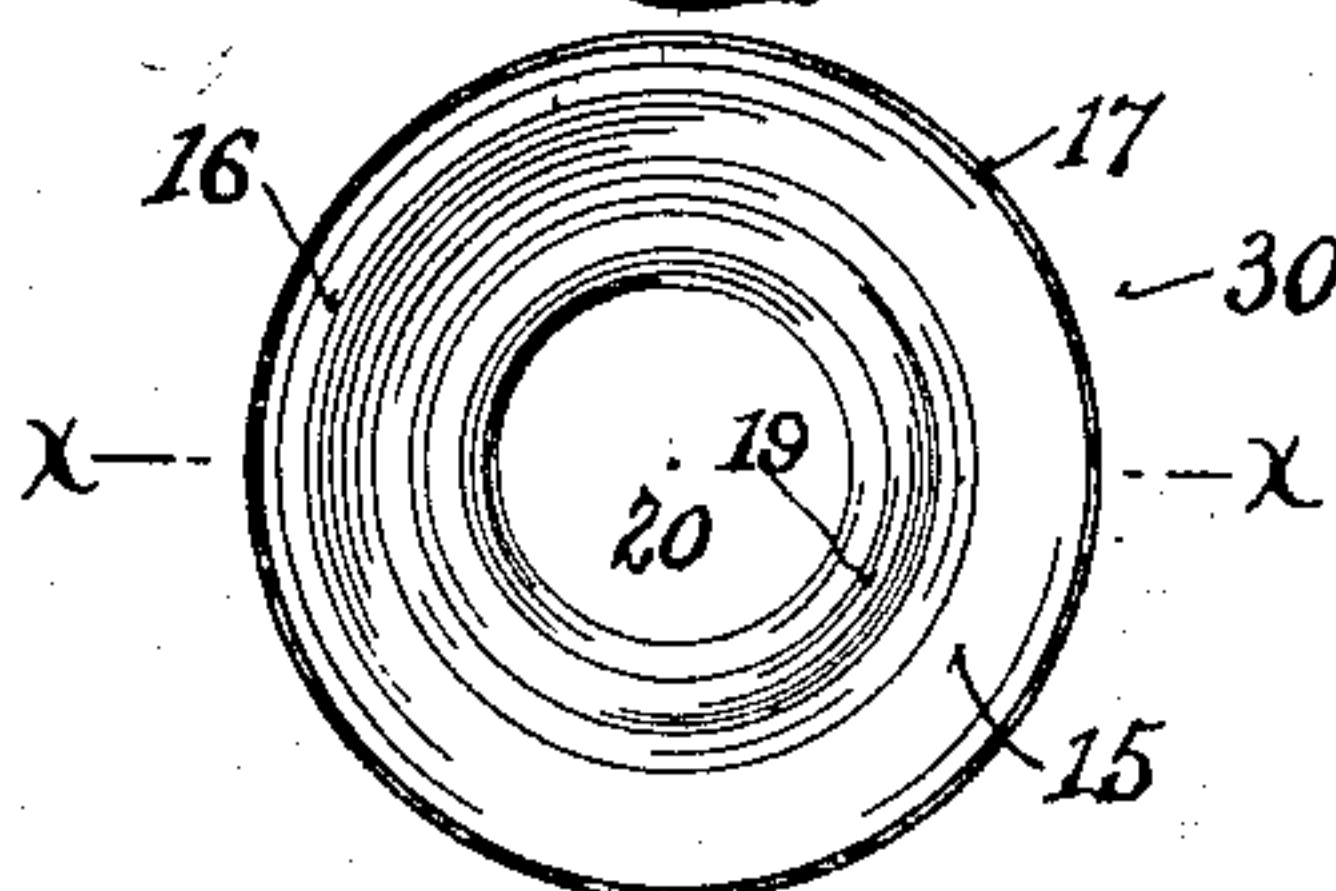


Fig. 7.



Fig. 3.

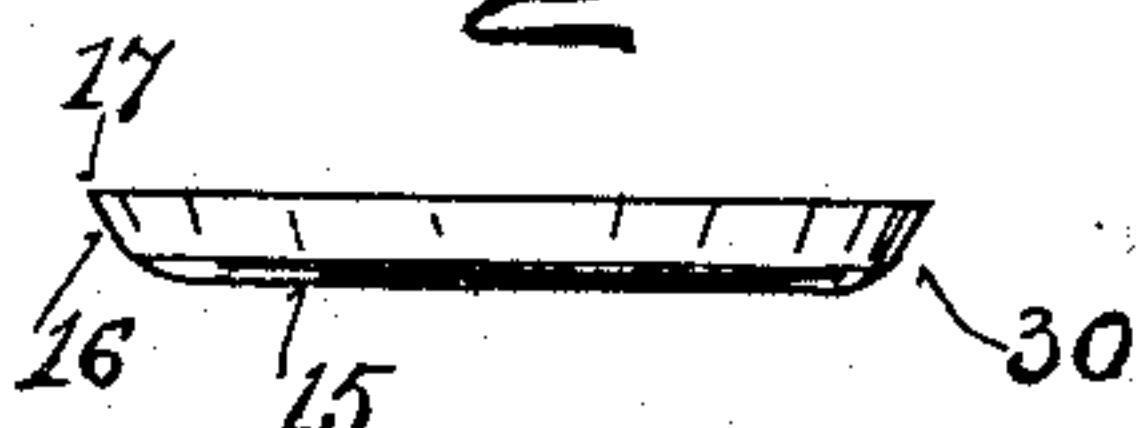


Fig. 5.

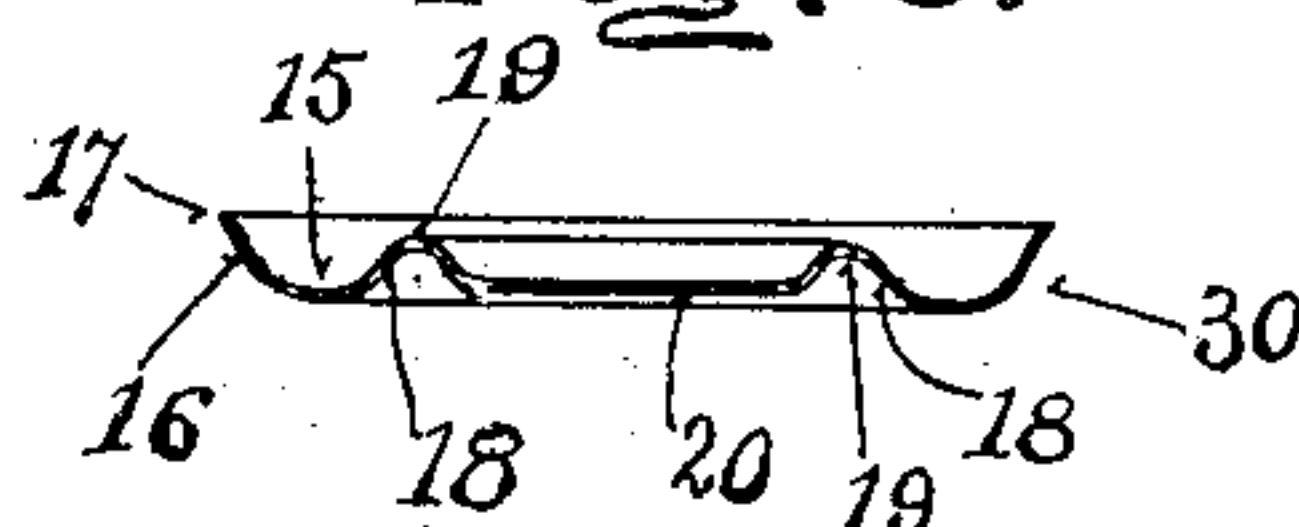


Fig. 11.

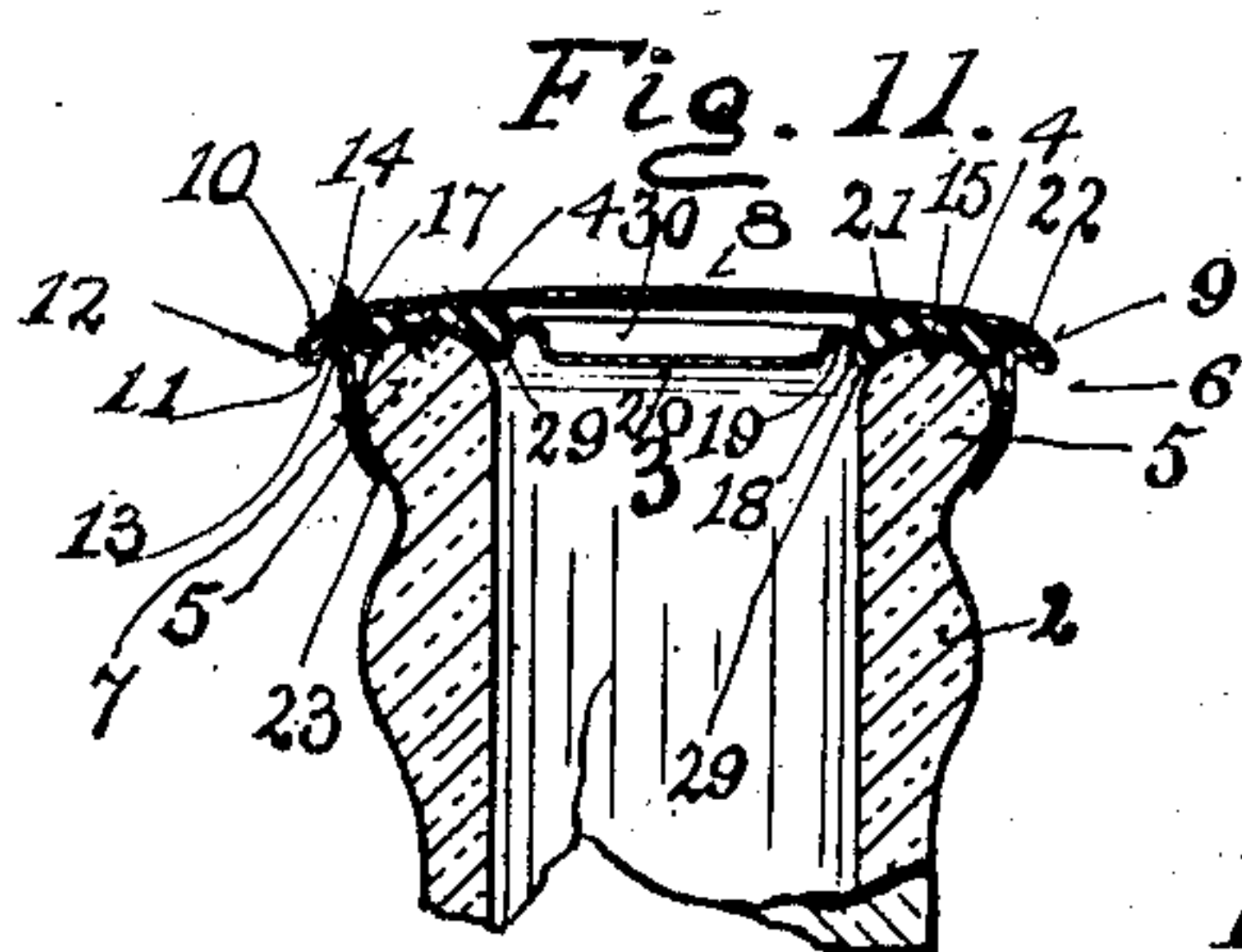


Fig. 9.

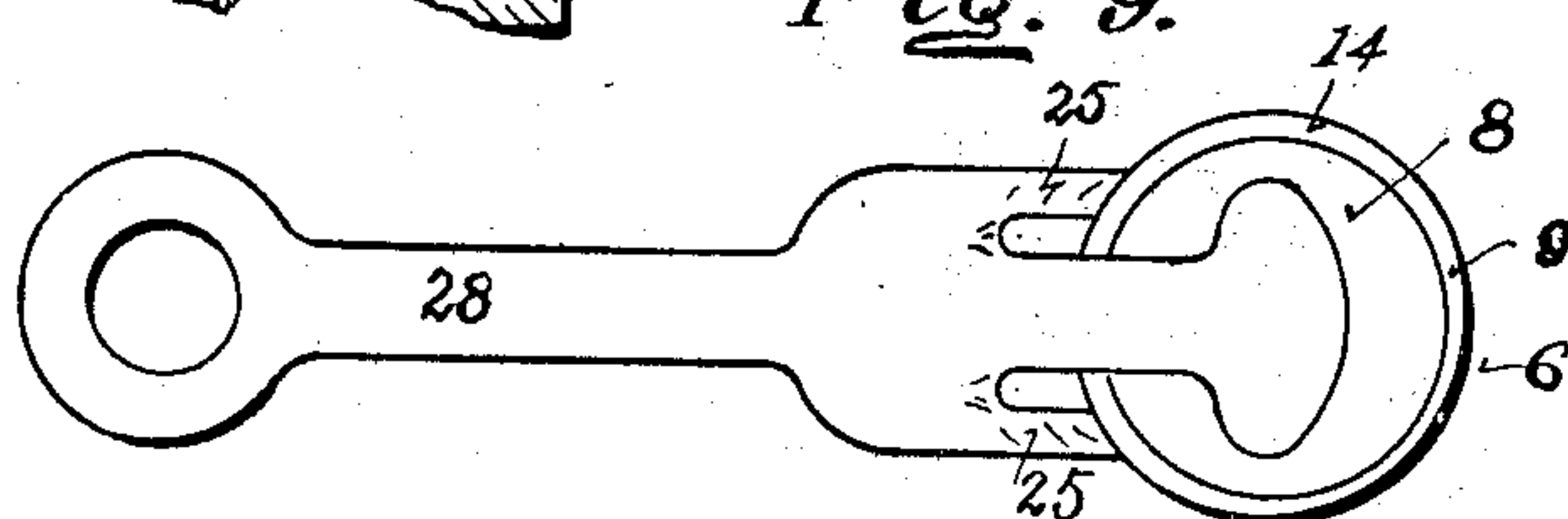


Fig. 8.

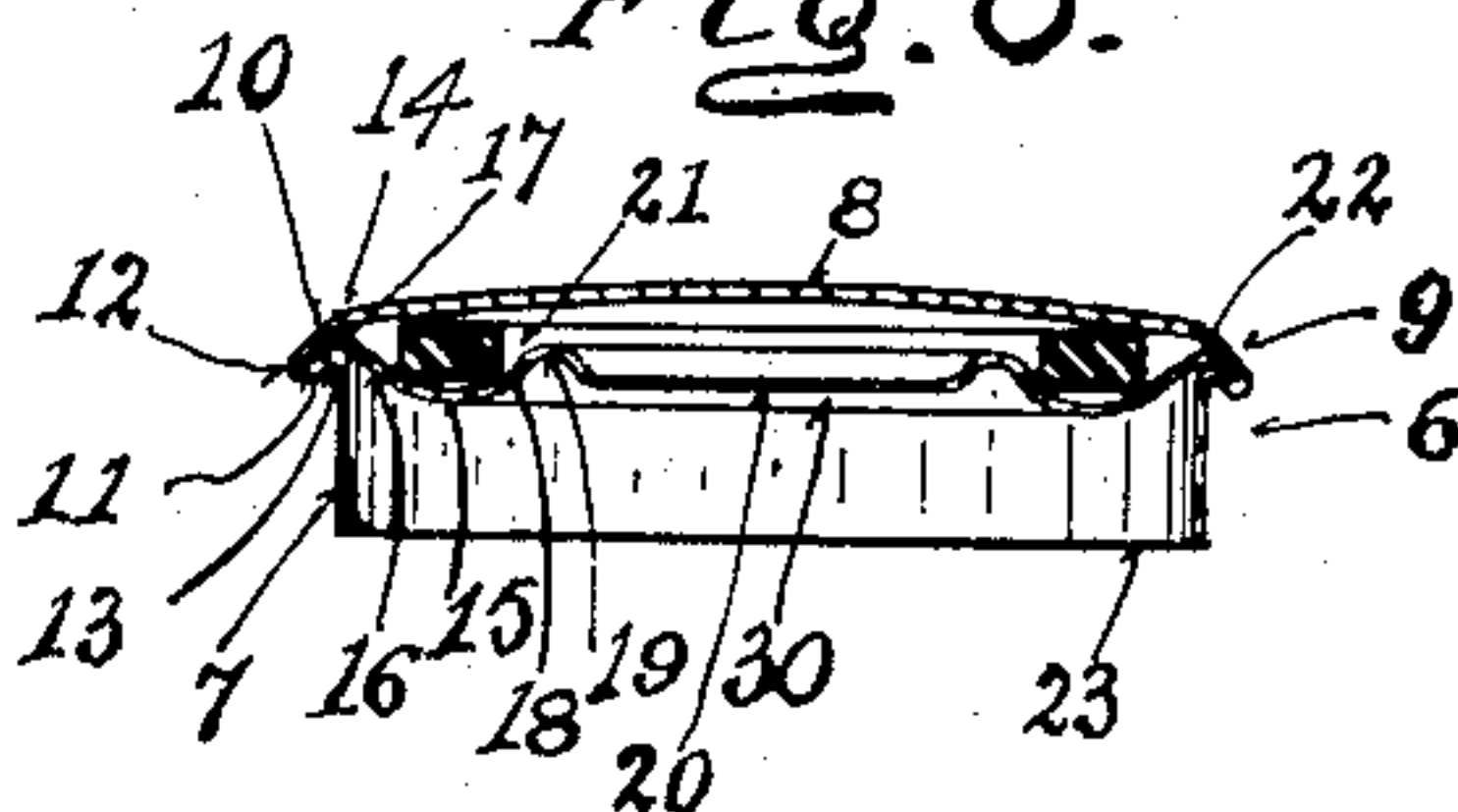
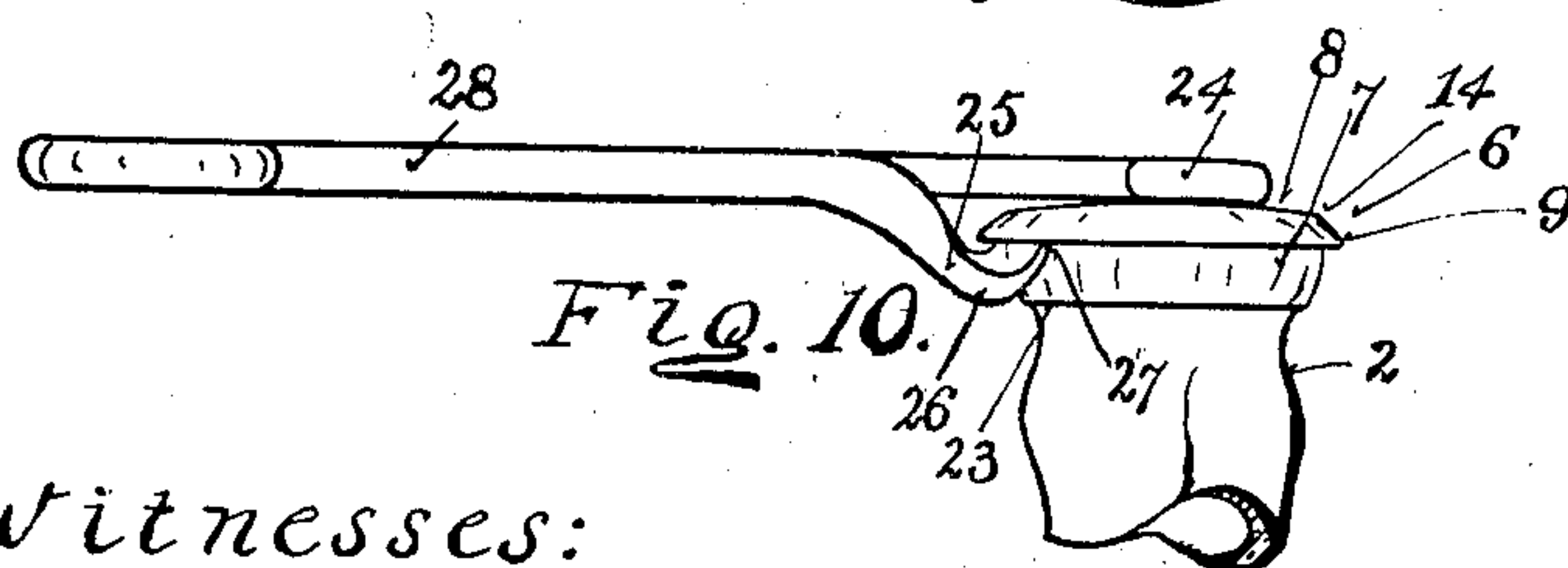


Fig. 10.



Witnesses:

Henry N. Bauer
Cordelia O'Hearn.

Inventor:

Walter J. Frey
by R. J. Walsh
his Attorney.

UNITED STATES PATENT OFFICE.

WALTER J. FREY, OF CINCINNATI, OHIO.

BOTTLE-CLOSURE.

No. 836,677.

Specification of Letters Patent.

Patented Nov. 27, 1906.

Application filed June 26, 1906. Serial No. 323,479.

To all whom it may concern:

Be it known that I, WALTER J. FREY, a citizen of the United States, residing at Cincinnati, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Bottle - Closures, of which the following is a specification.

My invention relates to bottle-closures, and has for its object the providing of a bottle-closure of novel construction and comprising an inner seal of peculiar form backed by a washer of compressible material interposed between the inner seal and the top of the cap at the bottle-lip, and my invention will be readily understood from the following description and claims and from the drawings, in which latter—

Figure 1 represents a side elevation of my improved device attached to a bottle, the latter being shown broken away. Fig. 2 is a central vertical cross-section of the cap. Fig. 3 is a side elevation of the inner seal. Fig. 4 is a plan view of the same. Fig. 5 is a cross-section of the same on the line *x x* of Fig. 4. Fig. 6 is a plan view of the annulus of compressible material. Fig. 7 is a cross-section of the same on the line *y y* of Fig. 6. Fig. 8 is a central vertical cross-section of the composite cap prior to attachment to the bottle. Fig. 9 is a plan view of the cap-remover. Fig. 10 is a side elevation of the same; and Fig. 11 is a vertical cross-section of my improved closure in closed relation on the bottle, the bottle being broken away.

1 represents a bottle having a neck 2, terminating in a mouth 3, having an outer lip 4 and an external bead 5.

6 is a cap, which I prefer to make of tinned iron or terne, similar, for instance, to the tinned sheets used in tinware or tin roofing. I form up this cap in peculiar manner, forming the same with an annular wall 7 and a top 8, having a drooping ledge or annular flange 9 between the same. I prefer to form the cap of a single piece of metal with the annular flange 9 of double thickness, as see the walls 10 11 thereof, formed with a reverse bend 12 and curling from the annular wall 7 with a bend 13 and from the top 8 with a bend 14, the top forming a crown or transverse web for the cap, which is preferably curved.

I prefer to form the inner seal 30 with an annular gutter 15, having an outer upwardly-flaring annular wall 16, terminating in a lip 17, and an inner annular wall 18, merging into an annular bead 19, formed by depressing the central part of the inner seal into the form of a depression 20. I prefer to form this inner seal of a soft metal or composition not liable to be corroded or affected by the contents of the bottle and having density for resisting porosity and ductility for readily assuming the shape into which it may be pressed by closure of the bottle. I prefer to form this inner seal of nickolum or nickeloid, being zinc coated or permeated with a small percentage of nickel or of a composition of block-tin and zinc in the proportion of about eighty per cent. of block-tin to twenty per cent. of zinc. A washer 21, of compressible material, is received by the annular gutter of the inner seal. I prefer to form this washer or annulus of rubber, although it may be formed of cork or a composition containing rubber or other compressible material.

I prefer to assemble the inner seal, annulus, and cap prior to the same being received by the bottle-mouth, and for doing this in ready manner I prefer to make the outwardly-extending lip of the inner seal of a diameter readily received within the annular wall of the cap, preferably being of such diameter as to normally substantially meet the walls of said annular wall of the cap. The cap and inner seal with the washer or annulus thereon are preferably brought into proper juxtaposition by means of a machine with a plug acting to force the inner seal with its annulus into the body of the cap when the same are correlated so as to be in axial plane with each other. In assembling, the inner seal with its annulus is received by the cap, the outer edge of the lip 17 of the inner seal contacting the crown of the cap for forcing said lip between the bend 13 and the crown of the cap. This lip is forced slightly into the mouth 22, formed between the walls 13 14 of the flange 9. In this manner the cap with its inner seal and compressible annulus forms a composite cap, which may be handled as an entity. This composite cap is then placed upon the bottle-mouth and pressed thereupon, the outer edge 23 of the cap-wall being turned under the

bead 5 for holding the cap firmly upon the bottle-mouth. The pressure applied in compressing the annulus also compresses the annular gutter 15 and forms an additional bead 5 29 between the bead 19 and the gutter 15, thereby strengthening the inner seal. This pressing of the cap upon the bottle-mouth and the end curling of its flange is preferably performed by machinery, great pressure being exerted upon the cap in the axial direction of the bottle for compressing the compressible annulus between the inner seal and the crown of the cap, the inner seal making direct contact with the lip of the bottle and 15 the annular wall of the cap being curled under the bead for retaining the annulus in compressed state and the cap firmly upon the bottle.

It will be noticed that the annular flange 9 20 is depressed or droops away from the crown of the cap toward the axial plane of the bottle. This gives a very rigid construction and forms a rib or bead for the reception of an opening-tool when it is desired to open the 25 bottle. I have shown an opening-tool applicable for the purpose in Figs. 9 and 10. The opening-tool preferably comprises a central tail 24, from the sides of which wings 25 project laterally and are curled downwardly, as shown at 26, and have engaging ends 27 30 adapted to take under the flange 9, the tool having a handle 28 by means of which upward pressure may be exerted for raising the cap, the tool acting as a lever with its fulcrum 35 at the tailpiece. The double-walled flange forms a rigid construction for enabling the cap to be raised against the resistance of the depending end-curved wall of the cap.

The flange preferably droops or flares in 40 the general direction of strain exerted by the tool upon the cap at the point at which the tool takes under the cap when removing the cap from the bottle.

Having thus fully described my invention, 45 what I claim as new, and desire to secure by Letters Patent, is—

1. In a bottle-closure, the combination of a cap having a crown and a depending wall with a flange between the same forming an inwardly-opening mouth at the upper inner 50 face of said depending wall, a ductile inner seal whose edge projects into said mouth for positioning said inner seal in said cap, and a compressible cushion between said inner seal 55 and crown of the cap.

2. In a bottle-closure, the combination with a bottle having an annular bead at its mouth, of a cap having an annular wall, a crown and an annular drooping flange between the same, said drooping flange flaring 60 outwardly and downwardly from the upper end of said annular wall for aiding in resisting upward pressure on said flange by a tool

in removing said cap, and a cushion of compressible material between said crown and 65 the mouth of said bottle, the said annular wall of the cap being bent under said bead of said bottle.

3. A bottle-cap having a wall, a crown and a drooping flange between said crown and 70 wall bent therefrom, said drooping flange flaring outwardly and downwardly from the upper end of said wall for aiding in resisting upward pressure on said flange by a tool in removing said cap from the bottle, substantially as described. 75

4. In a bottle-closure, the combination of a cap having a side wall, a crown and an annular drooping flange bent from said side wall and crown, said drooping flange having 80 an inner mouth, an inner seal of ductile material received by said inner mouth of said flange, and a cushion of compressible material located between said inner seal and crown.

5. In a bottle-closure, the combination 85 with a cap, of an inner seal having an annular gutter, a depression inside the same and an upwardly-extending annular bead between said gutter and depression, said inner seal also having an outer wall, a washer 90 of compressible material received by said gutter, the said inner seal being received inside the cap and held therein by pressure of said outer wall against the inside of said cap.

6. In a bottle-closure, the combination 95 with a bottle having a mouth, of a cap, an inner seal therefor having an outer wall and annular gutter inside said wall, and a depression inside said gutter for forming a bead between said depression and gutter, a washer 100 of compressible material received by said gutter, said inner seal being received inside said cap and held therein by pressure of its outer wall against the inside of said cap for forming a composite cap for said bottle, 105 which, when pressed upon said bottle will compress said bead and form an additional reverse bead adjacent thereto.

7. A bottle-cap of sheet metal having an annular wall, a crown and a drooping flange 110 formed of a reversely-bent portion of the sheet metal composing said cap connecting with said flange and crown respectively with a bend, the outer edge of said flange formed of a reverse bend of the sheet metal composing said cap and projected in the general 115 direction of stress from a prying opener under said flange.

8. In a bottle-cap having a wall, a crown and a flange between said crown and wall 120 bent therefrom, said flange flaring outwardly and downwardly in the general direction of strain from a prying opener received under said flange and having a fulcrum-piece on said cap, substantially as described. 125

9. In a bottle-closure, the combination

with a cap, of an inner seal having an annular upwardly-opening recess merging in an upwardly-extending outer wall, a washer of compressible material received by said recess, 5 the said inner seal being received inside the cap and held therein by pressure of said outer wall against the inside of said cap.

In testimony whereof I have subscribed my name hereto in the presence of two subscribing witnesses.

WALTER J. FREY.

Witnesses:

HENRY N. BAUER,
CORDELIA O'HEARN.