

No. 811,824.

PATENTED FEB. 6, 1906.

F. W. H. CLAY.
BOTTLE CLOSURE.
APPLICATION FILED JAN. 4, 1905.

FIG.1.

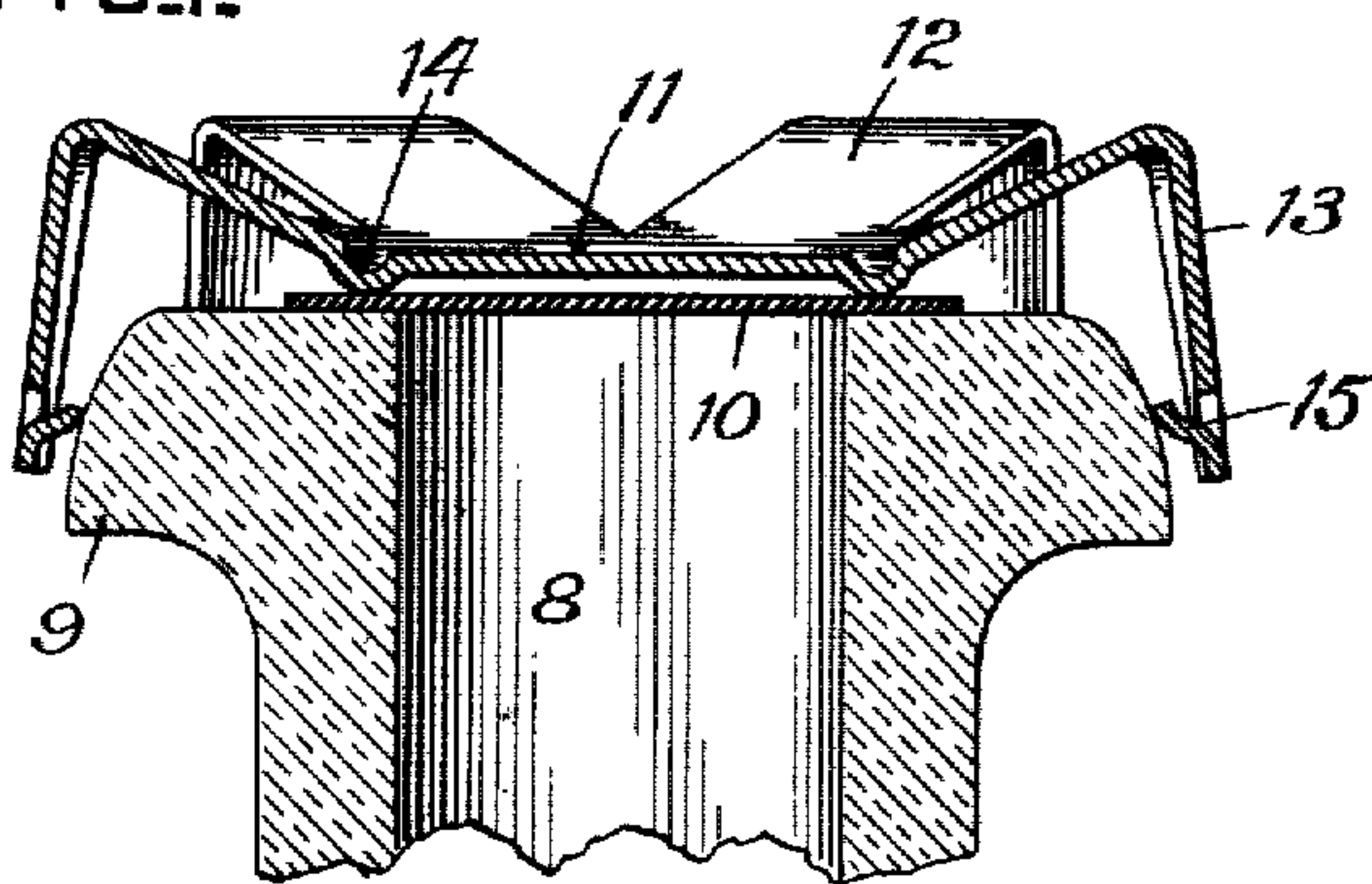


FIG.4.

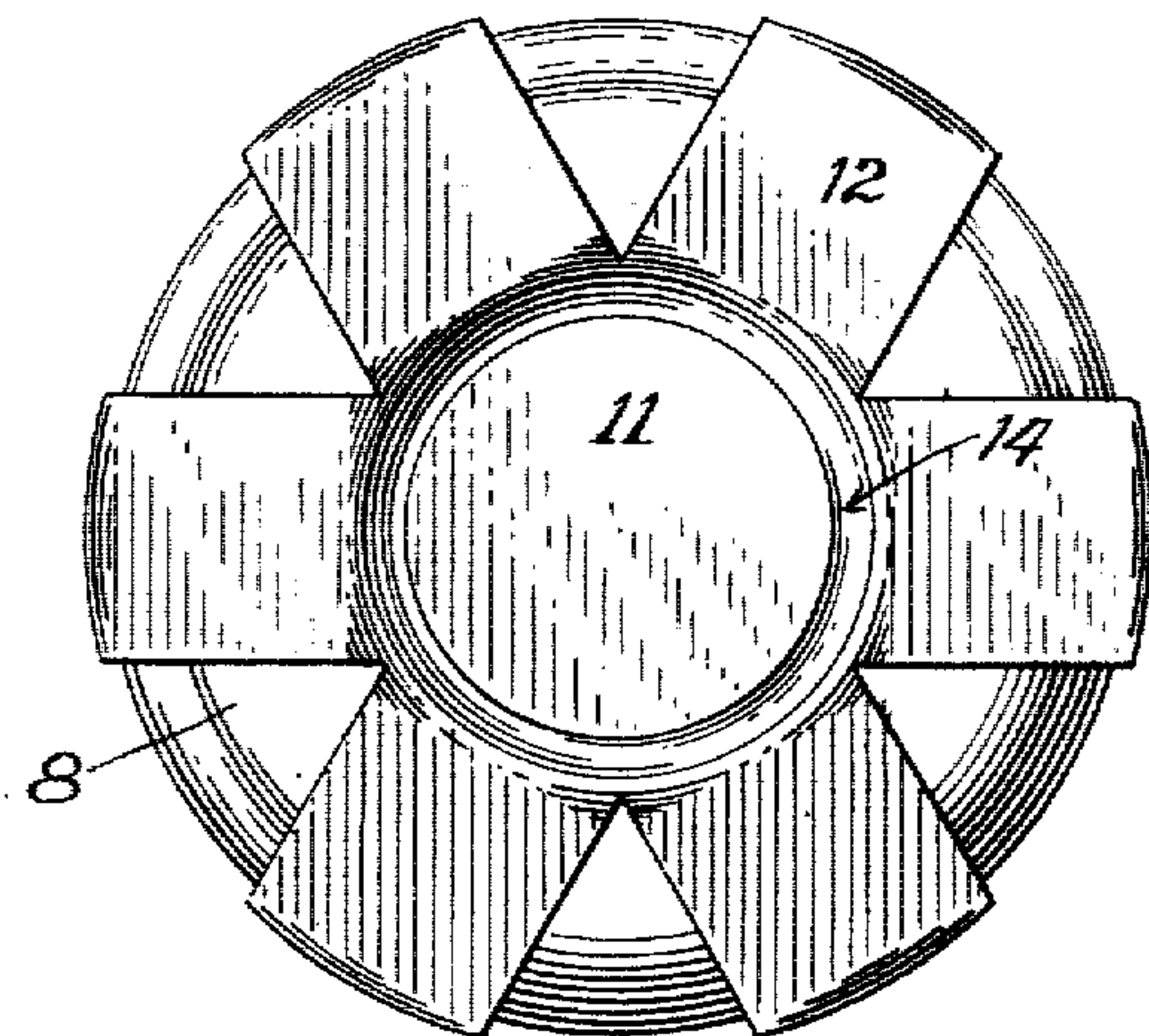


FIG.2.

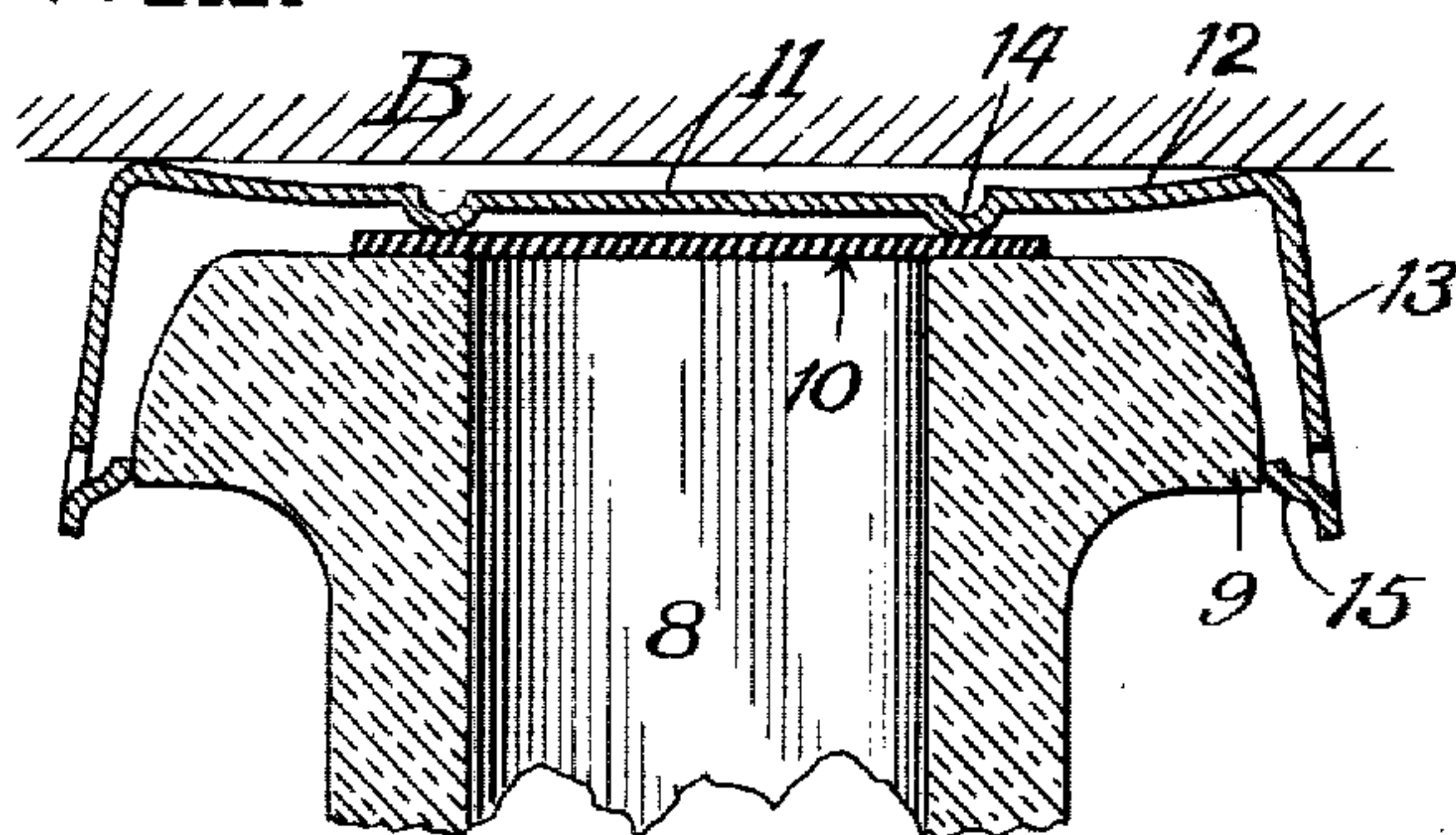


FIG.5.

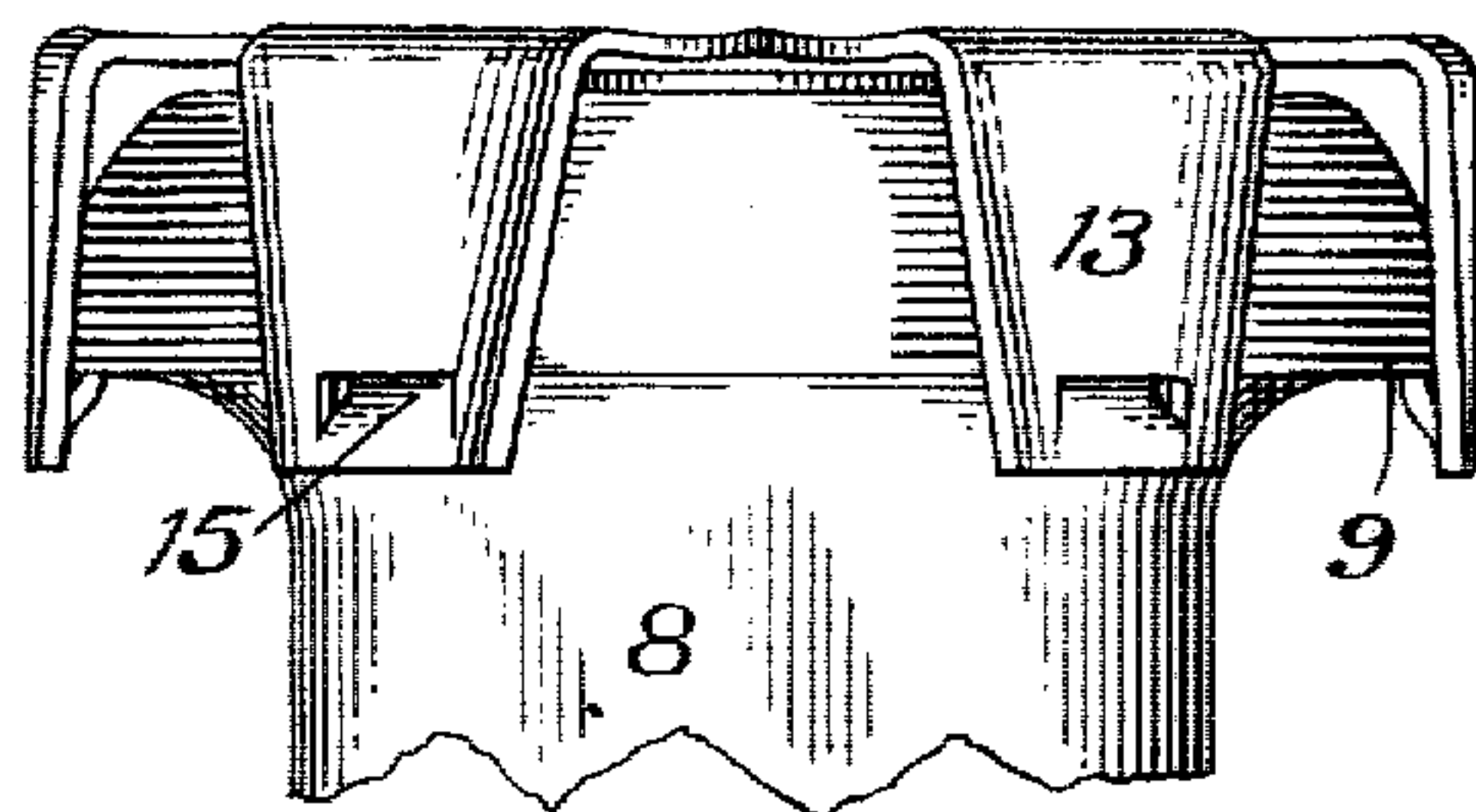


FIG.3.

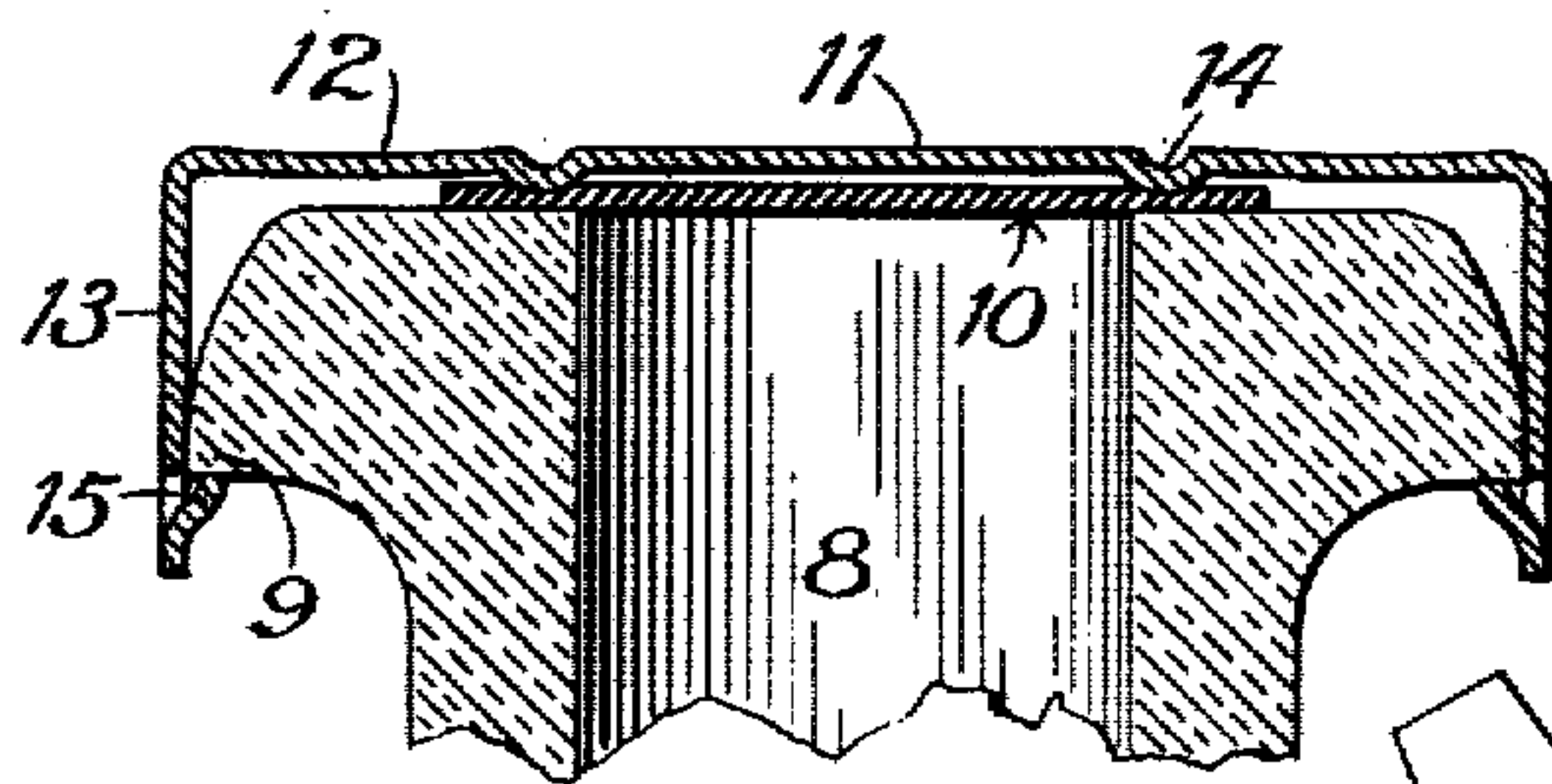


FIG.6.

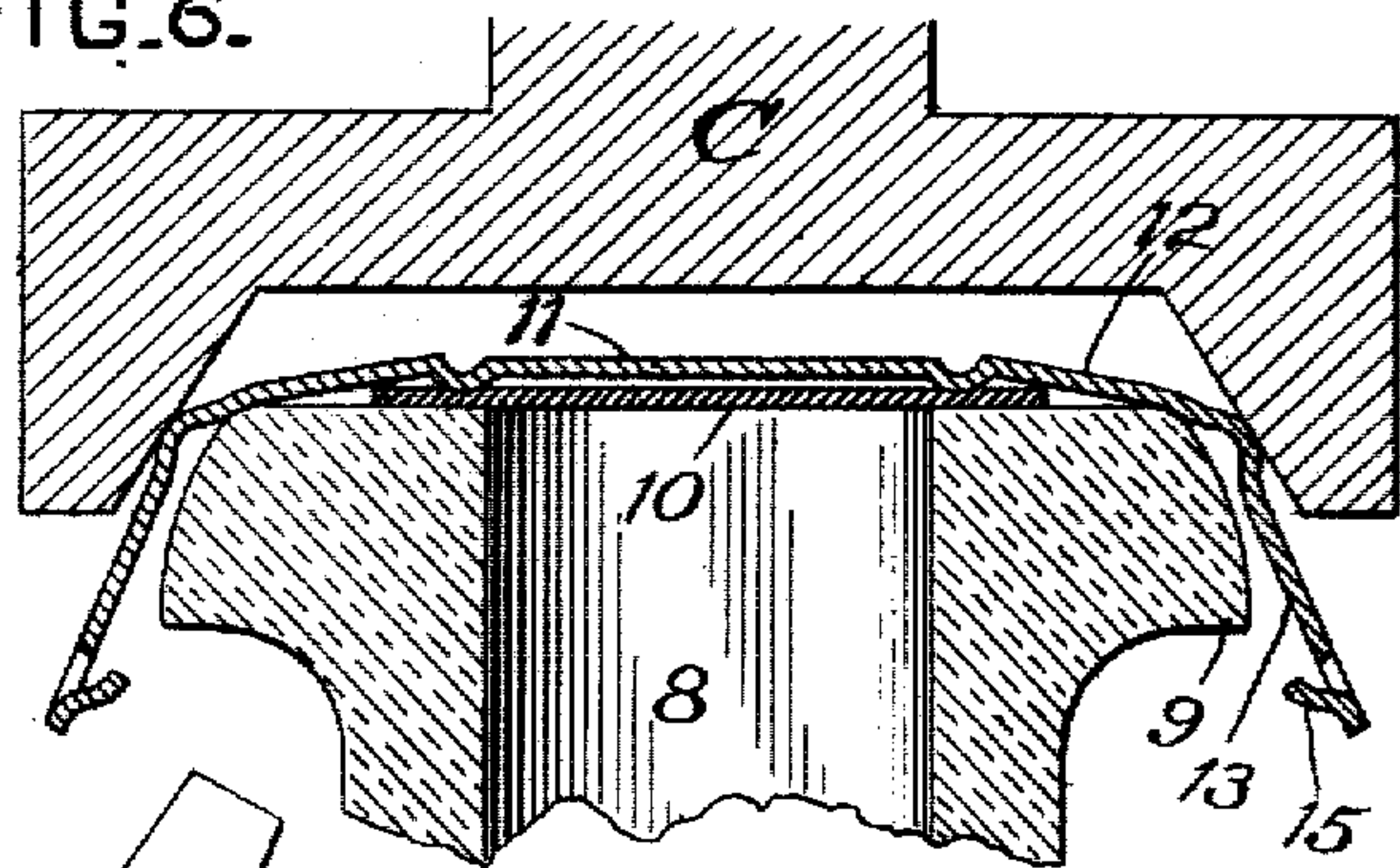
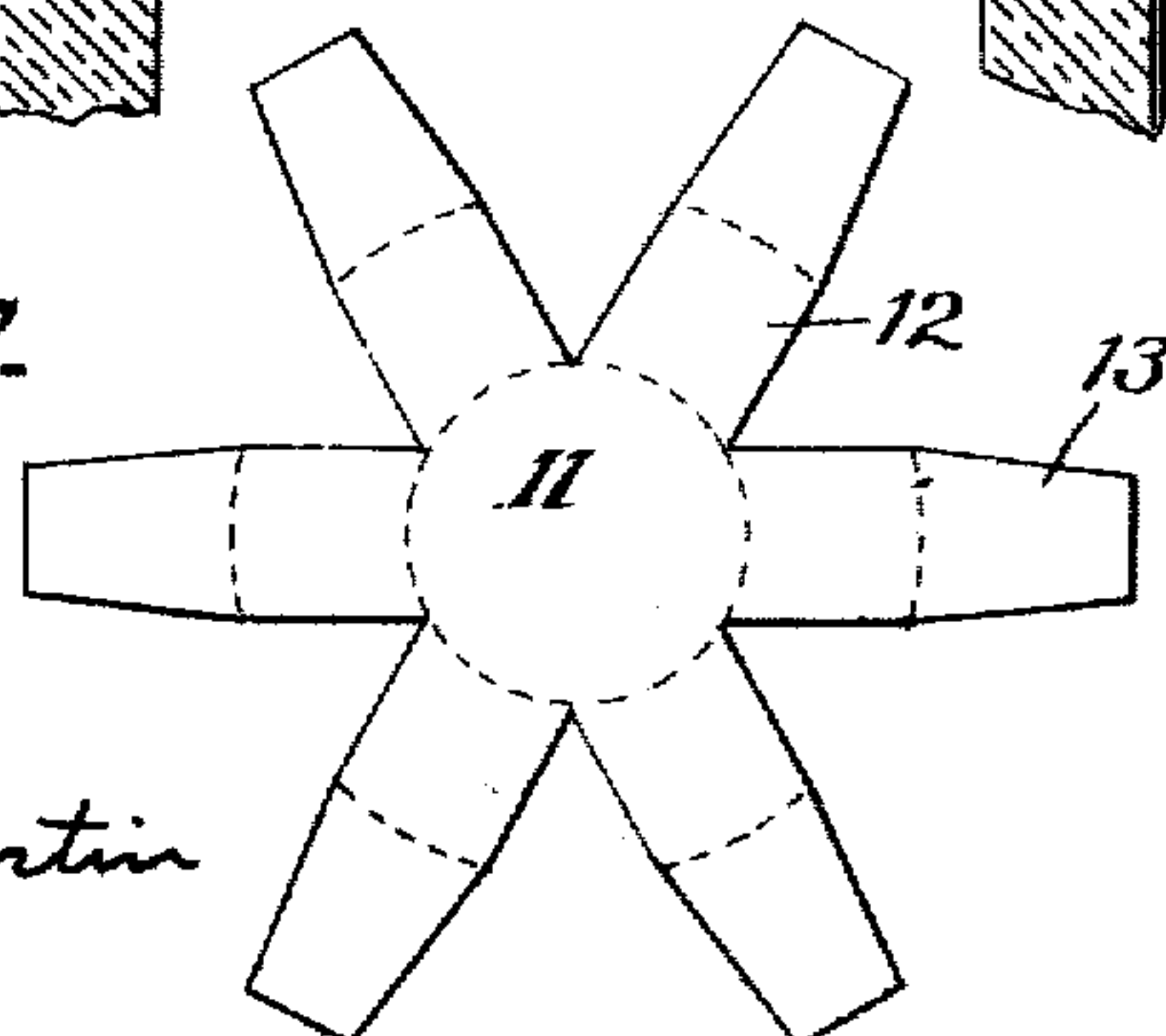


FIG.7.



Witnesses:

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UNITED STATES PATENT OFFICE.

FRANCIS W. H. CLAY, OF PITTSBURG, PENNSYLVANIA.

BOTTLE-CLOSURE.

No. 811,824.

Specification of Letters Patent.

Patented Feb. 6, 1906.

Application filed January 4, 1905. Serial No. 239,593.

To all whom it may concern:

Be it known that I, FRANCIS W. H. CLAY, a citizen of the United States, residing at Pittsburgh, in the State of Pennsylvania, have
5 invented certain new and useful Improvements in Bottle-Closures, of which the following is a specification.

My invention relates to means for closing or sealing the mouths of bottles, jars, and
10 such vessels, and particularly to metallic bottle stoppers. The primary object is to provide the necessary pressure for maintaining the seal by resilience in the metal cap, avoiding the use of elastic packings for this purpose. Other objects are, to provide superior
15 securing means, to provide for easy removal of the stopper in opening the vessel, and to increase the strength and efficiency of such stoppers. The present invention involves the
20 features of, and is an improvement on, the devices of my former patents Nos. 755,275 and 755,276 of March 22, 1904.

For illustration I herein show a preferred form of the closure in the accompanying
25 drawing, in which—

Figure 1 is a central section of the bottle head and a cap placed thereon in its original shape, ready to be attached;

Figure 2 is a similar section showing the cap
30 being pressed down on the bottle head;

Figure 3 is a similar section of the head and cap when the latter is in place and the bottle sealed;

Figure 4 is a top plan view of the closure in
35 place;

Figure 5 is a side elevation of the same;

Figure 6 is a central section showing the cap being removed by pressing down and spreading the legs by the tool C; and

40 Figure 7 is an outline of the blank for the cap.

As set forth in my former patents, the cap is so formed that in applying it the metal is bent out of the normal shape and by its
45 resiliency or effort to regain the normal shape it exerts a constant and yielding pressure on the substance which may be used for packing, and this latter is not relied upon to exert pressure on the bottle neck by its elasticity,
50 but is used only for the purpose of filling, to take up the unevenness of the bottle neck or provide a perfect fit of the stopper on the

neck or head of the bottle. It is also necessary to allow for irregularities on the shape of the head, and to make the application and re-
55 moval of the cap easy.

The bottle or jar is made with a neck 8 having around it an annular ledge 9, the head being preferably flat on top. Upon this is laid a thin disk of paper or any desired pack-
60 ing 10. The cap 11 should be made of resilient material such as stiff and springy steel or tin plate, and has a series of arms 12 ending in downwardly bent legs 13 having any desired fastening means thereon to engage
65 the bottle head. As shown herein, I have provided an inward lip 15, turned up or punched out of the leg 13. The top of the cap 11 has a depending annular bead or rib 14, which serves as a sharply defined contact-
70 surface to engage the bottle head and the packing 10, and also makes the cap stiff and prevents its distortion from bending the arms 12. These arms are flat, and are set at an angle to the plane of the top of the cap and at
75 such an angle to the legs 13 as to require the spreading of the angle and bending of the arms 12 as the cap is pushed down over the head spreading the legs 13. It will be noticed that the legs 13 are curved circumfer-
80 entially to the bottle, so that in spreading they will not bend along their length.

As shown in Figure 2, any flat surface B is pressed down on the cap, engaging the outer ends of the arms 12, and by the slope of the
85 head spreading them laterally, bending downward the arms 13 by the resistance of the head on the bead 14, compressing the packing 10 thereon, when the lips 15 will snap
90 over the ledge 9 and lock the cap in place on the bottle. In this condition the effort of the legs 13 to regain the normal angle with the arms 12 will keep the lips 15 safely engaged under the ledge 9, and this tendency
95 together with the effort of the arms 12 to regain normal angle with the top of the cap, will exert a very strong, constant and resilient or yielding pressure on the packing, sealing the bottle against inside pressure of the liquid or gas. (See Figure 3.)
100

The closure may be opened by releasing the legs 13 in any desired way; but I find it convenient to do this by pressing downward on the cap a tool C as shown in Figure 6, which is

made of a conical cup shape and engaging the outer rim of the cap at the juncture of the arms 12 and legs 13 spreads the angle between them, at the same time releasing the lips 15 as shown.

Of course it will be understood that the lips for engaging the ledge 9 may be bent up inward for engagement after the cap has been pressed down on the head, or the leg 13 may be bent in any other suitable manner to engage, without departing from the spirit of my invention. The various advantages of the device will be readily apparent to those familiar with the art to which the invention appertains.

Having thus described my invention and its use, what I claim as new, and desire to secure by Letters Patent, is the following:

1. A bottle closure comprising a body for covering the bottle opening, resilient flat arms on the body at an angle thereto and adapted to bend down, rigid legs on the arms for embracing and engaging the bottle head when the arms are depressed, substantially as described.

2. The combination with a bottle head having a retaining ledge, of a closing cap comprising a body with rigid circumference, flat spring arms outside the circumference set at an angle with the body, depending legs on the arms embracing the bottle head and having catches to engage the ledge, the diameters of the head and cap being such that the angle between the arms and legs is spread when the cap is forced down over the head substantially as and for the purpose described.

3. The combination with a rounded bottle head having a circumferential ledge 9, of a metallic stopper cap comprising a disk 11, angular resilient flat arms 12 with depending rigid legs 13 and catch lips 15 adapted to engage the ledge.

4. In a bottle closure a disk having upwardly slanting flat arms capable of bending, downturned rigid legs to embrace a bottle head, and means to lock the legs on the head, substantially as described.

5. The combination with a rounded bottle head having a flat top seating surface and an outside annular ledge, of a closing disk having an annular ridge engaging the head, and angularly disposed flat arms with depending legs adapted to engage said ledge and press the ridge downward, the dimensions being such that the legs on the arms are circumferentially spread in springing over the ledge, substantially as described.

6. The combination with a bottle having a retaining ledge and a rounded head, of a cap having angularly disposed arms with legs thereon embracing the head, and retained thereon and exerting resilient pressure there-

on, said arms being bent and adapted to be spread by the rounded bottle head to release the cap when the latter is pushed down on the bottle.

7. The combination with a bottle head having a sloping outer surface and a retaining ledge, of a resilient cap with divided sides adapted to engage the head and snap over the ledge, and adapted to be spread and released when said cap is pressed down on the head beyond its elastic limit, substantially as described.

8. The combination with a rounded bottle head having a retaining ledge, of a stopper cap having flat resilient arms with legs thereon engaging the head, the angle between the said arms and legs being sharper than the curve of the head, whereby the legs are spread and released when the cap is pressed down upon the head beyond the elastic limit of the arms and legs.

9. A bottle closing cap having resilient engaging legs substantially as set forth, adapted to lock itself on the bottle head when the legs are pressed downward, and to be released by spreading the legs when pressed further downward upon the bottle head, substantially as described.

10. A bottle closing cap comprising a flat disk, 11, with an annular ridge, 14, and having upwardly bent arms 12, and downwardly bent legs 13 with catch spurs 15, arranged substantially as described.

11. A bottle closing cap having an annular ridge or bead 14 to engage a flat topped surface of a bottle, and resilient means in the cap for exerting pressure on the bead, substantially as described.

12. In a bottle closing cap a series of resiliently-mounted legs for embracing the bottle head and having punched out lips 15 to engage the head, substantially as described.

13. The combination with a bottle head of rounded contour, of a closing cap therefor having resilient members adapted to engage the head when the cap is pressed on, the members having bends adapted to be spread by further pressure down on the head, to thereby release the engaging members.

14. The combination with a bottle head having an anchorage ledge and a rounded top, of a closing cap comprising legs to engage said ledge, a cover part to close the bottle mouth, and flat spring arms on the cover attached to the legs at an angle and adapted to spread said angle as the cap is pushed on the head to engage the legs on said ledge, and to be further depressed on the head and spread the said angle still further and release the legs, substantially as described.

15. The combination with a rounded bottle head having an anchorage ledge, of a clos-

ing cap thereon sprung out of normal position and exerting a self induced pressure on the bottle mouth by engagement with said ledge, the engaging part of the cap having a
5 sharper curve than the head and adapted to be further spread to release the engagement by pressing the said part further down on the head, substantially as described.

In testimony whereof I have hereunder signed my name in the presence of the sub- 10 scribed witnesses.

FRANCIS W. H. CLAY.

Witnesses:

F. E. GAIHTER,
ARCHWORTH MARTIN.