

No. 811,825.

PATENTED FEB. 6, 1906.

F. W. H. CLAY.
BOTTLE CLOSURE.
APPLICATION FILED JULY 18, 1905.

Fig. 1

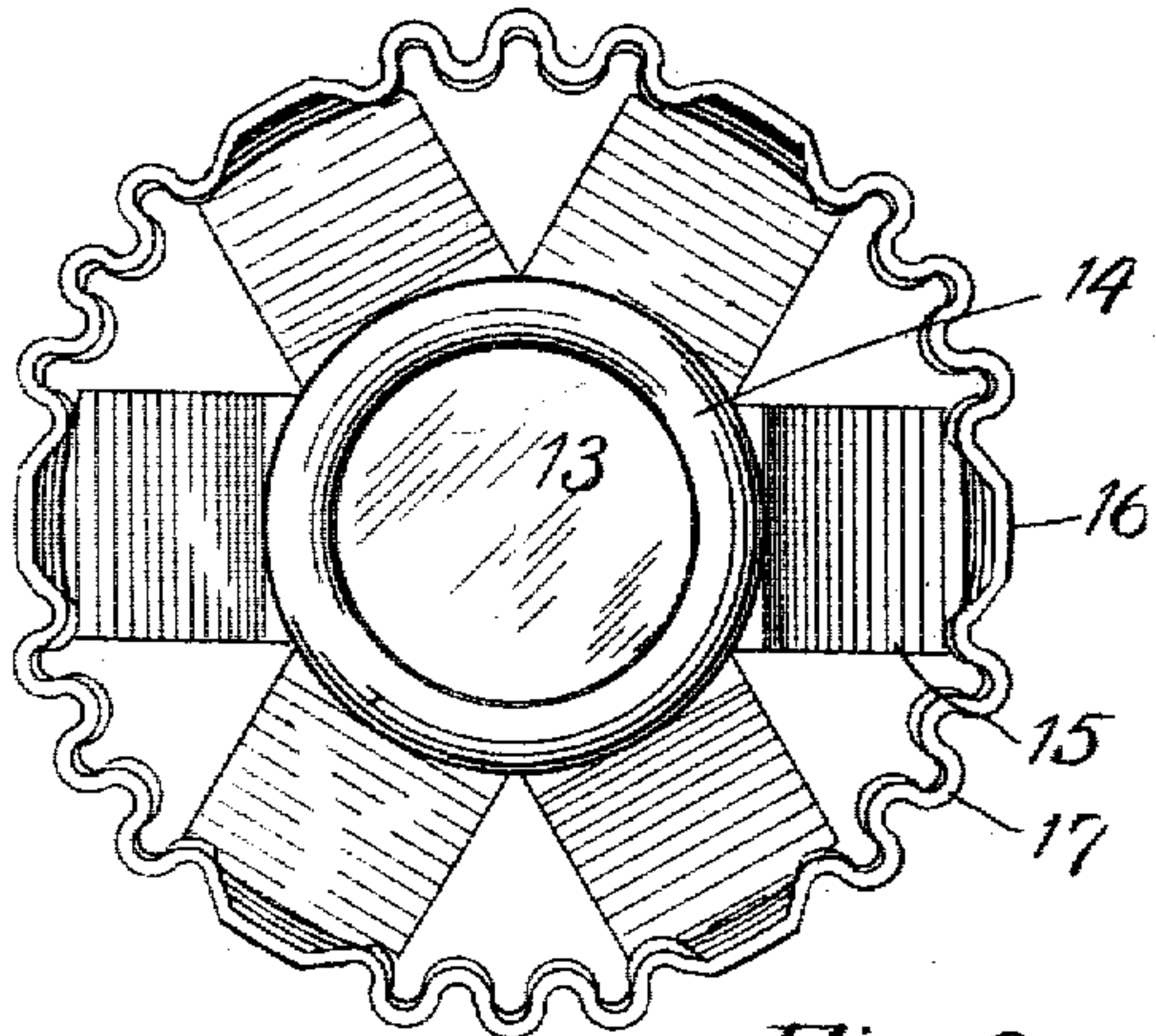


Fig. 2

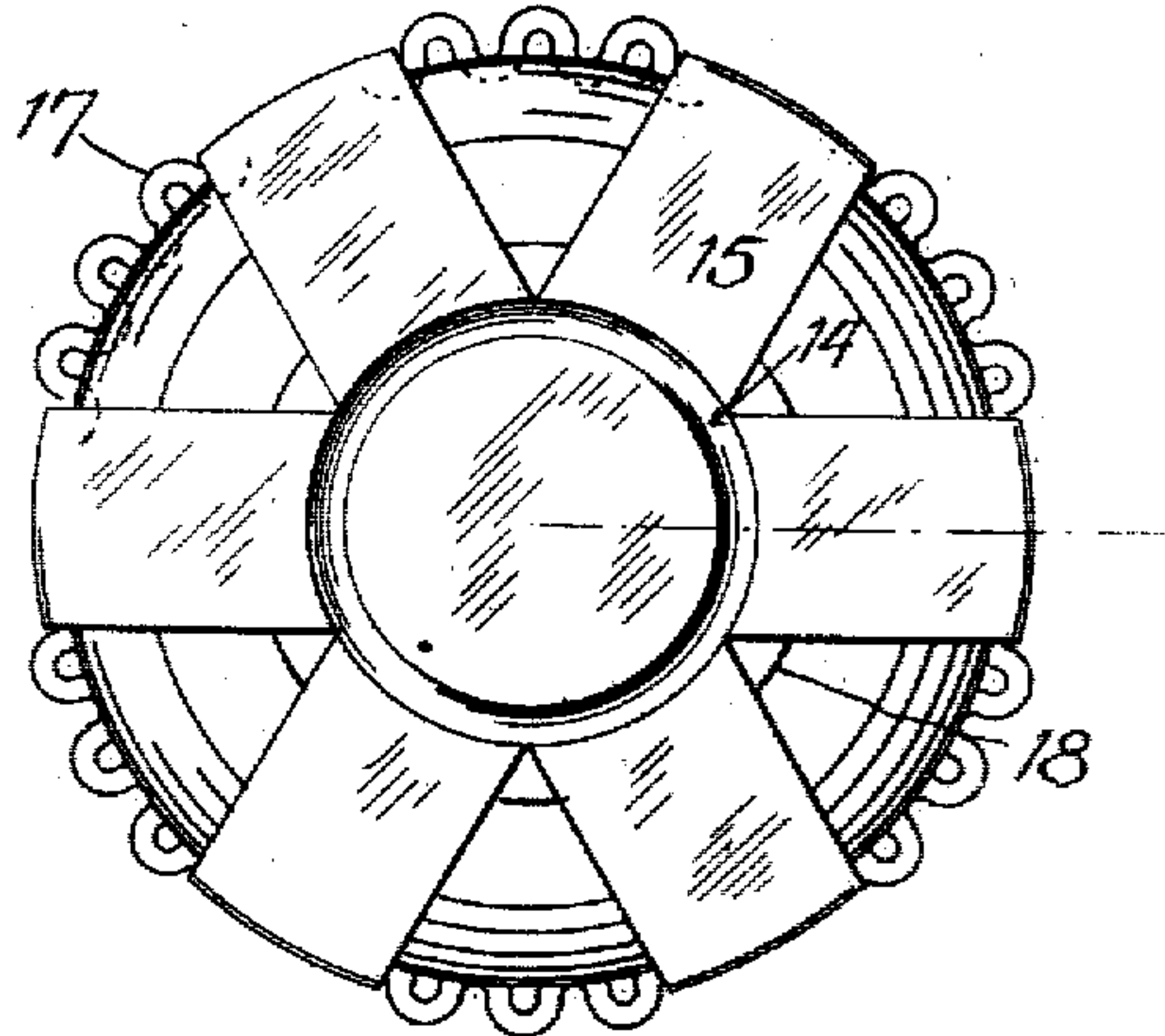


Fig. 3

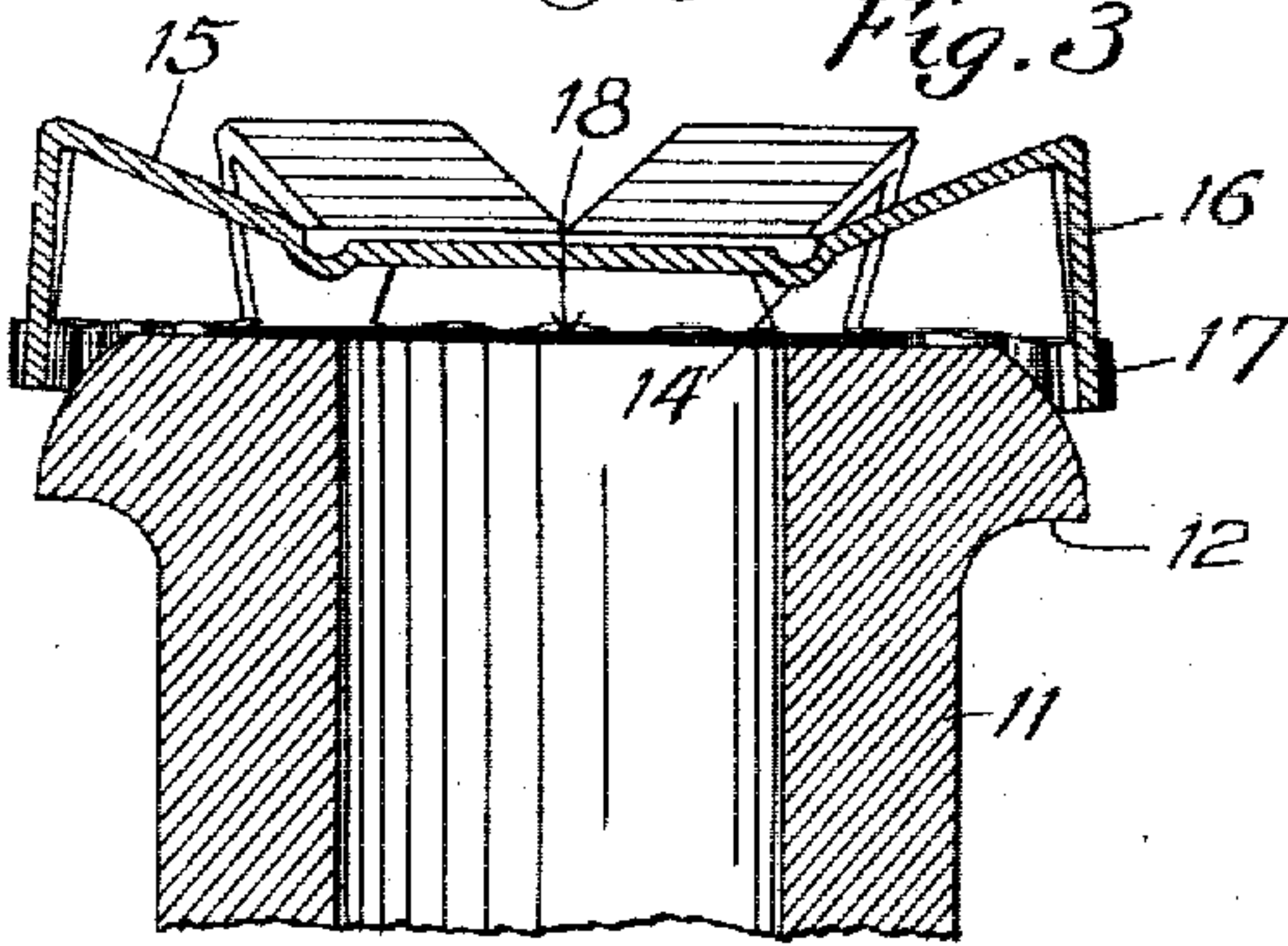


Fig. 4

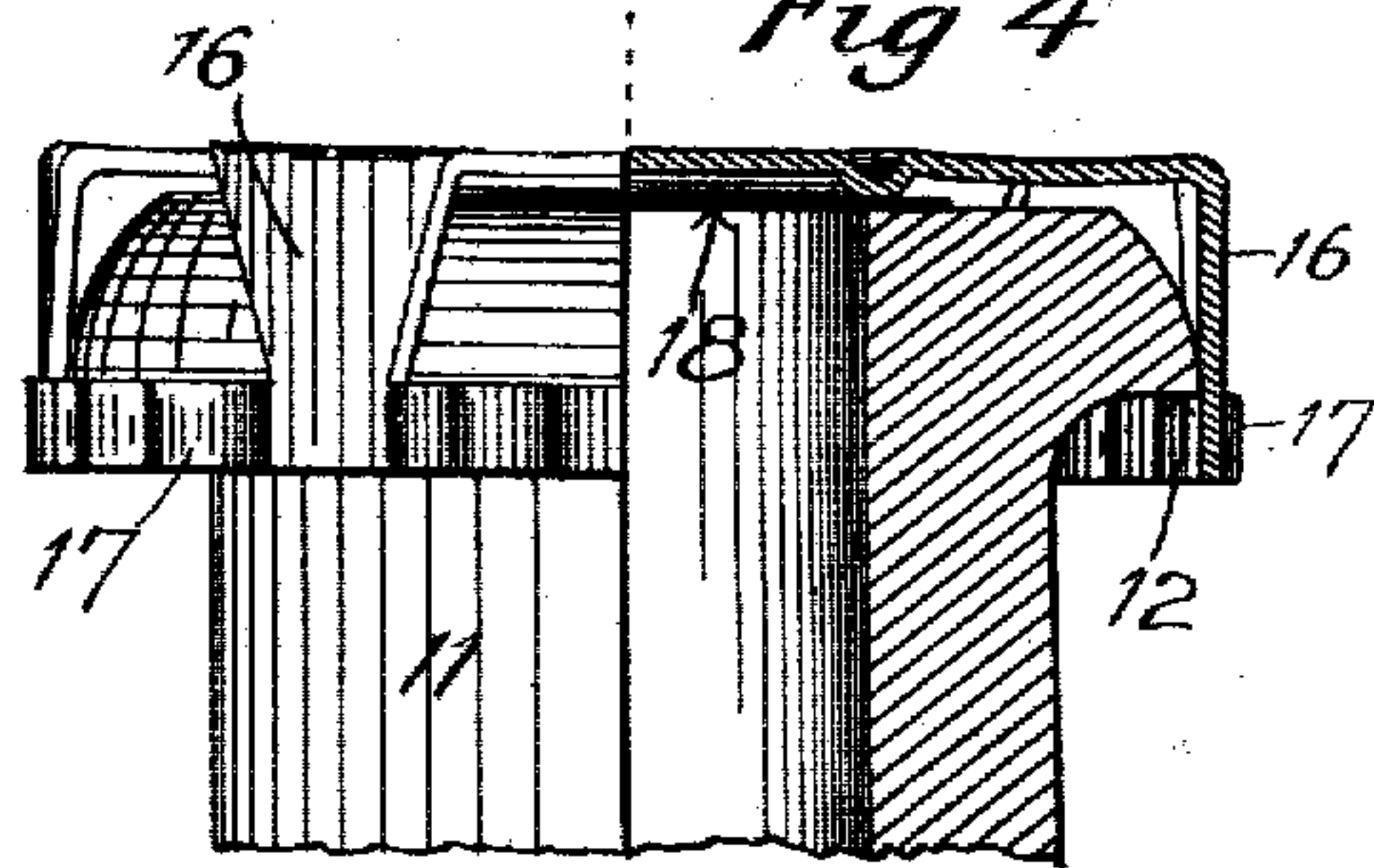


Fig. 5

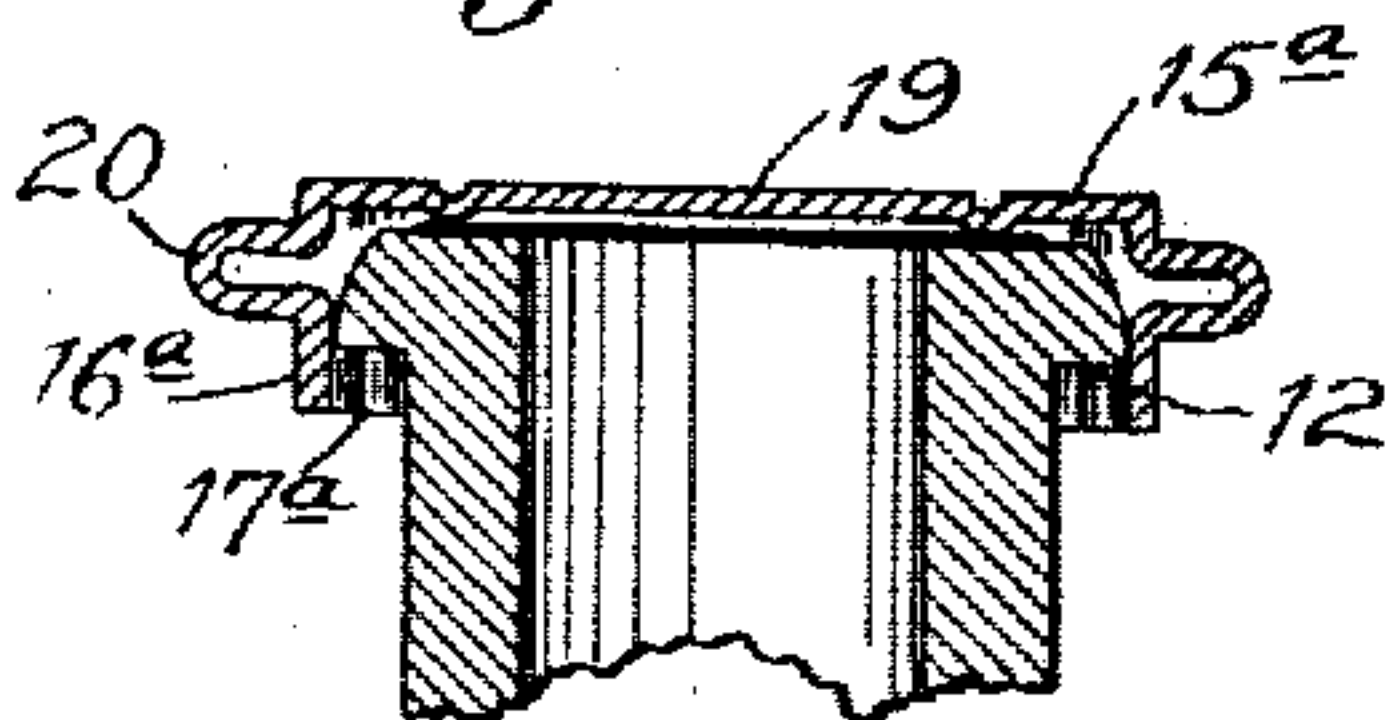


Fig. 6

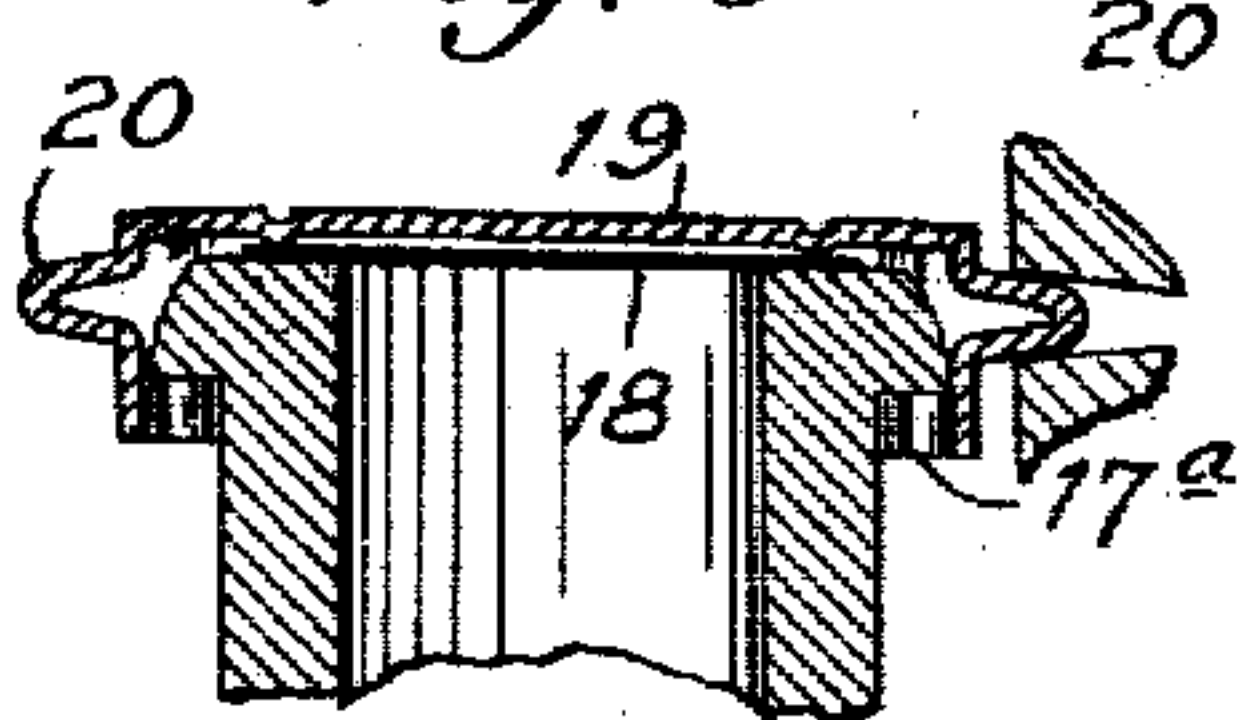


Fig. 9

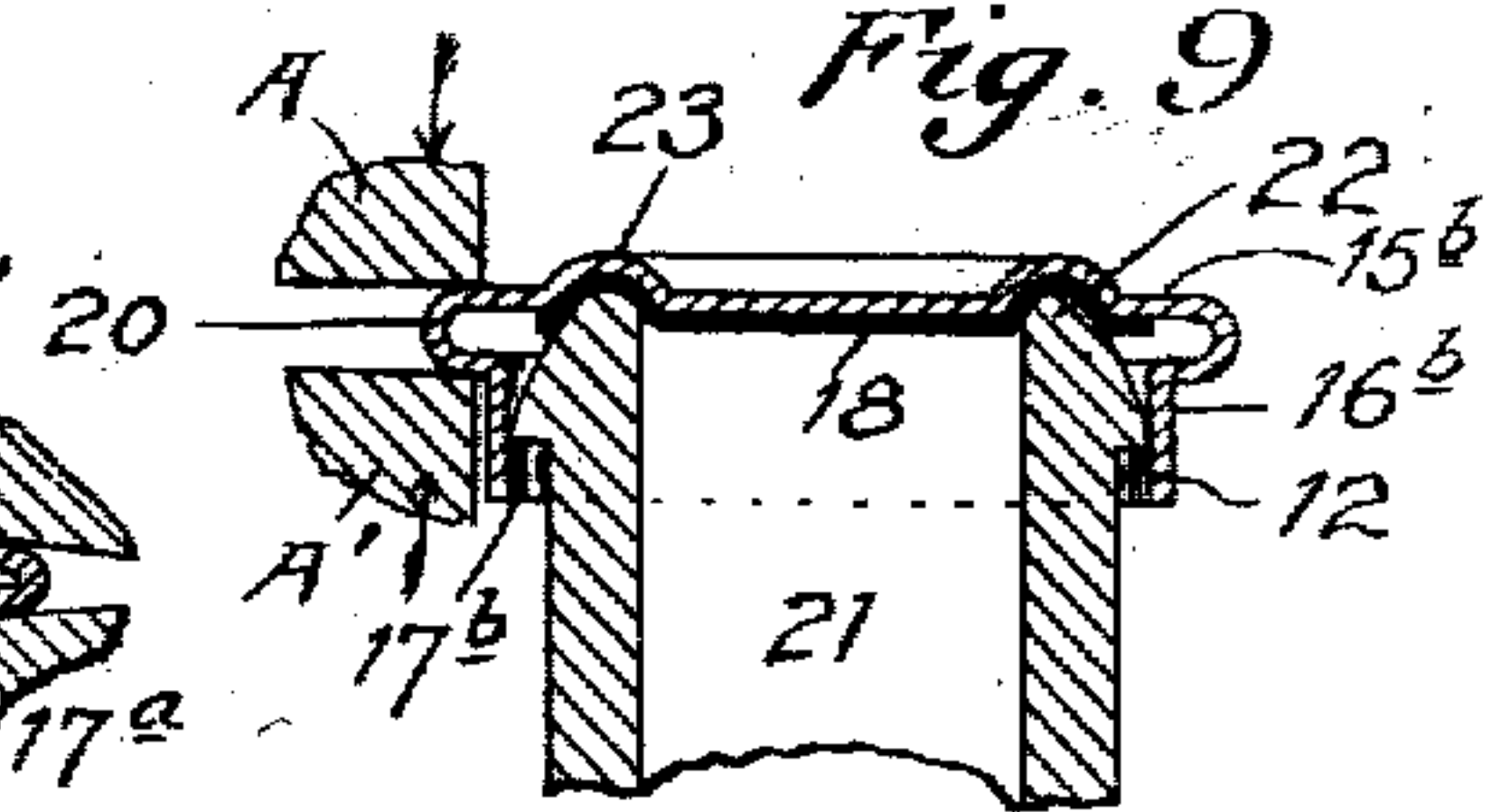


Fig. 7

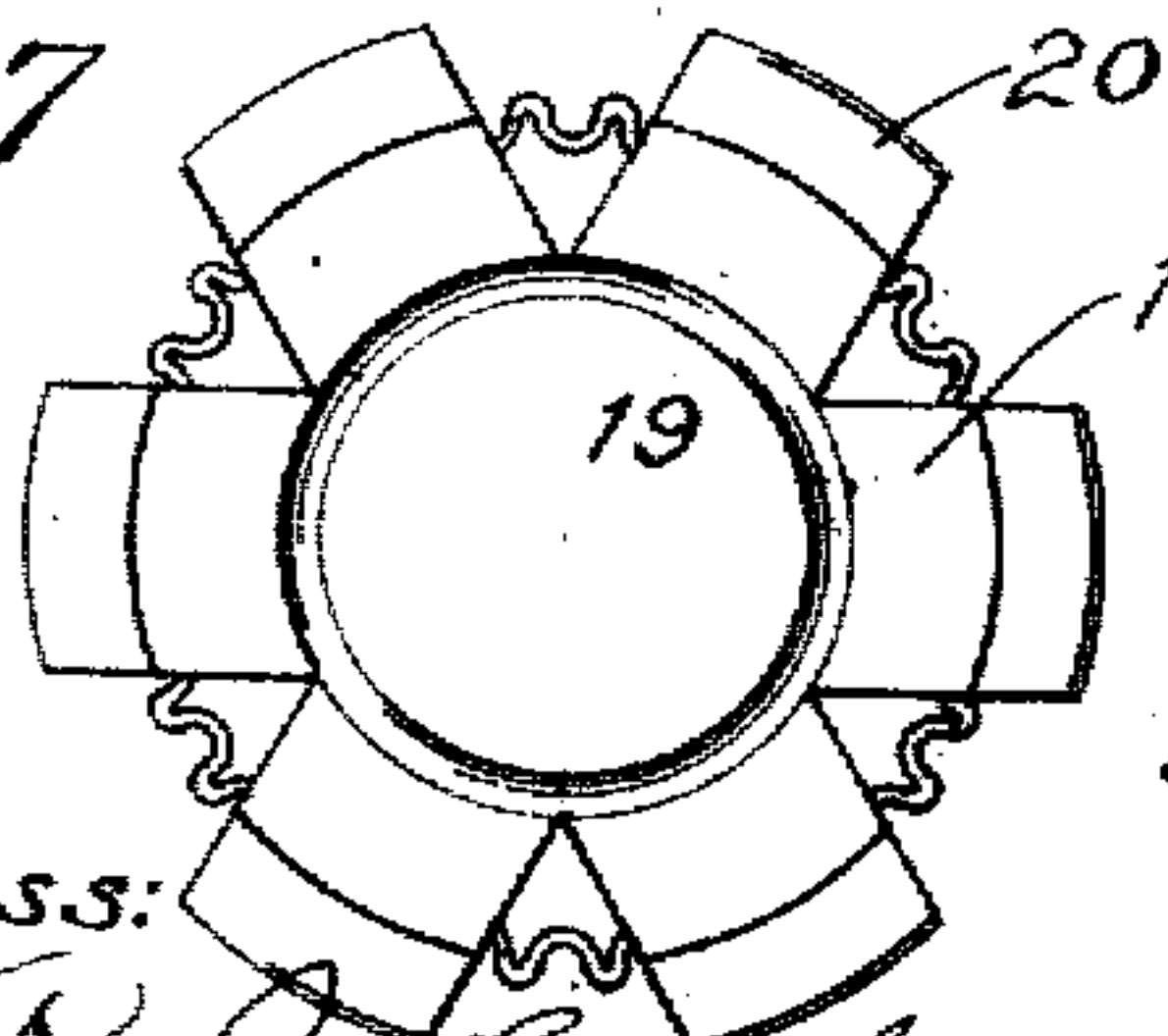


Fig. 8

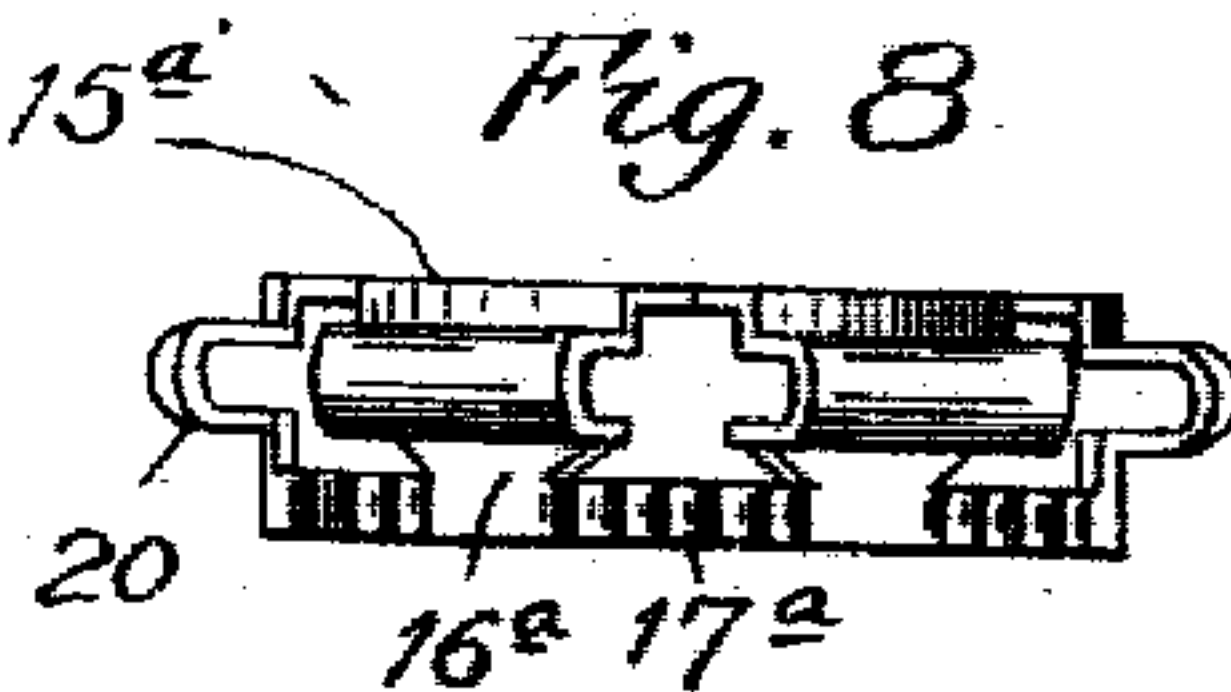
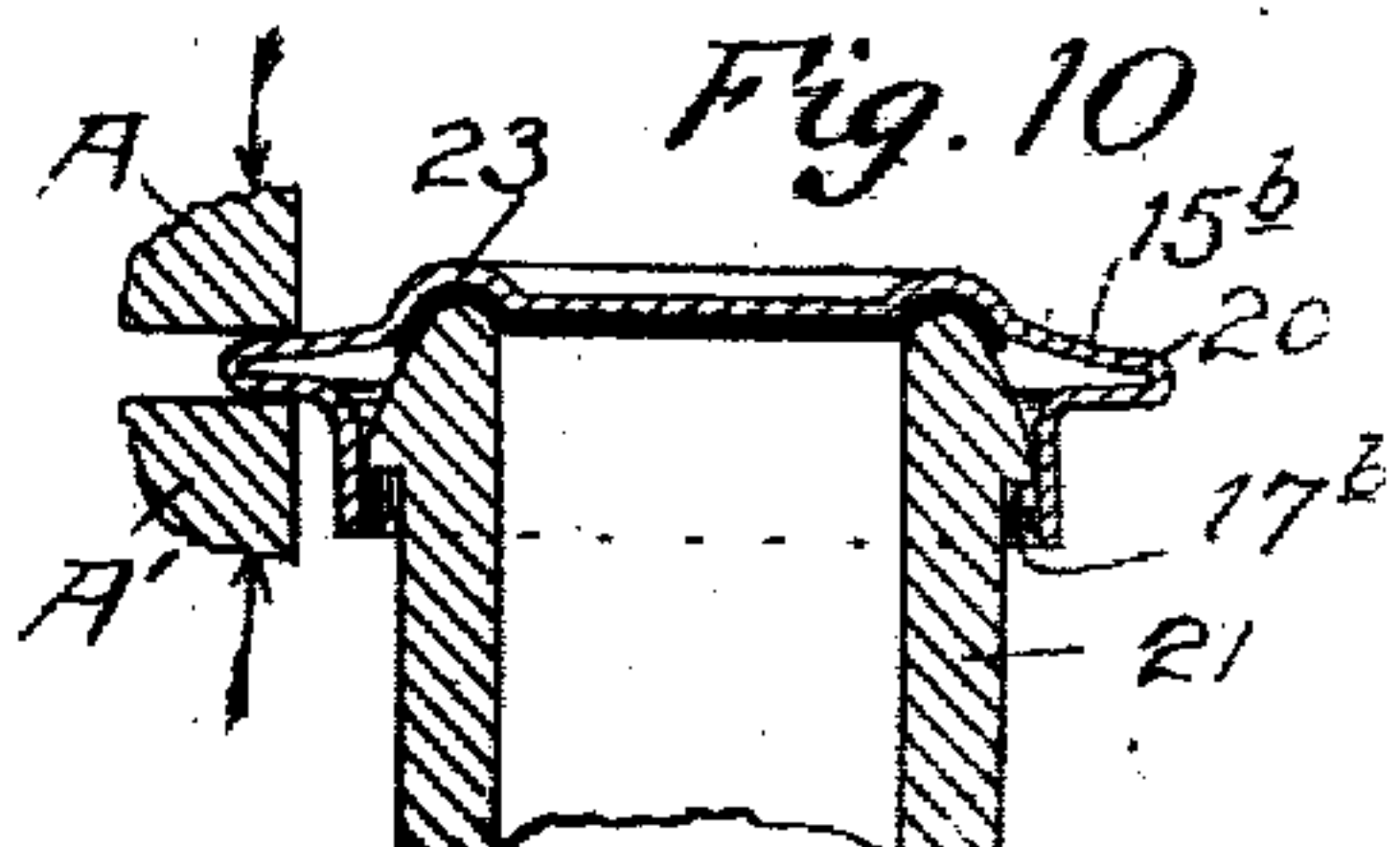


Fig. 10



Witness:

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BOTTLE-CLOSURE.

No. 811,825.

Specification of Letters Patent.

Patented Feb. 6, 1906.

Application filed July 15, 1905. Serial No. 269,843.

To all whom it may concern:

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

My invention relates to closures or stoppers for bottles, jars, or other receptacles; and its primary object is to provide means for effecting the sealing-pressure by resiliency in a metal cap and to improve the design of the cap for this purpose. I have illustrated it in several preferred forms in the accompanying drawings; but the principles of its operation are applicable to many other forms.

Figure 1 is an under plan of a metallic cap in its normal condition before application to the bottle. Fig. 2 is a top plan of a bottle-head with the same cap fixed thereon to close the mouth. Fig. 3 is a central vertical section of the bottle-head and the cap before the cap is sprung into place on the head. Fig. 4 is half a side elevation and half a central vertical section of the head and cap together, as in Fig. 2. Figs. 5 and 6 are sections of a head and a modified form of closing-cap thereon, respectively, before and after the cap has been distorted to bring pressure on the packing. Fig. 7 is a top plan, and Fig. 8 is a side elevation, of the same form of cap in normal condition. Figs. 9 and 10 are central vertical sections of another form of the cap and bottle-head, respectively, before and after distorting the cap to bring pressure on the packing, as explained hereinafter.

Heretofore the necessary pressure between the packing and the mouth of the bottle have been supplied by the packing itself, which must therefore be elastic. The metal holding devices were only for the purpose of keeping the cork or rubber in place to exert their elastic pressure. A former patent granted to me, No. 755,276, March 22, 1904, covers the idea of supplying the pressure by the cap itself. Figs. 1 to 4 herein show a device involving this idea, as also some features set forth in my copending application, Serial No. 239,593, filed January 4, 1904, and further improvement thereon. The bottle-head 11 has an anchorage-ledge 12, and in this case a flat top. The cap comprises the closing part or plate 13, which is bordered by an indented annular rib 14 to make sharp contact with the top and to prevent distortion of the plate. Extending from the plate 13 are resilient

arms 15, which are flat, so as to bend readily and be springy. Attached to them are depending legs 16, connected at their ends or bottoms by a corrugated flange or narrow ring 17, so arranged as to project under the ledge 12 of the head when the legs lie against it and being of less diameter than the head, so that it automatically snaps under it when the cap is pressed down. (See Fig. 3.) The parts being in the position of Fig. 3 and an oiled-paper packing-disk 18 being placed over the mouth of the bottle, the tops of the arms 15 are pressed down by a flat surface, which thus engages their ends, the ring 17 snaps over the anchorage-ledge, at the same time forcing the legs 16 outward, increasing the angle between them and the arms 15. In the position of Fig. 4 the effort of the resilient arms to rise to normal position again presses the bead or rib 14 tight down on the disk 18, making the seal, and the effort of the parts to resume the normal angle between the arms and legs keeps the corrugated ring 17 close under the ledge 12. The fixing of the cap in place is thus automatic, and the legs 16 are guarded and held by the ring 17 besides by their own rigidity, it being noted that they are parts of a cylinder in form. This form of cap is easily made in a die at one operation, and the form of the ring 17 enables it easily to fit irregular bottle-heads.

In Figs. 5 to 8 is shown a form of the cap in which while the engagement of the anchorage-ring 17^a is automatic, as before, the distortion of the metallic connection between the legs 16^a and the resilient arms 15^a is done by a separate operation by any convenient tool which presses together the sides of the bend 20. The cover-plate 19 may have the rib thereon when desired; but it is not so necessary in this case, as the arms 15^a are flat and in line with the top 19, and the bending does not endanger the fit on the bottle.

In Figs. 9 and 10 the cap is modified to use on a more common form of bottle-head. The head 21 has a rounded top edge 22 and an anchorage-ledge 12. The cap may have an upwardly-indented rib or bead 23, formed to approximately fit this edge, and a paper packing-disk 18 is placed between in order to take up any unevenness of fit. (This could be wax or gum, as it need not be elastic.) From the bead 23 there extends a folded or bent part 15^b, which may be solid or in the form of arms, as in Fig. 4, and the depending legs 16^b may be connected by a corrugated

ring 17^b, as before, though other means of anchorage may be used. When the cap has been pressed down on the head, as in Fig. 9, so that the legs are anchored under the ledge 5 12, some tool, such as an annular vise, or any two pressure-surfaces, as A A', are applied to pinch together the bend of the part 20, connecting the ring 17^b and the top. This causes the distortion shown in Fig. 10, by 10 which the top and anchorage parts are resiliently forced together, inducing the desired pressure on the disk 18.

The various advantages of these devices will readily occur to those familiar with the 15 art.

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

20 1. In a bottle-closure, in combination with a bottle-head having an anchorage thereon, a cap comprising a part covering the bottle-mouth, a corrugated ring engaging the anchorage, and a connection between said two 25 parts resiliently drawing them together to exert self-induced pressure of the cap itself upon the bottle-mouth.

2. The combination of a bottle-head having an anchorage-ledge with a closing-cap 30 thereon comprising a cover-plate, a resilient expansible ring engaging the ledge and bent portions connecting the plate and ring and resiliently pressing them toward each other, substantially as described.

35 3. In a bottle-closing cap, the combination of an expansible ring adapted to snap over and engage the head of the bottle, a cover-plate for the mouth of the bottle, and resilient bent members connecting the ring and 40 plate, adapted to be sprung out of normal position in application, whereby the plate is drawn down and the cap exerts self-induced pressure on the bottle-mouth to close it.

4. A bottle-closing cap comprising a cover 45 having spring-arms, legs depending from said arms, and a ring connecting the ends of said legs and adapted to engage the head of the bottle.

5. A bottle-closing cap comprising a cover 50 having resilient arms, legs depending from the arms, and an expansible ring connecting the arms and adapted to automatically en-

gage the bottle-head and by means of said legs to hold the arms sprung out of normal position in application. 55

6. A bottle-closing cap comprising a cover part, an anchorage part adapted to engage the bottle-head, and a bent part connecting the cover and anchorage part, adapted to have the sides of its bend sprung out of normal position in applying the cap, to thereby 60 resiliently draw the cover and anchorage together and exert pressure of the cover on the bottle-mouth.

7. A bottle-closing cap comprising a part 65 adapted to engage and fasten on the head, a closing cover part for the mouth of the bottle, and resilient members connecting the said cover and anchorage parts adapted to become pressed so as to draw said parts together and 70 exert resilient pressure on the bottle-mouth, whereby no elastic packing is required.

8. The combination with a bottle-head having an anchorage-ledge, of a closure comprising a ring engaging the ledge, a cover for 75 the mouth of the bottle, and parts connecting the ring and cover formed of bent resilient metal and adapted by compression of the bend to draw down the cover toward the anchorage, to make the seal. 80

9. In a bottle-closure, a cap adapted to fit over the bottle-head and having means to engage the head so as to be retained thereon, and a cover for the bottle-mouth, bent members connecting the said cover part to the en- 85 gaging means and the bend adapted to be compressed to shorten said connecting members and thereby press the cover down on the bottle-mouth.

10. In a bottle-closure the combination 90 with a bottle-head having an outside retaining-ledge, of a cap having a cover for the mouth of the bottle, a part engaging said retaining-ledge, and resilient bent portions connecting the cover and retaining part and 95 adapted to be compressed in order to draw the cover down on the bottle-mouth.

In testimony whereof I have hereunto signed my name in the presence of the two subscribed witnesses.

FRANCIS W. H. CLAY.

Witnesses:

F. E. GAITHER,

R. J. COOK.