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CAP OR CLOSURE FOR BOTTLES, JARS, OR LIKE RECEPTACLES.
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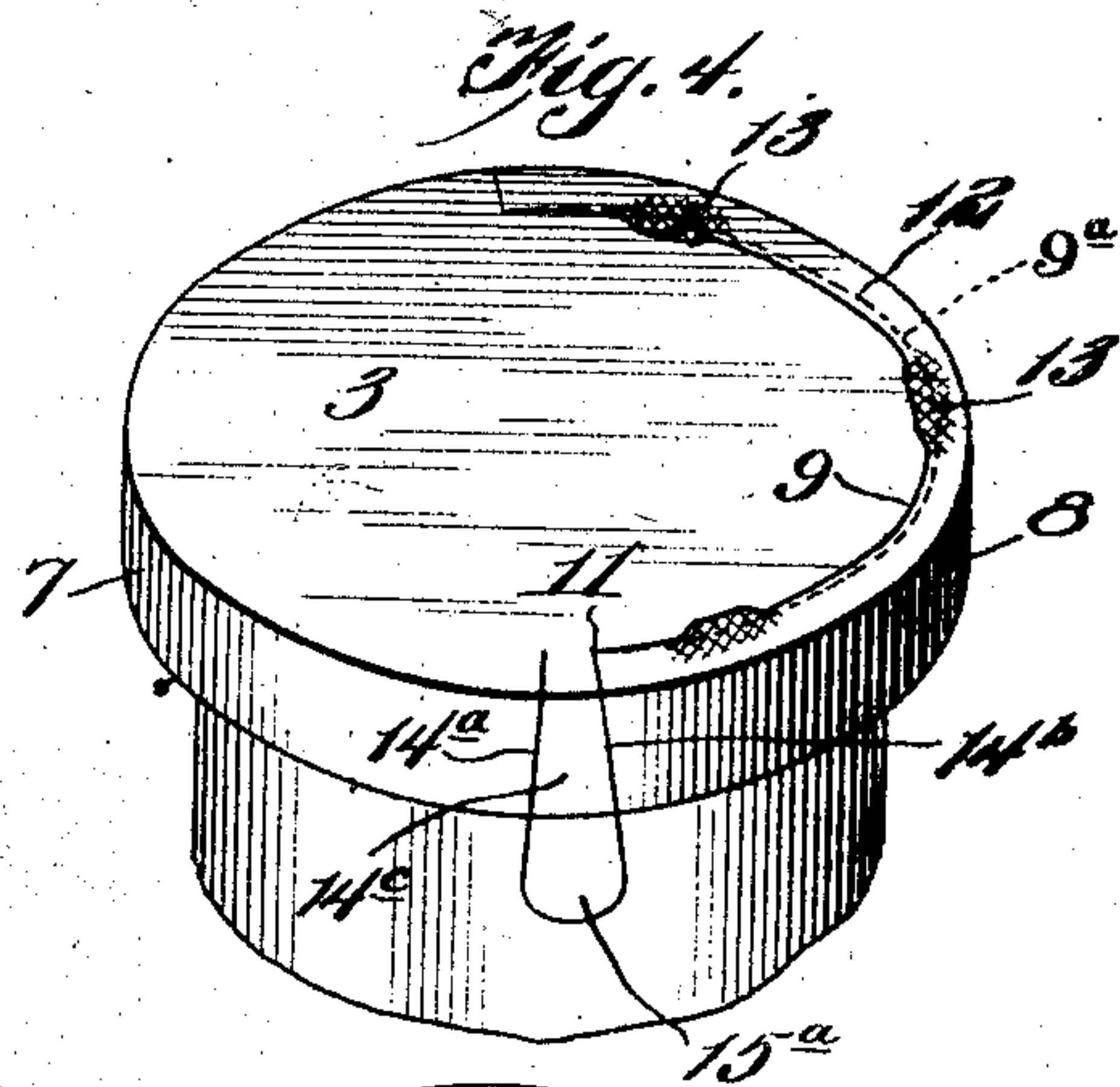
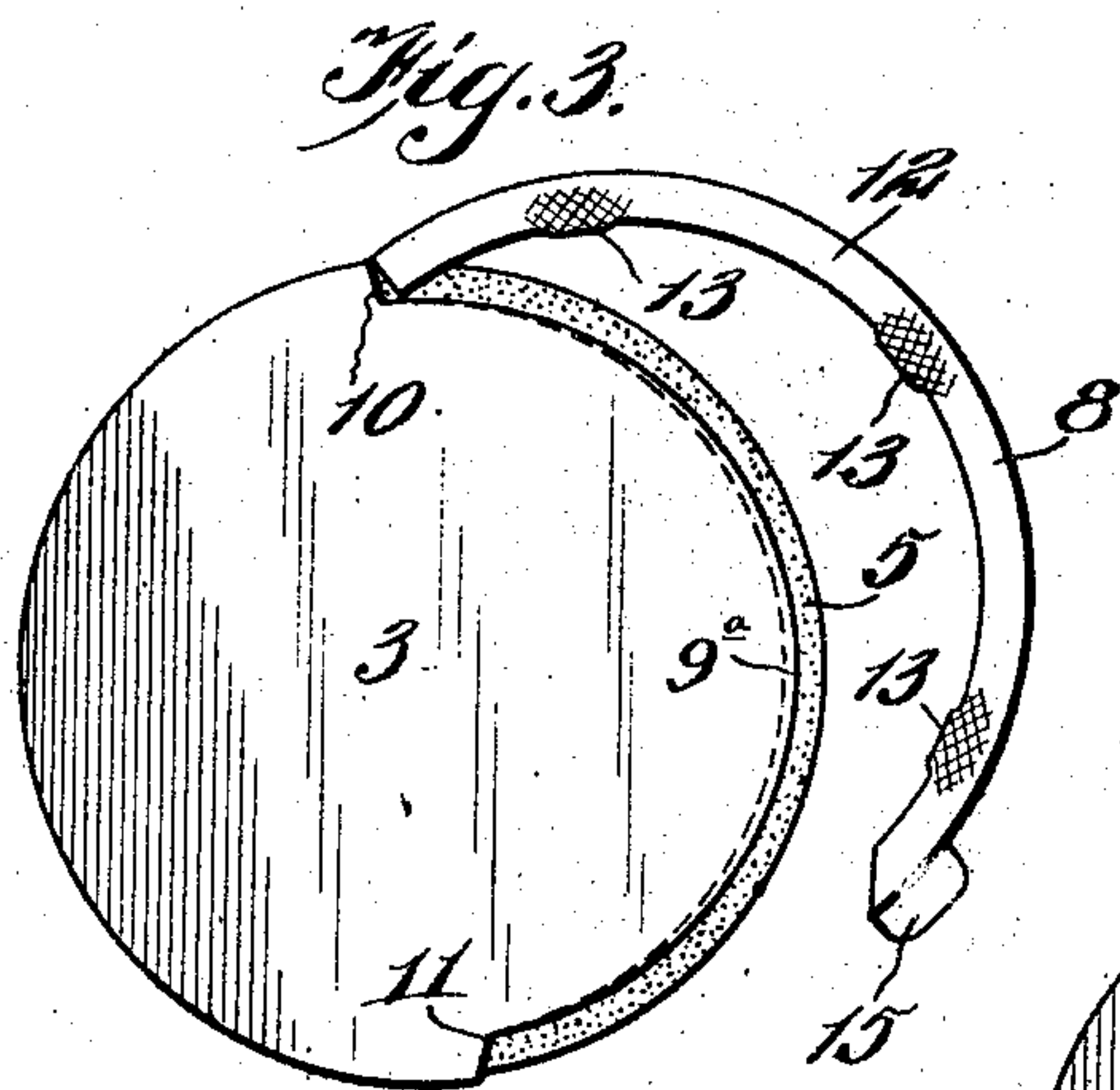
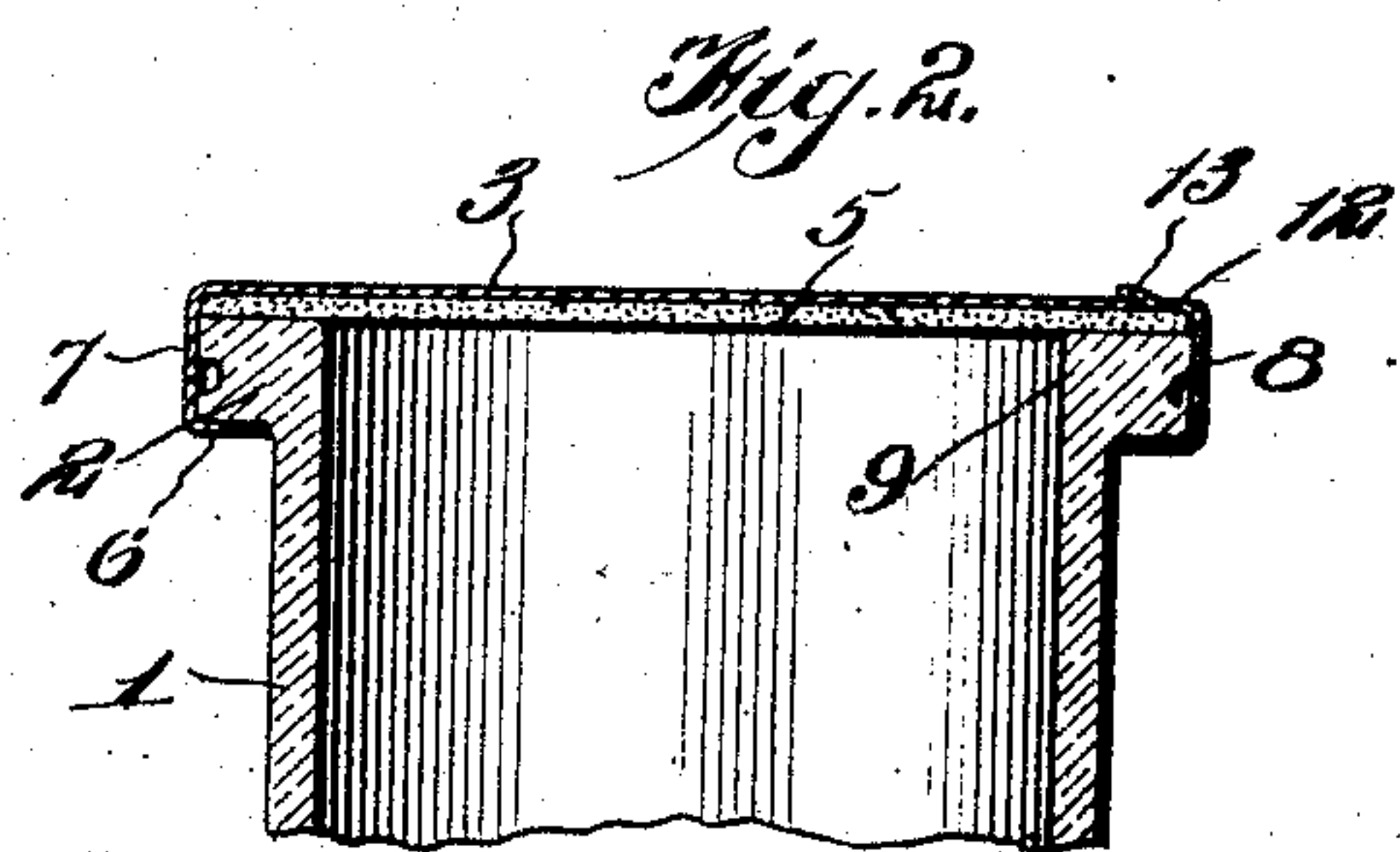
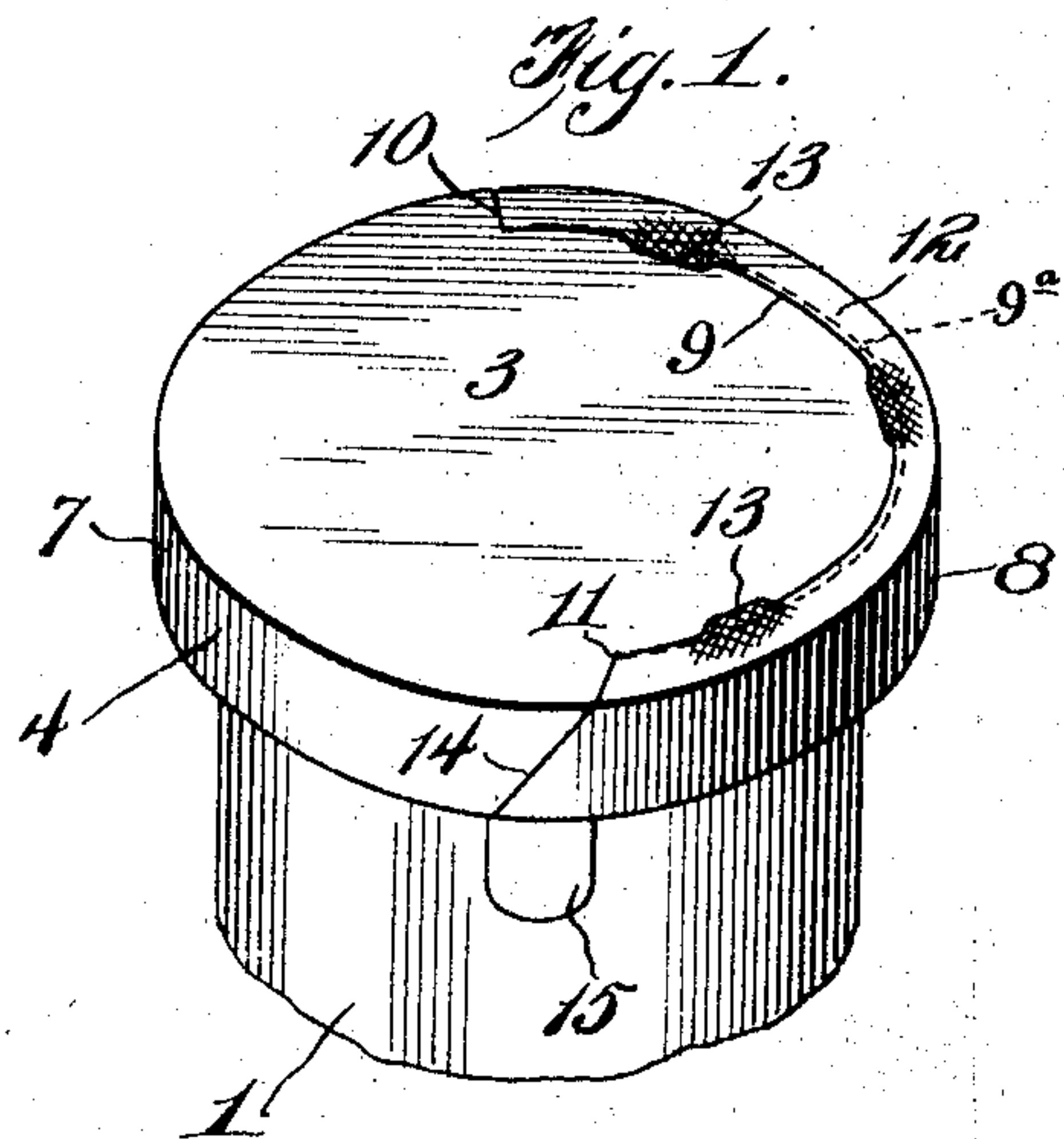
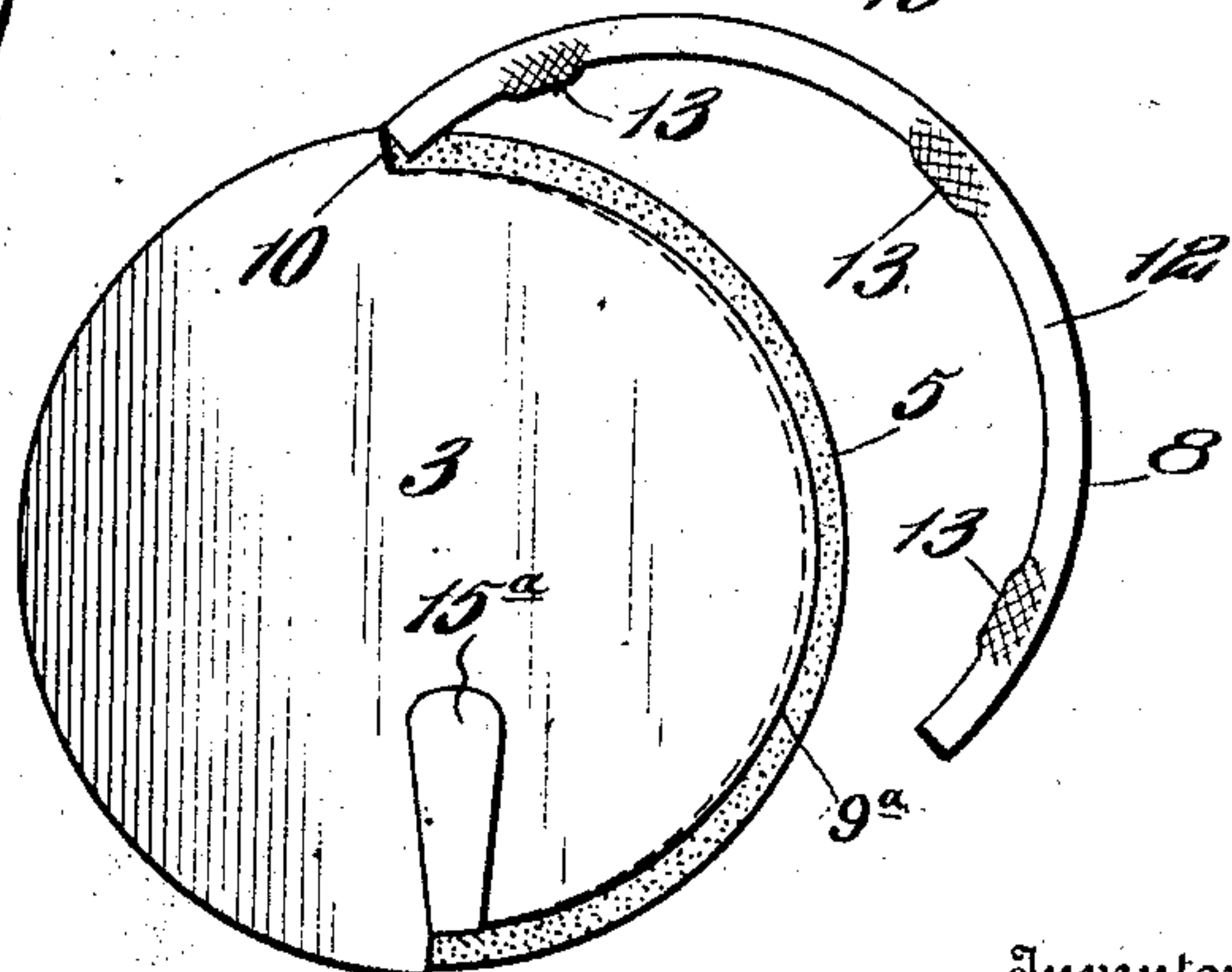


Fig. 5.



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CAP OR CLOSURE FOR BOTTLES, JARS, OR LIKE RECEPTACLES

No. 906,875.

Specification of Letters Patent.

Patented Dec. 15, 1908.

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To all whom it may concern:

Be it known that I, CHARLES HAMMER, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented new and useful Improvements in Caps or Closures for Bottles, Jars, or Like Receptacles, of which the following is a specification.

This invention relates to caps or closures for bottles, jars, cans or like receptacles, the object of the invention being to provide a sheet-metal cap or closure which is simple of construction, economical of manufacture, capable of being readily applied to the receptacle and removed therefrom, which has all of its parts combined in a single piece or integrally connected together, which is adapted to close the receptacle in an hermetically-tight manner, and which may be removed without the use of tools.

A further object of the invention is to provide a cap or closure having a separable flange portion, with means for displacing said separable portion to adapt the cap to be removed, and in which the necessity of contracting such separable portion in the application of the cap to the bottle or jar is avoided, thus simplifying and reducing the amount of labor in the applying operation.

The invention consists of the features of construction hereinafter fully described and claimed, reference being had to the accompanying drawing, in which:—

Figure 1 is a perspective view showing the application of one form of the invention to a bottle or jar. Fig. 2 is a vertical transverse section of the same. Fig. 3 is a top plan view showing the separable portion displaced to permit of the removal of the cap or closure. Fig. 4 is a view similar to Fig. 1 disclosing a modified construction of the cap or closure. Fig. 5 is a view similar to Fig. 3, showing the partially-separable portion of the flange of the cap disclosed in Fig. 4 displaced or separated from the top of the cap to permit of the removal of said cap.

Referring to the drawing, the numeral 1 designates a bottle or jar, or any other suitable like receptacle, provided at its upper end with an annular shoulder 2, which may be of any preferred form.

The cap comprises a top or cover portion 3 having a depending flange 4, and is used in conjunction with any suitable type of sealing disk 5 clamped when the cap is applied be-

tween the cover 3 and outer surface of the mouth of the bottle or receptacle.

The cap is formed in practice of a single piece of sheet-metal, cut out and stamped up through the action of a suitable die in a single operation, or in two or more successive operations, as desired. In the application of the cap to the bottle, the cap is fitted in the usual manner upon the upper end of the bottle neck so as to confine the sealing disk in position, after which the lower edge of the flange 4, which is of sufficient depth to extend below the base of the shoulder 2, is crimped under and into engagement with said shoulder, as at 6, thus fastening the cap in applied position.

The flange 4 has a portion 7, constituting practically one-half of the entire circumferential length of the flange, intact with the top or cover portion 3, and a portion 8, which constitutes the other half thereof, partially separated from the top or cover and adapted to be displaced out of normal position and separated from the top or cover in the operation of removing the cap.

As shown, the body portion 3 of the top is provided with a segmental slit 9, disposed some distance inwardly from the upper edge of the flange portion 8, said slit extending radially outward at one end to the edge of the flange, as at 10, and terminating at its opposite end inwardly from the edge of the flange, as at 11, this construction separating the flange portion 8 from the body of the top except at the end adjacent the slit-terminal 11, as hereinafter described, and providing the same with an inwardly projecting segmental lip 12 lapping over upon the adjacent portion of the sealing disk 5.

In order to close the slit and prevent spreading of the material along the line of the slit, as well as to adapt the cover to exert uniform pressure at all points upon the sealing disk 5, the edge 9^a of the top or crown formed by producing the slit and which is primarily concentric with the center of the top, is drawn out to extend on a line eccentric to the center of the top so that it will extend under the edge of the lip 12 and be overlapped thereby, while the lip 12 is provided with one or more offset portions or projections 13 to lap some little distance over upon the edge of the top, thus preventing the free edge of the top from springing up from contact with the seal and main-

taining the parts along the line of the joint substantially flush, so that the pressure upon the seal will be uniform or substantially so over the entire area thereof.

5 It is to be understood that the top, crown or cover portion 3 of the cap is primarily of a true circular form, and that the slit 9 is cut on a true segmental line concentric with the center of such top, after which the free
10 edge of the top along the line of the top is drawn out, expanded or stretched to produce the eccentric lap 9^a, and the edge of the lip 12 is expanded, flattened, drawn out or stretched to form the projections 13. By
15 this construction the necessity of cutting out the top in the form of an ellipse to produce an eccentric edge is avoided, enabling the cap to be much more easily and conveniently manufactured.

20 The operation of stretching or expanding the free edge of the top may be conveniently effected through the action of the die by which the cap is stamped up from the blank, by constructing the die so as to out-
25 wardly offset the free portion of the top in the form of a segmental boss extending around said free edge, and then during the second operation of scoring the cap to produce the weakened line simultaneously flat-
30 tening out the embossed portion of the cap. In the production of this boss, the metal of the free portion of the top is simply stretched or expanded, and is foreshortened only to an extent to slightly space the edge of such
35 portion from the edge of the flange 12, so that upon the subsequent operation of flattening out the boss the free portion of the top will be expanded under the flange to form the lap joint.

40 It will be understood that after the boss is formed and prior to the operation of flattening out the same the offset portions or projections 13 may be conveniently formed upon the lip 12 by the action of a suitable
45 die without affecting the top of the cap. These offset portions or projections may, however, be dispensed with, as the extension of the free edge of the top beneath the lip 12 will form a sufficiently close joint under
50 all ordinary conditions.

The end of the flange portion 8 adjacent to the terminal 10 of the slit is unreduced and unweakened and is integral with the contiguous portion of the flange section 7, while
55 the other end of the flange portion 8 is connected with the top and intact flange portion in such manner as to be readily severed therefrom. This is accomplished by scoring, grooving, indenting or otherwise weakening
60 the metal along the diagonal line 14 extending continuously upward from the lower edge of the flange over upon the top of the cap to the terminal 11 of the slit, forming an intact portion which joins the displaceable

portion of the flange but is sufficiently weakened to permit breaking or tearing of the metal along said line to free the adjacent end of the displaceable flange portion for separation except at its intact end from the body
70 of the cap. In order to enable the parts to be torn or separated and the displaceable portion 8 to be moved away from the body of the cap, a finger or tearing tab 15 is provided, which is integral with the lower end
75 of the flange portion 8 and in the application of the cap is bent inward to lie beneath the shoulder 2 so as to occupy a non-interfering position. By straightening this tab by an
80 upward and outward pull, and continuing such pull in an upward and forward direction, the metal may be torn or broken along the line 14 to separate the portions up to the line of the slit terminal 11, thus breaking the
85 adjacent end of the flange portion 8 away from the body of the cap and permitting said portion to be swung outward on its opposite or intact end as a fulcrum, as indicated in
Fig. 3, so that the body of the cap may be
90 slipped transversely off the jar and disengaged with the flange 2 thereof.

It will thus be seen that a cap is provided in which all of its portions are formed of a single piece of material and are normally in
95 condition for use, requiring no contraction, in a circumferential way, of the flange or other manipulation of the parts, other than the bending of the lower edge of the cap under the shoulder 2 to apply said cap to the
100 bottle or jar. Hence, the operation of applying the cap is simplified over constructions of that kind in which the displaceable portion of the flange is entirely separated from the top of the cap and expanded for the
105 application of the cap and drawn into normal position by the contraction of a connecting web, and furthermore, a cap of superior strength is produced. After the cap has
been initially removed to unseal the container, it may be subsequently used as a
110 cover by restoring the displaceable portion to normal position, in which, while it will no longer be permanently connected at its free end with the body of the cap, the cap will
115 nevertheless be capable in connection with the sealing disk of closing the receptacle in a sufficiently tight manner.

In the modified form of the invention shown in Figs. 4 and 5 the construction is
120 substantially the same as that hereinbefore disclosed, except that the cap is provided with a pair of upwardly converging weakening lines 14^a and 14^b, the latter extending
125 to the slit terminal 11 and the former being spaced a slight distance therefrom. This construction results in the production of a tongue or web 14^c between the flange portions 7 and 8, to which tongue or web the
tab or finger piece 15^a is connected. By
130 straightening out the tab and pulling up-

ward thereon, the metal will be broken along the lines 14^a and 14^b up to the slit terminal 11, thus separating the adjacent end of the displaceable portion of the flange from the body of the cap to permit it to be swung out to the position shown in Fig. 5 for the removal of the cap from the container. In the use of the cap for subsequently closing the jar or container, the tongue 15^a may be bent downward at an angle to engage the free end of the displaceable portion and assist in retaining the same in normal position.

It will be apparent that by the production of a cap in the manner described, the number of manipulations necessary in applying the same to a jar or container will be reduced over constructions requiring the displaceable portion of the flange to be contracted circumferentially, and the value of the cap in this respect will be readily appreciated.

It will also be seen that the present structure possesses superior strength and through its uniform pressure on the seal 5 insures a hermetically-tight closure of the receptacle.

Having thus fully described the invention, what is claimed as new is:—

1. A bottle cap or closure having a portion of its flange partially separated from its top by a segmental slit disposed adjacent said portion of the flange, said partially separated flange portion being held in closed position by a weakened portion intact with the top and remainder of the flange, said weakened portion being adapted to be torn or broken to free such separated flange portion for displacement.

2. A bottle cap or closure having its top formed with a segmental slit adjacent to and parallel with a portion of its flange and partially separating said flange portion from the top, one of the ends of said flange portion being intact with the top and remainder of the flange and weakened on a line intersecting the adjacent end of the slit so as to be readily torn or broken away.

3. A bottle cap or closure having a portion of its flange partially separated from its top by a segmental slit formed in said top parallel with said portion of the flange, said flange portion being intact at one end with the top and remainder of the flange and having said intact portion weakened on a line intersecting the adjacent end of the slit, and means associated with said intact weakened portion for tearing or breaking away the same along the weakened line.

4. A bottle cap or closure having its top formed with a segmental slit adjacent to and parallel with a portion of its flange, and partially separating said portion of the flange from the top, said portion of the flange being connected with the remainder of the flange and the top by an intact portion having a weakened line extending to one end of the

slit, and a tab integral with said weakened intact portion for tearing or breaking away the same along the weakened line, whereby the said partially separated flange portion may be displaced.

5. A bottle cap having its top formed with a segmental slit adjacent to and extending parallel with a portion of its flange, thus partially separating said flange portion from the top, leaving a lip extending inwardly from said portion of the flange, and having said flange portion connected with the top by a weakened portion adapted to be broken or torn away, the free edge of the top formed by said slit being extended beneath said lip by expanding the metal of the top from a partially circular to a partially elliptical form.

6. A bottle cap or closure provided in its top portion with a slit partially separating a portion of its flange from the top, the edge walls of the slit being expanded to produce overlapping portions, one of the ends of said partially separated flange portion being connected by a weakened portion with the top, and a grip upon the cap for breaking or tearing away said weakened portion.

7. A bottle cap or closure provided in its top portion with a slit partially separating a portion of its flange from the top, the edge of the top produced by said slit being expanded from a segmental to an eccentric outline and the opposing edge of the partially separated portion expanded at points to provide projections, whereby lapping surfaces are produced to close the slit, one of the ends of said partially separated flange portion being connected by a weakened portion with the top, and a grip upon the cap for breaking or tearing away said weakened portion.

8. A bottle cap or closure provided in its top portion with a slit partially separating a portion of its flange from its top, said partially separated portion of the flange being connected with the top and the remainder of the flange and held in closed position by an intact weakened portion intersecting one end of said slit, and a grip associated with said weakened intact portion for tearing or breaking away the same to free the adjacent end of said partially separated flange portion.

9. A bottle cap having its top formed with a segmental slit adjacent to and extending parallel with a portion of its flange, thus partially separating said flange portion from the top and leaving a lip extending inwardly from said portion of the flange, and having said flange portion connected with the top by a weakened portion adapted to be broken away or torn away, the free edge of the top formed by said slit being extended beneath said lip by expanding the metal of the top from a partially circular to a partially elliptical form, and a grip associated with said weakened portion for breaking or tearing the same away.

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10. A bottle cap or closure weakened across its flange and partially across its top at one side of said top, and provided with a slit in said top extending from said weakened portion across the top, said slit partially separating a portion of the top and the adjacent portion of the flange from the remainder of the top, said portions being held connected by the said weakened portion to form a closed cap, and means associated with the weakened portion for breaking or tearing the same to separate said partially separated portions from the top.

11. A bottle cap or closure having its top formed with a slit extending across the same and partially separating a portion of the top and the adjacent portion of the flange from the remainder of the top, and provided with a weakened portion between one end of said slit and the edge of the top and holding the portions of the top intact at one point to form a closed cap, and having its flange provided with a weakened portion forming a continuation of said weakened portion of the top, and a grip for breaking or tearing said weakened portions.

12. A bottle cap having a portion of its flange partially separated from its top by a slit formed in said top and held connected with the top by a weakened intact portion, and means for tearing or breaking said intact weakened portion, whereby said partially separated flange portion may be partially separated from the remainder of the flange and wholly separated from the top.

13. A bottle cap or closure having a slit extending across its top from one side of the top to the other and partially separating a portion of the top and a portion of its flange from the remainder of the top, said portions being held connected at one side of the cap

by a weakened intact portion partially formed upon the flange and partially upon the top and intersecting the adjacent end of the slit, and a tab or finger piece associated with said weakened intact portion whereby the same may be readily torn or broken away.

14. A bottle cap or closure having a slit extending across its top from one side of the top to the other and partially separating a portion of the top and a portion of its flange from the remainder of the top, said portions being held connected at one side of the cap by a weakened intact portion partially formed upon the flange and partially upon the top and intersecting the adjacent end of the slit, the portions of the top having their edges overlapped along the line of the slit by expanding one of said portions from a partially circular to a partially elliptical form, and a tab or finger piece associated with said weakened intact portion whereby the same may be readily torn or broken away.

15. A bottle cap having a portion of its flange partially separated from its top by a slit formed in said top and held connected with the top by a weakened intact portion, the walls of the slit being arranged to overlap by expanding one of said walls from a segmental to an eccentric outline, and means for tearing or breaking said intact weakened portion, whereby said partially separated flange portion may be partially separated from the remainder of the flange and wholly separated from the top.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES HAMMER.

Witnesses:

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OLIVER E. DAVIS.