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E. W. ENTRIKEN

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PASTE TUBE CLOSURE

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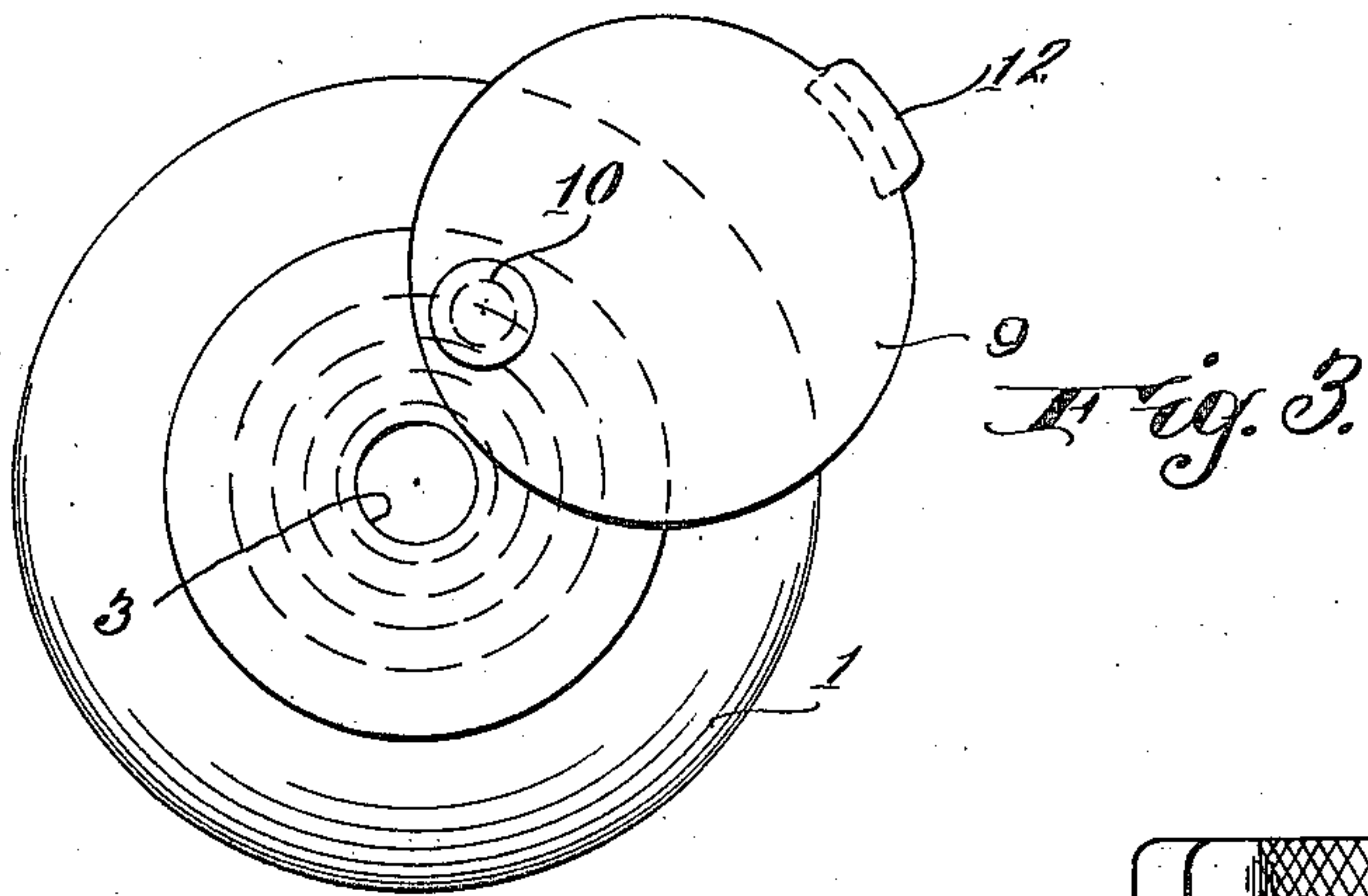


Fig. 3.

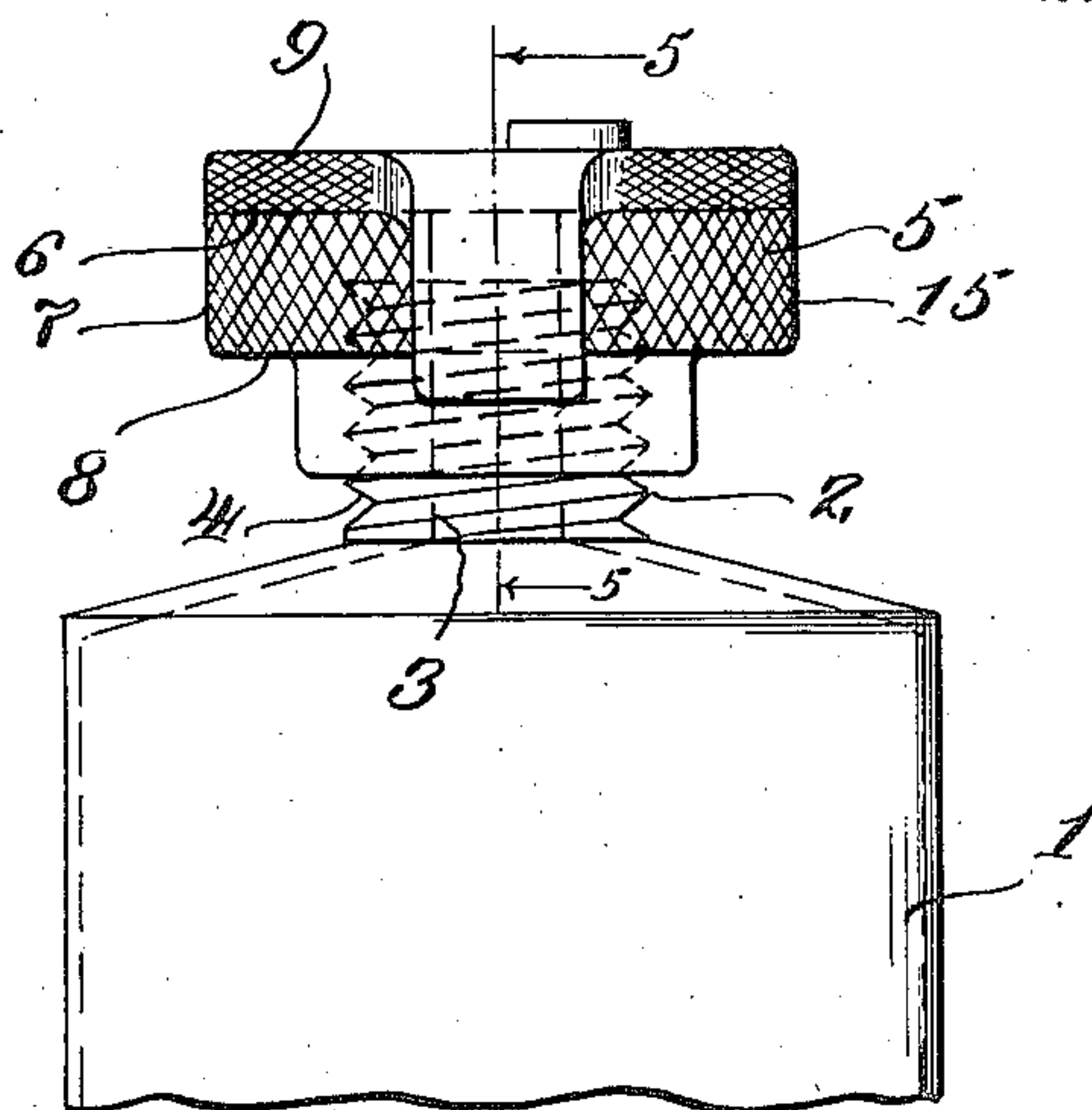


Fig. 1.

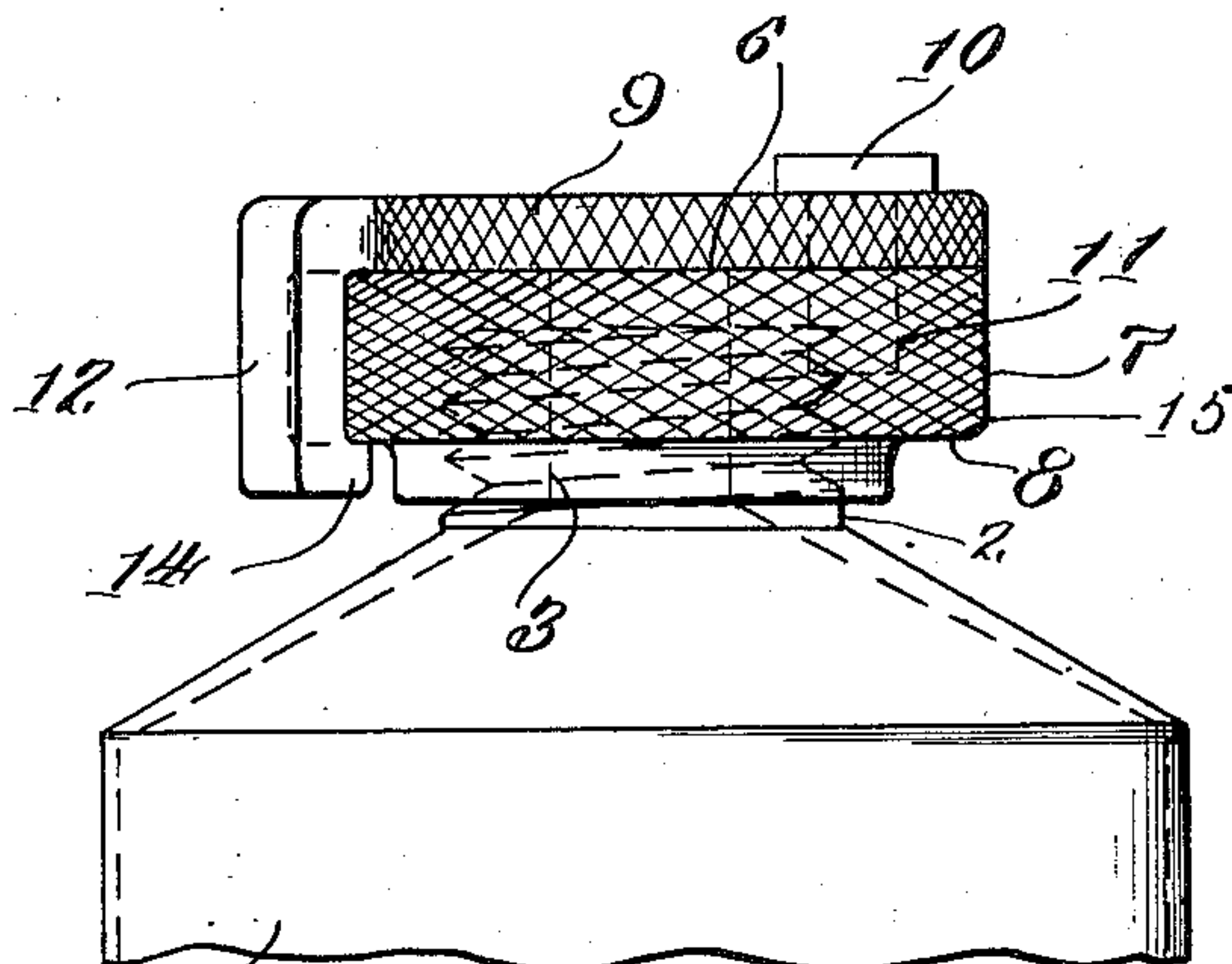


Fig. 2.

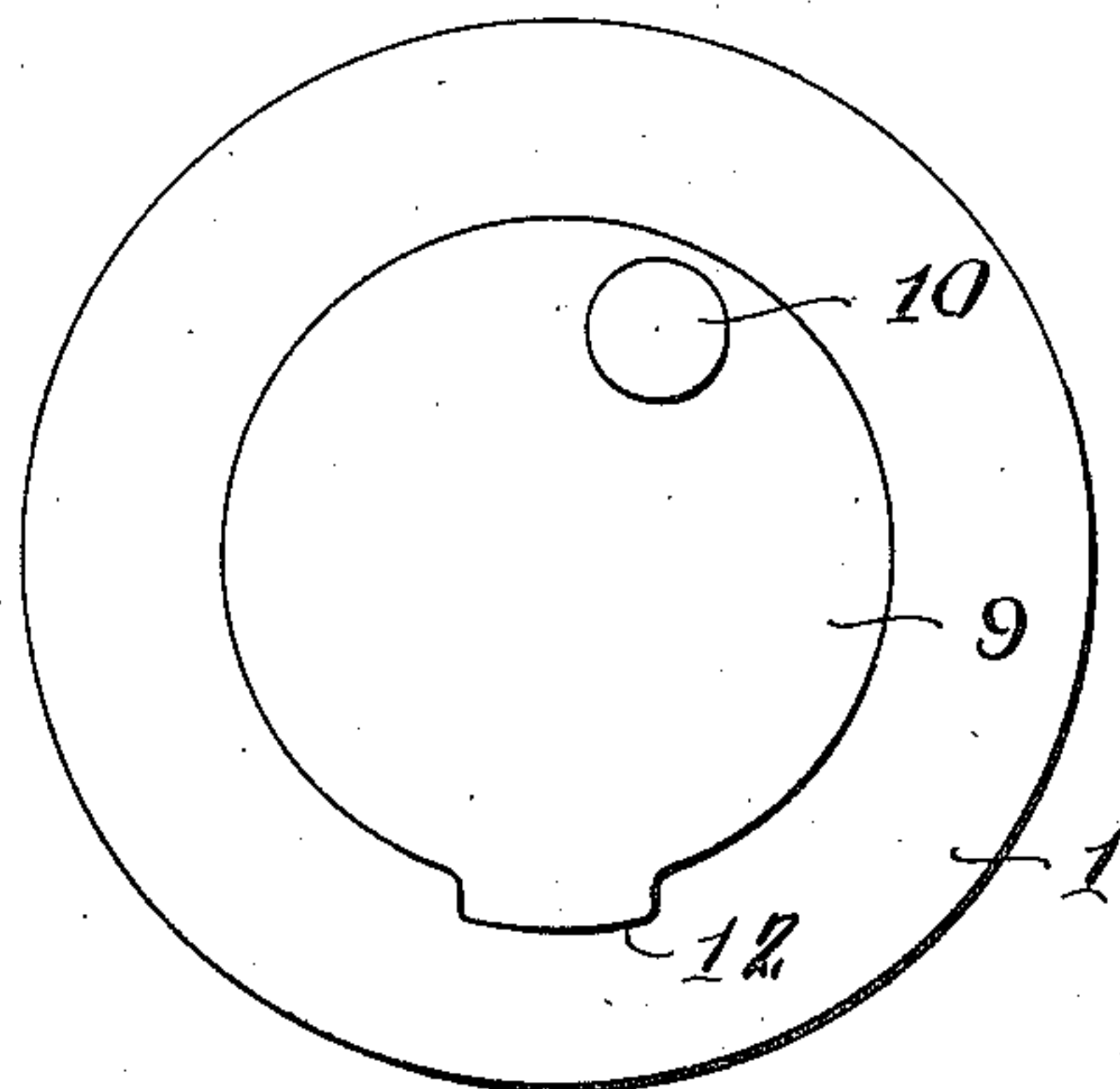


Fig. 4.

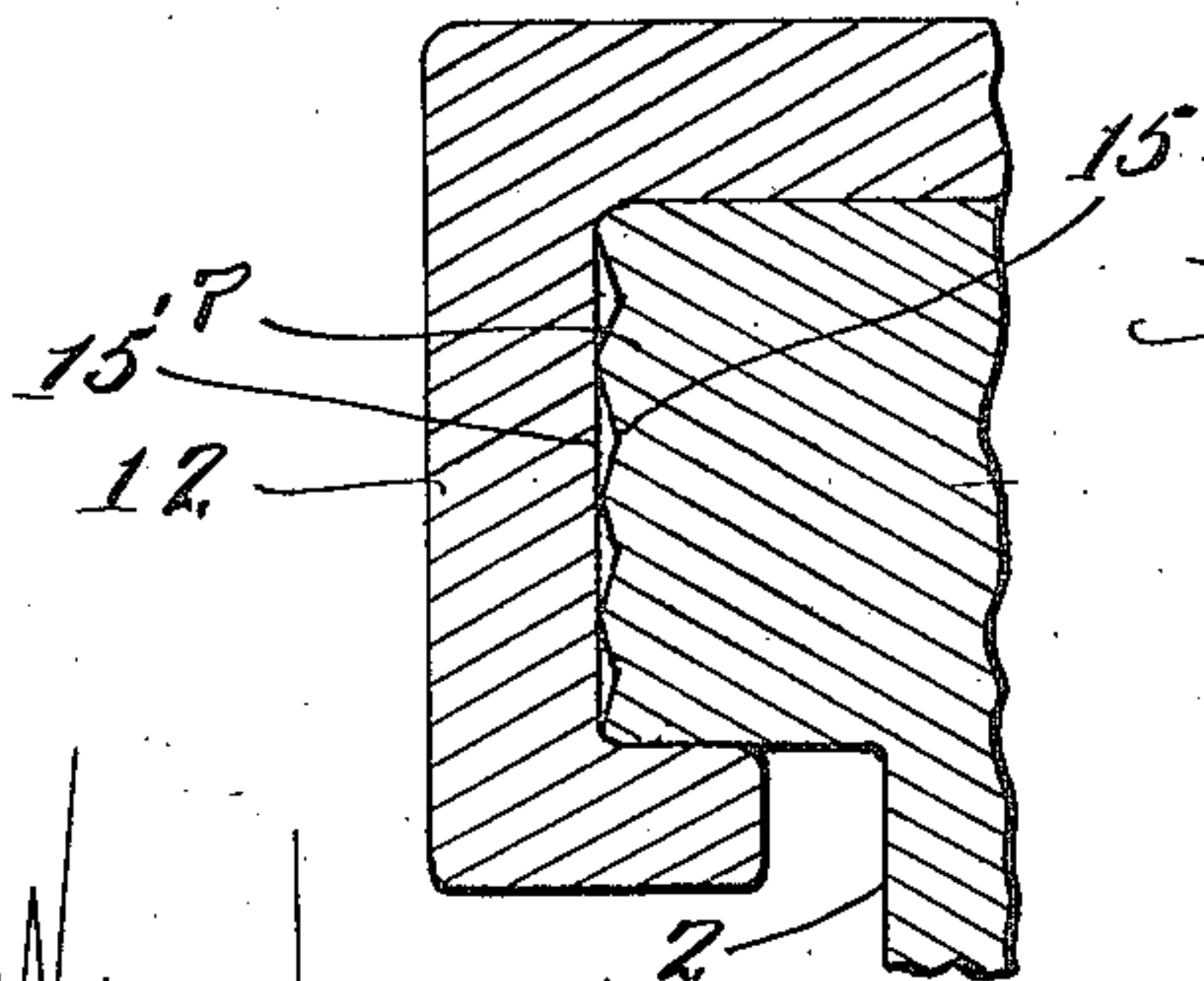


Fig. 5.

WITNESSES
T. H. H. H. H.

Inventor
Emmett W. Entriken

By Edwin H. H. H.

Attorney

UNITED STATES PATENT OFFICE

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PASTE TUBE CLOSURE

Emmett W. Entriken, Baltimore, Md.

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4 Claims. (Cl. 221-60)

The invention relates to a closure particularly adapted for use with collapsible tubes, though this closure is capable of more general application.

5 The inconvenience and waste incident to the use of tooth paste, shaving soap, paints, cements and other commodities sold in collapsible tubes closed by means of the well known screen cap, are matters of general knowledge. While various 10 more or less complicated closures for this purpose have been devised with a view to discovering these difficulties, they are all so expensive to construct that none of them have come into general use, so that the screw cap on account of its cheapness is still the generally 15 accepted closure for this type of container, being used on ninety-nine per cent. of the collapsible tube packages sold.

20 That the screw cap per se is inconvenient, undesirable and wholly insufficient for the purpose in hand is a fact so clearly demonstrated in every household that it is hardly open to discussion. The screw caps when used as closures for tooth 25 paste and shaving soap tubes, which use is most familiar to the general public, are not only mislaid and lost in various ways too numerous to explain, but are very frequently dropped into the hand basin and washed down the waste pipe where they are not only lost but have the further 30 effect of clogging the passage. This results in a considerable degree of annoyance and expense. Aside from this consideration the loss of the cap causes drying of the contents of the tube at the discharge passage so that the tube is 35 ruptured in the effort to extrude the dried accumulation of paste in the discharge passage. The container thus becomes useless on account of the leakage of the contents and is either discarded with the contents or a large percentage of 40 the contents is wasted by leakage. Also, the removal of the cap in order to use the contents of the tube and the attempt to hold it in one hand or find a safe place to deposit it for use in closing the tube after the use of the contents is for 45 the time being completed, involves an awkward and troublesome effort or a considerable mental hazard in the attempt to remember the place of deposit when the cap is required.

50 It is also of interest that the majority of the prior art devices intended as a substitute for the screw cap involve various changes in or departures from the standard construction of the neck of the tube to which the improved types of closures of the prior art are used; and such variations involve an expense which is prohibitive in

such containers which must be thrown away when the contents are consumed, and therefore must be itemized as a considerable increase in the cost of production involving increased price and consequently increased sales resistance in connection with the commodities so packed.

5 The invention provides a closure which, though it can be otherwise utilized, is preferably embodied in a screw cap which can be applied to the standard container and which, therefore, in its use requires no change of the tube construction and may further be sold separately to the consumer as an accessory to be applied to any package in the form of a collapsible tube or 10 other container having a similar closure which he may have in hand for use, the improved cap being under these circumstances transferred from one container to another as the contents are consumed. It is of further and controlling 15 interest that the cap of the invention with the improved closure is so devised that the expense involved in its production is but slightly in excess of that of an ordinary screw cap, the cap being in fact capable of production with the 20 old type of die with a slight variation whereby the discharge opening extends through the top of the cap. This discharge opening is, in accordance with the invention, closed by a pivoted plate which overlies the top of the cap in closed 25 position and swings over and off of the top of the cap to open position, the plate being pivoted to the cap at one side and having opposite the pivot a lug which engages the outer edge of the cap flange or lip, the lug being slightly off center so that in closing it locks the pivoted plate 30 because of the fact that the inside of the lug is of a radius from the pivot less than the corresponding greatest lateral dimension of the cap or head of the container.

40 In the accompanying drawing I have illustrated a closure for a collapsible tube embodying the features of the invention in the preferred form.

In the drawing:

45 Figure 1 is a front elevation of the top portion of the container tube showing the closure affixed and in closed position.

Figure 2 is a side elevation of the same with the neck somewhat shortened.

50 Figure 3 is a top plan view of the tube showing the closure in open position.

Figure 4 is a similar view showing the tube closed.

55 Figure 5 is a fragmentary section on the line 5, 5 in Figure 1.

Referring to the drawing by numerals, each of

which is used to indicate the same or similar parts in the different figures, the construction shown comprises a collapsible tube or container 1, shown fragmentarily, the upper portions only of the tube appearing in the drawing. This tube is provided with a neck 2 at the top center having a discharge opening 3. This neck in the preferred form is threaded externally at 4 for engagement with a flanged head or cap 5 which may be otherwise secured in any suitable manner, the engagement of the cap to the neck being intended to be more or less permanent. The closure for controlling the discharge of the contents of the tube from the neck opening 3 is pivotally mounted on the top surface of the cap or head and adapted to be quickly and easily opened and closed in using the contents of the tube, the closure being conveniently operated by a finger or thumb of the hand which holds the tube, leaving the other hand free and thus facilitating the use of a brush or other implement, as hereinafter more fully described.

The cap or head 5 is provided with a flat top surface 6 at right angles to the axis of the tube and the neck opening 3 extends downwardly from this surface into the inside of the tube. The cap or head 5 is further provided with a circular peripheral outwardly projecting flange or lip 7, the bottom surface 8 of which is parallel to the top surface 6. The surfaces 6 and 8 are preferably at right angles to the axis of the flange 7.

The closure of the discharge opening 3 to prevent the unintended discharge of the contents of the tube and the subsequent opening of the same to discharge the contents of the tube at the will of the consumer, is effected by means of a flat plate 9 which closely overlies the flat horizontal top surface 6 of the head or cap 5, the same being mounted on the top surface 6 of the cap or head and pivotally connected thereto by means of a pin 10 which is parallel to the axis of the tube and passes downwardly through the head, being permanently seated at its lower end at 11 in the head near one side and the pivoted plate 9 is provided at its opposite side but slightly off center, i. e. out of line with the long diameter of the head which extends through the pivot 10 with a depending hook or projection 12 which extends downwardly across the edge surface 15 of the flange 7 of the cap or head 5 having its lower end 14 turned under said flange forming a tab or lug which engages the bottom horizontal surface 8 of said flange or lip serving in closed position to hold the flat plate 9 in close contact with the top horizontal flat surface 6 of the cap or head surrounding the discharge opening 3.

It is of particular importance not only that the top surface 6 of the cap or head 5 and bottom surface 8 of the flange 7 be parallel contributing to the ease, cheapness and convenience of manufacture, but that the pin 10 and the inner surface of shank 15' of hook or projection 12 be off center and out of line with the long diameter of the plate 9 extending through the center of the pin, the pin and the inner surface of the shank 15' of the hook or projection 12 being spaced by a distance slightly less than the distance from the pin 10 to the opposite and most remote edge of the lip or flange 7. For this reason as the plate 9 swings into closed position as shown in Figures 1, 2, 4, and 5, the hook 12 swing inwardly against the outer peripheral surface 15 of the flange or lip 7 of the head or cap, locking this pivoted plate in closed position and further eliminating

any chance that the plate may rotate past locking position which would result in loosening the lug and pin and in confusion as to the manner and direction of opening.

The inner surface of the shank 15' of hook 12 is thus brought with a wedging action in close contact with the peripheral edge surface 15 of the head 5.

The closure in the form of pivoted plate 9 is thus held by the frictional engagement of shank 15' with edge surface 15 of the head 5 in closed position and retained with the bottom of the plate 9 in close contact with the flat top surface 6 of the head or cap 5, by the lug 14 which engages the bottom surface 8 of the flange or lip 7 of head 5 thus preventing leakage of the contents of the tube 1. This gives an entirely secure closure of the neck opening 3. At the same time the closure is conveniently opened by one finger or by the thumb of the hand which holds the tube or container, leaving the other hand free.

While the top plate or closure 9 may be mounted to swing either to the right or to the left, as the manufacturer may prefer, the preferred arrangement as illustrated is to have it close in the direction of the screwing down of the cap so that the swinging of the plate to open and closed position may be performed with a motion similar to that performed in the unscrewing and closing respectively of a screw cap.

In operation of the cap of the invention, which may to advantage be manufactured for sale as a separate commodity, as well as for use as a stock closure by manufacturers of tooth paste, shaving soap and the like, the cap is first screwed down tightly on the neck of the container so as to prevent accidental removal; or it may, if desired, as already pointed out, be secured or mounted on the neck in any preferred manner, being in effect permanently attached so as to eliminate the tendency to unscrew in operating the closure plate 9. In using the contents of the tube the consumer naturally holds the tube in one hand and the brush or other implement in the other hand, operating the closure plate with the thumb and finger of the hand which holds the tube, or the plate may, of course, be operated in any preferred manner.

It is of considerable importance that the cap as described can be produced by means of a simple punching or pressing operation by means of a die slightly varied from the die used in making the ordinary screw cap and that the closure plate can also be produced with a very simple die by a single stamping operation so that the cost of the improved cap of the invention, as already pointed out, is so slightly in excess of the cost of an ordinary screw cap that it can be produced and sold at little, if any, advance in cost over the old type of closure.

I have thus described specifically and in detail a closure for collapsible tubes and the like embodying the features of my invention in the preferred form in order that the manner of operating, applying and using the same may be more fully understood; however, the specific terms herein are used in a descriptive rather than in a limiting sense, the scope of the invention being defined in the claims.

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

1. A screw cap adapted for use in cooperation with a container having a threaded neck with a discharge opening therein, the cap having a flat top surface with a discharge opening therein and

a circular flange with a bottom surface parallel to the top surface of the cap, both said surfaces being substantially at right angles to the axis of said flange, a closure plate overlying said flat top surface and pivoted to the flange to swing over and off of said top surface, a hook formed on the other side of the plate and adapted to extend down over the flange, the hook having a shank and a lug at the lower end of the shank engaging the bottom surface of the flange in the closed position of the plate, the spacing of the inner surface of the shank from the pivot being slightly less than the greatest dimension of the flange from the pivot to the opposite peripheral surface of the flange whereby as the closure plate is swung to closed position, the shank is moved inwardly bringing its inner surface against the outer peripheral surface of the flange providing a frictional locking of the plate by engagement of the inner surface of the shank with the outer peripheral surface of the flange, the contact of the said surfaces preventing rotation of the plate through and beyond closed position, the closure plate swinging to closed position in clockwise direction and to open position in the opposite direction.

2. A removable cap for use on a collapsible tube having a neck with a discharge opening, and means for attaching the cap to the neck to close the opening, the cap having a flat top surface with a discharge opening therein, a peripheral flange with a bottom surface parallel to the said top surface, both said surfaces being substantially at right angles to the axis of the neck, a closure plate fitting the top of the cap and overlying its top surface and pivotally mounted on the cap with the pivot at one side, a hook depending from the side of the top plate opposite the pivot, the hook having a shank and a lug engaging beneath the flange in the closed position of the plate, the hook being at one side of a line drawn from the pivot through the center of the cap and having the inner surface of the shank spaced from the pivot by a distance slightly less than the greatest dimension of the flange from the pivot to the remote portion of the peripheral surface of the flange whereby as the closure plate is swung to closed position, the shank of the hook is moved inwardly

against the peripheral surface of the flange effecting a frictional locking of the plate by engagement of the inner surface of the shank of the hook with the outer peripheral surface of the flange preventing rotation of the plate through and beyond locking position.

3. A container cap having a flat top surface with a discharge opening therein, and a peripheral flange, a closure plate overlying and fitting the top surface of the cap and pivoted thereto at one side to swing over and off of the said top surface to open position, the closure plate having a depending projection remote from the pivot and extending down over the flange, the projection having its inner surface spaced from the pivot by a distance slightly less than the distance from the pivot to the peripheral edge of the flange most remote from the pivot so that in closing the projection swings inwardly against the edge of the flange, locking the plate in closed position by the friction of the inner surface of the projection against the edge of the flange preventing rotation of the plate through and beyond closed position.

4. A container head having a flat top surface with a discharge opening near the center, the head having a flange with a bottom surface parallel to the top surface, said surfaces being parallel, a closure plate pivoted on the head at one side, on an axis at right angles to said parallel surfaces, a projection at the opposite side of the plate from the pivot extending down over the flange, the projection having a lug engaging the bottom surface of the flange in the closed position of the plate, the spacing of the inner surface of the projection from the pivot being slightly less than the greatest dimension of the flange from the pivot to the opposite peripheral surface of the flange whereby as the closure plate is swung to closed position the projection is moved inwardly bringing its inner surface against the peripheral surface of the flange, providing a frictional locking of the plate by engagement of the inner surface of the projection with the peripheral surface of the flange and preventing the rotation of the plate beyond the closed position.

EMMETT W. ENTRIKEN.