M. B. BEHRMAN.

COLLAPSIBLE TUBE AND OTHER CONTAINER.

APPLICATION FILED MAR. 15, 1920.

1,357,024. Patented Oct. 26, 1920.

Fig. 1.

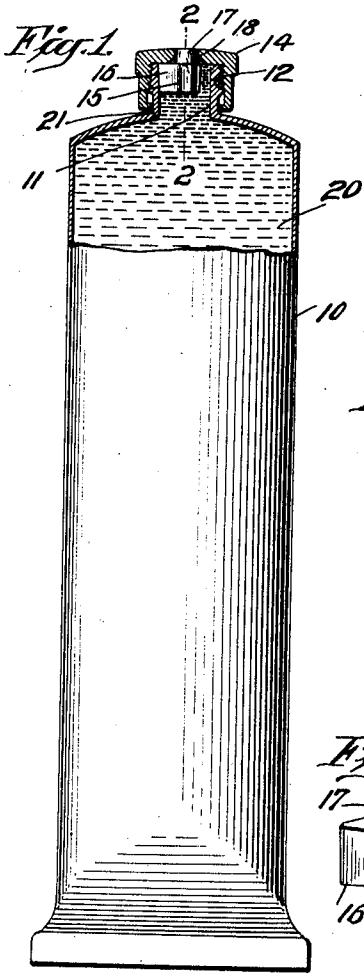


Fig. 2.

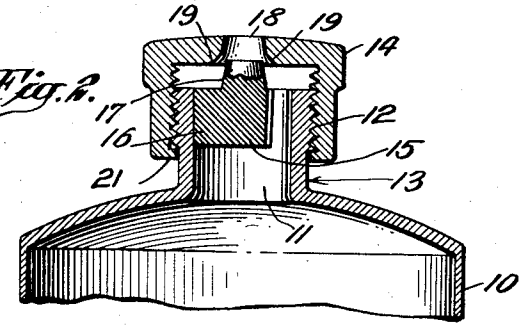


Fig. 3.

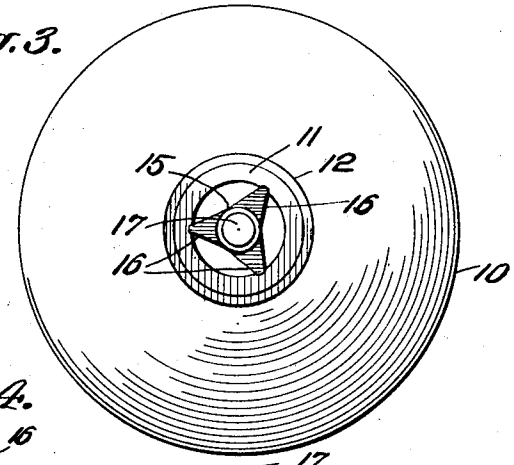


Fig. 4.

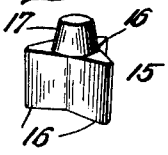


Fig. 5.

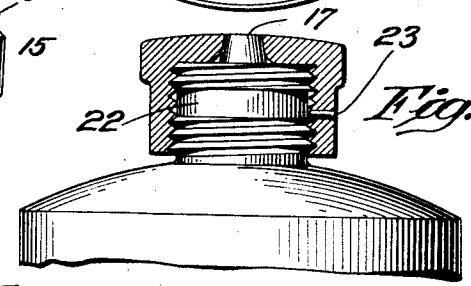


Fig. 8.

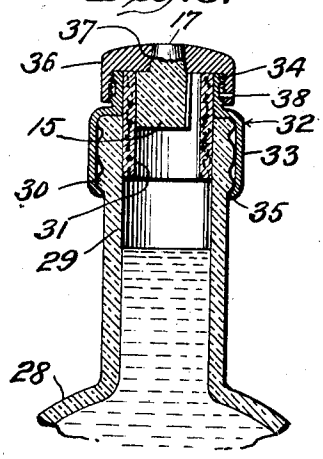


Fig. 6.

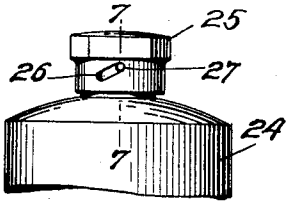
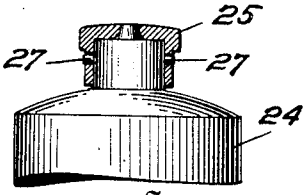


Fig. 7.



Inventor

MARCUS B. BEHRMAN

By his Attorney

Chas. C. Gill

UNITED STATES PATENT OFFICE.

MARCUS B. BEHRMAN, OF NEW YORK, N. Y.

COLLAPSIBLE TUBE AND OTHER CONTAINER.

1,357,024. Specification of Letters Patent. Patented Oct. 26, 1920.

Application filed March 15, 1920. Serial No. 365,734.

To all whom it may concern:

Be it known that I, MARCUS B. BEHRMAN, a citizen of the United States, and a resident of New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Collapsible Tubes and other Containers, of which the following is a specification.

The invention relates more particularly to containers having a screw-cap which is ordinarily removed so as to permit the discharge of the contents through the neck of the container. Containers of this class are of various types, and one type is represented by a collapsible tube of the kind commonly employed for holding tooth-paste, shaving cream and the like. These tubes usually have a threaded neck and a screw-cap which is removed when it is desired to discharge the contents of the containers through said neck. It is commonly well known that the screw-caps on containers when removed from position frequently fall on the floor and get lost or otherwise misplaced, and the purpose of the present invention is to provide a container having a screw-cap which is not detachable from the container, but which when partly unscrewed exposes an opening therein through which the contents of the container may be discharged. I preferably provide a hole in the center of the top of the screw cap and within the neck of the container I provide a plug which, when the cap is screwed to its closing position, has its aperture closed by said plug, said plug being stationary so that when the cap is screwed to open position the hole in the top thereof may become exposed above the plug and be utilized for the discharge of the contents of the container. By preference the hole in the top of the screw-cap has downwardly diverging side walls corresponding with downwardly diverging side walls of the plug located within the neck of the container, and hence when shaving cream or the like is discharged through the hole in the top of the cap, the same will exude in the form of a rod as distinguished from a hollow tube. The plug located in the neck of the container will preferably be of such length that when the cap is screwed to its closure position the upper end of the plug will be flush with the top surface of the cap, thereby avoiding any cavity in the top of the cap and avoiding the formation of a dried block of the shaving cream or other substance in the hole in the top of the cap.

The plug hereinbefore referred to is formed integrally with a spanner preferably having three wings and adapted to be inserted downwardly with a wedging action into the upper end of the neck of the container, the outer edges of said wings being slightly downwardly converging and the inner walls of the neck of the container being correspondingly diverged so that said spanner may have a wedging fit within said neck. The spanner may be of only sufficient thickness to maintain its horizontal position at the mouth of the neck of the container and the upper surface of said spanner will preferably be on a level with the lip surrounding the mouth of the container. The screw-cap may be rendered non-detachable but displaceable in several ways as will appear from the description hereinafter given.

My invention may be applied to glass containers or bottles and especially to bottles from which the liquid contents are to be discharged in limited quantities, such as bottles for holding sauce and the like.

The invention will be fully understood from the detailed description hereinafter presented, reference being had to the accompanying drawings, in which:

Figure 1 is a side elevation, partly broken away and partly in section, of a collapsible tube provided with a closure embodying my invention;

Fig. 2 is an enlarged sectional view of the upper portion of the same, the section being on the dotted line 2—2 of Fig. 1 and the cap being shown in its open position;

Fig. 3 is a top view of the same, with the screw-cap omitted;

Fig. 4 is a detached perspective view of the device I apply in the neck of the tube shown in Figs. 1, 2 and 3;

Fig. 5 is a side elevation, partly broken away, of a collapsible tube equipped with the closure features of my invention, the screw-cap being shown in closed position and in vertical section and a modified form of means being provided for preventing the complete detachment of the cap from the receptacle;

Fig. 6 is a side elevation, partly broken away, of a collapsible tube equipped with a modified form of my invention; the screw-

cap shown in Fig. 6 differs from that shown in Fig. 1 only in the detail that inclined slots are provided in the sides of the cap to receive pins projected from the neck of the container, these being in substitution for the ordinary screw threads shown in Figs. 1 and 2;

Fig. 7 is a vertical section through a portion of the same, taken on the dotted line 7—7 of Fig. 6, and

Fig. 8 is a vertical section through the upper portion of a glass bottle equipped with a closure embodying my invention and presenting a modification of the structure shown in Figs. 1 and 2.

In the drawings, referring to Figs. 1 to 4 inclusive, 10 designates a collapsible tube which, except for the features of my invention, may be of any usual or suitable material and construction. The tube 10 is formed with a neck 11 having above its lower end a screw-thread 12 below which the neck being of smaller diameter than the greater diameter of said thread, a space 13 is provided for the vertical movement of the lower edge of a screw-cap 14. The inner walls of the neck 11 preferably slightly converge downwardly, as shown in Fig. 2, and except as to the features referred to, said neck 11 is of usual character.

Within the upper end of the neck 11 I insert a spanner 15 shown in detail in Fig. 4, which preferably has three laterally extending, equally spaced apart, wings 16 adapted to be wedged against the converging inner walls of the neck 11, the outer vertical edges of said wings 16 being inclined slightly downwardly and inwardly to match the converging surfaces of the neck 11. At the center of the top of the spanner 15 is provided a short plug 17 which has downwardly diverging side surfaces and a flat upper end, and said plug 17 is preferably integral with the spanner 15, and said spanner and plug may be of metal, glass, celluloid or other suitable material. The plug 17 extends upwardly from the upper end of the spanner 15, and said end of said spanner is preferably on a horizontal plane with the lip surrounding the mouth of the neck 11, as shown in Fig. 1.

Upon the neck 11 I apply a screw-cap 14 having an internal thread in its skirt portion to engage the thread 12 on said neck and formed in its top with a discharge orifice 18 having downwardly diverging side walls adapted to the diverging side surfaces of the plug 17. The extreme lower annular edges 19 of the orifice 18 are laterally rounded off, as shown in Fig. 2, so that the opening at the lower end of the orifice 18 may be somewhat enlarged beyond the diameter of the lower end of the plug 17. The orifice 18 is proportionate to the diameter of the plug 17 and the length of the plug 17 is proportioned to the depth of the orifice 18 so that when the cap is screwed home or to closing position, said plug will close said orifice and leave the upper end of the cap smooth or with unbroken surfaces. I preferably form the orifice 18 with downwardly diverging surfaces and the sides of the plug 17 with corresponding surfaces so that when the material 20 within the tube 10 is caused to pass through the orifice 18, said material will be discharged in the form of a rod rather than in the condition of a hollow tube, the upwardly converging surfaces of the plug and orifice causing the material to be directed inwardly above the plug 17 to form a rod as distinguished from said plug creating a tubular orifice through the extent of the material discharged from the container.

The cap 14 has the outwardly diverging edges 19 at the lower end of the orifice 18 so as to facilitate the outward flow of the material around the plug 17 and also to permit a return movement of the material from the lower portion of the orifice 18 when the cap 14 is screwed to its closing position. The cap 14 has, at its lower edge, an inwardly turned shoulder 21 which, during the movements of the cap, pass along the space 13 at the exterior of the neck 11, and said shoulder 21, in coöperation with a shoulder at the lower thread 12 on the neck 11, prevents the complete detachment of the cap 14. The cap 14 will be applied upon the neck 11, while the lower edge of the skirt of said cap stands somewhat outwardly from the final position thereof and thereafter the lower edge of said skirt will be squeezed inwardly on concentric lines so that the shoulder 21 may enter the space 13 around the neck 11 and the thread on the cap placed in full engagement with the thread 12 on said neck. The cap 14 may have a movement outwardly to carry the orifice 18 from the plug 17, or to the position shown in Fig. 2, and said cap may be moved inwardly so as to carry the orifice 18 closely upon the plug 17 or to the position shown in Fig. 1. When the cap 14 is screwed outwardly, the contents of the container or tube 10 may be squeezed out around the spanner 15 and plug 17 and through the hole or orifice 18, and thereafter the cap 14 may be screwed to its closing position, shown in Fig. 1. The cap 14 is not detachable from the receptacle 10, but is displaceable to a sufficient extent to permit the discharge of the contents 20 from the receptacle.

It is important that the spanner 15 may be of such construction that it may be inserted in the neck 11 after the material 20 has been filled into the tube 10, since thereby said spanner may be firmly inserted in position and be enabled to maintain its position within said neck. The spanner 15 is a sepa-

rate piece may be very readily manufactured and applied to position.

I do not wish to limit my invention to all of the details shown in Figs. 1 and 2, and therefore in Fig. 5 I illustrate a slight modification in that the exterior thread on the neck of the container is in upper and lower portions separated by a space 22 within which a pin 23 applied through the skirt of the cap may move when the cap is screwed to its open and closed positions, said pin 23 serving to prevent the complete detachment of the cap from the receptacle and said space 22 fulfilling the purposes of the space 13, shown in Fig. 1. When the pin 23 is made use of, the shoulder 21, shown in Fig. 2, may be omitted from the skirt of the cap. The closure shown in Fig. 5 is identical with that illustrated in Figs. 1 to 4 inclusive, with the exception of the slight change rendered necessary by the substitution of the pin 23 for the shoulder 21.

In Figs. 6 and 7 I illustrate a further modification in which I number the flexible tube as 24 and the cap as 25. In this modification I employ inclined slots 26 in the skirt of the cap to receive and move on pins 27 projecting laterally from the side of the neck of the tube, said pins and slots being employed as a substitution for the screw-threads shown in Figs. 2 and 5 and as means for permitting the movement of the cap 25 to its open and closed positions and preventing the complete detachment of the cap from the tube. The cap 25 will have the orifice 18 of Fig. 2 and the neck of the tube 24 will have the spanner 15 and plug 17 of the identical construction shown in Figs. 1 to 4 inclusive.

In Fig. 8 I illustrate my invention as applied to a bottle 28 having a glass neck 29 formed with an annular shoulder 30 at a suitable distance below the lip surrounding the mouth of the bottle, and in this employment of the invention I make use of an inner sleeve 31 of cork or other suitable material closely fitting within the neck 29 of the bottle and usually projecting above the lip around the mouth thereof, as shown. Exterior to the bottle 28 I apply a cap-receiving section 32 comprising a skirt 33 and an upwardly projecting externally threaded neck 34. The neck 34 corresponds with the neck of the container shown in Figs. 1 to 4 inclusive, and the sleeve 31 closely fits within said neck 34. The lower edge of the skirt 33 of the closure-section 32 is crimped under the shoulder 30, as at 35, whereby said section 32 becomes locked upon the bottle. I make use of the sleeve 31 because the bottle 28 is intended to contain food products. Within the upper end of the sleeve 31 I provide the spanner 15, shown in Fig. 4, and upon the exterior of the neck 34 I apply a screw-cap 36 having an orifice 37 corresponding with the orifice 18, shown in Fig. 2, and coöperating with the plug 17 in the same manner that the orifice 18 coöperates with the plug 17 as hereinbefore described with respect to Figs. 1 to 7 inclusive. The cap 36 will be equipped with a pin 38 to prevent the complete detachment of the cap from the neck 34. In the construction shown in Fig. 1 the neck is integral with the container, but since the bottle shown in Fig. 8 is of glass, the neck 34 is made in a separate piece and fastened upon the lip around the mouth of the bottle by means of the skirt 33. The neck portion 34 of the section 32 corresponds with the neck portion of the containers shown in Figs. 1 to 7 inclusive, and the cap 36 and spanner 15 correspond with the caps and spanner hereinbefore described, and therefore the operation of said cap 36 will be understood without further detailed explanation.

What I claim as my invention and desire to secure by Letters-Patent, is:

1. A receptacle having a neck portion, a cap thereon having an orifice in its top and adapted for movement from and toward its closing position, means for preventing the complete detachment of the cap, and a spanner within said neck having a plug adapted to close said orifice when the cap is moved to closing position.

2. A receptacle having a neck portion, a cap thereon having an orifice in its top and adapted for movement from and toward its closing position, means for preventing the complete detachment of the cap, and a spanner within said neck having a plug adapted to close said orifice when the cap is moved to closing position, said orifice and said plug having downwardly diverging side surfaces.

3. A receptacle having a neck portion, a cap thereon having an orifice in its top and adapted for movement from and toward its closing position, means for preventing the complete detachment of the cap, and a spanner within said neck having a plug adapted to close said orifice when the cap is moved to closing position, said spanner having a plurality of wings fitting with a wedging action into said neck.

4. A receptacle having a neck portion, a cap thereon having an orifice in its top and adapted for movement from and toward its closing position, means for preventing the complete detachment of the cap, and a spanner within said neck having a plug adapted to close said orifice when the cap is moved to closing position, said spanner and said neck having downwardly converging side surfaces adapting said spanner to be wedged into said neck.

5. A receptacle having a neck portion, a

cap thereon having an orifice in its top and adapted for movement from and toward its closing position, means for preventing the complete detachment of the cap, and a spanner within said neck having a plug adapted to close said orifice when the cap is moved to closing position, the top of said cap having a smooth lower surface and said spanner having its upper end flush with the lip of the mouth of said receptacle and said plug being extended above the upper end of said spanner.

6. A receptacle having a neck portion, a cap thereon having an orifice in its top and adapted for movement from and toward its closing position, means for preventing the complete detachment of the cap, and a spanner within said neck having a plug adapted to close said orifice when the cap is moved to closing position, said spanner being in a separate piece insertible within said neck and adapted to tightly fit the same, and said orifice and said plug having downwardly diverging side surfaces.

7. A receptacle having a neck portion and a closure therefor comprising a section clamped thereon and having a threaded neck, a threaded cap on said neck having an orifice in its top and adapted for movement from and toward its closing position, means for preventing the complete detachment of said cap and a spanner within said neck having a plug adapted to close said orifice when the cap is moved to closing position.

8. A receptacle having a neck portion, a cap thereon having an orifice in its top and adapted for movement from and toward its closing position, means for preventing the complete detachment of the cap and a plug mounted within said neck and adapted to close said orifice when the cap is moved to closing position, said orifice and said plug having downwardly diverging side surfaces.

9. A receptacle having a neck portion, a sleeve inserted in said neck-portion, a cap on said neck portion having an orifice in its top and adapted for movement from and toward its closing position, means for preventing the complete detachment of the cap, and a spanner within said sleeve having a plug adapted to close said orifice when the cap is moved to closing position.

10. A receptacle having a neck portion, a sleeve therein and a closure therefor comprising a section clamped on said neck portion and having a threaded neck, a threaded cap on said neck having an orifice in its top and adapted for movement from and toward its closing position, means for preventing the complete detachment of said cap, and a spanner within said sleeve having a plug adapted to close said orifice when the cap is moved to closing position, said sleeve extending within said neck-portion and said neck and supporting said spanner.

Signed at New York city, in the county of New York, and State of New York, this 6th day of March, A. D. 1920.

MARCUS B. BEHRMAN.