Aug. 16, 1938. E. C. CHURCH 2,127,389

NOZZLE CLOSURE MEANS FOR CONTAINERS, BOTTLES, TUBES, CANS, AND THE LIKE

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Fig. 1.

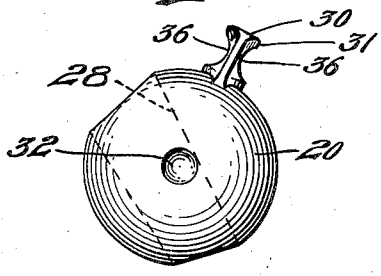


Fig. 2.

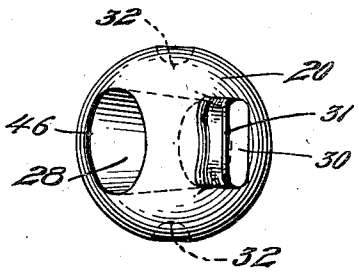


Fig. 3.

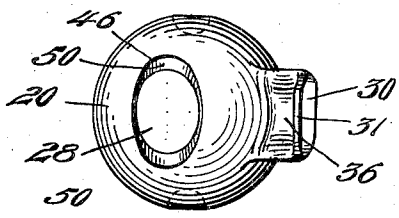


Fig. 4.

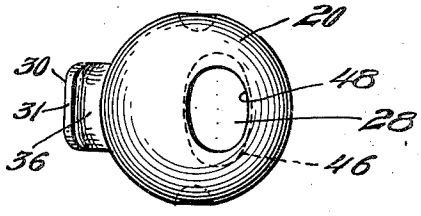


Fig. 5.

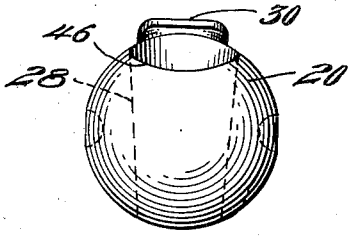


Fig. 6.

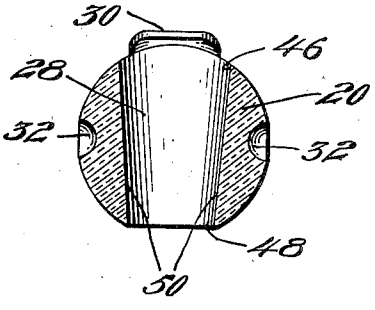
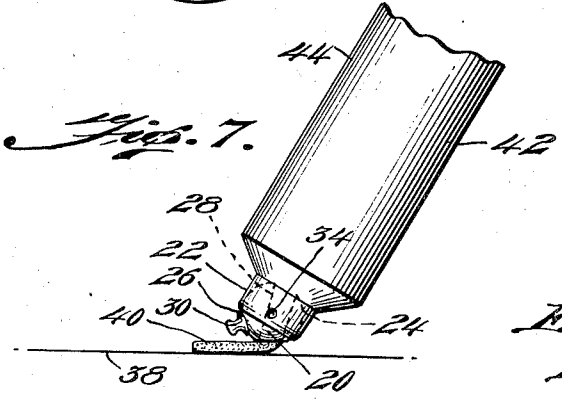


Fig. 7.



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Fig. 8.

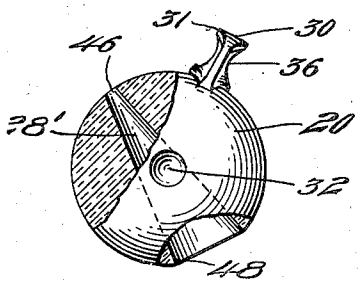


Fig. 9.

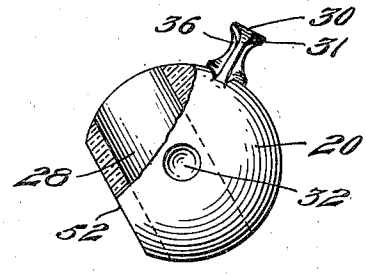


Fig. 10.

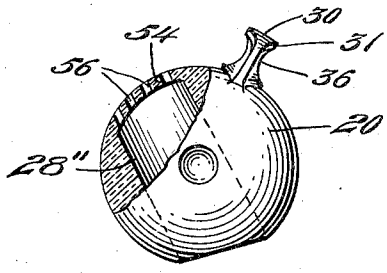
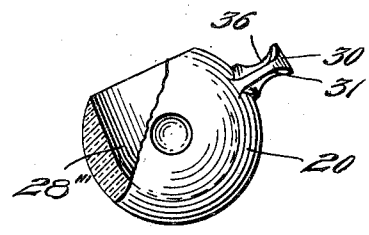


Fig. 11.



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UNITED STATES PATENT OFFICE

2,127,389

NOZZLE CLOSURE MEANS FOR CONTAINERS, BOTTLES, TUBES, CANS, AND THE LIKE

Elton C. Church, Providence, R. I., assignor to No-Kap Closures (U. S. A.), Inc., Providence, R. I., a corporation of Rhode Island

Application September 22, 1936, Serial No. 101,967
Renewed June 11, 1938

8 Claims. (Cl. 221—60)

My invention relates to improvements in closure members for nozzles for containers, such as cans, tubes, bottles and the like and is particularly adapted for use in collapsible tubes adapted to contain plastic material adapted to be dispensed therefrom on the collapsing thereof.

While my invention is adapted for use on the many types of closure means for nozzles of this description which have hitherto been provided, whether they be of the cylindrical type shown in Patent No. 1,967,797 to White or of the spherical type shown in the patent to Ford No. 1,278,901 or otherwise, it is particularly adapted for use with an at least partially spherical valve closure member provided with diametric axis of oscillation forming means thereon of the type shown in application of James Rest, S. N. 678,133 and of the type shown in the joint application of James Rest and Albert H. Church, S. N. 751,734 being preferably constructed of a suitable thermoplastic material, as disclosed in said latter application.

My invention particularly relates to the type of turning lug employed in valve closure means of this description. In the prior art a great variety of shapes of closure means have been hitherto provided, but the great difficulty with all of them has been the difficulty of manipulating the valves through their turning lugs or projections.

A main object of my invention is to provide a turning lug for valves of this description with oppositely disposed concaved side walls so that the thumb or finger may be inserted therein for the positive manipulation thereof in either direction.

These and such other objects of my invention as may hereinafter appear will be best understood from a description of the accompanying drawings, which illustrate various embodiments thereof.

In the drawings, Fig. 1 is a side elevation of a valve closure member constructed in accordance with my invention.

Fig. 2 is a plan view thereof in one position with the vent thereof being substantially in a closed position.

Fig. 3 is a plan view thereof similar to Fig. 2 with the vent in open position.

Fig. 4 is a reverse plan view thereof with the vent in open position.

Fig. 5 is a front elevation thereof.

Fig. 6 is a sectional view therethrough.

Fig. 7 is a side elevation illustrating my improved valve member mounted in a nozzle and dispensing a stream of plastic material on a flat surface, the flow of said stream being unobstructed by the turning lug.

Fig. 8 is a side elevation partially shown in section showing my improved turning lug mounted on a valve of a type adapted to dispense one drip at a time.

Fig. 9 is a side elevation partially shown in section showing my improved turning lug mounted on a valve having a discharge vent and an inlet vent at the side thereof.

Fig. 10 is a side elevation partially shown in section showing my improved turning lug mounted on a valve in which the open end of the discharge vent comprises a plurality of small holes for the convenient dispensing of face powder or like pulverant material.

Fig. 11 is a side elevation partially shown in section of my improved turning lug mounted on a hollow valve for dispensing powder or liquid.

In the drawings, wherein like characters of reference indicate like parts throughout, 20 generally indicates a valve closure member for use for containers having a nozzle 22 having a recess 24 for containing said closure member 20 therein and dispensing hole means 26 in the outer end thereof. While my improved valve may be constructed of metal, paper, pulp, composition or any other suitable solid material, it may conveniently be constructed of any suitable thermoplastic material, such as glass, rubber, synthetic resin, etc. Said valve closure member is adapted to be oscillatably mounted within said recess 24 and is preferably mounted within said recess to oscillate on an axis at right angles to the discharge vent 28 therein, and for this purpose, in accordance with the disclosure in the application for patent of James Rest, Ser. No. 678,133 for Containers for flowable material, the valve closure member is provided with diametric axis of rotation forming means 32, such as the dimples shown thereon and the wall of the nozzle is adapted to be pressed within said dimples as at 34 to provide said diametric axis of oscillation forming means to cause said closure member to be oscillatably mounted within said recess 24 to oscillate on an axis at right angles to said vent, as stated hitherto. Closure members of this description for nozzles for containers have been of different shapes, such as cylindrical, as shown in the aforesaid White patent, or spherical or substantially spherical, as shown in the Rest application, Ser. No. 678,135, or as shown herein, or otherwise, and the turning lug 30 has projected outwardly through the dispensing hole means 26 in the outer end of said nozzle 22 to provide means to oscillate said discharge vent 28 from a dispensing position aligned with the outer dispensing hole means 26

in said nozzle, an edge of the turning lug 30 abutting an edge of said dispensing hole means 26 to limit its movement to this position, if desired, to a closed position with the discharge vent 28 opposite the nozzle wall and the turning lug 30 abutting the opposite diametric edge of said dispensing hole means 26, to limit its movement to this position, if desired.

Former types of turning lugs for this purpose have been in general hard to grasp and manipulate and for the more facile manipulation of this turning lug, I have concaved the side walls of said turning lug as at 36 to more easily receive the end of a finger, finger nail, or other agent, for the easier manipulation or flicking thereof from open to closed position and vice versa.

In the prior art, in addition, great difficulty has been experienced with the end of the turning lug getting in the way of the stream of plastic material dispensed on a horizontal surface 38, such as the top of the toothbrush, and interfering with the free flow of the plastic ribbon 40, whether it be cylindrical or flat, onto said toothbrush. In accordance with another feature of my invention, therefore, I space the turning lug 30 from said top of the vent 28 a distance such that when the valve closure member is moved to open position bringing said discharge vent 28 in alignment with the outer nozzle dispensing hole means 26, a stream 40 of said plastic material may be dispensed through said aligned dispensing hole means 26 and discharge vent 28 on the collapsing of the side wall 42 of the collapsible tube 44 to lie flat on a horizontal surface 38 unobstructed in its flow by said turning lug 30. It is obvious that the side walls of the turning lugs 36 may be readily concaved in their method of manufacture in a manner described in the pending application of Charles H. O'Koomian for Method of molding plastic objects of irregular shapes and apparatus for use therewith, or may be so shaped in any desired manner of whatever material the valve closure member be constructed and whether or not the turning lug 30 be made or cast integral with the valve 20. It is thus obvious that the upper portion of each side wall will form a lip or shoulder 31 against which the finger or other object manipulating the lug may obtain sufficient grip for the ready manipulation thereof.

However, as shown in the drawings, an improved type of tapered dispensing hole 28 may be employed in which the outer dispensing end 46 thereof is generally elliptical and the lower dispensing end 48 therefor more nearly circular and the side walls thereof tapering, as shown at 50, from said upper elliptical dispensing hole 46 to said lower, more nearly circular dispensing hole 48.

It is apparent that my improved type of turning lug may be employed in any shaped valve and I have shown in Figs. 8–11 various modifications of valves on which my turning lug may be employed. In the embodiment shown in Fig. 8, the dispensing hole 28′ may be so tapered as to dispense at its outlet end 46 one drip or drop of liquid at a time. As shown in Fig. 9, a supplemental air inlet passage 52 may be provided by cutting off a segment from the spherical valve, or by otherwise providing a passage either between the nozzle and valve or a separate passage through the valve other than the usual discharge vent 28. I have shown in Fig. 10 an embodiment of my invention wherein the discharge vent 28″ in its entirety does not extend all the way through the valve, but terminates at a slight distance from the upper end of the valve in a wall 54 and in which the wall 54 is perforated with the small holes 56 for the ready dispensing of face powder or other pulverant material therethrough. I have shown in Fig. 11 a valve in which the usual discharge vent 28‴ is enlarged to substantially hollow out the valve to provide a hollow valve and which does not extend all the way through the valve and in which the valve must be oscillated a further distance to bring it in alignment with the inner dispensing hole means in the nozzle for receiving material therein, or in alignment with the outer dispensing hole means 26 in the nozzle for dispensing purposes.

It is apparent, therefore, that I have provided a novel type of valve closure means for use in containers having certain novel features of construction, novel of themselves and providing a new combination with the nozzle to permit the more ready manipulation thereof, the more facile assembly thereof within the nozzle, and the unobstructed flow of material therefrom with the other advantages explained above.

It is understood that my invention is not limited to the specific embodiments shown and that various deviations may be made therefrom without departing from the spirit and scope of the appended claims.

What I claim is:

1. Closure means for containers for plastic material comprising a nozzle having a recess therein and dispensing hole means in the outer end thereof, an oscillatable valve closure member having a discharge vent, said closure member being movably mounted within said recess to oscillate in an axis at right angles to said vent and having a turning lug projecting outwardly through the end of said nozzle to move said vent from a closed position on movement of said turning lug from a position abutting one nozzle wall to a dispensing position with said vent flush with said nozzle dispensing hole means and said turning lug abutting the opposite nozzle wall, said lug having concaved side walls for the ready manipulation thereof and being spaced from said discharge vent a distance such that when moved to open position bringing said discharge vent in alignment with the outer nozzle dispensing hole means, a stream of said plastic material may be dispensed through said aligned dispensing hole means and discharge vent to lie flat on a horizontal surface unobstructed in its flow by said turning lug.

2. Closure means for containers, comprising a nozzle having a recess therein and dispensing hole means in the outer end thereof, an oscillatable valve closure member having a discharge vent, said closure member being movably mounted within said recess to oscillate about an axis at right angles to said vent and having a turning lug projecting outwardly through the end of said nozzle to move said vent from a closed position on movement of said turning lug from a position abutting one nozzle wall to a dispensing position with said vent flush with said nozzle dispensing hole means and said turning lug abutting the opposite nozzle wall, said lug having concaved side walls for the ready manipulation thereof.

3. Closure means for containers for plastic material comprising a nozzle having a recess therein and dispensing hole means in the outer end thereof, an oscillatable valve closure member having a discharge vent, said closure member being movably mounted within said recess and having a turning lug projecting outwardly through the

end of said nozzle to move said vent from a closed position on movement of said turning lug to a dispensing position with said vent flush with said nozzle dispensing hole means, said lug having concaved side walls for the ready manipulation thereof and being spaced from said discharge vent a distance such that when moved to open position bringing said discharge vent in alignment with the outer nozzle dispensing hole means, a stream of said plastic material may be dispensed through said aligned dispensing hole means and discharge vent to lie flat on a horizontal surface unobstructed in its flow by said turning lug.

4. An at least partially spherical valve closure member for use in nozzles for containers for plastic material having a discharge vent, axis of oscillation forming means diametrically thereof substantially at right angles to said discharge vent and a turning lug at the upper end thereof having concaved side walls for the ready manipulation thereof spaced from said vent a distance such that when said discharge vent is moved to an open position within said nozzle, a stream of said plastic material may be dispensed through said discharge vent to lie flat on a horizontal surface unobstructed in its flow by said turning lug.

5. An at least partially spherical valve closure member for use in nozzles for containers having a discharge vent, axis of oscillation forming means diametrically thereof substantially at right angles to said discharge vent and a turning lug at the upper end thereof having concaved side walls for the ready manipulation thereof spaced from said vent.

6. An at least partially spherical valve closure member for use in nozzles for containers for plastic material having a discharge vent and a turning lug at the upper end thereof having concaved side walls for the ready manipulation thereof spaced from said vent a distance such that when said discharge vent is moved to an open position within said nozzle, a stream of said plastic material may be dispensed through said discharge vent to lie flat on a horizontal surface unobstructed in its flow by said turning lug.

7. Closure means for containers for plastic material comprising a nozzle having a recess therein and dispensing hole means in the outer end thereof, an oscillatable valve closure member having an open dispensing portion, said closure member being movably mounted within said recess to oscillate in an axis at right angles to said dispensing hole means and having a turning lug projecting outwardly through the end of said nozzle to move said vent from a closed position on movement of said turning lug to a dispensing position with said open dispensing portion in alignment with said nozzle dispensing hole means, said lug being spaced from said discharge vent a distance such that when moved to open position bringing said open dispensing portion in alignment with the outer nozzle dispensing hole means, a stream of said plastic material may be dispensed through said aligned dispensing hole means and open dispensing portion to lie flat on a horizontal surface unobstructed in its flow by said turning lug.

8. An at least partially spherical valve closure member for use in nozzles for containers for plastic material having an open dispensing portion, axis of oscillation forming means diametrically thereof substantially at right angles to said open dispensing portion and a turning lug at the upper end thereof spaced from said vent a distance such that when said discharge vent is moved to an open position within said nozzle, a stream of said plastic material may be dispensed through said discharge vent to lie flat on a horizontal surface unobstructed in its flow by said turning lug.

ELTON C. CHURCH.