Aug. 16, 1938. A. H. CHURCH 2,127,390

NOZZLE CLOSURE MEANS FOR CONTAINERS

Original Filed Sept. 23, 1936

Fig. 1.

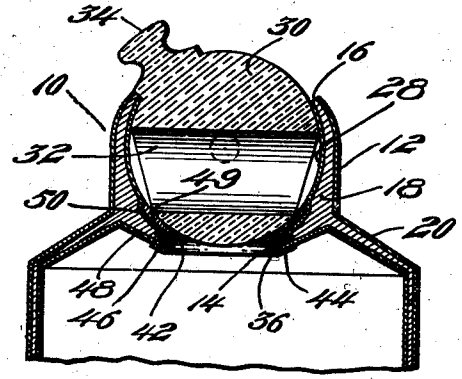


Fig. 2.

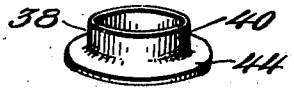


Fig. 3.

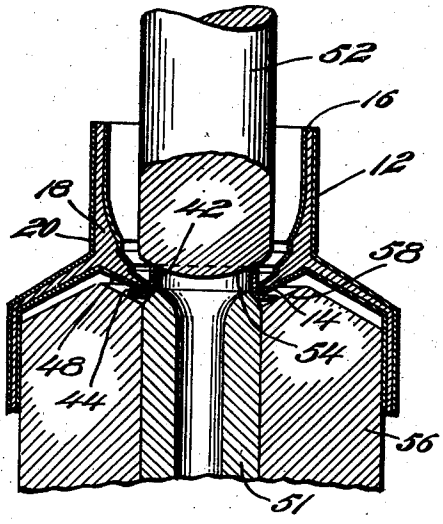


Fig. 4.

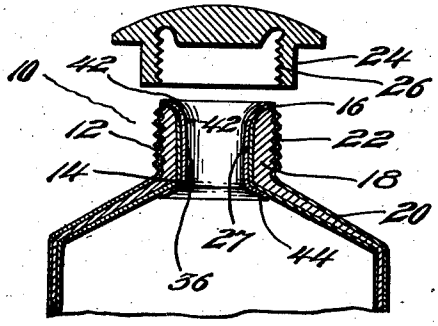


Fig. 5.

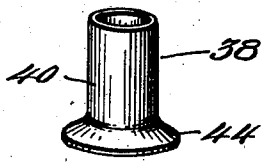
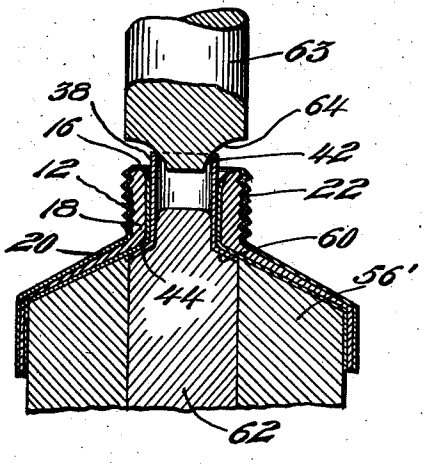


Fig. 6.



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NOZZLE CLOSURE MEANS FOR CONTAINERS

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Application September 23, 1936, Serial No. 102,144
Renewed June 11, 1938

5 Claims. (Cl. 221—60)

My invention relates to improvements in nozzle closure means for containers comprising bottles, cans, collapsible tubes and the like.

In the prior art, such nozzle closure means have been extruded, pressure shaped, or otherwise formed from a coated metal blank and in the extrusion thereof at least an edge of each nozzle has exposed the base metal of the container formed from said blank. In the prior art nozzles or particularly nozzles forming integral parts of collapsible tubes have either been extruded or otherwise fabricated from lead or like base metal having either poisonous or other non-desirable qualities, which may affect the contents of the container, or have been extruded or otherwise fabricated of a relatively inert and more expensive metal, such as tin. Various attempts have been made to extrude, pressure shape, or otherwise fabricate from a metal blank coated with a covering, preferably a metallic covering of a protective metal a coated nozzle for a container, or collapsible tube, but in any type of such an extruded nozzle, whether it be of the type having the outer surface thereof externally threaded adapted to receive an internally threaded cap or of the oscillatable valve type adapted to receive in a suitable recess therein an oscillatable or otherwise movable valve closure member, it has been inevitable in the course of the manufacture of such an article that the base metal protrudes through at least an edge of said coating metal. Thus in the extrusion of a nozzle or collapsible tube of the cap type, the metal of the blank has tended to become exposed on the upper edge of the nozzle and on the extrusion of a nozzle or collapsible tube of the movable valve type, the metal of the blank has tended to become exposed on the lower edge of the valve seat and sometimes on the upper edge of the valve seat adjacent the respective lower and/or upper hole means in said nozzle. The cost of coated metal nozzles or collapsible tubes of this type has been so much less than the respective cost of a nozzle or tube extruded from a ductile metal of either the non-poisonous type, or one which may have no deleterious effect on the contents of the tube or container, that it has been highly desired in the trade to employ such nozzles or collapsible tubes extruded or otherwise fabricated from coated metal blanks, such as tin coated lead. However, in this country at least the trade has been fearful of the exposure of said exposed non-coated metal edge or surface to the contents of the collapsible tube or container and has not employed such types of nozzles for general purposes.

Employing my invention, however, I am able to positively prevent the contents of the exposed metal edge or edges of the nozzle from coming in contact with the contents of the tube or other container and for this purpose I provide a sheaf for the inner surface of said nozzle or any exposed metal edge thereof and means to rigidly secure said sheaf to said nozzle, in the preferred embodiment of my invention comprising an eyelet having a body portion adapted to overlap the inner wall of said nozzle or said exposed edge or edges thereof and upper and lower flanges adapted to be rigidly clamped against opposite ends of said nozzle or said exposed edge to positively prevent the exposed metal of the body of said container from coming in contact with the contents of the container or collapsible tube, either while contained therein or during the dispensing thereof.

These and such other objects of my invention as may hereinafter appear will be best understood from a description of an embodiment thereof such as is shown in the accompanying drawing.

In the drawing, Fig. 1 is a vertical sectional view taken through the nozzle portion of a collapsible tube of the oscillatable valve type equipped with my invention.

Fig. 2 is a perspective view of the improved type of eyelet I preferably employ therein.

Fig. 3 is a vertical sectional view taken through a collapsible tube of the oscillatable valve type mounted on a suitable type of die for attaching my improved eyelet to the exposed metal edge of the lower dispensing hole means of said nozzle.

Fig. 4 is a vertical sectional view taken through a collapsible tube of the standard cap type equipped with my invention.

Fig. 5 is a perspective view of an eyelet suitable for use in covering the interior of the nozzle thereof.

Fig. 6 is a vertical sectional view taken through the upper end of a collapsible tube of this type and suitable apparatus for rigidly securing such an eyelet to cover the interior surface of said nozzle.

In the drawing, wherein like characters of reference indicate like parts throughout, 10 generally indicates a nozzle closure means for a container constructed in accordance with my invention. Said nozzle closure means includes a hollow nozzle member 12 having a dispensing hole means 14 in the lower end thereof and a dis-

pensing hole means 16 in the upper end thereof. As pointed out previously, nozzles for containers, particularly collapsible tubes, in the prior art have been extruded, pressure shaped, for otherwise fabricated from base metal, such as lead, which might have some deleterious effect, such as poison, on the contents thereof, and while such tubes have been suitable for certain substances, such as paint, they have been decidedly unsuitable for such substances as shaving cream, tooth paste, etc. and for these purposes it has been necessary in the trade to provide nozzles for collapsible tubes or other containers extruded or pressure shaped from more expensive ductile materials, such as tin, which can have no deleterious effects on the contents of the tubes or other containers. It has been found in the extrusion or pressure shaping of such nozzles, if constructed from a base metal coated with a more expensive metal, that no matter how much care is exercised in the extrusion, pressure shaping or other fabrication thereof, at least some portion of the interior of said nozzle 10, usually the lower edge 14 or upper edge 16 thereof, in its manufacture has permitted the base metal 18 coated with the more expensive metal 20 to be exposed in at least one portion of said nozzle. Thus in the extrusion of a standard type of such a nozzle having an externally threaded outer surface 22 and a cap 24 therefor having an internally threaded inner surface 26, the base metal 18 has tended to protrude through the inner surface of said nozzle at some portion thereof, usually at the upper edge 16 thereof as shown in Fig. 4. In the manufacture of nozzles by extrusion, pressure shaping or otherwise, having an enlarged recess 28 on the interior thereof to receive an oscillatable closure member 30 therefor having a dispensing hole 32 therein and a turning lug 34 to oscillate said dispensing hole 32 from a closed position closed by the wall of said nozzle 12 to an open dispensing position in alignment with one or both of said dispensing hole means 14 or 16 from a coated blank, the edge of said lower dispensing hole means 14 has tended to expose said base metal 18 as this is normally the weakest point in the extrusion or pressure shaping thereof as illustrated in Figs. 1 and 3.

In accordance with the principles of my invention, I have provided a sheaf 36 either for the entire surface of the inner wall of said nozzle or for the most likely end or edge thereof in which the base metal 18 of the article is apt to be exposed, which in the standard type of cap tube shown in Figs. 4–6 comprises the upper edge 16 of said nozzle and in the type of rotary valve closure shown in Figs. 1–3 comprises the edge of the dispensing hole means 14 in the lower end of said nozzle, and I provide in either instance means to compactly secure said sheaf means to the exposed portion of said nozzle.

I have found for either type of cap or capless nozzle closure means that an eyelet 38 is the most easily attached type of sheaf means, and I thus provide an eyelet 38 having a body portion 40 adapted to overlappingly engage said exposed edge or inner surface and the means I provide to rigidly attach said sheaf means, which in this instance comprises the body 40 of said eyelet, to said exposed surface, comprises an upper flange 42 of said eyelet engaging the upper edge of said inner surface or edge and a lower flange 44 of said eyelet overlappingly engaging the lower edge of said exposed surface or edge.

Thus to provide means to overlappingly seal or provide a sheaf for the exposed edge or surface of a nozzle closure means of the rotary valve type, as shown in Figs. 1–3, I provide a sheaf means 36, or eyelet body 40, for overlappingly sealing the edge of the lower dispensing hole means 14 in said nozzle having an upper flange 42 for said eyelet contained in an annular countersunk portion 46 in the valve seat 28 on the inner surface of said nozzle and a lower flange 44 adapted to be overlappingly crimped over or engage the lower surface of the annular flange 48, the upper surface thereof forming a portion of the lower valve seat, as shown in Fig. 1. However, the valve seat may be provided with a supplemental countersink 50 adjacent said countersunk portion 46 to receive a washer 49 therein to overlie said upper flange 42 of said eyelet 38 and be compactly contained against and between said valve seat 28 and said oscillatable valve 30.

Thus to assemble such a sheaf or body portion 38 of an eyelet to overlappingly seal the exposed edge 36 of the lower dispensing hole means 14 in said nozzle, I may provide an eyelet shown in Fig. 2 having the relatively short body portion 38 and the lower flange portion 44 projecting at right angles from the lower end thereof. I have shown in Fig. 3 suitable punch and die means for crimping the upper and lower portions 42 and 44 of said eyelet against the upper and lower surfaces of said valve seat flange portion 48 adjacent the dispensing hole means 14 in the lower end of said nozzle, in this instance comprising a rigid annular member 51 adapted to abut the inner surface of the lower portion of said eyelet, while a plunger member 52 having a convexed lower surface 54 abuts the upper end 42 of the body portion 38 of said eyelet to force said upper end 42 into an upper flange 42 within said countersink 46 and said nozzle and tube downwardly to force said lower flange 44 upwardly, said lower flange 44 being forced upwardly by the inner surface of the annular conical upper end 58 of the die member 56 to compactly engage against the lower surface of the flange 48 of said nozzle 10 forming the lower portion of said valve seat 28.

In the type of cap nozzle closure means shown in Figs. 4–6, the base metal 18 may protrude through the coated metal covering 20 at any portion of the inner wall 27 of said nozzle, particularly, however, through the upper end or edge 16 of said nozzle, and for this purpose I have found it desirable to provide, as a sheaf 36, an elongated body portion 40 of an eyelet 38 extending the length of the inner surface of said nozzle 10, and as means to secure said sheaf within said nozzle, I provide an upper flange portion 42 adapted to overlappingly engage the upper end 16 of said nozzle through which said base metal 18 is most likely to protrude and a lower flange 44 adapted to overlappingly engage the lower end of said nozzle 10. For this purpose I provide the eyelet 38 shown in Fig. 5 having the elongated body portion 40, and I preferably construct the shoulder 60 of the movable plunger 62 of the lower die 56′ to force the lower flange 44 of said eyelet against the lower end of said nozzle and construct the upper plunger member 63 with a lower upwardly concaved outer annular surface 64 adapted to overlappingly force the upper end 42 of said eyelet body 40 downwards to form

a flange 42 overlappingly engaging the upper end of said nozzle.

It is thus apparent that I have provided a novel type of sheaf means for protecting the inner surface of a coated nozzle for a container so as to prevent the base metal 18 of said nozzle from protruding through the coating 20 thereof at any portion of the inner surface of said nozzle, whether it be at the upper end or edge 16 thereof, the lower end or edge 14 thereof, or at any portion of the inner surface of said nozzle, with the advantages explained above.

While I preferably extrude or otherwise fabricate the nozzles from metal coated metal blanks, it is apparent that the coating may comprise metal, lacquer, or any other suitable material applied in any suitable manner, at least to the inner surface thereof.

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. Nozzle closure means for a container, comprising a hollow nozzle member constructed of coated metal having dispensing hole means in each end thereof, the edge of one of which exposes said metal and an inner wall substantially comprising an enlarged valve seat, a closure valve member oscillatably mounted on said valve seat having a vent oscillatable to an open position flush with a respective hole means or in a closed position against the nozzle inner wall and a projection projecting outwardly from said nozzle to oscillate said closure valve member, the lower portion of said valve seat around said lower dispensing hole means having a washer receiving countersunk recess and a supplemental recess of lesser width within said washer containing recess, an eyelet constructed of ductile protective material having a body portion overlappingly sealing the edge of the dispensing hole means in the lower portion of said nozzle having an upper annular flange compactly retained within said supplemental recess and a lower annular flange compactly pressed against the lower end of said nozzle and a partially spherical washer member contained within said countersunk washer recess in said lower valve seat portion between the lower portion of said valve seat and said oscillatable valve member.

2. Nozzle closure means for a container, comprising a hollow nozzle member constructed of coated metal having dispensing hole means in each end thereof, the edge of one of which exposes said metal and an inner wall substantially comprising an enlarged valve seat, a closure valve member oscillatably mounted on said valve seat having a vent oscillatable to an open position flush with a respective hole means or in a closed position against the nozzle inner wall and a projection projecting outwardly from said nozzle to oscillate said closure valve member, the lower portion of said valve seat around said lower dispensing hole means having a recess therein, an eyelet constructed of ductile protective material having a body portion overlappingly sealing the edge of the dispensing hole means in the lower portion of said nozzle having an upper annular flange compactly retained within said recess and a lower annular flange compactly pressed against the lower end of said nozzle.

3. Nozzle closure means for a container, comprising a hollow nozzle member constructed of coated metal having dispensing hole means in each end thereof, the edge of one of which exposes said metal and an eyelet constructed of ductile protective material having a body portion overlappingly sealing said exposed edge secured to said nozzle.

4. Nozzle closure means for a container, comprising a hollow nozzle member constructed of tin coated lead having dispensing hole means in each end thereof, the edge of one of which exposes said lead and an inner wall substantially comprising an enlarged valve seat, a closure valve member oscillatably mounted on said valve seat having a vent oscillatable to an open position flush with a respective hole means or in a closed position against the nozzle inner wall and a projection projecting outwardly from said nozzle to oscillate said closure valve member, the lower portion of said valve seat around said lower dispensing hole means having a washer receiving countersunk recess and a supplemental recess of lesser width within said washer containing recess, an eyelet constructed of ductile protective material having a body portion overlappingly sealing the edge of the dispensing hole means in the lower portion of said nozzle having an upper annular flange compactly retained within said supplemental recess and a lower annular flange compactly pressed against the lower end of said nozzle and a partially spherical washer member contained within said countersunk washer recess in said lower valve seat portion between the lower portion of said valve seat and said oscillatable valve member.

5. Nozzle closure means for a container, comprising a hollow nozzle member constructed of tin coated lead having dispensing hole means in each end thereof, the edge of one of which exposes said lead and an inner wall substantially comprising an enlarged valve seat, a closure valve member oscillatably mounted on said valve seat having a vent oscillatable to an open position flush with a respective hole means or in a closed position against the nozzle inner wall and a projection projecting outwardly from said nozzle to oscillate said closure valve member, the lower portion of said valve seat around said lower dispensing hole means having a recess therein, an eyelet constructed of ductile protective material having a body portion overlappingly sealing the edge of the dispensing hole means in the lower portion of said nozzle having an upper annular flange compactly retained within said recess and a lower annular flange compactly pressed against the lower end of said nozzle.

ALBERT H. CHURCH.