Sept. 12, 1933. W. J. SIMMONS 1,926,311

CLOSURE FOR CONTAINERS

Filed July 27, 1932

Fig. 1

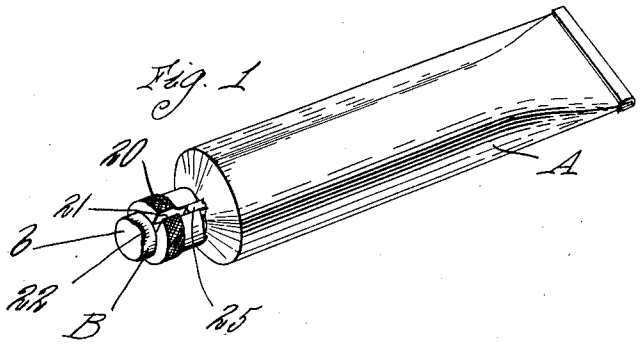


Fig. 2

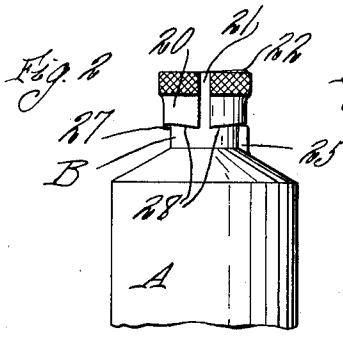


Fig. 3

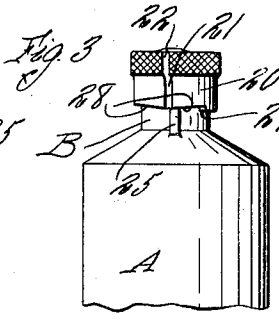


Fig. 4

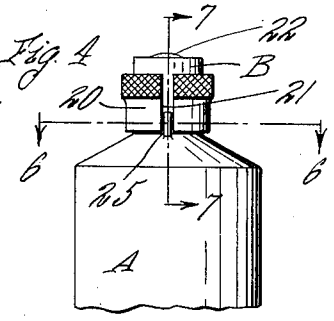


Fig. 5

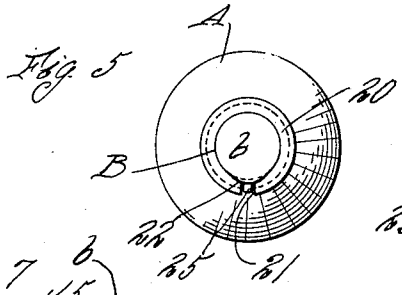


Fig. 6

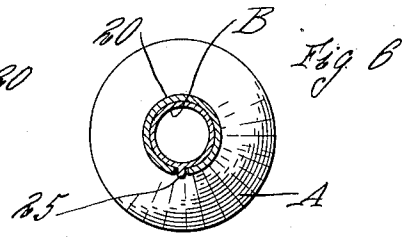


Fig. 7

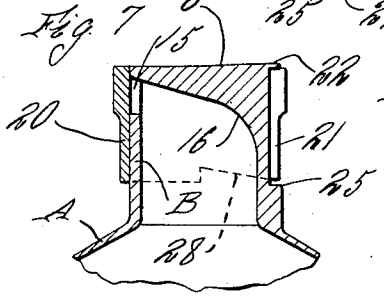


Fig. 8

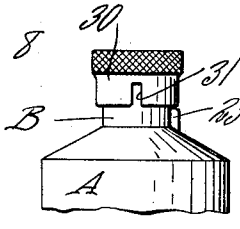
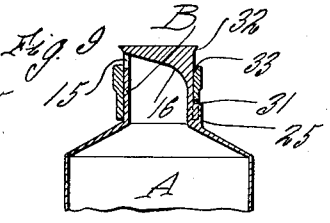


Fig. 9



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CLOSURE FOR CONTAINERS

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Application July 27, 1932. Serial No. 625,021

13 Claims. (Cl. 221—60)

This invention relates to improvements in closures for containers.

The objects of this invention are to provide a closure which includes a sliding sleeve arranged on the neck of a container to cover and uncover a discharge aperture in the neck; also to provide a device of this kind in which a slit sleeve is provided which has a spring clamping action on the neck of the container to form a tight seal over the discharge opening; also to provide a closure of this kind with means for holding the closure in closed position and which closure may be turned into a position to permit the same to be slid lengthwise of the neck into an open position; also to provide a closure of this kind which is so constructed as to cleanly cut off any material which has been extruded through the opening in the neck of the container; also to provide a closure of this kind with means for yieldingly holding it in closed position to prevent accidental opening of the same; also to provide an improved closure of inexpensive and efficient construction; also to improve closures of this kind in other respects hereinafter specified.

In the accompanying drawing:

Fig. 1 is a perspective view of a collapsible tube or container having a closure member embodying this invention applied thereto and shown in open position.

Fig. 2 is an elevation of the upper portion of the tube or container showing the closure member in closed position as for shipment.

Fig. 3 is a similar view showing a closure member turned for the purpose of opening the same.

Fig. 4 is a similar view thereof, showing the closure member in open position.

Fig. 5 is a top plan view of a container having a closure member in the position shown in Fig. 4.

Fig. 6 is a sectional plan view thereof, on line 6—6, Fig. 4.

Fig. 7 is a central sectional elevation of the upper portion of the container on an enlarged scale on line 7—7, Fig. 4.

Fig. 8 is an elevation of a closure member of modified construction.

Fig. 9 is a central sectional elevation of the upper portion of the container and closure member shown in Fig. 8.

The invention is shown in the accompanying drawing as applied to a collapsible tube, but it is not intended to limit this invention to use in connection with collapsible tubes, since closures embodying this invention are equally applicable to containers of other kinds.

A represents the body of a collapsible tube which may be of any suitable or desired construction, and which is provided at the discharge end thereof with a substantially cylindrical neck portion B having its outer end *b* closed. The neck portion of the tube is preferably cylindrical or straight sided throughout the greater portion of the length thereof, and is provided at one side with a discharge aperture 15 for the material in the container. If the material in the container is in paste form, the neck of the same may be provided with an inner inclined end portion 16 sloping toward the discharge aperture 15 to guide the material toward the discharge aperture.

The discharge aperture 15 may be closed by means of a closure member slidable lengthwise of the cylindrical neck portion B of the tube. This closure member may be either of annular form having an internal diameter closely fitting the outer diameter of the neck portion B, or the closure member may be in the form of a slit sleeve or collar formed so as to yieldingly grip the neck portion B of the container to form a tight closure around the edge portions of the discharge aperture 15 thereof. The slit sleeve type of closure is illustrated in Figs. 1 to 7, and includes a sleeve or collar 20 having a slit 21 formed lengthwise thereof. The closure member may be made of metal or of a non-metallic substance, such for example as a phenolic condensation product, and is preferably so made as to be of a very slightly smaller internal diameter than the external diameter of the neck B. The closure member or sleeve 20 can then be slightly expanded by forcing apart the edges thereof adjacent to the slit 21 so that the sleeve can be fitted over the neck B. When this force is released, the slit sleeve will tend to assume its original shape, thus fitting around the neck B, with spring tension which tends to form a tight closure over the aperture 15.

After the sleeve has been positioned on the neck, suitable means are preferably employed for preventing the closure member from being removed endwise from the outer end of the neck. Any suitable or desired means may be employed for this purpose. For example, a portion of the outer end *b* of the neck of the container may be bent or forced outwardly to overlie the edge of the closure member as indicated at 22. This tab or projection 22 may, for example, be initially cast integrally with the container to extend outwardly from the end *b* of the neck in the direction of the axis of the container, and then bent laterally to overlie the slit sleeve 20 after this sleeve has

been placed on the neck, or if desired, a drop of solder may be placed on the end of the container in such a manner as to form the projection 22. Any other means for forming a projection to keep the slit sleeve member on the neck of the container may be employed, if desired, and preferably, this projection is arrangd on the portion of the neck opposite from the discharge aperture 15 or at a distance therefrom.

In order to hold the closure member in closed position, the neck of the container is preferably provided with a projection 25 near the base thereof, this projection being sufficiently narrow to enter into the slit 21 of the closure member 20. This projection 25 preferably is so arranged that the outer end thereof which engages the inner edge of the closure member 20 will hold the closure member in closing position as illustrated in Figs. 2, 3, and 7. When, however, the closure member is turned into a position in which the slit 21 lies in alinement with the projection 25, then the closure member may be moved endwise on the neck to cause the projection to enter into the slit 21 and to uncover the discharge aperture 15. By providing the projection 25, the accidental opening of the container is to a large extent prevented and the closing of the same is facilitated, since it is only necessary to move the closure member endwise against the stop projection 22 and then turning the closure member sufficiently to move the slit 21 out of alinement with the projection 25. Preferably, the closure member or slit sleeve 20 is provided with stops 27 which prevent the turning of the closure member to such an extent that the slit 21 can register with the discharge opening 15, which would, of course, permit the contents of the container to escape or expose them to damage by contact with the air.

In applying a closure member of this kind to a container, it is desirable to provide means for positively preventing the closure member from being accidentally moved into open position during shipment or handling of the container until it reaches the ultimate consumer. For this purpose, the two lower surfaces of the slit sleeve 20 between the slit 21 and the shoulders 27 are preferably slightly inclined as indicated at 28, and the projection 22 is turned over or applied to the end of the container while the closure member 20 is in the position shown in Fig. 2, in engagement with or near to the stop projection 27. This will lock the closure member between the projections 22 and 25, so that accidental turning of the closure member is impossible. Upon applying a slight force to the closure member, the metal of the projection 22 will be slightly deformed or pushed outwardly because of the inclination of the part 28, and thereafter the closure member can be readily moved into and out of opening position. In this manner, the accidental moving of the closure member into open position is positively prevented until the closure member is turned with sufficient force to deform the projection 22. The slight inclination of the part 28 makes the closure member act like a wedge in forcing the projection 22 outwardly to a slight extent. Any other means for holding the closure member against movement into its open position until the container reaches the ultimate consumer may, of course, be employed, if desired.

A slightly modified form of closure member is shown in Figs. 8 and 9, in which the closure member 30 is in the form of a sleeve or annular member having a slot or recess 31 formed in the lower edge thereof, into which the projection 25 on the neck B of the container may enter to uncover the discharge opening 15 in the neck, as shown in Fig. 9. The closure member is, of course, readily moved into its closing position as shown in Fig. 8, by moving the same lengthwise of the neck portion until the projection 25 is arranged out of the slot 31, whereupon a slight turning of the closure member will cause the projection 25 to engage the lower edge of this member to hold it in its closed position. In this construction, the closure member may be held in its operative position on the neck of the container by forming a bead or annular projection 32 around the upper edge of the neck portion B, for example, by spinning or forcing over a part of the metal at the outer end of the neck. A projection similar to that described in connection with Figs. 1 to 7 may, however, be employed with this closure member. With this type of closure member, stops, such as the shoulders 27, are not necessary, since the slot 31 cannot register with the discharge opening 15 in any position of the closure member.

The closure member described has the advantage that it is permanently attached to the container so that it cannot be lost or mislaid. Furthermore, when the contents of the container are of the consistency of paste or salve, the closure member will neatly cut off the portion of the material which has been extruded through the aperture 15, so that the material in the container will not become spread over a large part of the outer end of the container and the closure member, as commonly happens with the usual screw cap type of closure member. This is due largely to the fact that the closure member shown is movable only lengthwise of the neck when opening or closing the aperture, so that only one portion of the outer surface of the closure member comes into contact with the extruded material. Rotary motion of the closure member is only possible when the closure member is in the closed position. If, for example, the closure member is used in connection with shaving cream or tooth paste, such material remaining on the neck of the container can be easily removed by means of a shaving brush, tooth brush or finger, as will be clear from an examination of Fig. 7, which shows the outer end of the closure member 20 substantially flush with the outer end of the neck of the container, and in the construction shown in Figs. 8 and 9, the outer end of the closure member 30 may be bevelled on its inner face, as indicated at 33, to cooperate with the turned-over portion 32 at the outer edge of the neck of the container. The closure member, furthermore, forms a tight seal around the edges of the aperture, so that the material in the container will be equally well preserved from contact with the air after a considerable portion of the material has been removed as when the material is initially placed into the container.

I claim as my invention:

1. A container having a neck portion with a closed outer end and a substantially cylindrical surface, said neck portion having a discharge aperture in said cylindrical surface near the outer end thereof, a closure member arranged on said neck portion and slidable endwise thereon into positions to cover and uncover said discharge aperture, and means for preventing endwise movement of said closure member except when the same is in a predetermined. circumferential position relatively to said neck portion.

2. A container having an integral neck portion

with a closed outer end and a substantially cylindrical surface, said neck portion having a discharge aperture in a side thereof, a closure member engaging said neck portion, said closure member being movable lengthwise toward the closed end of said neck portion into a position to close said aperture, and means operative by the turning of said closure member when in its aperture closing position to hold said closure member positively against endwise movement on said neck.

3. A container having a neck portion with a closed outer end and a substantially cylindrical surface, said neck portion having a discharge aperture in said cylindrical surface near the outer end thereof, a closure member arranged on said neck portion and slidable endwise without turning thereon to move the outer edge of said closure member clear of said aperture to uncover the same, and across said aperture to close the same and to sever the extruded material from the material in said aperture, said closure member being also rotatable about said neck portion, and means for preventing such rotation thereof except when said closure member is in its aperture closing position.

4. The combination with a container having a substantially cylindrical neck portion closed at its outer end and provided with an aperture in a side thereof, of a closure member slidably arranged on said neck portion to move only lengthwise of said neck portion into and out of a position to close said aperture, means on said neck portion for holding said closure member against movement beyond the same, said closure member being also rotatable about said neck portion, and means for preventing such rotation thereof except when said closure member is in its aperture closing position.

5. A container having a neck portion with a closed outer end and a substantially cylindrical surface, said neck portion having a discharge aperture in said cylindrical surface near the outer end thereof, a closure member movably mounted on said neck portion, and cooperating means on said container and said closure member for permitting said closure member to move only lengthwise of said neck portion into positions to open and close said aperture and to permit said closure member to rotate about the axis of said cylindrical neck portion only when in aperture closing position.

6. The combination with a container having a substantially cylindrical neck portion closed at its outer end and having an aperture in a side thereof, of a closure member extending at least partly around said neck portion and having a recess extending lengthwise thereof, a projection on said neck portion adapted to enter said recess to permit said closure member to move lengthwise of said neck portion to uncover the discharge opening in said neck portion and adapted to engage an edge of said closure member when out of said recess to hold said closure member in position to close said aperture.

7. The combination with a container having a substantially cylindrical neck portion closed at its outer end and having an aperture in a side thereof, of a cylindrical closure member having a longitudinal slit therein and in clamping engagement with said cylindrical neck portion, and a stop projection on said neck engaging an edge of said closure member to normally hold the same in closed position and adapted to enter said slit to permit said closure member to be moved into a position to open said aperture.

8. The combination with a container having a substantially cylindrical neck portion closed at its outer end and having an aperture in a side thereof, of a cylindrical closure member having a longitudinal slit therein and in clamping engagement with said cylindrical neck portion, a stop projection on said neck engaging an edge of said closure member to normally hold the same in closed position and adapted to enter said slit to permit said closure member to be moved into a position to open said aperture, and a second stop projection adapted to engage the opposite edge of said closure member to retain the same on said neck.

9. The combination with a container having a substantially cylindrical neck portion closed at its outer end and having an aperture in a side thereof, of a cylindrical closure member having a longitudinal slit therein and in clamping engagement with said cylindrical neck portion, a stop projection on said neck engaging an edge of said closure member to normally hold the same in closed position and adapted to enter said slit to permit said closure member to be moved into a position to open said aperture, and cooperating parts on said closure member and said container to limit the extent to which said closure member can be turned about said neck to prevent said slit from moving into registration with said aperture.

10. The combination with a container having a substantially cylindrical neck portion closed at its outer end and having an aperture in a side thereof, of a closure member mounted on said cylindrical neck portion to turn about the axis of said neck portion while in closed position, a pair of stops on said container which prevent movement of said closure member lengthwise of said neck portion, and a slit in said closure member into which one of said projections may enter to permit movement of said closure member lengthwise of said neck portion to uncover said discharge aperture.

11. The combination with a container having a substantially cylindrical neck portion closed at its outer end and having an aperture in a side thereof, of a closure member arranged about said neck portion, a stop extending radially from the end of said neck portion and engaging one edge of said closure member to hold the same from movement lengthwise out of engagement with said neck portion, a stop engaging the other edge of said closure member to prevent movement of the same lengthwise of said neck portion, said closure member having a slit into which said second projection may enter to permit said closure member to move lengthwise of said neck portion into a position to uncover said discharge opening, and means for releasably holding said closure member from turning into a position in which said second projection is in alinement with said slit.

12. The combination with a container having a substantially cylindrical neck portion closed at its outer end and having an aperture in a side thereof, of a closure member of substantially cylindrical form arranged on said neck portion, a pair of stops on said container between which said closure member may be moved about the axis of said cylindrical neck portion, a slit in said closure member into which one of said stop members may enter to permit uncovering of said aperture, portions of said closure member adjacent to said slit being of slightly greater length than the distance between said stops to prevent accidental opening

of said closure member but permitting movement of said closure member to bring one of said stops into alinement with said slit upon application of a slight turning force.

13. The combination with a container having a substantially cylindrical neck portion closed at its outer end and having an aperture in a side thereof, of a closure member of substantially cylindrical form arranged on said neck portion, a pair of stops on said container between which said closure member may be moved about the axis of said cylindrical neck portion, a slit in said closure member into which one of said stop members may enter to permit uncovering of said aperture, portions of said closure member adjacent to said slit being of slightly greater length than the distance between said stops to prevent accidental opening of said closure member but permitting movement of said closure member to bring one of said stops into alinement with said slit upon application of a slight turning force, and inclined portions connecting with said portions adjacent to said slit to enable said closure member, upon being turned by force into a position to open said aperture, to have a wedge-like action on said stops.

WILLIAM J. SIMMONS.