July 15, 1930. W. J. DONNELLY ET AL 1,770,464

RECEPTACLE CLOSURE

Filed Jan. 2, 1929

Fig. 1

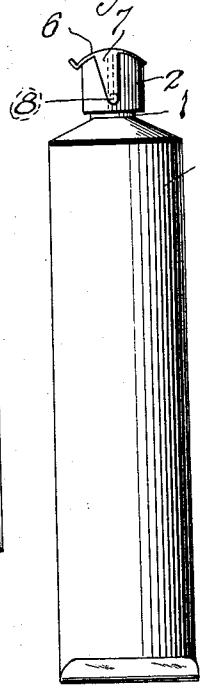


Fig. 2

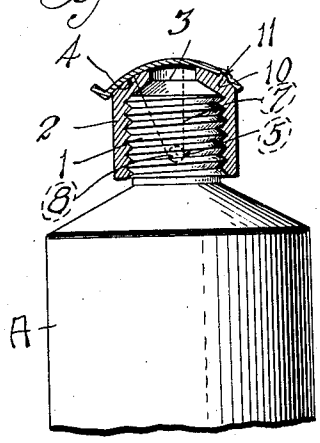


Fig. 3

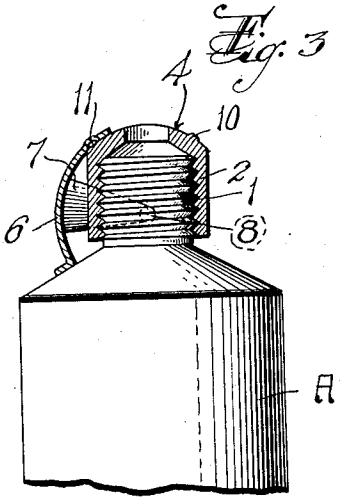


Fig. 4

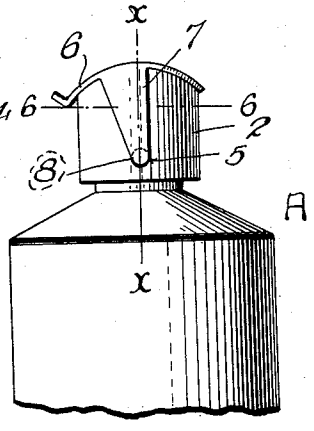


Fig. 5

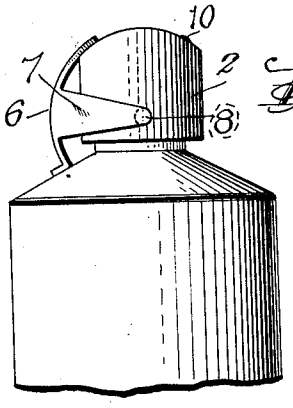


Fig. 8

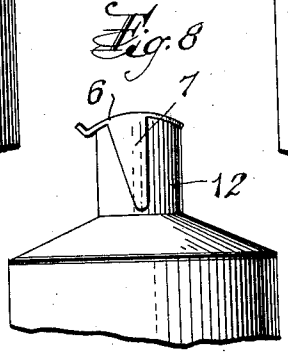


Fig. 6

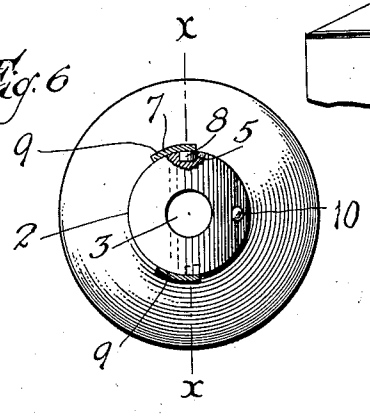
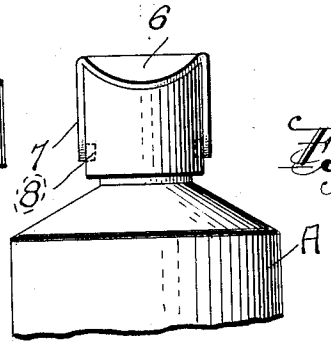


Fig. 7



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UNITED STATES PATENT OFFICE

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RECEPTACLE CLOSURE

Application filed January 2, 1929. Serial No. 329,790.

This invention relates in general to receptacle closures and more particularly to a closure especially adapted for use upon collapsible tubes and the like which are widely used as containers for tooth-paste, shaving cream and like substances.

One object of the invention is to provide a novel and improved receptacle closure comprising a closure member which is pivotally mounted upon the receptacle so as to slide transversely of the surface through which the ejecting or discharge opening of the receptacle is formed, the closure member and the adjacent portions of the receptacle being constructed to cooperate in such a manner as to limit closing movement of the closure member.

Another object is to provide such a receptacle closure in which the receptacle and the closure member have a cooperating projection and recess for holding the closure member in closed position, the closure member being of resilient construction so that the said projection and recess cooperate with a yielding snap action.

A further object is to provide a closure receptacle of this character wherein the surface of the receptacle containing the discharge opening is in the form of a segment of a cylinder concentric with the pivotal point of the closure member whereby the edge of the closure member serves to scrape or wipe said surface as the closure member is moved to closed position, said closure member being constructed to entirely overlie or cover said surface of the receptacle so that air and foreign matter is excluded.

Other objects are to provide a receptacle closure wherein a portion of the receptacle is substantially cylindrical in cross-section and has an end surface in the form of a segment of a cylinder in which is an outlet or discharge opening which is adapted to be opened and closed by a closure member or plate having opposite arms pivotally connected at their ends upon said cylindrical portion, the closure plate being arcuately curved concentrically with the point of pivoting of said arms and slidable over said end surface of said cylindrical portion to close and open said outlet opening, the arms being transversely curved substantially concentrically with the said cylindrical portion so as to engage said cylindrical portion to hold said closure member in closed position and to limit closing movement of the closure; to provide such a receptacle closure which may be applied directly to a receptacle or removably attached thereto, and to obtain other advantages and results as will be brought out by the following description.

Referring to the accompanying drawing, in which corresponding and like parts are designated throughout the several views by the same reference characters,

Figure 1 is a side elevation of a receptacle closure embodying our invention.

Figure 2 is an enlarged transverse vertical sectional view through the form of closure adapted to be removably attached to known types of collapsible tubes, and showing the closure in closed position.

Figure 3 is a similar view showing the closure in open position.

Figures 4 and 5 are side elevations of the closure as illustrated in Figures 2 and 3 respectively.

Figure 6 is a horizontal sectional plan view on the line 6—6 of Figure 4.

Figure 7 is a front elevation of the receptacle closure, and

Figure 8 is a view similar to Figure 4 showing the closure embodied directly in the receptacle.

Specifically describing the illustrated embodiment of the invention the reference character A designates a collapsible tube of known construction which has the usual exteriorally screw-threaded neck 1 formed with the usual outlet or discharge passage. Upon this neck is fitted a correspondingly internally screw-threaded attaching member 2 which is substantially cylindrical and has an outlet opening 3 substantially coaxial therewith. The opening 3 is surrounded by an end surface 4 on the attaching member which is in the form of a segment of a cylinder the axis of which is in a common plane with the axis of the attaching member, but at right angles thereto. The attaching member is also formed with ex-

terior diametrically opposite recesses 5 which are coaxial with the end surface 4.

Upon the attaching member 2 is mounted a closure member which includes a resilient plate 6 arcuately curved concentrically with the surface 4 and has diametrically opposite resilient arms 7 the ends of which are formed on their inner sides with pivot studs 8 which are rotatably fitted within the respective recesses 5. The plate 6 is thus capable of swinging transversely of the attaching member over the end surface 4 so as to close and open the outlet opening 3, as shown in Figures 2 and 3 of the drawings.

Preferably the arms 7 are transversely curved on the same radius as the cylindrical attaching member 2, and their extremities are spaced apart a distance substantially equal to the diameter of the attaching member, as clearly shown in Figure 6 of the drawings. It is also desirable that the arms 7 be arranged so that their center lines are offset with respect to the center line of said plate 6 or to a plane X—X (Figures 4 and 6) which contains both the axis of pivoting of the plate 6 and the axis of the cylindrical attaching member 2 when the closure plate is in its closed position. With this construction, the arms 7 frictionally engage the sides of the attaching member as the closure plate is moved toward and from closed position so as to yieldingly hold the closure plate in closed position. Also one edge of the arms designated 9 abuts the attaching member as the plate moves to closed position so as to positively prevent movement of the plate in the same direction beyond closed position.

Should it be desired to provide other means for holding the closure plate in closed position we may provide a projection 10 on the end surface 4 to cooperate with a recess 11 on the underside of the plate 6, the closure plate yieldingly passing over the projection with a snap action in both directions, so that the projection enters the recess when the plate reaches closed position so as to hold the closure plate in closed position, as shown in Figure 2 of the drawing.

Preferably the closure plate is coextensive with the end surface 4 so as to entirely cover the same and exclude dirt and air, and due to the concentric relation of the closure plate and the end surface, the closure plate serves to scrape the surface clean as the closure plate is moved to closed position.

A modification of the invention is shown in Figure 8 where the closure member is directly connected to the neck portion 12 of the tube instead of to an attaching member as illustrated in Figures 1 to 7 inclusive.

It will be understood that the specific details of construction of the receptacle closure embodied in our invention may be modified and changed by those skilled in the art without departing from the spirit or scope of the invention, and therefore we do not wish to be understood as limiting ourselves except as required by the following claims as construed in the light of the prior art.

Having thus described our invention, what we claim is:

1. The combination with a substantially cylindrical outlet portion of a container having an axial outlet opening therethrough and an arcuately curved end surface surrounding said opening, of a closure member comprising a plate arcuately curved concentrically with said end surface of the outlet portion and having opposite resilient arms pivotally mounted on said outlet portion so that said plate can swing over said surface to open and close said outlet, one of said arms having a portion thereof transversely curved to yieldingly frictionally engage said outlet portion and hold said closure member in closed position.

2. The combination with a substantially cylindrical outlet portion of a container having an axial outlet opening therethrough and an end surface surrounding said opening in the form of a segment of a cylinder whose axis is on the diameter of said cylindrical outlet portion, of a closure member comprising a plate arcuately curved concentrically with said end surface of the outlet portion and having opposite resilient arms pivotally mounted on said outlet portion concentrically with said arcuate surface so that said plate can swing over said surface to open and close said outlet and said arms frictionally engage said outlet portion, said arms being transversely curved on substantially the same radius as said cylindrical outlet portion so as to yieldingly engage said outlet portion and hold said closure member in closed position.

3. The combination with a substantially cylindrical outlet portion of a container having an axial outlet opening therethrough and an end surface surrounding said opening in the form of a segment of a cylinder whose axis is on the diameter of said cylindrical outlet portion, said outlet portion having a pair of recesses in the outer surface thereof disposed concentrically with said end surface, of a closure member comprising a plate arcuately curved concentrically with said surface of said outlet portion and having opposite resilient arms formed with pivot studs on their inner surfaces rotatably fitted in said recesses so that said plate can swing over said surface to close and open said outlet opening and said arms frictionally engage said outlet position, said arms being transversely curved on the same radius as said cylindrical outlet portion so as to yieldingly engage said outlet portion and hold said closure member in closed position.

4. The combination set forth in claim 1 wherein one of said arms is so arranged upon

said plate that its center line is offset with respect to a plane containing both the axis pivoting of said arms and the axis of said cylindrical portion when said plate is in closed position so as to positively prevent movement of said plate in one direction beyond closed position.

5. The combination set forth is claim 2 wherein one of said arms is so arranged upon said plate that its center line is offset with respect to a plane containing both the axis of pivoting of said arms and the axis of said cylindrical portion when said plate is in closed position so as to positively prevent movement of said plate in one direction beyond closed position.

6. The combination with a substantially cylindrical outlet portion of a container having an axial outlet opening therethrough and an end surface surrounding said opening in the form of a segment of a cylinder whose axis is on the diameter of said cylindrical outlet portion, of a closure member comprising a plate arcuately curved concentrically with said end surface of the outlet portion and having opposite arms pivotally mounted on said outlet portion concentrically with said arcuate surface so that said plate can swing over said surface to open and close said outlet, said plate being substantially coextensive with said end surface of the outlet portion so as to scrape said surface clean and exclude dirt and air as the plate moves to closed position, and a projection on one of said plate and said end surface and a recess in the other, said projection and recess cooperating to hold said closure member in closed position.

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