Oct. 20, 1931. S. FREEMAN 1,828,224

CLOSURE FOR CONTAINERS

Filed May 31, 1930

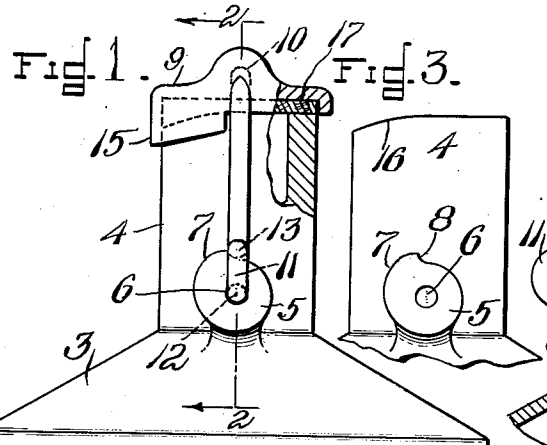


Fig. 1.

Fig. 3.

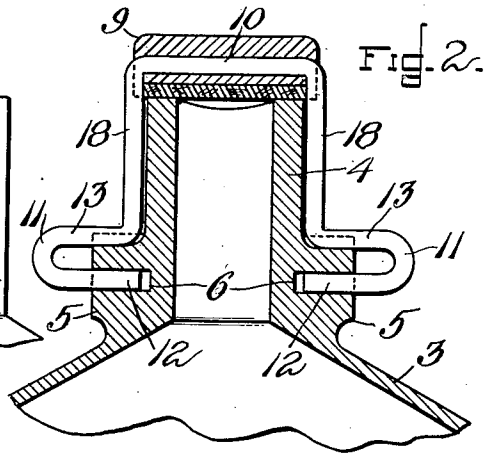


Fig. 2.

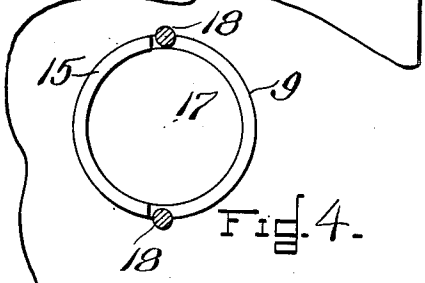


Fig. 4.

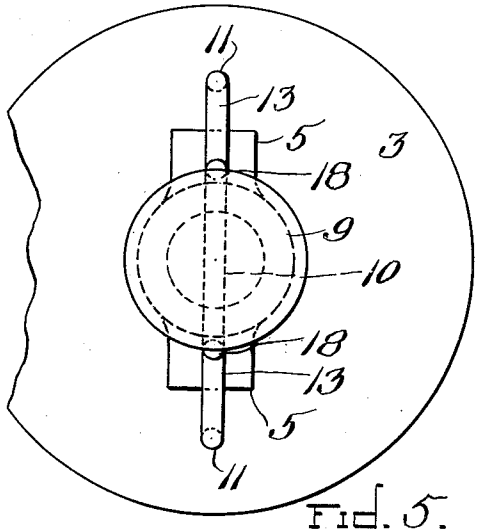


Fig. 5.

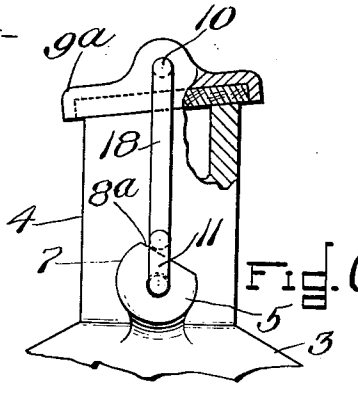


Fig. 6.

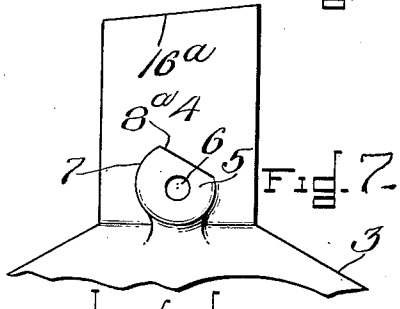


Fig. 7.

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UNITED STATES PATENT OFFICE

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CLOSURE FOR CONTAINERS

Application filed May 31, 1930. Serial No. 458,452.

My invention relates to closures for containers and it has for its object to improve the construction and operation thereof.

More especially my invention has for its object to provide an improved container of the collapsible tube class such as is employed for holding tooth paste, shaving cream and the like.

To these ends I have provided a container having a delivery spout with the outlet end of which is associated a closure cap provided at opposite sides thereof with a pair of arms which are disposed at opposite sides of, and longitudinally with respect to, the spout, the end portions of said arms being formed into resilient spring bows whereof one leg of each is rotatably mounted within a socket provided upon the adjacent side of the spout, and whereof the opposite leg of each is arranged to cooperate with a cam-abutment that is provided on said spout adjacent said socket.

The above mentioned parts of my new structure are so arranged that the cam-abutment serves to hold the cap in its spout-closing position while the spring bows referred to yieldingly urge said cap against the end of the spout. It is also a feature of the operation of my new structure that when the cap is moved away from spout-closing position, the spring bows are flexed by the cam-abutments in a direction to relieve the pressure of the cap against the end of the spout.

Other features of my invention are hereinafter pointed out.

In the accompanying drawings:

Figure 1 is an elevation partly broken away and in section of a collapsible tubular container provided with a closure mechanism embodying one form of my invention.

Figure 2 is a section on line 2—2 of Figure 1.

Figure 3 is an elevation of the spout portion of the tubular container shown in Figure 1.

Figure 4 is a bottom plan view, partly in section of the closure cap of the container shown in Figure 1.

Figure 5 is a top plan view, partly broken away of the container shown in Figure 1.

Figures 6 and 7 illustrate another form of my invention.

The container illustrated in Figs. 1 to 5, inclusive, comprises a tubular body 1 of soft pliable sheet metal which is permanently closed at one end by a clip 2 and at its opposite end is provided with a rigid molded metal head 3 made with a spout 4.

This spout is provided at each side, and near the base thereof with a boss 5, said two bosses being disposed diametrically opposite each other. The two bosses 5 are formed with sockets 6 whose axes are alined and disposed radially with respect to the axis of the spout 4. The periphery of each boss 5 is made with a cam portion 7 providing, at one end thereof, an abutment shoulder 8, Fig. 3.

Associated with the spout 4 is a closure cap 9 preferably of molded metal within which is fixedly embedded the middle portion of a wire bail 10 formed adjacent its opposite ends with spring bows 11 providing arms 12 which are rotatably mounted within the sockets 6 of spout 4.

The other arm 13 of each bow spring 11 is disposed alongside the periphery of its boss 5 to co-operate with the cam-abutment 7—8. The two bow spring 11 are radially disposed with respect to the axis of the spout 4 and when the cap 9 is in operative position upon the end of the spout, the two arms 12 and 13 of each bow spring 11 and the axis of spout 4 are approximately all in one plane. It should therefore be clear that when the cap is in this operative position the bow springs 11 serve to yieldingly urge the same against its seat upon the end of the spout 4.

When the cap 9 occupies its position upon the end of the spout 4 the arms 13 of the spring bows 11 are disposed behind the abutment shoulders 8 which therefore serve to yieldingly lock the cap against being swung away from its closed position on the pivotal arms 12, while an approximately semi-circular skirt or lip 15 provided on cap 9 engages the side of the spout 4 to positively prevent swinging movement of the cap 9 in the opposite direction.

The abutment shoulders 8 thus serve to hold

the cap in spout-closing position but when it is desired to open the container the cap 9 is forcibly swung on the arms 12 toward the left, Fig. 1, thereby causing the arms 13 of spring bows 11 to ride over the stop shoulders 8 on to the cam portions 7. Thus the spring bows 11 are expanded by the cam-abutments 7—8 as the cap is moved toward its open position and it will be clear that when the cap 9 is in its fully open position said cam-abutments will serve to hold said cap in its open position so that if the container is then inverted the cap will not fall by gravity into the path of the contents which are being ejected through the spout 4.

When the cap 9 is swung from its open to its closed position the arms 13 of the spring bows 11 ride over the cam-abutments 7—8 and into positions behind the abutment shoulders 8 where the cap is yieldingly locked in its closed position. Thus as the cap is moved towards its closed position, the cams 7 serve also to force said cap radially away from the spout, while the resiliency of the bow springs 11 serve to shift the cap 9 radially toward and against its seat on the spout as said cap comes into its fully closed position.

In order to permit of free movement of cap 9 on the axes of arms 12 the spout 4 may have its chime beveled upon one side as shown at 16, Fig. 3, while the spout-engaging side of the cap 9 may be made of counterpart shape to fit thereon when the cap is in its closed position.

Also the cap 9 may be formed with a recess upon its inner side provided with a filling of cork or the like 17 to provide a resilient or compressible seat for the end of the spout 4.

The inner ends of the arms 13 of spring bows 11 are connected with the opposite ends of the middle portion of the wire bail 10 by straight legs 18 disposed close to the opposite sides of spout 4.

In Figs. 6 and 7 the chime of the spout 4 is flat but beveled, or obliquely disposed, with relation to the axis of said spout, while the abutment shoulder of each boss 5 is provided by forming the boss with a flat obliquely disposed side portion 8*a* which co-operates with the spring bow 11 so that when the cap 9*a* occupies its closed position not only is said cap yieldingly urged longitudinally toward its seat by the spring bows 11, but the intermediate portions 18 of the wire bail 10 are under tension so that the cap 9*a* is yieldingly urged laterally also, toward the right, Fig. 6, against its seat. Thus the wire bail 10 acts in two respects upon the cap, viz., to yieldingly urge the same longitudinally with respect to the axis of the spout and also sidewise relatively to the spout toward the right, Fig. 6.

What I claim is:

1. In a container, the combination of a spout provided upon opposite sides thereof with sockets; a closure cap adapted to fit against the delivery end of said spout and provided at opposite sides of the latter with legs each of which is made with a trunnion occupying one of said sockets; means for yieldingly holding said cap against the delivery end of said spout, and means on said spout for moving said cap longitudinally relatively to the spout and away from said sockets as said cap is swung laterally away from its spout-closing position.

2. In a container, the combination of a spout provided upon opposite sides thereof with sockets; a closure cap adapted to fit against the delivery end of said spout and provided at opposite sides of the latter with legs each of which is made with a trunnion occupying one of said sockets; means for yieldingly holding said cap against the delivery end of said spout, and means on said spout engaging said legs to yieldingly hold said cap in spout-closing position, said means operating to shift said cap longitudinally away from the delivery end of said spout when said cap is swung laterally away from spout-closing position.

3. A container having a delivery spout provided upon the opposite sides thereof with sockets and with a cam-abutment adjacent each socket; a closure cap associated with said spout provided at opposite sides thereof with legs having inwardly extending trunnion portions occupying said sockets, each of said legs being formed with a spring bow to yieldingly urge said cap toward the end of said spout when said cap occupies spout-closing position, said cam-abutments serving to flex said spring bows in a direction to move the cap longitudinally away from the end of the spout when the cap is swung laterally away from spout-closing position.

4. A container of the class described having a head of molded material at one end thereof that is provided with a spout having socket bosses formed upon opposite sides thereof, each socket boss being made upon its periphery with a cam-abutment, and a closure cap for the delivery end of said spout provided with wire legs at opposite sides of the latter whose end portions are formed into radially disposed bow springs whereof one arm of each is rotatably mounted within one of said socket bosses and whereof the other arm is co-operatively associated with the cam-abutment of said socket boss so as to yieldingly retain the cap in spout-closing position but operable by said cam-abutment to relieve the pressure of the cap against the end of the spout when said cap is swung laterally away from spout-closing position.

5. In a container, the combination of a spout formed upon opposite sides thereof with sockets; a closure cap for the delivery end of said spout having legs disposed at opposite sides of the latter each of which is

provided with a trunnion rotatably mounted in one of said sockets and also formed with a bow spring portion, and cam-abutments upon opposite sides of said spout co-operatively associated with said spring bows so a to yieldingly hold said cap in spout-closing position and operable to shift said cap longitudinally when it is swung laterally away from spout-closing position.

6. A container constructed in accordance with claim 5, wherein the chime of said spout is obliquely disposed with respect to the axis of the latter.

Signed by me at Boston, Suffolk County, Massachusetts, this 29th day of May, 1930.

SAMUEL FREEMAN.