Jan. 31, 1939. D. E. STALEY 2,145,560

ATTACHABLE CLOSURE CAP FOR COLLAPSIBLE TUBES

Filed Oct. 4, 1938

Fig. 1

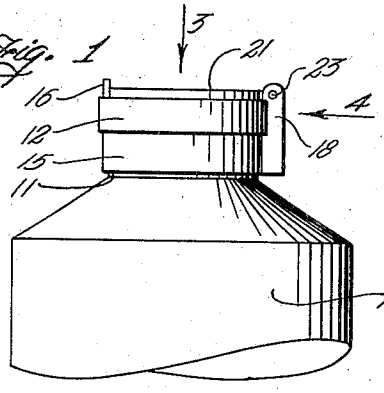


Fig. 2

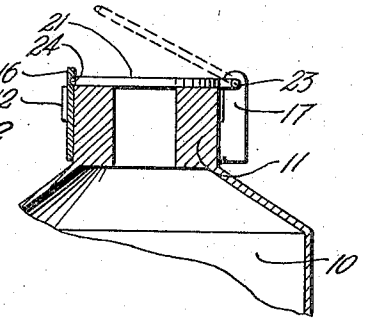


Fig. 3

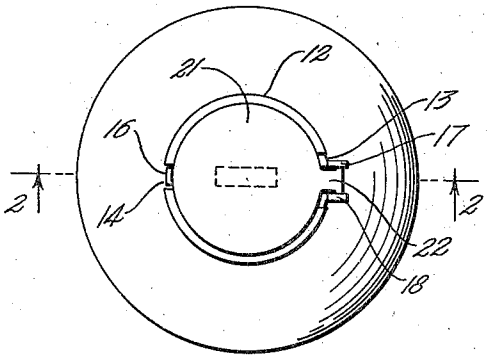


Fig. 4

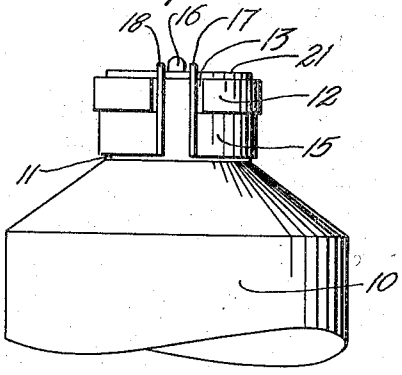


Fig. 5

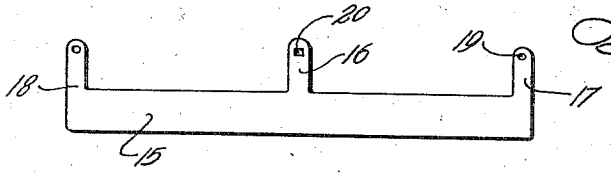
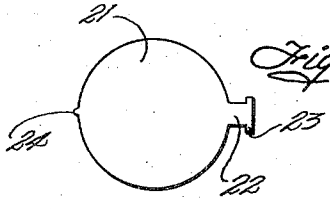


Fig. 6



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Patented Jan. 31, 1939 2,145,560

UNITED STATES PATENT OFFICE

2,145,560

ATTACHABLE CLOSURE CAP FOR COLLAPSIBLE TUBES

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Application October 4, 1938, Serial No. 233,217

7 Claims. (Cl. 221—60)

This invention relates to improvements in collapsible tubes of the character employed for conveying and dispensing substances, such as tooth paste, shaving cream, and the like.

The conventional collapsible tube is provided with a threaded neck to which is applicable a detached threaded cap or closure. The objection to such a construction is that the cap or closure being detached is frequently accidentally dropped and lost. Heretofore it has been proposed to overcome this objection by providing a construction which will permanently associate the cap with the tube so that it is impossible to drop or lose the cap independently of the tube. Such constructions, however, generally speaking, have been unsuccessful primarily because the constructions are elaborate and are difficult either to manufacture or to assemble. The difficulty in manufacturing or assembling increases the cost of the completed tube so that the adoption and use of these prior constructions on collapsible tubes is prohibitive.

It is an object of the present invention to provide a novel construction of collapsible tube wherein the closure will be permanently associated with the tube but which is characterized by the fact that the parts thereof are of very simple construction enabling them to be manufactured very easily at a minimum cost.

Another object of the invention is to provide a construction in the nature of an attachment for collapsible tubes wherein the closure is permanently associated with the tube and the parts thereof are so designed as to enable assembly to be accomplished very quickly and easily at a minimum labor cost.

With the foregoing and other objects in view, which will be made manifest in the following detailed description and specifically pointed out in the appended claims, reference is had to the accompanying drawing for an illustrative embodiment of the invention, wherein:

Figure 1 is a partial view in side elevation of a collapsible tube illustrating the invention as having been embodied thereon;

Fig. 2 is a vertical section through the tube shown in Fig. 1, the closure being shown in closed position in full lines and in partially open position in dotted lines;

Fig. 3 is a top plan view of the top of the tube as shown in Fig. 1;

Fig. 4 is a partial view in front elevation of the tube embodying the invention;

Fig. 5 is a plan view of the shape of the blank that is formed to provide the encircling band which encircles the neck of the tube; and

Fig. 6 is a plan view of the closure.

Referring to the accompanying drawing wherein similar reference characters designate similar parts throughout, the body of the collapsible tube indicated at 10 may conform to conventional practice. The neck of the tube indicated at 11 instead of being externally threaded as is conventional practice, is equipped with an external flange 12. This flange is divided by front and back grooves, the back groove being indicated at 13 and the front groove at 14 so that the flange in reality forms two semi-circular downwardly facing shoulders on the neck. A split resilient self-contracting band is provided which may be stamped out of resilient material in the form shown in Fig. 5. This comprises a band, the body of which is indicated at 15 having at its center an upstanding arm or lug 16 and at its ends upstanding arms or lugs 17 and 18. The upstanding arms or lugs 17 and 18 are designed to form radially extending ears and have apertures 19 formed therein. The central arm may be recessed on its inner face as indicated at 20. This band, while it may be formed of any resilient material, is preferably stamped out of high carbon sheet steel or steel having a sufficient carbon content so as to be capable of being heat treated or tempered.

When the blank is stamped out as shown in Fig. 5 which is done while the metal is in annealed condition, it is then rolled into circular form with the ends of the band bent outwardly into radial position. The band is then heat treated or tempered so as to impart to it the desired degree of spring or temper. When completed, this band assumes a normal position, snugly fitting around the diameter of the neck below the flange.

A cap is provided which may be stamped out of sheet material in the form shown in Fig. 6 consisting of a body 21 having an extension 22 at the sides of which there are outwardly extending arms 23 which constitute hinge pintles. At the forward edge of the cap there may be a small projection 24 which is engageable in the recess 20.

In order to assemble the construction as above-described, it is merely necessary to spring open the resilient self-contracting split band in order to slip the band over the flange 12. While this is being accomplished the cap is also applied with the extension 22 positioned between the radially extending ears at the ends of the band. When the band is finally slipped over the flange

so that it may contract about the neck the contraction of the band not only causes the band to be held about the neck beneath the shoulders, but in addition causes the pintles 23 to enter the apertures 19, thus forming a pivotal connection between the closure and the band. The closure may be swung open and closed as indicated on Fig. 2. It is held in closed position by the projection 24 entering recess 20. Whenever it is desired to open the closure, the arm or lug 16 may be sprung outwardly by the thumbnail disengaging projection 24 from the recess.

It will be noted that the radially extending ears 17 and 18 extend into the rear groove 13 in the flange 12 and that the central arm or lug 16 extends through the forward groove 14. Thus, the flange not only maintains the band on the neck but as these parts of the band enter their respective grooves the band is held against rotation with respect to the neck, thus facilitating opening the closure when it is desired to do so.

If desired, the cap need not be made from a sheet metal stamping but may be otherwise formed, such as for example by a molded plastic composition of any suitable character which will produce a hardened article. If made of a molded plastic composition the pintles on the cap may be formed integral with the body of the cap or by a wire embedded in the mold, the ends of which project from the plastic composition and provide the pintles. Also, the projection 24 may be formed by a wire or the equivalent which is embedded in the body of the cap so as to project therefrom during the molding. The cap, if so formed, may be assembltd with the band around the tube in the same manner as previously described.

From the above-described construction it will be appreciated that the attachment is formed entirely of the two parts, each of which are simple and may be easily and quickly stamped out of sheet material. Furthermore, in assembling these parts together around the neck of the tube, the same manipulation in assembling not only mounts the band on the neck but also forms the pivotal connection between the closure and the band. In this way it is possible to manufacture the device so that the cost of its adoption and use is not prohibitive on collapsible tubes designed for dispensing various semi-liquid substances and other materials.

Various changes may be made in the details of construction without departing from the spirit or scope of the invention as defined by the appended claims.

I claim:

1. A collapsible tube having a flanged neck, a split self-contracting resilient band adapted to be sprung onto the neck and to contract itself thereon and to fit snugly around the neck beneath the flange thereon, a closure for the neck, pintles on the closure, there being ears on the ends of the band adapted to receive said pintles when the band contracts about the neck whereby a pivotal connection is formed between the closure and the band.

2. A collapsible tube having a flanged neck, a split self-contracting resilient band adapted to be sprung onto the neck and to contract itself thereon and to fit snugly around the neck against the underside of the flange thereon, a closure for the neck, pintles on the closure, there being ears on the ends of the band adapted to receive said pintles when the band contracts about the neck whereby a pivotal connection is formed between the closure and the band, and means for holding the closure in closed position.

3. A collapsible tube having a neck, a split self-contracting resilient band adapted to be sprung onto the neck and to contract itself thereon, a closure for the neck, pintles on the closure, there being ears on the ends of the band adapted to receive said pintles when the band contracts about the neck whereby a pivotal connection is formed between the closure and the band, and means integral with said band engageable by the swinging edge of the closure for holding the closure in closed position.

4. A collapsible tube having a flanged neck, there being front and back grooves in the flange, a split self-contracting resilient band encircling the neck beneath the flange, said band presenting upstanding ears extending into the back groove in the flange, a closure for the neck carrying pintles receivable in said ears to pivotally connect the closure to the band, and means carried by the band extending into the front groove engageable by the swinging end of the closure to hold the closure in closed position.

5. A collapsible tube having a flanged neck, there being a groove in the back of the flange, a split self-contracting resilient band encircling the neck beneath the flange, said band presenting upstanding ears extending into the back groove in the flange, a closure for the neck carrying pintles receivable in said ears to pivotally connect the closure to the band, and means for holding the closure in closed position.

6. A collapsible tube having a flanged neck, there being a groove in the front of the flange, a split self-contracting resilient band encircling the neck beneath the flange, a closure for the neck carrying pintles receivable in apertures in the ends of the band, and means carried by the band extending into the groove in the front of the flange engageable by the swinging end of the closure to hold the closure in closed position.

7. A collapsible tube having a flanged neck, a split self-contracting resilient band adapted to be sprung onto the neck and to contract itself thereon and to fit snugly around the neck against the underside of the flange thereon, a closure for the neck, and means forming a pivotal connection between the closure and the ends of the band when the band contracts about the neck enabling the closure to be swung into open or closed position.

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