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SELF-CLOSING CONTAINER

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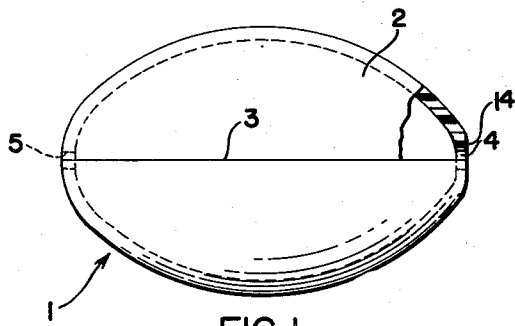


FIG. 1

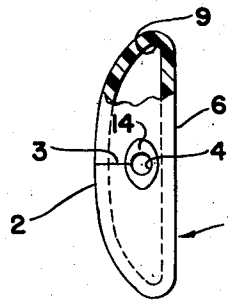


FIG. 3

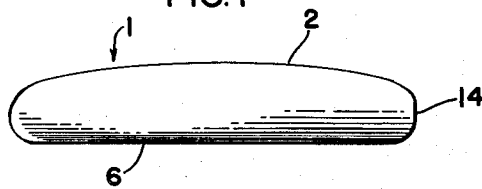


FIG. 2

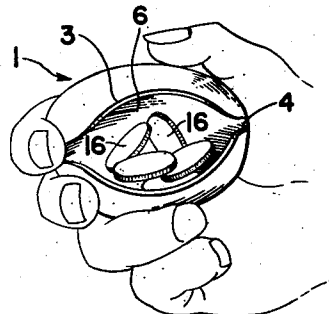


FIG. 5

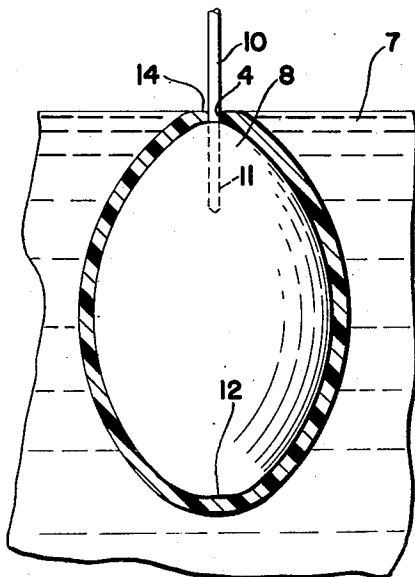


FIG. 4

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SELF-CLOSING CONTAINER

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5 Claims. (Cl. 150—37)

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This invention relates to containers for coins, keys or the like and, in particular, to a one-piece construction having a slit in one face which responds to pressure applied lengthwise of the slit to provide a substantial opening for placing articles in the container or removing them therefrom.

Containers of this general nature have been proposed heretofore, but these have generally comprised such material as leather, entailed stitching, and required auxiliary springs for proper operation.

I have found that a suitable and in every way satisfactory container may be constructed in one piece of a rubber-like material in a manner which involves only two essential steps, namely, a dipping operation and a slitting operation. In addition to simplicity and ease and economy of manufacture, the container of this invention is rugged and durable, is pleasing in appearance, and may have a permanent color of any desired hue.

It is therefore a principal object of the invention to provide a one-piece, self-closing container. Further objects are to provide articles of this nature which are of simple construction and easy and economical of manufacture, and which are certain in operation and possessed of qualities of endurance in use.

The invention is illustrated in the accompanying drawings, in which:

Fig. 1 is a top plan view of a container, partly broken away,

Fig. 2 is an elevational view of the container of Fig. 1, as seen from below that figure.

Fig. 3 is an elevational view of the container of Fig. 1, as seen from the right of that figure, and partly broken away,

Fig. 4 is an elevational view of the container being formed on a mandrel in a dipping operation, and

Fig. 5 is a view showing the container being manipulated to open position by hand.

Referring to the drawings by characters of reference, there is shown a one-piece container, generally elliptical in plan, indicated generally by the numeral 1, which is formed of a rubber-like material, preferably a so-called "paste" resin, a liquid which is not cured in the sense that rubber is, but is nevertheless brought to final form by heating. In particular, I employ the resin known as "Geon" paste, No. 121, manufactured by the B. F. Goodrich Co.

As seen in Figs. 2 and 3, the container, or pouch, has a domed side 2, in the form of a portion of an ellipsoid, which is the side through which access is had to the interior. For this purpose, the face 2 is provided with a through slit 3 coextensive with the major axis of the elliptical pouch. At its ends, the slit communicates with circular

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openings 4 and 5 with axes parallel to the major axis of the pouch.

The bottom 6 of the pouch is preferably flat, but this may also be curved in any desired manner. For instance, if bottom side 6 is to be imprinted, it will be of some help if this side is bowed outwardly.

In a preferred form, the article has a major axis of about 3 inches and a minor axis of about $2\frac{1}{4}$ inches.

As seen in Fig. 4, the first step in forming the pouch is by dipping, in a quantity of the liquid plastic 7, a mandrel 8 having the form desired in the completed article. That is, generally elliptical in plan and having an ellipsoidal surface on one or both sides. The mandrel also has a rounded periphery to produce a correspondingly rounded interior portion 9 in the completed article.

For the dipping process, the mandrel is provided with a suspending rod 10 secured to the mandrel in any suitable manner, as by molding in place, so that the lower portion 11 is secured in the mandrel. Other portions of the suspending mechanism, adapted for dipping a plurality of mandrels at one time, form no part of the present invention and, therefore, need not be illustrated herein.

In order to accelerate pick-up of the paste during the dip, the mandrels are preheated to about 500° F. before dipping. The mandrels are inserted slowly into the bath 7, which is at room temperature, and slowly removed.

In a single dip of about 20 seconds duration, a coating about $\frac{1}{64}$ inch in thickness is picked up. The coated mandrel is removed from the bath and placed in an oven at 500° F., where the coated material is conditioned to dryness in about 2 minutes. After removal from the oven, the articles are cooled by dipping in water, being removed therefrom as soon as practicable so that there is no undue loss of heat from the mandrels, which must subsequently be raised again to 500° F. After cooling, the coated mandrels are removed individually from the dipping rack for slitting and perforation. First, the end of the pouch is presented to a drill for formation of the opening 5, after which the slit 3 is made by a sharp knife in any convenient manner, employing a jig for instance, and the slit is started at one end, at opening 5 for instance, and is continued along the domed side 2 until it communicates with the other opening 4. Opening 4 is formed by the suspending rod 10 and is preferably located medially of the edge of the pouch, as seen in Fig. 3. Opening 5 could be formed by a rod extending from the mandrel on the end opposite rod 10, but it has been found that the fluid plastic tends to build up on such an extension to provide an objectionable hump. There-

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fore, it has been deemed preferable to form opening 5 with a drill or similar tool prior to the slitting operation. It has been found that this drilling is facilitated if a flat spot 12 is provided on the end of the mandrel.

Openings 4 and 5 have three important functions. They assist materially in the ready initiation of opening of the slit, they allow for a more expansive opening than would be possible with a slit alone, and they prevent tearing at the ends of the slit, which would destroy the usefulness of the article. It should be noted further that at least one of the holes is formed as an incident to the manner of attachment of the suspending mechanism, and therefore requires no extra-manufacturing effort.

In the dipping operation, if the mandrel is inserted too deep in the bath, the material will build up on the suspending rod 10, resulting in an unsightly extension on the end of the pouch which would have to be buffed or cut off. This happens even when the top of the mandrel is located below the level of plastic 7 a distance equal to the desired thickness of the pouch. Therefore, the mandrel is located slightly higher than this position. As a result, the upper end of the pouch has a flat area 14 (shown somewhat exaggerated in the drawing), and there is no build-up around rod 10 to produce a ragged edge. This construction does not materially reduce the thickness of the pouch at the end.

As seen in Fig. 3, the arch of the pouch has a reduced curvature at the keystone region, near the slit, being nearly flat. It has been found that this feature provides more secure closing of the slit and minimizes accidental opening and resultant escape of contents. Even greater security is provided if this area be recessed slightly so that its curvature is negative with respect to that of the arch as a whole.

The pouch may be opened by mere pressure of two fingers, applied at the opposite ends of the major axis of the pouch. However, it has been found most convenient to handle the pouch by a hand grasp in the manner illustrated in Fig. 5, wherein the pouch is shown as containing coins 16. With the pouch thus open, the desired coins may be easily selected and withdrawn, or the entire contents may be dumped into the other hand, and subsequently back into the pouch. The pouch shown may hold up to several dollars in change.

It is to be emphasized that forming of the slit 3 in a cutting operation is preferable to formation of the slit by mandrel appendages in the dipping operation, since in the latter case the fluid plastic builds up in mounds in the region of the slit, which must be buffed off, since the smooth contour of the article would otherwise be lost, and the opening and closing operations would not be as dependable in their functioning.

While I prefer to employ a resin paste, obviously the article could be made of rubber, natural or synthetic, or any other material having elastic properties similar to those of rubber. Likewise, although I have shown the article as being formed in a dipping process, it may be formed on a mandrel by other means, such as spraying, electro-deposition, or molding.

While a certain, preferred embodiment of the invention has been shown and described, the invention is not limited thereto, since various changes may be made without departing from the spirit or scope of the appended claims.

What is claimed is:

1. A quick-opening and self-closing container

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for articles comprising a unitary envelope of material having elastic properties similar to those of soft rubber, said envelope defining a substantially fully closed interior volume having a depth relatively small in comparison to dimensions transverse to its depth, and said envelope having a substantially transverse normally closed slit in one face extending from one periphery to an opposite periphery.

2. A quick-opening and self-closing container for articles comprising a unitary envelope of material having elastic properties similar to those of soft rubber, said envelope defining a substantially fully closed interior volume having a depth relatively small in comparison to dimensions transverse to its depth, and said envelope having a substantially transverse normally closed slit in one face extending from one periphery to an opposite periphery, the face bearing said slit being arched.

3. A quick-opening and self-closing container for articles comprising a unitary envelope of material having elastic properties similar to those of soft rubber, said envelope defining a substantially fully closed interior volume having a depth relatively small in comparison to dimensions transverse to its depth, and said envelope having a substantially transverse normally closed slit in one face extending from one periphery to an opposite periphery, said envelope having oppositely disposed, through apertures, and the respective ends of said slit communicating with respective apertures.

4. A container for articles comprising a unitary envelope of material having elastic properties similar to those of soft rubber, said envelope defining a substantially fully closed interior volume having a depth relatively small in comparison to dimensions transverse to its depth and being generally elliptical in plan, said envelope having at least one side arched, the top region of said arched side having a curvature of less magnitude than the balance of said arched side, and said one side having a normally closed through slit coextensive with the major axis of said envelope.

5. A quick-opening and self-closing container for articles comprising a unitary envelope of material having properties similar to those of soft rubber, said envelope defining a substantially fully closed interior volume and having a depth relatively small in relation to dimensions transverse to its depth, said envelope having oppositely disposed through apertures and a normally closed through slit in one face extending from one aperture to the other aperture, and said face being substantially flat in the region of said slit.

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