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A. A. SAAD

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ONE-PIECE SELF-CLOSING CONTAINER

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Fig. 1

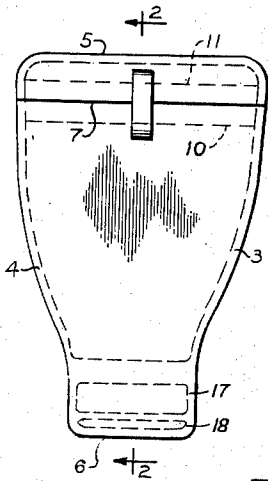


Fig. 2

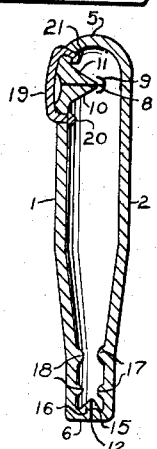


Fig. 3

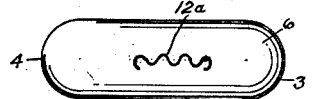
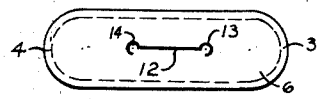


Fig. 4

Fig. 5

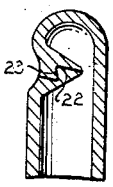


Fig. 6

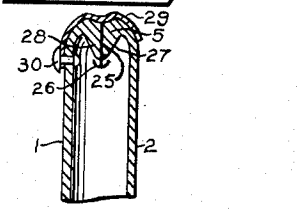
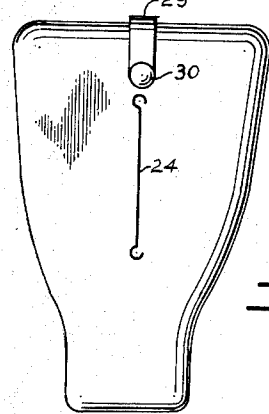


Fig. 8

Fig. 10

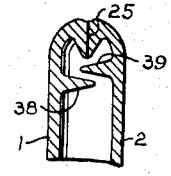
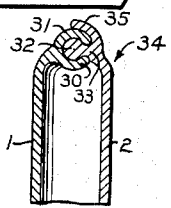
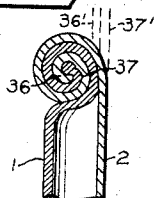


Fig. 9

Fig. 8



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1

2,868,254

ONE-PIECE SELF-CLOSING CONTAINER

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9 Claims. (Cl. 150—.5)

The present invention relates to containers and, in particular, to a one piece, self-closing container for granular material, powder, coins and related objects.

The container of the present invention is a one piece structure fabricated from plastic, rubber or like substances which has sufficient elasticity to return to a definite shape after deformation. The container has flat concave front and back walls and converging side walls terminating in two parallel end walls. The walls define a space within the container, access to which is obtained through a thin elongated slit in one of the walls. The walls on either side of the slit are provided with inwardly extending and tapered shoulders to increase the stiffness of the material of the container and to insure that the container is normally maintained closed; that is, that the shoulders are normally contacting one another. The container may be opened for filling by applying pressure immediately adjacent the ends and transverse to the slit which causes the slit to open. Another slit is provided in the container generally in one of the end walls thereof and is utilized for dispensing material. The end wall on either side of the latter slit is also provided with inwardly directed and tapered shoulders which help to maintain the slit closed. In addition, the front and back walls adjacent the lower end wall have a plurality of ribs extending generally parallel to the slit. These ribs additionally reinforce the material around this latter slit thereby requiring that an opening force to be effective must be applied in close proximity to the slit. The ribs also determine the space between the side walls adjacent the dispensing slit and, therefore, help determine the rate of flow of the material from the container or in the case of coins or related objects, how many of a specific size coin may be presented to the dispensing slit simultaneously. Either the dispensing slit or the filling slit may be provided with safety clips or catches or the shoulders adjacent the slit may be of such a configuration that they are normally interlocked and can be separated only by a direct application of suitable pressure to the edge of the slit.

It is an object of the present invention to provide a one piece, self-closing container having a filling opening and a dispensing opening and having shoulders adjacent the openings for maintaining the container normally closed.

It is another object of the present invention to provide a molded one piece self-closing container of elastic material having a filling and a dispensing slit and having reinforcing shoulders for maintaining the slits normally closed.

Another object of the present invention is to provide a one piece self-closing container having a dispensing slit and a plurality of reinforcing ribs adjacent thereto for maintaining the slit normally closed, for localizing the area in which an opening pressure is effective and for controlling the dispensing rate.

Yet another object of the present invention is to provide a one piece self-closing container having a filling

2

slit and having self-locking means for the slit or alternatively having a safety clip for maintaining the slit closed.

Still another object of the present invention is to provide a one piece self-closing container of elastic material and having a filling and a dispensing slit either of which may be straight or wavy and is provided at both ends thereof with enlarged areas to prevent splitting of the material.

The above and still further features, objects, and advantages of the invention will become apparent upon consideration of the following detailed description of a specific embodiment of the invention, especially when taken in conjunction with the accompanying drawings, wherein:

Figure 1 is a front view of an embodiment of the invention on utilizing a safety clip for maintaining the filling slit closed;

Figure 2 is a cross sectional view taken along 2—2 in Figure 1;

Figures 3 and 4 illustrate two alternative forms of the dispensing slit of the container; and

Figures 5, 6, 7, 8, 9 and 10 illustrate alternative embodiments of the container of the present invention.

Referring specifically to Figures 1—3 of the accompanying drawings, the one piece self-closing container of the present invention includes two flat concave front and back walls 1 and 2 connected by rounded and converging side walls 3 and 4. The side walls 3 and 4 terminate in parallel and generally flat ends walls 5 and 6 which interconnect the side walls 3 and 4 and front and back walls 1 and 2 to provide an enclosed volume. The container is a molded one piece structure fabricated from elastic plastic, rubber or similar material which is sufficiently strong to maintain its shape but sufficiently flexible to be deformed by the application of pressure thereto. The end of the front wall 1 adjacent the end wall 5 is provided with a thin slit 7 extending generally parallel to the end walls 5 and 6 from about the mid point of the side wall 3 to the mid point of the side wall 4. The slit 7 terminates centrally of semi-circular intersecting slits 8 and 9 to prevent splitting of the material due to repeated flexing of the container and to eliminate the possibility of the contents from seeping or spilling out. The wall 1 has two inwardly extending shoulders 10 and 11, one on each side of the slit 7 which provide an extensive area of contact along the slit 7 and reinforce the material immediately adjacent thereto.

Upon the application of pressure to the side walls 3 and 4, transverse to and adjacent the ends of the slit 7, the front and back walls 1 and 2 bow outwardly and the container opens along the slit 7, the concave shape of the walls 1 and 2 insuring the outward bowing of the walls. The shoulders 10 and 11 provide additional strength to the container immediately adjacent the slit 7 and insure that it will return to its original shape when the deforming force is relieved. In addition, the shoulders 10 and 11 provide an extensive area of contact along the slit 7 to help prevent leakage of material in the container through the slit.

The end wall 6 has a dispensing slit 12 terminating in hook-like slits 13 and 14 which prevent tearing of the material adjacent the ends of the slit 12. The end wall 6 is provided with inwardly extending shoulders 15 and 16 on either side of slit 12 which serve the same purpose as shoulders 10 and 11. The front and back walls 1 and 2 have several inwardly extending and aligned ribs 17 and 18 adjacent the end wall 6 for additionally reinforcing the container adjacent the slit 12. The ribs 17 and 18 localize the area to which a force may be applied to open the slit 12 to the area of the walls 3 and 4 adjacent the ribs 17 and 18. Thus, if a force is applied to the walls 3 and 4 above the ribs 17 and 18, substantially

no opening of the slit 12 is obtained, whereas, if the force is applied across the space between ribs 17 and 18 the slit 12 opens in response to a relatively small force. Thus, the ribs 17 and 18 reduce the possibility of leakage of material in the container by greatly reducing the area to which pressure may be applied to open the slit 12. The ribs 17 and 18, when compression is applied, determine the space between the walls 1 and 2 and, consequently, determine the rate of flow of the contents from the container.

The slit 12 may be a straight line slit as illustrated in Figure 3 or may be a wavy slit 12a as illustrated in Figure 4. The wavy slit of Figure 4 has been found to be preferable to the straight line slit since it provides a large contact area between the two edges thereof and, as a result, the edges adhere more tightly to one another. A wavy slit may be employed for the slit 7 for the same purposes and with the same result.

Since the slit 7 is quite large, it may be desirable to provide a safety clip or clasp therefor. Referring again to Figures 1 and 2 of the accompanying drawings, a strap or band 19 extends through an aperture in the wall 1 below the slit 7 and is provided with a barbed end 20 which prevents the strap from being pulled out through the aperture. The strap 19 extends above the slit 7 and is adapted to pass through a second aperture. The end of the strap 19 passing through the second aperture is enlarged as at 21 so that it may be pushed or pulled through the second aperture but offers some resistance to such movement. When the enlarged end 21 is inserted in the second aperture, the strap 19 holds the slit 7 tightly closed and prevents the spilling of contents from the container.

The strap 19 may be eliminated but its function provided by appropriately shaping the contacting surfaces of the shoulders 10 and 11. Referring specifically to Figure 5 of the accompanying drawings, which is a side cross-sectional view of an embodiment of the present invention, the shoulders 10 and 11 are provided with mating S-shaped surfaces. The mating S-shaped surfaces form interlocking flaps 22 and 23 which extend substantially along the length of the slit 7. The interlocking flaps 22 and 23 resist separation of the shoulders 10 and 11 since they tend to prevent vertical movement, as seen in Figure 5, of the shoulders 10 and 11 with respect to one another. In this figure, and in each of the subsequent Figures 6-10, the lower portion of the container is as illustrated in Figures 1 and 2 and may utilize a dispensing slit as illustrated in either Figures 3 or 4.

In the embodiments of the invention thus far described, the filling slit extends across the wall 1 generally transverse to the side walls 3 and 4. In another embodiment of the invention illustrated in Figure 6 of the accompanying drawings, a dispensing slit 24 is provided in the wall 1 which extends transverse to the end walls 5 and 6; the slit 24 being opened by applying pressure to the end walls. In this embodiment of the invention, it is preferable to utilize a slit or shoulders having mating S-shaped surfaces to prevent opening of the slit.

In another embodiment of the invention illustrated in Figure 7 of the accompanying drawings, the filling slit 25 is located in the end wall 5 and extends into the side walls 3 and 4, terminating in tear preventing circular apertures, only one of which, designated by the reference numeral 26, is illustrated. Two shoulders 27 and 28 may be employed, one on each side of the slit 25, these shoulders serving the same purpose as the shoulders 10 and 11 of Figures 1 and 2.

If necessary, several alternative arrangements may be employed for maintaining the slit 25 closed, one such arrangement being illustrated in Figure 7 and others being illustrated in Figures 8 and 9. In Figure 7 the container is provided with a resilient metal clip 29 conforming to the shape of the upper end of the container. The clip 29 is secured to the upper portion of wall 1 by a metal pin 30

and extends over the end wall 5 to approximately its juncture with the back wall 2. Consequently, the clip 29 extends across and transverse to the slit 25 and extends downwardly on either side thereof. Being of resilient material, the clip 29 urges the front and back walls 1 and 2 together to close the slit 25. However, upon pressure being applied to the end of and transverse to the slit 25, the walls 1 and 2 bow outwardly against the force of the clip 29 and open the slit 25.

In Figure 8 of the accompanying drawings, the front and back walls 1 and 2 terminate in interlocking ends for sealing the filling opening. The wall 1 terminates in two arcuate members 30 and 31 defining a circular channel extending between the side walls of the container. The circular channel has an opening thereto facing the wall 2 and through which passes an enlarged circular head 32 formed on one arm 33 of a forked end 34 of the wall 2. The other arm 35 of the forked end 34 is arcuate and engages the upper and outer surface of the arcuate member 31. The head 32 is larger than the normal spacing between the arcuate members 30 and 31 and, therefore, when seated in the circular channel, resists opening of the container. However, upon the application of sufficient pressure, the head 32 is forced out of the circular channel and the container is open for filling.

In another embodiment of the invention, illustrated in Figure 9 of the accompanying drawings, the walls 1 and 2 terminate in interlocking scrolls 36 and 37. When the sides 3 and 4 of the container are pressed immediately below the scrolls 36 and 37, they unroll and extend to the dotted line position indicated by reference numerals 36' and 37' respectively.

In addition to the locking arrangements illustrated in Figures 7-9, the locking arrangement illustrated in Figure 5 may be employed when the filling slit is situated in the end wall 5.

In still another embodiment of the invention illustrated in Figure 10 of the accompanying drawings, a modification of the embodiment of Figure 7 is provided. Two projections 38 and 39 extend inwardly from the walls 1 and 2 respectively into overlapping relation. The projections 38 and 39 are tapered and, consequently, relatively thin at their ends. As a result, the weight of the material in the container is sufficient to press the inner end of the lower projection 38 into contact with the projection 39 when the container is inverted and seals the container below the slit 25. Obviously, the projections 38 and 39 may be utilized with any of the various forms of the invention illustrated in Figures 1-4, 5, 6, 8 and 9.

While I have described and illustrated several specific embodiments of the present invention, it will be clear that other variations of the specific details of construction may be resorted to without departing from the true spirit of the invention as defined in the appended claims.

What I claim is:

1. A one piece, self closing container having at least two openings for receiving and dispensing discrete articles of approximately uniform width, said container molded from resilient material and comprising flat concaved front and back walls, converging side walls and parallel end walls, one of said end walls having a pair of inwardly directed confronting separably contacting shoulders generally coextensive with the length of said end wall, said one end wall and said shoulders having an elongated slit extending therethrough to provide one of said openings in said container and a plurality of ribs disposed on the inner surface of each of said side walls adjacent to and parallel to said one end wall, the spacing between one of said ribs on one of said side walls and an adjacent rib on the other of said walls being approximately equal to the thickness of the discrete articles to be dispensed by said container.

2. The combination in accordance with claim 1 wherein another of said walls is provided with a pair of inwardly directed confronting separably contacting shoulders gen-

5

erally coextensive with its transverse dimension, said another wall and said last mentioned shoulders having an elongated slit extending through said another wall and between said shoulders to provide the second opening into said container.

3. The combination in accordance with claim 1 wherein said openings comprises longitudinally serpentine slits having arcuate intersecting slits at their ends.

4. The combination in accordance with claim 1 wherein the other of said openings comprises a slit positioned in said front wall and parallel to said end walls. 10

5. The combination in accordance with claim 1 wherein the other of said openings comprises a slit positioned in said front wall perpendicular to said end walls.

6. The combination in accordance with claim 1 wherein said other of said openings comprises a slit positioned in the other end wall and parallel to said first mentioned slit. 15

7. The combination in accordance with claim 1 further comprising removable clip means extending from one to the other side of one of said openings for maintaining said one of said openings closed. 20

8. The combination in accordance with claim 1 further

6

comprising a pair of narrow resilient inwardly projecting tapered projections extending from said front and back walls respectively into overlapping relation to seal said container between said openings.

9. The combination in accordance with claim 1 wherein the second opening to the interior of said container is between said front and back walls, and interlocking means carried by said front and back walls for positively closing said opening.

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