June 4, 1940. H. F. RIGERMAN 2,203,271

CONTAINER

Filed July 12, 1938 2 Sheets-Sheet 1

Fig. 1.

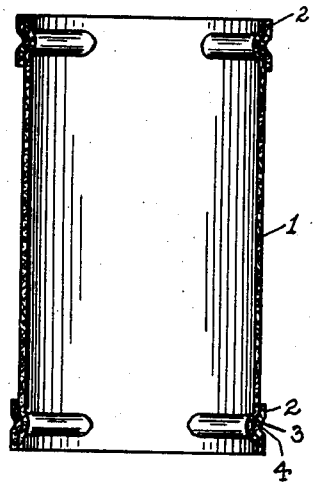


Fig. 2.

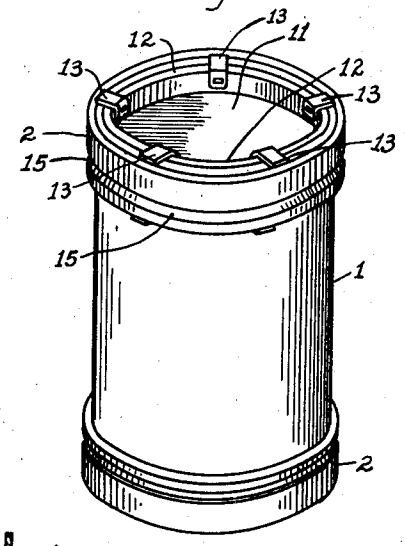


Fig. 3.

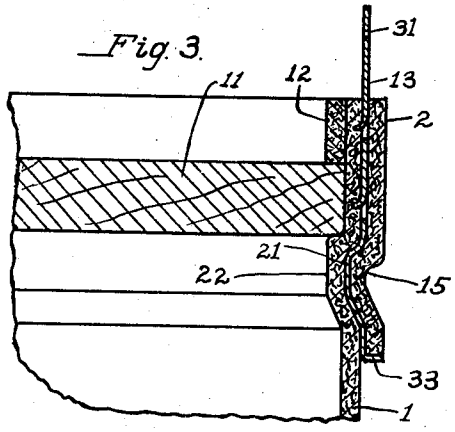


Fig. 5.

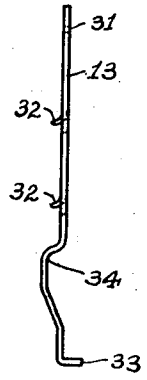


Fig. 4.

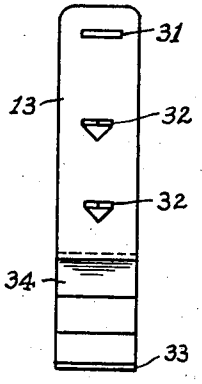
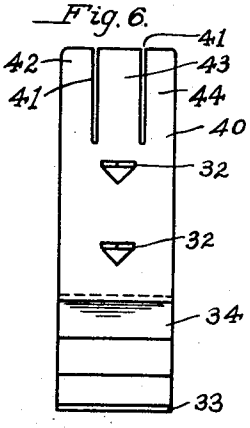


Fig. 6.



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Fig. 7

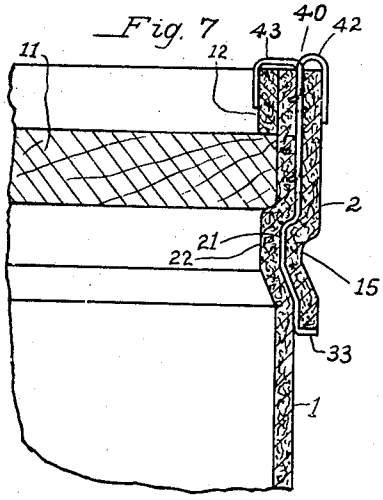


Fig. 9.

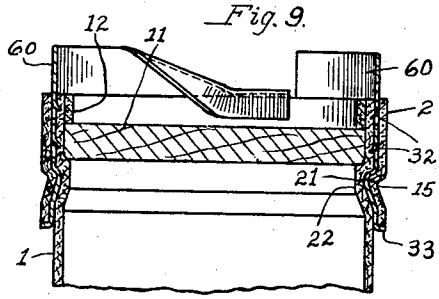


Fig. 10.

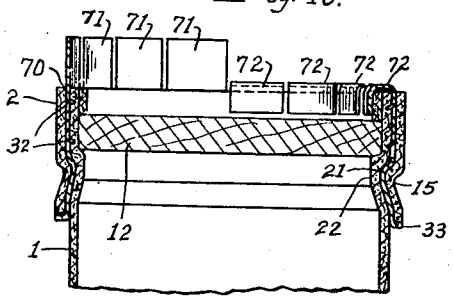


Fig. 8.

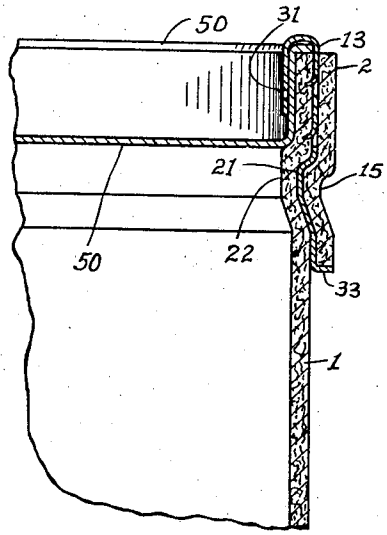
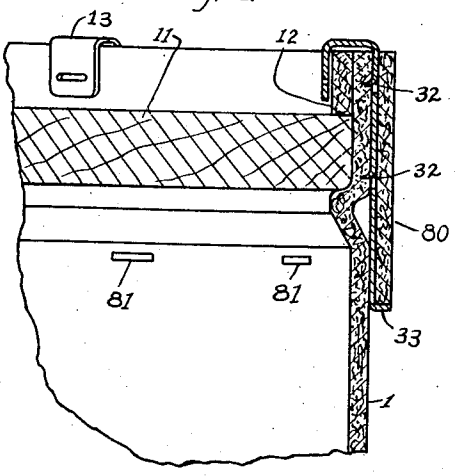


Fig. 11.



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UNITED STATES PATENT OFFICE

2,203,271

CONTAINER

Harry F. Rigerman, Kenmore, N. Y.

Application July 12, 1938, Serial No. 218,817

8 Claims. (Cl. 229—5.7)

This invention relates to a new and improved container, and has for its object the provision of a container that is strong, light in weight, inexpensive to manufacture and simple to use.

The novel features that characterize the present invention are set forth with particularity in the appended claims. The invention itself, however, will be understood best by reference to the following specification when considered in connection with the accompanying drawings, in which:

Figure 1 is a longitudinal section through a container body involving one embodiment of the present invention;

Figure 2 is a perspective view of a container embodying one modification of my invention;

Figure 3 is a fragmentary view, in section, of a portion of a container embodying one modification of my invention;

Figure 4 is a front elevation of a detent or lug utilized in certain modifications of my invention;

Figure 5 is a side elevation of a detent or lug utilized in certain modifications of my invention;

Figure 6 is a front elevation of another detent or lug utilized in other modifications of my invention;

Figure 7 is a fragmentary view, in section, of a portion of a container involving the use of the type of detent or lug shown in Figure 6;

Figure 8 is a fragmentary view, in section, of a portion of a container involving the use of a detent or lug of the type shown in Figure 5;

Figure 9 is a fragmentary view, in section, of a portion of a container involving the use of a detent in the form of a band in place of the detents or lugs shown in Figure 2;

Figure 10 is a fragmentary view, in section, of a portion of a container involving the use of a dentate band or detent in place of the individual detents or lugs shown in Figure 2;

Figure 11 is a fragmentary view, in section, of a portion of a container showing another modification of the type of container shown in Figure 3.

The container body shown in Figure 1 comprises a shell 1, open at the ends, and a reinforcing band 2 at each end thereof that tightly embraces the said shell. As shown, the shell 1 has depressions 3 formed at intervals in the outer surface of the shell and extending in a peripheral direction. Registering with and engaging the depressions 3 in the shell 1 are shown deformations 4 in the bands 2 encircling the shell.

In Figure 2 the complete container is shown comprising a shell 1 with reinforcing bands 2 tightly embracing the shell 1 at the ends thereof; a top closure plate 11, a chime strip 12 in position against said closure plate 11, and the bent-over ends of detents 13 engaging the chime strip 12 and holding it in place. Although not so shown in Figure 2, the detents 13 pass between the shell 1 and the reinforcing bands 2, and are held against longitudinal movement with respect to the shell 1 by their engagement with the opposite side of the peripheral deformation 15 in the band 2.

A better understanding of the structure shown in Figure 2 may be had by reference to Figure 3, which shows a portion of the container in section. In this figure, the shell 1 is shown with a peripheral depression 21 in its outer surface and a corresponding bulge 22 on its inner surface. The top closure plate 11 is shown resting on the bulge 22 and held in place by the chime strip 12. In this figure, the detent 13 is straight at its upper end and not bent over to engage the chime strip 12 as shown in Figure 2. The detent 13 is shown positioned between the shell 1 and the reinforcing band 2, and extending upward beyond the band 2 and bent over at the lower end of the band.

The detent 13 is further illustrated in Figure 4 and Figure 5. As shown there, it comprises a strip of relatively thin bendable metal having the shape shown in Figure 3. It has a perforation 31 located near the top to receive a tool, such as a screw-driver, to assist in lifting up the detent after it has been bent over to hold the lid or closure member in place. It comprises also a plurality of tongues 32 punched out of metal to penetrate the shell 1 and serve as means for positioning it on the body or shell of the container prior to the application thereto of the reinforcing band 2 shown in Figure 1, Figure 2 and Figure 3, and a bent-over foot 33 to engage the reinforcing band 2 and serve as additional means for preventing longitudinal movement of the detent with respect to the shell. The groove 34 engages with the depression 21 in the shell 1 and serves to prevent the detent from moving longitudinally with respect to the shell.

The detent 40 shown in Figure 6 is the same as that shown in Figure 4 and Figure 5 excepting that it is provided at its upper end with a plurality of slits 41 for a purpose brought out later in this specification, and that the perforation 31 of Figure 4 is omitted. The slits 41 divide the upper portion of the detent 40 into a plurality of strips 42, 43 and 44.

In Figure 7, which shows a fragmentary view in section of a portion of a container of the pres-

ent invention, and of the same character as that shown in Figure 3, the detent 40 is the kind illustrated in Figure 6, and has a strip 42 bent over and down on the outside of the container, and a strip 43 bent over and down to engage the chime strip 12. The strip 44 of Figure 6 is behind the strip 42, in Figure 7, and therefore cannot be seen.

The modification shown in Figure 8 is the same as that shown in Figure 3, excepting that the wooden closure member 11 of Figure 3 is replaced by a pressed metal closure member 50. In this figure the detent 13 is shown turned down against the closure member 50.

Another modification of the present invention is illustrated in Figure 9. Here the detent 60 is shown partially turned down against the chime strip 12 and partially straight. The detent 60 is in the form of a band of thin bendable metal, the length of the band being approximately the same as the outer circumference of the shell 1.

The detent 70 of Figure 10 is a modification of the detent 60 shown in Figure 9, in that the detent 70 is dentated to form individual lugs or detents 71 and 72 instead of being continuous as shown in Figure 9. The detents or lugs 71 are shown upright while the detents or lugs 72 are shown bent down to engage the chime strip 12.

The modification of the container of the present invention illustrated in Figure 11 is of the same character as that illustrated in Figure 3 excepting that the reinforcing band 80 of Figure 11 is held against longitudinal movement with respect to the shell 1 by means of staples 81 or other well known fastening means.

Throughout the above the description of the mechanical features of various modifications of the container of the present invention, the term "detent" has been used in reference to bendable means located between the shell and the reinforcing band for fastening the end closure means or head in place. Inasmuch as the head fastening means herein illustrated and described and referred to as "detents" are not the only modifications of such means that can be utilized without departing from the scope of the present invention, it is desired to have the term "detent" understood to mean any means located between the shell and the reinforcing band that can be bent over and down to serve as a fastener for the end closure member.

One method by which containers of the present invention can be made is as follows. The shell 1 is first formed by tightly winding a continuous strip of paper onto a mandrel of suitable size until a shell of the desired thickness is obtained. At least the beginning portion and the end portion of the paper should be attached to the surfaces of the paper contiguous thereto by a suitable adhesive, such as glue, and usually the entire strip is coated on one side with glue as it is being wound on the mandrel. By this method a substantially seamless shell is made.

If the container body is to be of the kind illustrated in Figure 1 the reinforcing bands 2 are applied in the same manner, that is, a continuous strip of paper is tightly wound onto the shell 1 at each end until the desired thickness is obtained. Here again, at least the beginning portion and the end portion, and preferably the entire strip, should be attached to the surfaces of the paper contiguous thereto by a suitable adhesive. The strip of paper forming these bands need not be adhesively attached to the shell 1 because the tight winding of the reinforcing bands onto the shell, and the interlocking of the reinforcing bands with the shell by means of the peripherally extending depressions 3 formed in the shell and the peripherally extending deformations 4 found in the bands, serve to prevent the bands from moving with respect to the shell.

The depressions 3 of the shell and the deformations 4 of the bands are formed at the same time by subjecting the band and the shell to pressure by means of suitable dies. The paper being wet from the adhesive applied as it was wound on the mandrel is in a pliable condition and will take the impression of the dies.

If the container body is to be equipped with a detent of the kind illustrated in Figure 9 or in Figure 10 or is to be equipped with detents of the kinds illustrated in Figure 2, Figure 3, Figure 4, Figure 5, Figure 6, Figure 7, Figure 8 or Figure 11, the blanks for the particular type of detent or detents to be used are positioned on the cylinder 1 before the bands 2 are wound thereon. The detents illustrated in the various drawings are shown to be provided with punched-out tongues 32, and these can be utilized in positioning the detents on the shell 1 prior to the winding thereon of the bands 2 by driving them into the shell 1. With the chosen detent or detents positioned on the shell 1 the reinforcing bands are wound onto the shell 1 in the manner described above. Then the depressions in the shell and the deformations in the reinforcing bands are formed to interlock the bands with the shell.

In the modifications shown in the drawings, with the exception of Figure 1, the deformation 15 is shown to encircle the band. Likewise the depression 21 in the shell encircles that member. These respectively interlocking depressions and deformations are formed at the same time, while the paper of the shell and of the bands are still pliable, by mounting the shell on a suitable mandrel having located therein a groove of the proper size and shape to produce the desired size and shape of depression in the shell and applying pressure to the band, directly over the groove in the mandrel, by means of a suitable tool while the mandrel, the shell and the band are rotated. The pressure applied to the reinforcing band in the manner just described causes the shell, which is in a pliable condition, the detent and the reinforcing band, which also is pliable, to become permanently interlocked so that neither the detent nor the band can move longitudinally with respect to the shell. As a matter of fact, the method herein described causes the shell, the detent and the band to be so united that, to all intents and purposes, they form a unitary structure.

The term "blanks" was used in the foregoing paragraph in connection with the particular type of detent to be used in making a container of the present invention. This term was used to indicate that the part that is positioned on the shell prior to the application of the reinforcing ring is not, when the foregoing method of fabrication is employed, in the form illustrated in the various drawings because it does not have the groove 34 formed therein until the shell, the detent and the reinforcing band have been interlocked by the application of pressure as described.

It should be understood that the foregoing method of fabrication is intended to be by way of illustration because various modifications of the method can be employed without departing from the scope of the invention. For example, the depression 21 in the shell can be formed prior

to the positioning of the detent or detents, before it or they are positioned on the shell.

It should be understood also that while the foregoing method mentioned paper as the material of which the shell and reinforcing bands were made, other materials or combinations of materials can be utilized without departing from the scope of the present invention. For example, the shell can be made of paper, as described above, and the bands can be made of wood or metal, or the shell and band both can be made of metal. Another material that can be used for the shell or band or both is that commonly known as "vulcanized fibre." As a matter of fact, the present invention is not limited with respect to the materials utilized because any material that is suitable for containers made by other methods or of other types of construction can be utilized in making a container of the persent invention.

The modification shown in Figure 11 comprises staples 81, or other suitable equivalents, for holding the reinforcing band to the shell because the band is not interlocked with the shell in the manner described above.

One outstanding advantage of a container constructed in accordance with the present invention resides in its strength and freedom from destructive distortion. It is well known in the art that the ends of a container are the parts that are most frequently subjected to abuse and they usually are the least capable of withstanding such abuse. If a cylindrical container is dropped so that it lands on one of its edges it is very likely that the head (or bottom) will fail to keep the container closed and the contents thereof will be spilled out. The shells illustrated and described in the present specification are not subject to such weakness. The end closure plates of the containers of the present invention are not held by nails or other similar means driven through the shell and into the end closure plate, as is the case in many of the containers heretofore known. The means shown and described in this specification for closing the ends of the container provides a resilient construction that is capable of withstanding great abuse without giving way. Furthermore, the reinforced ends are stronger than the rest of the body and therefore can stand more abuse. The shell and band or bands of the present invention, being substantially integral, form a strong, undistortable container body.

Another outstanding advantage of the containers of the present invention is that they are inexpensive to make. One reason for their low cost of manufacture lies in their simplicity. They require no complicated devices for securing the end closure plates to the shell, nor do they require extensive labor in their assembly. With the exception of the manufacture of the closure plates and the manufacture of the detents, the manufacture of the containers of the present invention is a winding operation and that has been brought to a high state of perfection. The end closure plates, being of simple design, can be made inexpensively, and likewise the detents, which can be made by simple operations, such as stamping, are inexpensive to make. There being no nails, rivets, staples or the like used in fastening the head (or bottom) to the shell, the labor cost of manufacture is reduced to a minimum.

Another outstanding advantage of the present invention resides in the ease with which the head (or bottom) can be secured in place and removed after having been secured in place. As shown in the drawings, the head is set on the bulge 22 formed on the inside of the container and a chime strip is then placed on top of the head and in contact with the inside wall of the shell. Then the projecting ends of the detents are bent over the end of the shell and down intimate contact with the chime strip. This can be done by hand because these detents can be made of easily bendable material and still provide ample locking strength to keep the head (or bottom) in place even though the container is heavily loaded and is dropped on its edge.

When the detent shown in Figure 9 or that shown in Figure 10 is used it can be made of still more readily bendable material than that required for the detents shown in the other drawings. In heading up a container of the type shown in Figure 9 the head and chime strip are put in place and then the detent is turned over an down by starting at one end of its projecting portion and proceeding with the turning over and down until the other end of the strip is reached.

In opening a container that has been closed in the manner by which the containers of the present invention are closed, one merely straightens the detent or detents and removes the head and chime strip.

Another advantage of the container of the present invention is that it can be repeatedly opened and closed up in the simple manner described above. No tools are really required for either operation, but a simple screw driver can be used if desired.

Other advantages will be apparent to those skilled in the art of making containers and to the users of containers, but the foregoing are of such moment that further enumeration of advantages is not considered necessary to show the value of the present invention.

Having thus described my invention, I claim:

1. A container comprising an open-ended shell with an endless reinforcing band adjacent an end thereof and tightly embracing the shell, and a plurality of bendable detents at intervals between said shell and said band and projecting beyond the end of said shell, the said reinforcing band and said detents being held against longitudinal movement with respect to said shell by a deformation in the band and in each detent which register with and engage a depression in the outer surface of said shell.

2. A container comprising an open-ended shell with an endless reinforcing band adjacent an end thereof and tightly embracing the shell, and a plurality of bendable detents at intervals between said shell and said band and projecting beyond the end of said shell, the said reinforcing band and said detents being held against longitudinal movement with respect to said shell by the interlocking engagement of a deformation in the band and in each of the said detents with a peripheral depression in the outer surface of said shell.

3. A container comprising an open-ended shell with an endless reinforcing band adjacent an end thereof and tightly embracing the shell, and a plurality of bendable detents at intervals between said shell and said band and projecting beyond the end of said shell, the said reinforcing band and said detents being held against longitudinal movement with respect to said shell by the interlocking engagement of a peripheral deformation in the band with a deformation in

each of the detents and with a peripheral depression in the outer surface of said shell.

4. A container comprising an open-ended shell with an endless reinforcing band adjacent an end thereof and tightly embracing the shell, and a plurality of bendable detents at intervals between said shell and said band and projecting beyond the end of said shell, the said reinforcing band and said detents being held against longitudinal movement with respect to said shell by the interlocking engagement of a peripheral deformation in the band with a peripheral deformation in said shell which forms a groove in the outer surface and a bulge on the inner surface of said shell.

5. A container comprising an open-ended shell with an endless reinforcing band adjacent an end thereof and tightly embracing the shell, and a plurality of bendable detents at intervals between said shell and said band and projecting beyond the end of said shell, the said reinforcing band and said detents being held against longitudinal movement with respect to said shell by the interlocking engagement of a peripheral deformation in the band with a peripheral deformation in said shell which forms a groove in the outer surface and a bulge on the inner surface of said shell, and a closure plate for the end of said shell which rests on the bulge on the inner surface of said shell and is held in place by the said bendable detents.

6. A container comprising an open-ended shell with an endless reinforcing band adjacent an end thereof and tightly embracing the shell, and a plurality of bendable detents at intervals between said shell and said band and projecting beyond the end of said shell, the said reinforcing band and said detents being held against longitudinal movement with respect to said shell by the interlocking engagement of a peripheral deformation in the band with a peripheral deformation in said shell which forms a groove in the outer surface and a bulge on the inner surface of said shell, and a closure plate for the end of said shell which rests on the bulge on the inner surface of said shell and is held in place by a chime strip which is held in place by the said bendable detents.

7. A container comprising an open-ended shell with an endless reinforcing band adjacent an end thereof and tightly embracing the shell, a bendable detent located between said shell and said band and projecting beyond the end of said shell, the said reinforcing band and said detent being held against longitudinal movement with respect to said shell by a deformation in the band and in said detent which register with and engage a depression in the outer surface of said shell.

8. A container comprising an open-ended shell with an endless reinforcing band adjacent an end thereof and tightly embracing the shell, a plurality of bendable detents located between said shell and said band and projecting beyond the end of said shell, the said reinforcing band and said detents being held against longitudinal movement with respect to said shell by a deformation in the band and in each of said detents which register with and engage a depression in the outer surface of said shell and a closure plate for the end of said shell which rests on a bulge on the inner surface of said shell and is held in place by said bendable detents.

HARRY F. RIGERMAN.