

Dec. 24, 1968

A. GITTLER
CONTAINER

3,417,894

Filed June 8, 1967

4 Sheets-Sheet 1

FIG. 1

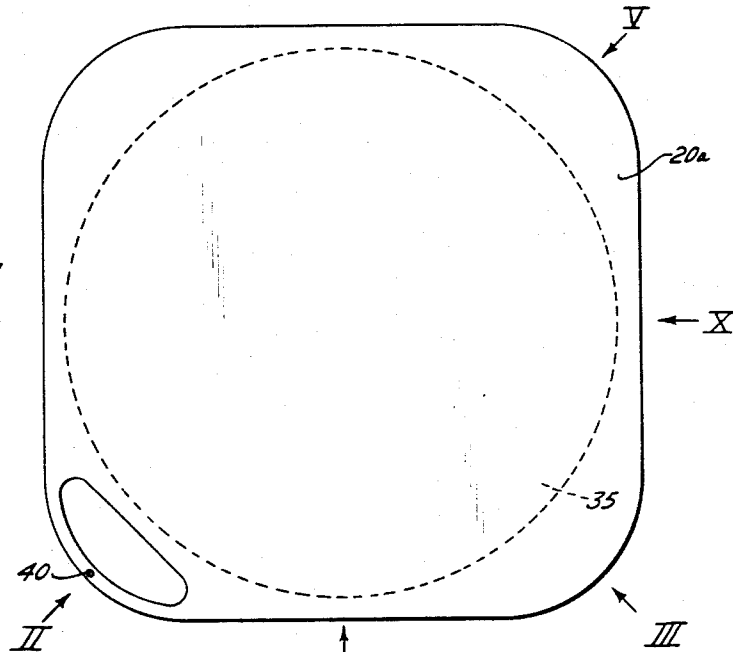


FIG. 2

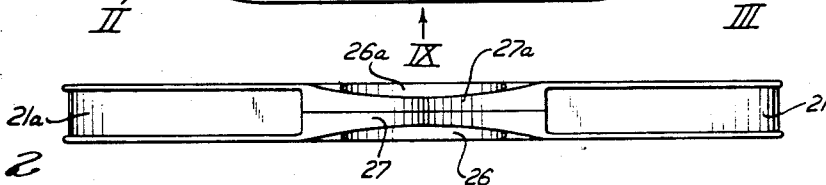


FIG. 3

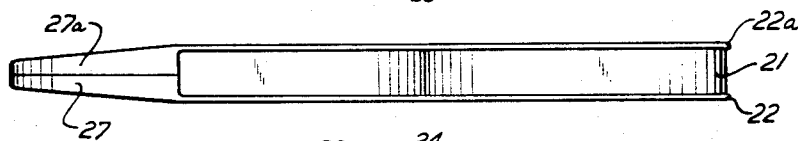
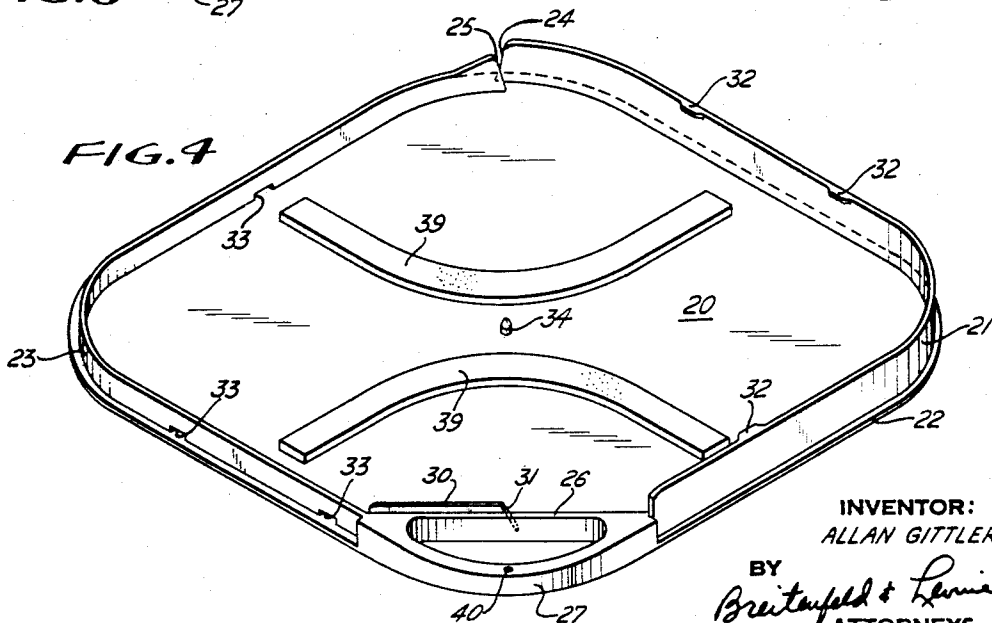


FIG. 4



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FIG. 5

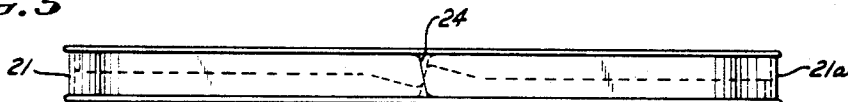


FIG. 6

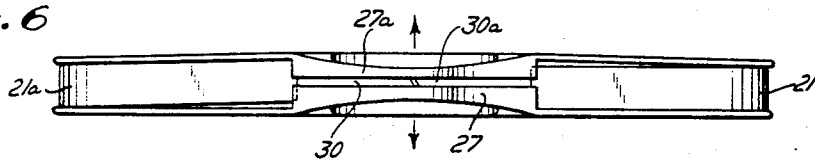


FIG. 7

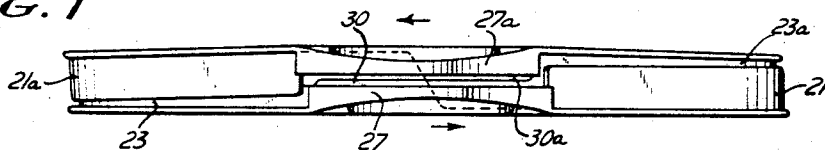


FIG. 8

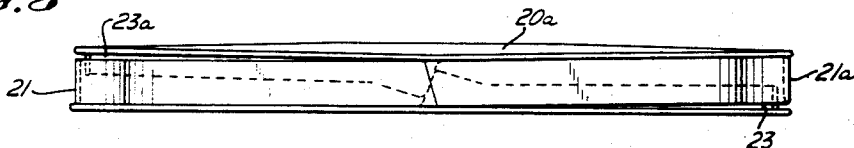


FIG. 9

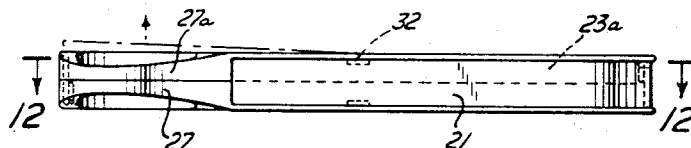
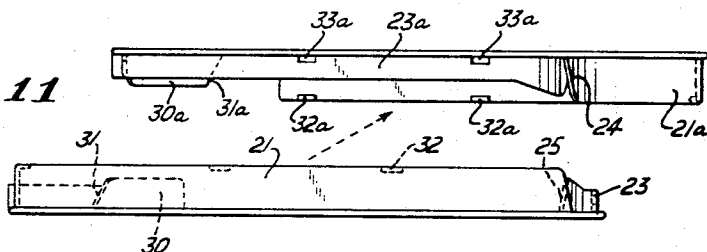


FIG. 10



FIG. 11



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FIG. 14

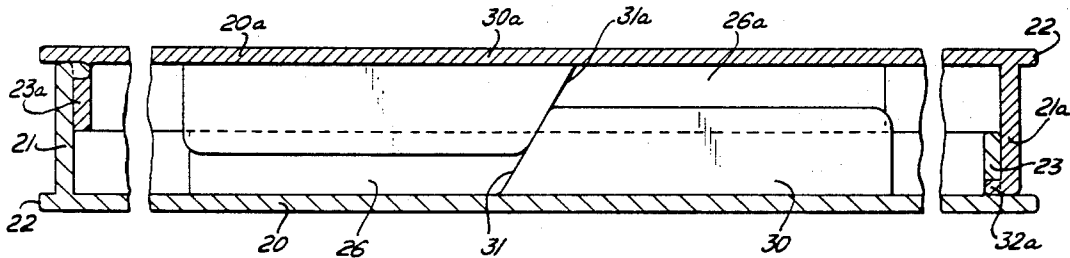


FIG. 15

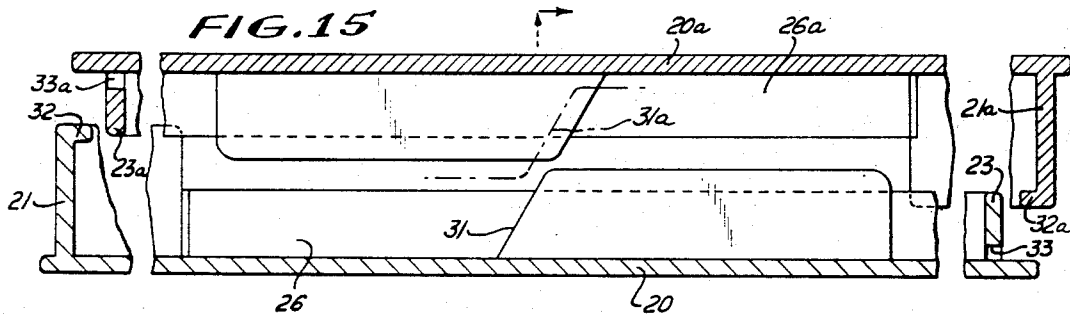


FIG. 16

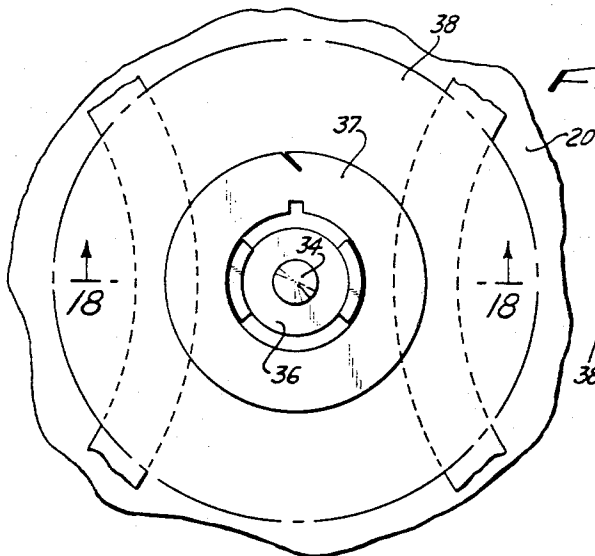
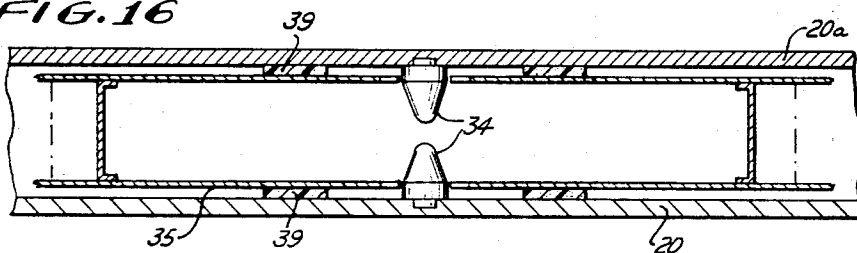
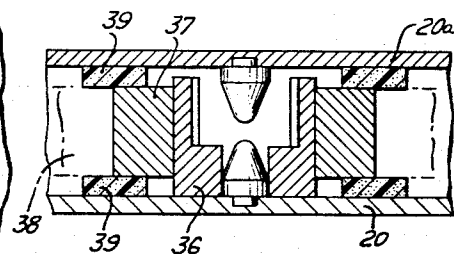


FIG. 17

FIG. 18



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10 Claims. (Cl. 220-4)

ABSTRACT OF THE DISCLOSURE

Two cooperable parts of container may be identical, and each includes a main wall and a rim. Latter carry locking means which cooperate to prevent separation of parts in a direction perpendicular to plane of main wall. Latching plates prevent lateral movement of parts, and grips permit separation of latching plates to permit disengagement of locking means by relative lateral movement of container parts.

This invention relates generally to receptacles, and more particularly to containers especially adapted to hold reels of motion picture film or the like. However, the container is not limited to use with any specific contents but obviously has a wide variety of potential uses.

It is a general object of the invention to provide a container which is staunch, and locks closed firmly to prevent accidental opening, but is relatively inexpensive to manufacture.

It is another object of the invention to provide such a container comprising two cooperable parts, the means for locking the parts together being formed integrally on the parts.

It is a further object of the invention to provide such a container which may be formed of molded plastic, the two container parts being identical so that the entire container may be produced from a single mold.

The present container is composed of two identical tray-like parts, each having a flat main wall, and a relatively short substantially peripheral rim projecting perpendicularly from one face of the main wall. The rims carry integral, cooperable locking means, serving to prevent relative movement between the parts in a direction perpendicular to the main walls, when the parts are interfitted. A portion of the rim of each container part is recessed, i.e., spaced closer to the center of the main wall than the remaining portion of the rim. Consequently, when the two parts are interfitted, the rim of one part does not extend completely around the rim of the other part, as is true of most containers of this type. Instead, each rim extends along the outer surface of the other rim for a portion of its length, and along the inner portion of the other for the balance of its length. As a result, the rims permit lateral movement between the parts, i.e., movement in a direction parallel to the main walls of the container parts. Such movement is not prevented by the locking means, and in fact such movement serves to release the locking means.

Lateral movement is, however, prevented by a latch plate carried by each container part, the latch plates having opposed contacting edges when the parts are interfitted. The opposed edges are arranged at an acute angle with respect to the main walls, and grips are provided for pulling the plates apart in a direction perpendicular to the main walls. Due to the angle of the opposed edges, this movement serves to space the edges apart, thereby permitting relative lateral movement between the container parts and release of the locking means. However, if the grips are not positively pulled apart, the container will not open.

Additional objects and advantages of the invention

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will be apparent from the following description in which reference is made to the accompanying drawings.

In the drawings:

FIG. 1 is a face view of a closed container according to this invention;

FIG. 2 is an edge view of the container looking in the direction of the arrow II in FIG. 1;

FIG. 3 is an edge view of the container looking in the direction of the arrow III in FIG. 1;

FIG. 4 is an inside perspective view of one of the two container parts;

FIG. 5 is an edge view of the container looking in the direction of the arrow V in FIG. 1;

FIG. 6 is a view similar to FIG. 2, showing the first stage of opening the container;

FIG. 7 is a view similar to FIG. 6, showing a subsequent stage of opening;

FIG. 8 is a view similar to FIG. 5 showing the container in the stage of opening illustrated in FIG. 7;

FIG. 9 and 10 are edge views of the container looking in the direction of the arrows IX and X, respectively, in FIG. 1;

FIG. 11 is a view similar to FIG. 10 showing the two container parts separated;

FIG. 12 is a cross-sectional view taken on line 12-12 of FIG. 9;

FIG. 13 is a view similar to FIG. 12 showing the two box parts in a final stage of separation.

FIG. 14 is a cross-sectional view taken on line 14-14 of FIG. 12;

FIG. 15 is a view similar to FIG. 14 showing the latching plates separated;

FIG. 16 is a fragmentary cross-sectional view taken on line 16-16 of FIG. 12;

FIG. 17 is a fragmentary face view of the container interior; and

FIG. 18 is a cross-sectional view on line 18-18 of FIG. 17.

The container chosen to illustrate this invention comprises two tray-like sections identical to each other and formed of any suitable almost rigid material, such as a molded plastic. Polystyrene and polypropylene have been found suitable for this purpose.

The structure of the container parts may be seen most clearly in FIG. 4, wherein one of them is shown. The reference numerals used in FIG. 4 will be applied to the lower container part in those figures showing both container parts. The same reference numerals, with the letter *a* appended to them, will be applied to the corresponding portions of the upper container part, as viewed in the drawings. The container part comprises a flat main wall 20 and a rim projecting perpendicularly from one face of the main wall. The wall 20 is preferably substantially square in shape to facilitate standing on edge, and it has rounded corners, as shown.

The rim is composed of two distinct portions. Rim portion 21 extends for almost one half the peripheral length of the main wall 20 and is slightly spaced inward from the edge of the main wall, to form a bead 22 on the latter. Rim portion 23 also extends for almost one half the peripheral length of the main wall, and is recessed from the edge of the main wall a distance greater than the spacing of the rim portion 21 from the edge of the main wall 20. The additional inward spacing of the rim portion 23 is equal to the thickness of the rim portion 21, so that when the rim portion 21 of one container part is arranged adjacent to the outer surface of the rim portion 23 of the other part, as will be described below, the rim portion 21 will be spaced the same distance from the edges of the main walls 20 of both container parts. In the present example, the height of rim portion 23 is shown as about one-half

that of rim portion 21. However, this is not essential, and the height of both rim portions could be the same.

The rim, i.e., portions 21 and 23, is discontinuous. Thus, at one corner of the main wall 20, the rim portions terminate in overlapping edges 24 and 25, respectively, (FIGS. 4, 5, and 11) arranged at oppositely facing acute angles with respect to the plane of the wall 20. The edges 24 and 25 define a "break" in the rim permitting the rims of the two container parts to be interfitted. This break need not necessarily be provided as shown in the drawings; all that is required is a separation to permit interengagement of the rims.

Near the corner of each container part diametrically opposite the edges 24 and 25, the rim portions 21 and 23 terminate at the ends of a wall 26 (FIGS. 4 and 12-15) extending across the corner of the main wall 20. Extending outwardly from the wall 26 is a grip or handle portion 27 having a curvature identical to the curvature of the other corners of the container. The wall 26 and handle 27 surround a hand hole through which the fingers can be inserted when the container is to be carried.

Adjacent to the inner face of the wall 26 is a latch plate 30 (FIGS. 4, 7, 11, 14, and 15), the plate 30 extending from one end of the wall 26 to about its center. The end edge 31 of the latch plate, located at the center of the wall 26, is oriented at an acute angle to the plane of the wall 20. The purpose of the latch plate will be discussed below.

Adjacent to its free edge, the rim portion 21 carries a number of inwardly projecting locking tongues or detents 32 (FIGS. 4, 11, and 12-15). Each tongue 32 constitutes a ledge, one side of which faces the main wall 20. Along the edge at which it joins the wall 20, the rim portion 23 is formed with openings 33 at locations complementary to the locations of the tongues 32. The upper wall of each opening is also a ledge facing the main wall 20. When the container parts are interfitted, the tongues 32 of one part are accommodated within the openings 33 of the other part. The opposed relationship of these ledges prevents separation of the container parts in a direction perpendicular to the main walls 10.

It should be pointed out that any ledge-defining means capable of achieving the locking function produced by the detents 32 and 33 may be employed. Thus, for example, the tongues 32 could be replaced by an inwardly projecting ledge extending continuously along the upper edge of the rim portion 21 for the entire length of the latter. In such a case, the openings 33 would be replaced by an outwardly projecting ledge extending continuously along the upper edge of the rim portion 23 for the entire length of the latter.

If the container is to be used for holding motion picture film or the like, the main wall 20 is provided, at its center, with an upstanding spindle 34, having a cylindrical base portion and a conical tip. The diameter of the base portion may be the same as a standard 35 mm. rewind spindle, so that spindle 34 can accommodate a standard motion picture reel 35 (FIGS. 1, 12, 13 and 16). Furthermore, an adapter 36 (FIGS. 17 and 18), having a larger external diameter than the spindle 34, may be removably mounted on the spindle so as to accommodate a core 37 of the type upon which motion picture film 38 is usually wound. The adapter can also accommodate a tight wound roll of film having no core. Also secured to the main wall 20, such as by a suitable adhesive, are strips of a cushion material 39, such as a foamed plastic.

When the container is closed, as shown in FIGS. 1-3, 5, 9, 10, 12, and 14, the tongues 32 of each part extend into the openings 33 of the other part, as shown in FIGS. 12 and 14, and prevent separation of the container parts in a direction perpendicular to the main wall 20. In addition, it will be seen that the rim portion 21 of the lower container part is outside the rim portion 23a of the upper part, but the rim portion 23 is inside the rim portion

21a. Thus, the interengagement of the locking means 32, 33, and of the rim portions 21, 23 of the container parts does not prevent relative lateral movement between the parts, e.g., movement of the upper part toward the left and lower part toward the right in FIG. 2. The "lateral" movement referred to is, more precisely, relative rotation of the container parts in opposite directions about a pivot axis defined by the engagement of the edges 24, 24a, 25, and 25a. When the container is closed, this lateral movement is prevented by contact between the edges 31 and 31a of the latch plates 30 and 30a (see FIG. 14), the latch plates being located in the same plane.

To open the container, the grip or handle portions 27 and 27a are first pulled apart in the direction of the arrows in FIG. 6. A limited movement of this nature is permitted by the inherent resilience of the material from which the container parts are made. This causes the latch plates 30 and 30a to be moved with relation to each other in the direction of the arrows in FIG. 6. Due to the angled orientation of the edges 31 and 31a, a lateral spacing results between these edges even though the container parts have not yet been moved laterally with respect to each other. This lateral spacing is seen in FIG. 6, and is illustrated by the broken line position of edge 31a in FIG. 15. Once the spacing between the edges of the latch plates is present, the container parts are permitted to move laterally in the direction of the arrows in FIG. 7, whereupon the latch plates are allowed to pass each other, as indicated in FIG. 7 and in full lines in FIG. 15. The conical tops of the spindles 34 permit the spindles to clear the reel 35 as the container parts move, so that the spindles do not interfere with the opening of the container. In other words, the angle of the conical portion of each spindle surface provides constant clearance between the spindle and reel as the container parts are moved apart. Continued lateral movement between the container parts causes the tongues 32 to move out of the openings 33 (FIG. 13), thus permitting complete separation of the container parts. To reclose the container, the two parts are held in registry and pushed together. The inherent resilience of the material allows the tongues 32 to slide past the rim portion 23 until they snap into openings 33.

If desired, the grips 27 may be shaped so that, instead of meeting along a straight line as shown in the drawings, each one presents a tooth projecting toward a correspondingly shaped depression in the other. Each tooth and depression engagement may be such as to prevent lateral movement between the grips, thereby aiding the latch plates 31 in this function, without interfering with movement of the grips away from each other. Furthermore, such teeth may help to locate the grips 27 in proper relative position for closing the container.

It will be appreciated that the present invention provides a container which will not open accidentally, because a positive force is needed to pull the grips 27 and 27a apart before disengagement of the parts can proceed. Furthermore, except for the cushion material 39, each entire container part can be integrally formed of molded plastic. In addition, the beads 22 protect the rims of the container, offer a recessed area around the container within which an identification tape can be secured, and provide a support for the container when it is stood on edge. Also, the grips 27 and 27a are furnished with holes 40, which are aligned when the container is closed, through which the wire of a conventional security seal may pass.

The invention has been shown and described in preferred form only, and by way of example, and many variations may be made in the invention which will still be comprised within its spirit. It is understood, therefore, that the invention is not limited to any specific form or embodiment except insofar as such limitations are included in the appended claims.

What is claimed is:

1. A container composed of two cooperable parts, each part comprising a main wall and a rim projecting perpendicularly from one face of said main wall, each rim having an inner portion arranged closer to the center of its respective main wall than an outer portion of said rim, so that when said container parts are interfitted said inner rim portion of each container is arranged inside the outer rim portion of the other container part, each of said rim portions extending no more than about one-half the peripheral distance around its respective main wall, locking means carried by the rim of each container part adapted to interengage with cooperable locking means carried by the rim of the other container part, interengagement of said locking means preventing separation of said container parts by relative movement in a direction perpendicular to said main walls, said locking means being separable by relative lateral movement between said container parts, a member carried by each of said container parts, said members presenting opposed edges engaging each other when the container parts are interfitted to prevent relative lateral movement between said container parts, said members being the only means within the container for preventing such lateral movement, and means for shifting said opposed edges out of interengagement, whereby said container parts can when desired be moved laterally with respect to each other to disengage said locking means and permit separation of said container parts.
2. A container as defined in claim 1 wherein said two cooperable parts are identical to each other.
3. A container as defined in claim 1 wherein said rim is at least partially discontinuous at the extremities of said inner and outer portions to permit interengagement of said container parts.
4. A container as defined in claim 1 wherein said locking means include detents carried by said rim, each detent presenting a ledge facing the main wall of its respective container part, the ledges of each container part being arranged in face-to-face engagement with the ledges of the other container part when the two parts are interfitted.
5. A container as defined in claim 4 wherein said detents comprise individual tongues carried by one of said rim portions and projecting toward the other of the said rim portions when said container parts are interfitted, and depressions in said other of said rim portions adapted to accommodate said tongues.
6. A container as defined in claim 5 wherein said tongues are arranged along the free edge of said outer rim portion, said tongues projecting inwardly, and said depressions are arranged in said inner rim portions adjacent to said horizontal wall.
7. A container as defined in claim 4 wherein said members include a vertical plate carried by each of said container parts, said plates being in the same plane and in edge-to-edge contact when said container parts are interfitted, thereby preventing movement of said rims away from each other in a direction parallel to said main walls.
8. A container as defined in claim 1 wherein each of

said members is integral with its respective container part.

9. A container as defined in claim 1 wherein at least one of said opposed edges is arranged at an angle less than 90° to the main wall of its respective container part, and said container parts are formed of resilient material, whereby when the portions of said container parts carrying said members are pulled apart in a direction perpendicular to the planes of said main walls said plates move with respect to each other thereby leaving a spacing between their opposed edges as a result of which the rims of said container parts can be moved laterally away from each other to release said locking means.

10. A container composed of two cooperable parts, each part comprising a main wall and a rim projecting perpendicularly from one face of said main wall, each rim having an inner portion arranged closer to the center of its respective main wall than an outer portion of said rim, so that when said container parts are interfitted said inner rim portion of each container is arranged inside the outer rim portion of the other container part, locking detents carried by the rim of each container part, each detent presenting a ledge facing the main wall of its respective container part, the ledges of each container part being arranged in face-to-face engagement with the ledges of the other container part when the two parts are interfitted, so as to prevent separation of said container parts by relative movement in a direction perpendicular to said main walls but allowing separation of said engaged detents by relative lateral movement between said container parts, a vertical plate carried by each of said container parts, said plates being in the same plane and in edge-to-edge contact when said container parts are interfitted, thereby preventing relative lateral movement in a direction parallel to said main walls between said container parts, the contacting edge of at least one of said plates being arranged at an angle less than 90° to the main wall of its respective container part, and grip portions adjacent to said plates adapted to be pulled apart in a direction perpendicular to the planes of said main walls, whereby said plates move with respect to each other in the same direction thereby leaving a spacing between their contacting edges as a result of which the rims of said container parts can be moved laterally away from each other to release said interengaged detents.

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GEORGE E. LOWRANCE, *Primary Examiner*.

U.S. Cl. X.R.

206—52; 220—60