

Sept. 15, 1953

P. E. BRUSIENSKI

2,652,169

HAND PRESSURE RELEASED CONTAINER OPENING

Filed Feb. 24, 1948

*Fig. 1.*

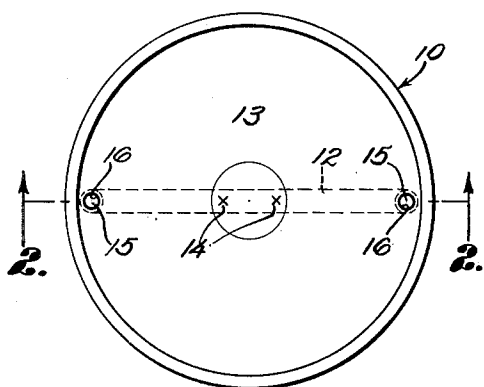


*Fig. 6.*

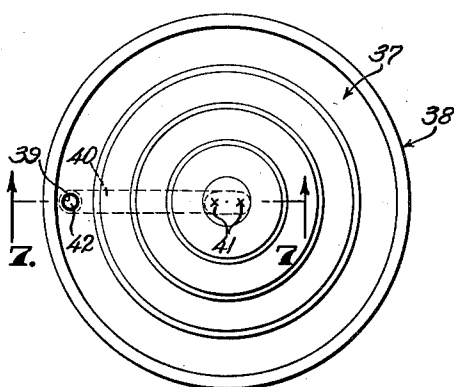


*Fig. 2.*

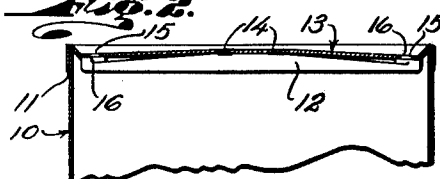


*Fig. 7.*

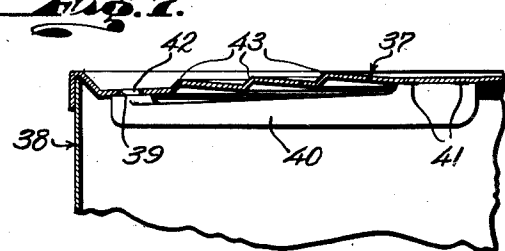


*Fig. 3.*

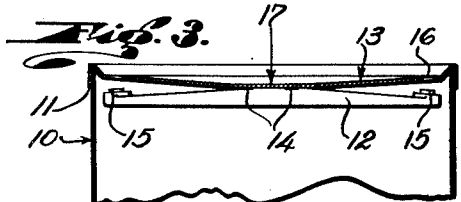


*Fig. 8.*

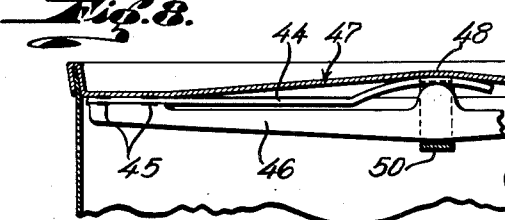


*Fig. 4.*

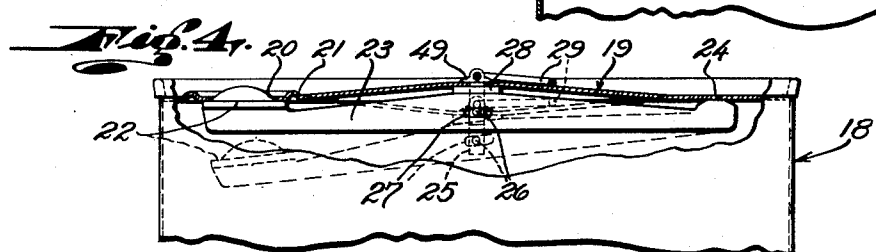
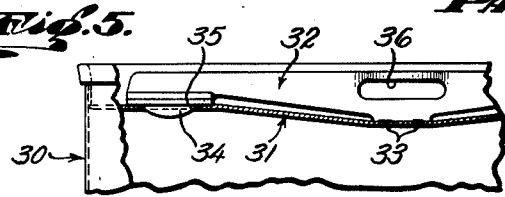


*Fig. 5.*



**PAUL E. BRUSIENSKI**  
INVENTOR.

BY *H. Kalinowski*

ATTORNEY

## UNITED STATES PATENT OFFICE

2,652,169

HAND PRESSURE RELEASED CONTAINER  
OPENING

Paul E. Brusienski, Ramona, Calif.

Application February 24, 1948, Serial No. 10,296

5 Claims. (Cl. 220-24)

1

This invention has to do with improved fluid tight container closures designed to permit the opening of sealed containers by mere deflection of the cover.

It is customary to remove canned liquid, powders, and other pourable products from their containers by first punching holes in the lid and then pouring the contents from these holes. This process consumes considerable time and often results in unnecessary spilling due to the irregularity of the openings usually made by punching. A jagged hole often causes an appreciable percentage of the liquid to spill downwardly along the outer can surface and be lost, whereas a regular hole would have made possible accurate pouring.

The present invention obviates the above difficulties by providing a lid in which the desired number of previously sealed holes are opened by mere manual deflection of the lid. No key, tool, or mechanical device of any kind is required to thus release the contents for use. To attain such a result, the cover is made of a flexible material, such as thin metal, plastic, rubberized material or the like, and it is the relatively small amount of deflection made possible by this flexibility which is employed to open the lid outlets.

There may be one, two, or more openings in the cover, all of which are normally closed by valve means until it is desired to open the can and use its contents. These openings are preferably situated near the periphery of the container cover, in order that they may be only slightly movable upon deflection of the central portion of the cover. The valve or valves may be carried by an operating bar having a portion situated adjacent the central region of the lid to follow its deflection and transmit movement to the valve or valves. The bar may be secured near the center of the lid, or at another position on the lid in such a manner as to pass its center. It is also contemplated that, for some uses, the bar may not be permanently secured to the lid at any point.

The flexible container cover may be of such design and material as to remain in the deflected position after opening of the valves. This simple arrangement is preferred for such containers as milk cans, holding a rather inexpensive product which will ordinarily all be used at the time of opening. When it is desired that the valves automatically close upon release of the cover deflecting pressure, the lid may be made of a more resilient material. The valve may then be successively opened many times, and each time it will return to closed position when the deflecting

2

force is released. Yielding means may be added to supplement the resiliency of the cover and assure its returning to the closed position. It is also contemplated that manual means may be provided for easily returning the cover and valve to closed position in the absence of cover resiliency.

The above and further features and objects of the present invention will be better understood from the following detailed description of the typical embodiments illustrated by the accompanying drawing, in which:

Fig. 1 is a plan view of one form of can top;

Fig. 2 is a fragmentary vertical section of the form shown in Fig. 1, taken on line 2-2 of Fig. 1 and showing the valves in closed position;

Fig. 3 is also a fragmentary vertical section taken on line 2-2 of Fig. 1, but shows the lid or upper wall of the can deflected downwardly to the valve opening position;

Fig. 4 is a fragmentary vertical section showing a variational form of closure;

Fig. 5 is a fragmentary vertical section of a further variational form;

Fig. 6 is a plan view of a further variational form similar to that of Fig. 1 but having only one opening;

Fig. 7 is a fragmentary vertical section taken on line 7-7 of Fig. 6; and

Fig. 8 is a fragmentary vertical section of a variational form employing a spring to supplement the resiliency of the container cover.

Referring first to Figs. 1, 2 and 3, a preferred form of the present invention is there shown adapted for use as a circular cover or upper wall 13 for cylindrical can 10. The normally convex cover 13 may be secured to the can in any customary manner, as by soldering annularly at 11. The form of Figs. 1, 2 and 3 employs a bar 12 disposed beneath the cover 13 and extending diametrically across that cover. Bar 12 is secured at two spaced points 14 near its center to the central portion of the cover 13. For simplicity and cheapness of manufacture, the attachment at these points is preferably by spot weld. Bar 12 is tapered toward its extremities, and terminates in upwardly extending valve members 15. The cover 13 contains openings 16, which are normally closed by valves 15, as seen in Fig. 2. At the cannery, a sealing compound, such as solder, tin, plastic, cement, or the like, may be applied to openings 16 to form frangible fluid tight seals or bonds between the valves and cover at the openings. As will be appreciated, these seals or bonds serve the dual purposes of main-

3

taining the valves in closed condition and forming fluid tight seals at the openings, until the valves are actuated and the bonds broken by deflection of the cover. Cover 13 is flexible and therefore deflectible between the position of Figs. 2 and 3.

When it is desired to use the contents of the can, it is merely necessary to exert downward pressure against the central portion of the cover, as at 17 in Fig. 3. Such pressure deflects the cover downwardly or inwardly to also move the bar and valves downwardly. This breaks the fluid seal and permits the user to pour the contents of the can out of one of the openings 16. The cover may be constructed of resilient material in order to automatically close the valves upon release of the downward pressure, or it may be so designed as to remain in the deflected position.

Fig. 4 shows a variational form of closure best adapted for use with cans containing coffee, powders, or other non-liquid products, which make it desirable that the valve move a maximum distance from its seat. Cover 19 is there shown applied to container 18, and has but one relatively large opening 20. The cover is deflectible downwardly from the full line position to the dotted line position. To lend rigidity to the cover in the vicinity of opening 20, an annular corrugation 21 may encircle that opening. The form of Fig. 4 makes possible a multiplication of the cover deflection by securing one end of bar 23 to cover 19 at 24 and thereby causing the bar to pivot about that point. Shaft 25 is secured to the center of cover 19 and extends downwardly adjacent to bar 23. This shaft bears a transversely extending pin 26 which engages slot 27 in the bar to transmit movement of the cover and shaft to the bar. Head 49 of the shaft is welded or otherwise secured to the cover, and carries a ring 29 for manually closing the valve. Resilient washer 28 is disposed between cover 19 and bar 23 to prevent undesired relative movement between these two parts.

The valve 33 is sealed in position after the container has been filled. The user may break this seal to permit pouring of the contents from opening 20 by merely depressing the central portion of the cover 19. If it is desired to again close the outlet valve, this may be accomplished by pulling upwardly upon ring 29 to move the cover, bar, and valve back to their closed positions.

Fig. 5 shows a form in which container 30 is closed by lid 31 bearing bar 32 on its exposed or upper rather than its under side. In this form, the cover is normally in the illustrated downwardly extending position. Bar 32 is secured at points 33 to the center of the cover, and bears a valve 34 at one or both ends for closing corresponding openings 35 in the cover. The user may open valves 34 by pulling upwardly on the bar at opening 36.

Figs. 6 and 7 show a further variational form of cover 37 for container 38 in which only one opening 39 is required. Bar 40 is secured at points 41 near the center of the cover and extends to a point beneath opening 39. It carries valve 42, which presents a beveled surface to the opening in order that slight thermostatic changes in bar length may not unseat it to break the seal. Cover 37 has a series of annular angularly disposed steps 43 advancing outwardly and toward its center to permit maximum deflectibility of the central portion of the cover.

In Fig. 8, one end of spring 44 is spot welded

4

or otherwise secured at points 45 between bar 46 and cover 47. The spring bears upwardly against the cover at 48 to assure return of the cover and valve to the normal valve closing position upon release of downward pressure against the cover. Strap 50, secured to the cover, transmits upward movement of the cover to the bar.

It is preferred that the bar, whatever its shape, be secured to the cover at two points as in Figs. 1, 2, 3, 5, 6, 7 and 8, in order to prevent undesirable pivoting which would result about one point. It is contemplated, however, that the bar may be secured to the cover only by the sealing material around the valves. In that case, deflection of the cover breaks this seal, and the bar drops to the bottom of the container.

In each form of the invention, the cover is of inwardly recessed formation to form a cavity entirely containing the central outwardly projecting portion of the wall in a manner protecting that central portion from accidental deflection.

I claim:

1. A container closure comprising a flexible wall, an operating member extending across the center of said wall and having a pair of ends at opposite sides of the center, said wall having a pair of openings opposite said ends respectively, and a pair of valves carried by said ends of the operating member and normally closing said openings, said valves being movable by said operating member to open positions upon inward deflection of said wall at its center.

2. A container closure comprising a flexible wall, an operating member extending across the center of said wall and having a pair of ends at opposite sides of the center, said wall having a pair of openings opposite said ends respectively, a pair of valves carried by said ends of the operating member and normally closing said openings, and means forming rupturable fluid tight seals substantially integrating each of said valves and said wall about the opening to prevent fluid passage through said openings, said valves being movable by said operating member to open positions upon inward deflection of said wall at its center.

3. A container closure comprising a flexible wall, an operating member extending across the center of said wall and having a pair of ends at opposite sides of the center, said wall having a pair of openings opposite said ends respectively, means securing said member to said wall at its center, and a pair of valves carried by said ends of the operating member and normally closing said openings, said valves being movable by said operating member to open positions upon inward deflection of said wall at its center.

4. A container closure of the character described, comprising a flexible circular wall, a bar extending diametrically across said wall, means securing said bar near its center to the central portion of said wall, said wall having a pair of openings positioned opposite the ends of the bar and near the periphery of the wall, and a pair of valves carried by said bar normally closing said openings and movable by said bar to open position in response to deflection of said central portion of the wall.

5. A container closure of the character described, comprising a flexible circular wall, a bar extending diametrically across said wall, means securing said bar near its center to the central portion of said wall, said wall having a pair of openings positioned opposite the ends of the bar and near the periphery of the wall, a pair

5

of valves carried by said bar normally closing said openings and movable by said bar to open position in response to deflection of said central portion of the wall, a pair of rupturable fluid tight bonds integrating said valves and said flexible wall about said openings to prevent fluid passage through the openings and to initially maintain the valves in closed condition, said bonds being preformed for rupture by the force exerted against said valves in an opening direction upon said wall induced movement of the member.

PAUL E. BRUSIENSKI.

6

## References Cited in the file of this patent

## UNITED STATES PATENTS

| Number    | Name         | Date           |
|-----------|--------------|----------------|
| 652,831   | Buck -----   | July 3, 1900   |
| 1,555,529 | Taylor ----- | Sept. 29, 1925 |
| 1,979,823 | Clark -----  | Nov. 6, 1944   |