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2,115,340

CONTAINER

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Fig. 1

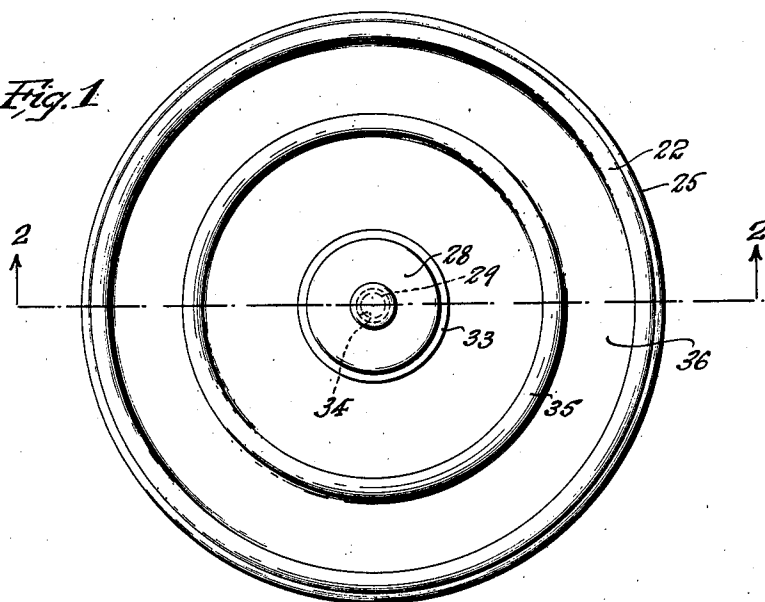


Fig. 2

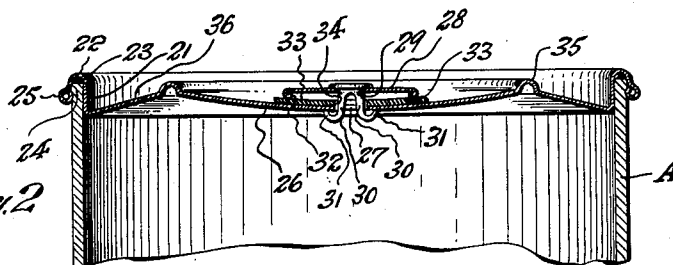
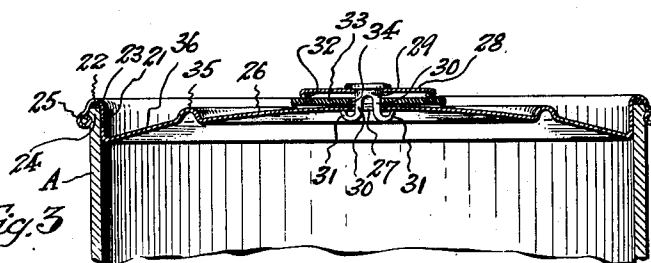


Fig. 3



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CONTAINER

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3 Claims. (Cl. 220-44)

This invention relates, generally, to an improved container primarily adapted for packaging food products; and the invention has reference, more particularly, to a novel vent valve means for such containers.

This invention has for an object to provide a container for food and other products having a novel construction of vacuum and relief valve means.

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

Fig. 1 is an end view of a container provided with the vacuum and relief valve means according to this invention; Fig. 2 is a fragmentary longitudinal section, taken on line 2-2 in Fig. 1, the valve being in normal closed condition; and Fig. 3 is a similar view, with the valve shown in its open condition.

Similar characters of reference are employed in the above described views, to indicate corresponding parts.

As shown in drawing, the container comprises a main body A, which may be formed of laminated paper material, of sheet metal, or of any other suitable material, the ends of which are closed by end walls. Illustrative of one form thereof, said end closure walls comprise end discs 20 of sheet metal having upstanding or substantially vertical peripheral wall portions 21 of an external diameter to tightly fit telescopically into the interior of the body A. Said peripheral wall portions terminate in an annular downwardly open and laterally extending concavo-convex seating flange 22, the interior of which is filled with a suitable sealing cement 23. The annular marginal edge of 24 of the body A enters the interior of said seating flange 22 and is closely and hermetically sealed thereto by the sealing cement 23. Extending from the outer margin of said seating flange 22 is a rolled finishing bead 25 which is pressed into tight gripping impingement upon the exterior surface of said body A, thereby pinching the latter between the wall portion 21 and said finishing bead 25. The end closures thus formed and applied may be assembled with the ends of the body A by means of the conventional types of can sealing machines familiar to the packaging industry.

It is preferred that the depth of the end disc peripheral wall portions 21 be in excess of the distance of overlap of the finishing bead 25 upon the exterior of the body A. By this arrangement, a backing of the wall material of body A by the interiorly disposed wall portions 21 at a point extending beyond the lower limits of the external

finishing bead 25 is provided, so that the user, in opening the container, may cut through the body wall A immediately beneath the finishing bead, so that not only may the end closure be removed, but the same may be utilized as a replaceable cover for the thus opened container, since the end closure disc and its peripheral wall may still be telescopically seated within the open body mouth.

In containers for food products it is frequently desirable to provide the same with a valve operative to vent the container interior either for vacuumizing the same or relieving the same of accumulated internal gas pressure. For this purpose the top end closure member is provided with a normally inwardly depressed and centrally located flexible concavo-convex bulge or dished portion 26 having a central vent opening 27. Cooperative with this bulge or dished portion 26 is a valve or clamp plate 28 having a central shank 29 to extend downwardly therefrom through the vent opening 27. The free end of said shank 29 is bifurcated to provide legs 30 terminating in laterally projected abutment lugs 31 which engage the under interior face of said bulge or dished portion 26 adjacent to the marginal edges of said vent opening 27. The periphery of said valve or clamp plate 28 is provided, around its underside, with a rolled edge or bead 32. Interposed between the valve or clamp plate 28 and the exterior surface of said bulge or dished portion 26 is a gasket 33 having a central opening 34 through which said shank 29 extends, said gasket being made of soft rubber or similar resilient material. When said bulge or dished portion 26 is in normal inwardly depressed condition, it draws downwardly the valve or clamp plate 28 tightly upon the gasket 33 thereby, in turn, tightly pressing the latter into close sealing relation to the outer surface of the bulge or dished portion all around the vent opening 27, thus shutting off or hermetically sealing the vent opening against ingress of air (see Fig. 2).

If the product packed in the container tends to yield gases, and thereupon accumulate an internal pressure of such gases, the valve structure above described will readily yield to such excess internal pressure and will vent the accumulating gases, without however admitting air into the container interior during the process. In such case, the accumulated pressure within the container, when sufficient to overcome external atmospheric pressure and the normal resistance to outward movement of the bulge or dished portion 26, will press the latter to outwardly bowed

or bulged condition, thereby relaxing the downward pull normally exerted thereby upon the shank of valve or clamp plate 28 to, in turn, relieve the pressure of the latter upon the gasket 33, whereby these parts are sufficiently loosened to open up communication between the vent opening 27 and the outside atmosphere, so that the accumulated pressure of gas within the container will be relieved by discharge of the gas (see Fig. 3). When the pressure within the container interior falls to substantial equalization to outside or atmospheric pressure, tension of the outwardly pressed bulge or dished portion 26 operates to return the latter to its normal inwardly depressed condition, thereby again drawing the valve or clamp disc into gripping relation to gasket 33, and thus again closing the vent opening against ingress of air.

The valve means thus provided may also be used to draw down the air content of the container to a partial vacuum after the container is sealed, by applying suitable suction means to the container top end. It will also be possible to introduce an inert gas through the suction head and valve means into the can interior, if desired, after the vacuumizing operation; such inert gas inflowing and filling the container interior to within a few inches of atmospheric pressure.

In larger sizes or diameters of containers equipped with the novel vent valve means above described, it is desirable to stiffen or reenforce the end closure around its bulge or dished portion 26. This may be done by providing an annular reenforcing rib 35 around the outer limits of said bulge or dished portion 26, and, furthermore, if desired, by providing a conical contour 36 to the disc body between its peripheral wall portions 21 and said reenforcing rib 35.

It will be obvious that the vent valve supplied end closure member may be connected with the container body by any form of conventional joint or seam or other means of attachment, especially when the vent valve means is embodied in an end member of an ordinary metal can, or in the metal cover of a glass or other jar. It will also be understood that the novel vent valve structure may be embodied in a wall portion of a container other than an end closure thereof.

Having described my invention, I claim:—

1. In a container comprising a body portion and sheet metal end closures secured and hermetically sealed thereto, one of said end closures having an automatic vent valve comprising an inwardly depressed flexible bulged portion having a central vent opening, a gasket on the ex-

terior side of said bulged portion aligned with said vent opening, a clamp plate overlying said gasket, said clamp plate having a shank extending through said gasket and vent opening, and laterally extending draw lugs at the inner end of said shank having extremities disposed to be engaged with down pulling effect by the inner side of said inwardly depressed bulged portion to thereby draw down said clamp plate to press said gasket into sealing relation between the margins of the latter and the exterior face of said bulged portion, which pulling effect is relaxed to release said gasket from such sealing relation when said bulged portion is outwardly flexed.

2. In a container comprising a body portion and sheet metal end closures secured and hermetically sealed thereto, one of said end closures having an automatic vent valve comprising an inwardly depressed flexible bulged portion having a central vent opening, a gasket on the exterior side of said bulged portion aligned with said vent opening, a clamp plate overlying said gasket, said clamp plate having a shank extending through said gasket and vent opening, and laterally extending draw lugs at the inner end of said shank having extremities disposed to be engaged with down pulling effect by the inner side of said inwardly depressed bulged portion to thereby draw down said clamp plate to press said gasket into sealing relation between the margins of the latter and the exterior face of said bulged portion, which pulling effect is relaxed to release said gasket from such sealing relation when said bulged portion is outwardly flexed, and means for stiffening the areas of the end closure wall which surround said flexible bulged portion against appreciable movement.

3. In combination with a container, a wall portion having an inwardly depressed flexible bulged portion provided with a vent opening, an externally applied gasket having a central opening to match said vent opening, a clamp plate overlying said gasket, said clamp plate having a shank extending through said gasket and vent opening, and said shank having means at its inner end engaged by the inner side of said bulged portion, whereby downward movement of the latter when inwardly flexed draws said clamp plate into gasket compressing and sealing relation to said vent opening and upward movement of said bulge portion when outwardly flexed relaxes said clamp plate to release said gasket from such sealing relation.

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