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W. F. PUNTE

1,950,327

VALVE CLOSED METAL CONTAINER

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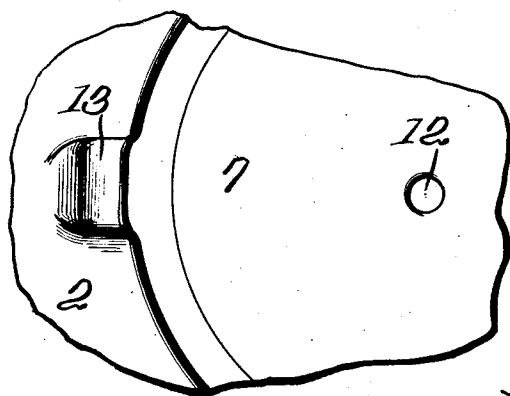
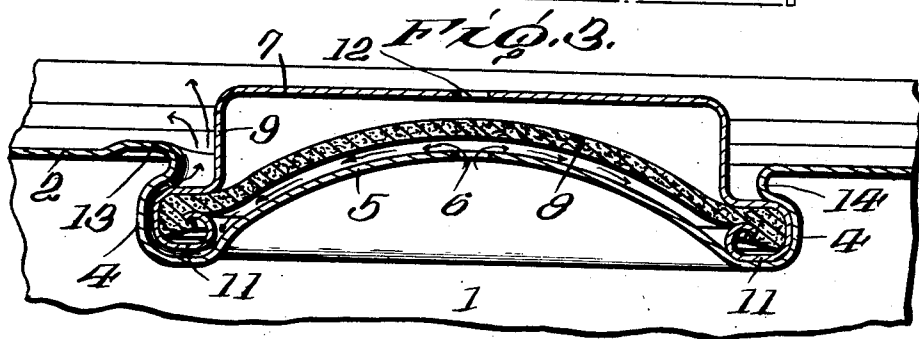
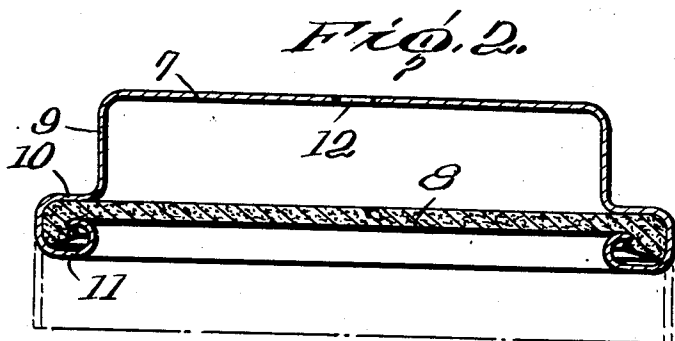
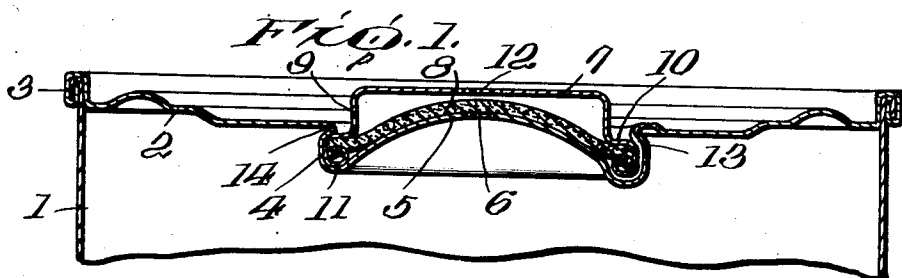


FIG. 4.

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UNITED STATES PATENT OFFICE

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VALVE CLOSED METAL CONTAINER

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6 Claims. (Cl. 220-44)

The invention relates to new and useful improvements in a metal container, and more particularly to a container which is provided with an opening through which gas evolving from the food product in the container may escape. In my co-pending application Serial No. 614,993, filed June 2, 1932, I have shown, described and claimed a valve construction for closing the opening through which the gas may escape, which valve is elastic and located wholly outside of the container, and so constructed as to permit the opening of the valve when the gas pressure within the container is above atmospheric pressure and closed when the gas pressure within is at atmospheric pressure or below. The present invention has to do with improvements in the construction of the valve and the attaching of the valve to top of container.

An object of the invention is to provide a container with a valve for closing the opening through the container end, which valve is in the form of a cap that is in turn attached to the container end without the use of solder or any securing means requiring heat.

A further object of the invention is to provide a container of the above type wherein the cap carrying the valve disk is secured to the container end by a shaping of the metal of the container end.

In the drawing—

Figure 1 is a vertical sectional view through the upper end of a container having the improvement applied thereto;

Fig. 2 is a sectional view through the cap to which the valve is attached prior to the attachment of the cap to the container end;

Fig. 3 is an enlarged sectional view through the container end with the valve attached thereto, and

Fig. 4 is a plan view of a portion of the container end, and showing one of the gas vents which may be used.

The invention relates to a metal container which includes a body portion having the end secured thereto. The end has a depressed portion therein, and the central portion is preferably bent upwardly and shaped into a dome. The dome has a perforation therethrough somewhere within its limits through which gas evolving from the food products may pass. Attached to the end is a metal cap. The metal cap has first attached thereto an elastic disk which is preferably clamped to the cap at the peripheral edge of the disk so that it is firmly held by the cap. The cap is placed in the depressed portion of the end,

and the metal in the end shaped by crimping or otherwise, so as to secure the cap to the end. When the cap is in place, the elastic disk contacts with the dome under proper tension so as to close the opening through the end when the pressure within the container is substantially at atmospheric pressure or below. Either the container end or the flange of the disk is provided with indented portions which provide gas vents between the cap and the container end, so that when the disk is raised, the gas escapes easily through these vents.

Referring more in detail to the drawing, the container consists of a body portion 1 to which an end 2 is secured by double seaming as indicated at 3. It is understood, of course, that the end may be secured in any suitable way to the container body. Said end is provided with a centrally disposed depression which has a vertical wall 4 and a raised dome-shaped central portion 5. There is an opening 6 through this dome-shaped portion of the end. This opening as shown is at the center of the dome, but it may be otherwise positioned, and more than one opening may be provided, if desired. The downward vertical wall 4 prevents the food products in containers from contact and possible blocking of relief hole 6.

There is a valve for closing the opening which consists of a holding cap 7 and an elastic disk 8. The cap has a depending flange 9 with an offset portion 10 against which the elastic disk is placed and the edge portion of the flange is rolled into a curl 11 which grips the disk and firmly presses the same against the shoulder 10. The disk during the curling of the edge portion of the cap is gripped tight by the rolling of the edge portion of the cap. The disk, as shown, is imperforate. The cap is provided with an opening 12 so that the chamber within the cap above the disk is open to the atmosphere. The cap is set so that its top is below the line of the top of the seam, thus avoiding interference with other cans when in piles, in packing or in shipping. The cap affords absolute protection for the valve disk in handling and prevents ingress of foreign matter from above to obstruct its proper functioning. The container end is provided with one or more indentations 13, which extend down along the vertical wall 4. The cap is of a diameter at the flange thereof so as to fit within the depression in the container end. The vertical wall 4 of the end is subjected to the pressure of a clinching roll or jaws in the region indicated at 14, and this bends the vertical wall over the shoulder 10 of the flange 9 sufficiently to firmly hold the cap

attached to the end. The indentation 13 extends all the way underneath the curled edge of the cap when it is attached to the end, and thus provides a vent through which the gas escaping from the container may pass. The dome contacts with the elastic disk when the cap is attached to the end and stretches the disk so that it is held firmly and uniformly in contact with the outer face of the dome, closing the opening 6. When the gas evolving from the food product within the container is of sufficient pressure to flex the disk and lift it from contact with the dome at the opening therethrough, then the gas will pass freely out through the opening and between the dome and the disk and through the vents 13. Just as soon, however, as the pressure within the container is insufficient to lift the elastic disk which is continually subjected to atmospheric pressure on its outer face, and also elastic pressure, then the opening in the container end is closed.

The valve member is preferably of rubber, and while it is shown as imperforate, it may be otherwise constructed and the gas may be allowed to escape in other ways after it has passed through the opening in the end. The essential features of the invention reside in the elastic disk which is secured to the cap and serves as a closing means for the opening in the end and the crimping or otherwise shaping of the metal in the end or in the cap for the firm connection of the parts so as to hold the disk in contact with the end for the closing of the opening. When the cap is secured to the end by a deforming of the metal of one of the members, no heat is required, as is necessary in soldering or welding, and therefore, the rubber gasket is not subjected to intense heat during the assembling of the parts and the construction of the container.

It is obvious that changes in the details of construction and the arrangement and location of the parts may be made without departing from the spirit of the invention as set forth in the appended claims.

Having thus described the invention, what I claim as new and desire to secure by Letters Patent, is:—

1. A metal container comprising a body portion, an end secured thereto having a raised portion with an opening located therein, a cap, an elastic disk attached thereto, said cap being secured to said container end by a deforming of the metal of one of the parts and said cap being disposed so that the disk contacts with the raised portion and normally closes the opening, said cap and disk being constructed so that when the disk is raised from contact with the end by the gas pressure from within, said gas will be permitted to escape through the opening in the raised portion.

2. A metal container comprising a body portion, an end secured thereto having a centrally located depression therein, the bottom of said depression having an upwardly raised portion therein, a cap having a flange, an elastic disk secured to the flange of said cap, said disk being disposed within said depression so that said disk contacts with the raised portion in the center

thereof, the wall of the depression being bent so as to contact with the cap and firmly secure said cap in said depression.

3. A metal container comprising a body portion, an end secured thereto having a centrally disposed depression, the center of said depression being raised to form a dome having an opening therethrough, a cap having a flange provided with an offset portion forming a shoulder, an elastic disk contacting with said shoulder, said flange being rolled so as to clamp said disk against the shoulder, said offset portion of the cap being adapted to fit within said depression and cause said disk to contact with said dome and normally close the opening therethrough, and means for securing said cap within said depression.

4. A metal container comprising a body portion, an end secured thereto having a centrally disposed depression, the center of said depression being raised to form a dome having an opening therethrough, a cap having a flange provided with an offset portion forming a shoulder, an elastic disk contacting with said shoulder, said flange being rolled so as to clamp said disk against the shoulder, said offset portion of the cap being adapted to fit within said depression and cause said disk to contact with said dome and normally close the opening therethrough, and means for securing said cap within said depression, the wall of said depression having an indentation formed therein extending beneath the curled portion of the cap and providing a vent for the gas escaping through the opening when the disk is lifted from contact with the dome.

5. A metal container comprising a body portion, an end secured thereto having a centrally disposed depression, the center of said depression being raised to form a dome having an opening therethrough, a cap having a flange provided with an offset portion forming a shoulder, an elastic disk contacting with said shoulder, said flange being rolled so as to clamp said disk against the shoulder, said offset portion of the cap being adapted to fit within said depression and cause said disk to contact with said dome and normally close the opening therethrough, the wall of said depression being bent inwardly over the shoulder on the cap for securing said cap to the end, the wall of said depression having an indentation formed therein extending beneath the curled portion of the cap and providing a vent for the gas escaping through the opening when the disk is lifted from contact with the dome.

6. A metal container comprising a body portion, an end secured thereto having a raised portion with an opening located therein, a cap shaped to provide a recess in its underface, an elastic disk attached thereto and spanning said recess, said cap being secured to said container end and disposed so that the disk contacts with the outer face of the raised portion and normally closes the opening, said cap and disk being constructed so that when the disk is raised from contact with the end by the gas pressure from within, said gas will be permitted to escape through the opening in the raised portion.

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