June 21, 1938. S. D. HARTOG 2,121,232

CONTAINER VALVE

Filed Oct. 21, 1937

Fig. 1.

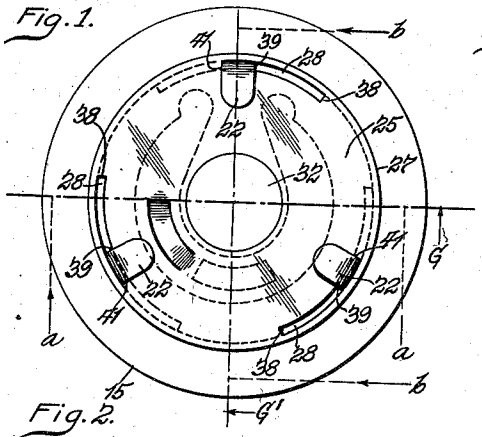


Fig. 2.

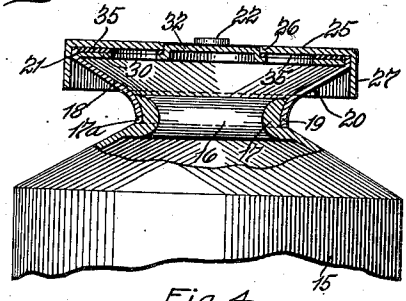


Fig. 4.

Fig. 3.

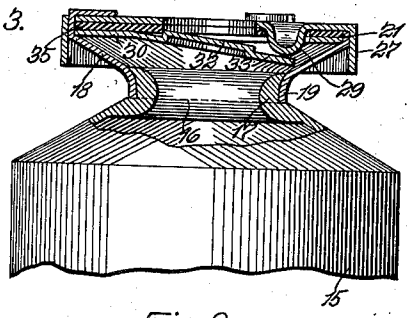


Fig. 8.

Fig. 10.

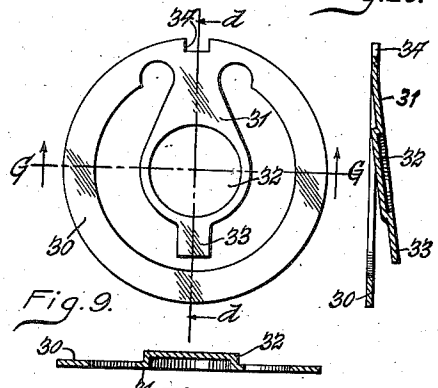


Fig. 9.

Fig. 11.

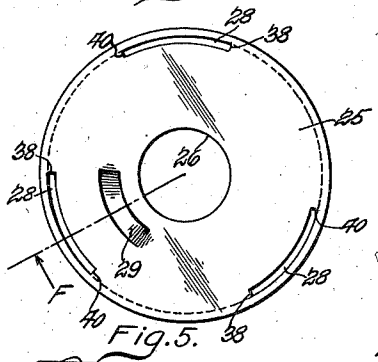


Fig. 5.

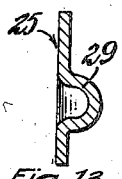


Fig. 13.

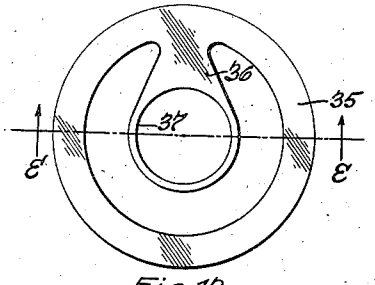


Fig. 12.



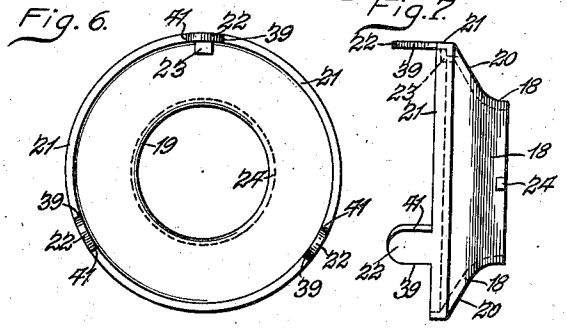


Fig. 6.

Fig. 7.

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Patented June 21, 1938 2,121,232

UNITED STATES PATENT OFFICE

2,121,232

CONTAINER VALVE

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Application October 21, 1937, Serial No. 170,187

9 Claims. (Cl. 221—60)

This specification, aided by the accompanying drawing, discloses certain new and useful improvements in features of construction as well as the means and mode of operation of container valves of the character relating to container valves in which the valve aperture closure is engaged permanently to the valve for continuous operative employment thereon thereby serving to eliminate the objectionable performance of screwing the aperture closure on and off the container.

The primary object therefore of the herein described and illustrated invention is to simplify the construction of container valves in a novel, economical and operative efficient manner whereby all of the difficulties and incapacities encountered in prior art structures are overcome.

To such ends, briefly summarized, this invention is, as, in and for a container valve characterized by features providing—

A container valve simple in construction and operation.

A container valve having few parts and therefore of minimum production cost.

A container valve designed and constructed for production by means of die-forming processes.

A container valve in which the discharge aperture of the valve is opened and closed by means of a rotatory member adapted to impart a perpendicular movement to a resiliently yieldable spring tension aperture opening and closing member of the valve.

A container valve in which the rotatory member effects an opening of the valve when moved in one direction and when the rotatory member is turned in an opposite direction, the aperture closure member tensionally springs into an aperture closing position.

For the purpose more clearly to understand the expressed objects, and other attending objects, the following description is given, and by aid of the accompanying drawing, it is discernable:

Fig. 1 is a plan view of the container valve shown mounted on a container.

Fig. 2 is a cross-section view of the valve shown mounted on a container, and viewed through line A—A Fig. 1.

Fig. 3 is a cross-section view of the valve taken along line B—B Fig. 1 including a radial view arrow F—Fig. 4.

Fig. 4 is a plan view of the apertured cover or cap of the valve.

Fig. 5 is a side view of the cap.

Fig. 6 is a plan view of a circularly formed body or collar constituting a member part of the valve.

Fig. 7 is a side view of the circularly formed body or collar.

Fig. 8 is a plan view of a wafer-plate or diaphragm provided with an embossment.

Fig. 9 is a view in cross-section of Fig. 8 as viewed through line G—G Fig. 8.

Fig. 10 is a view in cross-section of the wafer-plate or diaphragm as viewed through line D—D Fig. 8, illustrating a portion of the wafer-plate in a deflected position.

Fig. 11 is a plan view of a fabricated gasket.

Fig. 12 is a view in cross-section of the gasket.

Fig. 13 is a fragmentary cross-section view of the apertured valve cap taken through line F—Fig. 4.

The member parts constituting the structure of this container valve are designated upon the drawing in numerical order, whereby **15** identifies a fragmentary portion of a container provided with an apertured discharge end **16**, which discharge end is surrounded by an embossment **17** having a projecting lug **17**—*a*. Mounted upon the discharge end of the container **15** is a circularly formed body or collar **18**, the collar **18** being provided with an apertured circumvolving curved rim **19** having extending funnel shaped walls **20** terminating in a rim **21** provided with integrally formed projecting tabs **22**. At a suitable position within the core of the body, or collar **18**, an embossment **23** is provided and constituting a retaining lug, and within the end face surface of the curved rim **19**, a notch **24** is formed providing a key-way.

In assembly with the collar **18** is a disc shaped cover or cap **25** having an aperture **26**, a depending rim **27**, a series of perforated slots **28**, and an embossed projection **29**. There is included in the assembly with the body or collar **18**, the cover or cap **25**, a perforated wafer-plate or diaphragm **30** having a central portion **31** provided with a circularly formed embossment **32**, a teat **33** and a circumferentially located indentation providing a key-way **34**. The assembly also includes a yieldable fabricated gasket **35**. The gasket **35** is provided with a leaf-like form **36** having an aperture **37**.

As a unitary container valve assembly, the several member parts are arranged together in assembled relation upon the discharge end of a container by way of placing the cored body, or collar **18**, upon the container in a way to permit the open rim end **19** of the collar to surround the embossment **17**; arranging the key-way **24**

in a manner to embrace the lug 17—*a*, and then beading or otherwise spinning the marginal end of the embossment 17 in a manner to overlap within the curved rim portion 19.

Having thus arranged the circularly formed body or collar 18 to the container, the wafer-plate or diaphragm 30 is then placed within the rim 21 of the collar 18, and upon the flat surface of the wafer-plate 30, the yieldable fabricated gasket 35 is placed. The cover or cap 25 is then mountedly positioned on the collar 18 in a way to permit the projecting tabs 22, of the collar 18, to enter into the elongated apertures 28 of the cap 25 with the embossed projection of the leaf-like spring portion of the disc 30 entered into the discharge aperture 26 of the cap 25.

The cap 25 is then subjected to a compressive force sufficient to compress the fabricated gasket 35 in a manner to provide a seal-tight joint between the surfaces with which the gasket 35 is in contact; the projecting tabs 22 are then bent in a way to bear upon the surface of the cap 25, and yet not to bind the cap too tightly upon the members with which it is associated in assembly.

Thus arranged the valve is in condition for operation. The valve is opened by way of turning or rotating the cap 25 in the direction indicated in the drawing by arrow G—Fig. 1, until the edge surface 38 of the elongated slots 28 contact with the side wall surfaces 39 of the projecting tabs 22, whereby the embossed projection 29 of the cap 25 rides upon the teat 33 of the wafer spring formation 31, causing a deflection of the wafer spring 31 and thereby withdrawing the embossed projection 22 out of the cap aperture 26 thereby opening the valve. Thus opened, the valve is capable of discharging its contents through the discharge aperture 26 of the cap 25.

The closing of the valve aperture 26 is effected by rotating the cap 25 indicated in the direction by arrow G' Fig. 1 until the edge surfaces 40 of the elongated slots 28 contact with the side wall surfaces 41 of the tabs 22 thereby causing the embossment 29 to ride off the teat 33 in consequence of which the aperture sealing embossment 32 of the wafer spring portion 31 springs tensionally back into the discharge aperture 26, thus closing the discharge aperture of the valve.

The description discloses that by rotating the valve cap 25 in a horizontally right-hand and left-hand direction, a perpendicular movement is imparted to the resiliently yieldable portion of the wafer-plate aperture opening and closing portion of the valve.

Having thus described the invention, it is obvious that there is provided a container valve of the character described and possessed of the advantageous features hereinbefore enumerated as desirable. It is therefore to be understood that the container valve is susceptible of modification in its form, proportions, detailed construction and arrangement of parts without departing from the principle involved or sacrificing any of its advantages.

The invention, having been described in language more or less specific as to structural features, it is to be understood, however, that the invention is not limited to the specific details shown, but that the means and construction herein disclosed comprises the preferred form of several modes of putting the invention into effect and the invention therefore is claimed in any of its forms or modifications within the legitimate and valid scope of the appended claims.

I claim, and desire to secure by Letters Patent of the United States of America, this invention as, in, and for:

1. A container valve for the discharge end of a container, the container valve comprising a circularly formed body adapted to fit the discharge end of a container, an apertured cap mounted upon the circularly formed body, a wafer-plate arranged within the circularly formed body, the wafer-plate having an expressed projection formed upon the surface thereof, the wafer-plate being capable of opening and closing the discharge aperture of the valve when motion is imparted to the said apertured cap, and means to connect the container valve to a container.

2. A container valve for the discharge end of a container, the container valve comprising a circularly formed body, a perforated wafer-plate arranged within the circularly formed body, the mentioned wafer-plate having an expressed embossment upon the surface thereof, an apertured cap adapted for rotative movement mounted upon the circularly formed body, the perforated wafer-plate in cooperation with the apertured cap being capable of opening and closing the discharge aperture of the valve when rotative movement is imparted to the apertured cap, means to limit the rotative movement of the mentioned cap, and means to connect the container valve to the container.

3. A container valve for the discharge end of a container, the container valve comprising a rim provided annular body adapted to fit the discharge end of a container, an apertured cap mounted upon the rim provided annular body, a wafer-plate having an expressed projection adapted to fit into the aperture of the mentioned apertured cap, the mentioned wafer-plate being arranged within the rim provided annular body, the mentioned expressed projection of the wafer-plate being capable of opening and closing the discharge aperture of the cap when motion is imparted to the said cap, and means to connect the container valve to a container.

4. A container valve for the discharge end of a container, the container valve comprising a rim provided annular body adapted to fit upon the discharge end of a container, a cap mounted upon the rim provided annular body, the cap being provided with a discharge aperture, a perforated wafer-plate of metal provided with an expressed projecting portion arranged within the rim provided annular body, the expressed projecting portion of the mentioned wafer-plate of metal adapted to fit within the discharge aperture of the mentioned cap thereby providing a closure for the discharge aperture of the cap, the mentioned closure being capable of moving out of and into the discharge aperture of the cap when motion is imparted to the said cap, and means to connect the container valve to a container.

5. A container valve comprising a cored annulus, an apertured cap mounted for rotary movement upon the cored annulus, a resiliently yieldable aperture opening and closing member arranged within the core of the annulus, means on the apertured cap adapted to deflect the resiliently yieldable aperture opening and closing member in a way to open the valve when the cap is rotated in one direction, the resiliently yieldable member being inherently capable of tensionally springing to a valve closing position when the cap is rotated in a direction opposite to the first mentioned direction, and means to attach the container valve to the container.

6. A container valve comprising a collar, an

apertured cap mounted for rotary movement upon the collar, a disc within the collar, the said disc having an interrupted perforation partly surrounding a centrally formed projection provided on the said disc, the centrally formed projection of the said disc adapted to enter into and out of the aperture of the rotary cap to open and close the discharge aperture of the mentioned cap when the apertured cap is rotated, and means to attach the container valve to the container.

7. A container valve comprising a collar, an apertured cap for the collar, the apertured cap having an embossment, a resiliently yieldable spring having a projection, the resiliently yieldable spring arranged within the said collar, the resiliently yieldable spring being capable of reciprocating the projection thereof tensionally perpendicularly into and out of the aperture of the cap when the apertured cap is rotated horizontally, and means to connect the mentioned valve to the container.

8. In a device of the class described, the combination comprising, a container having a discharge neck provided with a discharge port, a cap for the neck of the container, the mentioned cap having a centrally located aperture within the crown of the cap, a perforated diaphragm having a centrally located embossment thereon, the mentioned embossment adapted to fit accurately into the mentioned aperture of the mentioned cap thereby plugging the mentioned aperture, the mentioned diaphragm being arranged between the interior surface of the mentioned crown of the cap and the face end surface of the discharge neck of the container, the mentioned diaphragm thereby surmounting the discharge port within the mentioned neck, the mentioned cap being capable of movement whereby the mentioned embossment of the diaphragm is moved out of the mentioned aperture of the cap thereby opening the discharge aperture within the mentioned cap, and means to limit the movement of the mentioned cap upon the mentioned neck of the container.

9. A container valve comprising a perforated disc having a projection thereon, the mentioned disc having a portion thereof provided with resilient yieldability, a cap having an aperture within the crown thereof, the mentioned disc adapted for assembly within, and localized beneath the crown of the mentioned cap, whereby the mentioned projection of the disc enters into the mentioned aperture within the crown of the cap thereby closing the aperture therein, the mentioned cap adapted for assembly in a manner to provide rotatory movement on the container neck, whereby the mentioned cap is operative to move the mentioned projection of the disc out of closed position to an open position, means to limit the rotatory movement of the cap and means to attach the container valve to the container.

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