Sept. 27, 1938. P. M. THORN 2,131,079

CLOSURE

Filed Dec. 1, 1937

Fig. 1.

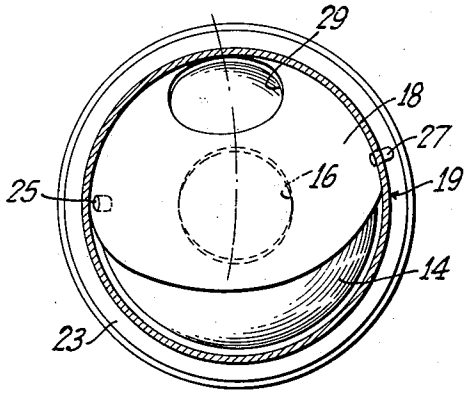


Fig. 2.

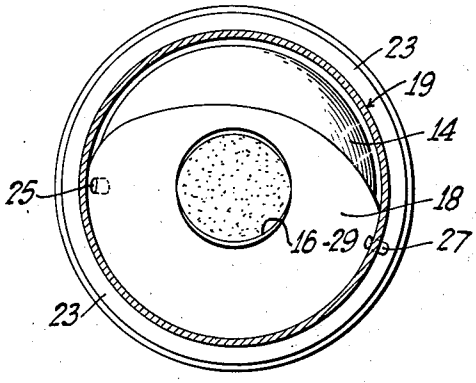


Fig. 3.

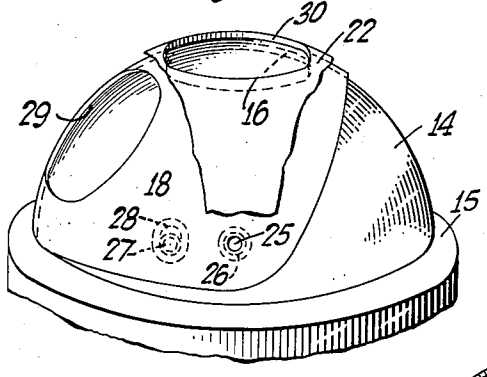


Fig. 4.

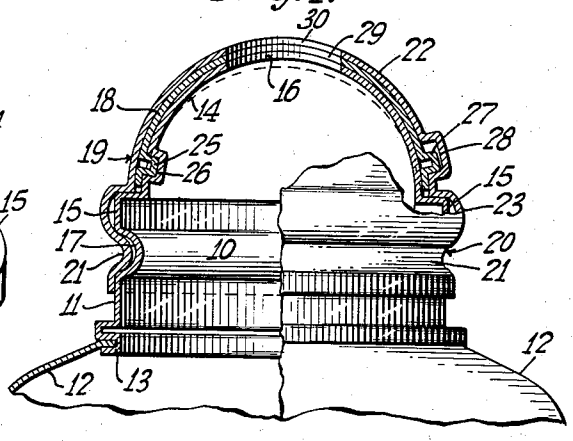


Fig. 5.

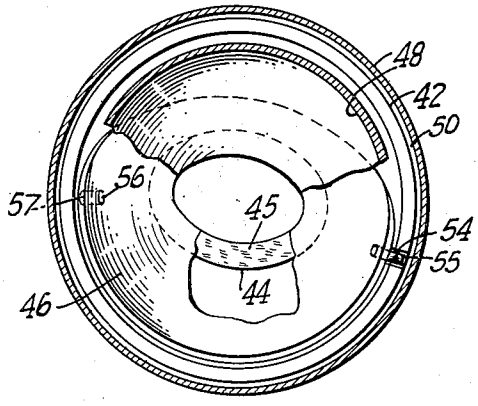
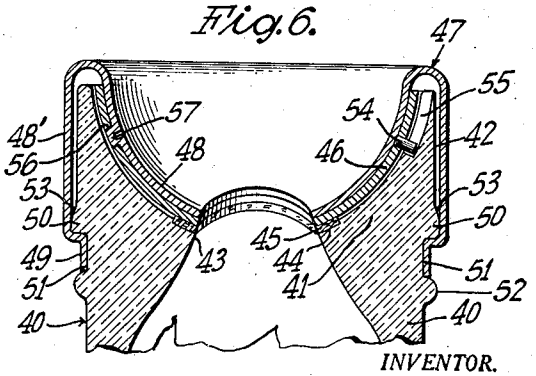


Fig. 6.



INVENTOR.
PERCY M. THORN
BY Lucas & Blue
ATTORNEYS.

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UNITED STATES PATENT OFFICE

2,131,079

CLOSURE

Percy M. Thorn, New Rochelle, N. Y.

Application December 1, 1937, Serial No. 177,461

8 Claims. (Cl. 221—64)

This invention relates to closures for containers.

It is an object of this invention to provide a new and improved closure which will give a maximum opening with a minimum outer diameter.

It is a further object of this invention to provide a new and improved closure which will present a novel and ornamental effect in its mechanical operation.

It is a further object to provide a closure having a dome shape to the operating parts whereby the necessary space required for the operating parts is conserved as far as possible, and a stronger and more rigid construction is obtained with a minimum of material.

It is a further object to provide a novel type of closure having a concave form which will present an attractive pouring surface and which will automatically drain all surplus liquid back into the container.

It is a further object to provide a novel closure which may embody the upper portion of the container itself as a part of the operating mechanism.

This application is in part a division and continuation of my prior application Serial No. 55,157 filed December 19th, 1935, but it involves certain new embodiments of one of the inventions there disclosed and a part of the disclosure of that case has been removed and incorporated herein in order sharply to define the line of division between that case and this.

The invention accordingly comprises an article of manufacture possessing the features, properties and the relation of elements which will be exemplified in the article hereinafter described and the scope of the application of which will be indicated in the claims.

For a fuller understanding of the nature and objects of the invention, reference should be had to the following detailed description, taken in connection with the accompanying drawing, in which:

Figure 1 is a top plan view of a closure embodying this invention being partly broken away to show the shutter in closed position.

Figure 2 is a top plan view with the cap removed, showing the shutter in open position.

Figure 3 is a perspective view showing the shutter in closed position, with the cap broken away.

Figure 4 is a central vertical section through the device.

Figure 5 is a modified form in which the dome shape is inverted for a purpose to be described.

Figure 6 is a vertical central section through the device of Figure 5.

In the drawing the numeral 10 represents a base of the closure having as illustrated a neck 11 adapted to be attached to a can 12 by being crimped thereto as shown at 13. This base has its upper portion or end wall dome shaped in the form of a hemisphere as shown at 14, which is preferably spaced from the neck 11 by an annular rim 15, although, if desired, this rim may be omitted to make a closure with a still smaller outside diameter. The domed wall 14 has a central outer opening 16 and the neck 11 has an annular recess or groove 17.

The numeral 18 comprises a shutter member concentric with the dome and fitting over it and having a general diamond shape contour, as will be clear from the drawing.

The numeral 19 is a cup shaped cap having circumferential walls 20 fitting over the neck 11 and having an inwardly projecting rib 21 fitting into and tightly engaging the walls of the groove 17 to hold the cap in place, and said cup having a dome shaped end wall 22 adapted to mate with the end wall 14 and shutter 18. The cup 19 may also have an annular rim 23 corresponding with and engaging the rim 15 of the base.

The shutter is articulated near one end to the base and at the other end to the cap. For example the shutter may have a depressed pin 25 attached at one end to fit into a depressed recess 26 in the periphery of the dome shaped portion 14 of the base, and may have an outwardly pressed pin 27 at the other end fitting into an outwardly expressed elongated slot 28 in the periphery of the dome shaped portion of the cap.

It will be understood that the pins 27 and 28 will be spaced not quite diametrically across from each other and sufficiently far from the periphery of the dome so that as the outer cap is turned the shutter is moved across the surface of the sphere. The shutter, in one of its positions, and the cap have openings 29 and 30 in registry with the opening 16.

In the form of the invention disclosed in Figure 5, the dome is reversed. As here illustrated the container, which may be a bottle 40, has its neck a little thickened toward the center as shown at 41, and cut out in the form of a hemisphere as shown at 42, having a central opening 43. Immediately surrounding this central opening is a recess 44 adapted to receive a resilient washer 45 as for example of cork.

A shutter 46 in the form of a sector of a sphere that is substantially diamond shape in contour mates with the surface 42. A cap 47 has a depressed dome 48 mating with shutter 46 and

a dependng flange **48'** extending over the outside of the neck of the bottle. This flange has a lower inwardly projecting rim **49** adapted to fit over a projecting rib **50** of the neck and enter a recess **51** which may be formed between rib **50** and a second rib **52** so that the cap is rotatably mounted on the neck without end play. The rib **50** may have its upper face **53** inclined to facilitate forcing the cap over it.

The parts are preferably so proportioned that when the cap is in place it is free from engagement with the neck of the bottle except at its periphery, and it is free to exert pressure on the shutter immediately above the washer **44**.

The shutter **46** is provided with a pin **54** at one end fitting into an open groove **55** in the neck of the bottle and with an opening **56** in its other end adapted to be engaged by a pin **57** depressed from the dome **48**.

The operation of this form of the invention is the same as that of the first form. It possesses the advantage that the cap **47** has a lip **58** which serves as a pouring spout, and any surplus of liquid is drained back into the bottle.

Since certain changes may be made in the above construction and different embodiments of the invention could be made without departing from the scope thereof, it is intended that all matter contained in the above description or shown in the accompanying drawing shall be interpreted as illustrative and not in a limiting sense.

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the invention herein described, and all statements of the scope of the invention which, as a matter of language, might be said to fall therebetween.

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

1. A device of the character described comprising in combination a base portion and a cap portion, each of said portions comprising a side wall, and a hemispherical end wall, a hemispherical shutter movable between said end walls, said shutter being pivotally connected at its opposite ends to the end walls of the base portion and the cap portion respectively, each of said pivotal connections being near to but spaced from the base of the hemisphere of the end walls and means for holding said cap portion upon said base portion.

2. A device of the character described comprising in combination a base portion and a cap portion, each of said portions comprising a side wall and a curved end wall, a shutter movable between said curved end walls and pivotally connected at its opposite ends to the base portion and cap portion respectively, cooperating bearing surfaces carried by side walls to permit rotation of the cap portion on the base portion.

3. A device of the character described comprising in combination a base portion and a cap portion, each of said portions comprising a side wall and a curved end wall, a shutter movable between said curved end walls and pivotally connected at its opposite ends to the base portion and cap portion respectively, said cap portion being rotatable on said base portion, said base portion and said cap portion having an opening in alignment therewith in one position of the latter.

4. A device of the character described comprising in combination a base portion and a cap portion, each of hemispherical shape, a hemispherical shutter movable between said portions, said shutter being articulated to both of said portions whereby a rotation of said cap portion will move said shutter, said base portion and said cap portion having aligned openings in position to be intercepted by said shutter in one position of the latter.

5. A device of the character described comprising in combination a base portion, a cap portion and a shutter portion, all curved to the shape of substantially concentric spheres of more than 120° of circular arc, said shutter being movable between said base portion and said cap portion and having one end pivoted to said base portion and one end pivoted to said cap portion, said base portion and said cap portion having central aligned openings adapted to be intercepted by said shutter in one position of the latter.

6. A closure for a receptacle comprising a member upon said receptacle having a concave surface therein, an opening in the bottom of said concavity leading to the interior of the receptacle, a shutter within said concavity and conforming to the surface thereof, a cap fitting over said member and enclosing said shutter and having a concave surface corresponding to the shape of the concavity in said member, said cap having a central opening therein, said member and shutter having bearing surfaces retaining said cap in place and permitting the rotation thereof, means for articulating the shutter to the cap and member whereby the rotation of the cap will move the shutter from one position to another, there being an opening in the shutter in one of its positions in alignment with the opening in the member and cap.

7. A closure for a receptacle comprising a member upon said receptacle having a concave surface therein, an opening in the bottom of said concavity leading to the interior of the receptacle, a shutter within said concavity and conforming to the surface thereof, a cap fitting over said member and enclosing said shutter and having a concave surface corresponding to the shape of the concavity in said member, said cap having a central opening therein, said member and shutter having bearing surfaces retaining said cap in place and permitting the rotation thereof, said shutter being pivoted at its opposite ends to said member and to said cap, whereby the rotation of the cap will move the shutter from one position to another, there being an opening in the shutter in one of its positions in alignment with the opening in the member and cap.

8. A receptacle comprising a neck having a concave opening therein, an opening in the bottom of said concavity leading to the interior of the receptacle, a shutter within said concavity and conforming to the surface thereof, a cap fitting over said neck and enclosing said shutter and having a concave surface corresponding to the shape of the concavity in said neck, said cap having a central opening therein, said neck and shutter having bearing surfaces retaining said cap in place and permitting the rotation thereof, said shutter being pivoted at its opposite ends to said neck and to said cap, whereby the rotation of the cap will move the shutter from one position to another, there being an opening in the shutter in one of its positions in alignment with the opening in the neck and cap.

PERCY M. THORN.