Oct. 1, 1935. E. H. HOWARD 2,016,200

DISPENSING DEVICE

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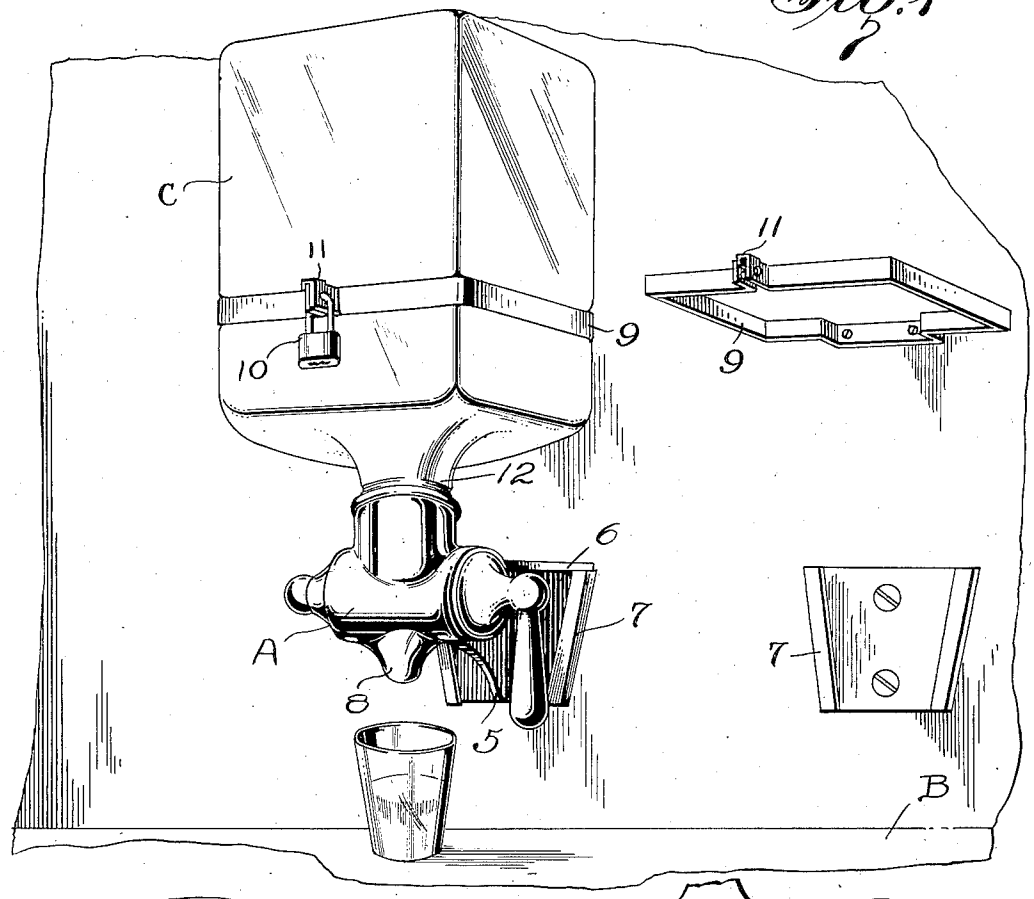
Fig. 1



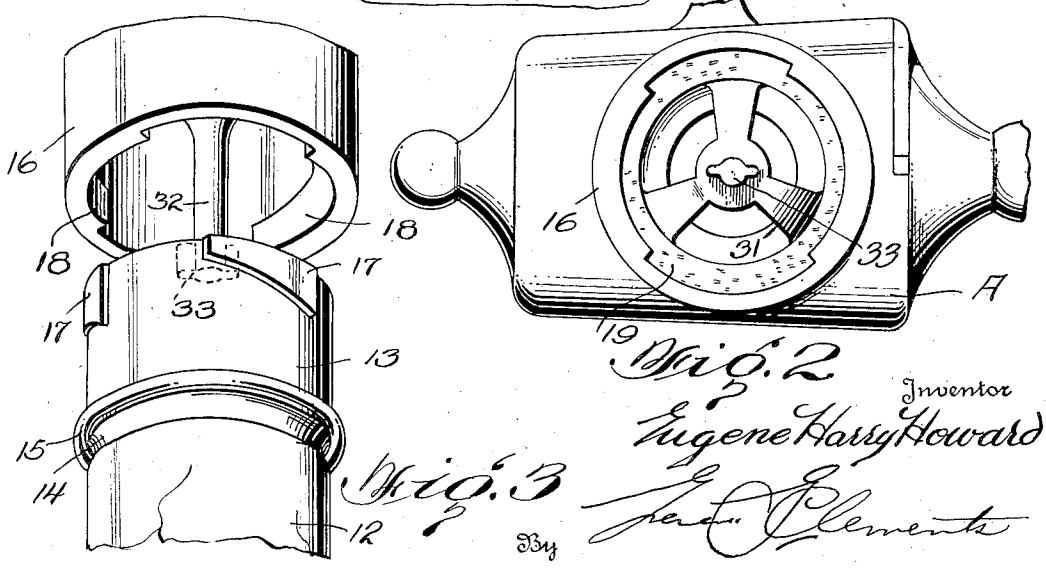


Fig. 2

Fig. 3

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Fig. 4

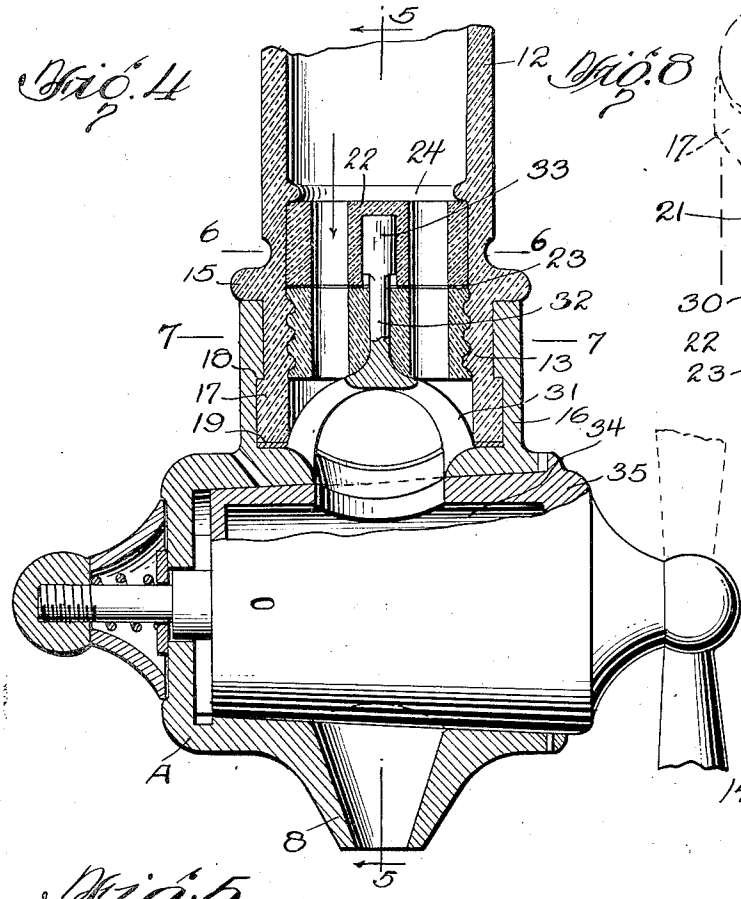


Fig. 8

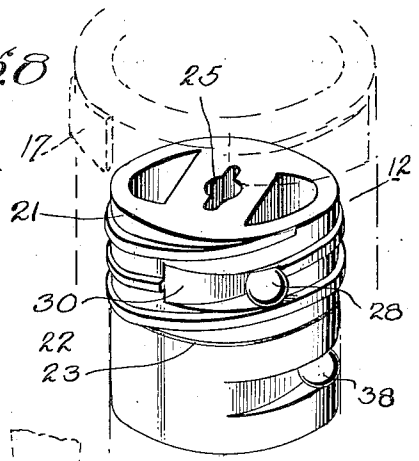


Fig. 6

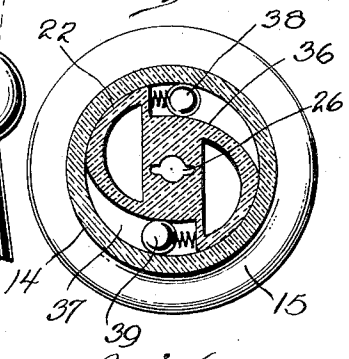


Fig. 5

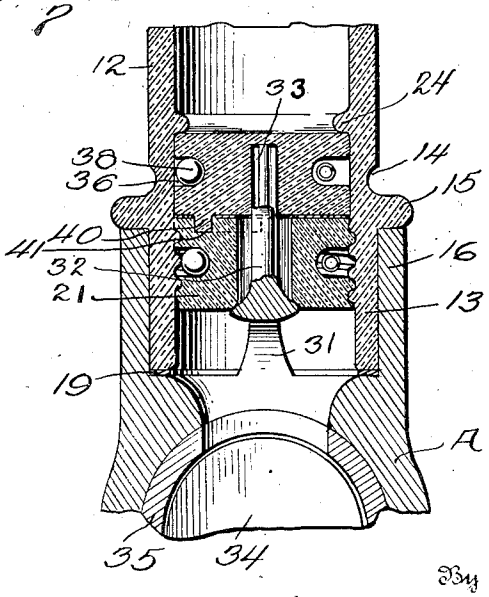
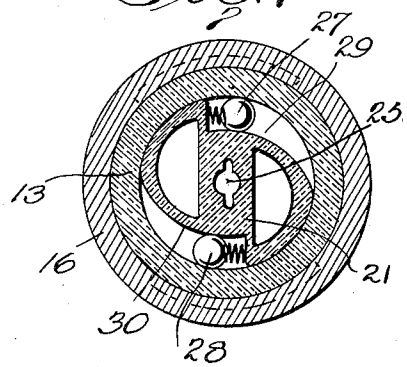


Fig. 7



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UNITED STATES PATENT OFFICE

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DISPENSING DEVICE

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Application November 1, 1934, Serial No. 751,076

17 Claims. (Cl. 221—106)

My invention relates to dispensing devices adapted to dispense liquid or other freely flowing materials in predetermined amounts from a bottle or other frangible container mounted thereupon.

More particularly my invention relates to such a dispensing device which is provided with means for detachably securing the same to a suitable support, whereby the device may be inverted and secured to the neck of a filled container in such a manner as to prevent separation thereof, without breaking the neck of the container.

My invention relates further to valve means within the frangible neck of a container for normally sealing the contents of the container, said valve means being operable by means for securing the neck of the container to the dispensing device for opening the valve as the annular end of the neck is brought into sealing engagement with a leakproof gasket in the dispensing device.

A further object of my invention is the provision of valve means wholly within the frangible neck of a filled container for normally sealing the same, said valve means being operable to effect communication through the valve to the interior of the container and to break the neck of the container when operated to close the valve.

A still further object of my invention is the provision of socket means on a dispensing device for receiving and supporting the frangible neck of a container, said socket means and neck being provided with cooperating engaging means for drawing and securing the one within the other upon relative rotation; for establishing communication through normally closed sealing means between the container and dispensing device upon such relative rotation, and for preventing the closing of such sealing means and separation of the container from the socket of the dispensing device, upon further relative rotation, without breaking the neck of the container.

In order that my invention may be better understood, reference will now be had to the accompanying drawings, wherein:—

Fig. 1 is a fragmentary view of a stand equipped with embodiments of my invention shown in perspective;

Fig. 2 is a top plan view of the dispensing device apart from its support and container to illustrate the interior construction of the container neck receiving socket;

Fig. 3 is a fragmentary view, in perspective, showing the socket of the dispensing device as it would appear when inverted over the neck of a container in the act of securing one to the other;

Fig. 4 is a vertical sectional view of the measuring and dispensing device with the neck of a container secured in the socket thereof and illustrating the sealing valve means for the container turned and held in open position by the dispensing device;

Fig. 5 is a fragmentary sectional view taken on line 5—5 of Fig. 4, showing the clutching and fracturing means between the elements of the sealing valve and the inner surface of the container neck with the valve operating key of the dispensing device in operative position in said valve elements;

Fig. 6 is a transverse sectional view taken in line 6—6 of Fig. 4, and showing the ported rotatable valve element and the neck fracturing means carried thereby;

Fig. 7 is a view similar to Fig. 6, taken on line 7—7 of Fig. 4, and showing the ported retainer for the rotatable valve element and the one-way clutch means for preventing reversed rotation of the retainer in the threaded neck of the container; and

Fig. 8 is a perspective view of the sealing valve as it would appear in the neck of a filled container, the container neck being indicated in dotted lines.

According to this invention it is desirable that the measuring and dispensing device, indicated broadly as A, be formed with a bracket 5 having a tapered base portion 6. As shown in Fig. 1 the base portion 6 is adapted to be removably supported in an angularly flanged holder 7 secured to a vertical panel at the rear edge of a shelved member indicated at B so as to position the dispensing device A with its outlet spout 8 overhanging the shelf.

A strap-like member 9 is shown secured intermediate its free ends to the vertical panel above the flanged holder 7, the free ends of the strap being bent to extend in parallel planes and apertured to receive the shackle of a padlock or other locking member 10. As shown in Fig. 1 the strap member is preferably shaped to surround and fit within an annular groove in the body portion of a bottle-like container C so that the container C is firmly held by the strap against unauthorized or accidental movement relative to the dispensing device A for reasons which will be more fully explained hereinafter. To facilitate the operation of locking the container to the shelved member B I provide one of the apertured ends

of the strap 9 with a lip 11 which is adapted to be hooked over the upper edge of the opposite end of the strap to hold the ends together with their apertures in registration for the ready insertion of a locking shackle as above explained.

The container C may take the form of a glass bottle having a neck 12. By reference to Fig. 3 it will be noted that the frangible neck 12 is formed with a relatively thick cylindrical end portion 13 and a weakened portion adjoining the cylindrical end portion. The weakened portion may take the form of an annular groove 14 and the cylindrical portion adjacent the groove may be further strengthened by an annular rib 15 to insure that breaking or fracturing of the neck will occur inwardly of the cylindrical end 13 to facilitate removal of a fractured end portion 13 from the socket 16 of the dispensing device A, all as will be hereinafter more fully explained.

At the lip or outer end portion of the cylindrical neck 13 is formed a plurality of circumferentially spaced lugs 17, each having an inclined inner edge, and the cylindrical bore of the socket 16 is provided with cooperating internal lugs 18. The lugs 18 are spaced to receive the inclined edges of the lugs 17 beneath their oppositely inclined faces to draw the neck portion 13 within the socket 16 to seating and sealing engagement with an annular gasket 19 at the base of the socket upon relative rotation of the container C and socket of the dispensing device A.

The parts above defined function to secure the container and dispensing device together so that the unit may be supported from the shelved member B in the manner illustrated in Fig. 1.

To provide means for normally closing and sealing the contents of a filled container, which means will be automatically operable to open communication between the container and the dispensing device when attached in the manner described and thereafter prevent the closing of such sealing means and separation of the container from the dispensing device without mutilating the container, I provide a neck sealing valve such as is illustrated in Figs. 4 to 8, inclusive.

This valve comprises one-way rotatable disk-like members 21 and 22, each having two ports which are eccentrically disposed on opposite sides of a transverse web portion, the adjacent faces of the disk members being coated or otherwise provided with a sealing material indicated at 23, to prevent leakage between the members when disposed in abutting relation with their ports out of registration as illustrated in Fig. 8.

The valve member 22 is rotatably mounted in the cylindrical bore of the frangible container neck 12, immediately behind the weakening groove 14 and is there held against axial movement by a shoulder 24 in the bore and the retaining member 21 of the valve which is threaded into the neck to abut one side of the valve member 22. When thus assembled in the neck of a filled container by the use of an assembling tool (not shown) the slots of the key-ways 25 and 26 are aligned by the tool which shifts the ports of the abutting valve members 21 and 22 out of registration to close and seal the contents of the container. Reverse rotation of the retaining valve member 21 in the threaded bore of the neck is thereafter prevented through the wedging or clutching action of oppositely disposed spring pressed balls 27 and 28 which are interposed between the threaded wall of the neck and eccentric grooves 29 and 30 formed in the peripheral surface of the valve member.

Disposed within the base of the socket 16, of the dispensing device A, is a spider 31 having a vertical stem 32 extending centrally through the socket to a point above the upper edge thereof where the stem is laterally flattened and extended to form a valve operating key 33.

In the operation of attaching a filled container C to the dispensing device A, or vice versa, as illustrated in Fig. 3, the key 33 and its supporting stem 32 are inserted in the normally aligned slots of the key-ways 25 and 26 in the transverse webs of the valve members 21 and 22. The cylindrical end portion 13 of the container neck 12 is thus centered and guided into the bore of the socket member 16, the lugs 17 on the neck passing between and beyond the lugs 18 in the socket.

The dispensing device may now be rotated on the neck 12 to bring the oppositely inclined faces of the lugs 17 and 18 into engagement which forces the lip edge of the neck firmly against the gasket 19 at the base of the socket.

During this operation the key 33 is passed through the ported retaining valve member 21 and into the key-way 26 of the valve member 22 so that upon such relative rotation of the container and dispensing device, the valve member 22 is turned relative to its retaining member 21, bringing their ports into registration. The contents of the container C may now flow freely through the open sealing valve in the container neck into the chamber 34 of the measuring valve 35 in the body of the dispensing device A, as clearly shown in Fig. 4.

Reverse rotation of the container relative to the dispensing device to disengage the inclined connecting lugs 17 on the container neck from under the lugs 18 in the socket 16, without breaking the frangible neck, is therefore prevented by means now to be described.

The peripheral surface of the rotatable valve member 22 is formed on opposite sides with circumferentially extending, eccentric grooves 36 and 37, in each of which is freely mounted spring pressed balls 38 and 39. By reference to Figs. 5 and 6 it will be seen that the balls 38 and 39 are retained within the grooves 36 and 37 by contact with the surrounding inner cylindrical wall of the frangible neck 12, immediately behind the weakening groove 14 formed in the outer surface of the neck. While the construction just defined will permit free rotation of the valve member 22 in one direction, rotation in the opposite direction will bring the eccentric surfaces of the grooves beneath the balls 38 and 39, forcing the balls radially through the weakened portion of the frangible neck and destroying the container for further use, after separation from the dispensing device.

It will be observed from the showings in Fig. 4 that upon rotation of the chambered valve 35 in the tapered bore in the body of the dispensing device A, to the dotted line position, that the flow of material from the container will be cut off while discharging measured quantities from the chamber 34 of the valve through the discharge or outlet spout 8.

When the container C is emptied through repeated operations of the measuring and dispensing valve 35 the connected container and dispensing device A are removed as a unit from the shelved member B and inverted as in the previously described operation of attaching the one

to the other. The dispensing device is then rotated relative to the container to disengage the connecting lugs 17 and 18 and align the key-way slots 25 and 26 of the valve members 21 and 22 so that the then fractured neck of the frangible container may be readily removed from the socket 16 of the dispensing device.

While it is possible with the construction of sealing valve herein described to manually rotate the disk valve member 22 relative to the ported retaining member 21 within the neck 12 of a container C apart from the dispensing device A, through the use of a specially constructed key (not shown) and thus open the valve by bringing its ports into registration, further rotation of the valve member 22 in the same direction to close the valve is prevented by engagement of the lug 40 on the disk 22, with a shoulder at the end of an arcuate groove 41 in the adjacent face of the retaining valve member 21. Rotation of the valve member 22 in the opposite direction to close the valve, as heretofore explained, is prevented without fracturing the neck 12 and thus destroying the container C for further uses.

It will therefore be seen that I have provided means which may be operated automatically in conjunction with the dispensing device A, or manually apart from the dispensing device, to open the valve in the neck of a container C, but in each case, however, the means may not thereafter be operated to close the valve without breaking the neck of the container.

It will be further noted that in the event the sealing valve of a container C has been manually opened, as above described, for pouring out its contents and possibly refilling the container, that it will thereafter be impossible to attach the container to the socket 16 of the dispensing device A as the slots of the key-ways 25 and 26 of the valve members 21 and 22 will be out of registration, preventing entrance of the key 33 into the valve member 22.

From the foregoing it will be seen that I have provided an improved dispensing means and container for use therewith, the construction and arrangement of parts being such as to readily adapt the device for use in dispensing beverages in measured quantities from a sealed container, without requiring opening of the seal prior to connecting the container to the dispensing means, and which will function to destroy the container for further uses when disconnecting the same from the dispensing means or otherwise attempting to close the sealing means thereof.

I claim:

1. A dispensing device comprising a frangible container, valve means for normally closing said container, a dispensing element having means for securing said container thereto and simultaneously bringing said valve means to open position, and means associated with said valve means for breaking said container when said valve means is operated to disassociate said container from the dispensing element.

2. A dispensing device comprising a container having a frangible neck, valve means mounted within the neck of said container for normally closing the same, a dispensing element, and cooperating means on said neck and dispensing element for securing the one to the other upon relative rotation, said means including means for operating said valve means to open the same upon such relative rotation and to break the neck of said container upon reverse rotation.

3. A dispenser, comprising a dispensing valve having means for securing the same to a support, a socket carried by the valve, a frangible container having valve means normally closing the same, means to secure the normally closed container in said socket, and means associated with said socket and operatively engaging said valve means for opening said valve means and preventing removal of said container from said socket without breaking the same.

4. A dispensing device comprising a container having a frangible neck, a dispensing device provided with a socket securing and supporting the aforementioned neck, sealing means associated with the container and dispensing device for normally preventing communication therebetween, said socket and neck being provided with cooperating engaging means for drawing and securing the one within the other upon relative rotation and simultaneously establishing communication through said normally closed sealing means, and means associated with said engaging and securing means for preventing closing of the sealing means and the separation of the container from the socket upon further relative rotation without breaking the neck of the container.

5. The combination with the neck of a frangible container, of a one-way rotatable valve mounted therein, said valve having a key-way for key operation of said valve, a dispenser having socket means for receiving and supporting the neck of said container, a valve operating key mounted within the socket of said dispenser and adapted to enter the keyway in said valve, and cooperating means on said neck and socket means for connecting the one to the other while simultaneously operating said valve, whereby the container and dispenser are inseparably connected together.

6. The combination with the neck of a frangible container, of a sealing valve mounted for one-way rotation therein, a dispenser having a socket for receiving and supporting the neck of said container, sealing valve operating means mounted within said socket, and cooperating means on said neck and socket for connecting the one to the other while simultaneously operating said valve, whereby said neck and socket are inseparably connected together.

7. The combination with the neck of a frangible container, of a sealing valve mounted therein, said valve comprising a disk having a port and means for rotatably supporting and sealing the port in said disk, neck fracturing means carried by said valve, a dispenser having a socket for supporting and securing the neck of said container thereto, and means cooperating with said socket and valve for operating said valve to fracture the neck of said container.

8. The combination with the neck of a frangible container, of a sealing valve rotatably mounted therein, said valve comprising a disk-like member having a cam groove in the periphery thereof, and a neck fracturing element freely mounted in said groove and adapted to be moved radially thereby to frictionally engage the neck of said container upon rotation of said member in one direction.

9. The combination with the neck of a frangible container, of a sealing valve rotatably mounted therein, said valve comprising a disk-like member having a cam groove in the periphery thereof and a neck fracturing element mounted in said groove and adapted to engage the neck of said container, a non-rotatable valve retaining member mounted within the neck of said container to

engage said disk-like member, and means carried by one of said members and cooperating with the other to limit rotation of said disk-like member relative to said retaining member.

10. The combination with the neck of a frangible container, of a sealing valve rotatably mounted therein, said valve comprising a ported disk-like member having a circumferentially extending cam groove in the periphery thereof, a neck fracturing element mounted in said groove and adapted to engage the neck of said container, a dispenser, and means on said dispenser for supporting and securing the neck of said container, said last mentioned means cooperating with said valve to fracture the neck of said container upon operation to disassociate said container from said dispenser.

11. The combination with the neck of a frangible container, of a sealing valve mounted for rotation therein to open the valve, said valve having means operable upon reverse rotation to fracture the neck of said container, a dispenser, and means for supporting and securing said container to said dispenser, said last mentioned means cooperating with said valve to rotate the same when operated to connect or disconnect said container and dispenser.

12. In a dispensing device having means for securing a container thereto, a frangible container, means for normally sealing said container, said sealing means being constructed for cooperation with said securing means to open said sealing means, and means cooperating with said sealing means and constructed to break said frangible container when said sealing means is operated to close the same.

13. In a dispensing device having means for securing a container thereto, a frangible container, valve means rotatably mounted in said container for normally closing the same, said valve means being constructed for cooperation with said securing means to open said valve means, and means to prevent rotation of said valve means in either direction when in open position.

14. In a dispensing device having means for securing a container thereto, a frangible container, valve means rotatably mounted in said container for normally closing the same, said valve means being constructed for cooperation with said securing means to open said valve means, and means to prevent rotation of said valve means in either direction when in open position, said last mentioned means including container fracturing means operable to break the container when said valve means is operated to close the container.

15. In a device of the class described including a dispenser and a valved container, said dispenser having means for securing said container thereto, container valve operating means associated with said securing means, and means cooperating with the valved container and valve operating means to prevent separation of said dispenser and container.

16. A dispenser having a socket and a measuring valve operatively mounted therein to communicate with said socket, means in said socket constructed to secure a container thereto upon relative movement, valve operating means connected to said socket for operation therewith when securing a container thereto, said valve operating means serving also to fracture said container upon operation to disassociate a container from the securing means in said socket.

17. A dispensing device comprising a support, a dispenser detachably connected to said support, a container, means on said dispenser and container for securing the one to the other upon relative rotary movement, and means on said support and engaging said container for preventing such relative movement.

EUGENE HARRY HOWARD.