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A. F. LOEWE

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CLOSURE FOR DISPENSERS

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Fig. 2.

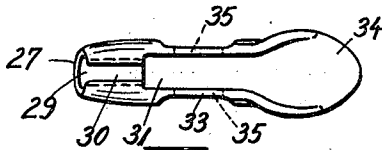
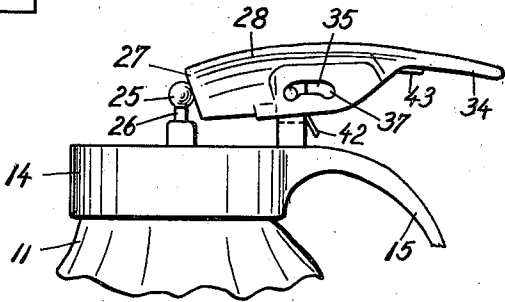


Fig. 4.

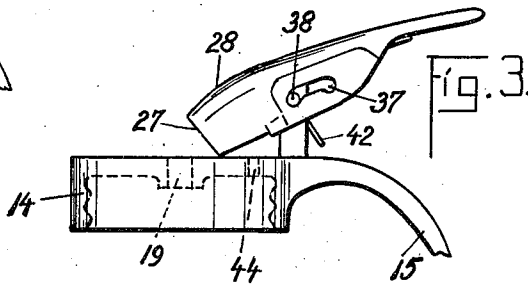


Fig. 3.

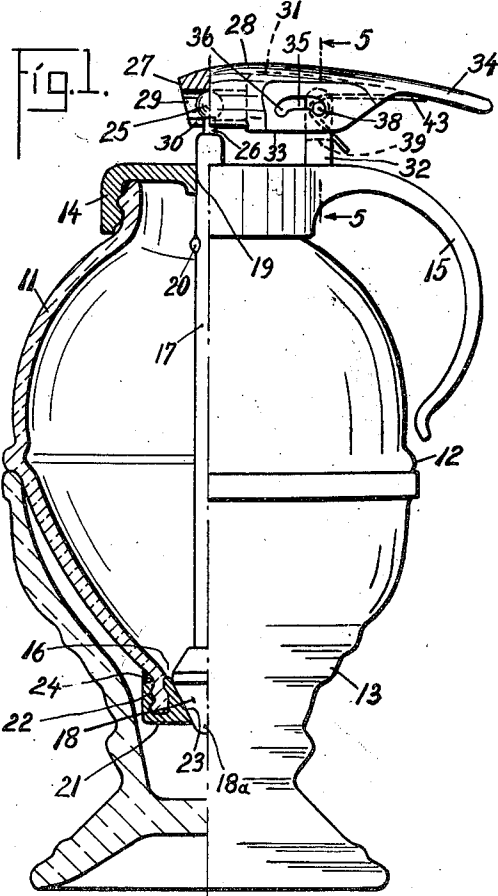


Fig. 1.

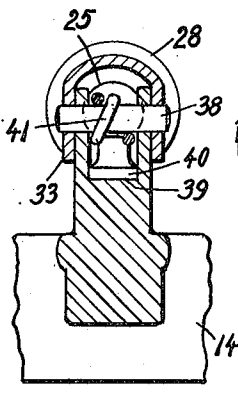


Fig. 5.

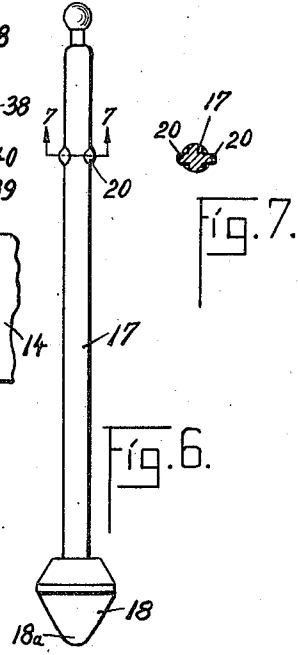


Fig. 7.

Fig. 6.

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# UNITED STATES PATENT OFFICE

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## CLOSURE FOR DISPENSERS

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Application April 8, 1937, Serial No. 135,675

18 Claims. (Cl. 65—45)

This invention relates to vessels with closures especially adapted for dispensing the contents of the vessel.

It has among its objects to provide improved operating mechanism for the valve of a dispenser of the type having a bottom outlet and valve operating means on the removable cover of the dispenser. A further object of my invention is to provide such valve operating mechanism having improved means for enabling the same to be connected to or disconnected from the valve rod in such manner as to enable the latter to continue to close the bottom outlet while the cover carrying the operating mechanism is removed from the dispenser. A still further object of my invention is to provide such improved operating mechanism including an improved connecting element transversely shiftable on the cover and selectively connectible or disconnectible by movement toward or from the axis of the valve rod. Other objects include the provision of such an improved mechanism and element whereby the valve rod may be connected or disconnected at will while the cover is stationary, in such manner as to eliminate any necessary connection between the valve operating mechanism and the valve rod while the cover is moving during the process of being inserted on or removed from the dispenser, and whereby the valve rod may be not only more readily and quickly connected, but also maintained more readily in outlet closing position during the cover disconnecting and connecting operations incident to filling the dispenser. These and other objects and advantages of my improved construction will, however, hereinafter more fully appear.

In the accompanying drawing, I have shown for purposes of illustration one embodiment which my invention may assume in practice.

In the drawing,—  
Fig. 1 shows a partly sectioned side elevation of an assembled dispenser.

Fig. 2 shows a non-sectioned similar view of part of the device, the valve gearing being here shifted into a releasing position.

Fig. 3 is a similar view of part of the cover, after it has been removed from the dispenser.

Fig. 4 is a detail bottom view of the control lever which may be exemplarily used in pursuit of the instant invention.

Fig. 5 shows, in a sectioned rear view, the arrangement of the control lever of the valve gear upon the cover.

Fig. 6 is an illustration of the valve, and  
Fig. 7 is a cross-section of the valve stem.

The exact positions of sections of the views of Figs. 5 and 7, are pointed out by dot-dash lines, arrows, and the numerals 5 and 7 in Figs. 1 and 6, respectively.

Similar numerals refer to similar parts 5 throughout the various views.

The vessel 11 is preferably arranged so that it may rest upon a stand above a container, which latter will receive any possible dripping, when the vessel 11 is not in use. For that purpose the illustration of Fig. 1 provides the vessel 11 with a shoulder 12 extending therearound, upon which the vessel is supported in a vertical position by the cup 13, which serves as the stand as well as the container mentioned.

An intake at the upper end of vessel 11 is removably closed by a cover, e. g. screw cover 14, which is provided with a handle 15. By way of handle 15 the screw cover may be tightly placed onto the vessel and the handle 15 also serves to manipulate the whole vessel, after the cover has been attached thereto, for instance for the purpose of lifting the vessel from the cup 13 into a position in which some contents of the vessel 11 may be dispensed therefrom, by way of an outlet 16 at its lower end.

If the stem 17 of conical valve 18 is to extend through the cover 14 we may provide a central clearance opening 19 in cover 14, as shown, to allow free passage and possible guidance for the valve stem 17 as it is reciprocated in a vertical direction.

The choice of the material for the various parts of the device herein described, may follow the suggestion and dictate of practical consideration. From the point of view of hygiene, for instance, the vessel 11 is preferably made out of glass, but a strong metal or condensation product may be selected as material for the valve 18 and the stem 17, so that the diameter of the stem 17 may be made comparatively small.

One or more upsets 20 or an equivalent may be provided upon the stem 17 at a suitable distance below the cover 14, so that the valve cannot be lifted too high in the closed container, thus preventing the valve from being raised so high that, if dropped, it might strike with excessive force and break the vessel.

If the valve seat 21 is executed separately from the vessel 11, due precaution should be exercised to mount it firmly upon the vessel, so that it cannot be loosened and severed by the force of the descending valve. For that purpose the seat is shown to be fastened by way of an outer thread 22 upon the bottom end of the vessel 11, and the

inner conical part 23 of this seat is shown to be spun out into the flared part of the outlet 16 of the glass part 11. The seat may be further securely positioned upon the vessel by cement, as shown at 24.

It will be noted that valve 18 outwardly protrudes beyond the valve seat 21, by way of an attenuated end 18a. The end of the valve is thus allowed to extend from the vessel, when it is seated, in order to reduce to minimum,—particularly in a case where the vessel has liquid or semi-liquid contents,—the drop remaining at the bottom end of the valve after it has been closed. We do not need such a protruding end on the valve, if the contents of the vessel are dry.

The protruding end 18a of the valve may assume different cross-sections in accordance with the intended use. Generally, that cross-section will be substantially a conic section, but there may be steps and concavities and it is subject to variations in accordance with the viscosity and density of the liquid, for which the dispensing vessel is primarily intended. In connection with thin fluids which flow readily, the protruding end of the valve may be simply a continuation of the truncated cone of the valve proper. The end may also provide a concavity below the frustum of the valve proper. In the showing the protruding end substantially resembles a hyperbola in cross-section.

Just as in the case of the straight cone, the valve proper and the downward extension thereof, as well as the surface 23 of seat 21 may all combine to form a solid body, such as a hyperboloid, paraboloid, a sphere ellipsoid, ovoid, etc.

Above the receded neck 26 a ball formation 25 is provided at the upper end of stem 17. Into the slanted front end 27 of the lever 28 extends a transverse hole 29, which slidably accommodates the ball 25. Hole 29 is downwardly open by virtue of a narrow slot 30, which clears the neck 26 of stem 17. Thus lever 28 and ball 25 form a joint and form consecutive parts of a chain of the gearing of valve 18. To the back the hole 29 expands into a hollow rectangular formation 31 in the lever, which is downwardly fully open.

A square arbor 32 arising from the top of cover 14, slidably fits between the side walls 33 of the said hollow angular formation. To the back of the said angular formation, the lever 28 flares out into a key 34, which is adapted for manipulation by the thumb of a hand gripping handle 15.

In the opposite walls 33 are parallel, substantially horizontal slots 35, which are swerved downwardly at their ends to form notches 36 and 37. Between notches 36 and 37 the slot 35 slidably accommodates a fulcrum pin 38, which is mounted in the arbor 32.

A groove 40 extends down to a bottom 39 in the arbor 32, and accommodates a spring 41 which is coiled onto pin 38; one of the ends 42 of said spring reacting upon the bottom 39 of groove 40, the other end 43 of said spring reacting upon the lever underneath the key 34 at the end thereof. Spring 41 presses the fulcrum pin 38 either into the notch or catch 36, as shown in the release position of Figs. 2 and 3, or into the notch or catch 37, as shown in the operating position of Fig. 1, it being readily possible to shift the lever from one notch onto the other by means of manipulation of the key 34.

By way of the handle 15, the vessel 11 may be lifted off the cup 13, and may be positioned by

the user above a dish or object, onto which some of the contents of the vessel 11 are to be dispensed. At his discretion the user presses the thumb part 34, thus releasing a portion of the contents of the vessel as desired.

In order to provide access of air to the vessel during evacuation thereof, a perforation 44 may be placed in customary manner in the cover 14, for instance underneath the lever 28.

When the fulcrum pin 38 is switched into the notch 36, and cover 14 is unscrewed and lifted off the vessel 11, the spring 41 pushes the lever 28 into the position of Fig. 3, the ball 25 at the upper end of the valve 17, 18 being released from the lever, and remaining standing erect in the seat 21 at the bottom of vessel 11.

If valve 17, 18 stands erect in the vessel, thus closing the bottom outlet 16 thereof, the vessel may be filled by way of the uncovered intake. The cover 14 may be screwed onto the top of the vessel 11 without disturbing the valve 17, 18 in the erect position, (in which the valve closes the bottom of the vessel). As the cover 14 is being screwed on, and the ball 25 emerges through the opening 19 in the cover, hole 29 may engage in ball 25, and the lever 28 may be fully engaged upon the ball, if the lever is switched to the front, so that fulcrum pin 38 snaps out of notch 36 over into notch 37, into the position shown in Fig. 1.

Having thus described my invention in detail, I do not wish to be limited thereby, except as the state of the art and the appended claims may require, for it is obvious that various modifications and changes may be made in the form of embodiment of my invention, without departing from the spirit and scope thereof.

What I claim is:

1. In combination with a removable cover on a vessel, and a valve closing an outlet of said vessel, a chain of valve gearing for control of said valve and extending from said cover to said valve, and relatively releasable parts in said chain, separable upon bodily movement of one part transversely to the valve axis, said parts serving for operative connection from said cover to said valve when the cover is positioned on the vessel.

2. In combination with a removable cover on a vessel, and a valve closing an outlet of said vessel, a chain of valve gearing for control of said valve and extending through said cover to said valve, and relatively releasable parts in said chain, transversely separable from said valve while said cover remains stationary on said vessel, said parts serving for operative connection from the outside of said vessel to said valve when the cover is positioned on the vessel.

3. In combination, a receptacle having an open top and a bottom outlet, a valve normally supported on and closing said outlet, a cover through which a portion of said valve projects, valve operating means on said cover normally pressing said valve down to close said outlet, and means including a connection in said operating means having an element thereof bodily shiftable transversely of the valve axis to disconnect said valve for enabling removal of said cover while said valve continues to close said outlet.

4. In combination, a vessel having an open top and a valve seat in its bottom, a valve supported on said seat and having an upwardly projecting rod, a cover on said top through which said rod projects, and valve operating means on said cover including a pivoted spring pressed operating

member transversely connectible to the end of said valve rod and bodily shiftable relative to its pivot to connect or disconnect said rod.

5. In combination with a removable cover on a vessel, and a valve seated upon and closing an outlet of said vessel, a chain of valve gearing for control of said valve and extending through said cover to said valve, and relatively releasable parts in said chain, separable upon relative movement transversely of the axes of said valve and of said cover, one of said parts being operatively mounted on said cover, the other one extending from said valve, said parts serving for operative connection from the outside of said vessel, to said valve when the cover is positioned on the vessel, and said parts being transversely separable to enable removal of the cover from the vessel while the valve continues to close said outlet.

6. In combination with a removable cover on a vessel, and a valve closing an outlet of said vessel, a chain of valve gearing for control of said valve and extending through said cover to said valve, and relatively releasable parts in said chain, one of said parts being manipulatably mounted on said cover, the other one extending from said valve, said parts serving for operative connection from the outside of the said vessel to said valve when the cover is positioned on the vessel, and said first mentioned part being movable transversely relative to the other part to disconnect the same and enable removal of the cover.

7. In combination with a removable cover on a vessel, and a valve closing an outlet of said vessel, a chain of valve gearing for control of said valve and extending through said cover to said valve, and relatively releasable parts in said chain, one of said parts being operatively mounted on said cover and also bodily movable reversely relative thereto transversely relative to the valve axis, the other one extending from said valve and projecting through said cover, said parts serving for operative connection from the outside of said vessel, to said valve when the cover is positioned on the vessel, and means for automatically connecting and disconnecting said parts upon reverse bodily movements of said first mentioned part relative to said cover.

8. In combination with a vessel, with a cover closing an intake of said vessel, and with a valve in said vessel closing an outlet thereof, and operated by way of said intake, means for operating said valve mounted on said cover, said means being movable into positions of disengagement from and of operative engagement with said valve, and a catch for engaging said means on said cover in said position of said operative engagement.

9. In combination with a vessel, with a cover closing an intake of said vessel, and with a valve in said vessel closing an outlet thereof and operated by way of said intake, means for operating said valve mounted on said cover, said means being movable into positions of disengagement from and of operative engagement with said valve, and catches for retaining said means and cover upon each other in said positions of relative disengagement and engagement.

10. In combination with a vessel, with a cover closing an intake of said vessel, and with a valve in said vessel closing an outlet thereof and operated by way of said intake, means for operating said valve mounted on said cover, said means being movable into positions of disengagement

from and of operative engagement with said valve, a catch for engaging said means on said cover in said position of said operative engagement, and a spring pressing said valve into its seat and said catch into said engagement.

11. In combination with a vessel, with a cover closing an intake of said vessel, and with a valve in said vessel closing an outlet thereof and operated by way of said intake, means for operating said valve mounted on said cover, said means being movable into positions of disengagement from and of operative engagement with said valve, catches for retaining said means and cover upon each other in said positions of relative disengagement and engagement, and a spring pressing said valve into its seat and said catches into the retainment referred to.

12. In combination with a vessel, with a cover closing an intake of said vessel, and with a valve in said vessel closing an outlet thereof and operated by way of said intake, a lever for operating said valve fulcrumed upon said cover and reversely shiftable upon said cover transversely relative to its fulcrum into and out of operative engagement with said valve.

13. In combination with a vessel, with a cover closing an intake of said vessel, and with a valve in said vessel closing an outlet thereof and operated by way of said intake, a lever for operating said valve fulcrumed upon said cover and shiftable into and out of operative engagement with said valve, and a fulcrum pin relatively rockably and slidably interconnecting said cover and lever.

14. In combination with a vessel, with a cover closing an intake of said vessel, and with a valve in said vessel closing an outlet thereof and operated by way of said intake, a lever for operating said valve fulcrumed upon said cover and shiftable into and out of operative engagement with said valve, and a fulcrum pin mounted on said cover and slidably and rockably supporting said lever.

15. In combination with a vessel, with a cover closing an intake of said vessel, and with a valve in said vessel closing an outlet thereof and operated by way of said intake, a lever for operating said valve fulcrumed upon said cover and shiftable into and out of operative engagement with said valve, and a fulcrum pin mounted on said cover, said lever being adjustably accommodated upon said pin by way of a curved slot.

16. In combination with a vessel, with a cover closing an intake of said vessel, and with a valve in said vessel closing an outlet thereof and operated by way of said intake, a lever for operating said valve fulcrumed upon said cover and shiftable into and out of operative engagement with said valve, and a fulcrum pin mounted on said cover, said lever being adjustably accommodated upon said pin by way of a plurality of notches.

17. In combination with a vessel, a reciprocable valve in said vessel closing an outlet of said vessel, a cover on said vessel guiding said valve in the direction in which it is reciprocable and sliding off said valve when removed from said vessel, and a key for operating said valve and movable on said cover transversely to said direction into and out of operative engagement.

18. In a device of the character described, a vessel, a valve, and a seat for said valve screwed onto said vessel and spun into said vessel in a screwed-on position.

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