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DISPENSING CLOSURE

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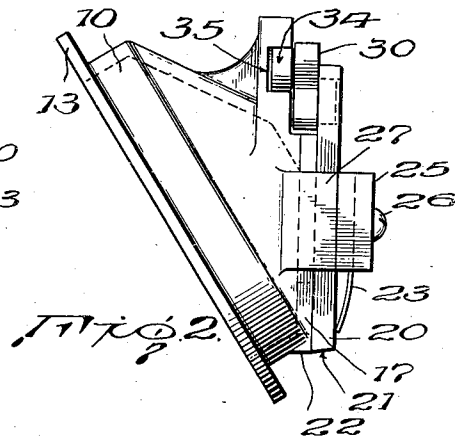
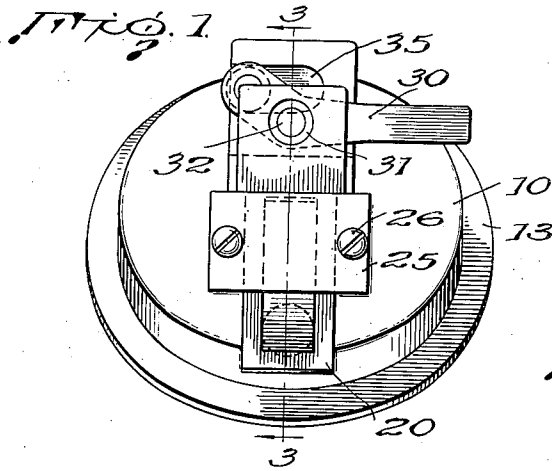
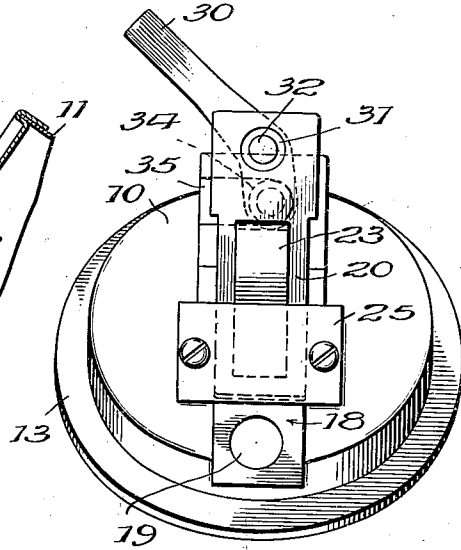
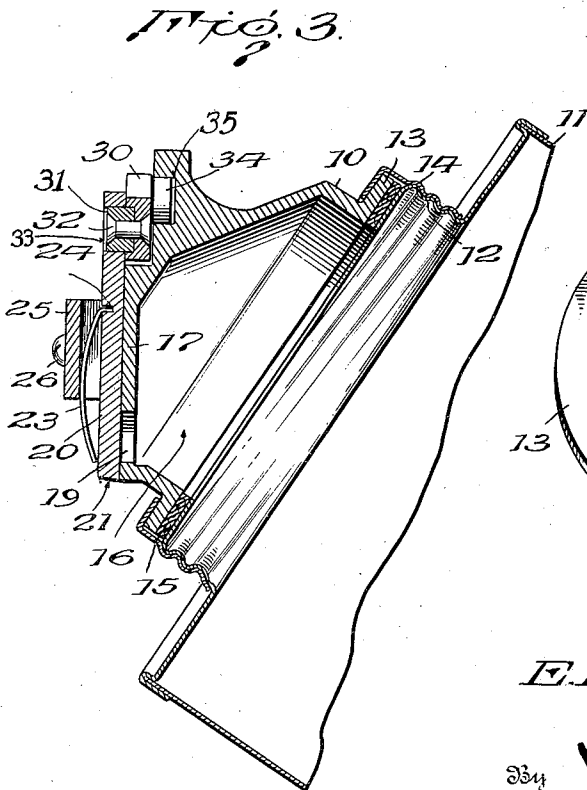


FIG. 4



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DISPENSING CLOSURE

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5 Claims. (Cl. 251-53)

This invention or discovery relates to dispensing closures; and it comprises a valved dispensing closure primarily adapted for attachment to the outlet of a container containing paint, varnish or other viscous or pasty liquid for accurate dispensing thereof, and including a valve body member having an orifice therethrough and adapted for attachment to a container, a gate member in sliding relation to the body member and adapted to expose the orifice to various degrees, resilient means for pressing the gate member against the valve member, and lever means connecting the gate member to the valve member for reciprocating the gate member; all as more fully hereinafter set forth and as claimed.

In paint shops, automobile finishing establishments, etc. it is necessary to measure out small quantities of paints and lacquers from supply cans, for mixing and blending. Simply pouring the material out of a can is messy and moreover it is difficult to pour out exactly the right quantity, especially when the quantity required is small. Similar considerations apply in dispensing many other sticky and pasty liquids: pigment pastes and other pastes, rubber cement, etc. Various types of valved closures for these cans have been proposed, but none has proved entirely satisfactory. Conventional spigot type valves, which have found some use, are too slow in closing, and moreover are difficult to keep clean.

According to the present invention there is provided a valved closure for paint cans which is adapted for abrupt closing, almost instantaneous in fact, and which is very readily kept clean even when employed with sticky varnishes or the like. The valved closure is primarily adapted for accurately measuring out small quantities of paints, etc. and is so arranged as to control the flow of the can to a very fine stream when desired. The valve includes a guillotine gate member, resiliently pressed against an accurately machined flat faced valve body member, orificed near one side of the closure. The gate is operated by a lever arrangement such as to give very rapid movement of the gate in opening and closing, and to open or close the gate completely by a movement of the lever through a relatively small arc. At the same time the lever arrangement makes possible setting the valve at any desired position intermediate open and closed, and facilitates controlling fine streams of liquid. The gate and the valve body member are so constructed that in the closed position the gate end is flush with the body member so that the exposed parts of the valve can be cleaned by simply wiping with a rag. Further to facilitate cleaning, the gate is retained to the body member by a retaining

piece in such manner that by simply removing this piece the gate and lever system can be lifted out and all parts of the valve made accessible for cleaning. The seat portion and gate are disposed at an angle to the plane of attachment to the container, and the rear face of the closure is hollowed out in such manner as to facilitate dispensing even the last few ounces of liquid in the container.

In the accompanying drawing there is shown, more or less diagrammatically, an example of a specific embodiment of apparatus within the purview of the invention. In the drawing,

Fig. 1 is a view of the valved closure in front elevation, with the valve in closed position,

Fig. 2 is a corresponding view in side elevation, Fig. 3 is a sectional view taken along line 3-3 of Fig. 1, and

Fig. 4 is a view similar to Fig. 1, but with the valve in open position.

Referring to the drawing, the apparatus includes a circular valve body member 10 of such size and shape that it serves as a closure for a standard paint can 11 having a conventional threaded spout 12. The body member is flanged at 13 and is retained to the can spout by a threaded ring 14. A gasket 15 is interposed as shown. The body member is shaped to provide a shallow chamber 16, to collect the last of the paint when the can is nearly empty. The body member has a valve seat portion 17, inclined with respect to the body member and machined accurately flat on its outer face 18. An orifice 19 extends through the body member, defining a sharp-lipped hole in the seat member as shown, near the outer edge of the closure, whereby the very last few drops of liquid can be drawn from the can. The orifice is very short, as shown. This permits free flow of liquid and makes for easy cleaning. A valve gate member is provided in the form of a strip or blade of metal 20, of relatively massive construction as shown, accurately machined to fit face 18, and slightly beveled at its outer end 21 to provide a cutting action in cooperation with the sharp lip of orifice 19. The end of blade 20 is of the same contour as the end portion 22 of seat portion 17 (Figs. 1 and 2), to facilitate cleaning by simply running a rag over this part of the valve. The rubbing faces of the seat portion and of the blade are of substantially the same length which makes for the most uniform wear of these faces.

The blade 20 is retained to the seat member by a leaf spring 23, having an end retained in a slot 24 in the blade as shown, and bearing against a cross-piece 25 fastened by screws 26 to standards 27 integral with the seat member as shown. The standards guide the blade. By making the crosspiece detachable as shown, the

face 18 is capable of being readily machined by simple methods to an accurately flat surface.

The blade is actuated by a lever 30, carrying a stud or trunnion 31 riveted to the lever at 32 and inserted in a bore 33 in the blade. The end of the lever has riveted thereto a stud 34 arranged to slide in a transverse groove 35 in the seat member, as shown. By moving the lever counterclockwise (Fig. 1) the gate is opened to the position shown in Fig. 4, with stud 34 resting against the end of groove 35 as a stop. The leverage is least at or near the closed position, which makes for rapid cutoff. In fact, the action of the valve gate is practically a snap action, although the gate member will remain firmly at any desired intermediate position from open to closed, and in practice is often employed at some intermediate position without being fully opened. The lever is arranged to move in the plane of movement of the gate member. This facilitates operation of the valved closure, as well as manufacture thereof, and it minimizes accidental opening of the valve.

In use, the valve is ordinarily kept sufficiently clean simply by wiping off the closure end of the blade with a rag, in the closed position. For further cleaning, as when the valve is to be removed to a can containing a different color finish, crosspiece 25 is removed and the blade lifted off. The lever, with its studs 31 and 34, is taken out. Thus all the working parts of the valve are readily exposed for cleaning. In putting the valve together there is no chance for error, since the parts can be fitted together in only one way.

The apparatus is embodied in any metal or non-metal suitable for the particular purpose at hand. Steel, brass, aluminum, etc. are generally suitable. The valve body member 10 is conveniently made as a single die casting. The various parts can be plated if desired.

While the apparatus has been described primarily in connection with paint and varnish containers, it is useful for controlling supplies of lubricants or any other liquid. It is especially suited for pouring out accurate quantities of viscous liquids.

What I claim is:

1. A valved dispensing closure comprising a valve body member having a smooth surfaced valve seat face and an orifice extending therethrough near one edge of the closure and a transverse-slotted portion near the opposite edge of the closure, an elongated gate member in sliding relation to the valve seat face, resilient means for pressing the gate member against the valve seat face, a lever, a pivot connecting the lever with the gate member, and a fulcrum on the lever closely fitting in and in sliding relation to said transverse-slotted portion of the body member, whereby said gate member is reciprocated by movement of the lever in the plane of reciprocation of the gate member.

2. A valved dispensing closure comprising a thin-walled valve body member of hollow domed shape with an annular base adapted for attachment to a container opening and having a smooth surfaced valve seat adjacent one side of the body member inclined with respect to the plane of the base and a short orifice adjacent said side of the body member and extending through the seat and wall, an elongated gate member in sliding relation to the valve seat and adapted to expose the orifice to a varying extent, yoke means in fixed relation to the body member and extending over the gate member, resilient means between the yoke member and the end portion of the gate member for retaining the end portion of the gate member firmly against the valve seat face and lever means connecting the gate member to the valve member, for reciprocating the gate member.

3. A valved dispensing closure comprising a valve body member having an annular base adapted for attachment to a container and having a smooth surfaced valve seat face and an orifice extending therethrough adjacent one edge of the body member, an elongated gate member in sliding relation to the seat face and adapted to expose the orifice to a varying extent, resilient means pressing against the end portion of the gate member for retaining the end portion of the gate member against the seat portion, a slot in the body member transverse with respect to the long axis of the gate member and located between the orifice and the end of the gate member which is remote therefrom, and a lever fulcrumed adjacent the end of the gate member which is remote from the orifice, and fulcrumed in said transverse slot, the fulcrum being perpendicular to the plane of the seat face and said lever having its lowest leverage when in position corresponding to the closed position of the gate member.

4. A valved dispensing closure for containers having circular spouts comprising a domed valve body member with a circular base portion adapted for attachment in sealed relation to a container spout and having a flat smooth-surfaced upraised valve seat portion inclined with respect to the plane of the base portion and orificed adjacent one edge of the body member, an elongated gate member in sliding relation to the seat portion and adapted to expose the orifice to a varying extent, the gate member having an end portion of contour closely registering with the contour of the end of the valve seat portion to facilitate cleaning, a removable yoke extending across the valve gate member adjacent the orifice, resilient means engaging the yoke and the gate member for pressing the gate member against the seat, and a lever fulcrumed in the body member and the gate member, one of the fulcrum being of pin-and-socket type and the fulcrum axes being perpendicular to the valve seat face, whereby on removal of the yoke the gate member can be lifted off for cleaning.

5. A valved dispensing closure for containers having outlets, comprising a thin-walled valve body member of concave shape having an annular flanged rim adapted to rest on the container outlet and to be secured thereto in desired angular relation, said body member having a smooth surfaced valve seat adjacent one side of the body member and a short orifice adjacent said side of the body member and extending through the seat and wall, an elongated gate member in sliding relation to the valve seat and adapted to expose the orifice to a varying extent, a cross piece in fixed relation to the body member and extending over the gate member, resilient means between the cross piece and the end portion of the gate member, for retaining said end portion firmly against the valve seat face, and manually operable means engaging the gate member and the valve body member, for reciprocating the gate member.

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