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LIQUID DISPENSER WITH OPEN VALVE LATCHING MEANS

Filed March 9, 1945

2 Sheets-Sheet 1

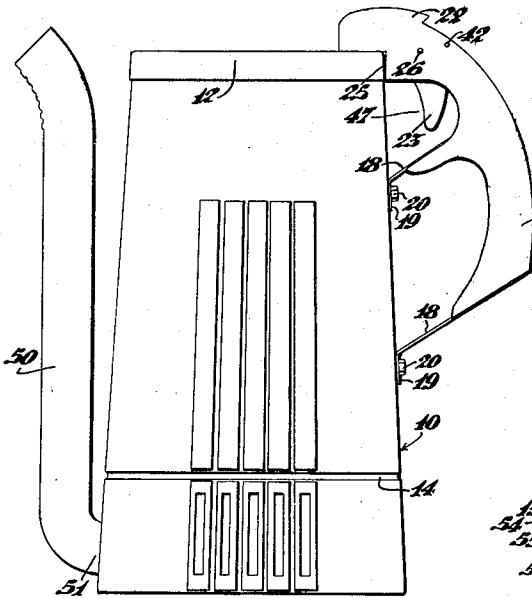


Fig. 1

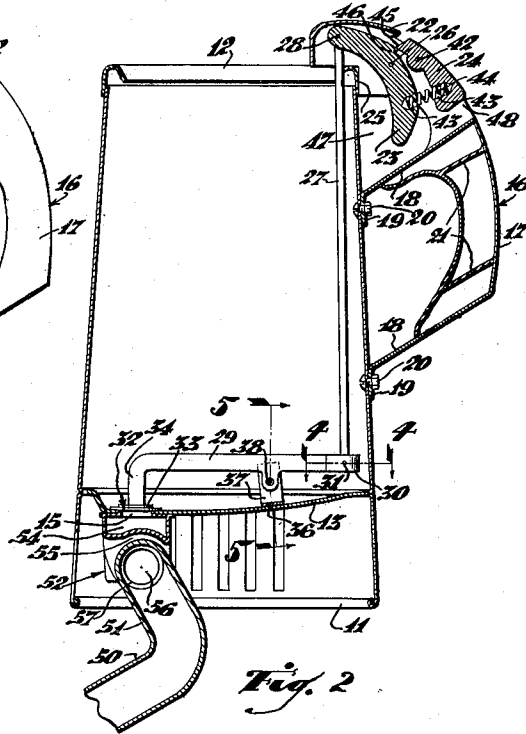


Fig. 2

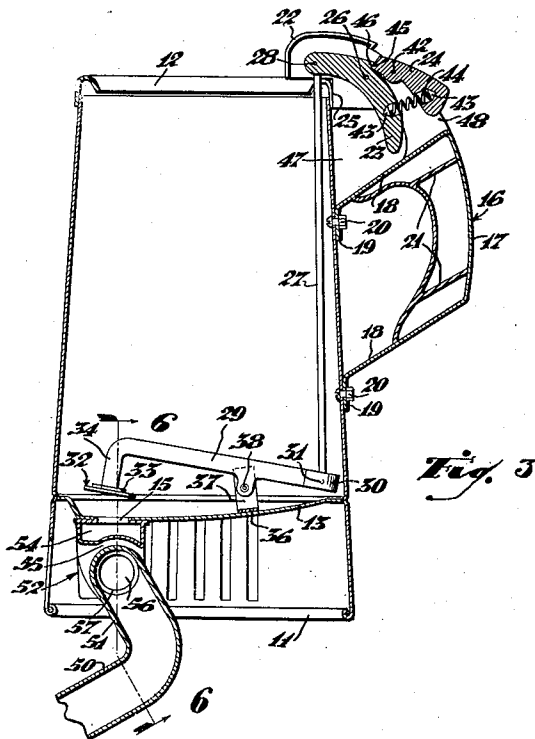


Fig. 3

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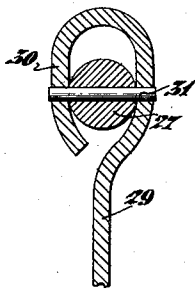


Fig. 4

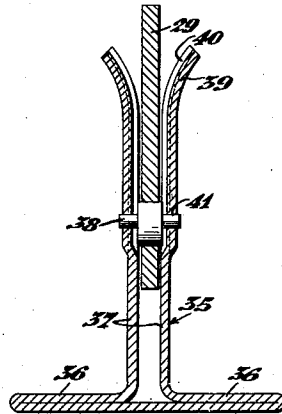


Fig. 5

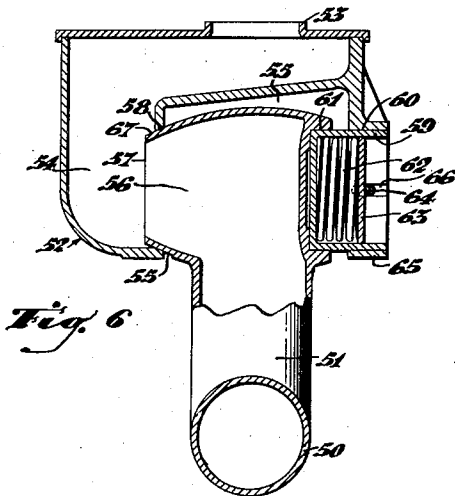


Fig. 6

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## UNITED STATES PATENT OFFICE

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LIQUID DISPENSER WITH OPEN VALVE  
LATCHING MEANSWilbur J. O'Brien, Cincinnati, Ohio, assignor to  
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9 Claims. (Cl. 222-474)

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This invention relates to dispensers for delivering liquid to a point of use, such as lubricating oil to the crankcase of an engine, and is particularly directed to improvements in the valve operating mechanism, the valve position indicating means, and the delivery tube of this type of dispenser.

It is recognized that the prior art discloses a great many structures for operating the valve as well as means for indicating the position of the valve. However, none of these prior structures contains the invention as set forth and disclosed here wherein new and useful results are obtained in the simplicity and ease of operation of the valve operating and position indicating mechanism and the ready assembly of the dispensing valve operating mechanism and the delivery tube relative to the dispenser.

The broad objective accomplished in this invention is the provision of a valve operating mechanism actuated by a trigger element conveniently related to the handle of the dispenser.

A further accomplishment has been the provision of improved means for locking the valve actuating mechanism in position with the valve held open, this means being closely associated with the trigger in position to be released by thumb pressure adjacent the trigger. Further, this locking means when holding the valve open is disposed in an extended position whereby it serves as an indicator of the open position.

A still further accomplishment has been to include these trigger and locking parts compactly within the handle for the dispenser with the trigger conveniently disposed for operation by the forefinger of the operator.

In the past the assembly of the valve parts in the dispenser has been a difficult operation and one which retarded rapid production. This has been true since the valve itself and its support arm are mounted inside the receptacle on the bottom thereof in a position rather difficult to reach.

This problem of assembly has been solved by the present inventor by the provision of mounting means for the valve which is assembled simply by pushing the assembled parts downwardly into position, there being no necessity for tediously inserting a pin or pins into place while holding the parts in aligned relationship.

Still further improvement of the dispenser has been accomplished in the mounting of the delivery spout whereby its rotative connection to the dispenser is more efficiently sealed against leakage of oil and the spout is easily moved or swung on the connection.

Other objects and certain advantages will be more fully apparent from a description of the accompanying drawing in which:

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Figure 1 is a side view of the dispenser of this invention.

Figure 2 is a sectional view taken vertically through the dispenser and showing the details of the valve operating mechanism with the valve disposed in closed position.

Figure 3 is a view taken similar to Figure 2 but showing the valve in open position and the trigger holding element in indicating position.

Figure 4 is a sectional view taken on line 4-4, Figure 2, showing the connection between the valve arm and the operating rod.

Figure 5 is a sectional view taken on line 5-5, Figure 2, illustrating the pivotal mounting for the valve arm.

Figure 6 is an enlarged sectional view taken on line 6-6, Figure 3, showing the details of the spout connection to the dispenser.

The body 10 of the dispenser is cylindrical. Its lower edge 11 is rolled inwardly to form a reinforcement beading or stiffened portion. The upper edge has a lip element 12 welded thereto, the flange of which curves inwardly and downwardly.

The bottom element 13 of the dispenser is welded in position spaced upwardly from the lower edge of the cylindrical body. It lies against a shoulder 14 produced by an annular inwardly depressed portion in the wall of the cylindrical element. The bottom element is pressed out to provide an eccentrically disposed outlet opening 15 to which the bottom slopes for complete drainage.

The handle 16 for the dispenser is formed of sheet metal elements welded together. A tubular grip portion 17 is provided which is shaped to fit the hand. This grip portion is attached to the dispenser body by means of flat members 18 disposed in parallelism and extending downwardly to the body. They include attaching flanges 19 secured to the body by means of bolts 20. Reinforcing members 21 are provided within the tubular grip portion.

The handle includes an upward extension 22 of the grip portion which houses and mounts the valve operating trigger 23 and locking pawl 24. This extension 22 is constituted by a curved continuation of the grip portion. It overhangs the upper end of the dispenser and has its sides and top welded to the dispenser as at 25.

The trigger is mounted on a pivot pin 26 extending across between the walls of the housing 22. The upper end of the trigger projects into the upper portion of the housing and thus overhangs the edge of the dispenser. An operating rod 27 is disposed within the dispenser parallel with the axis of the dispenser and adjacent the side thereof. The upper end of this

rod is pivotally attached to the upper end of the trigger by means of a pivot pin 28.

The lower end of the rod 27 is pivotally attached (see Figure 4) to the operating end of the valve arm 29. The end of the arm is looped as at 30 to receive the end of the rod 27. A pivot pin 31, passing through the sides of the loop and the rod, provides a pivotal connection.

The valve arm has the valve element 32 fixed to its other end in position to seat on the margin of the outlet opening 15. The valve element consists of a circular plate element fixed to a pad 33 welded to the downwardly turned end 34 of the arm.

This arm 29 is fulcrumed on a bracket 35 (see Figure 5) fixed to the bottom of the dispenser. The bracket is formed from a strip of metal bent to provide double thickness attaching flanges 36 and upwardly projected spaced flanges or arms 37 for receiving the pivoted portion of the arm.

The arm carries a pivot pin 38 fixed in position with the ends of the pin projected outwardly at each side of the arm. The upper ends of the arms or flanges 37 are flared outwardly as at 39 for receiving the pin ends. Also, guide grooves 40 are provided extending downwardly on the insides of the flanges or arms 37. These grooves guide the pin ends to the bores 41 in the arms 37 into which they snap when aligned.

Thus, the assembled valve arm and rod may be lowered unitarily and the pivotal connection of the valve arm in the bracket 35 readily established simply by pushing the fixed pin downwardly into the bracket.

Means is provided for holding the valve in open and closed positions. This means is constituted by the pawl element 24. This pawl is pivoted on a pin 42 in the housing 22. The trigger element 23 and the pawl include adjacent and aligned recesses 43, 43. A spring 44 is disposed under compression within and between these bores or recesses. The upper end of the pawl includes a projected lateral edge 45 adapted to engage a notch 46 in the rear face of the trigger when the trigger is pulled or depressed. By virtue of the relationship of the pivots for the trigger and pawl the spring will cause the pawl to snap into the groove and thus lock the valve open when the trigger is depressed.

The trigger's actuating end extends into a clearance 47 (Figure 1) where it can be engaged by the forefinger of the operator. The underside of the extension is open for this purpose. The rear side of the extension or housing is cut away as at 48 for clearing the pawl and disposing it for engagement by the thumb of the operator.

When the valve is open (Figure 3) the pawl projects outwardly and thus indicates the open position of the valve. Thumb pressure on this pawl, when in this position, will release the trigger and the valve will move to closed position under the influence of the spring. The spring, at this time, is pressing against a fixed abutment, namely, the pawl, which cannot move because its upper end is lying against the rear face of the trigger above the groove or notch 46.

A swinging type of spout 50 is provided. This spout includes an inwardly extended lower end 51.

A fitting 52 (Figure 6) is attached to the bottom below the outlet opening and is adapted to receive the oil. This fitting is welded to the underside of the bottom, the circular flange 53 fitting into the opening. The fitting provides a chamber 54 and a recess 55 in its underside for

mounting the receiving end 56 of the spout. The end 56 consists of a transverse tubular member having its axis laterally disposed relative to the remainder of the spout.

The open end 57 of the tubular portion is mounted in an opening 58 between the fitting chamber 54 and the recess 55. The other end is mounted on a thimble 59. The thimble is disposed in a bore 60 in the side of the recess and its inner end projects into a circular depression 61 in the end of the tubular portion 56 of the spout. A spring 62 is disposed under compression between a washer 63 and the bottom of the thimble lying against the spout extension.

A cotter pin 64 passes through the boss 65 of the fitting and across the outer face of the washer 63 for holding the spring in place. The cotter pin passes through longitudinal slots 66 in the thimble 59 so the thimble is unrestricted in its axial movement against the spout extension. The tubular extension 56 of the spout has its wall curved axially so as to provide a curved seating surface 67 engaging the opening 58 to constitute a seal under the spring pressure.

The spout is removed by first removing the cotter pin and the thimble assembly. Then the spout can be moved laterally for cleaning the opening or bore 58.

Having described my invention, I claim:

1. In a liquid dispenser, a receptacle having an outlet opening in the bottom thereof, a valve for said outlet opening, a handle for said receptacle, a valve operating trigger mounted within said handle, means connecting said trigger and said valve, a pawl mounted within said handle and cooperating with said trigger to latch said valve in open position, and spring means between said trigger and pawl operable for moving said valve to closed position and said pawl to latching position.

2. In a liquid dispenser, a receptacle having an outlet opening in the bottom thereof, a valve for said outlet opening, a handle for said receptacle, a trigger mounted within said handle and operatively connected to said valve, a pawl mounted within said handle adjacent to said trigger, said pawl constructed and arranged so as to engage said trigger when in position, with the valve opened for holding said trigger in the aforesaid position and, a spring disposed between said trigger and said pawl adapted to urge said valve into closed position and said pawl into latching position.

3. In a liquid dispenser, a receptacle having an outlet at its lower end, a valve for said outlet, a handle for said receptacle, a trigger pivotally mounted within said handle and having a portion extended beyond the confines thereof for manipulation by the forefinger of the operator, a pawl pivotally mounted adjacent said trigger, said pawl disposed within the confines of the handle, said trigger operatively connected to said valve, said trigger including a notch engageable by said pawl when the trigger is in valve opening position, and a dual purpose spring arranged to urge said pawl into said engaging position and to urge said valve into closed position.

4. In a liquid dispenser, a receptacle having an outlet opening at its lower end, a valve for said outlet opening, a tubular handle for said receptacle, a trigger mounted in said handle, said trigger operatively connected to said valve, a pawl mounted in said handle adjacent to said trigger, said pawl constructed and arranged so as to hold said trigger in valve opening position, said trigger

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having its manipulated portion extending from the handle to a portion engageable by the forefinger and said pawl disposed in an opening in the handle opposite to that from which the trigger extends, said pawl projecting outwardly to indicate valve open position and depressible by thumb pressure for releasing the trigger and closing the valve.

5. In a liquid dispenser, a receptacle having an outlet opening at its lower end, a valve for said outlet opening, a handle for said receptacle, a trigger mounted within said handle and operatively connected to said valve, and a pawl mounted within said handle for holding said trigger in valve opening position, said pawl disposed in said handle so as to project therefrom when the valve is open to indicate this position and to be accessible for movement to release the trigger.

6. In a liquid dispenser, a receptacle having an outlet opening at the lower end thereof, a handle for said receptacle, a valve for said opening, said handle having a grip portion and an upper casing portion, a trigger mounted in said casing portion and operatively connected to said valve, a pawl cooperable with said trigger to releasably latch said trigger, said casing portion including a clearance just above the grip portion and said trigger extending into said clearance for operation by the forefinger of the hand gripping said grip portion and spring means, common to said trigger and pawl, urging the trigger into valve closing position and said pawl into latching position.

7. In a liquid dispenser, a receptacle having an outlet opening in the bottom thereof, a valve for said opening, a handle for said receptacle, operating means at said handle for operating said valve, a valve-carrying lever disposed across the bottom of said receptacle, a rod extending from the end of the lever opposite to the valve to said operating means, a bracket for pivotally mounting said lever on the bottom of the receptacle, said bracket providing flared spaced arms including adjacent bores, and said lever including a pin fixed therein and adapted to be forced between the arms into position in said bores and means in said arms for guiding said pin into position in said bores.

8. In a liquid dispenser, a receptacle having an outlet opening in the lower end thereof, a valve

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for said opening, an arm carrying said valve at one end, an operating rod connected to said arm at the other end and fulcrum means for said arm including a bracket fixed to the bottom of said receptacle and a pivot pin fixed in said arm and adapted to be inserted and mounted in said bracket, said bracket including a pair of spaced limbs providing journals for said pin, at least one of said limbs being resiliently flexible and adapted to flex outwardly to receive said pin between said limbs and into alignment with said journals and adapted to flex inwardly when said pin is in alignment with said journals thereby pivotally mounting said pin in said journals.

9. In a liquid dispenser, a receptacle having an outlet opening in the lower end thereof, a valve for said opening, an arm carrying said valve at one end, an operating rod connected to said arm at the other end, fulcrum means for said arm including a bracket fixed to the bottom of said receptacle and a pivot pin fixed in said arm and adapted to be inserted and mounted in said bracket, said bracket including a pair of outwardly flared, spaced limbs having aligned holes constituting bearings for said pin, one of said limbs being resiliently flexible, each of said limbs having guide grooves formed on the inner surface thereof, said grooves being in communication with said journal holes, whereby as said pin is inserted between said limbs, the limbs will be spread and said pin will pass along said grooves to journaling engagement with said holes.

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