June 7, 1932. W. HAGSTROM 1,862,083

FORCE FEED OIL CAN

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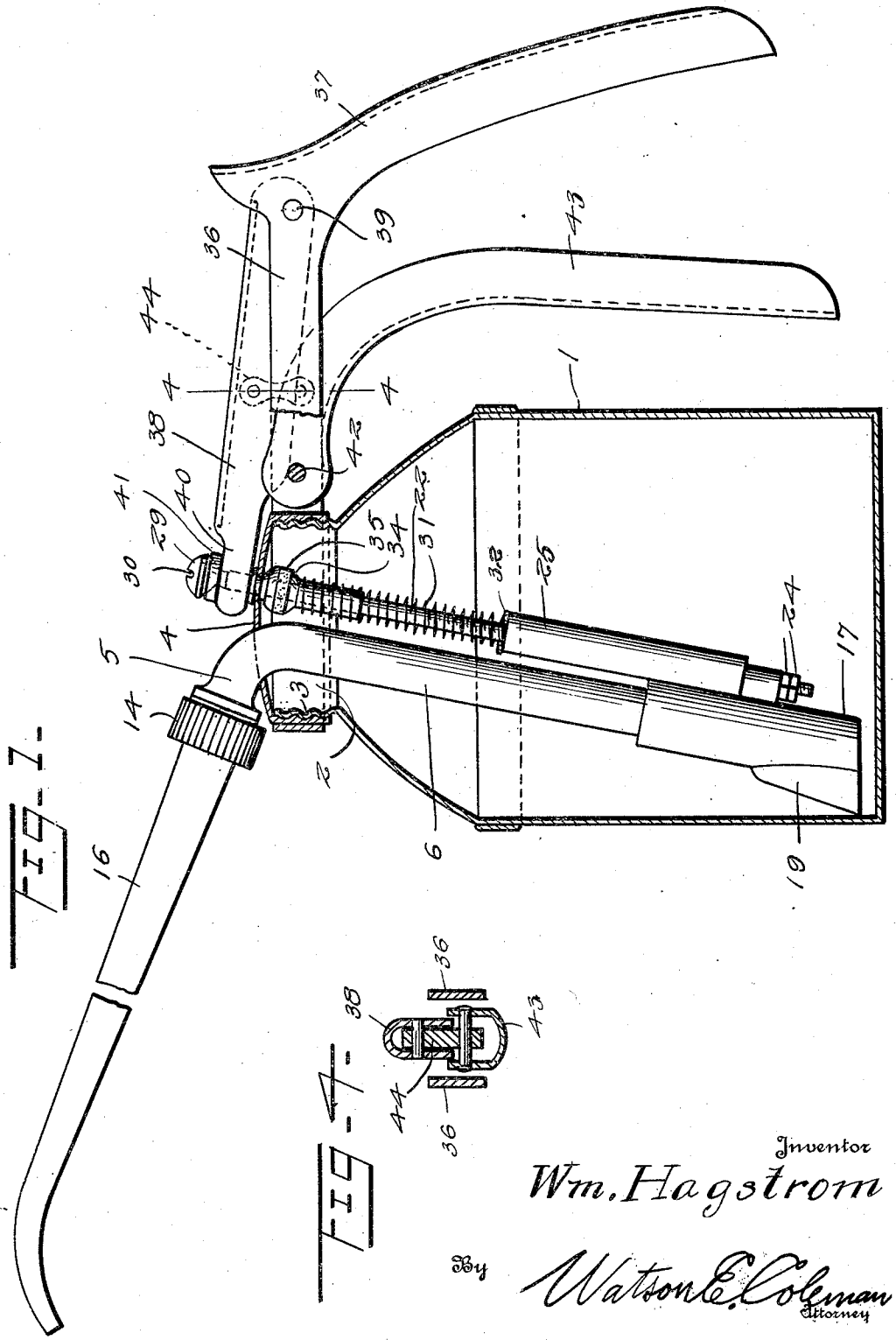

FIG. 1.

FIG. 4.

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Fig. 2.

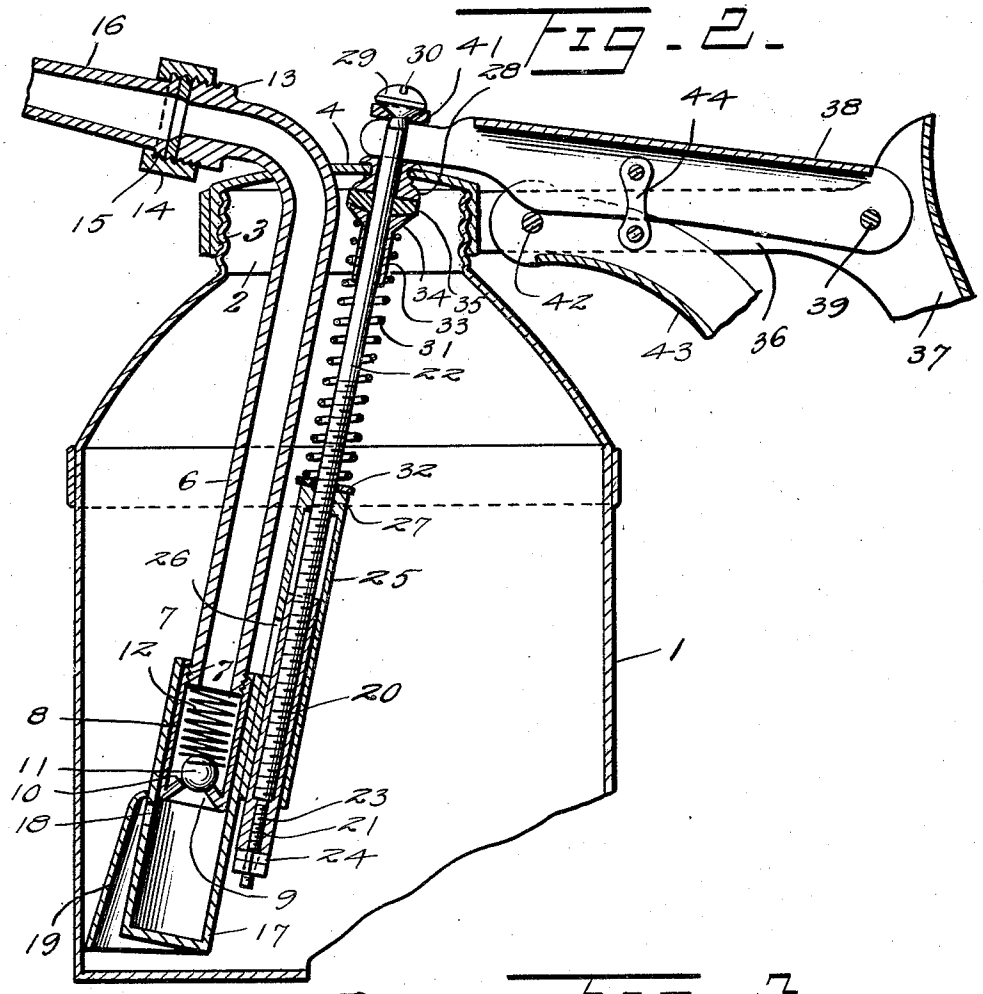
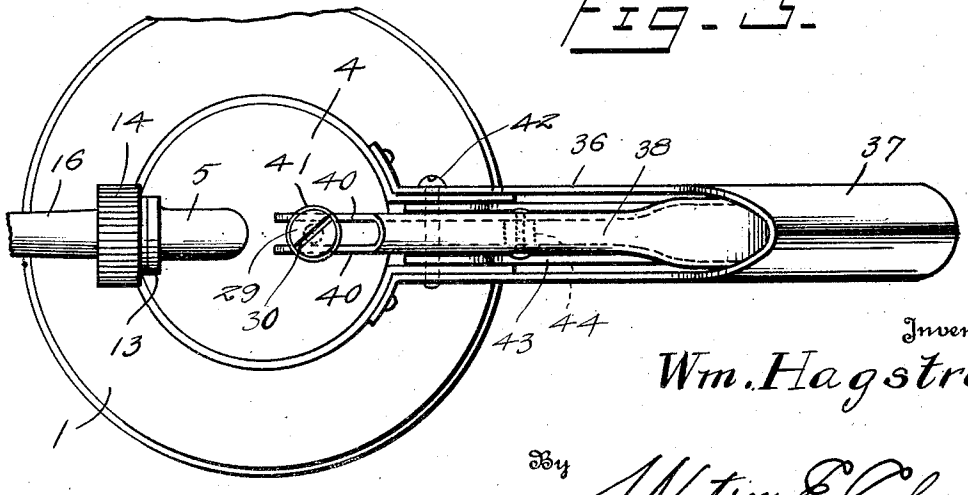


Fig. 3.



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UNITED STATES PATENT OFFICE

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FORCE FEED OIL CAN

Application filed January 2, 1930. Serial No. 418,082.

This invention relates to improvements in oil cans, particularly cans of the type designed to forcibly discharge a given quantity of oil.

The primary object of the present invention is to provide an improved oil can wherein a reciprocable cylinder works over a hollow fixed piston in such a manner that the contents of the cylinder will be forced into and through the piston each time the cylinder is shifted, the return movement of the cylinder on the piston creating a vacuum therein for the indrawing of a new charge of oil through a port which remains closed through the major portion of the period of movement of the cylinder.

Another object of the invention is to provide an oil can having a cylinder and piston mechanism for discharging a fixed quantity of oil therefrom, wherein the movement of the cylinder on the piston for the purpose of drawing a charge of oil into the cylinder is controlled by a spring element and wherein means is provided whereby the tension of the spring may be increased or decreased as desired to adapt the can to the handling of light or heavy oils.

Still another object of the invention is to provide an oil can employing a piston and cylinder element for forcing a quantity of oil therefrom, wherein an improved lever mechanism is provided for the actuation of the ejecting mechanism.

The invention will be best understood from a consideration of the following detailed description taken in connection with the accompanying drawings forming part of this specification, with the understanding, however, that the invention is not confined to any strict conformity with the showing of the drawings but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

In the drawings:—

Figure 1 is a view in vertical section of an oil can showing the dispensing mechanism embodying the present invention in side elevation therein.

Figure 2 is a sectional view similar to Figure 1 but showing the dispensing mechanism in section.

Figure 3 is a view in top plan of the oil can.

Figure 4 is a sectional view taken upon the line 4—4 of Figure 1.

Referring more particularly to the drawings wherein like numerals of reference indicate corresponding parts throughout the several views, the numeral 1 indicates generally an oil can wherein the upper portion is drawn in to form a neck 2 about the outlet opening, this neck being threaded as indicated at 3 for the reception of a cap 4.

The cap 4 has extending therethrough and secured thereto the curved upper end portion 5 of an oil discharge tube 6, this tube extending down into the can at an oblique angle to the longitudinal center thereof as shown and having its lower end exteriorly threaded as indicated at 7 for the reception thereon of a plunger or piston 8.

As shown in Figure 2 the plunger 8 is hollow and opens directly into the lead-off tube 6 and it also has its lower end dished slightly or of concave formation as indicated at 9 with an opening 10 formed in the central portion thereof in which opening a ball check valve 11 positions where it is held by a coil spring 12 in the manner shown.

At its upper end the discharge tube 6 has the enlargement 13 formed thereon which is exteriorly threaded to receive the swivel coupling 14 which surrounds the flanged end 15 of a discharge nozzle 16.

The piston or plunger 8 has slidably positioned thereover a reciprocable cylinder 17, the lower end of which is closed as shown. Intermediate its ends the cylinder has an aperture 18 formed through the wall thereof which aperture as will be hereinafter shown becomes covered as soon as the cylinder is moved slightly upwardly on the piston. Surrounding the forward half of the lower part of the cylinder 17 and covering the opening 18 is a downwardly flaring hood 19 the open lower portion of which projects beyond the bottom of the cylinder as shown and is sub-

stantially parallel with the bottom of the oil can 1.

Opposite the hood 19 the back of the cylinder 17 has secured thereto, adjacent the upper end, and longitudinally thereof, a relatively long slender sleeve 20, the upper portion of which projects above the cylinder 17. At its lower end this cylinder 20 is constricted slightly as indicated at 21.

Extending downwardly into the sleeve 20 is a long threaded screw 22 the lower end of which is reduced as indicated at 23 for extension through the constricted lower end of the sleeve. This reduced portion 23 of the screw receives a pair of nuts 24 which draw the shoulder formed between the reduced portion and the main portion firmly down against the shoulder formed upon the inside of the sleeve at the upper end of the constricted part thereof. The lower end of this screw 22, while it is threaded, is free to rotate in the sleeve 20, there being no threaded connection between the screw and the sleeve at any point.

Surrounding the sleeve 20 is an outer reciprocable sleeve 25 which telescopes onto the fixed sleeve 20, this reciprocable sleeve being longitudinally slotted at its lower end as indicated at 26 to permit it to move down beyond the area where the fixed sleeve and the cylinder 17 are joined, the parts of sleeve 20 and cylinder 17 which are in contact, entering this slot. At its upper end the sleeve 25 is of reduced interior diameter 27 and is interiorly threaded for connection with the screw 22.

The upper end of the screw 22 passes through the top or cap 4 of the can through the fixed button 28 and terminates at its outer end in the head 29 across which a kerf 30 is formed to facilitate the engagement of a screw-driver therewith.

Surrounding the screw 22 within the can is a coil spring 31, the lower end of which rests against a suitable washer 32 which also surrounds the screw and rests upon the upper end of the sleeve 25, while the upper end has extended thereinto the reduced portion 33 of a packing cup 34 against the underside of which the spring bears. This packing cup 34 forces upwardly against the button 28 the ring of packing material 35 which surrounds the screw and is interposed between it and the button.

Attached to the cap 4 by means of the rigid arms 36 which are secured in spaced parallel relation thereto is a fixed hand grip 37. As shown the arms 36 extend outwardly a substantial distance from the cap 4 and there is pivotally secured therebetween adjacent the outer ends thereof, one end of a bar 38, the bar being mounted upon a cross pin 39 extending between the arms 36. This bar 38 as shown in Figure 4 is of substantially U-shaped cross-sectional design and at its inner end is formed to provide the spaced fingers 40 which extend on opposite sides of the screw 22 as shown in Figures 2 and 3, a washer or the like being interposed between these fingers and the head of the screw as indicated at 41. Adjacent their inner ends the arms 36 have pivotally secured therebetween upon the cross pin 42 the upper end of the oscillatable lever 43. As shown the upper end of this lever is curved and extends inwardly toward the cap of the can so that it is nearly parallel with the bar 38. Connecting this inwardly extending upper part of the lever 43 with the bar 38 is a link 44 the upper end thereof being pivotally attached to the bar 38 intermediate its ends while the lower end is pivotally attached to the lever 43 as shown.

From the foregoing description it will be readily seen that when the hand grip 37 is grasped the lever 43 may be drawn theretowards by the fingers of the user of the can, this operation resulting in the lifting of the forward end of the bar 38 so that the screw 22 will be pulled outwardly. This movement of the screw causes a compression of the spring 31 and also slides the cylinder 17 upwardly on the piston or plunger 8, with the result that the opening 18 of the cylinder is almost immediately closed and the oil trapped in the lower part thereof is forced up through the check valve 11 into the lead-off pipe or tube 6. Upon release of the screw 22 the spring 31 will force the cylinder down creating a vacuum therein as it moves off of the piston so that when the port 18 is uncovered the oil surrounding the lower end of the cylinder will be immediately drawn thereinto. It will also be apparent that if the oil used in the can is of a heavy character or if the can is used in cold weather so that the oil becomes stiff an increased spring tension will be necessary to force the cylinder down and this may be obtained by rotating the screw 22 so that the reciprocable sleeve 25 will be drawn up thereon to compress and increase the tension of the spring 31. It will also be obvious that due to the manner in which the lower end of the cylinder is positioned in the can the entire contents of the can may be drawn off and also the can may be readily used in any position so long as the lower part of the hood 19 is closed by a body of oil. It will thus be apparent that the can may be used in an inverted position if desired as the tube 6 and nozzle 16 will be full of oil at all times and sufficient pressure can be obtained by shifting the cylinder on the piston to eject the oil therefrom.

Having thus described my invention, what I claim is:—

1. In an oil can of the character described, a receptacle, a lead-off tube extending into the receptacle and having an opening through the inner end thereof, a spring pressed valve closing the opening in said tube, a cylinder reciprocable on the said end of the tube and

having an inlet aperture through the wall thereof, said aperture being adjacent the end of the tube when the cylinder is projected therefrom to the limit of its movement off of the tube, a hood carried by the cylinder and covering said aperture and extending downwardly to and opening only at the bottom of the cylinder, the open end of the hood being relatively close to the bottom of the receptacle when the cylinder is projected to the limit of its movement off of the tube, a reciprocable element operatively connected to the cylinder and extending to the exterior of the receptacle, resilient means surrounding the element and normally acting to urge the cylinder from the tube, and means exteriorly of the receptacle for shifting said member against the tension of said resilient means.

2. In an oil can of the character described, a receptacle, a lead-off tube extending into the receptacle and terminating at its inner end in an enlarged hollow body comprising a piston, said body having an opening through the lower end thereof, a spring pressed valve closing the opening in said body, a cylinder reciprocable on the piston and having an inlet aperture through the wall thereof, said aperture being adjacent the piston when the cylinder is projected therefrom to the limit of its movement, a reciprocable element operatively connected to the cylinder and extending to the exterior of the receptacle, resilient means surrounding the element and normally acting to urge the cylinder from the piston, means exteriorly of the receptacle for shifting said member against the tension of said resilient means, and means whereby the tension of said resilient means may be altered through rotation of said reciprocable element.

3. An oil can comprising a receptacle, an outlet tube extending into the receptacle and having a discharge nozzle upon its outer end, a hollow piston body secured to the inner end of the tube and having an inlet aperture through the bottom thereof, a check valve controlling the inlet of oil to said piston body, a cylinder reciprocable on said piston having its lower end closed and having an inlet aperture through the wall thereof, said aperture being in close proximity to the piston when the cylinder is extended to the limit of its movement thereon, an elongated screw swivelly connected to said cylinder and extending therefrom to the exterior of the receptacle, a body having said screw threaded therethrough for movement longitudinally thereof but held against rotation thereabout, resilient means interposed between the body and a fixed portion of the receptacle, and means for reciprocating said screw.

4. An oil can comprising a receptacle, an outlet tube extending into the receptacle and having a discharge nozzle upon its outer end, a hollow piston body secured to the inner end of the tube and having an inlet aperture through the bottom thereof, a check valve controlling the inlet of oil to said piston body, a cylinder reciprocable on said piston having its lower end closed and having an inlet aperture through the wall thereof, said aperture being in close proximity to the piston when the cylinder is extended to the limit of its movement thereon, an elongated screw swivelly connected to said cylinder and extending therefrom to the exterior of the receptacle, a body having said screw threaded therethrough for movement longitudinally thereof but held against rotation thereabout, resilient means interposed between the body and a fixed portion of the receptacle, and means for reciprocating said screw, said cylinder having a hood secured thereto and covering the inlet aperture thereto and projecting downwardly and opening at a point below the cylinder.

5. In an oil can of the character described, an oil receptacle, an outlet tube opening through the top of the receptacle, a check valve controlling the inlet of oil to the inner end of the tube, a cylinder closed at one end and having its other end reciprocable over the inner end of the tube and having an inlet through the wall thereof, a hood covering said inlet and extending downwardly and opening at a point below the cylinder in close proximity to the bottom of the receptacle, a sleeve secured longitudinally of the cylinder, a threaded screw swivelly held in said sleeve, an outer sleeve encasing the first mentioned sleeve and having threaded connection with said screw for movement longitudinally thereof, the other end of said screw extending through the top of the receptacle to the exterior thereof, means to provide a packing about the screw adjacent the top of the receptacle, a coil spring surrounding the screw and interposed between said packing and said reciprocable sleeve, and means for reciprocating said screw against the tension of said spring to move the cylinder over the inner end of the tube.

6. In an oil can of the character described, an oil receptacle, an outlet tube opening through the top of the receptacle, a check valve controlling the inlet of oil to the inner end of the tube, a cylinder closed at one end and having its other end reciprocable over the inner end of the tube and having an inlet through the wall thereof, a hood covering said inlet and extending downwardly and opening at a point below the cylinder in close proximity to the bottom of the receptacle, a sleeve secured longitudinally of the cylinder, a threaded screw swivelly held in said sleeve, an outer sleeve encasing the first mentioned sleeve and having threaded connection with said screw for movement longitudinally thereof, the other end of said screw extending through the top of the receptacle to the exterior thereof, means to provide a packing

about the screw adjacent the top of the receptacle, a coil spring surrounding the screw and interposed between said packing and said reciprocable sleeve, and means for reciprocating said screw against the tension of said spring to move the cylinder over the inner end of the tube, said tube being disposed at an oblique angle to the length of the receptacle to position said hood in the lower corner thereof.

7. In an oil can of the character described, an oil receptacle, an outlet tube opening through the top of the receptacle, a check valve controlling the inlet of oil to the inner end of the tube, a cylinder closed at one end and having its other end reciprocable over the inner end of the tube and having an inlet through the wall thereof, a hood covering said inlet and extending downwardly and opening at a point below the cylinder in close proximity to the bottom of the receptacle, a sleeve secured longitudinally of the cylinder, a threaded screw swivelly held in said sleeve, an outer sleeve encasing the first mentioned sleeve and having threaded connection with said screw for movement longitudinally thereof, the other end of said screw extending through the top of the receptacle to the exterior thereof, means to provide a packing about the screw adjacent the top of the receptacle, a coil spring surrounding the screw and interposed between said packing and said reciprocable sleeve, and means for reciprocating said screw against the tension of said spring to move the cylinder over the inner end of the tube, said check valve being disposed inwardly of the lower end of the inlet tube to permit the bottom of the cylinder to be brought into contact with the lower end thereof.

8. In a fluid dispenser of the character described, having a reciprocable fluid discharge element, an actuating means for said reciprocable element, comprising a hand grip having a pair of rigid arms connecting the same with the body of the dispenser, a bar pivotally mounted at one end between the outer ends of the rigid arms and having its other end loosely connected with the reciprocable member, an oscillatable lever pivotally connected at one end between said rigid arms at the inner ends thereof and designed to have its other end swing toward the hand grip, and a connecting link between said lever at a point adjacent its pivot and the bar intermediate the ends of the latter.

9. In an oil can of the character described, a receptacle, a lead-off tube extending into the receptacle and having an opening in the inner end thereof, a valve closing the opening in said tube, a cylinder reciprocable on the inner end of the tube and having an inlet aperture through the wall thereof, said aperture being adjacent the said end of the tube when the cylinder is projected therefrom to the limit of its movement, a reciprocable element operatively connected to the cylinder and extending to the exterior of the receptacle, resilient means controlling the element and normally acting to urge the cylinder from the tube, means exteriorly of the receptacle for shifting said member against the tension of said resilient means, and means whereby the tension of the said resilient means may be altered through rotation of said reciprocable element.

In testimony whereof I hereunto affix my signature.

WILLIAM HAGSTROM.