March 26, 1929. F. I. JADEN 1,707,084

OIL CAN

Filed Nov. 25, 1927

Fig. 1.

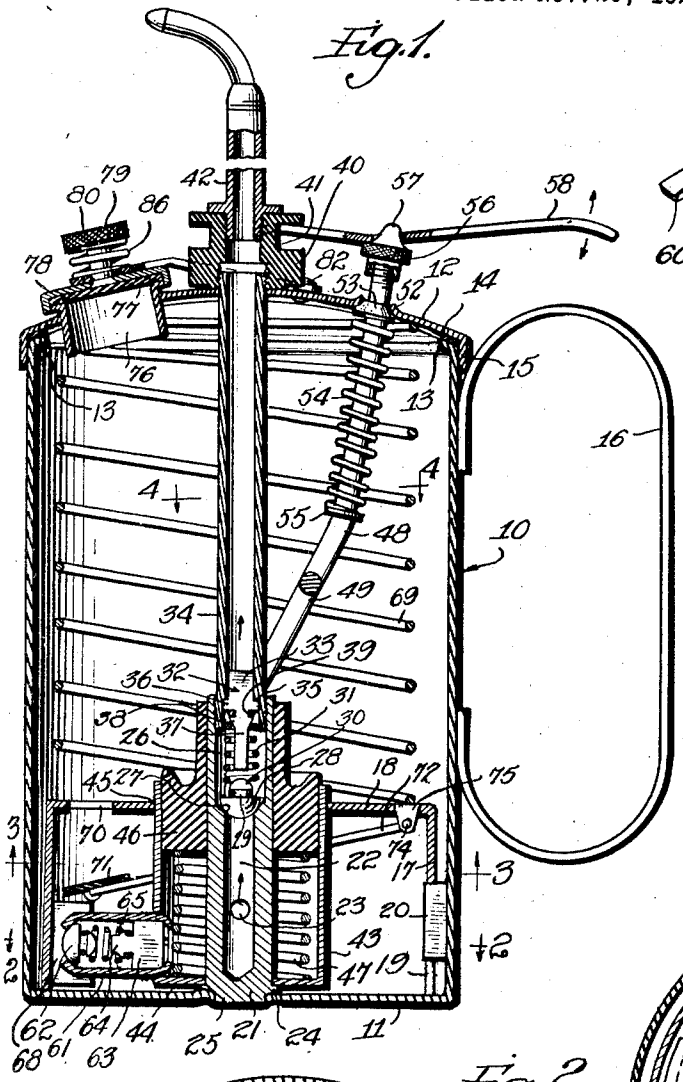


Fig. 5.

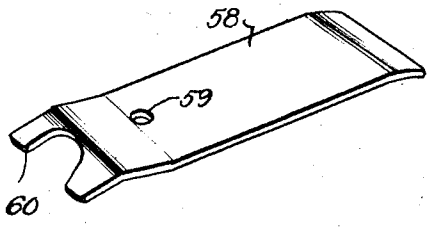


Fig. 4.

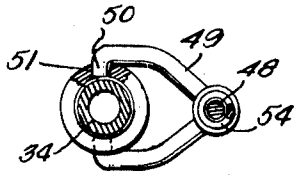


Fig. 3.

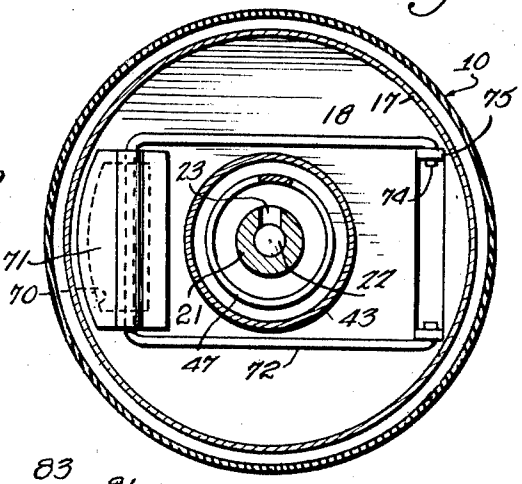
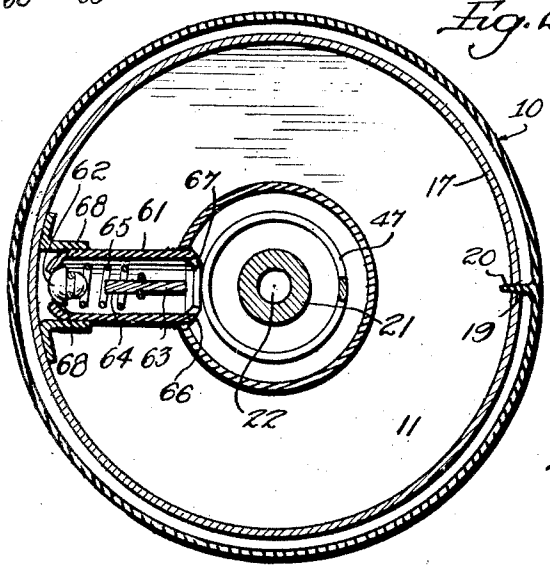


Fig. 2.



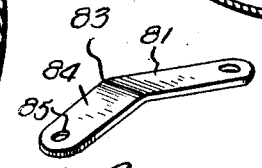


Fig. 6.

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UNITED STATES PATENT OFFICE.

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OIL CAN.

Application filed November 25, 1927. Serial No. 235,677.

This invention relates to oil cans, and more particularly to an oil can of the pumping type adapted to supply lubricant under pressure to desired mechanical elements to be lubricated.

An important object of the invention is to provide a force feed oil can wherein the parts are relatively simple and cheap to manufacture and are held in their respective positions by novel means.

A further object is to provide novel valve means controlling the passage of lubricant to permit the pumping operation efficiently to take place.

A further object is to provide novel valves of the character referred to which are simple and inexpensive to manufacture and wherein the operative parts thereof are connected together in a novel manner to permit them to be inserted and removed as a unit.

A further object is to provide valves of the character referred to wherein the parts cooperate in a novel manner to retain the valves proper in substantially central position to permit them to seat properly and to limit the movement of the valves from their seats.

A further object is to provide lubricant pumping means of the character referred to including a piston operable in a cylinder, novel means being employed for retaining the cylinder in operative position without positive fastening means.

A further object is to provide novel auxiliary lubricant containing means adapted to retain a substantial quantity of oil in proximity to the pump inlet regardless of the position of the oil can so that lubricant may be pumped therefrom until the receptacle is substantially empty, regardless of the position in which the device is employed.

A further object is to provide novel means for retaining the auxiliary lubricant container in proper position without the use of positive fastening means.

A further object is to provide a device of the character referred to including a receptacle and a removable top therefor, and to provide novel means associated with other parts of the device for retaining the top in closed position.

A further object is to provide an oil can structure adapted to perform the various functions referred to, and wherein the several parts of the device are readily adapted to be assembled and disassembled without the use of special tools.

A further object is to provide novel means for permitting the receptacle to be filled with lubricant.

Other objects and advantages of the invention will become apparent during the course of the following description.

In the drawings I have shown one embodiment of the invention. In this showing,

Figure 1 is a central vertical sectional view, parts being shown in elevation,

Figure 2 is a section on line 2—2 of Figure 1,

Figure 3 is a similar view on line 3—3 of Figure 1,

Figure 4 is a detail section on line 4—4 of Figure 1,

Figure 5 is a detail perspective of the pump actuating handle, and,

Figure 6 is a detail perspective of the spring for retaining the filling cap in position.

Referring to the drawings the numeral 10 designates a preferably cylindrical receptacle having a bottom 11 and removable top 12. The upper end of the body of the receptacle is provided with an inturned flange 13 and a gasket 14 is arranged between this flange and the top 12. An annular flange 15 is preferably formed on the top 12 to telescopically receive the upper end of the body of the receptacle. A suitable handle 16 is secured to one side of the receptacle as shown in Figure 1.

A preferably cylindrical auxiliary container 17 is arranged in the bottom of the receptacle and preferably snugly fits therein. The auxiliary container is provided with an open lower end, the lower edges of the body of the container resting upon the bottom 11, while the container is provided with an upper head 18. One side of the cylindrical portion of the container 17 is provided with a slot 19 extending from the lower end thereof and this slot is adapted to slidably receive a rib 20 projecting inwardly from the cylindrical wall of the container 10. It will be apparent that the slot and rib construction described is provided for the purpose of insuring the proper arrangement of the container 17 within the receptacle 10.

A sleeve or stem 21 is arranged centrally in the lower end of the device and is provided with an axial passage 22 and a radial open-

ing 23 communicating therewith. The lower end of the stem 21 is provided with a shoulder 24 which seats against the bottom 11 and the lower extremity of the stem may be riveted to secure it to the bottom 11 as indicated at 25. The upper end of the stem is provided with an enlarged axial passage 26 the lower end of which forms a valve seat 27 adapted to be engaged by a valve 28. This valve is preferably semi-spherical and is provided with a reduced neck 29 having an annular flange 30 thereabove. The lower end of a coil spring 31 is reduced to snugly fit around the neck 29. A combined guide, stop and spring retainer 32 is arranged above the valve 28 and is provided with an upper shank 33 slidable within a tube 34, the lower end of this tube being threaded in the upper end of the stem 21. The tube 34 is provided near its lower end with an internal shoulder 35 against which seat opposite projections 36 carried by the member 33. The latter member is provided with a relatively long depending shank 37 adjacent the upper end of which is a pair of projections 38 forming a reduced neck 39 about which the upper extremity of the spring 31 is coiled. Thus it will be apparent that the valve 28, spring 31, and member 33 are secured together whereby all may be simultaneously inserted into and removed from the device.

The upper end of the tube 34 projects through the top 12 and is externally threaded for connection with a connecting member 40 having an annular groove 41 formed therein for a purpose to be described. Since the member 40 is threaded on the tube 34 and contacts with the top 12, it is adapted to retain the latter element in position on the upper end of the receptacle 10. A spout 42 is threaded in the upper end of the member 40, the latter having a central passage therethrough communicating between the tube 34 and spout 42.

A cylinder 43 is arranged centrally in the lower portion of the receptacle 10 and is provided with a lower end 44 surrounding the stem 21 and seating upon the shoulder 24. The upper end of the cylinder 43 projects through an opening 45 formed in the head 18 and receives a reciprocating piston 46. A coil spring 47 is arranged between the head 44 of the cylinder and the lower end of the piston to normally urge the latter upwardly. An operating stem 48 is arranged in the container 10 and is provided with a forked lower end 49. The extremities of the forked portion are turned inwardly as at 50 for reception within openings 51 formed in the upper end of the piston 46. The upper end of the stem 48 extends through an opening 52 formed in the head 12, portions of the metal surrounding the opening 52 preferably being turned upwardly slightly as indicated in Figure 1 to form a seat adapted to be engaged by a felt washer 53 or similar sealing means. A coil spring 54 surrounds the stem 48, the spring contacting at its upper end with the washer 53 and at its lower end with a collar 55 secured to the stem. It will be apparent that the stem is slidable in the washer 53, and the spring compresses the washer and retains it in seated position to prevent leakage of oil through the opening 52. The upper end of the stem 48 is provided with a nut 56 having a preferably round top 57. A preferably broad operating handle 58 is provided with an opening 59 to receive the top of the nut 56, and the inner end of the handle is forked as at 60 for reception within the annular groove 41. The inner end of the handle 58 is preferably turned downwardly whereby the forked end thereof substantially fills the space between the top and bottom of the groove 41, thus preventing upward movement of the handle beyond the position shown in Figure 1 so as to prevent the opening 59 from becoming disengaged from the nut 56.

A valve cage 61 is threaded at its inner end in the wall of the cylinder 43 and is adapted under certain conditions to establish communication between the cylinder and the interior of the auxiliary container 17. The outer end of the cage is turned inwardly as shown to form a seat for a valve 62 which is identical in construction with the valve 28 and need not be referred to in detail. A member 63 is arranged in the inner end of the cage 61 and is similar in general construction to the member 33 previously described except that its structure is changed to accommodate it to the valve cage. The members 33 and 63 are both formed of flat metal stock stamped out in the shapes indicated. The member 63 also is provided with a shank 64 having a spring engaging neck at its inner end adapted for connection with a spring 65, the outer end of this spring encircling the neck of the valve 62. It will be noted that the inner end of the valve cage is turned inwardly as at 66 to retain the member 63 in position, the inturned portion being provided at diametrically opposite points with slots 67 in which the member 63 may be inserted when the elements of the valve structure as a whole are assembled. One side of the auxiliary container is provided with a pair of inwardly extending fins 68 adapted to be arranged on opposite sides of the valve cage 61 to retain the latter in proper position with respect to the auxiliary container for a purpose to be described. In this connection it will be noted that the valve cage is arranged in the side of the receptacle 10 opposite the handle 16.

As previously stated the auxiliary container is slidable in the receptacle 10 and is retained in position by a spring 69 the upper end of which contacts with the top 12. This container is provided for the purpose of retaining oil in proximity to the valve cage to supply oil thereto to be pumped from the

device when the supply of lubricant is low and regardless of the position in which the device is employed. The top 18 of the auxiliary container is provided with an oil passage 70 which it will be noted is arranged directly over the valve cage 61. This opening also is arranged opposite the handle 16 as will be obvious, and is adapted to be closed under certain conditions by a flat valve 71 connected to a pair of arms 72, as shown in Figure 3. The opposite ends of the arms are turned inwardly as at 74 for pivotal connection with ears 75 extending downwardly from the top 18 of the auxiliary container.

Novel means is provided for permitting the receptacle to be quickly and easily filled with lubricant. As shown in Figure 1, a filling spout 76 projects downwardly into the receptacle 10 through the top 12 thereof and is provided at its upper end with an outturned flange against which seats a gasket 77 arranged in a cap 78. The edges of the cap 78 are turned downwardly as indicated in Figure 1 to snugly surround the flange at the upper end of the spout 76. A knob 79 is provided with a depending shank 80 riveted to the cap 78 and acts as a handle for opening and closing the cap, as will become apparent. A resilient retaining spring 81 is pivotally connected to the top 12 as at 82. The retaining member is bent as at 83 to provide an end 84 adapted to engage against the cap 78, this end being provided with an opening 85 through which the shank 80 extends. A coil spring 86 surrounds the shank 80 between the knob 79 and the end of the resilient retaining member.

The operation of the device is as follows: The knob 79 is pulled upwardly against the tension of the spring 81 to lift the cap 78 from the top of the spout 76 whereupon the cap may be swung to one side by virtue of the pivotal connection between the retaining spring 81 and the top 12. The lubricant then may be poured into the receptacle 10 to the desired height, after which the cap 78 is replaced. The gasket 77 prevents leakage of oil from the spout 76, the cap and gasket being retained in position by the retaining spring, as will be obvious. The oil flows downwardly into the auxiliary container 17 through the opening 70, and thus lubricant is retained in proximity to the valve cage 61. Each upward movement of the handle 58, and consequently of the piston 46, creates a partial vacuum within the cylinder 43 to unseat the valve 62 and thus draw lubricant into the cylinder. Each downward movement of the handle 58 causes downward movement of the piston against the tension of the spring 47, and oil within the cylinder thus will be pumped into the stem 21 through the opening 23, the valve 62 obviously seating during such operation to prevent the oil from passing from the cylinder to the auxiliary container. Upon the creation of pressure in the stem 21 in the manner stated, the valve 28 will be unseated to permit oil to pass upwardly through the tube 34 to be discharged at the desired point through the spout 42. The pumping action obviously is positive and is adapted to take place regardless of the position of the container. The device is held by the handle 16, and the thumb of the operator conveniently may be employed for operating the handle 58 by moving it downwardly, the upward movement of the handle being accomplished by the spring 47, acting against the bottom of the piston 46.

The device is operable to retain lubricant in proximity to the valve cage 61, when the supply of lubricant is low and when the device is employed in an inverted position. As previously stated, the lubricant flows downwardly into the auxiliary container by gravity, and when the device is tilted forwardly beyond a horizontal position, the valve 71 will seat by gravity to prevent the lubricant from flowing from the auxiliary container to the receptacle 10 through the opening 70. Thus it will be apparent that even when the supply of lubricant is low, a sufficient quantity thereof will be retained in proximity to the valve cage 61 to be drawn into the cylinder 43 and thus discharged at the desired point.

The various structural features of the device are important from the standpoint of efficiency in manufacture and operation, and from the standpoint of assembly. For instance, it is necessary to project the stem 48 through the top of the container for operative connection with the handle 58, and thus the washer 53 is provided to prevent leakage of oil through the top 12 when the device is inverted. The stem 48 is slidable in the washer, and the latter is maintained under compression by the spring 54 thus causing it to seat snugly against the metal surrounding the opening 52, and against the stem 48. In order for the valve cage 61 to function properly for the purpose above stated, it is essential that these elements be retained in positions opposite the handle 16. Accordingly the rib 20 is provided and it will be apparent that the auxiliary container can be inserted only in its proper position with the opening 70 and valve 71 arranged opposite the handle. The fins 68 are provided to properly position the valve cage 61, the latter being adapted to slide downwardly between the fins, as shown in Figures 1 and 2. The spring 47 not only serves the purpose of normally causing the piston 46 to move upwardly, but also seats the bottom of the cylinder against the shoulder 24 to form a leak-proof joint therewith. The top 12 is retained in position wholly by the threaded connection between the member 40 and the tube 34, no other fastening means being necessary since the tube 34 is secured to the stem 21 which in turn, is riveted to the

bottom 11. The spring 69, arranged between the top 12 and the auxiliary container 17, obviously is adapted to retain the latter in normal position. No fastening means need be employed in connection with the handle 58 in view of the structure thereof. As previously stated, the bent inner end of the handle serves to fill the space between the side walls of the groove 41, thus preventing the handle from moving upwardly beyond the position shown in Figure 1. It will be apparent therefore that the handle cannot become disconnected from the device when in normal position, and when it is being moved downwardly the downward pressure exerted against the handle causes the opening 59 to remain in position around the head 57. From the foregoing it will be apparent that most of the elements of the device are adapted to be retained in position without positive fastening means, and the cost of manufacturing the device is thus minimized and assembling and disassembling are greatly facilitated.

Particular attention is invited to the structure and operation of the two check valves employed. Each check valve per se is provided with the reduced neck described which is adapted to receive the similarly reduced end of the corresponding spring whereby these elements are secured together. Similarly, the opposite ends of the springs are connected to the retaining members 32 and 63, and accordingly it will be apparent that the elements which constitute the valves and associated elements are adapted to be inserted and removed from the device as a unit. The upper check valve may be removed simply by unscrewing the tube 34 and lifting the member 32. The lower check valve and associated elements may be removed by revolving the member 61 until the edges thereof register with the slots 67 whereupon it may be withdrawn through the inner end of the cage 61.

It is to be understood that the form of the invention herewith shown and described is to be taken as a preferred example of the same and that various changes in the shape, size and arrangement of parts may be resorted to without departing from the spirit of the invention or the scope of the subjoined claims.

I claim:

1. A device of the character described comprising a receptacle, a cylinder arranged in the lower part of said receptacle, resilient means contacting with said cylinder for retaining it in position, and means including a piston reciprocable in said cylinder for pumping liquid therefrom.

2. A device of the character described comprising a receptacle, a cylinder arranged in the lower part of said receptacle, resilient means contacting with said cylinder for retaining it in position, a discharge spout, and a piston reciprocable in said cylinder to pump liquid therefrom to said spout.

3. A device of the character described comprising a receptacle, a cylinder arranged in the lower part of said receptacle, resilient means for retaining said cylinder in position, a hollow stem arranged in said cylinder and communicating therewith, a discharge spout communicating with said stem, and a piston slidably surrounding said stem and reciprocable in said cylinder to pump liquid therefrom to said stem.

4. A device of the character described comprising a receptacle, a hollow stem secured at its lower end to the bottom of said receptacle, a cylinder surrounding said stem and communicating therewith, a discharge spout connected to said stem, and a piston slidably surrounding said stem and reciprocable in said cylinder to pump liquid therefrom to said stem.

5. A device of the character described comprising a receptacle, a hollow stem connected at its lower end to the bottom of said receptacle and provided with an annular shoulder, a cylinder mounted in said receptacle and provided with a bottom having an opening therethrough for the reception of said stem, the bottom of said cylinder being supported on said shoulder, said cylinder being adapted to communicate with said receptacle to receive liquid therefrom and with said stem to discharge liquid thereinto, a discharge spout communicating with said stem, and a piston reciprocable in said cylinder.

6. A device constructed in accordance with claim 5 provided with resilient means for seating the bottom of said cylinder against said shoulder.

7. A device constructed in accordance with claim 5 wherein said receptacle is provided with a handle arranged at one side thereof, said cylinder communicating with said receptacle at the opposite side thereof.

8. A device of the character described comprising a receptacle, a discharge spout adapted to communicate with said receptacle, pumping means for discharging fluid from said receptacle through said spout and including a cylinder, and check valve means controlling passage of fluid from said receptacle to said cylinder and from said cylinder to said spout, each of said means including a valve having a reduced portion, a spring adapted to seat said valve and having a portion surrounding the reduced portion thereof, and a member having a reduced portion snugly receiving an end portion of said spring.

9. A device of the character described comprising a receptacle, a discharge spout adapted to communicate with said receptacle, pumping means for discharging fluid from said receptacle through said spout and including a cylinder, and check valve means controlling passage of fluid from said receptacle to said cylinder and from said cylinder

to said spout, one of said means including a valve cage having a valve seat in one end thereof, the opposite end of said cage being turned inwardly and provided with oppositely arranged slots, a valve arranged in said cage and adapted to engage said seat, said valve being provided with a reduced neck, a coil spring arranged in said cage and having one end reduced to receive said neck, and a flat retaining member arranged in the opposite end of said cage and provided with a reduced neck, the adjacent end of said spring being reduced to snugly fit the neck of said retaining member, said retaining member being equal in width to the width of said cage within said slots and adapted to be withdrawn therethrough.

10. A device of the character described comprising a receptacle having a closed bottom and an open top, a cap adapted to be arranged over said receptacle, a hollow stem connected at its lower end to the bottom of said receptacle, a discharge spout arranged over said cap, connecting means for said spout and said stem, said means engaging said cap to retain it in position, a cylinder arranged in the lower portion of said receptacle and adapted to communicate with said receptacle and said stem, and a piston reciprocable in said cylinder.

11. A device of the character described comprising a receptacle having a discharge spout, pumping means for transferring liquid from said receptacle to said spout and including a cylinder, a check valve arranged in one side of said cylinder and opening thereinto, an auxiliary container arranged in the bottom of said receptacle and having an upper wall provided above said check valve with an opening, a valve arranged beneath the opening in said upper wall and adapted to close said opening when said receptacle is tilted in one direction beyond a certain angle, and a handle carried by said receptacle on the side thereof opposite said check valve and said opening.

In testimony whereof I affix my signature.

FRED I. JADEN.