April 29, 1952 A. G. ANDERSON 2,595,118

OIL CAN

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FIG 1

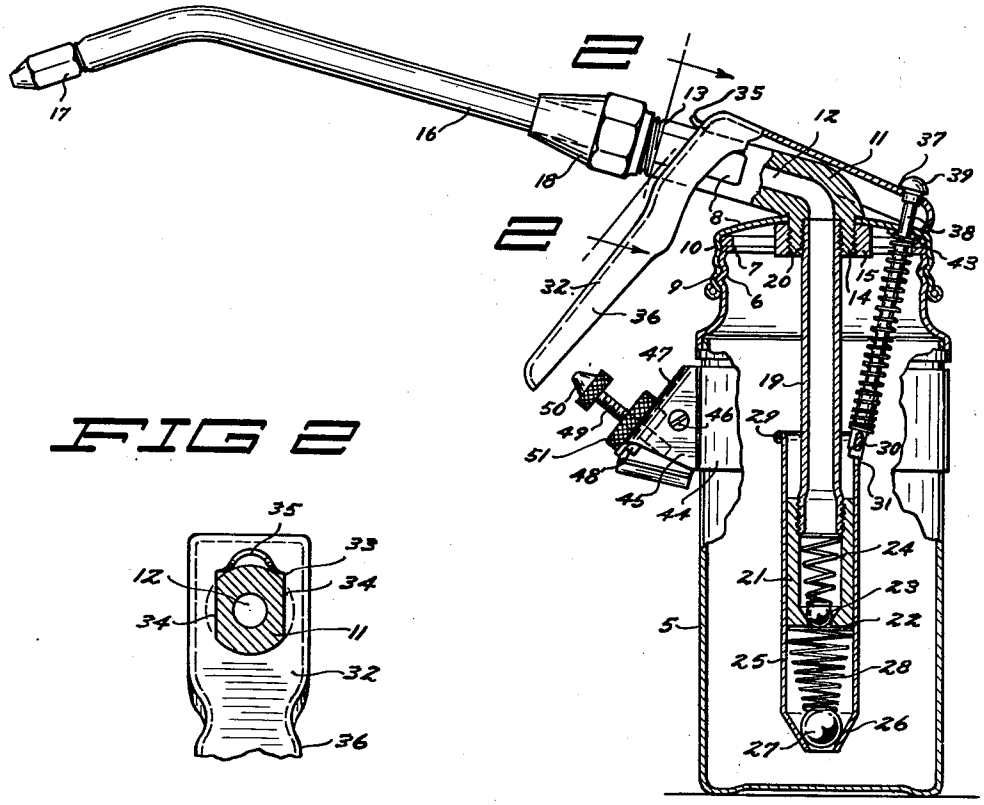
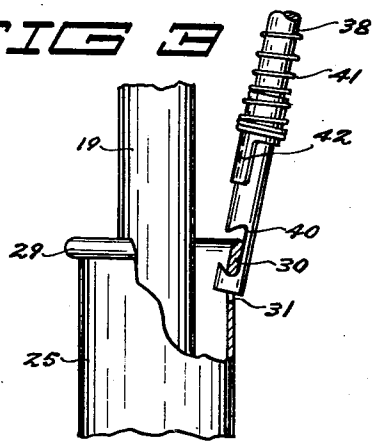


FIG 2

FIG 3



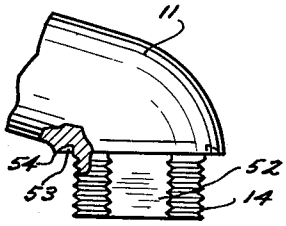


FIG 4

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OIL CAN

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9 Claims. (Cl. 222—385)

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This invention relates to fluid dispensing devices and particularly dispensers of the type, such as used in discharging lubricating oil, which will expel the fluid in controlled quantities.

My invention is an improvement over the oil can disclosed by Aubrey E. Westwood in United States Letters Patent No. 1,849,161, dated March 15, 1932.

Gun type oil cans such as described in the above mentioned patent have attained a status of extensive use, both because they are capable of expelling a strong stream of oil and because of their adaptability in gaining access to and depositing a proper amount of lubricant at the proper place. However, generally, these cans as heretofore marketed and used have failed to provide suitable mechanism for eliminating the factor of human judgment. In many industries it is highly desirous to have a machinery lubrication dispenser which will eject only the exact amount of oil required for proper performance. An example of the need for such precise lubrication can be found in the textile industry. Weaving looms must be frequently oiled at various points and it is found that excessive dosages such as at the heddle pulleys will cause the oil to spill upon and soil and penetrate the strands with consequent damage to the cloth being woven.

It would accordingly be of great advantage to such an industry if an oil can were provided of the type shown in the aforementioned patent but which would have an adjustable control mechanism which could be set so that the can dispensed only a predetermined amount of oil at each discharge therefrom.

It is therefore the primary object of my invention to provide an improved oil can having a construction and mechanism which insures the ejection of only a predetermined amount of oil at each dispensing action thereof.

Another object of my invention is to provide an oil can having a spout mounted thereon with an improved mounting means which supports the spout rigidly on the can and which provides a tight oil seal therebetween.

Another and more specific object of my invention is to provide a pump type oil can having an improved pump actuating mechanism.

Still another object of my invention is to simplify the construction of earlier known gun type oil cans to decrease the cost of production.

These and other more detailed and specific objects will be disclosed in the course of the following specification, reference being had to the accompanying drawings, in which—

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Fig. 1 is an elevation of the oil can partially in section to disclose interior details of construction.

Fig. 2 is a slightly enlarged sectional view taken along line 2—2 of Fig 1.

Fig. 3 is an enlarged view of the pump and rod connection with the pump cylinder partially broken away.

Fig. 4 is partial elevation of the adaptor used to connect the spout with the oil can

Referring now more particularly and by reference characters to the drawings, a cylindrical oil can or receptacle 5, of a relatively small diameter to allow convenient manual gripping thereof, has a screw threaded upper neck portion 6 provided with an internal annular flange 7. A cap or cover 8 is provided with a threaded rim 9 for screw threading connection with the neck 6 and a gasket 10 preferably of leather or rubber is disposed between the cap 8 and the flange 7 to provide an oil tight seal at the connection.

An angled spout adaptor shown generally at 11 having an internal passage 12 and externally threaded terminals 13 and 14 is secured at its lower reduced terminal 14 thru a central aperture in the cap by means of a nut 15. A tubular spout proper 16 has a nozzle 17 at one end and is joined at its other end with the free terminal 13 of the spout adaptor by means of a nut 18 so that the spout adaptor 11 and the spout proper 16 are combined in an assembly that can be called generally the oil can spout.

A pump mechanism for expelling oil in the can out thru the spout depends within the can from the cover thereof and is constructed substantially as follows: A connector tube 19 is screwed at its upper end 20 into the internally threaded terminal 14 of the adaptor 11 and rigidly carries by threading thereon an annular plunger 21 at its lower end. The plunger 21 is accordingly stationary with the cover and spout. The bottom end of the plunger 21 is formed with a reduced inner periphery to provide a valve seat 22 to receive a ball valve 23. A cone-shaped coil spring 24 contained within the plunger yieldably holds the ball seated with the upper coil thereof abutting against the end of the tube 19.

A cylinder 25 is slideably mounted on the plunger 21 and has its bottom end drawn as at 26 to provide a valve seat for the ball 27. Between the plunger 21 and the ball 27 I place a rather light coiled spring 28 which operates to hold the ball 27 normally seated but which will yield under slight pressure permitting the ball valve to open. The open top edge of the cylin-

der 25 is circumferentially rolled back on the cylinder to form a rim 29 and a small portion of said rim is vertically flattened as at 30. Immediately below said flattened portion 30 I provide a small substantially square opening 31 in the cylinder wall the purpose of which will be subsequently disclosed.

The pump mechanism as explained to this point functions in a now well known manner. As previously stated, the cylinder 25 is slideably mounted on the stationary plunger 21. As the cylinder 28 is moved upwardly, in a manner to be described, air is expelled from the cylinder past the valve 23. On the downstroke oil in the can flows thru the valve 27 into the vacuum that has been created. On the next and subsequent upstrokes the oil then in the cylinder 28 is forced past the valve 23 and out thru the various spout connections to the nozzle 17 where it is discharged.

The cylinder is reciprocated on the piston by means of a finger piece or trigger 32 and connecting mechanism with the cylinder now to be described. The trigger 32 is in the form of a substantially L-shaped lever having an opening 33 therein through which the spout adaptor 14, on which the trigger fulcrums, freely passes (Fig. 2). It will be noted that the adaptor has flattened side portions 34 along which the trigger operates and the opening in the trigger has straight lateral edges to fit snugly around this portion of the adaptor with the upper edge of the opening formed in an upturned arcuate riding lip 35. The rear arm of the trigger member centrally overlies the cover mounted portion of the adaptor 14 and the forward arm extends angularly downward coplanar with the spout 16. For reinforcement the trigger member is curved in transverse cross section with side walls 36 forming a downwardly opening channel therein. A central aperture 37 is provided proximal the rear end of the trigger to receive connecting means with the pump cylinder.

Connection between the trigger and the cylinder 25 is affected through a pump rod 38. This rod extends through a hole in the cap and the aperture 37 in the trigger 32 and is provided with an enlarged head 39 preventing upward freedom of the trigger arm from the rod. The lower end of the pump rod (Fig. 3) is transversely notched as at 40 for engagement with the flattened portion 30 of the cylinder rim 29. It will be noted that the walls of the notch diverge with the depth of the notch to insure a more secure grip on the rim. The mouth of the notch, however, is sufficiently broad for easy manual engagement or disengagement with the portion 30. I provide a spiral spring 41 to loosely encircle the pump rod while rigidly retaining a small catch 42 in its bottom coils, the catch being slideable on the rod. This spring normally extends between a washer 43, sealing the rod opening in the cap, and the rim 29 (Fig. 1) thus yieldably holding the catch over the mouth of the notch. The catch may of course be manually moved up on the rod, as shown in Fig. 3, against the action of the spring when connecting or disconnecting the rod and cylinder. Not only does the pump rod spring hold the catch 42 and the washer 43 in position, but it also serves as a recoil mechanism to rapidly effect the downward refilling movement of the cylinder 25 when the trigger is released.

I provide a control mechanism for use with the can when desired and operative to regulate the amount of oil which can be ejected by each manipulation of the trigger. This is in the form of an adjustable stop to limit the distance which the trigger can be moved. It consists of an annular band 44 having a pair of terminal clamping ears 45 held together and tightened by means of a screw 46. One of the ears 45 is bent inwardly at an angle to form an outwardly and downwardly angled bracket plate 47 disposed on a plane substantially parallel with the forward arm of the trigger. A nut 48 is secured to the underside of the plate as by soldering with opening therein aligned with a slightly larger aperture (not shown) in the plate. A stop screw 49 having a tapered head 50 is threaded downwardly into the nut 48. The control band is positioned on the receptacle so that the stop screw is located directly under the trigger 32 where it may limit downward movement thereof. It is of course obvious that the greater the downward movement of the trigger the greater will be the rise of the cylinder 25 and in turn the greater amount of oil will be discharged through the spout. The screw 49 may accordingly be adjusted in the threads of nut to vary the proximity of the head 50 with respect to the normal trigger position to regulate the flow of oil. A lock nut 51 is provided on the screw 49 to be tightened against the bracket plate 47 and prevent accidental turning of the screw. The tapered portion of the screw head 50 aids in introducing the head into the trigger channel should the trigger be brought downwardly slightly off center.

It is in this connection that the flattened side portions 34 of the spout adaptor become important. Where the trigger has a round opening for passage of the spout, such as in the aforementioned Westwood disclosure, it is found that the trigger frequently twists slightly around the spout on the downward movement to the point where it may completely miss the stop screw. This results, of course, in an overdose of oil. With the adaptor walls and trigger opening shaped as herein disclosed, however, the trigger will always move in a substantially coplanar path insuring repeated contact of the same point on the trigger with the head of the stop screw.

Another important feature of my device is an improved joint between the adaptor and the oil can cap. In the first place, it might be said that it is believed preferable, due to relative manufacturing cost, to use two separate parts rather than cast the cap and spout adaptor as one unit. It is essential, however, that the connection between them be oil tight as the can is frequently used in an inverted position. I therefore provide the tightly sealing adaptor connection best shown in Fig. 4. The reduced terminal 14 of the adaptor is formed with flat sides 52 and the central opening in the receptacle cap is cut to fit tightly around the transverse shape of the terminal. This fitting prevents rotary movement of the adaptor with respect to the cap. The lower edge of the main portion of the adaptor is undercut as at 53 forming an annular sealing edge 54 on the adaptor face which contacts the top of the cap. Accordingly as the joint is made secure by tightening of the nut 15 only a thin annular portion of the cap is pressed between the nut and said edge and a leak proof seal is provided between the adaptor and the cap. This joint construction is also found to provide a more rigid connection between the spout and the can. Where the adapter end face portion is not cut away as at 53 the adapter has

a tendency to loosen and rock on the can cap. This is particularly true where the top of the cap is slightly arched as in Fig. 1. It will be readily appreciated that by forming said end face portion as shown in Fig. 4 the broad base formed by the edge **54** will give greater stability to the spout mounting.

I have thus provided an improved oil can constructed to carry out the aforementioned objectives with maximum efficiency. The pump control mechanism is designed to insure ejection of only a predetermined amount of lubricant. Furthermore the oil receptacle is provided with various sealing means and a pump recoil mechanism which enable the device to be used safely and effectively when held in any position.

It is understood that suitable modifications may be made in the structure as disclosed, provided such modifications come within the spirit and scope of the appended claims. Having now therefore fully illustrated and described my invention, what I claim to be new and desire to protect by Letters Patent is:

1. In a fluid ejecting device, a container for the fluid, a fluid pump disposed within the container, an outlet spout communicating with the pump, said spout having a flat surface portion thereon, a finger piece fulcrumed on the spout adjacent said flat portion and having connecting means with the pump, said finger piece having a straight edge which engages and moves coplanar with said flat portion to control movement of the finger piece in a set arc about the fulcrum.

2. A fluid ejecting device comprising, in combination, a container for the fluid, a screw cap for the container, a spout mounted on the cap and having a flat exterior side wall portion, means for expelling the fluid out thru the spout, said means including a finger piece having an opening receiving the spout adjacent said side wall portion and the opening having a flat edge mating with said wall portion to insure movement of the finger piece only on a plane parallel to the plane of said flat portion, and an extensible finger piece control member mounted on the container to extend into the path of movement of said finger piece.

3. A fluid ejecting device comprising, in combination, a container for the fluid, a pump disposed within the container, a spout member mounted on the container and connecting with the pump, a finger piece fulcrumed on the spout and having a connection with the pump for actuating the same, an adjustable stop screw mounted on the container for limiting movement of the finger piece about the fulcrum, the spout member having a flat exterior surface area on a plane at right angles to the fulcrum axis, and said finger piece having a straight edge adapted to slide flush along said flat spout surface area as the finger piece is moved about its fulcrum to prohibit turning of fulcrum axis and so to confine the movement of the finger piece to a stop screw contacting plane.

4. A fluid ejecting device comprising a container for the fluid, a fluid pump disposed within the container, an outlet spout mounted on the container and communicating with the pump, said spout having laterally opposing flat wall surface portions disposed on parallel planes, a finger piece fulcrumed on the device for actuating the pump and having an opening for receiving the spout adjacent said surface portions, a stop member on the device for limiting fulcrum movement of the finger piece, and the said finger piece opening having opposing flat parallel sides adapted to mate with the flat surface portions on the spout to control the path of movement of the finger piece to a stop member contacting plane.

5. A fluid ejecting device comprising a container for the fluid, a pump disposed within the container for expelling the fluid therefrom and having a handle portion thereon, an actuation member carried by the device for actuating the pump, and a connecting means between the actuation member and the pump including a pump rod having one end associated with the member and the other end notched to receive said handle portion, and a catch slideably disposed on the rod for opening and closing movement over the notch to lock the handle portion in the notch.

6. A fluid ejecting device comprising a container for the fluid, a pump disposed within the container for expelling the fluid therefrom, an actuation member carried by the device for actuating the pump, and a connecting means between the actuation member and pump including a pump rod having one end associated with the member and the other end releasably connected to the pump, a keeper moveable on the rod and adapted to lock said connection, and a spring means associated with the keeper for yieldably retaining the keeper in locking position.

7. A fluid ejecting device comprising a container for the fluid and a pump mechanism for ejecting fluid from the container, said pump mechanism including a piston member disposed within the container and being rigid therewith, a cylinder moveable on the piston and having an opening in the side wall thereof, a finger piece mounted on the container and connected to the cylinder for moving the cylinder on the piston, said connection including a rod member having one end associated with the finger piece and the other end formed to engage an edge of the cylinder wall opening.

8. A fluid ejecting device which comprises a container for the fluid, a pump within the container for ejecting fluid therefrom, said pump including a piston member having a diametrically reduced rod portion and a cylinder slideable on the piston and extending over the rod portion, a pump actuation member on the device, and a connecting member between said pump actuation member and the cylinder having a gripping means at one end thereof extending through and engaging the extended portion of the cylinder.

9. In a fluid ejecting device, a container for the fluid, a cap member for the container, and a pump mechanism for ejecting fluid from the container, said pump mechanism including a piston member mounted on the cap member to depend downwardly inside the container, a cylinder slideable on the piston member for up and down movement thereon, a finger piece fulcrumed on the cap member, a rod having one end connected to the finger piece and extending downwardly through the cap member and to the cylinder, said cylinder having a side wall opening near the upper end thereof forming a horizontally extending handle portion on the upper marginal edge of the cylinder, said rod having a seat formed near the lower end thereof adapted to receive said handle portion, and a

spring supported keeper yieldably adapted to retain said handle portion in the seat whereby fulcrum movement of the finger piece will move the cylinder on the piston.

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