Oct. 29, 1929. S. HARRIS 1,733,731

OIL CAN

Filed Oct. 6, 1927

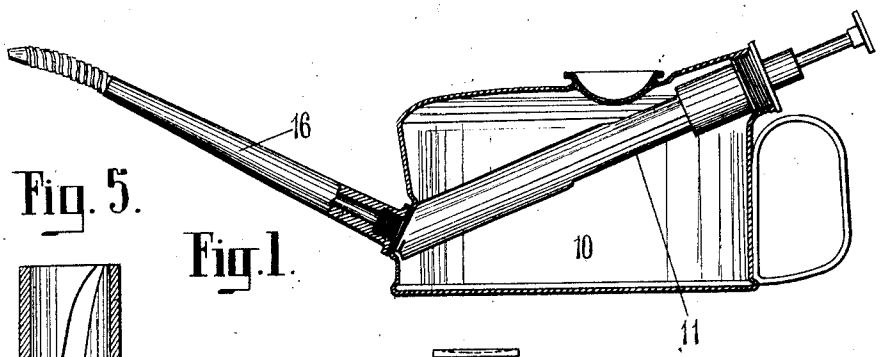


Fig. 1.

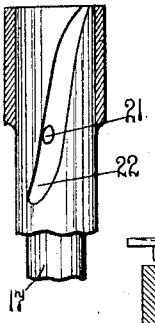


Fig. 5.

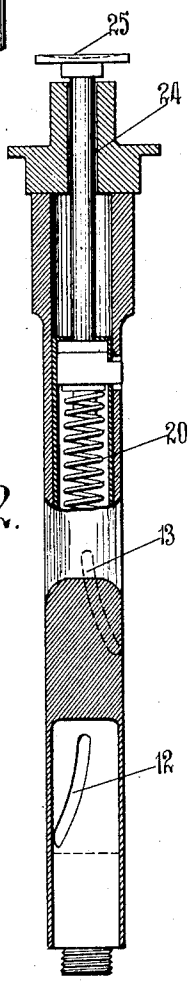


Fig. 2.

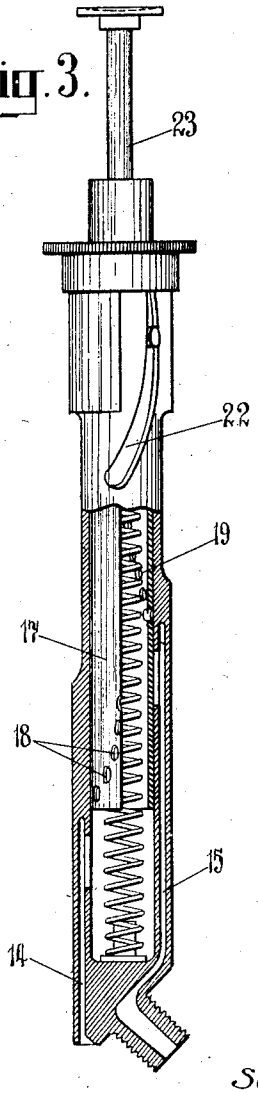


Fig. 3.

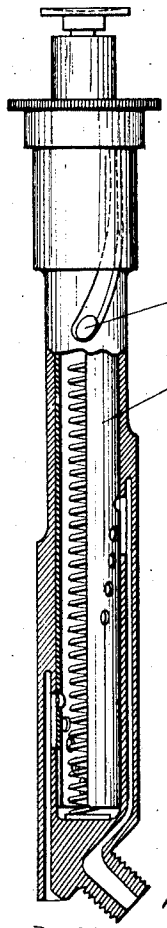


Fig. 4.

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UNITED STATES PATENT OFFICE

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OIL CAN

Application filed October 6, 1927, Serial No. 224,477, and in Australia June 2, 1927.

This invention relates to an improved oil can.

The oil can is of the force-feed type for delivering oil under pressure.

The invention consists broadly in the use of a plunger that, whilst moving in a cylinder, turns to an extent that alternately opens suction and discharge ports communicating with the oil reservoir and with the discharge spout.

There are other features of novelty that will appear as the description proceeds.

The invention will readily be understood by reference to the accompanying drawings, in which:—

Figure 1 is a sectional side elevation of the assembled oil can.

Fig. 2 is a part sectional elevation of the cylinder, plunger, and appurtenant parts.

Fig. 3 is another part sectional view of the parts shown in Fig. 2, but shown at 90° thereto. In this case the plunger is at the top of its stroke.

Fig. 4 is a similar view to Fig. 3, except that the plunger is at the bottom of its stroke, and

Fig. 5 is an enlarged view showing the slot in the cylinder and the guide pin working therein.

As shown in the drawings, an oil can 10 of appropriate shape has a cylinder 11 in juxtaposition thereto, such cylinder being provided with a suction port 12 and with a discharge port 13, the first leading by an appropriate passage 14 to the oil sump or reservoir, whilst the latter by a passage 15 communicates with a discharge spout 16. Working inside such cylinder is a hollow plunger 17, open at one end and closed at the other. Such plunger is provided with appropriate openings or ports 18 and 19, adapted to register respectively with the suction port 12 and with the discharge port 13 of the cylinder. A spring 20 registers against the closed ends of the cylinder and the plunger, whereby the suction stroke is automatically effected merely by releasing the thumb at the end of the discharge stroke. Near one end the plunger is provided with a protruding guide pin 21, which works against one side or the other of a curved slot or guide 22 formed in the corresponding part of the cylinder. The sides of the slot are curved to such an extent that they will, through the pin above referred to, cause the plunger during the working and suction strokes to turn alternately in a clockwise and counter-clockwise direction to such an extent as to uncover the corresponding ports. The end of the plunger 17 is connected to a working rod 23 passing through a guide or gland 24. The connection between the working rod 23 and the plunger 17 is such that, although the plunger turns, the rod is restricted to a simple reciprocating motion. The end of the rod is provided with the usual thumb button 25, which is preferably made saucer-shaped to overcome the tendency the thumb has of slipping out of position.

The oil can operates as follows:

The thumb button 25 is pressed in, and when released the result is that the plunger 17 moves backward under spring propulsion and in doing so uncovers the intake ports 12 and 18 and so draws oil into the cylinder 11 and the hollow plunger 17. When the thumb button is again pushed in, the working stroke is made, which results in the discharge ports 13 and 19 registering, and in the oil now under pressure being delivered to the spout 16. The foregoing action is continued so long as the plunger is reciprocated.

It is to be noted that the guide pin 21 moves against one side of the slot 22 on the working stroke, and against the other side on the suction stroke.

From the foregoing it will be understood that the plunger 17 is a combined sleeve valve and piston having an oscillatory as well as reciprocating movement within its cylinder and such oscillatory movement being effected by means of the slot and pin connection indicated by the numerals 21 and 22. On the downward or working stroke of the plunger 17 the pin 21 will be naturally forced against the lower face of the slot 22 whereby the port ways 19 formed within the plunger will register with the discharge opening 13 for permitting the oil to be forced from the cylinder, whereas upon the upward or suction

stroke of the plunger 17 this pin 21 will ride against the opposite or upper face of the slot 22 whereby the port ways 18 of the plunger 17 will register with the inlet port 12 of the cylinder and at the same time the port ways 19 of the plunger will be out of register with the outlet port 13 of the cylinder. This slight displacement caused by a pin working in an enlarged slot 22 causes the respective ports to be uncovered and closed at the correct time, which latter could not be effected by merely oscillating in a block or counter-clock-wise direction the sleeve valve or plunger as the port-ways therein would be uncovered on both strokes of the plunger and the apparatus, accordingly, would be unworkable.

From the foregoing description it will be obvious that in the apparatus there is really only one moving part, namely, the hollow plunger 17.

I claim:—

1. In a force feed oil can, the combination of an oil reservoir, a cylinder having an inlet port communicating with said reservoir and an outlet port whereby the oil may be forced therefrom, a hollow plunger mounted within said cylinder having port-ways therein adapted at times to register with the inlet and outlet ports of said cylinder, means whereby said plunger may be reciprocated for drawing in and discharging the oil from said reservoir through said ports and means whereby upon each reciprocating movement of the said plunger the latter will be caused to rotate and the port-ways thereof caused to register with the respective ports of said cylinder.

2. An oil can comprising in combination an oil reservoir, a cylinder arranged therein having an inlet port and an outlet port, a combined valve and piston mounted for simultaneous reciprocatory and rotary motion within said cylinder, and said combined valve and piston consisting of a hollow sleeve having port-ways therein whereby the port-ways of said sleeve will be caused to register with said inlet and outlet ports of the cylinder during the reciprocatory movement of said hollow sleeve and upon rotation thereof.

3. An oil can comprising in combination an oil reservoir, a cylinder arranged therein having an inlet port and an outlet port formed in its opposite sides, a combined valve and piston comprising a hollow sleeve having port-ways arranged in its opposite sides adapted at times to communicate with the inlet and outlet ports of the cylinder, means whereby a combined reciprocatory and rotary movement may be transmitted to said sleeve, whereby upon movement of said sleeve in one direction its port-ways will communicate with the inlet port of the cylinder and when moving in an opposite direction its port-ways will communicate with the outlet port of said cylinder.

4. An oil can comprising in combination an oil reservoir, a cylinder arranged therein, said cylinder having an inlet port at one side and an outlet port at its opposite side, a combined valve and piston having port-ways therein and adapted at times to register with said inlet and outlet ports of the cylinder, said combined valve and piston comprising a hollow sleeve, a coil spring arranged within said cylinder and adapted to normally retain said sleeve in one position, a working rod connected to said sleeve whereby the latter may be forced in a direction opposite to that which is caused by said coil spring, said cylinder having a curved slot formed therein, a pin carried by said sleeve and loosely mounted within said slot whereby an oscillatory movement will be transmitted to said sleeve for causing the port-ways thereof to register either with the inlet or outlet port of said cylinder.

Dated this 26th day of August, 1927.

SAMUEL HARRIS.