Feb. 23, 1932. J. MICKELSON 1,846,135

AUTOMATIC OIL DISPENSER

Filed Jan. 23, 1931

Fig. 1

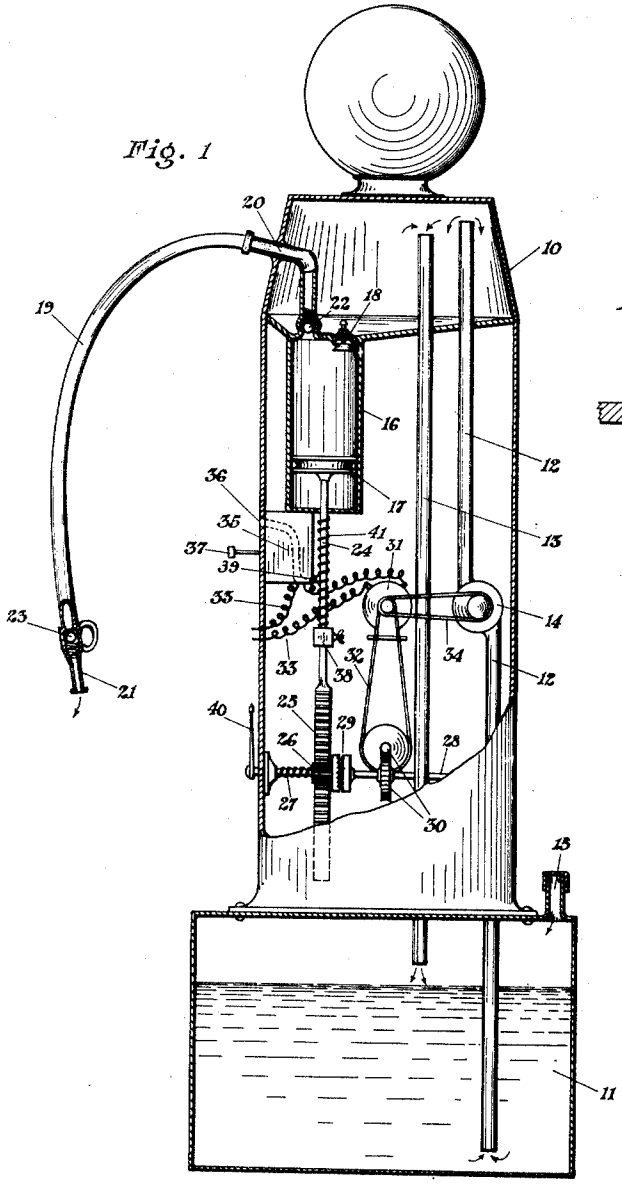


Fig. 2

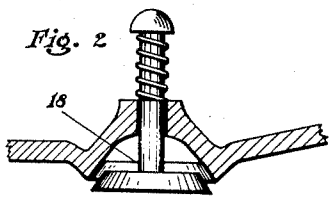
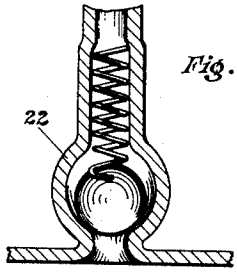


Fig. 3



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UNITED STATES PATENT OFFICE

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AUTOMATIC OIL DISPENSER

Application filed January 23, 1931. Serial No. 510,718.

My invention relates to dispensers for lubricating oil, its primary object being the provision of an automatically operable oil dispenser for delivering a measured quantity of lubricating oil upon the insertion of a coin of the proper denomination.

Another of my objects is the provision of an oil dispensing mechanism for delivering the lubricating oil to the purchaser from an overhead oil reservoir in measured quantities.

Another of my objects is the provision of a casing and dispensing mechanism positioned above an underground oil container and having an oil reservoir in the top portion of the casing.

Another of my objects is the provision of simply actuated mechanism for delivering the oil to the purchaser, the mechanism including an adjustable stop member for stopping the operation of the mechanism when a predetermined quantity of oil has been delivered.

Having in view these objects and others which will be pointed out in the following description, I will now refer to the drawings, in which

Figure 1 is a view in vertical section showing the casing and the underground tank and the mechanism within the casing for delivering measured quantities of oil.

Figure 2 is a view of the check valve through which the oil flows from the upper reservoir into the measuring reservoir.

Figure 3 is a sectional view of the check valve at the outlet of the measuring reservoir.

The device includes an upper reservoir 10 and a lower storage reservoir 11, these being connected by means of conduits 12 and 13. The conduit 12 is provided with a pump 14 which conducts the oil from the bottom of the reservoir 11 to the upper portion of the upper reservoir 10. The conduit 13 merely maintains the level of the oil in the reservoir 10 at a constant level by providing an overflow which carries the excessive oil back into the lower reservoir 11. The lower reservoir is provided with a filler opening 15. Due to the viscosity of lubricating oil, it is important that delivery be made from an elevated reservoir like the reservoir 10 instead of pumping it directly from a lower reservoir like the reservoir 11. At the same time it is important that the oil be stored in a lower reservoir, an underground reservoir being preferred.

Beneath the reservoir 10 is a cylindrical reservoir 16 having a piston 17 slidable therein. The piston 17 is normally maintained in its lowermost position. The two reservoirs 10 and 16 are connected by means of a check valve 18, the details of this valve being best shown in Figure 2. When the pressure above the valve is greater than the pressure below, the oil flows freely into the cylindrical reservoir 16 until that reservoir is filled. If the pressure within the cylindrical reservoir 16 is greater than that within the reservoir 10, the valve 18 is automatically closed to prevent the further flow of oil. The oil is delivered from the cylindrical reservoir 16 through a hose 19 with pipe connections 20, the hose being provided with a nozzle 21. Both the inlet and the outlet of the delivery conduit are provided with check valves 22 and 23. The structure of the check valve 22 is best shown in Figure 3.

The cylindrical reservoir 16 with the piston 17 constitute in effect a force pump for delivering the oil from the reservoir 16 through the conduit and through the nozzle 21. For this purpose the piston 17 is provided with a piston stem 24 depending therefrom and terminating in a rack 25. This rack is actuated in an upward direction by the pinion 26 which is secured to the shaft 27. This shaft in turn is connected with a shaft 28 through a ratchet device 29 whereby the rotation of the shaft 28 is communicated to the shaft 27 in one direction but not in the other. The shaft 28 is driven through worm gearing 30. Power is derived from the motor 31 which is conveyed to the worm gearing 30 through a belt 32. The motor 31 is preferably an electrical motor which has connections 33 with any suitable source of electrical energy. The motor 31 also drives the pump 14 through the belt 34.

A coin box 35 is adapted to receive coins of the proper denomination which are inserted through the slot 36. This coin box may be of any desired form, the details of

the mechanism therein being no part of my invention. It is essential, however, that the insertion of the proper coin will either close the electrical circuit through 33 or that it will unlatch mechanism so that a plunger 37 may be manually operated to close the electrical circuit. In either case the insertion of the proper coin will finally result in the operation of the motor 31 to drive the rack 25 upwardly and to cause the piston 17 to force the oil out through the nozzle 21. This movement must, however, be stopped when a predetermined quantity of oil has been delivered. For this purpose I provide a stop member 38 surrounding the stem 24 and having means for securing it in place at any desired point on the stem 24. The coin box is provided with a lever 39 which lies in the path of movement of the stop member 38. When the stop member 38 comes in contact with the lower surface of the lever 39, the lever 39 will break the circuit 33 and thus stop the action of the motor 31. Since the stop member 38 is adjustable, it is possible to so position it that a predetermined quantity of oil will be delivered on the insertion of the proper coin.

In order to indicate to the purchaser the amount of oil which he is receiving, I provide a pointer 40 which is secured to the shaft 29. A dial in the rear of the pointer will then indicate to the purchaser the amount of oil passing through the nozzle 21. The gearing may be so designed that the emptying of the entire contents of the reservoir 16 will result in one complete revolution of the pointer 40.

After the action of the motor 31 has stopped, the parts are restored to their neutral position. The spring 41 surrounds the stem 24 and the ends of the spring abut against the lower surface of the cylindrical reservoir 16 and the upper surface of the stop member 38. This forces the stem 24 to move downwardly and to carry the piston 17 with it. As the piston 17 moves downwardly, the oil will flow from the reservoir 10 into the cylindrical reservoir 16 through the check valve 18. The downward movement of the stem 24 with its rack 25 will then actuate the pinion 26 to restore the pointer 40 to the zero position. This movement of the pinion 26 in the reverse direction of rotation will not affect the shaft 28 which remains stationary due to the ratchet 29.

My device is designed initially and primarily for automatically dispensing lubricating oils and similar liquids of high viscosity. It is apparent, however, that the mechanism which I describe might be equally useful for dispensing other liquids and I therefore wish it understood that wherever oil is mentioned throughout my description and claims, any other liquid may be used in the place of the oil even though dimensional changes may be resorted to resulting from the differences in the viscosity of the liquids.

Having thus described my invention in such full, clear, and exact terms that its construction and operation will be readily understood by others skilled in the art to which it pertains, what I claim as new and desire to secure by Letters Patent of the United States is:

1. An automatic oil dispenser including a casing, an oil storage reservoir beneath said casing, a second oil storage reservoir within the upper portion of said casing, a conduit and a pump therein for conveying oil from the first to the second of said reservoirs, a hollow cylinder beneath the second of said reservoirs for receiving oil therefrom by gravity flow, a discharge conduit for said cylinder and a piston therein for discharging the oil through said discharge conduit, a motor for actuating said piston in the oil discharging stroke, means for returning said piston to inoperative position, means for starting the action of said motor, and means for automatically stopping the action of said motor when a predetermined quantity of oil has been discharged through said discharge conduit.

2. An automatic oil dispenser including a casing, an oil storage reservoir beneath said casing, a second oil storage reservoir within the upper portion of said casing, a conduit and a pump therein for conveying oil from the first to the second of said reservoirs, a hollow cylinder beneath said second reservoir for receiving oil therefrom by gravity flow, a discharge conduit for said cylinder and a piston therein for discharging the oil through said discharge conduit, a motor for imparting the oil discharging stroke to said piston, means for returning said piston to inoperative position, means for starting the action of said motor, and an adjustable stop member for automatically stopping the action of said motor when a predetermined quantity of oil has been discharged through said discharge conduit.

3. An automatic oil dispenser including a casing, an oil storage reservoir beneath said casing, a second oil storage reservoir within the upper casing of said reservoir, a conduit and a pump therein for conveying oil from the first to the second of said reservoirs, a hollow cylinder beneath said second reservoir and having a passageway therefrom for the passage of oil by gravity flow, a discharge conduit for said cylinder and a piston therein for discharging oil through said discharge conduit, a motor for imparting the oil discharging stroke to said piston, a check valve in the passageway between said second reservoir and said cylinder for preventing the passage of oil from said cylinder to said second reservoir during the discharging stroke of said piston, means for returning

said piston to inoperative position, means for starting the action of said motor, and an adjustable stop member for automatically stopping the action of said motor when a predetermined quantity of oil has been discharged through said discharge conduit.

4. An automatic oil dispenser including a casing, an oil storage reservoir beneath said casing, a second oil storage reservoir within the upper portion of said casing, a conduit and a pump therein for conveying oil from the first to the second of said reservoirs, a hollow cylinder beneath the second of said reservoirs for receiving oil therefrom by gravity flow, a discharge conduit for said cylinder and a piston therein for discharging the oil through said discharge conduit, an electrical motor for imparting the oil discharging stroke to said piston, means for automatically returning said piston to inoperative position, means for closing the electrical circuit through said motor, and adjustable means for automatically opening the electrical circuit when a predetermined quantity of oil has been discharged through said discharge conduit.

5. An automatic oil dispenser including a casing, an oil storage reservoir beneath said casing, a second oil storage reservoir within the upper portion of said casing, a conduit and a pump therein for conveying oil from the first to the second of said reservoirs, a hollow cylinder beneath the second of said reservoirs for receiving oil therefrom by gravity flow, a discharge conduit for said cylinder and a piston therein for discharging the oil through said discharge conduit, a motor for imparting the oil discharging stroke to said piston, means for returning said piston to inoperative position, means for starting the action of said motor, means for automatically stopping the action of said motor when a predetermined quantity of oil has been discharged through said discharge conduit, and an indicator operable by said motor for indicating the measured quantity of oil delivered through said discharge conduit.

In testimony whereof I affix my signature.

JOHN MICKELSON.