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MULTIPLE CHAMBER VISIBLE FLOW OIL PUMP.

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1,424,176. Patented Aug. 1, 1922.

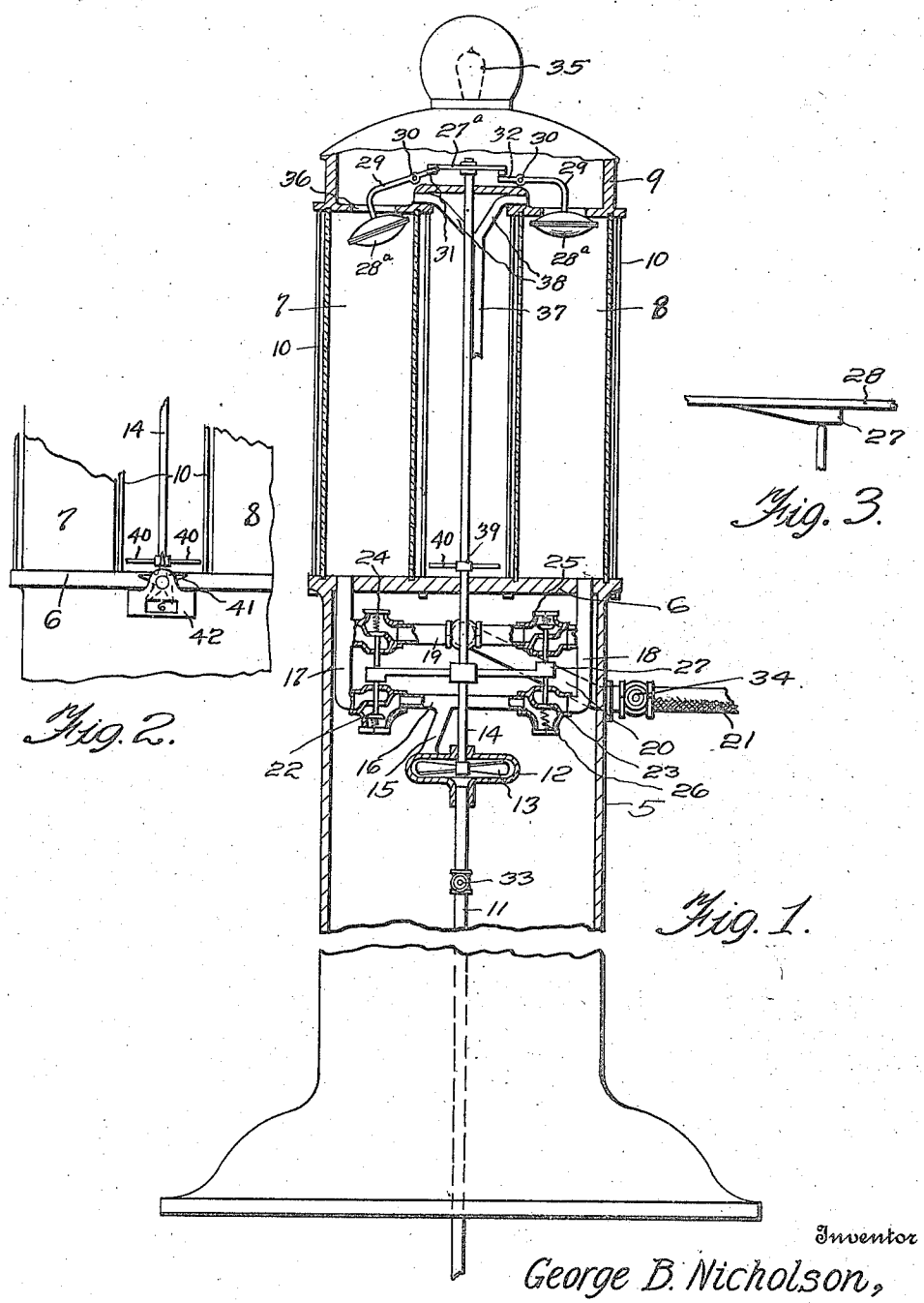


Fig. 2.

Fig. 3.

Fig. 1.

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MULTIPLE-CHAMBER VISIBLE-FLOW OIL PUMP.

1,424,176. Specification of Letters Patent. Patented Aug. 1, 1922.

Application filed July 26, 1921. Serial No. 487,583.

To all whom it may concern:

Be it known that I, GEORGE B. NICHOLSON, a citizen of the United States, residing at 7015 Meade Street, East End, Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Multiple-Chamber Visible-Flow Oil Pumps, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to dispensing apparatus and it has for its object to provide an improved device of this nature, particularly adapted to dispense gasoline and like fuel oils, though it is also capable of use in dispensing any liquid.

It is a primary object of the present invention to provide a dispensing apparatus comprising a plurality of transparent containers and an automatic valve shifting mechanism operable under the influence of the flow of the liquid being dispensed to alternately direct the liquid into said transparent containers, one of said containers discharging its contents while the other is being filled and vice versa.

Further objects and advantages of the invention will be set forth in the detailed description which follows.

In the accompanying drawing:

Fig. 1 is a view partly in side elevation and partly in vertical section of a dispensing apparatus constructed in accordance with the invention;

Fig. 2 is a fragmentary front elevation thereof illustrating a counter hereinafter described; and

Fig. 3 is a detailed view of a valve shifting disc hereinafter described.

Like numerals designate corresponding parts throughout the several figures of the drawing.

In the drawing 5 designates a supporting standard carrying a base plate 6. A plurality of transparent glass containers 7 and 8 is mounted upon the plate 6 and these transparent containers or cylinders are bound between the plate 6 and a cap 9 by means of tie rods 10.

A supply pipe 11 leads from any suitable source of fuel oil supply, such as a pump, to the casing 12 of a fluid motor consisting of vanes 13 mounted upon a vertical shaft 14. The flow of the fuel oil through the casing 12 acts upon the vanes 13 and tends to turn the shaft 14. The outlet from the casing 12 is through a pipe 15 which, in turn, is connected to a branch pipe 16, said pipe 16 in turn being connected by the vertical legs 17 and 18 with the lower portions of the transparent cylinders 7 and 8.

A discharge branch 19 connects the legs 17 and 18 and is in turn connected to a discharge pipe 20 having the usual flexible dispensing hose 21 connected thereto. The flow from the pipe 15 through the vertical legs 17 and 18 is controlled by supply valves 22 and 23, while the flow from the cylinders 7 and 8 through the discharge hose 21 is controlled by discharge valves 24 and 25. These valves are moved to closed position under the influence of springs 26 and they are forced from their seats against the tension of said springs by cam lugs 27 upon a cam disc 28, said disc in turn being mounted upon the shaft 14. It is manifest that the shaft 14 must not be permitted to rotate continuously under the influence of the vanes 13. To properly control the movement of this shaft, I mount upon the upper end thereof a stop-arm 27^a. Floats 28^a are disposed in the upper ends of the cylinders 7 and 8 and these floats are carried by stop levers 29 which are pivoted at 30. The tails 31 and 32 of the floats are moved into and out of the path of the stop-arm 27^a, as said floats fall and rise. In other words as the oil is discharged from a given container 7 or 8, the float therein falls and as it falls it brings its tail 31 or 32, as the case may be, into the path of movement of the stop-arm 27^a and as this float rises, said tail is moved out of the path of movement of the stop-arm.

The operation of the device is as follows:

A controlling valve 33 in supply pipe 11 being open fuel oil under pressure will flow through the casing 12 and thence through pipe 15 through one or the other of the containers according to how the valves happen to be set. Assuming that at the preceding operation container 7 was left filled by closing the discharge valve 34 in discharge pipe 20 the flow from casing 12 will be past valve 23, valve 22 being closed and thence through leg 18 into the container 8, it being understood that at this time the

valve 34 is opened. This permits the fuel contained in container 7 to flow past discharge valve 24 and through discharge pipe 20 and hose 21 into the tank of the waiting automobile. When the gasoline reaches such a height in container 8 as to lift the float 28^a, the tail 32 of said float will be moved out of the path of movement of the stop-engaging arm 27^a and the shaft 14 will make a partial rotation under the influence of the action of the vanes 13 and the liquid flowing past said vanes. Movement of the shaft 14 will be limited by the tail 31 which will have been disposed in the path of movement of the stop-arm 27^a by the descent of the float 28^a in the container 7 when the contents of the latter container was discharged through the hose 21. However the partial rotation of the shaft 14 causes a partial rotation of the cam disc 28 and causes the cam lugs 27 carried by said disc to act against the stems of the valves 22 and 25 forcing said valves from their seats against the tension of their springs 26 and permitting the valves 23 and 24 to close under the action of their springs. The result of this shifting of the valves is to permit the oil to flow from pipe 15 past valve 22 and through the branch 17 into the lower portion of the container 7 and to permit the contents of the container 8 to be discharged past valve 25 and through the hose 21. When the container 7 has been filled and the float 28 rises and its tail 31 is moved out of the path of the stop-arm 27, it is manifest that another partial rotation will be imparted to the shaft 14 and the valves will be restored to their former position and the container 8 will begin to fill and the container 7 will begin to empty itself through the hose 21. In order to insure that the containers will be completely emptied before the valves are shifted, I designedly make the discharge pipe 21 of greater capacity than the supply pipe 15. Thus the rate of discharge is somewhat greater than the rate of inflow.

I prefer to illuminate the containers 7 and 8 by placing an incandescent electric light 35 in a dome 36 upon the cap 9, though this forms no part of the invention, since illuminated receptacles of this character are well known in the art.

I prefer to arrange the floats 28^a in such manner as to cause them to close upon seats 36^a formed upon the cap 9 so that an accurate measure of the oil within the containers 7 and 8 may be had. But in order to insure against overflow of the gasoline from the apparatus if for any reason the mechanism should fail to work, I provide an overflow pipe 37 which is connected with a branch pipe 38 leading from those portions of the cap 9 which lie above the containers 7 and 8. The overflow pipe 37 may be connected to any suitable point of discharge or storage of the oil which overflows. In order that a visible indication of the number of gallons of oil dispensed may be displayed to the purchaser, I mount upon the shaft 14 a hub 39 carrying a pair of arms 40. These arms or fingers act upon the star wheel 41 of a counter 42 of usual and well known construction and serve to indicate upon said counter the number of gallons of oil dispensed.

While I have illustrated only two containers 7 and 8 upon the pedestal or standard 5, it is manifest that these may be increased in number without departure from the invention. To increase these containers in number would involve merely the provision of additional valves and pipes corresponding to valves 22, 23, 24 and 25 and the provision of additional cams 27 upon the disc 28 to actuate said valves.

It is to be understood that the invention is not limited to the precise construction set forth but that it includes within its purview whatever changes fairly come within either the terms or the spirit of the appended claims.

Having described my invention, what I claim is:

1. A device of the character described comprising a support, a pair of transparent containers thereon of predetermined capacity, a source of liquid under pressure, conduits leading from said source of liquid under pressure to the several containers, valves in said conduits, a fluid motor disposed in the path of the liquid flow, means actuated thereby for shifting said valves, and means for restraining said actuating means comprising float operated elements associated with the containers and adapted to be elevated by the liquid in the containers for releasing the restraining means.

2. A device of the character described comprising a standard, a supply pipe of liquid under pressure leading to said standard, a casing to which said pipe is connected, a fluid motor in said casing, a shaft actuated by said fluid motor, a stop engaging member carried by said shaft, float operated means associated with the containers and cooperating with said member, valves for controlling the passage of liquid from said casing to the containers and for controlling the passage of liquid from said containers and a valve actuating means carried by said shaft and serving to alternately connect one of said containers with source of supply and the other of said containers with an outlet and vice versa.

3. A device of the character decsribed comprising a standard, a pair of transparent containers thereon, a float in each of said containers, a supply pipe for liquid under pressure, a fluid motor disposed in connec-

tion with said supply pipe, a supply pipe leading from the fluid motor to the containers, a dispensing hose, a discharge pipe leading from the containers to said dispensing hose, valves controlling said discharge and supply pipes, a shaft actuated by the fluid motor, valve shifting means carried by said shaft and a restraining mechanism for said shaft releasable under the movement of the floats.

In testimony whereof I hereunto affix my signature.

GEORGE B. NICHOLSON.