

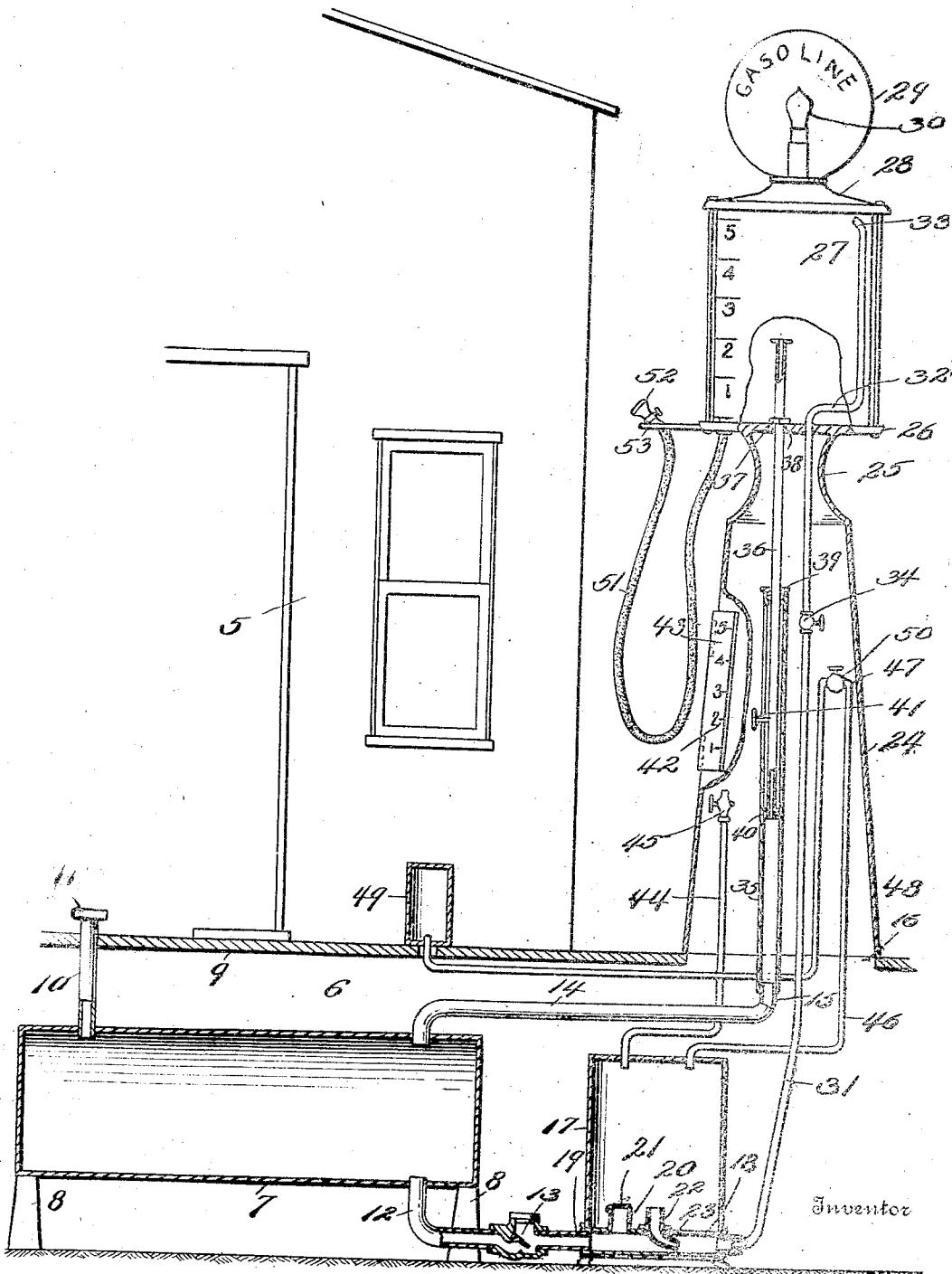
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LIQUID DISPENSING APPARATUS

Filed Oct. 23, 1923



UNITED STATES PATENT OFFICE.

RODGER EADES, OF WINCHESTER, KENTUCKY.

LIQUID-DISPENSING APPARATUS.

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To all whom it may concern:

Be it known that I, RODGER EADES, a citizen of the United States, residing at Winchester, in the county of Clark and State of Kentucky, have invented new and useful Improvements in Liquid-Dispensing Apparatus, of which the following is a specification.

This invention relates to liquid dispensing apparatus particularly adapted for measuring and discharging various quantities of oil or other liquids.

The primary object of the invention is to provide an improved device of this class for dispensing gasoline or other liquids comprising comparatively few and inexpensive coordinated elements constructed and operating in such manner that various quantities of gasoline or other liquids desired may be obtained with accuracy in measurement without resorting to pressure upon the main supply tank. A further object of the invention is to provide an improved dispensing apparatus having pneumatic means for elevating gasoline or other liquids to a point of discharge comprised in a filling stand or station installation by easily operated, manually controllable means without the use of a pump or analogous complex mechanism, to thereby more rapidly and accurately dispense the gasoline or other liquid. A still further object of the invention is to provide an improved device of the class specified which is safe in its use and will fully comply with the fire regulations of various municipalities which prohibit the use of pressure upon the storage tanks containing inflammable oils and other liquids. With these and other objects and advantages in view, the invention consists in the preferred construction and arrangement of the several parts which will be more fully hereinafter described and claimed.

The drawing illustrates a sectional elevation of a dispensing apparatus adapted for filling stations or stands and constructed in accordance with the present invention.

The numeral 5 designates a portion of a garage or other storage or equipment station adjacent to which it is preferred to install the improved dispensing apparatus. Partially under or at one side of the garage 5, in a pit or cellar 6, is located a main storage tank 7 having suitable bottom supports 8 resting on the bottom of the pit or cellar, and leading up through the floor or curbing

9 on which the garage is located, or at one side of the latter, as the case may be, is a filling or supply pipe 10, which opens into the top of the tank 7 and having a closure plug 11. Connected to the bottom of the tank 7 is a discharge pipe 12 provided with a suitable check valve 13, which opens in a direction to permit of the discharge of the contents of the tank but closes against back flow, as illustrated in the drawing. Connected to the top of the tank 7 is an overflow return pipe 14 of suitable length and extending far enough to have its upturned end 15 disposed in central relation to and below an opening 16 through the floor or curbing 9 for a purpose which will be presently explained. An auxiliary or pressure tank 17 is also supported on the bottom of the pit or cellar 6 and has a pipe or tube 18 extending transversely of the lower portion thereof, one end of the latter pipe or tube being connected to the discharge pipe 12, as at 19, the check valve 13 being interposed between the pipe or tube 18 and the discharge pipe 12. The auxiliary or pressure tank 17 is fully closed except where pipe connections are made therewith, and the discharge pipe 18 has a supply nipple 20 extending upwardly into the tank 17 and is provided with a gravitating valve 21 on its upper end. The supply nipple, which is in the form of an angular branch pipe or tube of short length, permits the contents of the tank 7 to freely flow upwardly there-through from the pipe or tube 18 through the check-valve 13, into the pipe 12 and thence into the tank 17. Adjacent to the filling nipple or branch 20 is an outlet nozzle 22 which has its upper end extending into the tank 17 and its lower extremity 23, which is bent and of reduced area, extending into the pipe 18 in the direction of the outlet end of the said pipe 18. The discharge end of the nozzle 22 is of reduced cross-section.

On the floor or curbing 9 a hollow pedestal 24 is mounted over the opening 16, the said pedestal preferably tapering from its lower to its upper extremity and having a reduced tubular neck 25 and having at its upper end a supporting flange 26 on which is mounted a transparent receptacle 27 having scale marks thereon, representing in the present instance a capacity of five gallons. On top of the receptacle 27 is a closing cap 28, which carries an illuminating globe 29

having a suitable lighting means 30 therein and also provided with suitable indicating matter such as the word "gasoline" for attractive purposes. A reduced discharge pipe section 31 connects with the end of the pipe or tube 18 opposite that to which the discharge pipe 12 is attached and is projected upwardly through the pedestal 24, neck 25 of the latter and flange 26 and is given an angular bend, as at 32, and terminates in a bent discharge end 33 near the top of the receptacle 27. The pipe 31 at a suitable elevation within the pedestal 24 has a regulating valve 34 preferably of the globe type. A telescopic overflow pipe is also mounted within the pedestal 24 and comprises a lower member 35 connected at its lower end to the upturned end 15 of the overflow return pipe 14 and also having a smaller pipe member 36 fitted therein for vertical sliding movement. The pipe 36 extends upwardly through a gland or packing collar 37 fitted in a suitable opening 38 in the flange 26, the upper end of the pipe member 35 having a gland or packing 39 therein through which the smaller pipe member 36 has sliding movement. The lower end of the pipe member 36 has a packing ring or analogous device 40 fixed thereon and snugly engaging the inner surface of the pipe member 35. By this means a non-leakable connection between the smaller pipe member 36 and the pipe member 35 and the flange 26 is provided and vertical movement of the pipe member 36 is made possible. The pipe member 35 remains stationary but the pipe member 36 may be projected upwardly and downwardly within the receptacle 27 as may be desired in accordance with the quantity of oil or liquid to be dispensed. To effect an accurate movement of the pipe 36 it is provided with a hand operated projection 41 within the pedestal 24 and so arranged as to cooperate with a scale 42 corresponding to that on the receptacle 27. The scale with which the projection 41 cooperates in the present instance is shown applied to a door 43, which gives access to the interior of the pedestal for operation of the several devices which need attention or manipulation to effect a raising and dispensation of gasoline or other liquid and to cut off the latter when the proper quantity has been measured, as will be shown by the scale on the receptacle 27.

Connected to the top of the auxiliary or pressure tank 17 and bent at an angle and extending part way up into the pedestal 24 is a vent pipe 44 having a petcock 45 on the upper end thereof and readily operable through the opening in the pedestal controlled by the door 43. The object of this vent pipe 44 is to relieve the auxiliary or pressure tank 17 of all air when it is desired

to effect a filling of the said tank from the storage tank 7. An air pressure pipe 46 also connects with the upper portion of the tank 17 and extends upwardly into the pedestal a suitable distance and is formed with a bend or elbow 47 and then returned downwardly and at an angle, as at 48, and connected to an air tank 49 conventionally shown as supported on the floor or curbing 9 within the garage 5, or said pipe 48 may connect with any other suitable source of air under pressure. In the bend or elbow 47 of the air pressure pipe 46 a regulating valve 50 is mounted and may be easily reached through the opening in the pedestal, the object of this valve being to reduce the amount of air flowing downwardly to the auxiliary or pressure tank as may be necessary and to maintain an air pressure only sufficient to fully elevate or force the gasoline or other liquid upwardly through the pipe 31 into the receptacle 27.

As in the usual form of filling stands or stations, an ordinary discharge hose 51 communicates with the bottom portion of the receptacle 27 and has a suitably valved nozzle 52, which is normally supported in a bracket or projection 53.

In starting the operation of the improved apparatus the vent pipe 44 is opened through the medium of the petcock or valve 45 and the gasoline or other liquid flows from the tank 7 downwardly through the pipe 12 and valve 13 into the pipe or tube 18 and thence upwardly through the nipple or filling branch 20 and automatically raises the valve 21 and enters the interior of the tank 17, filling the latter tank to at least a point near the closed top thereof, or in accordance with the level of the liquid within the tank 7. During this preliminary charging of the tank 17 it will be understood that the valve 50 will be closed, and, when it is desired to dispense a certain amount of the gasoline or other liquid, the operator adjusts the pipe member 36 of the telescopic discharge pipe to a level within the receptacle 17 corresponding to the quantity of gasoline or oil to be dispensed. The upper open end of the pipe member 36 within the receptacle 27 is shown in the drawing as standing on a level with the two-gallon scale mark. The operator then opens the valve 34 of the pipe 31 and the valve 50 and the air pressure is regulated as may be found necessary to force the gasoline or other liquid from the tank 17 downwardly through the nozzle 22 in the direction of the outlet end of the pipe or tube 18, and by this means a suction is created at the inlet end of the latter pipe and also through the discharge pipe 12 and valve 13, and at the same time the valve 21 is closed. The gasoline or other liquid is forced by the air pressure out through the pipe or tube 18

upwardly through the pipe 31 into the receptacle 27, and, if a greater quantity of gasoline or oil is discharged into the said receptacle than is required, the surplus will pass down through the telescopic overflow pipe and thence into the return pipe 14 back to the storage tank 7. As soon as the requisite quantity, or a little more than the quantity required, of the gasoline or other liquid is discharged into the receptacle 27, the valves 34 and 50 are closed. It will be understood that a certain amount of gasoline or other liquid may remain in the auxiliary or pressure tank 17, but the latter is continually replenished and a certain quantity of gasoline or other liquid will always be supplied to the tank 17 from the main storage tank.

When the gasoline or other liquid is forced by the air pressure out through the pipe or tube or conduit 18, through the pipe 31 into the receptacle 27, a suction is set up in the said pipe, tube or conduit 18 by the nozzle 22 in view of the fact that the reduced extremity of the latter is, directed towards the outlet of the pipe, tube or conduit 18, and this suction has a pulling effect on the gasoline or other liquid in the tank 7 through the pipe 12, the valve 13 being automatically opened under this suction stress. In view of this suction and the drawing of the contents of the tank 7 through the pipe 12 into the pipe, tube or conduit 18, more or less of the said contents of the tank 7 will be drawn into the pipe, tube or conduit 18 and forced upwardly through the pipe 31 to the receptacle 27, and as a consequence, the gasoline or oil will be fed into the pipe, tube or conduit 18 from two sources. This suction operation is established by the air pressure within the tank 17 and the intensity of the same will be regulated in accordance with the pressure of the air entering the said latter tank.

What is claimed as new is:

1. In a liquid dispensing apparatus, a storage tank, an auxiliary tank, a discharge pipe leading from the lower portion of said storage tank, a connection between said discharge pipe and the lower portion of said auxiliary tank to permit the flow of liquid

from said storage tank to said auxiliary tank, means for preventing backflow of liquid from said auxiliary tank to said storage tank, a conduit extending from the lower portion of said auxiliary tank into said discharge pipe and having its outlet end of reduced area and directed toward the discharge end of the latter, and means for supplying fluid under pressure to the upper portion of said auxiliary tank.

2. In a liquid dispensing apparatus, a storage tank, an auxiliary tank, a discharge pipe leading from said storage tank, through the lower portion of said auxiliary tank, a supply nipple extending from said discharge pipe into said auxiliary tank, means in said nipple permitting the flow of liquid from said discharge pipe to said auxiliary tank and preventing its flow in the opposite direction, a conduit extending from the lower portion of said auxiliary tank into said discharge pipe and directed toward the discharge end of the latter, said conduit having its outlet end of reduced area, means for supplying fluid under pressure to the upper portion of said auxiliary tank, and means for relieving the pressure of fluid in said auxiliary tank.

3. In a dispensing apparatus, a storage tank, an auxiliary tank having its bottom at a lower level than the bottom of said storage tank, a discharge pipe leading from the lower portion of said storage tank, through the lower portion of said auxiliary tank, and having an outlet to the latter through which liquid may flow by gravity from said discharge pipe to said auxiliary tank, means in said outlet permitting the flow of liquid from said discharge pipe to said auxiliary tank and preventing the return of liquid therethrough, means to prevent backflow of liquid from said discharge pipe to said storage tank, a discharge nozzle extending from said auxiliary tank into said discharge pipe toward the discharge end of the latter, said discharge nozzle having its discharge end of reduced area, and valved means for supplying fluid under pressure to the upper portion of said auxiliary tank.

In testimony whereof I have hereunto set my hand.

RODGER EADES.