June 12, 1928. 1,673,696

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DISPENSING TANK

Filed Feb. 24, 1926

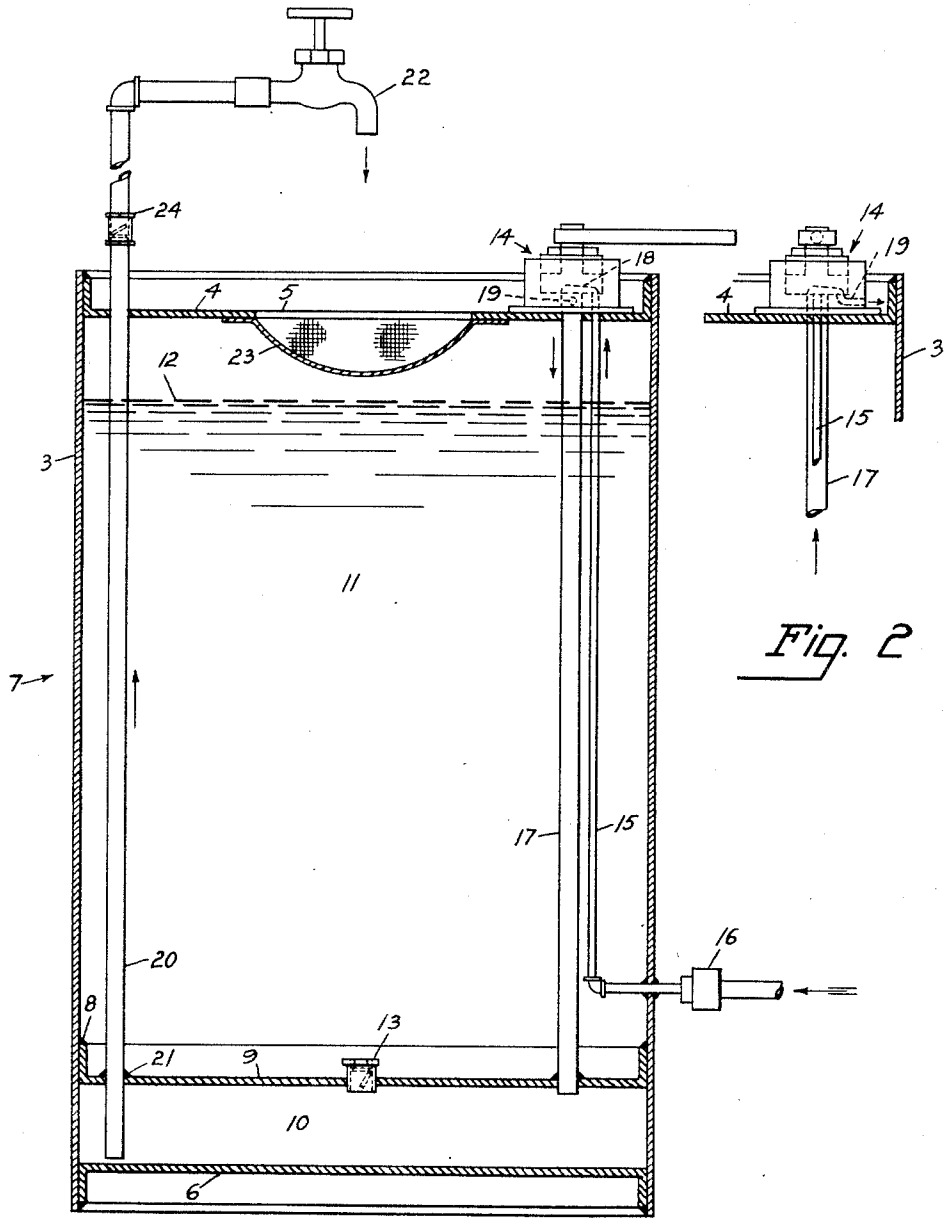


Fig. 1

Fig. 2

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Patented June 12, 1928. 1,673,696

UNITED STATES PATENT OFFICE.

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DISPENSING TANK.

Application filed February 24, 1926. Serial No. 90,320.

My invention relates broadly to tanks, and more particularly to that class of tanks for the dispensation of fluids, such for example, as the tanks employed in oil service stations, garages and the like.

Dispensing tanks of the above character are generally single containers and have mounted thereupon hand pumps for delivering the fluid contents of the tanks to the measuring reeptacles. These tanks are constructed to withstand the pressure due to the fluid contents only. Other dispensing tanks that I am aware of have been constructed to withstand internal pressures for the delivery of the fluid contents by air pressure instead of hand or power-driven pumps. Of necessity, the latter tanks had to be built much stronger and consequently entailed a greater construction cost on account of heavier material, reenforcing rods and braces both corner and through. Since the latter tanks are under pressure, a great objection has been encountered other than the high cost, and that is, no provision is made for the overflow or surplus flow of the fluid back to the tank from the dispensing terminal. Also, the general run of tanks in the hand-pump class make no provision for the overflow because the hand pump also measures the output of the tank to check up on the input.

The above objections I consider as deficiencies in the art, and seek to overcome them by the provision of a simple tank structure to withstand an internal pressure having material substantially of the same gage as the tanks of the hand-pump class of like capacity, compare substantially the same in cost, take care of the overflow, eliminate the mounted, large and bulky hand-pump structure and substitute therefor a small and compact air-controlling means for dispensing the fluid contents of the tank by pressure.

Another object is the provision of a tank structure considered safe at all times, even by inadvertance should the air pressure be turned on and left on indefinitely.

Another object is that but part of the unit tank structure is under pressure and that preferably of a small predetermined volume, while the balance of the tank is for storage and under atmospheric pressure only.

Another object of the invention is the construction of a fluid dispensing tank in which the pressure tank therein is situated directly beneath the storage tank so as to admit the feed by gravity from the latter, the pressure tank being alternately connectible with a source of pressure and with the atmosphere for the purpose of first applying pressure for the displacement of the fluid therefrom to any desired measure or receptacle, and then relieving the pressure from said pressure tank to permit the replenishment of the fluid by gravity from the superposed storage tank.

Another object of the invention is to provide a pressure supply conduit direct to the pressure tank and use a part of the said conduit as a venting conduit, and at the junction of the double-use conduit to connect a single pressure-control means, such as the air-control valve of my copending patent application, Serial No. 90,321, filed February 24, 1926. whereby an angular turn of the valve will communicate pressure to the pressure tank or relieve the pressure therefrom to the atmosphere.

With the above and other objects in view, my invention consists in the improved liquid dispensing device illustrated in the accompanying drawings, described in the following specification and particularly claimed at the end thereof, and in such variations and modifications thereof as will be obvious to those skilled in the art to which my invention appertains.

In the drawings accompanying and forming a part of this specification, and wherein the preferred embodiment of my invention is illustrated:

Figure 1 is a central vertical sectional elevation of a tank structure embodying the invention, the air-control means being shown in the open position whereby the pressure supply conduit is open direct to the pressure tank; and

Fig. 2 is a similar elevation but of a fragment of the structure, to show that the air-control means has been angularly turned to relieve the pressure in the pressure tank to the atmosphere, by directing the compressed air in the pressure tank to escape through part of the pressure supply conduit and through the exhaust port of the air-control means.

Adverting to the drawings, the embodiment of the invention shown comprises a unit tank structure having continuous metallic side walls indicated by the numeral 3,

a top 4 having an opening 5 preferably central therein, and a closed bottom 6. Within the casing 7 of the tank, and before the top or bottom is made a part thereof, I secure as by welding at 8 a suitably formed metallic partition 9. The partition is positioned close to the bottom 6 for three main reasons: namely (1) to establish a sealed compartment 10 in the tank and maintain in it a maximum safe internal pressure with the ordinary plate material used for open tanks that could not be accomplished if the partition were placed otherwise; (2) to establish a pressure tank of small predetermined volume, usually three gallons; (3) to establish a storage tank 11 of large capacity with respect to the pressure tank and that the same be directly above the pressure tank so that the latter may automatically be filled with oil 12, or any other fluid, by gravity under certain conditions.

Preferably in the center of the partition 9 I secure an ordinary check valve 13 openable downwards from the storage tank into the pressure tank when there is no pressure in the latter.

To a convenient part of the tank such as the top thereof I mount a simple air-pressure control means 14, such as the valve of my said copending application, and to the valve a pipe connection 15 is made leading from a source of air pressure supply (not shown), usually a branch from the air pump pipe line. A reducing valve 16 is interposed in the branch, to effect a pressure of about five to ten pounds in the conduit 15.

A pipe 17 is connected to the partition 9 and may extend through the storage tank and is at its other end connected to the valve 14, and is communicative with the pipe connection 15 through the channel 18 of the valve. This pipe 17 is also communicative to the atmosphere through the said channel 18 and exhaust port 19 in the valve 14, Fig. 2.

A delivery pipe connection 20 is in communication with the pressure tank and is shown as passing through the storage tank and is terminated within close proximity of the bottom 6 of the pressure tank. The pipe is sealed at the partition 9 as by the weld 21. The pipe projects through the top 4 and is suitably formed so that its dispensing faucet 22, nozzle, or other terminal may be over the opening 5. The height of the faucet above the tank is such that any common measure may be conveniently held under the faucet for a dispensation of the fluid, any overflow dripping back into the storage tank through opening 5 and screen 23. A suitable check valve 24 is installed in the delivery pipe and preferably near the outlet.

In operation, the storage tank is filled with the liquid desired through the opening 5, and if the air-controlling means 14 is positioned so that the conduit 17 is open to the atmosphere, the check-controlled port 13 will open and admit the liquid to flow by gravity into the auxiliary tank 10 and fill the same. To effect a dispensation of the liquid, a measure or any receptacle (not shown) is held under the delivery outlet 22, and the air-controlling means 14 is manipulated so that compressed air is conveyed through conduits 15 and 17 to the pressure or auxiliary tank 10, whereupon the increased pressure therein exerts its influence upon the valve of the check-controlled port 13 and closes it, and the liquid in the said auxiliary tank is forced therefrom through the delivery pipe connection 20, check valve 24 and discharge terminal 22 and into the receptacle, any overflow or surplus liquid dripping back into the storage tank whereby none of the liquid is wasted and a clean dispensing tank service equipment be ever present.

Should a three-gallon measure (the capacity of the hereindescribed auxiliary tank) be desired, the air-controlling means 14 is left open until all the liquid from the auxiliary tank is exhausted, and made evident by the issuance of air from the discharge terminal. From this, it is obvious that the unit tank structure is never in danger of disruption by pressure, as this safety factor is ever present, a much desired feature of the salable article of manufacture.

Having illustrated and described my invention what I claim as new and desire to secure by Letters Patent of the United States, is:

1. A fluid container having a top provided with an opening covered by a screen constituting a drain and said container having a closed bottom, a partition sealed in the container near the bottom thereof to divide the container into an upper compartment under atmospheric pressure and a lower compartment therebeneath adapted to withstand pressure greater than atmospheric pressure, a check-valve-controlled port in said partition between said compartments, a delivery pipe from the lower compartment spaced from said port and terminating in spaced relation above the opening in the top of the container, means for supplying compressed air to the lower compartment whereby to discharge fluid therefrom, and means for relieving the pressure in said lower compartment to permit flow of fluid thereto through the check-controlled port.

2. A fluid container having a top provided with a screened opening and having a closed bottom, a partition sealed in the container near the bottom thereof to divide the container into an upper compartment under atmospheric pressure and a lower compartment therebeneath adapted to withstand pressure greater than atmospheric pressure, a check-valve-controlled port between said compartments, a delivery pipe from the

lower compartment and terminating in spaced relation above the opening in the top of the container, and unitary air-controlling means for selectively connecting the lower compartment to a source of compressed air or to the atmosphere; whereby when said means is manipulated to admit compressed air to the lower compartment the fluid therein will be expelled through the delivery pipe, and when manipulated to relieve the pressure to atmosphere the check-controlled port will open to admit the fluid in the upper compartment to flow by gravity into the lower compartment, surplus flow from the delivery pipe being adapted to flow through the opening in the top of the container to the upper compartment.

In testimony whereof, I affix my signature.

SEWARD B. MERRY.