(No Model.)

M. A. POSSONS & H. L. CARROLL.

RESERVOIR.

No. 491,023. Patented Jan. 31, 1893.

Fig. 1.

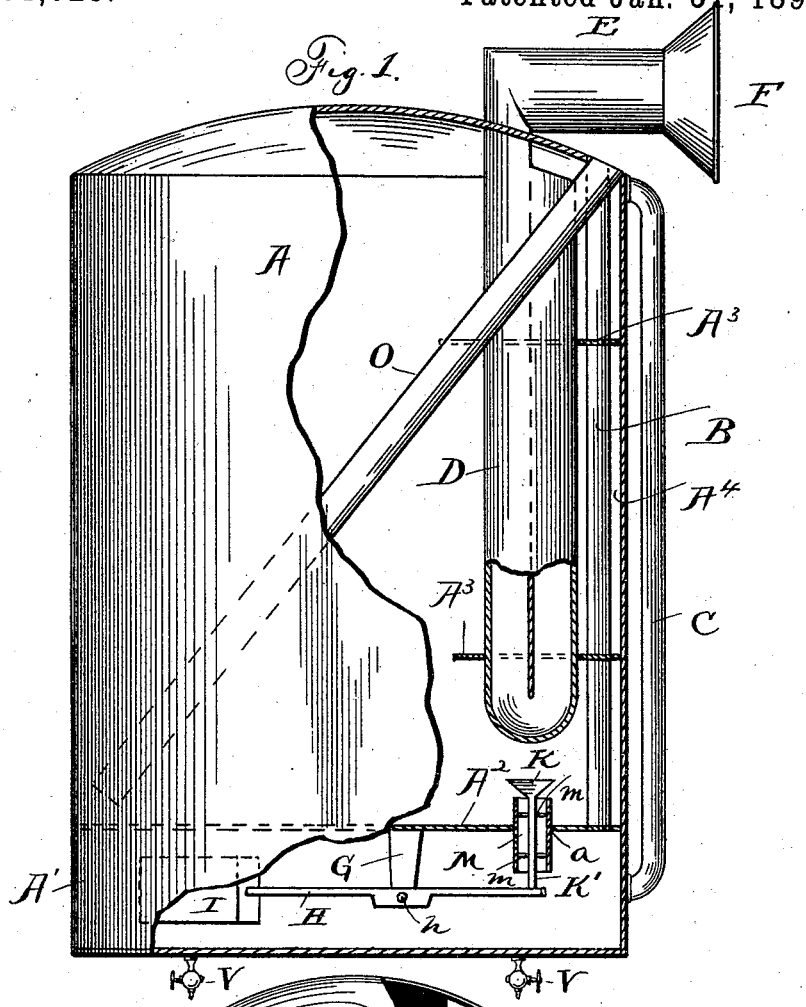
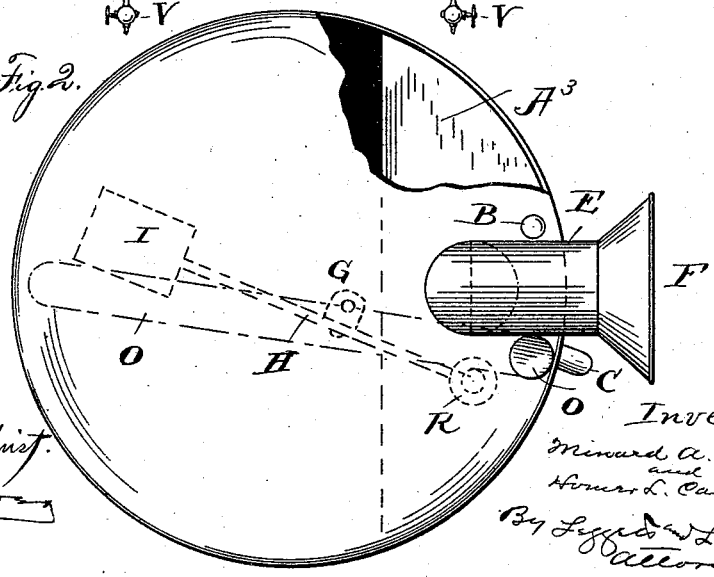


Fig. 2.



Witnesses.
E. Byrn Gilchrist.

Inventors
Minard A. Possons
and
Homer L. Carroll
By Lyons & Lyons
Attorneys

UNITED STATES PATENT OFFICE.

MINARD A. POSSONS AND HOMER L. CARROLL, OF CLEVELAND, OHIO.

RESERVOIR.

SPECIFICATION forming part of Letters Patent No. 491,023, dated January 31, 1893.

Application filed November 30, 1891. Renewed December 20, 1892. Serial No. 455,840. (No model.)

To all whom it may concern:

Be it known that we, MINARD A. POSSONS and HOMER L. CARROLL, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Reservoirs; and we do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to improvements in safety-reservoirs especially well adapted for use in connection with vapor-burners, and comprising two chambers, a primary-chamber, and a secondary-chamber located directly below said primary chamber, the gasoline or liquid being fed from the primary chamber to the secondary-chamber, and the latter being provided with a valve or valves for distributing the liquid as desired.

Our invention consists more especially in a pneumatic reservoir, having suitable means for insuring an air-space in the primary-chamber above the liquid level, and having suitable means for controlling the level of the liquid in the secondary-chamber and guarding against any serious results that might accrue by the expansion of the gasoline or liquid and over-supply of liquid to the secondary-chamber. Gasoline, for instance, is exceedingly variable in density according to the variations in its temperature, and with the reservoir heretofore devised the expansion of the gasoline was not only a great source of annoyance, but extremely dangerous, in that it would ascend by capillary attraction, and spread itself about the outside of the reservoir.

In the accompanying drawings, Figure 1 is a side elevation of a reservoir embodying our invention, showing the internal construction partly in elevation, and Fig. 2 is a plan of the same, portions being broken away to more clearly show the construction.

A and A′ represent, respectively, the primary and secondary-chambers of the reservoir closed top and bottom, respectively, being separated by a partition or diaphragm, A^2.

B and C represent, respectively, air-tubes or pipes located at the filling side of the reservoir, the former establishing open communication between the external atmosphere and chamber A′, being preferably soldered at its ends, respectively, to the top, and bottom of chamber A, and tube C establishing open communication between chamber A′ and the upper portion of chamber A, and being preferably located outside the reservoir, as shown.

D represents a trap of any suitable construction, the same being located preferably vertically in chamber A and at one side of the chamber as shown, trap D discharging into the upper part of chamber A.

Trap D, at its inlet-end, terminates in a lateral branch, E, that in turn terminates in a funnel, F.

Diaphragm A^2 is provided, at the filling side of the reservoir, with an orifice, *a*, for feeding liquid from the primary to the secondary-chamber, and to the underside of partition or diaphragm A^2 is secured, in any suitable manner, a depending arm, G, to which is fulcrumed, as at *h*, a tilting-lever, H. Lever H, at one end, carries a float, I, and, at the other end, has preferably pivotally connected therewith the upright stem, K′, of a valve, K, the latter being adapted to cut off or open the supply of liquid to the secondary-chamber, as hereinafter more fully described, there being preferably provided a small upright pipe or tube, M, extending through diaphragm A^2 at orifice *a*, as shown, and secured to the diaphragm in any suitable manner, the upper end of this pipe or tube constituting a seat for valve K. Pipe M has secured within it preferably one or more horizontal perforated diphragms *m* adapted to suitably embrace the stem of valve K and maintain the verticality of the same. In the normal position of parts valve K is elevated from its seat.

The gasoline, or other liquid, as the case may be, is poured in at funnel F,—the reservoir of course being held in a horizontal position when supplying the same,—and the liquid passes through trap D into chamber A. Of course, in supplying the reservoir, the primary-chamber should not be filled completely, but preferably to about an inch from the top of said chamber, so as to leave a suitable air-space between the level of the liquid in chamber A and the top of said chamber, to accommodate the expansion of the liquid in said chamber. To prevent chamber A from

being filled beyond the desired level, we provide transverse imperforate partitions, A^3, at the filling side of the reservoir, forming a chamber A^4, partitions A^3 being preferably soldered to the surrounding wall of chamber A. With such construction, in filling chamber A,—of course imagining the reservoir placed in a horizontal position, for the purpose aforesaid,—the liquid will close the open end of chamber A^4, but cannot displace the air contained in said chamber, the walls of the chamber being imperforate as aforesaid and hence the air is retained therein, and the cubic area of chamber A^4 should be equivalent to the air-space it is desired to have in the upper part of chamber A when the reservoir is righted. Hence, it will be observed that there is no possibility of over-filling the reservoir.

Air-tubes or pipes B and C and valve K, as already stated, being located at the filling side of the reservoir and air-tube C preferably outside the reservoir, and the maximum elevation of valve K from its seat being but little, perhaps a sixteenth of an inch, it will be observed that little liquid can obtain access to the secondary-chamber during the filling of the primary-chamber of the reservoir.

The liquid remaining in trap D forms a liquid-seal against the passage of air; tube B affords the desired air-pressure to give fluency to the liquid in chamber A′ when discharging-valves V are opened, and tube C affords the desired air-pressure to give fluency to the liquid in chamber A.

It is not desirable to carry more liquid in the secondary-chamber than about one-third of the capacity of said chamber, and the arrangement of parts is such that float I and the lower end of air-tube or pipe C have the proper elevation relative to the desired liquid level in said chamber, so that as the liquid in said chamber rises above the desired level, from an over-supply due to a more rapid feed of the liquid from the primary to the secondary-chamber,—resulting from an expansion of the liquid in the primary-chamber,—such abnormity in the level of the liquid is checked by the elevation of float I actuating lever H and closing valve K, thus cutting off further supply of liquid to the secondary-chamber until the liquid in said last-mentioned chamber has again assumed its normal level.

O represents an air-tube that is in open communication with the external atmosphere near lateral branch E and extends thence to the diagonally opposite end of chamber A and is in open relation with the latter. Tube O performs no function except in emptying the reservoir through funnel F, in which case trap D serves as a siphon, the reservoir being held in such a position that tube O will supply the desired air-pressure to facilitate the emptying of the reservoir.

What we claim is:—

1. A reservoir, comprising a primary and a secondary-chamber, located the one above the other and closed top and bottom, an air-pipe or tube establishing open communication between the external atmosphere and secondary-chamber, and an air-pipe or tube establishing open communication between the secondary-chamber and the upper portion of the primary-chamber, a trap in open relation with the primary-chamber and external atmosphere, and a feed-orifice for the passage of liquid from the primary to the secondary-chamber, a float in the secondary-chamber, a valve connected with said float and adapted to close or open said feed-orifice according to the level of the liquid in the secondary-chamber, substantially as set forth.

2. A reservoir, comprising a primary and a secondary-chamber, located the one above the other and closed top and bottom, an air-pipe or tube establishing open communication between the external atmosphere and secondary-chamber, and an air-pipe or tube establishing open communication between the secondary-chamber and the upper portion of the primary-chamber, a combined trap and siphon in open relation with the primary-chamber and external atmosphere, and a feed-orifice for the passage of liquid from the primary to the secondary-chamber, a float in the secondary-chamber, a valve connected with said float and adapted to close the aforesaid feed-orifice according to the level of the liquid in the secondary-chamber, and an air-tube or pipe establishing open communication between the external atmosphere, at or near the filling point of the reservoir and the diagonally opposite end of the primary-chamber, substantially as set forth.

3. A reservoir, comprising a primary and a secondary chamber, located the one above the other and closed top and bottom, an air-tube or pipe establishing open communication between the external atmosphere and secondary-chamber, and an air-tube or pipe establishing open communication between the secondary-chamber and upper portion of the primary-chamber, a trap in open relation with the primary-chamber and external atmosphere and adapted to be used in filling the primary-chamber, the air-tubes or pipes aforesaid being located at the filling-side of the reservoir, and a feed-orifice in the wall between the primary and secondary-chambers at the filling side of the reservoir, substantially as set forth.

4. A reservoir, comprising a primary and a secondary-chamber, located the one above the other and closed top and bottom, and an air-pipe or tube establishing open communication between the external atmosphere and secondary-chamber, and an air-pipe or tube establishing open communication between the secondary-chamber and the upper portion of the primary-chamber, a trap in open relation with the primary-chamber and external atmosphere, the wall between said chambers at the filling-side of the reservoir, having a feed-ori-

fice for the passage of liquid from the primary to the secondary-chamber, and having a depending arm secured thereto, a valve for closing said feed-orifice, and a lever fulcrumed to the depending arm aforesaid, the one end of the lever carrying a float and the other end of the lever having connected therewith the stem of the valve aforesaid, substantially as, and for the purpose set forth.

5. A reservoir, comprising a primary and a secondary chamber, located the one above the other and closed top and bottom, an air-pipe or tube establishing open communication between the external atmosphere and the secondary-chamber, and an air-pipe or tube establishing open communication between the secondary-chamber and upper portion of the primary-chamber, a trap in open relation with the primary-chamber and external atmosphere, a feed-orifice for the passage of liquid from the primary to the secondary-chamber, and a chamber within the primary-chamber at the filling-side of the reservoir, substantially as, and for the purpose set forth.

6. A reservoir, comprising a primary and a secondary-chamber located the one above the other and closed top and bottom, an air-pipe or tube establishing open communication between the external atmosphere and secondary-chamber, and an air-pipe or tube establishing open communication between the secondary-chamber and upper portion of the primary-chamber, a feed-orifice for the passage of liquid from the primary to the secondary-chambers, a valve adapted to open and close said feed-orifice according to the level of liquid in the secondary-chamber, and transverse imperforate partitions in the primary chamber at the filling-side of the reservoir, substantially as and for the purpose set forth.

In testimony whereof we sign this specification, in the presence of two witnesses, this 9th day of November, 1891.

MINARD A. POSSONS.
HOMER L. CARROLL.

Witnesses:
C. H. DORER,
WARD HOOVER.