F. D. HOWE.

CARBURETER.

APPLICATION FILED SEPT. 29, 1913.

1,252,440. Patented Jan. 8, 1918.

Fig. 1.

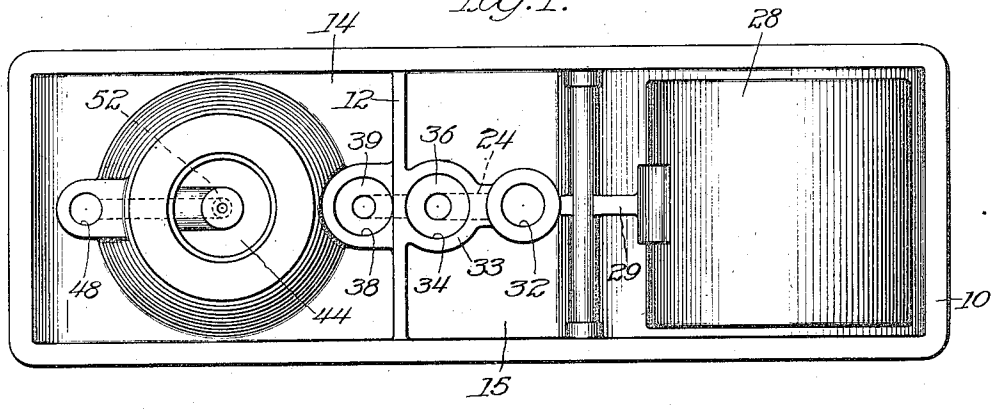
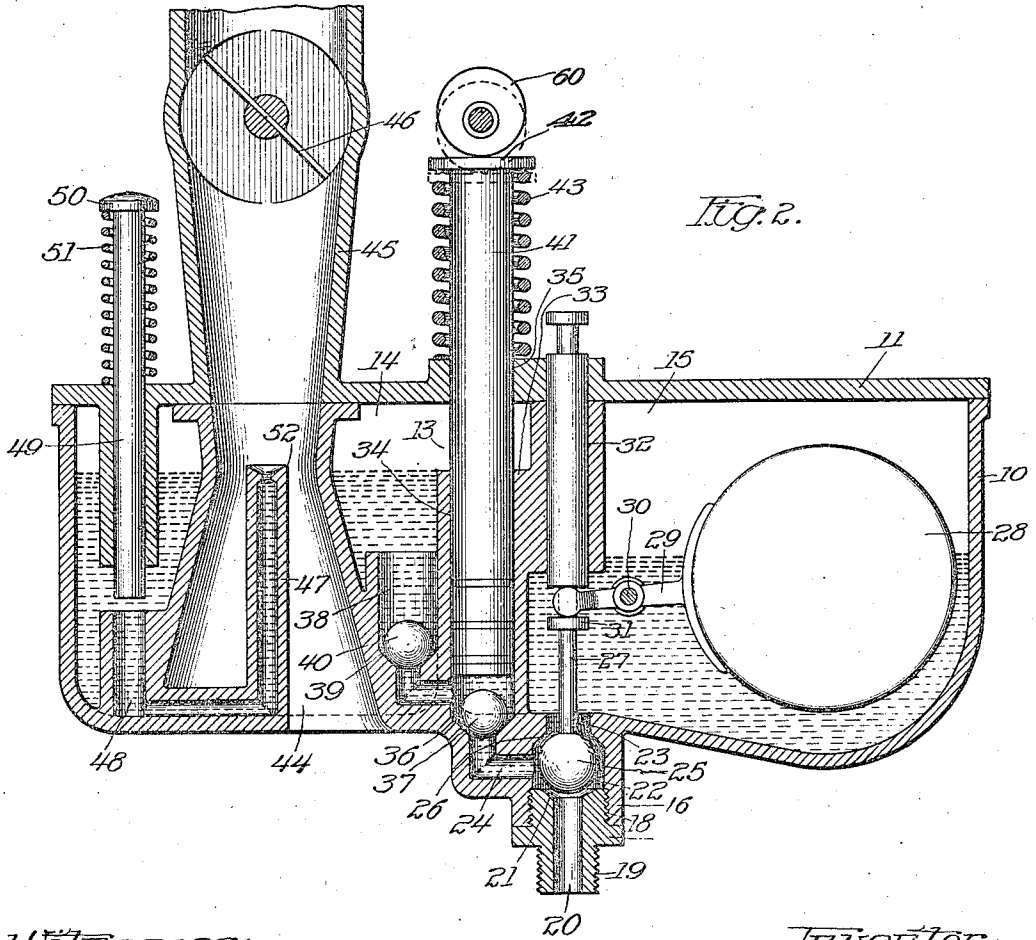


Fig. 2.



Witnesses:
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UNITED STATES PATENT OFFICE.

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CARBURETER.

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To all whom it may concern:

Be it known that I, FRANK D. HOWE, a citizen of the United States, residing at Akron, in the county of Summit and State of Ohio, have invented certain new and useful Improvements in Carbureters, of which the following is a full, clear, and exact specification.

This invention relates to carbureters.

The main object of my invention is to maintain the fuel in carbureters at the proper level under all conditions of operation.

Another object is to dispense with a fuel return pipe in a fuel supply system.

A further object is to provide novel means for flooding the carbureter or for creating a temporary excessive supply at the nozzle.

These objects are accomplished by providing a carbureter having a plurality of chambers, automatically operated means for supplying fuel in excess of demand to one of said chambers, the fuel therein being maintained at a constant level by a partition, another of said chambers communicating with the first and which forms an auxiliary source of supply, and means for causing an excessive flow of fuel at the nozzle.

The various novel features of my invention will be apparent from the description and drawings, and will be particularly set forth in the appended claims.

The invention is illustrated on the accompanying sheet of drawings, in which—

Figure 1 is a plan view of the body portion of my improved carbureter with the cover portion thereof removed to disclose the float and divided chamber; and

Fig. 2 is a longitudinal sectional view of the carbureter.

My carbureter has a main body portion 10 provided with a cover 11. The body portion is provided with two chambers 14 and 15 formed by a partition 12 which extends across the body portion from one side wall to the other, and which is preferably cast integral therewith. This partition extends upward nearly to the under side of the cover 11, leaving an opening 13 through which fuel may flow by gravity from one chamber 14 to the other chamber 15.

The body portion 10 is provided with a boss 16 projecting from its bottom, in which is screwed a nipple 17, which is provided with a thread 18 to hold it in engagement with the body, and a threaded end 19 for connecting the carbureter with any suitable source of fuel supply. The nipple is provided with a passageway 20 terminating in a valve seat 21. Formed in the boss 16 is a small valve chamber 22 which communicates with two passageways 23 and 24, the former of which leads from chamber 15, and the latter of which leads to chamber 14.

The passageway 23 is controlled by a valve 25 which, under certain conditions, seats on a valve-seat 26 formed in the upper end of the chamber 22. The valve 25 is provided with a valve-stem 27, the upper part of which is guided by a portion of the casting 10 and extends upward through the cover 11, as shown.

A float 28 is placed in a chamber 15 and is provided with a lever 29 fulcrumed at a point 30. One end of the lever is bifurcated to straddle the valve-stem 27 and rest in a groove 31 formed in said stem in such a manner that the float in rising will force the valve 25 down and from the seat 26 to open the passageway 23. Conversely, the float may lower to close said passageway 23. It will be noted that the valve-stem 27 is provided with an enlarged cylindrical portion having a close working fit in the guide opening 32, thereby preventing escape of any fuel therethrough.

The partition 12 has an upwardly extending portion 33, in which is formed a cylinder 34 in alinement with an opening 35 in the cover. The cylinder 34 is open at its bottom end and terminates in a valve-seat 36, on which rests a ball check valve 37. A chamber 38 is formed adjacent the cylinder 34, said chamber 38 and cylinder 34 being in communication with each other and with the passageway 24. A valve-seat 39 is formed in the bottom end of said chamber 38, and a ball valve 40 is located in said chamber and rests on said valve-seat 39. A piston or plunger 41, which is fitted to reciprocate in said cylinder 34, extends upwardly therefrom through the opening 35 in the cover, and is provided at its upper end with a laterally extending flange 42, between which and the top of the cover a helical spring 43 is interposed to lift the plunger 41 a predetermined distance above the valve-seat 36.

An air conduit 44 is formed in the body 10 and extends vertically therethrough, and is extended by an upwardly extending portion 45 of the cover 11. A valve 46 is

mounted in said portion 45 and controls the passage of gas therethrough. The shape of this air and gas passageway is that of the well-known Venturi tube meter passageway.

A spray tube 47 is located at the center of the conduit 44 and extends upwardly to a point just above that of the height of the partition 12. This spray tube 47 is in open communication with the compartment 14 at a short distance from the bottom thereof, and terminates in a cylindrical chamber 48, above which a plunger 49 is supported in vertical alinement with said chamber 48. This plunger is provided with a laterally extending flange 50, between which and the top of the cover a helical spring 51 is interposed to support the plunger 49 at a predetermined distance above the upper end of the chamber 48. By simply removing the cover 11 from the body portion 10, the plungers 49 and 41 may be lifted clear of the body without removing them from the cover portion, and the float and other interior parts may be inspected without trouble.

The operation of the carbureter is as follows:

Assuming that fuel is being conducted from any suitable source of supply to the passageway 20, and that the plunger 41 is adapted to be operated by a cam 60 or other suitable means driven by an engine, and that the engine is ready to be operated, the chamber 14 first is filled up to the top of the partition 12 with fuel by manual operation of the pump plunger. Let it be assumed also that there is little or no fuel in chamber 15, in which case the float 28 will be depressed, lifting the valve 25 and closing the passageway 23. The plunger 41, as it rises under the influence of spring 43 after being depressed, will draw fuel from the source of supply through passageways 20 and 24 and past valve 37. Each time that the plunger 41 is depressed the ball valve 37 will close passage 24 and fuel will be forced past ball valve 40 into chamber 14, and a portion will overflow into chamber 15 through opening 13.

The rising fuel in chamber 15 will finally lift float 28, causing valve 25 to open. Fuel will then be drawn from chamber 15 and the main supply source together or from either alone, depending upon the level of the liquid in chamber 15 and the consequent position of the float. It is obvious that no return overflow pipe to the main supply source is necessary and that the supply source may be either above or below the carbureter level indifferently. It is evident also that a considerable fluctuation in the fuel level is permissible in chamber 15 so that the float may transmit decisive and positive action to valve 25, thus diminishing danger of leakage when the engine is at rest. The fuel also is maintained in chamber 14 at a constant level necessary to the proper action of the spray nozzle 52.

In case the engine needs a greater quantity of fuel in starting same, or for a limited period, the plunger 49 may be manually depressed by means of a suitable lever or other device, to force a sufficient supply from the chamber 48 through the nozzle 52.

What I claim as new is:

1. In a carbureter, the combination of a constant level fuel chamber and an overflow chamber, pumping means for supplying fuel in excess from a source to said constant level fuel chamber, the excess flowing into said overflow chamber, and a valve controlling float to limit the height to which fuel may rise in said overflow chamber to prevent an overaccumulation of fuel in the constant level chamber.

2. In a carbureter, the combination of a constant level fuel chamber and an overflow chamber having an outlet, pumping means for supplying fuel in excess to said first chamber, the excess passing into said overflow chamber, a float in said overflow chamber, and a valve operated by said float and controlling the outlet from said overflow chamber to insure the excess of fuel passing from said constant level and overflow chambers.

3. In a carbureter, the combination of a constant level fuel chamber and an overflow chamber, pumping means for supplying fuel in excess from a supply source to said first chamber, the excess overflowing into the overflow chamber, a float in said overflow chamber, and a valve operated by said float and controlling both the outlet from said overflow chamber and the source of supply.

4. In a carbureter, the combination of a constant level fuel chamber and an overflow chamber, a fuel pump, and means whereby said pump may draw from either a main source of supply or said overflow chamber.

5. In a carbureter, the combination of a constant level fuel chamber and an overflow chamber, a fuel pump, and means whereby said pump may draw from either a main source of supply or said overflow chamber, or from both simultaneously.

6. In a carbureter, the combination of a plurality of fuel containing chambers in overflow relationship, a fuel pump, and means whereby said pump may draw from either a main source of supply or from one of said chambers to supply another of said chambers.

7. In a carbureter, the combination of a plurality of fuel containing chambers in overflow relationship, and means whereby fuel may be drawn from either a main source of supply or from one of said chambers to supply another of said chambers.

8. In a carbureter, the combination of two fuel containing chambers in overflow

relationship connected by a passageway communicating with a main fuel supply conduit, and means for controlling the supply of fuel to one of said chambers from the other chamber and from the main fuel conduit.

9. In a carbureter, the combination of a body portion having two fuel containing chambers having overflow communication with each other and a passageway between each other, a fuel nozzle leading from one of said chambers, a float in the other of said chambers, a valve controlling said passageway operated by said float, and means for drawing fuel from one of said chambers and forcing it into the other through said passageway.

10. In a carbureter, the combination of a body portion having two chambers, the top portions of which are in open communication with each other, and having a passageway leading from one chamber to the other, a nozzle having a fuel passageway leading from one of said chambers, a float in one of said chambers, a valve controlling the passageway leading from one chamber to the other operated by said float, and means for drawing a fluid from one of said chambers and forcing it into the other chamber through said valve controlled passageway.

11. In a carbureter, the combination of two chambers having overflow communication with each other and having a passageway between each other, a nozzle leading from one of said chambers, a float in one of said chambers, a valve controlling said passageway operated by said float, and means drawing fuel from one of said chambers and forcing it into the other chamber through said valve controlled passageway.

12. In a carbureter, the combination of two chambers, the top portions of which are in open communication with each other and having a passageway between each other, a nozzle leading from one of said chambers, a float in one of said chambers, a valve controlling said passageway operated by said float, and means for drawing a fluid from one of said chambers and forcing it into the other chamber through said valve controlled passageway or from an independent source of fluid supply.

13. In a carbureter, the combination of two chambers, the top portions of which are in open communication with each other and having a separate passageway between each other, a main fuel passageway leading into said separate passageway, a nozzle leading from one of said chambers, a float in the other of said chambers, a valve controlling said passageways operated by said float, and means for drawing fuel from one of said chambers and forcing it into the other chamber through said valve controlled passageway or from said main fuel passageway.

In testimony whereof I affix my signature in the presence of two witnesses.

FRANK D. HOWE.

Witnesses:
JOHN P. MCALONAN,
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