

C. HAGGARD.  
CARBURETOR.

APPLICATION FILED NOV. 12, 1920.

1,409,947.

Patented Mar. 21, 1922.

2 SHEETS—SHEET 1.

FIG. 1

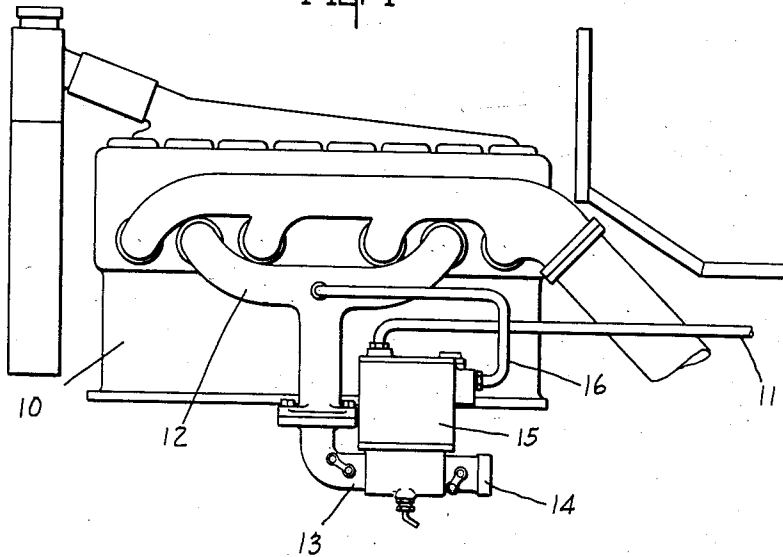
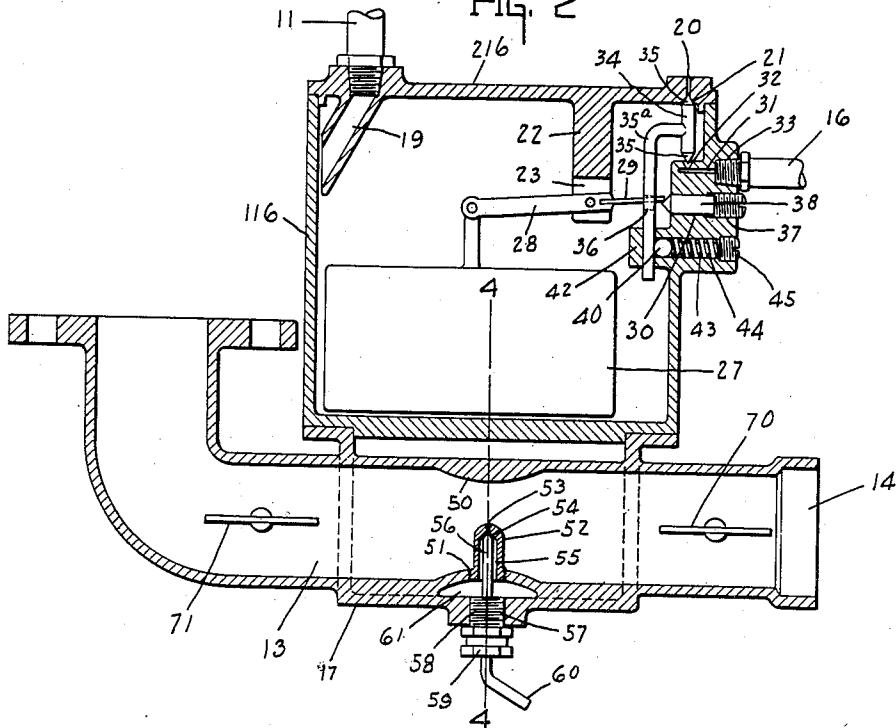


FIG. 2



INVENTOR.  
CHESTER HAGGARD.

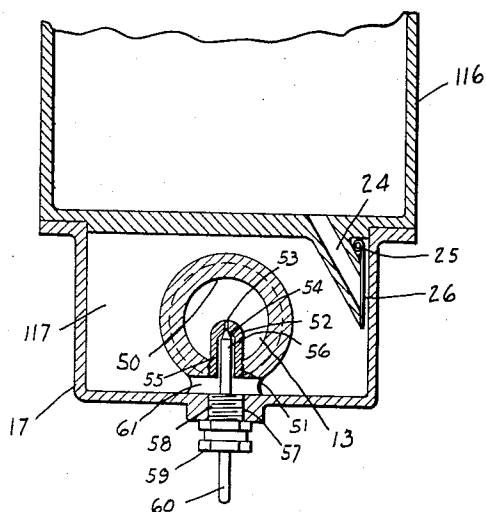
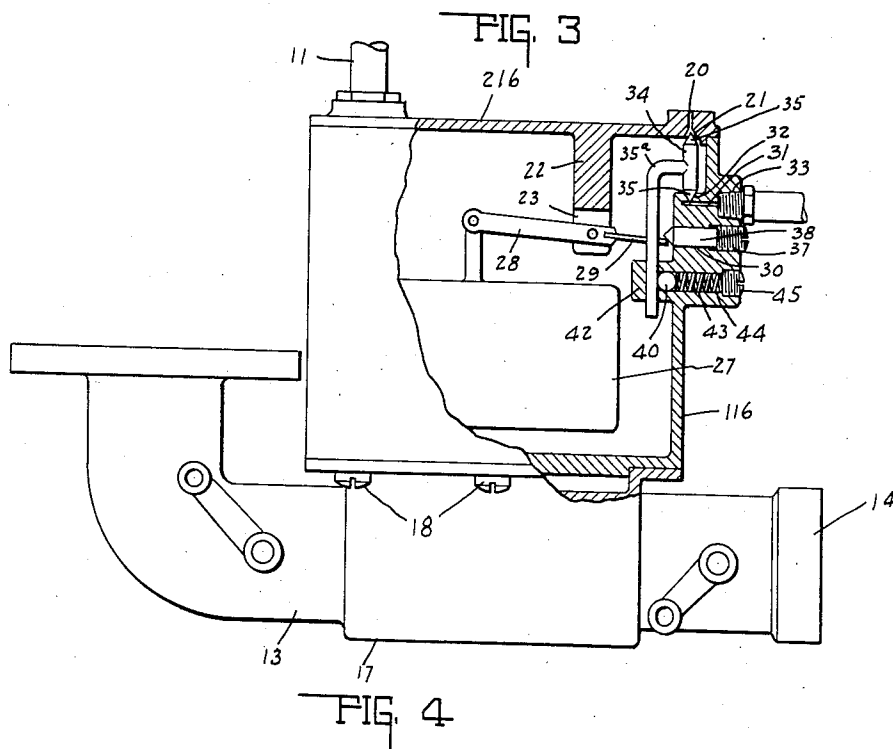
BY

*Lockwood Lockwood*  
ATTORNEYS.

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INVENTOR.  
CHESTER HAGGARD.

BY

*Arthur H. Haggard*  
ATTORNEYS.

# UNITED STATES PATENT OFFICE.

CHESTER HAGGARD, OF INDIANAPOLIS, INDIANA.

## CARBURETOR.

1,409,947.

Specification of Letters Patent.

Patented Mar. 21, 1922.

Application filed November 12, 1920. Serial No. 423,661.

*To all whom it may concern:*

Be it known that I, CHESTER HAGGARD, a citizen of the United States, and a resident of Indianapolis, county of Marion, and State of Indiana, have invented a certain new and useful Carburetor; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, in which like numerals refer to like parts.

This invention relates to a carburetor construction associated with what is termed a vacuum feed system. The chief object of this invention is to improve the construction of the present vacuum fuel feed carburetors by reducing the number of parts heretofore associated in such a system, and by positioning the several parts in juxtaposition to other parts, whereby several parts heretofore employed to secure the same operation may be omitted in the present construction without reducing the efficiency or effectiveness of the operation of the carburetor.

The chief feature of the invention relates to the construction of the valve controlling means and the operating means therefor, whereby the suction and air vent control associated with the carburetor is simplified.

Another feature of the invention consists in the construction of the carburetor vaporizing element and the association therewith of suitable valve means.

The full nature of this invention will be understood from the accompanying drawings and the following description and claims.

In the drawings Fig. 1 is a side elevation of an internal combustion engine provided with the invention, said engine being associated with a motor vehicle. Fig. 2 is an enlarged central sectional view of the vacuum forming and controlling means associated with the carburetor as well as the carbureting or vaporizing means. Fig. 3 is an enlarged side elevational view of the carburetor with parts broken away to illustrate the vacuum controlling means in a position other than that illustrated in Fig. 2. Fig. 4 is a transverse sectional view taken on the line 4-4 of Fig. 2.

In the drawings 10 indicates an internal combustion engine of a motor vehicle provided with a fuel tank suitably connected to a fuel or gasoline line 11, said tank not being shown. The internal combustion engine is provided with the usual intake mani-

fold 12 and a carburetor 13 provided with an air inlet 14. Associated with the air inlet and carburetor 13 is a vacuum fuel feed control 15, which feed control is shown enlarged and in detail in Figs. 2, 3, and 4. All of the foregoing is of the usual construction and forms no part of the invention.

In the construction to which the present invention is particularly applicable there are formed two connecting compartments or chambers through which the gasoline or other liquid fuel passes in succession, the communication therebetween being controlled by a suitable check valve. One of these chambers is provided with a float and suitable valve mechanism is operated by said float, whereby the float chamber may be connected to the intake manifold or other source of partial vacuum and at the same time be connected to the fuel supply line or tank so that the partial vacuum in the float compartment or chamber will draw gasoline or other fuel from the fuel supply line or tank. The raising of the float by the fuel level to a predetermined position operates the valve mechanism hereinafter described to close the vacuum communication and open an air vent so that the fuel in the float chamber may flow by gravity to the other and preferably lower compartment from which it may flow to or supply the carburetor. All of the foregoing is also old in the art and the invention therefore relates to the details of the valve mechanism and the details of the carburetor construction.

In the drawings the intake manifold 12 is connected to the vacuum fuel supply housing 15 in the combination carburetor by means of the conduit 16. The vacuum housing 15 is composed of the two separable members 116 and 17 detachably secured together by suitable means such as the bolts 18. The member 116 forms a float chamber and the bottom of said float chamber is adapted to form the top of the lower or carburetor supplying chamber 117. The float chamber 116 is provided with a cover plate 216 which is provided with a discharge outlet 19, an air vent or orifice 20 provided with a tapered valve seat 21. Said cover is further provided with a depending bracket 22 suitably slotted to provide the ear portions 23. As shown clearly in Fig. 4 the bottom portion of the float chamber 116 is provided with a discharge outlet 24 and suitably supported adjacent thereto upon

the pin 25 is a flap valve 26 which operates as a check valve by permitting fuel to pass from the upper chamber to the lower chamber by gravity, but will prevent the return of the fuel from the lower chamber to the upper chamber when the pressure in the upper chamber 116 is reduced below that in the chamber 117. Positioned within the chamber 116 is a float member 27, and pivotally supported by the ears 23 is a lever 28. The float member 27 in its movement, operable by the liquid level in said float chamber, rocks said lever upon its pivotal support in the ears 23. The lever 28 is provided with an actuating spring 29.

The housing 116 is provided with an enlargement 30, which enlargement is provided with an orifice 31 communicating with a tapered valve seat 32 and provided with a threaded outlet 33 and adapted to secure the conduit 16 such that said conduit communicates with the float chamber through the valve opening 32. The ports 21 and 32 in the present instance are shown in alignment with each other, such that a valve member 34 provided at each end with a tapered valve portion 35 is adapted to close one or the other of said valve openings.

The means for operating the dual and integral valve 34 comprises a stem portion 35<sup>a</sup> extending substantially parallel to the valve body portion 34, said stem portion being provided with a slot 36 through which extends the actuating spring member 29, said spring member terminating adjacent the enlargement 30 and beyond the valve stem 35<sup>a</sup>. The enlargement 30 is provided with a suitable threaded opening 37 and in the same is adjustably positioned a centering pin 38, the extending point of which is adapted to bear against the other end of the actuated spring 29. The tapered pin 38 is positioned in the enlargement 30 such that said actuating spring 29 is adapted to bear upon either side of said pin so as to maintain the valve stem 35<sup>a</sup> in one of two positions whereby one of the valve ports hereinbefore described will be closed and the other will be opened. The means for yieldingly holding the stem 35 in the particular valve closing and opening position until such time as the float 27 is moved to a position such that the spring member 29 will be moved from a position upon one side of the tapered pin 38 to the other side thereof, comprising a locking ball or roller 40 adapted to bear against the stem 35<sup>a</sup>, which stem is slidably supported in the extending portion 42 in the enlargement 30. The ball or roller 40 frictionally engages said stem by being positioned in a chamber 43 in which is positioned a coil spring 44. The other end of said chamber is closed by the plug member 45, which plug member is adapted to provide a bearing for one end of the coil spring 44

such that the position of said plug member in the chamber 42 determines the tension of the spring member therein.

From the foregoing it will be understood that in the operation of the engine suction is supplied from the intake manifold 12 through the conduit 16, orifice 31 and valve 32 to the float chamber 116. Said suction thereupon seats the valve 26 such that the discharge channel 25 will remain closed. The suction will be applied to the fuel line 11 and tank communicating therewith through the discharge channel 19. Fuel is thus drawn into the float chamber 116 and with the inflow of said fuel the float 27 is caused to rise by the liquid level thereof, rising in said tank until such time as the lever 28 is actuated by said float member so as to actuate the valve stem 35<sup>a</sup>, whereupon the valve 35 controlling the orifice 31 is seated and simultaneously therewith the valve 35 controlling the orifice 20 is removed from its seat so that the tank is changed from partial pressure to atmospheric pressure. Simultaneously with the change in pressure the flap valve 26 is moved from its seat by the flow of the fuel through the discharge channel 25 from the float chamber 116 to the fuel chamber 117. The continuous flow of the liquid from the chamber 116 will cause the float 27 to fall therewith and said float will then be moved from the position shown in Fig. 3, which illustrates the condition herein described, to the position shown in Fig. 2, Fig. 2 being known as the partial vacuum control position and Fig. 3 being known as the atmospheric control position.

The carburetor 13 is provided with a restricted portion 50 which extends through the fuel chamber 117 and is provided with a threaded opening 51 in the lower portion thereof. Extending transversely of the channel 13 and into the same, is a nozzle 52 having a threaded engagement with said cooperating channel in the threaded opening 51. The nozzle 52 is provided with a restricted orifice 53 which communicates with a tapered seat 54. The tapered valve opening 54 communicates with the intake channel 55, and extending axially through said channel is a needle valve 56 seatable upon the tapered seat 54 of the construction hereinbefore described. The housing 17 is provided with a threaded opening 57 and in said threaded opening is a supporting bushing 58 in which is supported the needle valve 56. Suitable nuts 59 secure said construction in the assembled relation. The needle valve 56 extends through the construction hereinbefore described and terminates in an angular handle portion 60, whereby the position of said needle valve may be manually adjusted with respect to the tapered valve seat. The fuel supplying channel 55 in the nozzle 52 communicates with the fuel supplying chan-

nels 61 formed in the base of the housing portion 17 such that the fuel chamber 117 is in direct communication with the inlet channel 55, said channel discharging directly through the needle valve construction into the carbureting channel 13 at the center thereof and at the center of the venturi construction. A pair of valves 70 and 71 are positioned so as to control the flow of air through the carbureting channel and also the flow of fuel through the carbureting channel 13 respectively.

The invention claimed is:

1. In a vacuum feed fuel system for carburetors, the combination with a float chamber, a float therein, fuel supplying intake means, fuel discharging outlet means, and check valve means in said fuel discharge outlet means, of air vent means in said float chamber, an outlet adapted to communicate with a source of partial pressure, valve means controlling both the air vent means and said last mentioned outlet and provided with stem means, a lever operable by said float for operating said valve means, a centering pin cooperating with said lever to maintain the same in either over center position, and friction maintaining means associated with said stem means but permitting forcible movement of said float.

2. In a vacuum feed fuel system for carburetors, the combination with a float chamber, a float therein, fuel supplying intake means, fuel discharging outlet means, and check valve means in said fuel discharge outlet means, of air vent means in said float chamber, an outlet adapted to communicate with a source of partial pressure, valve means controlling both the air vent and said last mentioned outlet and provided with

stem means, a lever operable by said float for operating said valve means, a centering pin cooperating with said lever to maintain the same in either over center position, and adjustable friction maintaining means associated with said stem means but permitting forcible movement of said float.

3. In a vacuum feed fuel system for carburetors, the combination with a float chamber, a float therein, fuel supplying intake means, fuel discharging outlet means, and check valve means in said fuel discharge outlet means, of air vent means in said float chamber, an outlet adapted to communicate with a source of partial pressure, valve means controlling both the air vent and said last mentioned outlet and provided with a common stem, a lever operable by said float for operating said valve means, a centering pin for cooperating with said lever, and friction maintaining means associated with said stem.

4. In a vacuum feed fuel system for carburetors, the combination with a float chamber, a float therein, fuel supplying intake means, fuel discharging outlet means, and check valve means in said fuel discharge outlet means, of air vent means in said float chamber, a source of partial pressure, an outlet adapted to communicate with a single valve member controlling both the air vent and said last mentioned outlet and provided with a common stem, a lever operable by said float valve for operating said valve member, a centering pin for cooperating with said lever, and friction maintaining means associated with said stem means.

In witness whereof, I have hereunto affixed my signature.

CHESTER HAGGARD.