

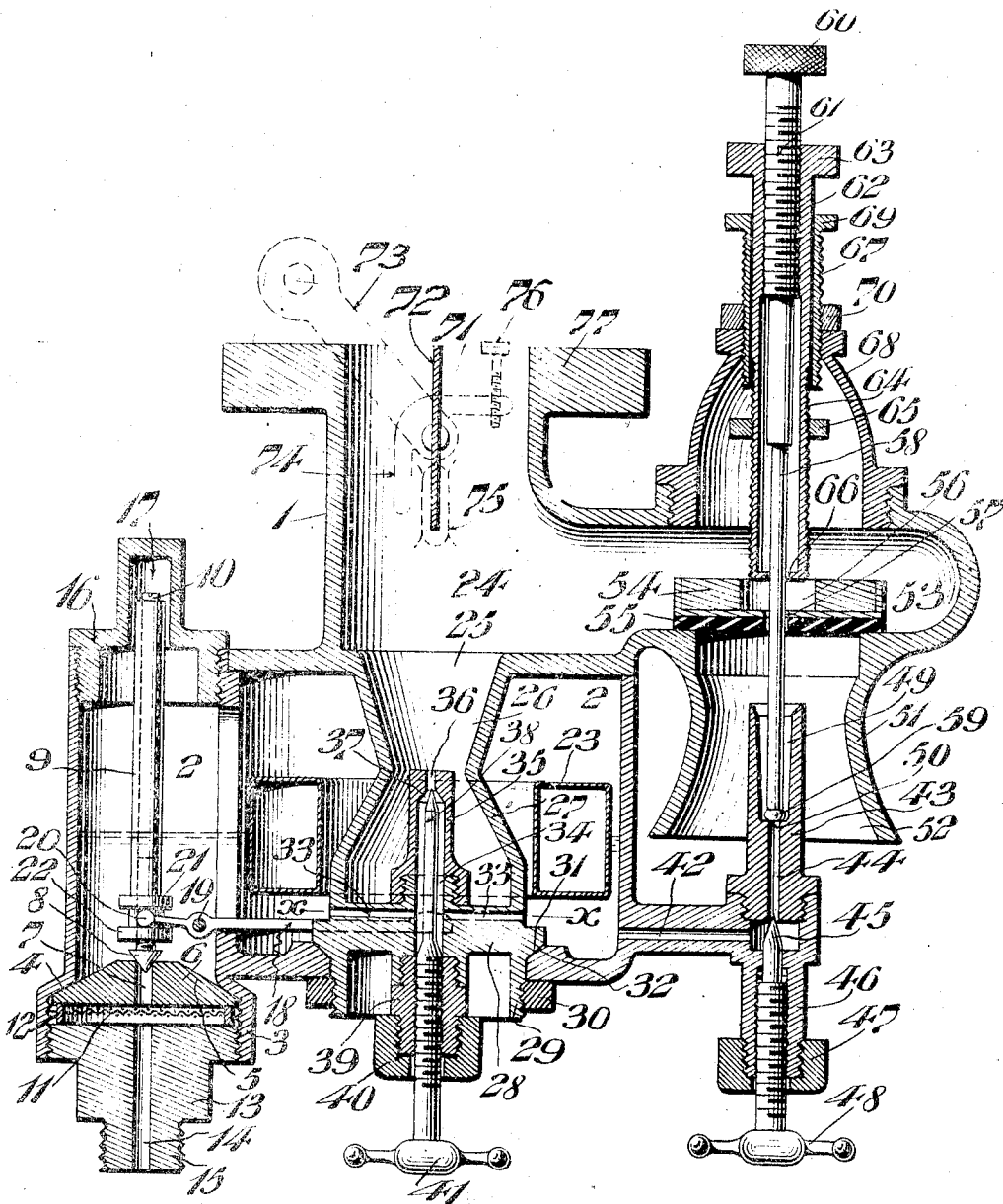
J. L. FRITZ.

CARBURETER.

APPLICATION FILED FEB. 11, 1911.

993,770.

Patented May 30, 1911.



WITNESSES

H. Dietrich
L. Dowville

INVENTOR

Julius L. Fritz
BY *Wederhew & Fairbanks*

ATTORNEYS

UNITED STATES PATENT OFFICE.

JULIUS L. FRITZ, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO
AMOS H. OMAN, OF PHILADELPHIA, PENNSYLVANIA.

CARBURETER.

993,770.

Specification of Letters Patent.

Patented May 30, 1911.

Application filed February 11, 1911. Serial No. 608,087.

To all whom it may concern:

Be it known that I, JULIUS L. FRITZ, a citizen of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Carbureter, of which the following is a specification.

One object of my present invention is to devise a novel construction of a carbureter wherein the range of speed of the engine is greatly increased and wherein the low speed adjustment is independent of the intermediate and high speed adjustments, while the intermediate adjustment is independent of the low and high speed adjustments, and the high speed adjustment is independent of the intermediate and low speed adjustments, all of these adjustments coöperating under high speed, it being understood that I contemplate providing an accurate adjustment for all speeds of the engine intermediate the low and high range of the carbureter.

A further object of my invention is to eliminate the necessity of employing springs and to devise a construction wherein all the working parts are vertically arranged, with a consequent reduction in the wear of such parts.

A further object of my invention is to devise a novel carbureter which will not be affected by climatic conditions and wherein I have eliminated the necessity of employing in conjunction with a valve for controlling the supplemental air inlet, levers, pivot pins, springs or slides which are subjected under practical conditions to wear or change through adhesion of dirt or climatic conditions.

A further object of my invention is to devise a novel carbureter which is adaptable for either gasoline or kerosene vaporization and is adjustable to be used with the varied grades of gasoline now on the market.

A further object of my invention is to devise a novel carbureter wherein means are provided for permitting the admission of a greater quantity of air as the suction increases without the admission of an additional amount of fuel.

A further object of my invention is to devise a novel carbureter having means for admission of additional fuel and air and novel means for controlling the admission of the additional fuel and air.

A further object of my invention is to devise a novel construction of gravity valve and novel means for limiting the movement thereof.

A further object of my invention is to devise a novel adjustment of the float valve and a novel construction of filtering device for the gas inlet to the carbureter and a novel construction of a removable seat for the float valve.

A further object of my invention is to devise a novel construction of carbureter wherein all of the working parts are readily accessible for the purpose of inspection, removal or repair and wherein the consumption of fuel is more economical more power is attained and wherein the carbureter has a greater range of perfect adjustment than in the devices heretofore employed.

With the above and other objects in view, which will hereinafter more fully appear in the detailed description of the invention, my device consists of a novel construction of carbureter adapted to be accurately adjusted for varying speeds and wherein means is provided for permitting the admission to the mixing chamber of additional air or fuel or both, as required.

It further consists of other novel features of construction, all as will be hereinafter fully set forth.

For the purpose of illustrating my invention, I have shown in the accompanying drawings one form thereof which is at present preferred by me, since the same has been found in practice to give satisfactory and reliable results, although it is to be understood that the various instrumentalities of which my invention consists can be variously arranged and organized and that my invention is not limited to the precise arrangement and organization of these instrumentalities as herein shown and described.

Figure 1 represents a sectional elevation of a carbureter embodying my invention.

Similar numerals of reference indicate corresponding parts in the figures.

Referring to the drawings, 1 designates the carbureter casing in which is located a float chamber 2, provided with a threaded extension 3, having an internal beveled wall 4 against which is adapted to seat the conical face 5 of a removable valve seat 6 provided with a passage 7 therethrough, the upper end of which forms a seat for the conical

valve 8, which latter is adjustably connected with respect to the float valve stem 9 and, in the present instance, I have shown the same as being threaded therein and locked in its adjusted position by means of the screw 10 abutting thereagainst, said screw 10 being longitudinally adjustable relatively to the float valve stem 9.

11 designates a filtering screen which in the present instance, consists of apertured metal or gauze secured to an annulus 12 which latter abuts against one side of the removable valve seat 6 and is maintained in assembled position by means of a nut 13 having a passage 14 therethrough preferably in alinement with the fuel passage 7 in the float valve seat 6. The nut 13 has its lower end threaded, as indicated at 15, thereby adapting the same to be readily connected to the source of fuel supply.

16 designates a cap or closure having threaded connection with the casing 1 and provided with a chamber 17 which provides for the proper movement of the valve stem 9. 18 designates a float lever pivoted at 19 to the casing and having a fork 20 which operates between the heads 21 and 22 on the valve stem 9. The end of the lever 18 is adapted to cooperate with a float 23 preferably formed of a hollow metallic casing.

24 designates a mixing chamber from which extends a passage 25 having its smaller diameter intermediate its length, thereby forming reversely inclined conical walls 26 and 27, the wall 27 at its lower end being united to a bridge piece 28 having a depending threaded flange 29 adapted to receive a nut 30 whereby the conical wall 31 will engage with the conical wall 32 of the casing, and a fluid tight connection formed at this point. The bridge piece 28 is provided with fluid passages 33 therethrough which communicate with a vertically arranged fuel passage 34.

35 designates the main spray nozzle or jet which has threaded engagement with an extension of the bridge piece 28 and is provided with a restricted outlet 36 and a valve seat 37 with which cooperates a needle valve 38 having threaded engagement with a nut 39 which latter has threaded engagement with an extension from the bridge piece 28.

40 designates a packing nut having threaded engagement with the nut 39. The needle valve 38 is provided with a suitable handle or lever 41 whereby the same may be manually actuated when desired. The float chamber 2 is provided with a fuel passage 42 which communicates with a supplementary fuel nozzle 43, the passage 44 of which at its lower end forms a valve seat and is controlled by a valve 45 having threaded engagement with a flange 46 to which latter is secured a packing nut 47, it being understood that the valve 45 is pro-

vided with a suitable handle 48 whereby the same may be manually actuated.

The discharge outlet of the fuel nozzle 43 is provided with tapering internal walls 49 and a valve seat 50. The fuel nozzle 43 extends into supplementary air inlet 51 which is preferably restricted in proximity to the discharge end of the nozzle 43 and forms a supplemental air inlet 52, which communicates by means of the passage 53 with the mixing chamber 24.

The supplemental air inlet 52 is controlled by means of a gravity valve 54 provided on its operative face with suitable packing 55, of leather or other desired material, it being noted that the valve is centrally chambered, as seen at 56, and the lower ends of the valve and the gasket 55 are provided with an aperture 57 therethrough thereby adapting the same to freely travel on a valve stem 58, the lower end of which is provided with a ball-valve 59 which co-acts with the valve seat 50 to control the flow of fuel through the supplemental fuel passage 44. The upper end of the valve stem 58 is provided with a head 60 thereby adapting the same to be manually actuated, it being noted that the upper portion of the valve stem 50 is threaded, as indicated at 61, thereby adapting the same to engage with and be carried by the internally threaded sleeve 62 which has an enlarged head 63 thereby adapting the same to be manually operated. The lower portion of the sleeve 62 is threaded, as indicated at 64, and with this threaded portion a nut 65 has engagement, it being noted that the extreme lower end of the sleeve 62 is apertured, as indicated at 66, thereby permitting the valve stem 58 to be longitudinally adjusted with respect thereto. The upper end of the sleeve 62 is freely movable relatively to a sleeve 67 which latter has threaded engagement with a bonnet 68 having threaded or other engagement with the casing 1, the sleeve 67 being provided with a suitable operating head 69 and being locked in adjusted position by means of a lock nut 70.

71 designates the discharge outlet from the mixing chamber which is controlled by means of a valve 72 operatively connected with a lever 73 which latter is provided with an angle arm 74 one end of which cooperates with the lug 75 carried by the casing 1, while the other end thereof is provided with an adjusting screw 76, whereby a fixed throttling effect may be produced when desired.

The carbureter is provided with an extra heavy coupling flange 77 in order to prevent buckling when the same is secured to the intake manifold pipe.

The operation of my novel construction of carbureter will now be readily apparent and is as follows:—The throttle valve 72 is controlled in the usual manner by means of

a suitable connection operatively secured to the lever 73. When working under low speeds the adjustment of the fuel is controlled by manually actuating the lever 41 to control the amount of fuel passing the outlet 36, it being of course understood that the suction of the engine causes the fuel to be withdrawn from the nozzle 35 and passes through the conical passage 25 to the mixing chamber 24. As the suction increases and a greater amount of fuel is withdrawn from the outlet 36, the gravity valve 54 will rise from its seat and permit an additional amount of air to enter the mixing chamber 24 and commingle with the gases therein. Under intermediate speed adjustments the gravity valve 54 will be raised from its seat into contact with the sleeve 62, so as to cause the latter to move upwardly, the amount of such movement being limited by the engagement of the nut 65 with the inner end of the sleeve 67, it being understood that the amount of fuel which is permitted to pass from the float chamber 2, through passage 42, and passage 44 in the fuel nozzle 43, may be accurately controlled by actuating the valve stem 61 and it will further be apparent that the height to which the valve 54 may rise may be accurately controlled by adjusting the sleeve 67 or by adjusting the nut 65 relatively to the sleeve 62. For high speed adjustment the lever 48 is actuated to control the amount of fuel passing through the supplemental fuel nozzle 42.

It will now be apparent to those skilled in this art that the various adjustments which I have provided for the different speeds are all independently adjustable, yet at the same time they all cooperate with each other to produce the requisite results.

Special attention is directed to the simplified and compact construction of my device and the manner in which the various working parts can be removed for the purpose of inspection or repair.

The float valve 8 may be adjusted as desired relatively to the float valve stem 9 and locked in its adjusted position by means of the screw 10 which abuts thereagainst.

When it is desired to remove the float valve it is simply necessary to unscrew the cap or closure 16 whereupon the same may be readily moved without the use of any tools. The valve seat 6 may be readily removed by uncoupling the nut 13 and removing the filter 11, so that the valve seat may be readily reground when desired.

A carbureter constructed in accordance with my invention may be easily started and is not affected by the various changes in temperature due to climatic conditions.

In so far as I am aware, I am the first in the art to devise a carbureter provided with a supplemental air and fuel inlet port which is controlled by a gravity valve and where

positive means are provided for controlling the movement of such valve and the amount of fuel passing through the supplemental inlet and it is to be understood that my claims to such features are to be interpreted with corresponding scope.

The valve 38 may be readily removed when desired, as is apparent, by simply manipulating the packing nut 40 and the nut 39 and the valve 45 may be also readily removed by manipulating, in the proper manner, the packing nut 47. The gravity valve 54 may be readily removed when desired by removing the bonnet 68 and the valve stem 61 and the various sleeves 62 and 67 may be readily removed when desired without the necessity of employing any tools.

It will now be apparent that I have devised a novel and useful construction of a carbureter which embodies the features of advantage enumerated as desirable in the statement of the invention and the above description and while I have, in the present instance, shown and described a preferred embodiment thereof which has been found in practice to give satisfactory and reliable results, it is to be understood that the same is susceptible of modification in various particulars without departing from the spirit or scope of the invention or sacrificing any of its advantages.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:

1. In a device of the character stated, a casing having a mixture outlet, a mixing chamber in said casing having air and fuel inlets, fuel supply for said mixing chamber, a supplemental air inlet having communication with said mixing chamber, a supplemental fuel nozzle, and suction controlled means for controlling the supplemental air inlet, and on a predetermined movement of said means controlling the amount of fuel passing to the supplemental air inlet.

2. In a device of the character stated, a casing having a mixture outlet, a mixing chamber in said casing having air and fuel inlets, a fuel supply for said mixing chamber, a supplemental air inlet having communication with said mixing chamber, a fuel jet in said supplemental inlet and having communication with said fuel supply, suction controlled means including a gravity valve for controlling a supply of air through said supplemental air inlet, and means operated thereby after said gravity valve reaches a predetermined point in its travel for controlling said supplemental fuel jet.

3. In a device of the character stated, a casing having a mixture outlet, a mixing chamber in said casing having air and fuel inlets, a fuel supply for said mixing chamber, a supplemental air inlet having com-

munication with said mixing chamber, a supplemental fuel jet in said supplemental air inlet and having communication with said fuel supply, a gravity valve controlling said supplemental air inlet, and means operated by said gravity valve for controlling said supplemental fuel jet.

4. In a device of the character stated, a casing having a mixture outlet, a mixing chamber in said casing having air and fuel inlets, a fuel supply for said mixing chamber, a supplemental air inlet having communication with said mixing chamber, a supplemental fuel jet in said supplemental air inlet, a gravity valve controlling said supplemental air inlet, a valve controlling said supplemental fuel jet, and means actuated by the movement of said gravity valve for shifting said fuel valve after a predetermined movement of said gravity valve.

5. In a device of the character stated, a casing having a mixture outlet, a mixing chamber in said casing having air and fuel inlets, a fuel supply for said mixing chamber, a supplemental air inlet having communication with said mixing chamber, a supplemental fuel inlet disposed within said supplemental air inlet, a gravity valve controlling said supplemental air inlet, a valve controlling said supplemental fuel inlet and actuated by the movement of said gravity valve, and means to vary the operative relation between said valves.

6. In a device of the character stated, a casing having a mixture outlet, a mixing chamber in said casing having air and fuel inlets, a supplemental air inlet having communication with said mixing chamber, a supplemental fuel jet in said supplemental air inlet, means to regulate the flow of fuel to said supplemental fuel jet, a valve controlling said jet, a gravity valve for said supplemental air inlet, and means actuated by said gravity valve for opening and closing said supplemental fuel jet valve.

7. In a carbureter, a mixing chamber provided with a main air inlet and a supplemental air inlet, a main fuel nozzle and a supplemental fuel nozzle in proximity to said respective air inlets, devices for controlling each of said fuel nozzles, independent means for controlling the discharge from said supplemental fuel nozzle, and an independently movable gravity valve controlling said supplemental air inlet and said independent means.

8. The combination in a carbureter, of a casing having a mixing chamber provided with a main and a supplemental air inlet, a main fuel nozzle in the main air inlet, a supplemental fuel nozzle in the supplemental air inlet, a fuel supply in communication with said nozzles, a manually actuated valve for each of said main and said supplemental fuel nozzles, a gravity valve

controlling the supplemental air inlet, and a valve on which said gravity valve is mounted for controlling the supplemental fuel nozzle on a predetermined movement of the gravity valve.

9. The combination in a carbureter, of a casing having a mixing chamber provided with a main and a supplemental air inlet, a fuel nozzle for the main air inlet, a supplemental fuel nozzle for the supplemental fuel inlet, a fuel supply in communication with said fuel nozzles, a gravity valve controlling the supplemental air inlet, and means for varying the effective weight of the gravity valve and simultaneously therewith controlling the supplemental fuel nozzle.

10. The combination in a carbureter, of a casing having a mixing chamber provided with a main air inlet, a supplemental air inlet, a main fuel nozzle in the main air inlet, a supplemental fuel nozzle in the supplemental air inlet, means for feeding fuel to said nozzles, a gravity valve controlling the supplemental air inlet, a valve controlling a supplemental fuel nozzle, a sleeve within which the supplemental valve is longitudinally adjustable and with which the gravity valve co-acts at a predetermined point in its travel to actuate the supplemental fuel valve, and means for regulating the travel of said sleeve.

11. The combination in a carbureter, of a casing having a mixing chamber and a main and a supplemental air inlet communicating therewith, a main fuel nozzle, a supplemental fuel nozzle, means for feeding fuel thereto, means for manually controlling each of said fuel nozzles, a gravity valve controlling the supplemental air inlet, a supplemental fuel valve controlling the supplemental fuel nozzle, and means co-acting with the gravity valve and the supplemental fuel valve to control the movement of the latter.

12. The combination in a carbureter, of a casing having a mixing chamber and a main and a supplemental air inlet communicating therewith, a main fuel nozzle, a supplemental fuel nozzle, means for feeding fuel thereto, a gravity valve controlling the supplemental air inlet, a supplemental fuel valve controlling the supplemental fuel nozzle, a longitudinally adjustably movable member by which said supplemental fuel valve is adjustably carried, an abutment adjustably carried by said member, and means adjustably carried by said casing with which said abutment is adapted to co-act to limit the movement of said member, said gravity valve co-acting with said member only after it has opened a predetermined distance.

13. The combination in a carbureter, of a casing having a mixing chamber, a supplemental air inlet communicating therewith, a main fuel nozzle, a supplemental fuel nozzle,

means for feeding fuel thereto, a gravity valve for the supplemental fuel nozzle, a sleeve in which said valve is threaded, a second sleeve longitudinally adjustable within the casing and in which said first sleeve is freely movable, and a stop member adjustably carried by said first sleeve and adapted to engage said second sleeve to limit the movement of said supplemental valve, said second sleeve being in the path of said gravity valve and actuated thereby after the latter has reached a predetermined point in its travel.

14. The combination in a carbureter, of a casing having a mixing chamber and a main and a supplemental fuel nozzle, means for feeding fuel to said nozzles, a valve for the supplemental air inlet normally maintained seated by gravity, and a valve for the supplemental fuel inlet normally maintained seated by gravity, the gravity air valve being controlled by the suction, and the gravity fuel valve being controlled by the gravity air valve.

15. The combination in a carbureter, of a casing having a mixing chamber and a main and a supplemental air inlet communicating therewith, a main fuel nozzle, a supplemental fuel nozzle, means for feeding fuel to said nozzles, a valve for the supplemental air nozzle normally maintained seated by gravity, a valve for the supplemental fuel inlet normally maintained seated by gravity, the gravity air valve being controlled by the suction and the gravity fuel valve being con-

trolled by the gravity air valve, and means for varying the time of cooperation between the two valves.

16. The combination in a carbureter, of a casing having a mixing chamber and a main and a supplemental air inlet communicating therewith, a main fuel nozzle, a supplemental fuel nozzle, means for feeding fuel to said nozzles, a valve for the supplemental air nozzle normally maintained seated by gravity, a valve for the supplemental fuel nozzle, the gravity air valve being controlled by the suction and the gravity fuel valve being controlled by the gravity air valve, and devices for limiting the amount of movement of said valves.

17. The combination in a carbureter, of a mixing chamber having a main and a supplemental air inlet communicating therewith, a main and a supplemental fuel nozzle, means for feeding fuel thereto, a gravity valve controlling the supplemental air inlet, a fuel valve controlling the supplemental fuel nozzle and upon which the gravity air valve is guided, the supplemental fuel valve being actuated by the supplemental gravity valve when the latter reaches a predetermined point of opening thereby increasing the weight at such times of the gravity air valve, and means for limiting the amount of movement of said valves.

JULIUS L. FRITZ.

Witnesses:

C. D. McVAY,
F. A. NEWTON.