F. F. STRATTON.

CARBURETOR FOR INTERNAL COMBUSTION ENGINES.

APPLICATION FILED AUG. 7, 1917.

1,426,685. Patented Aug. 22, 1922.

3 SHEETS—SHEET 1.

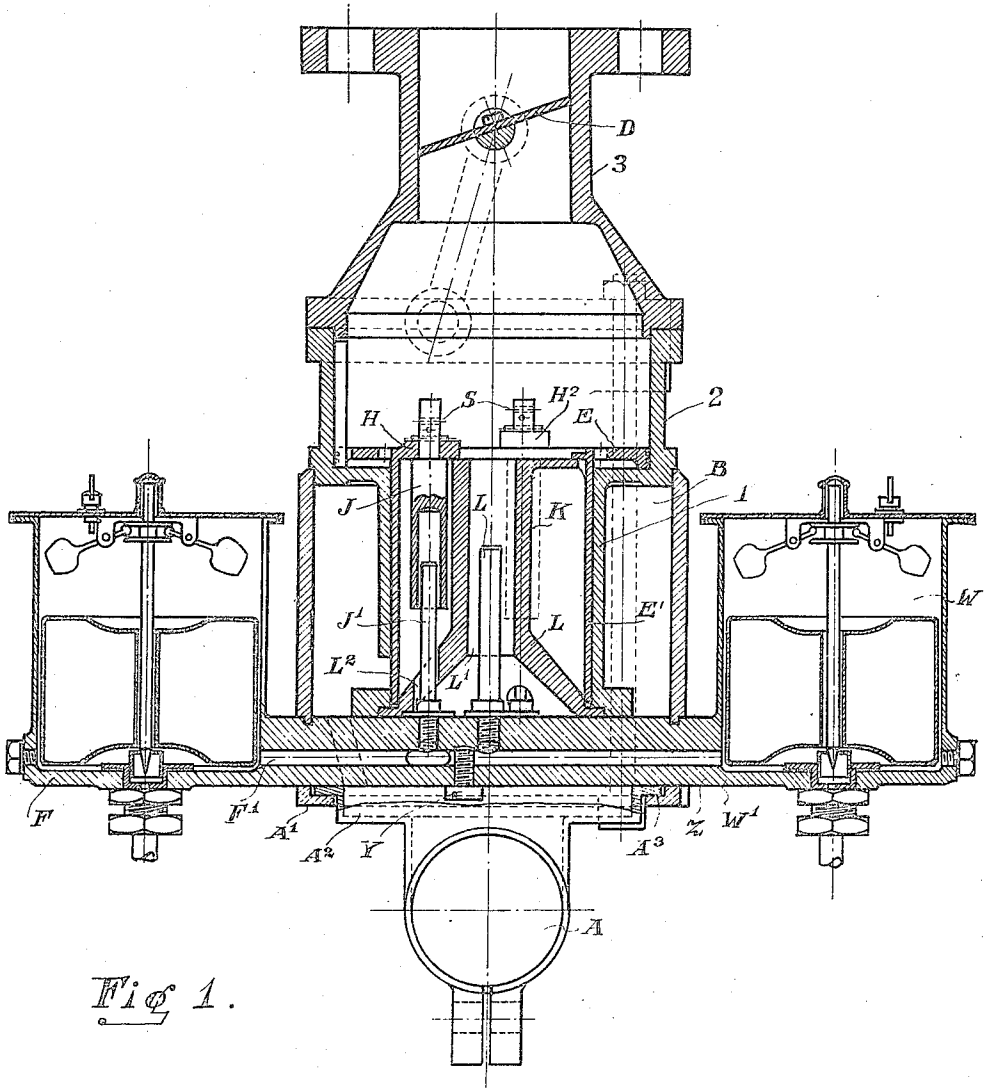


Fig 1.

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3 SHEETS—SHEET 2.

Fig. 2.

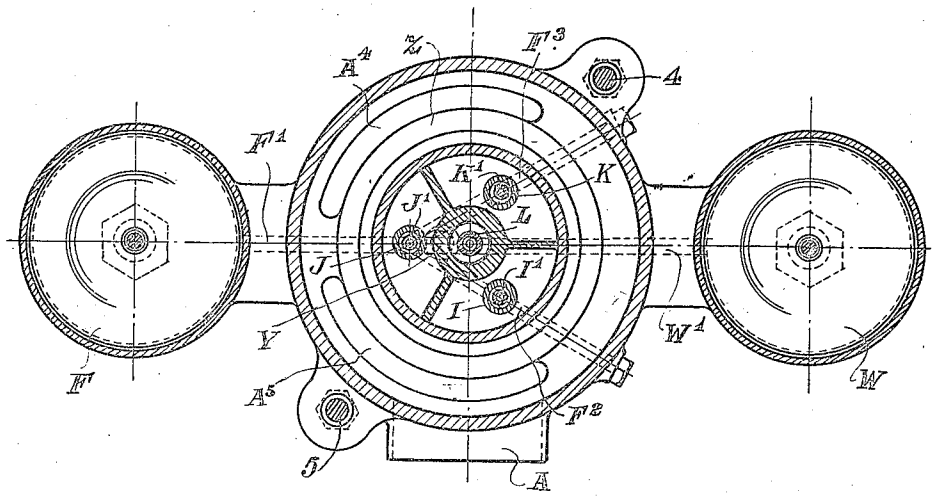


Fig. 4.

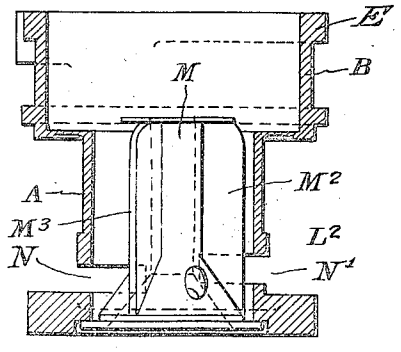
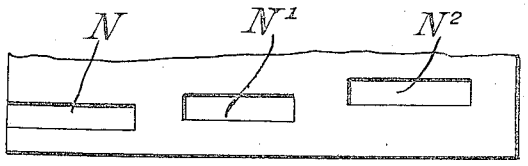


Fig. 5.



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3 SHEETS—SHEET 3.

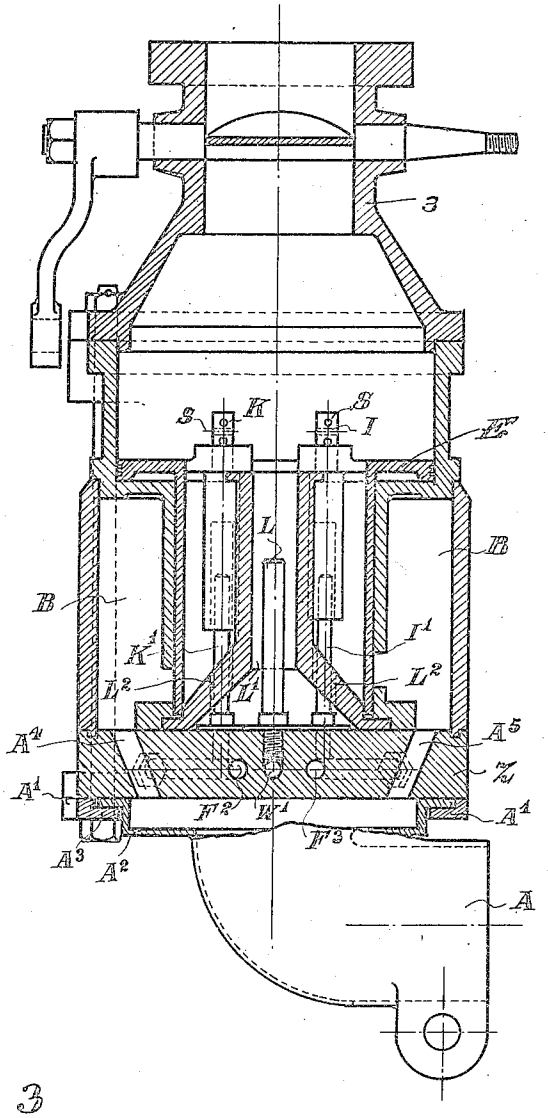


Fig 3

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UNITED STATES PATENT OFFICE.

FENTON FREDERICK STRATTON, OF EAST CROYDON, ENGLAND.

CARBURETOR FOR INTERNAL-COMBUSTION ENGINES.

1,426,685. Specification of Letters Patent. Patented Aug. 22, 1922.

Application filed August 7, 1917. Serial No. 184,952.

To all whom it may concern:

Be it known that I, FENTON FREDERICK STRATTON, a subject of the King of Great Britain and Ireland, and a resident of Oak Lodge, Park Hill Road, East Croydon, Surrey, England, have invented new and useful Improvements in Carburetors for Internal-Combustion Engines, of which the following is the specification.

This invention relates to improvements in carburetors for internal combustion engines.

The object of the invention is to provide improved means to effectively employ a heavier liquid fuel such as paraffin conjointly with a lighter liquid fuel such as petrol.

The invention comprehends a plurality of main nozzles, a pilot nozzle, a plurality of air inlets, means including an automatic piston valve for opening and closing the main nozzles and the air ports in succession during the rise and fall of said automatic valve, in combination with means to feed the pilot or starting nozzle only with petrol or lighter liquid fuel, and the main nozzle with a heavier liquid fuel such as paraffin, said last mentioned means including two float chambers, one for the lighter fuel and one for the heavier liquid fuel, the main nozzles being brought successively into operation.

An important feature of the invention also resides in the special location and connection of the air supply pipe at the bottom of the carburetors, whereby a simple, practical construction is provided, enabling the air intake pipe to be turned to adapt the same to suit different arrangements of the hot air supply as encountered in different types of cars.

The invention, with other objects and advantages thereof, and the particular construction, combination and arrangement of parts comprising the same, will be understood from the hereinafter contained detail description, when considered in connection with the accompanying drawings, forming part hereof, and illustrating one embodiment of the invention.

In the drawings:—

Figure 1 is a sectional elevation through the carburetor and the two float chambers.

Figure 2 is a sectional plan of the carburetor.

Figure 3 is a section at right angles to that shown in Fig. 1.

Figure 4 is a vertical section of the main carburetor chamber without the valve.

Figure 5 is an extension showing the respective positions of the three air ports.

Referring to a detail description of the drawings, wherein like reference characters designate corresponding parts throughout the several views, 1 designates the central cylindrical nozzle chamber having integrally formed therewith a second cylinder 2 located above it and of larger diameter, this second cylinder 2 having secured thereto the outlet portion of the casing 3, in which latter is mounted the throttle valve D. The piston valve E, which is shown as formed of two diameters, is adapted to slide vertically in the cylinders 1 and 2, the upper or larger part or diameter of the valve E sliding in the larger diameter of the casing 2, and the lower portion of the valve or smaller diameter E′ in the casing portion 1. The cylinders 1 and 2 are rigidly secured together by bolts 4 and 5 to the base Z of the carburetor.

The valve E is provided with lugs or bosses (see Figs. 3 and 4) having openings therein, and fitting within the said openings are the tubular caps I, J, K. The caps I, J, K are adapted to fit loosely over the three main nozzles J′, K′, I′, when the piston valve is in its lowermost position. The nozzles are of equal length, but the caps I, J, K, as shown are of varying lengths so that as the valve rises the nozzle J′ is first uncovered (after the pilot nozzle L later referred to) and then in succession the nozzles K′ I′. Provision is made for the adjustment of the operative lengths of the caps to raise or lower the position of the caps relatively to the automatic valve. For this purpose each cap is provided with a plurality of holes S, and a pin S′ adapted to be engaged with one of the holes S and to rest against the upper face of the piston valve E. N, N′, N^2 designate air ports arranged to be opened in succession, that is to say, that the port N which supplies the nozzle J′ is uncovered first and the cap of the nozzle J′ is first lifted. As the valve continues to lift the port N′ is opened and the nozzle K′ commences to operate, and finally the port N^2 is opened and the nozzle I′ operates, the nozzles with their respective ports being successively brought into operation, the lowest air port N, however, being never completely closed, so that when starting, air enters the central choke tube L′ through the holes L^2.

The paraffin or heavy liquid fuel float-chamber F is rigidly secured to the base plate

Z of the carburetor on the one side, and the float chamber W for the lighter liquid fuel is similarly connected on the other side of the carburetor. Conveniently, the fuel channels F′ and W′ are formed as one continuous passage or channel extending directly across and through the carburetor base plate, and a screw Y is fitted in the base plate to form a partition to completely separate the channels F′ and W′. The float feed chamber W, by the channel W′, thus feeds the central nozzle only, this jet L being the starting or pilot nozzle. The float feed chamber F containing paraffin, or the like, supplies the nozzle J′ by the channel F′, and also the nozzles K′ and I′, by the channels F^2, F^3 (see Fig. 2) which branch from the channel F′.

The air supply to the carburetor which is preferably heated in any suitable way, enters the same by the inlet pipe A. The intake pipe A is connected with the base of the carburetor and extends laterally therefrom, as shown, and an adjustable swivel connection between said intake pipe A and the base of the carburetor being provided so that the inlet pipe A may be turned around to meet the position of the heated air supply pipe (not shown) as may be to suit the particular type of car to which the carburetor is to be fitted. The pipe A is shown formed with a disc plate A^2 having the flange A^3 engaging loosely within the flange A′ on the base Z. The heated air passes from the inlet pipe A through arc-shaped ports A^4, A^5, (see Figs. 2 and 3) in the base Z to the annular chamber B surrounding the central mixing chamber.

In starting, air enters the center choke tube L through the holes L^2 provided for each main nozzle in the conical base of the choke tube L′. As the valve rises and ports open, the suction on the tube L′ diminishes until all of the ports are opened when the supply from the petrol nozzle L becomes a minimum. On the other hand, as the ports progressively open, the main nozzles J′ K′, I′ successively supply paraffin or heavier liquid fuel by the respective nozzles in succession.

Thus, in a very convenient and simple manner the pilot nozzle is fed by petrol or the like only, while the three main nozzles controlled by the said caps are fed by paraffin or the like only, a complete separation being effected between the two supplies.

The construction has the particular advantage that when the throttle is nearly closed by means of its connection to the pedal lever or the like, (not shown), as for example, when the vehicle upon which the carburetor is fitted, is suddenly stopped or slowed down in traffic, or otherwise, the heavier liquid fuel or paraffin is automatically cut off and petrol alone fed by the pilot nozzle, thus avoiding the smoking, which nearly always arises under such conditions when paraffin is employed. On the other hand, as soon as the throttle is opened the suction on the pilot nozzle decreases and the main supply again comes progressively and successively from the paraffin nozzles.

What I do claim as my invention and desire to secure by Letters Patent is:—

1. In a carburetor, a casing having a plurality of air ports arranged in stepped relation, a multiplicity of nozzles including a main nozzle and a pilot nozzle, an automatic piston valve reciprocable in the casing and operated by the engine suction, means connected with the piston valve for opening and closing the air ports in the casing and the main nozzles in succession, said casing having a base plate formed with a straight channel extending through and across the same, a float chamber for the heavier fuel connected with one end of said passage, a float chamber for the lighter fuel connected with the other end of the passage, the starting nozzle and one of the main nozzles being located in line with said main channel and in communication therewith, means for closing the main channel between said main nozzle and the starting nozzle, and branch channels leading from the main nozzle side of the main channel to the other main nozzles.

2. In a carburetor, a casing having a central mixing chamber, an air chamber surrounding the mixing chamber, a multiplicity of nozzles and air ports leading into the mixing chamber, an automatic piston valve reciprocable in the casing and operated by the engine suction, means connected with the piston valve for opening and closing the air ports in the casing and the multiplicity of nozzles in succession, and an air inlet connection at the base of the carburetor communicating with the concentrically disposed air chamber, said air intake comprising an air intake pipe having a portion extending laterally of the carburetor casing, and means providing an adjustable swiveling joint connection between the inner end of said intake pipe and the base of the carburetor casing.

FENTON FREDERICK STRATTON.

Witnesses:
I. D. Roots,
Catherine A. Carlisle.