H. H. BOORE.

CARBURETER.

APPLICATION FILED JUNE 17, 1908.

930,724.

Patented Aug. 10, 1909.

Fig. 1.

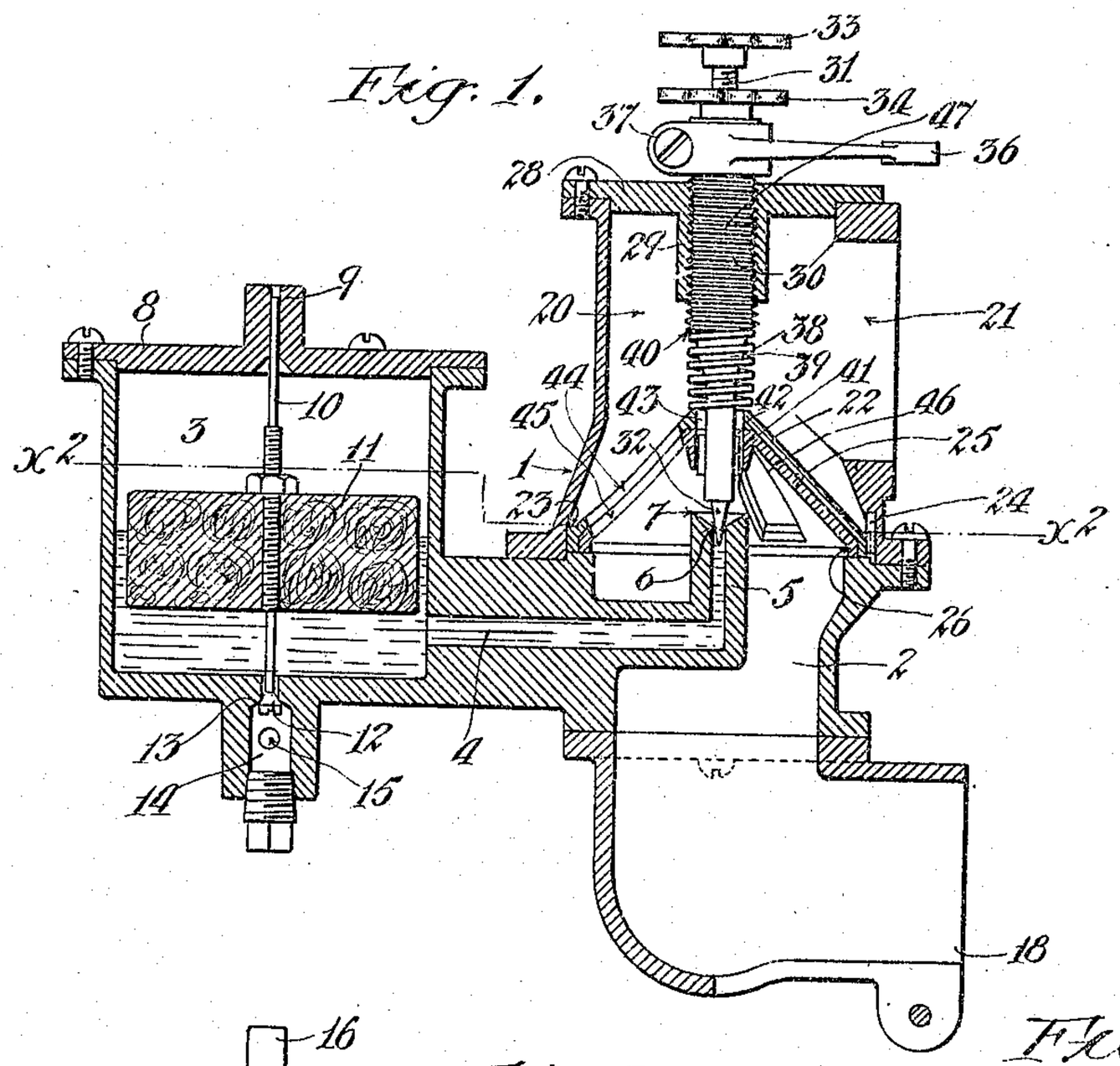


Fig. 2.

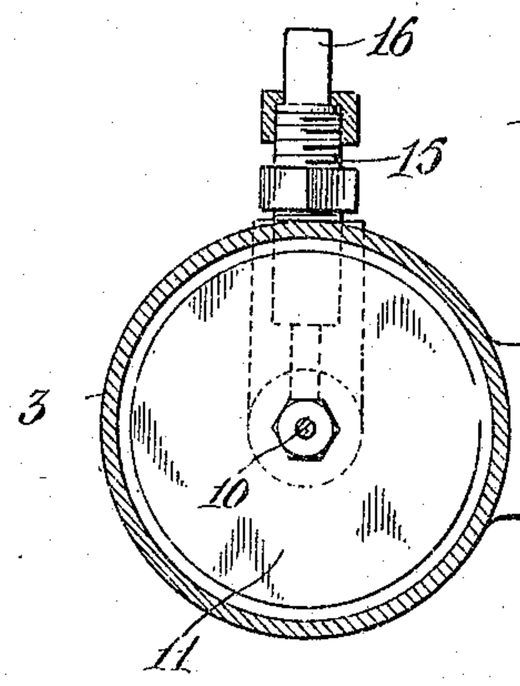


Fig. 3.

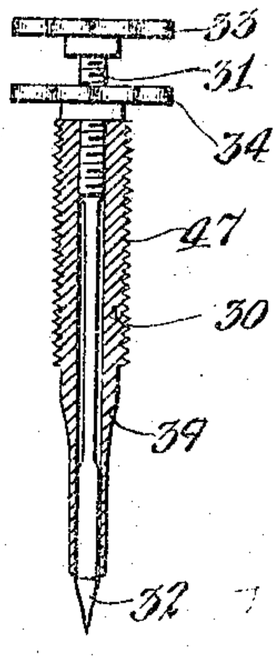
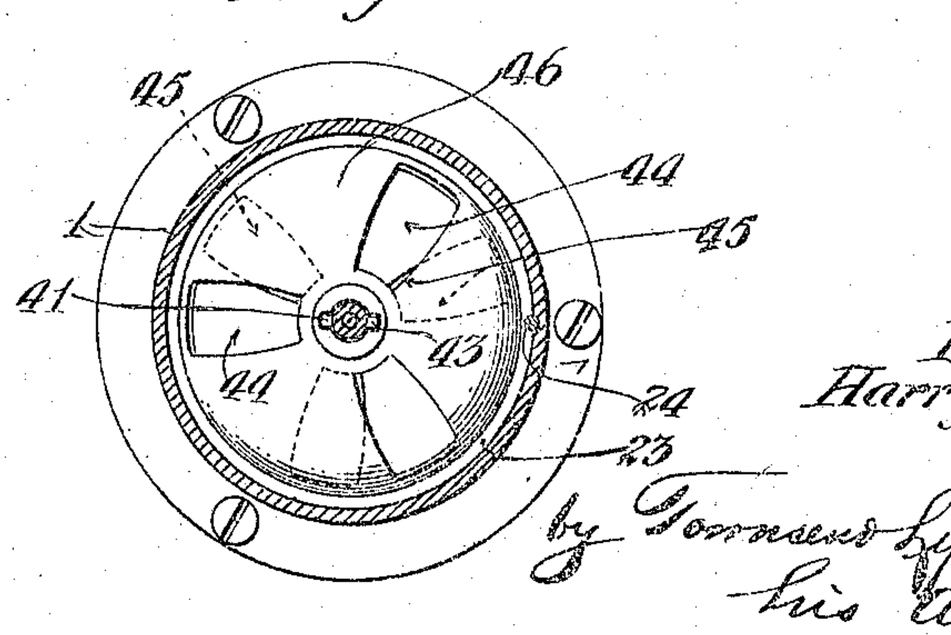


Fig. 4.



Witnesses:-
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UNITED STATES PATENT OFFICE.

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CARBURETER.

No. 930,724. Specification of Letters Patent. Patented Aug. 10, 1909.

Application filed June 17, 1908. Serial No. 439,064.

To all whom it may concern:

Be it known that I, HARRY H. BOORE, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Carbureter, of which the following is a specification.

The main object of the present invention is to produce a carbureter which will regulate the fuel and air supply in such manner as to produce the proper mixture for giving maximum power to the engine, when desired, or to vary the oil and air supply in correspondence with the requirements.

The accompanying drawings illustrate the invention, and referring thereto:—Figure 1 is a vertical section of the carbureter. Fig. 2 is a horizontal section thereof on line x^2—x^2 Fig. 1. Fig. 3 is a detail section of the movable valve member. Fig. 4 is a horizontal section showing the air valve in nearly closed position.

The carbureter comprises a body 1 formed with a vertical passage or air inlet chamber 2, a fuel reservoir 3 and a fuel duct 4 leading from said reservoir and extending through a nozzle piece 5 which projects from the wall of chamber 2 to the center of said chamber 2 and thence extends upwardly, terminating at its upper end in a seat 6 for the fuel valve, and an upwardly flaring lip 7 above said seat.

The fuel valve 32 extends within the air inlet chamber or passage 2, and is movable relatively to the oil outlet to open and close said outlet, so that the oil issuing through said outlet is confined by the valve member to produce the maximum atomizing effect.

The fuel reservoir 3 may be of any suitable construction being shown as provided with a closure cap 8 formed with a guide 9 for the spindle 10 of a float 11, the lower end of said spindle being formed with a valve 12 corresponding with a seat 13 in the passage 14 leading to the reservoir from an oil supply connection 15 which the oil supply pipe 16 connects. An air inlet fitting 18 is attached to the bottom of the air inlet chamber 2, and a mixture chamber 20 is attached to the top of said chamber 2 and is provided with a lateral mixture inlet 21 adapted for connection to the engine.

Communication between the air inlet chamber and the mixture chamber is controlled by an air valve whose seat is formed as a conical member 22 converging upwardly and having a peripheral flange 23 and held from rotation by a key 24. The movable air valve member 25 is also conical, to fit inside the member 22 and works between the member 22 and the top of body 1, and has a flange 26 fitting within the flange 23.

A cap piece 28, fastened at the top of chamber 20, is formed with a tapped opening 29 in which works a left hand screw threaded member 30, this member being internally screw threaded to receive the screw threaded spindle 31 of the needle valve 32, said spindle having an operating thumb piece or handle 33 to enable its vertical adjustment relative to the fuel valve seat aforesaid. The air and fuel valves and their operating screw-members 30, 31 are coaxial with the fuel outlet. A lock nut 34, screwing on this spindle, engages with the upper end of the member 30 to lock the members 31, 30 together so that in normal operation they turn as one piece. A lever 36, secured to member 30 by means of clamp screw 37, serves for operation of the air valve by connection with any suitable means, for example, the usual link operated by a controller or hand lever. A spring 38 surrounding an extension 39 of member 30 and extending between a shoulder 40 of said member 30 and the top of valve seat member 22, serves to hold said valve seat member with yielding pressure on the top of the rotary valve member, insuring a working fit without undue friction and allowing for wear of the screw threaded member 30. The valve spindle 31 is provided with keys or feathers 41 working in vertical grooves or keyways 42 in the rotatively movable valve member 25, so that said valve member is caused to turn with said spindle, but adjustment of the said spindle is permitted relatively to the valve member to enable adjustment of the regulation of the oil supply relatively to the air supply. The valve seat member 22 is also notched or grooved, as at 43, to enable insertion of the valve spindle therethrough. The valve seat member 22 and the rotary valve member 25 are provided with ports 44, 45 whose side walls 46 converge upwardly and inwardly but at a less angle than would be the case with direct radial convergence, so that in relative rotation of these members from closed position the opening will first be formed at the upper ends of the ports, and in further rotation the

opening will gradually extend toward the lower end, at the same time increasing at the upper end.

The operation is as follows:—The carbureter being connected to an engine and being supplied with oil, and the oil control valve 32 having been adjusted by means of handle member 33 to the proper position, and locked by nut 34, the throttle lever 36 is operated to move the valve member 25 to partly open the ports 44, 45 as much as may be desired. This movement operates by means of the screw thread 47 of member 30, which is preferably a left handed screw, to slightly lift the needle valve and open the discharge outlet for fuel, said outlet being above the normal level of fuel in tank 39, controlled by float 11, so that the fuel only flows in response to suction from the engine. At each suction of the engine air is drawn through the ports 44, 45 and the condition of suction also causes the fuel to flow over the lip 7 and to be taken up by the air passing to said ports. When the valve is but slightly open, as shown in Fig. 4, the openings are close to the center, so that the current of air is confined toward the oil outlet, and maximum entraining effect is secured, and as the valve is further opened, the current zone spreads outwardly, so that under all conditions the oil is effectually taken up by the air, and no matter how little air is admitted its flow is concentrated so as to take up the oil. The movements of the fuel valve 31 and the rotary air valve member 25 are proportioned so that the amount of fuel and air admitted is in correspondence, and any desired ratio of correspondence or of variation may be obtained by suitably forming or curving the needle 32 of the fuel valve and the side walls 46 of the air valve ports. The air valve being conical and surrounding the oil outlet, deflects and concentrates the current of air toward the oil supply. The angle of the thread on screw threaded member regulates the proportion of oil supplied. The openings in air valve members are shaped to proportion the air supply to the oil inlet. For this purpose the edges of the openings or ports are less than radially convergent, and are slightly curved, to give the proper variation.

What I claim is:—

1. A carbureter comprising a body formed with an air passage, a fuel supply means having an outlet in said air passage, a fuel valve extending in the air passage and movable relatively to said outlet to open and close said outlet, a mixture outlet connection, and a rotary air valve controlling communication from said passage to said outlet connection, said air valve provided with radial ports which open initially at their portions nearest to the fuel outlet.

2. A carbureter comprising a body having an air passage, a fuel supply means extending and discharging into said passage, a fuel valve coöperating with and controlling said outlet, a screw member carrying said fuel valve, means for rotating said screw member to cause operation of the fuel valve by the screwing motion of said member, a mixture outlet means, an air valve controlling communication from the aforesaid passage to said mixture outlet means, said air valve comprising a nonrotative member, and a movable member connected to be operated by the rotation of said screw member the rotative and non-rotative members of the air valve formed as upwardly converging cones over and surrounding the fuel outlet, and provided with ports adapted to initially open at the lower end of the ports nearest the fuel valve outlet and to spread the opening radially as the valve is opened further.

3. A carbureter comprising a body having an air passage, a fuel supply means extending and discharging into said passage, a fuel valve coöperating with and controlling said outlet, a screw member carrying said fuel valve, means for rotating said screw member to cause operation of the fuel valve by the screwing motion of said member, a mixture outlet means, an air valve controlling communication from the aforesaid passage to said mixture outlet means, said air valve comprising a nonrotative member, a movable member connected to be operated by the rotation of said screw member, and a spring engaging the screw member to take up wear thereof the rotative and non-rotative members of the air valve formed as upwardly converging cones over and surrounding the fuel outlet, and provided with ports adapted to initially open at the lower end of the ports nearest the fuel valve outlet and to spread the opening radially as the valve is opened further.

4. A carbureter comprising a body having an air passage, a fuel supply means extending and discharging into said passage, a fuel valve coöperating with and controlling said outlet, a screw member carrying said fuel valve, means for rotating said screw member to cause operation of the fuel valve by the screwing motion of said member, a mixture outlet means, an air valve controlling communication from the aforesaid passage to said mixture outlet means, said air valve comprising a nonrotative member, a movable member connected to be operated by the rotation of said screw means, and operating means for the fuel valve screwing within said screw member to adjust the fuel valve relatively to the air valve said valves and their operating screw-members being mounted coaxially with the fuel outlet.

5. A carbureter comprising a body formed

with an air passage, a fuel supply means having an outlet in said air passage, a fuel valve coöperating with and controlling said outlet, said outlet being formed with an upwardly flaring seat for said valve, a mixture outlet connection, and an air valve controlling communication from said passage to said outlet connection, said air valve provided with ports which open initially at their portions nearest to the fuel outlet, the air valve being conical and surrounding the oil outlet.

6. A carbureter comprising a body formed with an air passage, a fuel supply means having an outlet in said air passage, a fuel valve coöperating with and controlling said outlet, a mixture outlet connection, and an air valve controlling communication from said passage to said outlet connection, said air valve consisting of a member having ports and a rotative member provided with ports whose edges are shaped to coöperate with the edges of the aforesaid ports so that the opening is initially at their portions nearest the fuel outlet, and spreads radially outward as the ports are further opened.

7. A carbureter comprising a body formed with an air passage, a fuel supply means having an outlet in said air passage, a fuel valve controlling said outlet, a mixture outlet connection, and an air valve controlling communication from said passage to said outlet connection, said air valve provided with ports which open initially at their portions nearest to the fuel outlet, the air valve being conical and surrounding the oil outlet, the fuel valve and the air valve ports being shaped to vary the oil and air supply in correspondence.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 10th day of June 1908.

HARRY H. BOORE.

In presence of—
F. M. Townsend,
J. T. Keough.