J. HARRIS.

CARBURETER.

APPLICATION FILED JUNE 26, 1908.

988,638.

Patented Apr. 4, 1911

FIG. 1

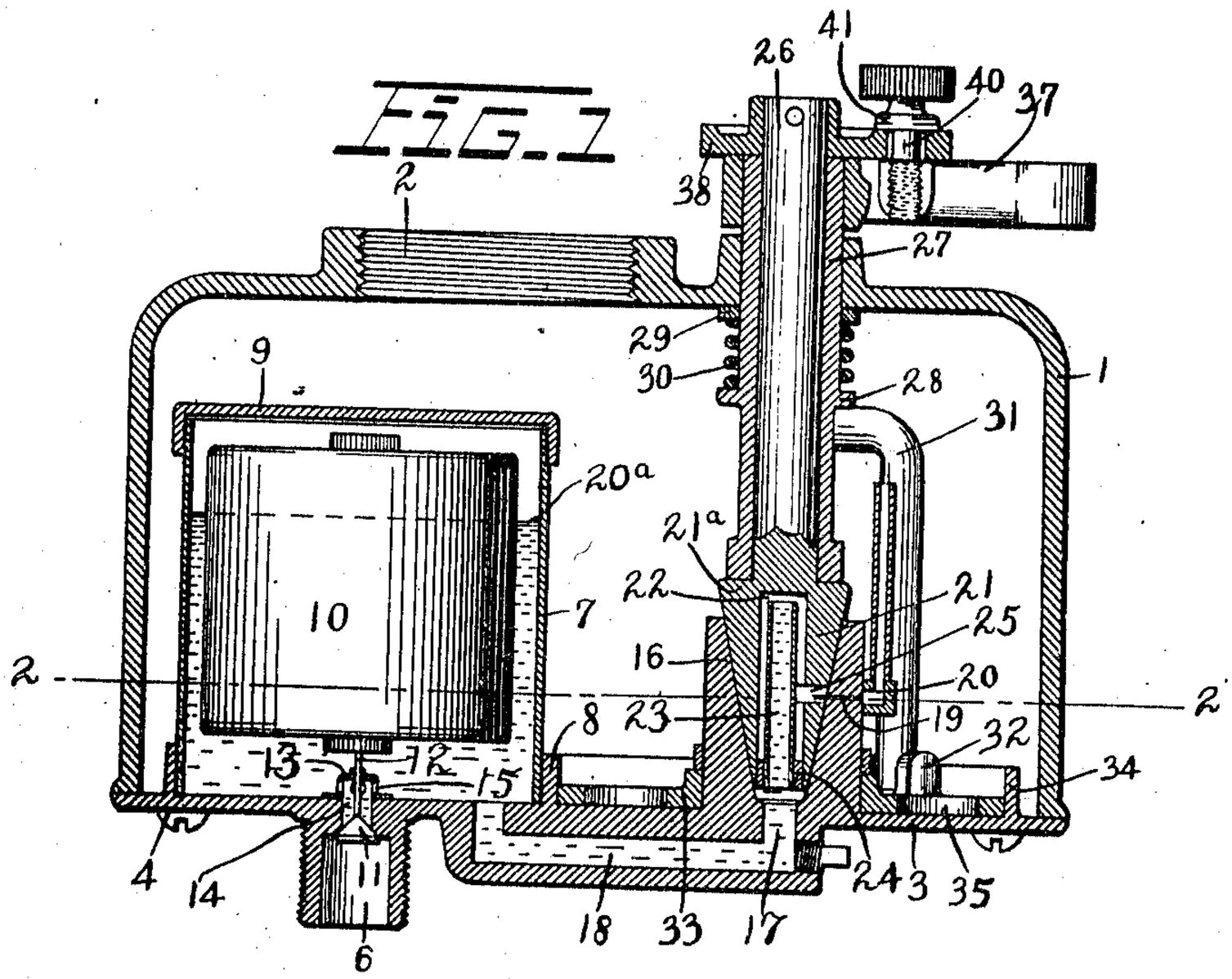


FIG. 2

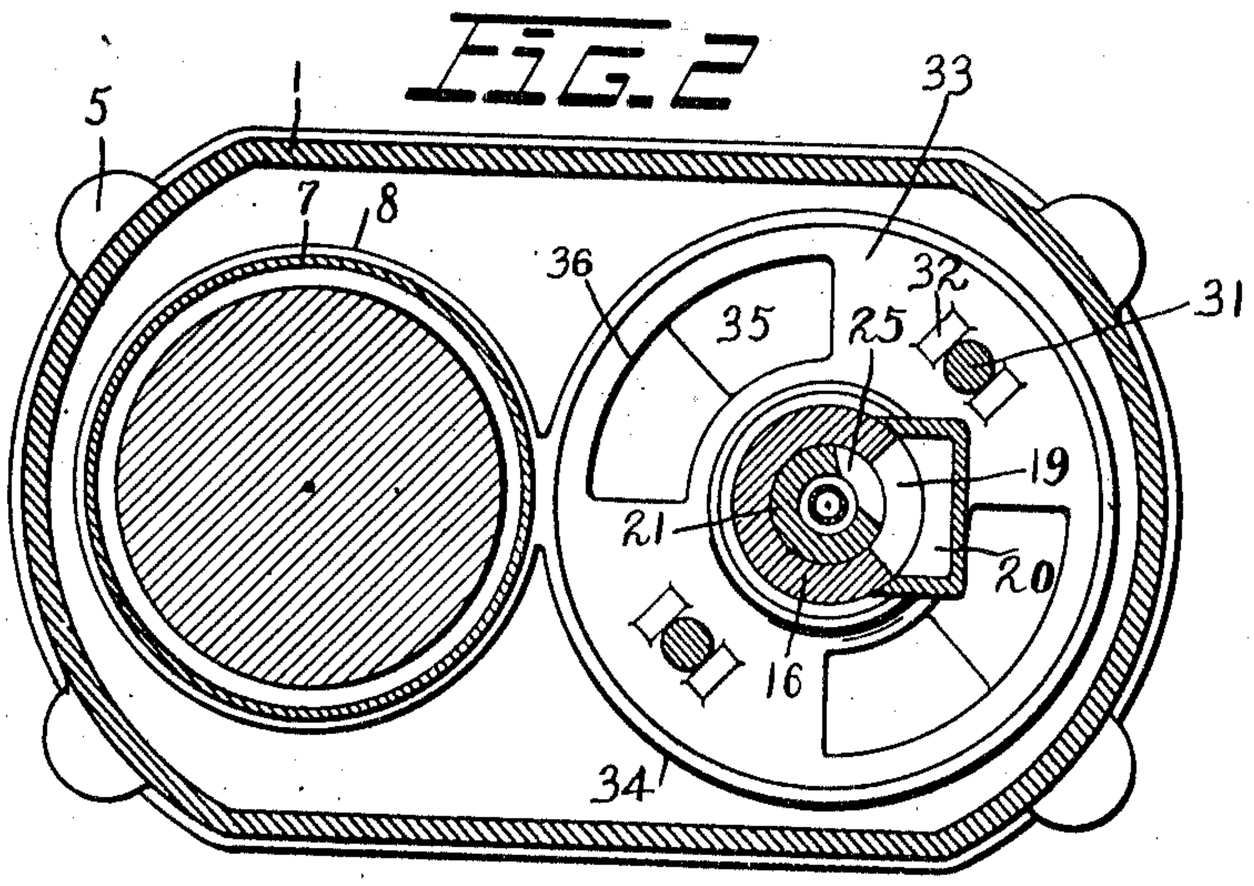
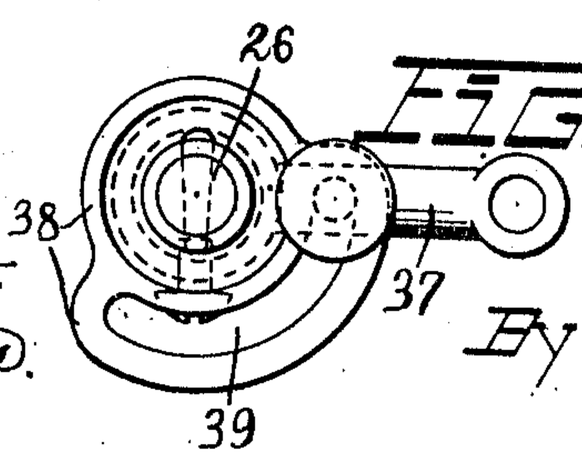


FIG. 3



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UNITED STATES PATENT OFFICE.

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CARBURETER.

988,638. Specification of Letters Patent. Patented Apr. 4, 1911.

Application filed June 26, 1908. Serial No. 440,480.

To all whom it may concern:

Be it known that I, JOHN HARRIS, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented a certain new and useful Improvement in Carbureters, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings.

This invention relates generally to devices for producing a mixture of air with fluid fuel, and more especially to devices, in the nature of carbureters, for producing mixtures of air with liquid fuel which is in a vaporous condition.

It has for its general objects to simplify the construction of such devices; to provide a mixing device wherein the proportions of air and fluid fuel may be maintained constant after the air and fuel ports have been adjusted, but which will allow for the convenient adjustment of such ports to vary such proportions when desirable; and to provide a construction whereby fluid fuel may be supplied under constant pressure to its port but without danger of flooding the device.

More limitedly, the subject of this application is an improvement upon that described in my co-pending application, filed May 9th, 1908, Serial No. 431,774.

Still more specifically, the invention consists in certain details of construction which are illustrated in the drawings hereto annexed, wherein—

Figure 1 represents a vertical longitudinal sectional view taken through a carbureter constructed in accordance with my invention; Fig. 2 represents a longitudinal sectional view corresponding to the line 2—2 of Fig. 1; and Fig. 3 represents a plan view of a detail of the valve-operating mechanism.

Describing the parts by reference characters, 1 denotes a casing which is provided at its top with a connection 2 to which the engine suction pipe may be attached. This casing is provided at its bottom with a plate 3 removably fitted to the body of the casing, as by screws 4 which extend through the bottom plate and are threaded into lugs 5 on the casing. The bottom plate 3 is provided near one end thereof with an inlet connection 6 through which liquid fuel may be supplied to a float chamber. This chamber may be conveniently formed by a casing 7 the lower end of which fits within an annular ledge 8 preferably cast with the bottom 3, such casing being provided with a removable cover 9.

10 denotes the float, said float carrying an upwardly seating conical valve 11 on a valve stem 12. This valve stem extends through a guide 13 which is mounted on the bottom plate above the port 14 and is provided with a suitable number of lateral discharge orifices 15.

Adjacent to the end opposite connection 6, plate 3 is provided with an upwardly projecting hollow boss 16, preferably integral therewith, the interior of which boss communicates with the float chamber 7 by means of a port 17 extending through the bottom plate and a passage-way 18 which connects said port with the float chamber. The boss 16 has therein an inverted frusto-conical valve seat and is provided with a port consisting of an elongated horizontal slot 19. The discharge end of this slot is inclosed by a chamber 20. This chamber extends upwardly to a point above the level of the liquid fuel (indicated at 20^a) in the float chamber within casing 7 and is open at its upper end.

21 denotes a valve plug which is mounted within the valve chamber formed within the boss 16. This plug forms a snug fit within the inner surface of 16 and is provided with an internal chamber 22 projecting above the port 19. Within this chamber there is mounted a tube 23, the lower end of which is secured within the lower end of the chamber, as by means of a bushing 24, and the upper end whereof projects above port 19. The upper end of tube 23 is spaced from the top of the chamber 22, whereby the liquid fuel supplied from the float chamber 7 may flow freely into the chamber 22. The valve 21 is provided with a horizontal slotted port 25 having a flared outlet end of substantially the same angular extent as the inner end of port 19 and adapted to register therewith. Port 25 is of considerably greater capacity than port 19, whereby, with the arrangement of ports as hereinbefore described, liquid fuel is supplied to port 19 under constant pressure. Above the boss 16, the plug 21 is provided with an operating stem 26 closely fitted within a sleeve 27 which projects through the top of the casing 1, forming a close fit therewith. This sleeve is provided with an annular ledge 28 and a washer 29, between which there is interposed

a spring 30. The washer 29 bears against the inner surface of the top of casing 1 and prevents leakage of the mixture at this point, while spring 30, through the engagement of the lower end of the sleeve with the enlarged head 21ª of the plug, holds the valve to a snug seat within the boss 16.

The sleeve 27 is provided with a pair of arms 31, which project outwardly and downwardly therefrom, their lower ends fitting between lugs 32 on a rotary valve 33. This valve is in the shape of an annular disk and is rotatably mounted between the boss 16 and an annular ledge 34 which is preferably integral with the bottom plate 3. The valve is provided with arc-shaped ports 35 adapted to register with corresponding ports 36 in the bottom of the casing. The arc-shaped ports 35 and 36 are so arranged that the air valve will begin to open simultaneously with the opening of the fluid fuel valve and will be fully opened when the latter valve is also fully opened.

For the purpose of operating the air and liquid fuel valves, I provide an operating arm or handle 37 which is rotatably mounted upon the upper end of sleeve 27. The upper end of valve stem 26 projects above the upper end of the sleeve 27 and has rigidly mounted thereon a segment 38 having an arc-shaped slot 39 by means of which an adjustable connection is formed between the valve stem 26 and the sleeve 27 through a screw 40, which extends through slot 39 and is threaded into the handle 37. The screw 40 is provided with a shoulder 41 which, when the screw is tightened, bears against the segment 38 and causes stem 26 and sleeve 27 to move in unison. As stem 26 carries the valve plug 21 and sleeve 27 the operating arms for the air valve, it will be apparent that the air and fuel valves may be conveniently adjusted whenever desired and that, after having been so adjusted, they will move in unison.

By the construction herein illustrated and described, numerous advantages may be secured. For instance, the liquid fuel supplied through the port 19 is under the constant pressure of the head due to the level of the liquid in the float chamber 7. At the same time, there is no possibility of flooding the mixing chamber formed within the casing 1 and of wasting the liquid fuel, owing to the provision of the chamber which incloses the discharge end of the slot 19 and extends above the level of the liquid in the float chamber 7. With this construction, the throttle valve may be left open when it is desired to "crank up" and still not waste the gasolene. Furthermore, the chamber 20 will contain just enough liquid fuel to prime or start a multi-cylinder engine.

The air valve construction is particularly simple and efficient. By its use, whistling is avoided and a large capacity of air ports is obtained without unduly increasing the size of the parts. The employment of the tube 23, which extends above the slots 25 and 19 and is of greater capacity than the slot 19, insures a constant pressure of liquid fuel on this slot, which renders it possible to maintain a constant proportion between the liquid fuel and the air supplied to the mixing chamber.

Having thus described my invention, I claim:

1. In a carbureter, the combination of a casing having an upwardly projecting valve seat provided with a lateral discharge port, a valve rotatably mounted in said seat and having a port adapted to register with the former port, a float feed chamber, connections for supplying liquid fuel thereto, connections between said chamber and said valve, said float chamber being arranged to maintain a liquid level above the lateral port in the valve seat, and a vertically extending outlet communicating with the latter port and extending above the level of the liquid in the float chamber.

2. In a carbureter, the combination of a casing having an upwardly projecting valve seat therein, said valve seat being provided with a connection for supplying liquid fuel to the lower portion thereof, said valve seat being provided with a port extending through its wall, a rotary valve mounted in said valve seat and provided with a port adapted to register with the former port and provided with a chamber extending upwardly from the bottom thereof to a point above the port in the valve seat, said chamber communicating with the lower portion of the valve seat and with the port in said valve, and connections for supplying liquid fuel to said chamber at a point above the said ports.

3. In a carbureter, the combination of a casing having a valve seat provided with a port and having at its lower end a connection for liquid fuel, a rotary valve in said seat provided with a chamber extending upwardly from the bottom thereof and with a port adapted to register with the former port and communicating with said chamber, a tube mounted in the lower end of said chamber and extending above said ports and communicating at its lower end with the lower portion of the valve seat, and connections for supplying liquid fuel to the lower portion of said seat.

4. In a carbureter, the combination of a casing having a valve seat provided with a lateral port, a rotary valve in said seat provided with a chamber extending upwardly from the bottom thereof and with a port adapted to register with the former port and communicating with said chamber, a tube mounted in the lower end of said cham-

ber and extending above said ports, and connections for supplying liquid fuel through said tube to said chamber and thence to said ports.

5. In a carbureter, the combination of a casing having therein an upwardly projecting valve seat provided with a lateral port and connected at its lower portion with a source of fuel supply, a rotary valve mounted in said seat and having an upwardly extending chamber communicating at its lower end with the supply to the valve seat and extending above the lateral port and provided with a port adapted to register with the former port and communicating with said chamber, a float feed chamber arranged to maintain a liquid level above the top of the former chamber, connections between said float feed chamber and the valve seat, and means for preventing the flooding of the casing through the port in the valve seat.

6. In a carbureter, the combination of a casing having an upwardly extending valve seat and one or more segmental air ports located adjacent to said seat, a rotary valve in said seat, a stem for said valve, a sleeve on said stem, a rotary valve surrounding the valve seat and provided with one or more segmental ports adapted to register with the first mentioned port or ports, a pair of arms projecting downwardly from said sleeve and engaging the last mentioned valve, a connection between said stem and said sleeve, and means for supplying fluid fuel to the first mentioned valve.

7. In a carbureter, the combination of a casing having in the bottom thereof an upwardly projecting valve seat and having one or more air ports in the bottom adjacent to said seat, a rotary valve mounted in the valve seat and having an operating stem, a valve surrounding the valve seat and co-acting with the port or ports in the bottom of the casing, a sleeve mounted on the valve stem, one or more arms carried by said sleeve and engaging the last mentioned valve, an adjustable connection between said sleeve and said valve stem, and means for supplying fluid fuel to the first mentioned valve.

8. In a carbureter, the combination of a casing having a valve seat therein and provided with one or more air ports in the base thereof, a rotary valve mounted in the valve seat and having a stem projecting through the casing, a sleeve mounted on said stem and also projecting through said casing, a valve having ports coöperating with the ports in the base of the casing, a connection between said sleeve and the last mentioned valve, an arm mounted on the sleeve, a segment mounted on the valve stem adjacent said sleeve and having an arc-shaped slot therethrough, a screw extending through said slot and threaded into said arm, and means for supplying fluid fuel to the first mentioned valve.

9. In a carbureter, the combination of a casing having a valve seat projecting upwardly from the bottom thereof and provided adjacent to said seat with one or more air ports, a valve mounted in said seat and having a stem projecting upwardly through the casing, a sleeve mounted on said stem, a rotary valve coöperating with the port or ports in the bottom of the casing, one or more arms connecting the last-mentioned valve and the sleeve, a ledge on said sleeve, a washer on said sleeve adapted to engage the inner surface of the top of the casing, a spring interposed between said ledge and said washer, an adjustable connection between said sleeve and said valve stem located above said casing, and means for supplying fluid fuel to the first mentioned valve.

10. In a carbureter, the combination of a casing having therein a fluid fuel valve provided with a stem projecting through the casing, a sleeve mounted on said stem, a rotary air valve, one or more arms connecting the last-mentioned valve and the sleeve, a ledge on said sleeve, a washer on said sleeve adapted to engage the inner surface of the casing, a spring interposed between said ledge and said washer, and a connection between said sleeve and said valve stem.

11. In a carbureter, the combination of a casing having therein an upwardly projecting valve seat provided with an elongated lateral discharge slot, a valve rotatably mounted in said seat and provided with an elongated discharge slot adapted to register with the former slot, a liquid fuel reservoir communicating with said valve and having means for maintaining therein a liquid level above said slots, a chamber inclosing the discharge slot in the valve seat and extending above the maintained level in the reservoir, and means for supplying air to said casing.

12. In a carbureter, the combination of a casing having an upwardly projecting valve seat provided with an elongated lateral discharge outlet, a rotary valve in said seat provided with an elongated discharge outlet adapted to register with the former outlet, a liquid fuel reservoir communicating with the said valve and having means for maintaining therein a supply of liquid fuel above said outlets, a chamber communicating with the outlet in the valve seat and extending above the level of the liquid in said reservoir, an air valve for controlling the flow of air into said casing, and connections for operating the air and liquid fuel valves in unison.

13. In a carbureter, the combination of a casing having a valve seat therein provided with a discharge port, a valve rotatably mounted in said seat and provided with a port adapted to register with the former

port, a liquid reservoir communicating with said valve seat and provided with means for maintaining therein a liquid level above said ports, a chamber communicating with the port in the valve seat and extending above the level of the liquid in the reservoir, an air valve for admitting air to said casing and connections for operating the air and the liquid fuel valves proportionally.

14. In a carbureter, the combination of a casing having therein a valve comprising a valve seat provided with an elongated lateral discharge outlet and a valve body rotatably mounted with respect to said seat and provided with an elongated discharge outlet adapted to register with the former outlet, a liquid fuel reservoir communicating with said valve and having means for maintaining therein a liquid level extending above said outlets, a chamber inclosing the valve outlet through which the liquid fuel is discharged and extending above the maintained level in the reservoir, and a valve for controlling the supply of air to said casing.

15. In a carbureter, the combination of a casing having therein a valve comprising a valve seat having an elongated discharge outlet and a valve body coöperating therewith and having an elongated discharge outlet adapted to register with the former outlet, a liquid fuel reservoir communicating with said valve and having means for maintaining therein a liquid level extending above said outlets, a chamber inclosing the valve outlet through which the liquid fuel is discharged and extending above the maintained level in the reservoir, and a valve for controlling the supply of air to said casing.

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

JOHN HARRIS.

Witnesses:
J. B. HULL,
BRENNAN B. WEST.