Aug. 25, 1925. 1,551,239

C. J. DESCH

CARBURETOR

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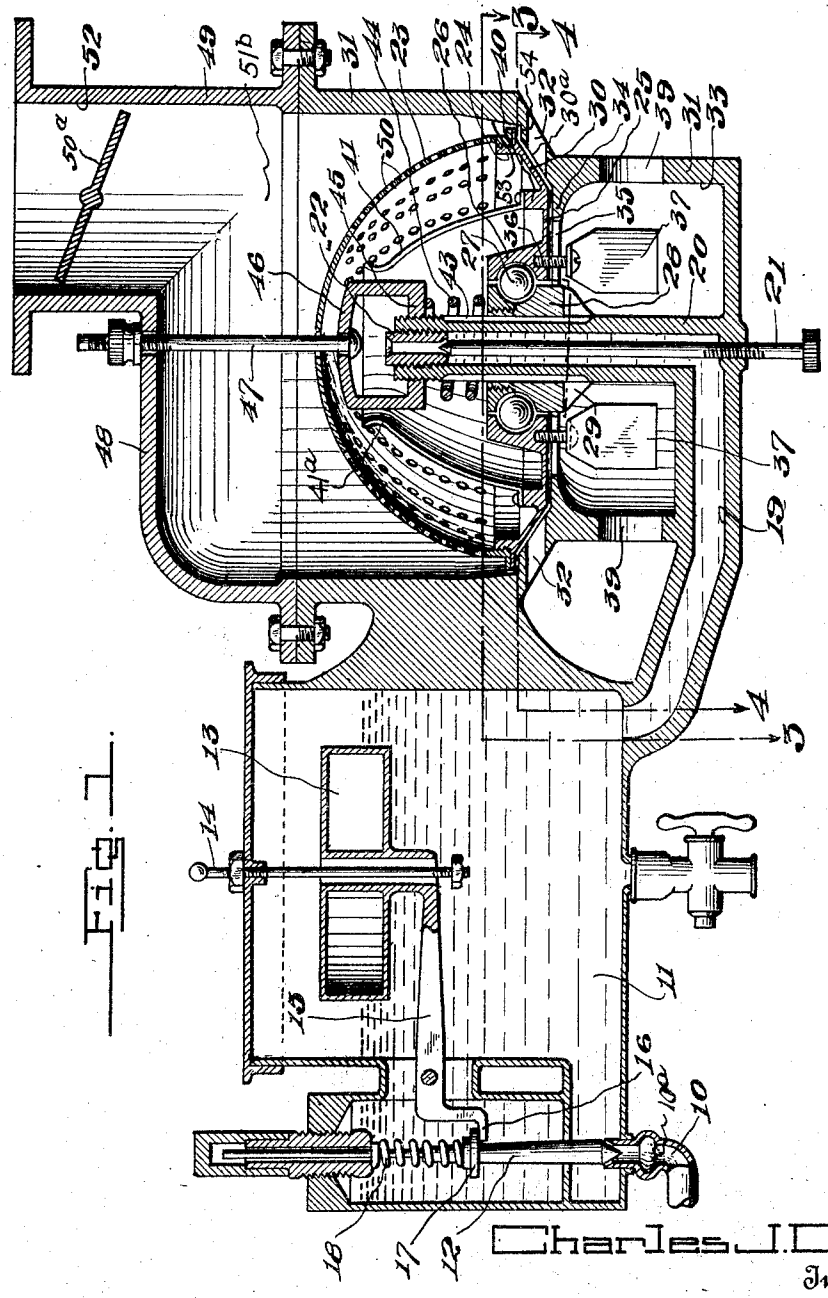


Fig. 1.

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Fig 2.

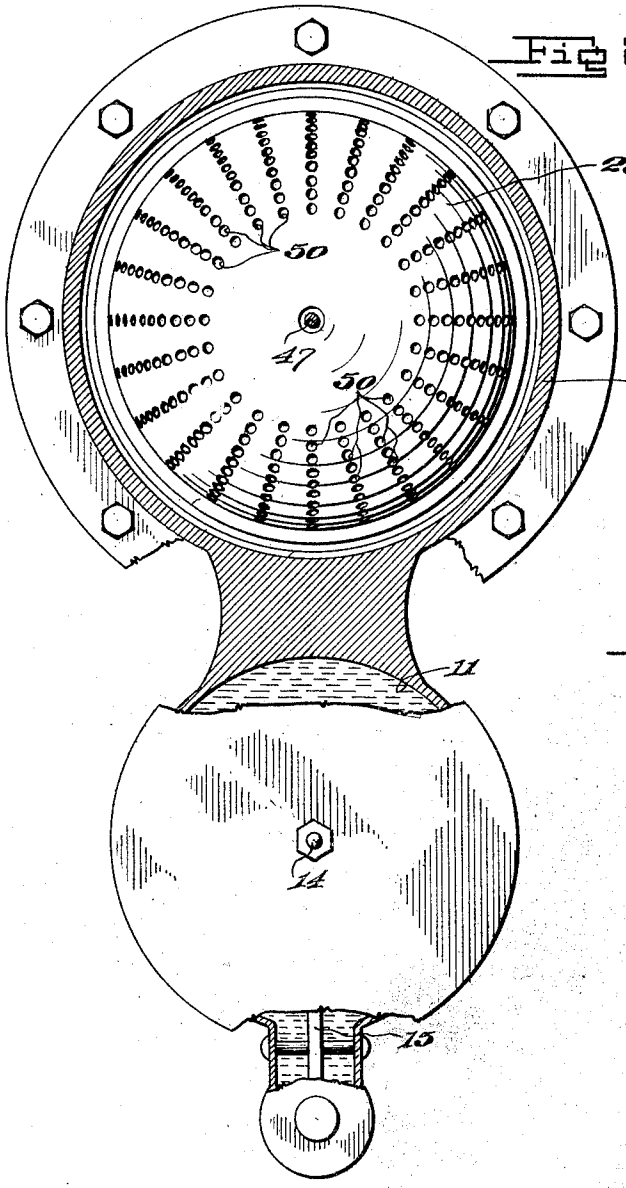
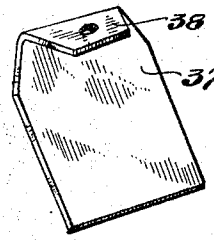


Fig. 5.



Fig. 6.



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Fig. 3.

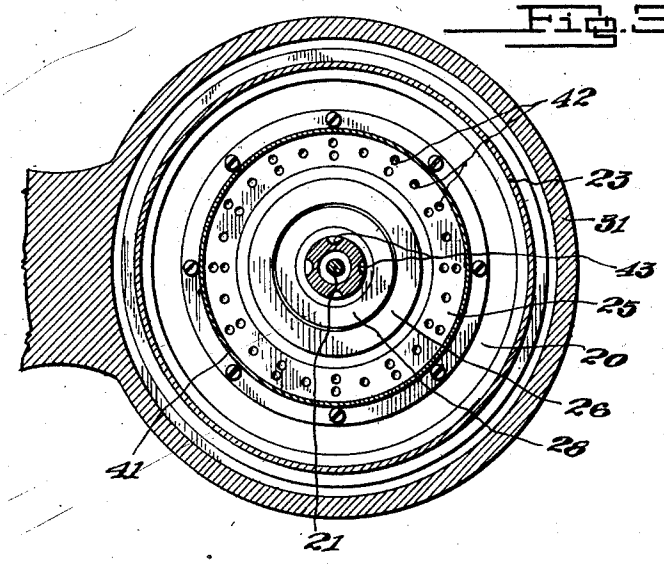
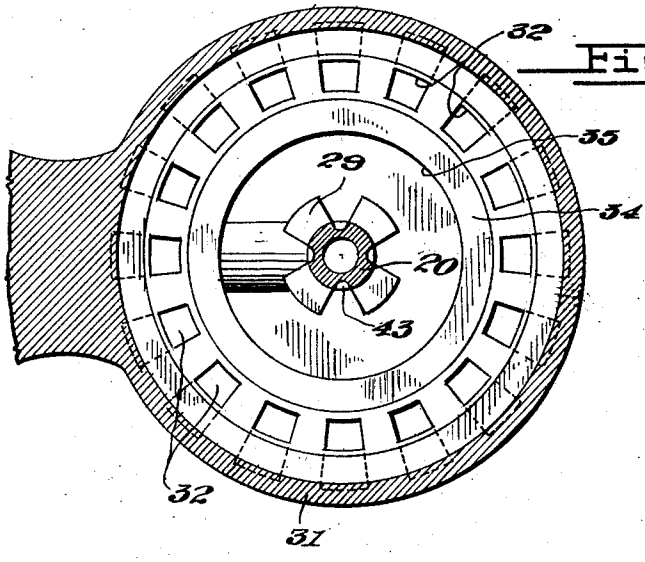


Fig. 4.



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Patented Aug. 25, 1925. 1,551,239

UNITED STATES PATENT OFFICE.

CHARLES J. DESCH, OF HARRISBURG, PENNSYLVANIA.

CARBURETOR.

Application filed October 30, 1919. Serial No. 334,511.

To all whom it may concern:

Be it known that I, CHARLES J. DESCH, a citizen of the United States, residing at Harrisburg, in the county of Dauphin and State of Pennsylvania, have invented certain new and useful Improvements in Carburetors, of which the following is a specification.

This invention relates to a carburetor as used in connection with internal combustion engines, designed for atomizing fuel of lower grades or greater specific gravity than gasoline.

The primary object of the invention is the provision of a carburetor embodying a novel type of mixing chamber, capable of revolving under engine suction to thoroughly atomize heavy fuels.

A further object of the invention is the provision of a carburetor having a mixing chamber of the above described character, and including certain parts which will automatically respond to increase of engine speed, to produce a proportionately greater amount of explosive mixture.

Other objects of the invention will appear in the following detailed description taken in connection with the accompanying drawing, forming a part of this specification, and in which drawings:

Figure 1 is a longitudinal section through the improved carburetor.

Figure 2 is a fragmentary horizontal section through the carburetor, illustrating the perforated semi-sphere of the primary mixing chamber in top plan.

Figure 3 is a detail horizontal section through the primary mixing chamber taken on the line 3—3 of Figure 1.

Figure 4 is a detail horizontal section taken on the line 4—4 of Figure 1.

Figure 5 is a detail perspective view of a part of the carburetor structure, and

Figure 6 is a detail perspective view of one of the fan blades of the carburetor structure.

Referring more particularly to the drawings, wherein like characters indicate like and corresponding parts throughout the several views, the combustible fuel such as kerosene or the like enters the carburetor structure through the entrance tube 10 through a strainer 10^a prior to its entrance into the float chamber 11 of the carburetor. The entrance of the fuel into the float chamber 11 is controlled by the needle valve 12, which is in turn operated by means of a float 13, to control the flow of the fuel into the float chamber 11, as desired. This float 12 is carried by a suitable rod 14, in such manner that it is permitted to move with the rise and fall of the fuel level within the chamber 11 and has an arm 15 attached thereto which is pivotally connected intermediate its ends and is provided with a flat end portion 16 which engages against the upper surface of a collar 17 carried by the needle valve 12, so that when the float falls in the chamber 11 it will rock the lever 15 to raise the needle valve to permit the flow of fuel into the chamber. However, as the float rises, the lever 15 will move downwardly relieving the needle valve 12 from the upward pressure and the needle valve will be seated, to cut off the entrance of fuel into the chamber 11, by means of the spring 18.

The fuel, passes from the float chamber 11, through the passageway 19, into the jet nozzle 20, in which a needle valve 21 is mounted; this needle valve being supported to permit its adjustment relative to a removable nozzle plug 22, for regulating the flow of fuel through said removable plug 22. The fuel is discharged from the nozzle 20 into the primary or first mixing chamber of the carburetor which is formed by the substantially semi-spherical shell 23, the lower edge of which is detachably connected, preferably by means of screw threads to the upstanding flange 24 upon the disc 25. This disc 25 is provided with an upstanding centrally disposed bearing hub 26, provided with a ball race in its inner face, in which bearing balls 27 engage. The bearing balls 27 also engage in a ball race formed in the outer surface of the collar 28. This collar 28 is supported upon lateral projections 29 which are formed upon the nozzle structure 20, as clearly shown in Figures 1 and 4 of the drawings. The outer portion of the disc 25 near its periphery inclines upwardly as shown at 30 and is adapted to engage against the upwardly inclining portion 30^a of the casing 31 of the carburetor structure, normally closing the air ports 32, which air ports communicate with the atmosphere exteriorly of the casing 31 of the carburetor structure. The casing 31 is provided with an annular air passage 33, formed threin beneath the partition 34, upon which the disc 25 normally rests, and this partition 34 is

provided with a central opening 35, surrounding the collar 28, through which the attaching screws or bolts 36 of the fan blades 37 extend. The fan or agitating blades 37 have their upper ends bent at right angles as shown at 38, and the attaching screws or bolts 36 extend therethrough and into the hub 26 of the disc 25, for connecting the agitator or fan blades 37 to the disc 25, so that air entering the air chamber 33 through the entrance opening 39 will impinge against the blades 37 and rotate the disc 25, and shell 23. The disc 25 is provided with an annular upstanding collar 40, inwardly of the upstanding flange 24, to receive a guide shell 41, extending upwardly in the chamber formed by the shell 23, and opening out at its upper end in an outwardly flaring restricted outlet 41^a, as clearly shown in Figure 1 of the drawings. The disc 25 is provided with a plurality of perforations 42, formed therein, inwardly of the collar 40, and these openings establish communication between the space within the guiding shell 41 and the air chamber 33, through the opening 35, permitting air to pass upwardly into the space within the shell 41 and outwardly through the restricted upper end thereof into the primary mixing chamber formed within the shell 23. The nozzle stem 20 is also provided with a plurality of longitudinally extending grooves 43, which permit air to pass upwardly from the air chamber 33 into the chamber formed within the guiding shell 41.

A spring 44 disposed about the nozzle tube 20 rests upon the top of the collar 28, and is normally held under variable compression by a disc or ring 45, adjustably threaded upon the exterior threaded upper end of the nozzle 20. Thus, the collar 28 is normally held upon the supporting projection 29. Likewise, the disc 25 is held upon the partition 34, and normally closing the air ports 32.

A bail 46 is connected to the ring 45 and is connected by means of a bolt 47 to the top 48 of the removable portion 49 of the housing or casing of the carburetor.

In operation, the fuel passes, or is drawn through the nozzle 20, and out through the plug 22. The air under engine suction is drawn upwardly within the guide shell 41, through the perforations 42, and nozzle grooves 43. Due to the restricted outlet 41^a, the air attains considerable velocity at this point, catching up the fuel from the nozzle 20, and spraying the same within the dome-shaped shell 23. The air entering the passageway 33, will as hereinbefore explained, rotate the mixing chamber. Thus, the atomized fuel within the shell 23 will be thoroughly mixed with air to produce a homogeneous explosive mixture.

As the engine speed increases, an increasing amount of constant quality fuel is required. To this end, the mixing chamber has been slidably mounted in the carburetor casing. For low engine speed, the mixing chamber will rotate at about 10 cycles per second, and unseat said chamber for a very small distance from its beveled seat 30^a, permitting air to be drawn in through ports 32, to escape into the air chamber 33, a very small amount escaping into secondary chamber 51^b. With increasing engine speed, the entire rotary mixing chamber will slowly rise by air suction, and rushing currents. The speed of the mixing chamber will increase in rotation for atomizing a greater quantity of fuel from nozzle 20. Attention is directed to the upper and outer tapering sides 53 in the casing 31, adjacent the extension 54, as provided by the bevelled or upwardly inclined surface 30^a. As the mixing chamber rises with the increase engine speed, the ports 32 are uncovered to greatly increase the air supply in the carburetor. This air is fed into the primary mixing chamber in certain amount; the remainder being directed in increasing quantity into the secondary chamber 51^b, through the space circumferentially about the primary rotary mixing chamber and over the tapered surface 53, to be further mixed with the atomized fuel coming from the rotary mixing chamber.

The resulting mixture is drawn from the primary mixing chamber into the secondary chamber 51^b, through the perforations 50, formed in the shell 23, and which chamber is formed in the portion of the housing 31 of the carburetor about the shell 23 as clearly shown in Figure 1 of the drawings. The atomized fuel passes from this secondary chamber 51^b through the outlet 52 of the carburetor structure into the intake manifold of an engine with which the carburetor is associated. It is preferred to provide the conventional throttle valve 50^a in the outlet passage 52, in order to throttle the mixture passing from the carburetor.

Various changes in the shape, size, and arrangement of parts may be made to the form of invention herein shown and described, without departing from the spirit of the invention or the scope of the claims.

I claim:

1. A carburetor comprising a casing having a chamber therein; a mixing chamber movably disposed within the chamber of said casing, including a base portion rotatably mounted on the casing, an outer perforate shell upwardly mounted upon the base portion, and an inner hollow frustro-conical member positioned in said shell and having annular walls of imperforate material and open at its upper end and communicating with the interior of said shell and cooperating therewith in providing a mix-

ing chamber between said shell and inner member, and air and fuel inlet means for said mixing chamber opening thereinto through the passageway of said imperforate member.

2. A carburetor, comprising in combination a casing, a nozzle extending upwardly into said casing and disposed axially thereof, a mixing chamber rotatably and reciprocably mounted in said casing about said nozzle and having an outer shell of perforated material and an inner wall in spaced relation to the shell and nozzle and formed of imperforate material, means for feeding fuel into said mixing chamber and air inlet means controlled by reciprocatory movement of the mixing chamber.

3. In a carburetor, the combination with a casing having an air chamber therein opening out to the atmosphere and a mixing chamber, of a nozzle extending upwardly into said casing, a disc rotatably supported by said nozzle, a substantially semi-spherical shell attached to said disc and co-acting therewith to form a chamber, said shell provided with perforations to permit the passage of fuel therefrom into the mixing chamber within the casing, said disc provided with a plurality of perforations to permit the entrance of air from the air chamber into the shell chamber, and an annular baffle forming wall positioned within said shell in spaced relation to the shell and nozzle and formed of imperforate material.

CHARLES JOSEPH DESCH.