L. L. CUTLER.

CARBURETER.

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989,697.

Patented Apr. 18, 1911.

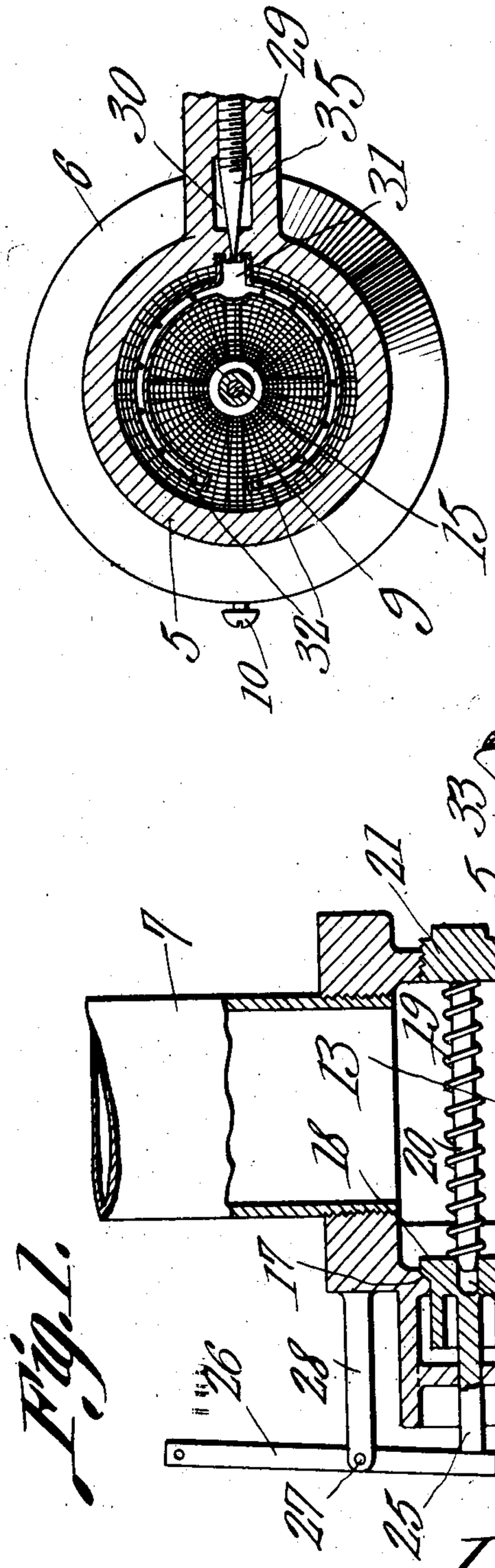

Fig. 2.

Fig. 1.

Witnesses

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UNITED STATES PATENT OFFICE.

LORIN L. CUTLER, OF DANVILLE, ILLINOIS, ASSIGNOR OF ONE-SIXTH TO THOMAS S. CUTLER, ONE-SIXTH TO SAMUEL H. CUTLER, AND ONE-SIXTH TO LORIN CUTLER, ALL OF DANVILLE, ILLINOIS.

CARBURETER.

989,697. Specification of Letters Patent. Patented Apr. 18, 1911.

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To all whom it may concern:

Be it known that I, LORIN L. CUTLER, a citizen of the United States, residing at Danville, in the county of Vermilion and State of Illinois, have invented a new and useful Carbureter, of which the following is a specification.

This invention relates to carbureters employed in connection with internal combustion engines for forming the combustible charge; and it is the object of the invention to provide a carbureter of this kind which is so constructed as to prevent flooding of the engine cylinder with the gasolene or other hydrocarbon.

A further object of the invention is to provide a carbureter in which a thorough mixture of air and hydrocarbon vapor, in proper proportions, is effected, and in which the proportion of air and vapor can be readily varied to suit the conditions under which the engine is running.

With these objects in view, the invention consists in a novel construction and arrangement of parts to be hereinafter described and claimed, reference being had to the accompanying drawing forming a part of this specification, in which drawing,

Figure 1 is a central vertical section of the carbureter which is the subject of the present invention. Fig. 2 is a horizontal section on the line 2—2 of Fig. 1.

As shown in the drawing, the casing 5 of the carbureter is substantially cylindrical in form, with one of its ends made slightly flared as indicated at 6, this being the inlet end. To the opposite end of the casing is connected a pipe 7 which leads to the intake manifold of the engine. Into the inlet end of the carbureter casing is screwed, or otherwise secured, a disk 8 carrying a series of screens 9, these screens being in the form of concentrically arranged cones extending into the carbureter casing and having parallel spaced walls, their apices pointing in the direction of the outlet 7. The disk has openings to permit the passage of air therethrough into the carbureter casing, and it is locked in place by means of a set screw 10.

Between the screens 9 and the outlet 7 the carbureter casing contains a diaphragm 11 having a central opening 12 in which seats a valve 13, said valve opening upwardly in the direction of the outlet, and being provided with guide wings 14. From the bottom of the valve depends a stem 15, which is guided in a central opening made in a bridge 16 extending across the interior of the carbureter casing. An air inlet to the carbureter casing is located between the valve 13 and the outlet 7, the casing having a side opening 17 in which seats a valve 18 which is normally held closed by means of a spring 19. This spring is coiled around a stem 20 carried by a plug 21 which screws into an opening in the carbureter casing, said opening being located diametrically opposite the opening 17. In the back of the valve 18 is an opening 22 to receive the end of the stem 20, the depth of said opening being such that the valve is permitted to open. The spring 19 is interposed between the back of the valve and the plug 21, and therefore serves to normally hold the valve seated, the valve opening against the tension of the spring. This tension may be adjusted by means of the plug 21 upon screwing the same farther into or out of the opening in the carbureter casing.

The opening 17, on the outside of the carbureter casing, is surrounded by a tubular extension 23 of said casing, across the interior of which a bridge 24 extends, said bridge having a central opening through which passes a stem 25 extending from the valve 18, whereby the latter is guided in its movement toward and from its seat. The outer end of the stem 25 projects a sufficient distance from the tubular extension so that it may be engaged by one end of a lever 26 fulcrumed intermediate its ends, as indicated at 27, to a bracket 28 carried by the carbureter casing. This lever is provided for the purpose of opening the valve 18 manually whenever necessary.

The inlet of the gasolene or other hydrocarbon is located between the valve 13 and the screens 9. The carbureter casing is formed at this point, on the outside, with a boss 29 having a passage 30 which opens through the casing wall into a pipe 31 located in the casing. The pipe has two substantially semi-circular branches 32 encircling the stem 15, and disposed horizontally. In the bottom of the branch pipes 32 is a ring of outlet apertures through which the gasolene is discharged onto the screens 9, said branch pipe being located

above the screens and arranged concentric thereto. The pipe 31 is secured in any suitable manner to the carbureter casing, on the inside thereof. In the boss is a side passage 33 which opens into the passage 30, and is connected to a suitable source of supply by a pipe or other means 34. The passage of gasolene into the pipe 30 is controlled by a needle valve 35 carried by a valve bonnet 36 which screws into the boss 29, and is provided with a suitable stuffing box 37, and a gland 38. The stem of the needle valve is provided with a suitable operating handle 39.

In operation, the needle valve 35 being open, gasolene passes into the pipe 30, and flows into the branches 32 thereof, from which it is discharged onto the top screen 9. The gasolene runs down the screen and spreads over the same, and any surplus passes through the same to the next screen which is spaced a little distance below, and so on to the lowest screen. When the engine makes a suction stroke, air is drawn through the carbureter casing, the air entering the same through the openings in the disk 8, and passing through the screens. The valve 13 also opens on the suction stroke of the engine. The fine particles of gasolene adhering to the screens are taken up by the air passing therethrough, and the gasolene is thus thoroughly vaporized. The vapor passes through the opening 12 to the outlet 7, and is carried into the engine cylinder. Surplus gasolene, if any, escapes from the screens to the atmosphere, and flooding of the cylinder is thus effectually prevented.

The valve 18 acts as a diluting valve to vary the proportion of air and gasolene vapor. When the engine is running normal, the valve remains closed. When the speed of the engine increases sufficiently to produce a suction strong enough to open the valve 18, an additional supply of air enters the carbureter casing, and mixes with the vapor, thus varying the proportion of the air and the combustible vapor, the volume of the explosive mixture however remaining constant. The spring 19 will be adjusted so as to permit opening of the valve 18 when a certain speed is exceeded, and the valve may also be opened manually by means of the lever 26.

What is claimed is:

A carbureter comprising a casing having an air inlet at its lower end, and a vapor outlet at its upper end, a disk removably mounted in the air inlet and having openings through it, a series of concentric conical screens having their bases supported upon the disk over its openings and having their walls parallel with and spaced from each other, and a liquid fuel supply pipe leading through the side of the casing and having substantially semi-circular branches pierced with a ring of apertures standing above the wall of the uppermost screen.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

LORIN L. CUTLER.

Witnesses:
L. D. GASS,
J. L. TUICHER.