G. L. TER WEER.
CARBURETER.
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1,006,033. Patented Oct. 17, 1911.

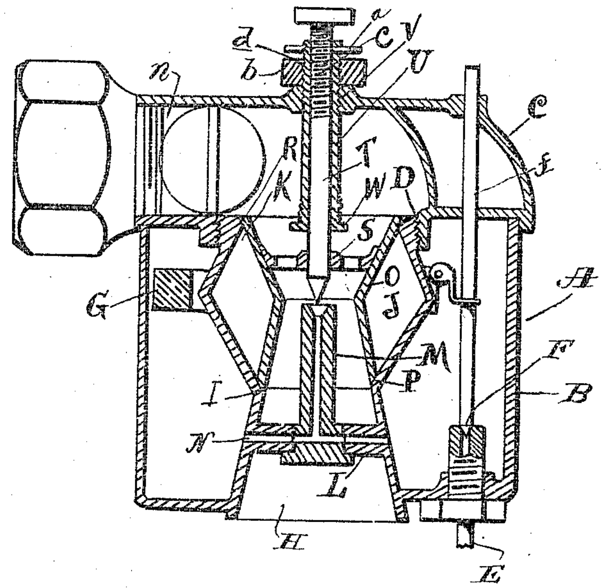

Fig. 1

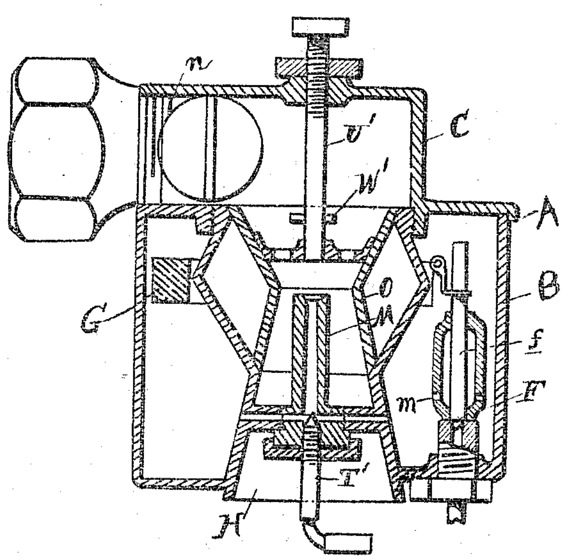

Fig. 2.

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UNITED STATES PATENT OFFICE.

GARHARDUS L. TER WEER, OF DETROIT, MICHIGAN, ASSIGNOR OF ONE-THIRD TO SYBREN R. TYMSTRA AND JOHANNES H. FIGEE, OF DETROIT, MICHIGAN.

CARBURETER.

1,006,033. Specification of Letters Patent. Patented Oct. 17, 1911.

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To all whom it may concern:

Be it known that I, GARHARDUS L. TER WEER, a subject of the Queen of the Netherlands, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Carbureters, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to carbureters, and consists in certain features of construction, and in the arrangement and combination of parts as will be more fully hereinafter described.

In the drawings,—Figure 1 is a vertical central section through the carbureter; and Fig. 2 is a similar view, illustrating a modification.

In the drawings thus briefly described, A represents the casing of the carbureter, preferably formed in two parts,—the reservoir B and top C,—the latter having a screw-threaded engagement with the reservoir B, as at D. The reservoir is provided with a supply connection E, controlled by a needle valve F, this valve being governed in the usual manner by a float G.

In order to indicate the position occupied by the valve F, I extend the stem thereof outwardly through the top of the casing C, its engagement with the casing forming a bearing for guiding the stem during the raising or lowering of the valve.

H is the air conduit, formed centrally of the reservoir B, having a restricted portion I, and terminating beyond said restricted portion in an elongated chamber J, which in turn terminates in a restricted outlet K.

L is a spider, M is the oil discharge nozzle secured centrally thereof, and N are conduits establishing communication between the reservoir and the discharge nozzle.

O is a double tapered air valve normally resting upon seats P and R formed on the air conduit.

S is a spider, fixedly secured to the upper portion of the valve O, and T is a needle valve controlling the outlet of the discharge nozzle and having a free sliding engagement with the spider S, thereby forming means for guiding the vertical movement of the valve O.

U is a member telescopically engaging the needle valve T, and having a screw-threaded engagement at its outer end with the top C, as at V. The lower end W of this member U projects downward into the path of the spider S, and limits the upward movement of said valve. Lugs *a* are provided at the upper end of the member U, which permit said member to be adjusted to vary the distance between the lower end W thereof and the spider S, thereby varying the limit of opening of the valve O.

b is a lock nut for maintaining the member U in its various positions of adjustment. The needle valve T is adjustable independently of the member U, and to this end has an externally screw-threaded portion *c* engaging corresponding internal threads *d* on the member U.

In the modification shown in Fig. 2, the discharge conduit is provided with an adjustable needle valve T′ at its lower end which controls the flow of oil to the discharge conduit. The member U′ is therefore made solid, and has its lower end slidably engaging the spider S, the upward movement of the valve being limited by means of a collar or pin W′ upon the member U′. The pin U′ also has a screw-threaded engagement with the top of the casing, and is held in its adjusted positions in the same manner as the member U shown in Fig. 1. The stem *f* in this construction, however, does not extend outward through the casing, but an elongated bearing *l* is formed for guiding the movement of the stem. This bearing is so constructed as to form an annular chamber between it and the stem *f*, and a plurality of ports *m* are formed through the sides of the bearing, thereby establishing communication between the inlet port and the reservoir.

In the operation of the engine, the carbureter is adjusted so that during the normal operation of the engine the air coming through the inlet conduit H is sufficient to produce the desired mixture. However, if the operation of the engine increases, a greater suction is produced in the carbureter, which will lift the valve O from its seat, permitting air to pass through the expanded chamber J into the discharge conduit *n*. The raising of this valve also decreases the suction on the discharge nozzle, as the restricted portion of the valve O will be raised above the outlet of the discharge nozzle, which will leave a larger free area around the end of said discharge nozzle. As soon as the engine resumes its normal speed the valve seats by gravity. As long as the suction in the carbureter is sufficient to raise the valve from its seat, it floats between its seats and the stop for limiting its upward movement. Thus, it will be seen that the engine is automatically controlled through the carbureter by means of the valve O, and also that the construction is such that it can be readily applied to engines of widely varying horsepower. It will also be observed that no springs are employed in the carbureter.

What I claim as my invention is,—

1. In a carbureter, a conduit adapted to connect with an engine, a vertically disposed air conduit open at its lower end and communicating at its upper end with said first mentioned conduit, said air conduit being provided with a valve seat at the top thereof and intermediate the ends thereof and directly below said valve seat with an enlarged portion therein, an oil feed nozzle positioned centrally of the enlarged portion of the air conduit, and an open ended double cone valve positioned in the air conduit and surrounding the oil feed nozzle, the upper end of said valve being normally seated on the valve seat at the top of the air conduit and the lower end of said double cone valve extending below the point of greatest width of the enlarged portion of the air conduit.

2. In a carbureter, an air inlet provided with an enlarged portion therein, an oil feed nozzle positioned centrally of the enlarged portion of the air inlet conduit, a double cone valve positioned in the air conduit and surrounding the oil feed nozzle, the ends of said valve being normally seated in the air conduit, adjacent the ends of the enlarged portion thereof, and means for limiting the movement of the valve.

3. In a carbureter, an air inlet provided with an enlarged portion therein, an oil feed nozzle positioned centrally of the enlarged portion of the air inlet conduit, a double cone valve positioned in the air conduit and surrounding the oil feed nozzle, the ends of said valve being normally seated in the air conduit adjacent the ends of the enlarged portion thereof.

4. In a carbureter, an air inlet provided with an enlarged portion therein, an oil feed nozzle positioned centrally of the enlarged portion of the air inlet conduit a double cone valve positioned in the air conduit and surrounding the oil feed nozzle, the ends of said valve being seated in the air conduit adjacent the ends of the enlarged portion thereof, means for limiting the movement of said valve, and means for controlling the flow of fluid from said fluid nozzle.

5. In a carbureter, an air inlet conduit provided with an enlarged portion therein, an oil feed nozzle positioned centrally of the enlarged portion of the air inlet conduit, a double cone valve positioned in the air conduit and surrounding the oil feed nozzle, the ends of said valve being normally seated in the air conduit adjacent the ends of the enlarged portion thereof, a needle valve controlling the outlet from said oil feed nozzle, and means for varying the limit of opening of said cone valve and for simultaneously adjusting said needle valve while permitting independent adjustment of the latter.

6. A carbureter comprising a casing forming a float chamber, a float in said chamber, means operated by the float for admitting a combustible fluid to the chamber, an upwardly tapering tubular member in the axis of the float chamber extending upward therethrough and open at its ends, a cap detachably secured upon the float chamber and formed with a mixing chamber into which the upper end of the tubular member opens and also formed with an outlet pasage leading from the mixing chamber, a Venturi tube in the upper end of the tubular member, a bridge extending across the tubular member formed with a passage in the float chamber, and a nozzle member secured within the bridge with its opposite end extending upward into the Venturi tube.

7. A carbureter comprising a cup-shaped casing forming a float chamber, a float in said chamber, means operated by the float for admitting combustible fluid to the float chamber, an upwardly tapering tubular member formed integral with the casing at its axis and opening through the bottom thereof and extending upward through the casing and open at its upper end, a cap to close the upper end of the float chamber and formed with a mixing chamber into which the upper open end of the tubular member opens, said cap being also formed with a laterally extending discharge passage opening from the mixing chamber, a valve in said discharge passage, a Venturi tube movably supported within the upper end of the tubular member and forming an auxiliary air passage between it and the wall of said member, a flange on the Venturi tube to engage the tubular member and close the auxiliary air passage, and a discharge nozzle in the axis of the tubular member communicating with the float chamber and extending upward into the Venturi tube.

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

GARHARDUS L. TER WEER.

Witnesses:

SYBREN R. TYMSTRA,

J. H. FIGEE.