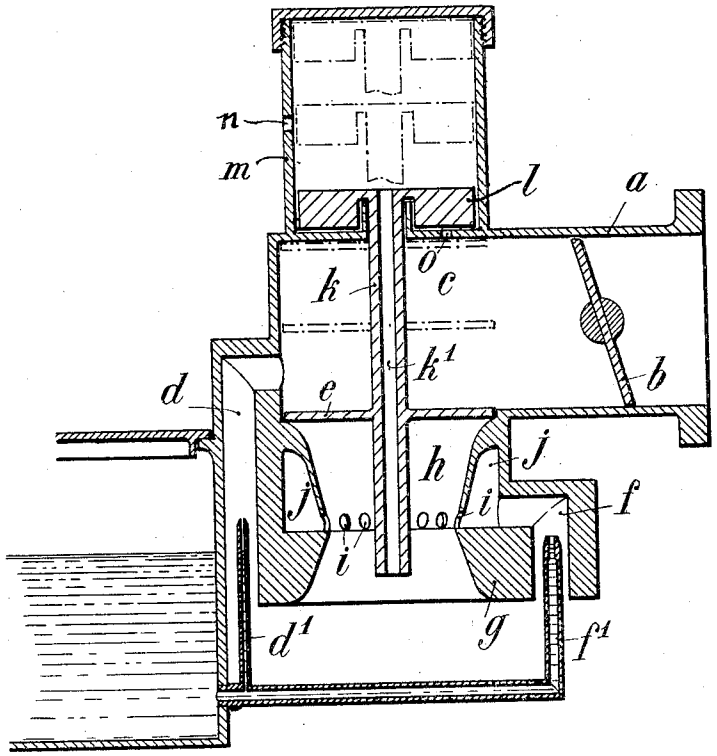
Dec. 9, 1924. 1,519,081

R. COZETTE

CARBURETOR

Filed April 12, 1920



Inventor
R. Cozette
By H.R. Kerslake
Atty.

Patented Dec. 9, 1924. 1,519,081

UNITED STATES PATENT OFFICE.

RENÉ COZETTE, OF COURBEVOIE, FRANCE.

CARBURETOR.

Application filed April 12, 1920. Serial No. 373,221.

To all whom it may concern:

Be it known that I, RENÉ COZETTE, a citizen of the French Republic, residing at No. 43 Rue Louis Blanc, Courbevoie, Seine, France, have invented certain new and useful Improvements in Carburetors, of which the following is a specification.

This invention has for its object to provide an improved carburetor designed for use with internal combustion engines in order to produce an explosive mixture in which the proportions of fuel and air are correctly determined for all speeds of the engine.

The improved carburetor comprises two small carburetors of which one, hereinafter described as the low speed carburetor, acts continuously, whilst the other, hereinafter designated as the high-speed carburetor, acts to supply fuel to the engine when the speed of the engine increases.

The invention consists therefore in a peculiar construction of the high-speed carburetor and in the regulation of its delivery by means of a valve that is adapted to be operated by the depression occurring in the mixing chamber of the carburetor.

A constructional form of the improved apparatus is illustrated by way of example in the accompanying drawing wherein is illustrated a diagrammatic vertical section of a carburetor in accordance with the invention.

As shown, the improved carburetor is provided as usual with a pipe a leading to the inlet valve of the engine and in which there is arranged a regulating throttle b. An inlet chamber c formed as a prolongation of this pipe, is in constant communication with a low speed carburetor d provided with a nozzle d^1. This chamber is closed at its lower end by a valve e which on being opened establishes communication between the said chamber and the high speed carburetor provided at the nozzle f^1 and the Venturi tube g.

The seat of this valve is constituted by the upper part of the Venturi tube h which is open at its base to the atmosphere, and communicates through orifices i with a chamber j for the flow of the mixture furnished by the high speed carburetor whose nozzle f^1 is arranged in the air intake passage f. The guide rod k of the valve passes through the top of the chamber c and carries a piston l working in a cylinder m which latter communicates through the orifice n with the atmosphere, and through the orifice o with the inlet chamber. This guide rod k extends also under the valve e and is preferably tube-form throughout its length and constitutes a duct k^1 which establishes communication between the Venturi tube and the space situated above the upper space of the piston l in such a manner as to subject the latter under certain conditions to the effects of the depression existing in the carburetor.

It is to be noted that the lower edge of the rod k terminates in a plane beneath the most restricted portion of the throat of the Venturi tube. The object of the arrangement is to vary the action on the valve and to brake the valve at low and medium speeds and to raise the valve when the engine is revolving at or about its normal speed.

The improved carburetor operates as follows:—

When the engine is operating at low speed, the valve e being on its seat, only the low speed carburetor d will be in operation.

At medium speeds, since the depression increases in the chamber c, the valve will be acted upon by two forces, namely an upward force which is a result of the depression existing in the chamber c and of the area of the valve, and a downward force which is a result of the weight of the valve and of the action of the differential pressure upon the surface of the piston l.

The result is that the resistance to the opening of the valve is determined by the choice of the diameter of the piston and of the weight of the valve. It is to be noted on this point that this resistance must be greater in engines running a high compression than in engines having only a low compression, but that the lifting force of the valve must always be greater than the braking force, that is for instance if P be the weight of the valve; D the depression existing in the chamber c; S the area of the valve; and S^1 the area of the piston, there must always be

$$P \div S^1 \times D < S \times D$$

Owing to the depression in the chamber c the valve e will therefore rise a certain extent so as to allow the air sucked in through the venturi to enter said chamber, said air

serving to compensate for the increase in the fuel supplied by the nozzle d^1 as a result of the increase in the depression.

If this depression still increases, the valve will lift a corresponding additional amount, and since the velocity of the air passing through the venturi increases, the nozzle f^1 will begin to deliver in such a manner as to compensate for the insufficient delivery of the nozzle d^1. Nevertheless the lift of the valve will be slightly braked by the depression in the chamber c acting through the orifice o, and when, the valve having continued its movement, the piston l will have reached and closed the orifice n, the depression existing in the Venturi tube will act through the duct k^1 upon the upper surface of the piston and the differential pressure will assist the rise of the valve.

On a further increase in the speed, the orifice n will be again uncovered, but this time it is uncovered by the under surface of the piston, and the admitted air will destroy the depression which under this surface is exerting a braking of the lift of the valve. The differential pressure will then raise the valve quickly to the end of its travel.

The reverse operation will take place of course when the engine drops from its normal speed down to low speed.

It will be understood that this valve does not require the use of any returning spring, and that it moves out of the way automatically as soon as the engine reaches its normal speed, so that it does not create any obstacle in the piping.

What I claim is:—

In a device of the character described, in combination, a throttle controlled inlet pipe forming a main chamber; a medium and high speed carburetor having a Venturi tube and communicating with said chamber; a low speed carburetor communicating with the inner end of the chamber, a substantially closed cylinder having a small opening for establishing communication with the top of the chamber and also provided with a small opening in its lateral wall near its base for establishing communication with the atmosphere, a piston head operating in the cylinder and coacting with the openings therein, a hollow rod carried by the piston head and depending therefrom and slidable through the casing and having its lower edge normally arranged in a plane beneath the most restricted portion of the throat of the venturi, and a valve carried by the rod controlling the communication between said chamber and the high speed carburetor substantially as and for the purposes set forth.

In testimony whereof I affix my signature.

RENÉ COZETTE.