March 28, 1933. R. OPPENHEIM 1,902,887

CARBURETOR

Filed Dec. 30, 1930

Fig. 1.

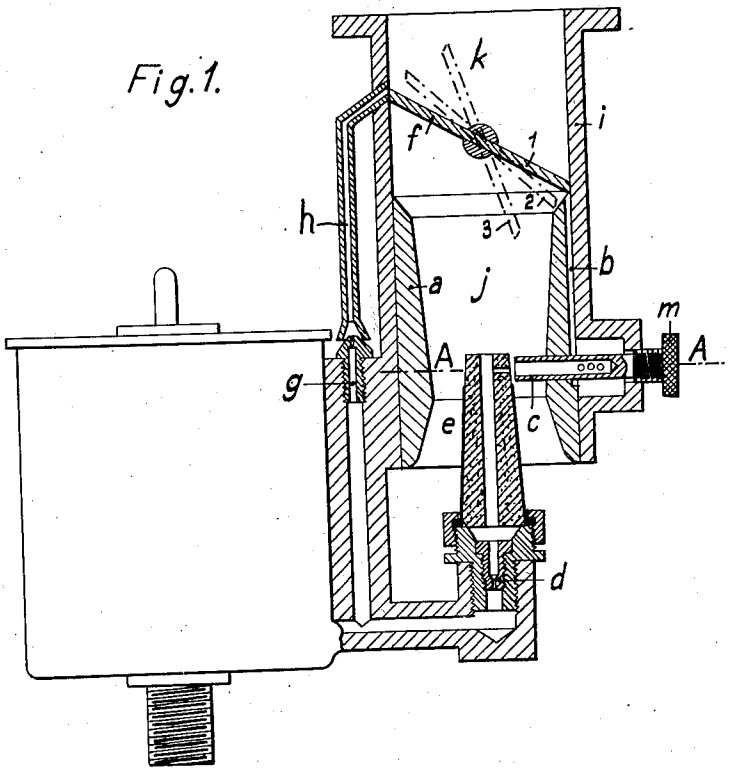


Fig. 3.

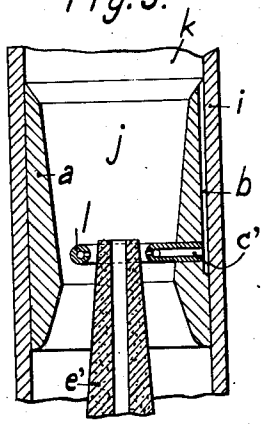


Fig. 4.

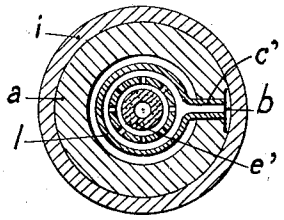


Fig. 5.

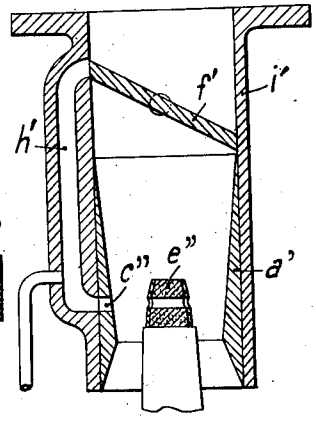
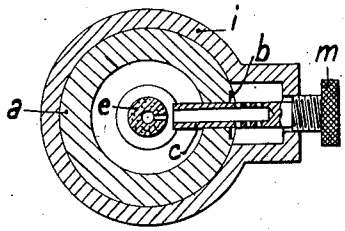


Fig. 2.



RENÉ OPPENHEIM
INVENTOR
BY
ATTORNEY

Patented Mar. 28, 1933

1,902,887

UNITED STATES PATENT OFFICE

RENÉ OPPENHEIM, OF GENNEVILLIERS, FRANCE, ASSIGNOR TO SOCIÉTÉ ANONYME LE CARBONE, OF GENNEVILLIERS, FRANCE

CARBURETOR

Application filed December 30, 1930, Serial No. 505,541, and in France January 7, 1930.

It is known that in carburetors when passing from slackened running to normal running, a delay arises in the placing into action of the principal nozzle, which is commonly expressed by saying that there exists a "hole" in the carburation.

The present invention has as an object to remedy this defect and to ensure the continuity in the feed even at the instant when passing from the slackened operation to the normal operation.

The invention is characterized substantially by the application of a canal which emerges on the one hand into the diffuser or venturi in the neighbourhood of the nozzle, and on the other hand at the top of the diffuser at such a point that this canal may be exposed by the butterfly or a similar device, at the moment when passing from slackened operation to normal operation. This canal permits of a direct induction of petrol which arises shortly before the petrol is fed in a usual manner through the principal nozzle, this admission of petrol avoiding the "hole" or leg in the carburation.

The invention is characterized further by the fact that the upper part of the venturi is out according to a concentric circular surface at the edge of the butterfly, in such a manner that, at the moment when the special canal defined above becomes exposed, the edge of the butterfly which is removed from it remains in contact with the said surface, and that there does not arise any aperture between the butterfly and the diffuser on this side, this aperture only being produced when the butterfly has turned at a sufficient angle.

The invention is applicable to all carburetors provided with a regulating butterfly or an equivalent device, whatever the arrangement of the nozzle may be, but it is particularly advantageous in carburetors supplied with a carbon vaporizer such as those forming the object of applicant's prior patents, and notably specification U. S. A. Serial No. 316,061, October 30, 1928.

The invention is represented, but merely by way of example, in the accompanying drawing, in which:—

Figure 1 is a vertical section showing a carburetor provided with the new improvements of the present invention.

Figure 2 is a horizontal section of same made on the line A—A, Figure 1.

Figure 3 is a fragmentary section similar to Figure 1, showing a modification of the nozzle, while omitting the exterior channel and the butterfly valve for the sake of clarity.

Figure 4 is a horizontal cross section of the parts of the apparatus shown in Figure 3.

Figure 5 is a vertical section of another modification.

Throughout the views, the same reference indicia refer to the same or like parts.

As may be seen on the drawing, the ordinary diffuser or venturi is replaced by a diffuser *a*, penetrated by a channel *b*. The lower end of this channel communicates with a small tube *c* which is present before the nozzle. In the example given in the drawing, it has been presumed that this nozzle has, besides the member *d* provided with the proportioned hole, a covering *e* in the form of a porous body, such as carbon, and preferably activated carbon, but of course, the nozzle may be arranged in any manner.

The upper part of the venturi is shaped according to a circular surface the axis of which is the same as that of the butterfly *f* and the generator of which is the edge of this butterfly.

The carburetor of Figure 1 is provided with a slow-speed nozzle *g* the conduit *h* of which merges in the usual manner opposite the edge of the butterfly.

The functioning is as follows:

In the position represented, indicated by 1 in Figure 1, the butterfly *f* is closed; it does not, however, completely shut off the end of the canal *h*. The induction of the motor may therefore exert itself on the slow nozzle.

If the opening of the butterfly be commenced, the conduit *h* is completely exposed: the slow nozzle thus feeds more actively than usual.

As soon as the edge of the butterfly moves away from the wall of the carburetor body *i*, it uncovers the end of the conduit *b*, position 2. Depression immediately supervenes

in this conduit and the petrol which saturates the porous body *e* is drawn through this tube *c* and the conduit *b*.

The butterfly continuing to open, position 3, the depression is transmitted into the space *j* and the normal suction is exerted on the nozzle *d*, *e*.

It must be noted that in position 2, the right edge of the butterfly is in contact with the edge of the venturi so that the butterfly does not place the space *j* of the venturi or diffuser into any communication with the admission conduit *k* except on the left side. This arrangement has the advantage that a strong depression exerts itself on the entrance of the conduit *b*.

It will be noticed that, for the reason just explained, whilst in this space *j*, a certain time is necessary in order that the depression may establish itself there, due to the narrow passage which forms between the edge of the butterfly and the body of the carburetor *i* at the commencement of the opening, and the volume of this space in which the vacuum must be made, on the contrary the depression acts immediately on the upper orifice of the conduit *b*. It will hence be understood that this conduit *b* intervenes exactly at the moment when the slow nozzle stops and when the principal nozzle has not yet come into action, or has done so insufficiently, that is to say that it suppresses the "hole" in the carburation.

It is not indispensable that the tube *c* should come into contact with the carbon *e*. This tube may be shortened and even abolished. The best effect, however, is obtained when it is placed sufficiently near to the nozzle and when this latter is provided with a porous body. In order to ensure a uniform suction on the porous body, the extremity of the tube *c'* may be terminated by a hollow crown *l*, Figures 3 and 4, enclosing the carbon *e'*; the induction then exerts itself equally over all the circumference of this latter.

As may readily be seen in Figs. 1 and 2, the position of the tube *c* can be easily regulated from the exterior with the aid of a milled button *m*.

Use may also be made of the slow running channel *h* existing for the transmission of the depression at the principal nozzle. For this it suffices to provide the boring of the body of the carburetor and of the diffuser. To recapitulate, when the butterfly occupies the position indicated by dotted lines at 2 in the first view, the channel *b* serves to transmit to the principal nozzle the suction existing above the butterfly valve, and consequently causes acceleration of the actions of said nozzle.

However, the slow speed nozzle may be abolished altogether, as shown in Figure 5, wherein the venturi *a'* is located within a carburetor body *i'* about a block *e''* of activated carbon which receives the fuel upon its own porosity to conduct the fuel upward and outward by capillary attraction. Here, the channel *h'*, whose upper end is covered in closed position of the butterfly *f'* as before, terminates at the lower end in a duct *c''* opposite the porous body *e''* within the venturi.

The arrangements described above are only given by way of example, all the details of execution and placing into operation, the forms, materials and dimensions, may be varied without changing the principle of the invention.

I claim:—

1. A carburetor including the combination of two nozzles, one of which is for slow speed and the other nozzle for normal speed, a porous hollow body associated with the normal speed nozzle and forming the terminus thereof, a conduit for the slow speed nozzle, an auxiliary conduit terminating at one end in the vicinity of the normal speed nozzle and a controllable valve for opening and closing the other end of said auxiliary conduit at will.

2. A carburetor including the combination of two nozzles, one of which is for slow speed and the other nozzle for normal speed, a porous hollow body consisting of activated carbon which is associated with the normal speed nozzle, a conduit for the slow speed nozzle, an auxiliary conduit terminating at one end in the vicinity of the normal speed nozzle and a controllable valve for opening and closing the other end of said auxiliary conduit at will.

3. A carburetor including the combination of nozzles and a fuel supply, one nozzle being for slow speed and the other for normal speed, a conduit for the slow speed nozzle, an adjustable auxiliary conduit terminating at one end in the vicinity of the normal speed nozzle and a controllable valve for opening and closing the other end of said auxiliary conduit at will.

4. In a carburetor provided with a butterfly controlling a main conduit therein, the combination, with a principal nozzle for normal speed and a fuel supply, of a slow speed nozzle delivering into said main conduit below said butterfly, and an auxiliary conduit opening at one end proximate to the principal nozzle and having the other end thereof opening beneath said butterfly so as to be inactive in closed position of the latter and to produce a suction at the principal nozzle by communicating said suction from above said butterfly upon opening of the butterfly.

The foregoing specification of my "improvements in carburetors" signed by me this 16th day of December, 1930.

RENÉ OPPENHEIM.