Nov. 29, 1932. R. MALIN 1,889,126

CARBURETOR

Filed July 3, 1930 2 Sheets-Sheet 1

Fig. 1.

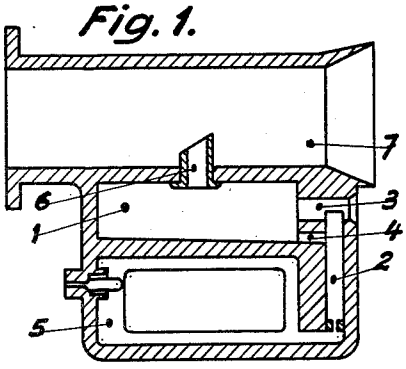


Fig. 2.

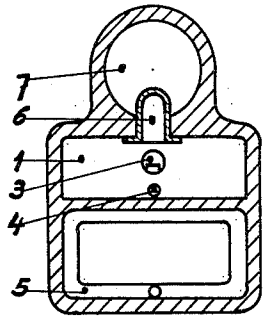
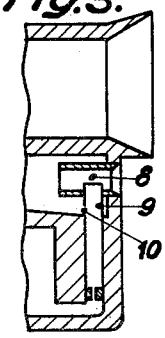


Fig. 3.



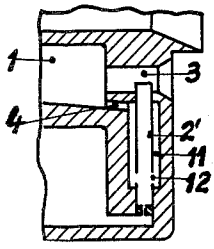


Fig. 4.

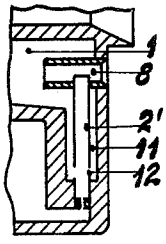


Fig. 5.

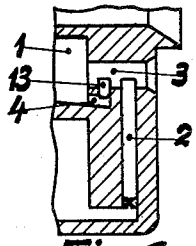


Fig. 6.

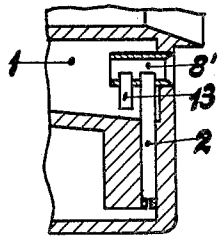


Fig. 7.

Fig. 8.

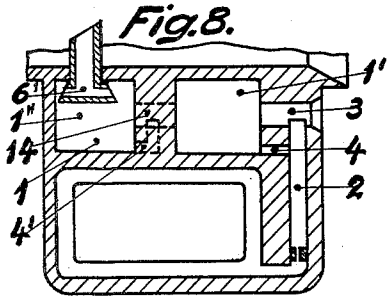


Fig. 9.

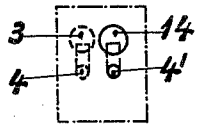


Fig. 10.

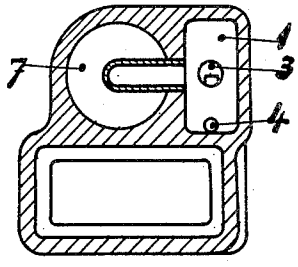


Fig. 14.

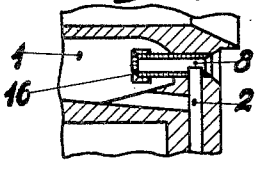


Fig. 15.

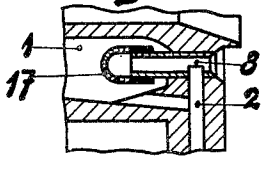
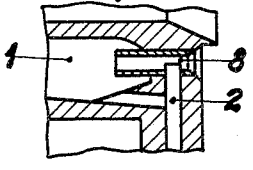


Fig. 16.



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Fig. 17.

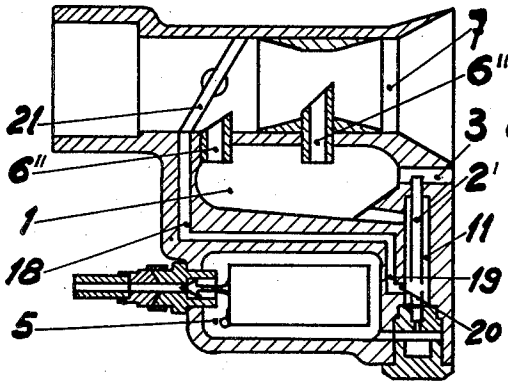


Fig. 18.

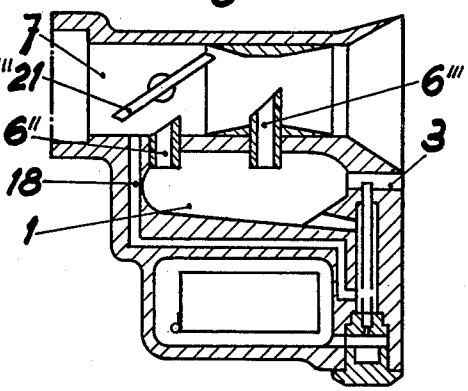


Fig. 19.

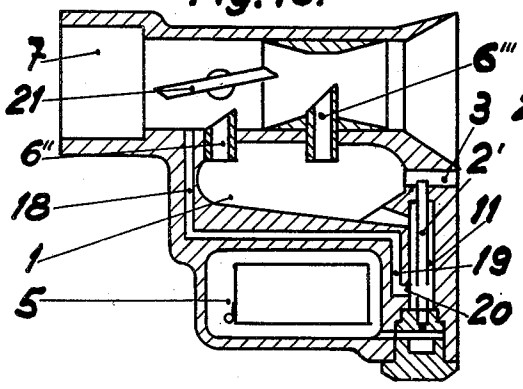


Fig. 20.

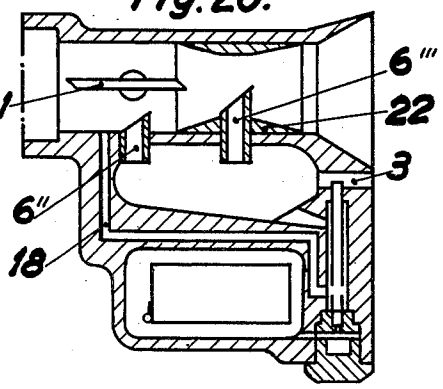


Fig. 11.

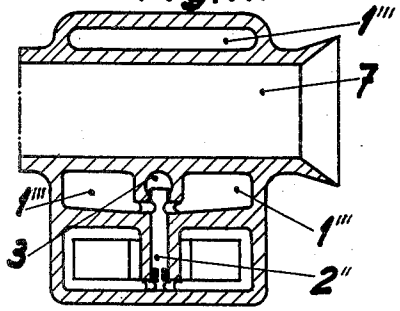


Fig. 12.

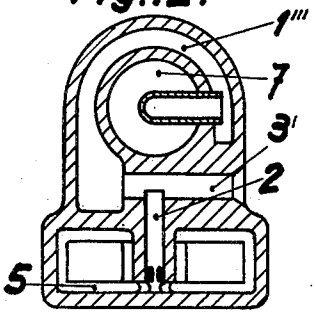
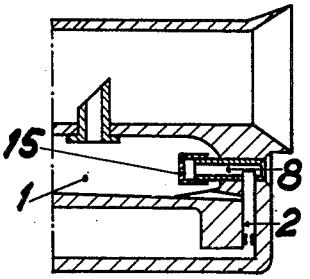


Fig. 13.



Inventor:

Richard Malin

Patented Nov. 29. 1932 1,889,126

UNITED STATES PATENT OFFICE

RICHARD MALIN, OF CHEMNITZ, GERMANY

CARBURETOR

Application filed July 3, 1930, Serial No. 465,601, and in Germany May 13, 1930.

The carburetor according to the present invention comprises a special atomizing chamber arranged between the suction pipe and the float chamber and is shown in the accompanying drawings by way of examples.

In these drawings:—

Figs. 1 to 7 inclusive, Sheet 1, show the improved arrangement of the atomizing tube and of the circular chamber, about the vaporizing or atomizing chamber, which is preferably drilled out of the wall or which may also be inserted as separate tube portions, and also the inclined design of the floor of the atomizing chamber.

Figs. 8 and 9, Sheet 1, also Fig. 11, Sheet 2, show improvements in the arrangement of several atomizing chambers.

Figs. 10 to 12 inclusive, Sheets 1 and 2, indicate the arrangement of the atomizing chamber beside or above the suction pipe or surrounding the latter in the form of an annular chamber.

Figs. 13 to 16 inclusive, Sheets 1 and 2, show the arrangement of a sieve or gauze like cover of the blow pipe orifice.

Figs. 17 to 20 inclusive, Sheet 2, illustrate the arrangement of two or more overflow pipes, which may if desired be of different dimensions, in connection with a fuel supply channel for no load running.

1 is the atomizing chamber, 2 is the atomizing pipe or jet tube, 3 is the air aspiration channel, and 4 is the return for the coarse particles deposited in the atomizing chamber, which are again fed into the atomizing air current, for the purpose of being again atomized.

5 shows the float chamber, and 6 denotes the overflow pipe and 7 the suction pipe.

By the lateral arrangement of the jet tube 2 preferably as a duct or channel in the lateral wall of the carburetor (Fig. 1) a simple design of the carburetor and a greater protection of the jet tube and the parts connected with it is secured.

According to Fig. 3 the arrangement of the jet tube differs from that shown in Fig. 1, in that the air aspiration channel is formed by a pipe socket 8, a part of the jet tube 2 and a pipe socket 9, a hole 10 being formed in the wall of the jet tube to re-admit any liquid fuel precipitated in the vaporizing chamber 1.

According to Fig. 4 the atomizing or jet tube 2′ is encircled by an annular chamber 11 and this annular chamber is connected by a channel or duct 4 with the vaporizing chamber 1 for the purpose of conducting the fuel precipitated into the atomizing tube 2′ through the holes 12. A reserve of fuel is arranged in this annular chamber.

In the embodiment according to Fig. 5 there is again provided a pipe socket 8 for the purpose of forming the air inlet channel into and the atomizing chamber 1 which connects directly with the annular chamber 11.

In the atomizing arrangement according to Fig. 6, the channel or duct 4 terminates in a vertical mouth piece 13, so that the fuel particles deposited in the vaporizing chamber 1 are vaporized separately and are led directly into the atomizing air jet or current.

The constructional form according to Fig. 7 differs from that shown in Fig. 6, only by the fact that pipe sockets 8′ and 13 are used instead of channels or ducts 3 and 4 of Fig. 1.

Fig. 8 illustrates the arrangement, as an example of two vaporizing chambers 1′ and 1″, adjacent one another whereby a more efficient atomization of the fuel being vaporized is obtained than has hitherto been possible, and whereby a richer and better reserve of vaporized fuel is obtained, especially in the second chamber 1″. In this case the passage 14 and the return duct 4′ leading to the second atomizing chamber are staggered in relation to the duct or channel 3 and 4 of the first vaporizing chamber 1′, (Fig. 9) and by reason of this arrangement all the coarse particles of fuel are mainly deposited in the first vaporizing chamber.

It is immaterial to the invention whether the two or more atomizing chambers are arranged one next or one above the other.

According to Fig. 10 the atomizing chamber 1 is for instance arranged at the side of the suction pipe 7, whereas according to Figs. 11 and 12 it is designed as a circular chamber or a tubular chamber 1‴‴‴, enclosing the suction pipe partly or completely.

The bottom of the atomizing chamber is

inclined to such an extent that any fuel precipitated will readily flow off, (see Figs. 1, 8 and 11).

These different arrangements of the chambers allow the carburetor to be given in each case such a shape as will fit any vehicle and which enables the best efficiency to be obtained.

Figs. 13, 14 and 15 show three constructional forms of a sieve or gauze covering of the air inlet tube 3. This cover may be designed in the shape of a cap 15 or a cover 16 or a basket 17. By reason of this cover the jet is deflected in the form of a ball jet, that is to say in that manner that it is directed laterally and that any fuel which might possibly have been carried along is divided at the sieve, and that it is consequently impossible for any fuel to be precipitated on the blow tube or pipe, as is the case in the method of vaporization as shown in Fig. 16, because the jet in this case follows a straight direction and is not deflected.

According to the constructional form of carburetor shown in Figs. 17–20 two overflow pipes 6″ and 6″″″ lead from the atomizing chamber 1 to the suction channel or pipe 7. There is further a narrow channel 18 starting from the annular chamber 11 or from the atomizing or jet tube 2 and leading to the suction channel 7. An enlargement 19 provided in the channel 18 serves as a depositing chamber for the fuel. A nozzle 20 is preferably used as a means of connecting the annular chamber 11 and the enlarged portion 19. If the throttle valve 21 is opened only slightly, as for instance shown in Fig. 18, then the reduced pressure produced in front of the valve, in the suction channel 7 acts on the no load channel 18, and the air entering through the pipe 3 is sucked through the jet pipe 2′ into the no load channel 18 and injects through the latter a quantity of fuel which suffices for the no load running of the machine.

When the throttle valve 21 is opened a little wider, as indicated in Fig. 19, then the overflow pipe 6″ exerts a sucking action, thus bringing the atomizing chamber 1 into action, that is to say the atomization in it produces a very fine gas mixture, which reaches the suction pipe 7 and the engine through 6″. In so doing the no load channel 18 is practically put out of action, as is also the overflow pipe 6‴ which is in its clear dimension somewhat larger than 6″.

The supply of the combustible mixture at this particular position of the throttle is sufficient for an average power output of the motor, or even for a gear changing.

If the throttle valve is however opened completely as shown in Fig. 20, then the carburetor is adjusted for a full supply of fuel. The total cross section of the suction channel 7 is free, and the highest air velocity obtains in the choke tube 22, consequently the larger overflow pipe 6‴ is put into action, the channel 18 and the overflow pipe 6″ meanwhile becoming practically inoperative.

It is quite comprehensible that the steps or changes in the supply of the mixture can be further augmented by arranging several and differently designed overflow pipes and by arranging several positions of the throttle.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed I declare that what I claim is:—

1. In a spray carburetor the combination of an air suction pipe and an atomizing chamber, the latter with an air inlet channel separate from the air inlet of the suction pipe and in atomizing relationship to a jet tube, a channel connecting said atomizing chamber with said jet tube leading any fuel precipitated in the atomizing chamber back into the air inlet channel for reatomization, said atomizing chamber being connected with the suction pipe by overflow pipes, and a no load channel leading from the jet tube into said suction pipe.

2. In a spray carburetor the combination of an air suction pipe and an atomizing chamber, the latter with an air inlet channel separate from the air inlet of the suction pipe, closed by a gauze like gap and in atomizing relationship to a jet tube, the bottom of said atomizing chamber being inclined in the direction to a channel connecting said atomizing chamber with said jet tube leading any fuel precipitated in the atomizing chamber back into the air inlet channel for reatomization, said atomizing chamber being connected with the suction pipe by overflow pipes, and a no load channel leading from the jet tube into said suction pipe.

In testimony whereof I affix my signature.

RICHARD MALIN.