June 19, 1934. B. BEARD 1,963,458

CARBURETOR

Original Filed Jan. 22, 1930

Fig. 1

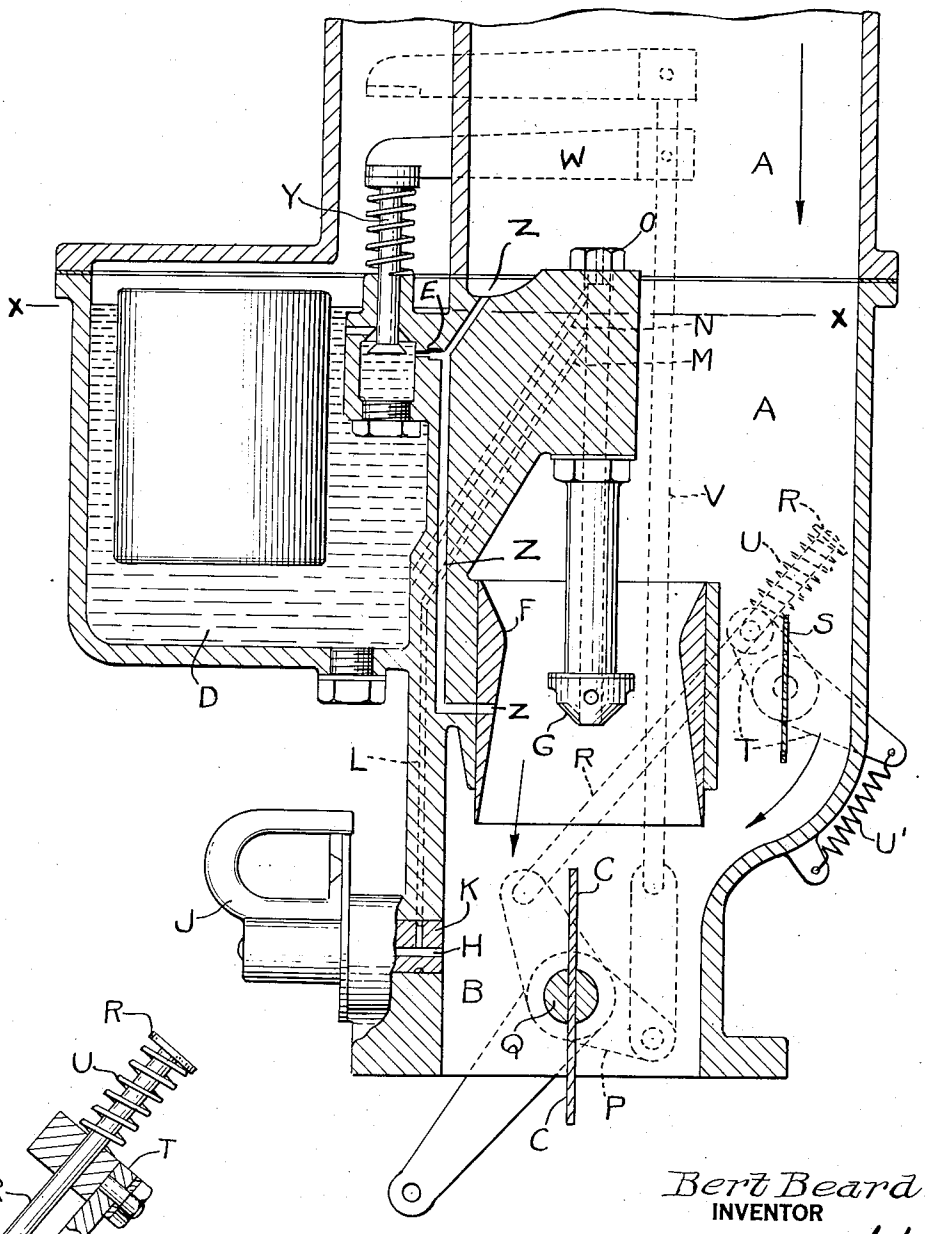


Fig. 2.

Bert Beard
INVENTOR

By Stanley M. Udale
ATTORNEY

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CARBURETOR

Bert Beard, Detroit, Mich., assignor to George M. Holley, Detroit, Mich.

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3 Claims. (Cl. 261—49)

This invention relates to a carburetor of the type in which fuel is fed from a float chamber into an inverted mixture chamber. The fuel being drawn from the float chamber at a point above the level therein. The specific difficulty with this type of carburetor is that when the carburetor is sufficiently large enough to freely admit a full charge of air to the engine, the engine will not run at low speed with the throttle wide open for the reason that there is an insufficient flow of air through the mixing chamber to ensure a steady and adequate supply of fuel to run the engine, further on opening the throttle the transfer from idle to wide open is not made without an interruption to the fuel flow, for a similar reason. If the mixing chamber is restricted the engine does not get a full charge of air at wide open throttle at maximum engine speed. Specific means are provided in this inyention to correct this defect.

Figure 1 shows in elevation the novel parts and shows in partial elevation the parts which are common to all carburetors of this type. These latter portions are not shown in complete detail.

Figure 2 shows a small detail.

In the figures A is the air entrance, B is the mixture outlet, C is the throttle valve therein, D is the float chamber containing the usual float mechanism (which is not shown), the mechanism maintains the fuel at the level X—X. F is the mixing chamber, G is the fuel nozzle discharging therein. H is the low speed fuel orifice located in the low speed fuel plug K, controlled by the lever J. This low speed fuel orifice is fed through the passages L—M (shown in broken lines). The fuel nozzle G is fed through a passage N (shown in broken lines). This passage N also furnishes the fuel for the low speed passage M. A vent plug O is provided located above the level X—X to prevent the nozzle G and the low speed nozzle H siphoning the fuel out of the float chamber D. For obvious reasons this vent O must be at least $\frac{3}{16}$'' above the level X—X. P is a lever mounted on a throttle shaft Q. Two links are connected to P one of them lettered R controlling a valve S which provides additional air around the mixing chamber F. The valve S is controlled by a lever T and a spring U is interposed between the link R and the lever T for a purpose to be described later. The other end of the lever P is connected through a link V and an arm W with a valve Y which admits fuel through the passage Z into the mixing chamber F at a point E below the level X—X of the float chamber D. The opening E is restricted so that the flow through E under the head X—X gives the desired additional fuel. It must be understood of course that the fuel nozzle G is more complex than shown, and in addition a fuel pump of the type shown in my copending application 338,934 will also be required to satisfy the owners of modern high speed automobile engines. It will be noted that the passage Z communicates at its upper end with the air entrance A.

Operation

When the engine is running slowly the throttle C being in a closed position, the fuel is drawn up N and down M through orifice H into the mixing chamber B. With the throttle S in the closed position and the spring U is compressed, it will be noted that the arm of the lever T, which is connected to the link R, is shorter than the arm of the lever P which is connected to R. As the throttle P is opened the spring U expands and the valve S remains closed, all the air entering at A is thus forced to pass through F and the depression created therein causes the fuel to flow up N and down M into the mixing chamber F. When the throttle is approximately ¾ open the spring U' causes the valve S to open, when the throttle C is wide open the throttle S is also wide open. Simultaneous with the opening of S the valves Y open admitting fuel directly from the float chamber D into the mixing chamber F through the restricted orifice E which is located below the level X—X. This fuel flows down Z being entrained by the air flowing through Z and discharges into the venturi F.

What I claim is:

1. A downdraft carburetor having a mixing chamber, a mixture outlet, a throttle valve therein, a constant level fuel supply chamber, a suction controlled fuel nozzle supplied therefrom supplying fuel to said mixing chamber, a gravity fed fuel nozzle supplying fuel from said supply chamber to said mixing chamber at a point below said constant level, means for holding said gravity fed fuel nozzle open only when the throttle is substantially in the wide open position.

2. A downdraft carburetor having a mixing chamber, a mixture outlet, a throttle valve therein, a constant level fuel supply chamber, a suction controlled fuel nozzle supplied therefrom supplying fuel to said mixing chamber, a gravity fed fuel nozzle supplying fuel from said supply chamber to said mixing chamber to a point below said constant level, means for holding said gravity fed fuel nozzle open only when the throttle is substantially in the wide open position, means for

admitting an extra quantity of air into said mixture outlet when the gravity fed fuel nozzle is brought into operation.

3. A downdraft carburetor having a mixing chamber, a mixture outlet, a throttle valve therein, a constant level fuel supply chamber, a suction controlled fuel nozzle supplied therefrom supplying fuel to said mixing chamber at all times, a gravity fed fuel nozzle supplying fuel from said supply chamber to said mixing chamber at a point below said constant level, means for closing said gravity fuel nozzle when the throttle is moved to the closed position whereby the gravity fed nozzle ceases to deliver fuel when the throttle is moved a substantial degree away from the wide open position.

BERT BEARD.