Sept. 6, 1927. 1,641,332

G. M. HOLLEY

CARBURETING DEVICE

Filed Sept. 4, 1920

FIG-II

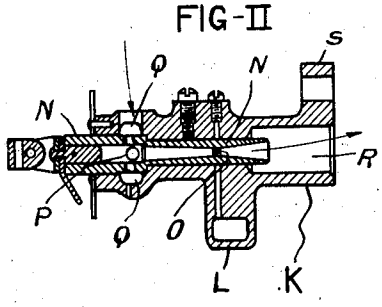


FIG-I

George M Holley.

INVENTOR.

WITNESS:

E. McShane

H. S. Tibbals

BY

ATTORNEY.

Patented Sept. 6, 1927. 1,641,332

UNITED STATES PATENT OFFICE.

GEORGE M. HOLLEY, OF DETROIT, MICHIGAN.

CARBURETING DEVICE.

Application filed September 4, 1920. Serial No. 408,351.

This invention relates to carbureting devices for use with internal combustion engines.

The purpose of this invention is to provide means whereby the carbureting device of an internal combustion engine may supply a correct mixture at low engine speed without the complication of an air valve or auxiliary throttle.

Figure I shows the general arrangement.

Figure II shows the nozzle arrangement.

Description.

The various parts of the vaporizer are designated as follows:

The mixing chamber casting A is controlled by a strangling shutter or choke valve B and by an outlet throttle C controlling a low speed fuel outlet D. A Venturi tube E is placed within the mixing chamber, and is provided with high speed fuel outlet F. A passage G communicates with the U tube H located in the exhaust pipe J.

A rich mixture of fuel and air is supplied to pipe H by the fuel nozzle (Figure II) K which obtains its fuel from the float chamber L. The mixture is delivered to an inlet manifold M.

In Figure II the means for furnishing the primary mixture are shown, consisting of a small Venturi tube N, a fuel discharge orifice O located in the throat of said Venturi tube N, a plurality of air entrances P in the Venturi tube N and an annular passage Q surrounding the Venturi tube N and so permitting the free communication of air to the Venturi tube N. The Venturi tube N is mounted in the float chamber casting L and the venturi projects into the drilled passage R of the projection K of the float chamber into which the U tube H also projects. A bracket S serves to locate and hold the float chamber L in position.

Operation.

The operation of this carbureting device is as follows:—

The float chamber L is filled with gasoline, the strangling shutter or choke valve B is almost closed, and the throttle C is about ¼ open. On cranking the engine, a rich mixture is taken into the engine through the low speed outlet D from the fuel nozzle K by way of the U tube H.

When the engine fires, the strangling shutter B is gradually opened by hand, and after the engine has run for a few (one to three) minutes, the fuel supply to L is switched over to kerosene by moving the lever Z from left to right, and thereafter the engine operates on this fuel.

When the throttle is opened wide the depression existing in the throat of the Venturi tube E exceeds the depression in the mixture outlet, so that the rich mixture flowing up G will issue into the throat of the venturi at the outlets F.

The means shown in Figure II for controlling the quantity of the fuel may be replaced by a simple needle controlled nozzle, and this feature is not specially claimed in this application.

The arrangement of the smaller Venturi tube N so that it discharges through the U tube H, passage G and so into the throat of the Venturi tube E causes the depression at the point O within the throat of the Venturi tube N to be greater than the depression within the throat of the larger Venturi tube E. This being the well known double venturi effect discovered by Bourdon. The result of this is that, especially at low engine speeds, the depression in the throat of the smaller Venturi tube N is sufficiently great to insure an adequate supply of fuel. The calibrated fuel orifice O may therefore be restricted which results in fuel economy at the higher air velocities when the double venturi effect is less marked. Further, the increased atomization facilitates vaporization in the U tube H.

What I claim is:

1. In a vaporizer for internal combustion engines, a mixing chamber for mixing highly heated rich mixture of hydrocarbon vapor and air with cold air, a cold air entrance, an outlet which is controlled by a butterfly throttle, a venturi passage in the rear of said throttle, a constant level fuel supply chamber, a fuel nozzle supplied therefrom, an exhaust heated passage communicating with the atmosphere into which said fuel nozzle discharges, an exhaust pipe surrounding said passage, said passage being connected to a hydrocarbon vapor passage cast integrally with the mixing chamber, said vapor passage having one outlet in the Venturi tube and a second outlet located near the said throttle valve and on the downstream side thereof.

2. A mixing device for an exhaust heated

vaporizer for internal combustion engines, comprising a mixing chamber for mixing highly heated rich mixture of hydrocarbon vapor and air with cold air, having an outlet which is controlled by a throttle, a restricted air passage in the rear of said throttle, a vapor passage having an outlet in the restricted air passage and a second outlet located near the said throttle valve and on the downstream side thereof, a fuel reservoir, means whereby the fuel level therein is maintained at a constant level, a fuel nozzle supplied therefrom, a U tube to which the nozzle delivers fuel, and an exhaust pipe surrounding said U tube which delivers a rich mixture to said restricted air passage.

In testimony whereof he affixes his signature.

GEORGE M. HOLLEY.