May 26, 1925. 1,539,732

W. HARTL

CARBURETOR

Filed April 28, 1923

Fig. 1.

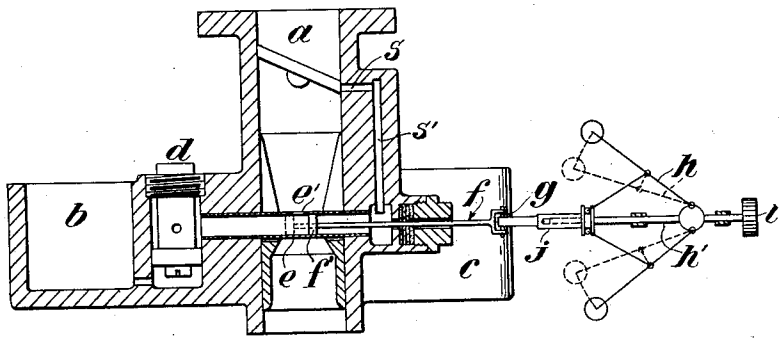
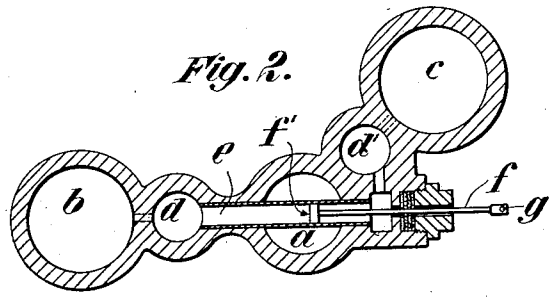


Fig. 2.



INVENTOR.

Wilhelm Hartl

By William C. Linton

Atty.

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UNITED STATES PATENT OFFICE.

WILHELM HARTL, OF BERLIN, GERMANY.

CARBURETOR.

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To all whom it may concern:

Be it known that I, WILHELM HARTL, a citizen of the Republic of Austria, residing at Berlin, in the Republic of Germany, have invented certain new and useful Improvements in Carburetors; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

It is desirable to employ the heavier hydrocarbons as fuel for internal combustion motors, but said heavy hydrocarbons are difficult to atomize or vaporize and cannot be employed successfully in starting or during idling, because of the comparatively low suction in the intake manifold of the engine at that time. Moreover, the use of such hydrocarbons is impossible on starting because the temperature is too low.

In view of these facts, certain carburetors have already been designed which are provided with two float chambers, one of which is provided with a light hydrocarbon fuel, and the other of which serves as a reservoir for a heavy hydrocarbon fuel. Means, such as a valve, is provided for controlling the communication between these float chambers and the carburetor nozzle, so as to employ whichever fuel is desirable. Existing devices of this character have presented certain defects of operation and it is the object of this invention to provide an improved carburetor which will use either a light or heavy hydrocarbon fuel and will form a properly proportioned mixture of air and either hydrocarbon fuel under all conditions of operation.

My invention is illustrated, by way of example, in the accompanying drawing, in which Figure 1 is a vertical section through an arrangement and combination of parts of the kind in question, the governor being indicated only diagrammatically; and Figure 2 is a horizontal section through the lower part of Figure 1, in the axial line of the tube traversing the suction channel.

a indicates the before mentioned suction channel of the carburetor having the usual throttle valve arranged therein. A tube *e* bridges the suction channel *a* and is provided with an outlet opening *e'* which latter is in communication with the mixing chamber of said channel. The casing of the carburetor is provided with two tanks or fuel supply float chambers *b* and *c* which are in communication with the opposite ends of the tube *e*. One of these chambers *b* is to be supplied with heavy fuel whereas the other chamber *c* is to be supplied with light fuel. In the passageways forming means of communication between the chambers *b* and *c* and the tube *e* are chambers *d* and *d'*, each having an apertured plug therein which acts as a reducer or nozzle for spraying the fuels into the tube *e* whereby the fuels will be sprayed or partly atomized before entering the tube *e*. The apertured plug within the chamber *d* is adaptable for heavy fuels whereas the plug (not shown) within the chamber *d'* is suitable for light fuels whereby the two fuels may be properly atomized before entering the tube *e* and these properly sprayed or atomized fuels may be discharged from a single opening *e'* at the proper ratio and thereby prevent waste of the lighter fuels. The feed of fuels to the opening *e'* is controlled by a piston *f'* which is slidable within the tube *e*.

In the position of the piston *f'* as shown in the figures, the suction channel communicates with the heavy-fuel tank *b*. If the piston is shifted to the left, said communication is interrupted and another, viz, between the channel *a* and the light-fuel tank, is established. It is obvious that either light fuel or heavy one may be supplied into the suction channel, just as desired or required, but the light fuel is supplied in either case also through a no-load nozzle *s* which is fed through a by-channel *s'*.

The change-over member, or the piston *f'* respectively, may be connected with, and operated by means of, a governor rotated by the motor and effecting the change-over automatically if, owing to the number of revolutions of the motor decreasing, the air velocity at the place of mixing, viz, at the narrowest or smallest sectional area of the channel *a*, decreases so much that the proper atomization of the heavy fuel is no more warranted and, therefore, light fuel must be supplied to the air sucked through the said channel.

The governor *h* is connected with the piston rod *f* by a jointing *g* and is rotated by the motor by means of the cog-wheel *i*. The governor spindle *h'* extends at its other end into a sleeve *j* with which it is coupled so as to rotate it and which is connected with the

piston rod *f* by the jointing *g*. The sleeve is, of course, longitudinally shiftable on the spindle *h'*.

When working with heavy fuel, the piston *f'* is located righthand from the orifice *e'* of the tube *e* and the position of the governor is that shown in full lines. If the number of revolutions diminishes and the heavy fuel is no more sufficiently atomized, the governor assumes by and by the position indicated in dotted lines, in which, finally, the sleeve *j*, the joint *g*, and the rod *f*, are so much displaced to the left that the piston *f'* is located on the other side of the orifice *e'* in which the communication of this latter with the tank *b* is broken and communication with the tank *c* is established, the carburetor being fed now, consequently, with the light fuel.

The co-action of the no-load nozzle *s* may be interrupted at times by a shutting member (not shown) if the state of service of the motor renders the continuous supply of light fuel through the by-channel *s'* unnecessary or undesirable.

I claim:

A fuel nozzle for carburetors comprising a cylindrical tube adapted to bridge the suction channel of the carburetor and having an outlet opening arranged in the medial portion thereof so as to communicate with the suction channel of the carburetor, a piston slidably mounted within said tube and adapted to be moved horizontally across said outlet opening, a piston rod extending from one end of said tube and connected to said piston, and the opposite ends of said tube being opened whereby different grades of fuel may be supplied thereto, substantially as and for the purpose specified.

In witness whereof I have hereunto set my hand.

WILHELM HARTL.