

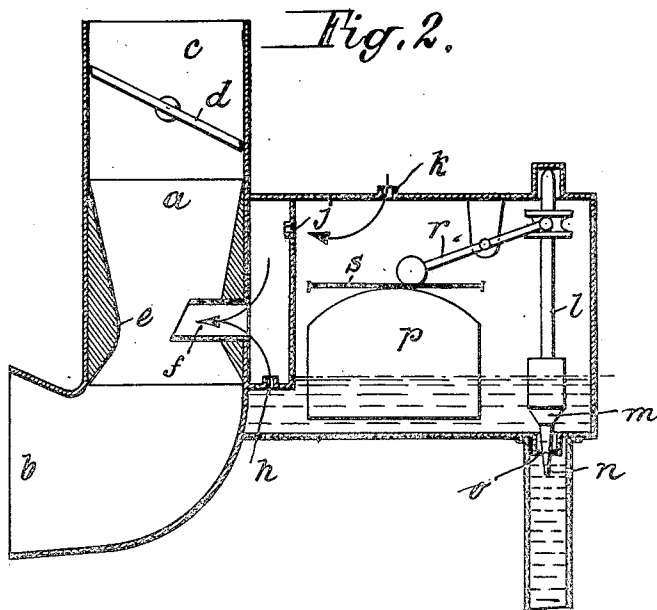
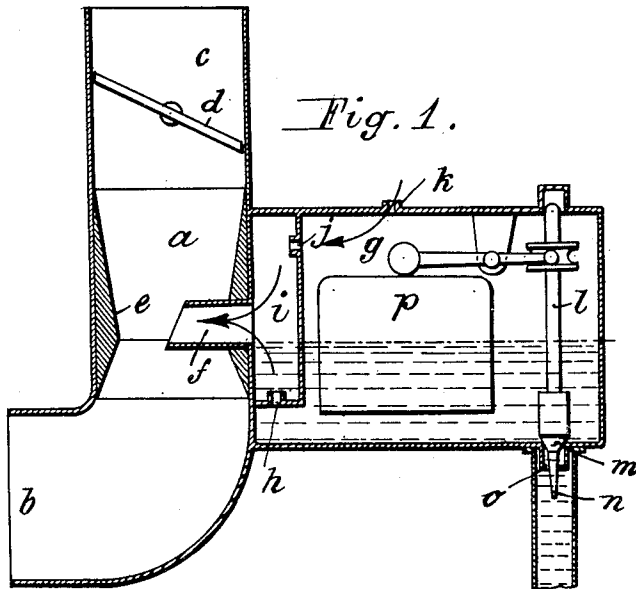
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CARBURETOR

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64

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CARBURETOR

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It has already been proposed, in carburetors for internal combustion engines, to subject the float feed tank to the suction or vacuum prevailing in the main suction pipe, but this arrangement affords only a relative compensation. In fact, the variations of the resulting vacuum (consisting of the vacuum on the feeding nozzle, less the vacuum in the float chamber) will correspond only in an irregular manner to the relation between air and fuel when the engine speed varies or when the barometric pressure changes due to variations of altitude. The output of the feeding nozzle depends upon the variations of the said resulting vacuum (or suction) when the level becomes stationary in the tank and when the supplying needle valve is closed, but if the speed of the engine increases, the level in the float chamber diminishes, and thus acts—through the medium of the float—to raise the said needle valve.

In this manner the conditions may be such at high speeds that the supply of fuel to the float chamber will be just sufficient for the feed of the nozzle, so that the valve will be almost constantly raised from its seat, and henceforward the correction due to the difference in the vacuum will no longer prevail, since the float feed chamber is in permanent relation to the fuel recipient or intermediate chamber which operates at atmospheric pressure.

The present invention relates to improvements in this type of carburetor whereby the above-mentioned defects will be obviated. Such improvements consist essentially in the combination of a calibrated needle which modifies the feeding section for the fuel according to its ascent, and hence according to the output of the feeding nozzle which is placed in a recipient subjected to the suction or vacuum and communicates with the main body of the carburetor, which recipient also communicates by a calibrated orifice with the upper space in the float tank, said tank being provided with an optionally adjustable atmospheric outlet.

In the appended diagrammatic drawing, and by way of example:

Figs. 1 and 2 show two different constructional forms of the improved device according to the present invention.

The improved carburetor comprises, as in the known apparatus, a main body *a* whereof one end *b* is an atmospheric inlet and the other end *c* is connected with the admission end of the engine. The said body *a* contains the regulating element *d*, such as a throttle or the like closing means, the diffuser *e* and the sprayer *f*; the said sprayer is subjected to the suction and is supplied by the float feed tank *g* by means of a submerged nozzle *h* placed in the recipient or chamber *i*.

According to the invention, the said recipient or chamber *i* is connected at its upper part, by the calibrated orifice *j*, with the upper space in the float feed tank *g*, this being connected with the exterior atmosphere by a calibrated orifice *k*, optionally adjustable. The said float feed tank *g* is supplied with fuel through an orifice whose section varies according to the variations in the suction (or vacuum) acting upon the submerged nozzle *h*. For this purpose, the valve rod *l* comprises a contact portion which forms a valve member *m*, and is extended for instance by a tapered needle *n* coacting with a calibrated orifice *o*, so that the vertical movements of the rod *l*, depending upon the variations of level of the liquid, will produce corresponding displacements of the needle *n* with reference to its coacting orifice *o*, and hence variations of the flow section of the fuel.

In these conditions, when the engine operates, the vacuum acts upon the submerged nozzle *h* and upon the calibrated orifice *j* which, as is well known, checks the feed of the fuel.

The apparatus is adjusted in such manner that when on the ground level, the calibrated orifice *k* will feed sufficient fuel air to supply the calibrated orifice *j*, so that the float feed tank *g* will not be subjected to the vacuum.

As the apparatus rises above the ground in an airplane or the like, the barometric pressure will diminish. The calibrated orifice *k* no longer feeds sufficient air to supply the orifice *j* subjected to the suction, and this will hence create a depression in the upper space

in the float chamber *g* and upon the surface of the liquid. The height of the column of liquid which is to counterbalance this new state of the suction will hence tend to increase, and therefore to raise the float *p* and to lower the valve *l*. The needle *n* on the end of said rod will reduce the flow section at *o*, thus reducing the feed of fuel to the submerged nozzle *h*. The decrease in the output of said nozzle depends upon the increase in the height of the column of liquid above it, and hence upon the weight of said liquid. By suitably regulating the calibrated orifices *k* and *j*, I thus provide conditions in which the reduction of the weight of the liquid withdrawn, said reduction depending upon the barometric pressure and hence upon the variations of altitude.

The preceding arrangements are applicable to the known carburetors. In this case, it may happen that the floats *p* are too heavy, so that when under suction, the liquid will rise to the orifice *j* which then feeds the fuel. Such defects can be obviated by placing between the top of the float *p* and the pivoted arm *r* connecting it with the valve *l*, a disc *s*, of determined size and weight, which is pivoted to the arm *r*, and thus when the level descends in the float tank *g*, the float *p* is separated from said disk. Under the action of the vacuum (or suction which is antagonistic to its weight,) the said disc and with it the needle valve *l* will take a position of equilibrium. This represents in fact the combination of the float *p* serving for hydraulic equilibrium, with a flat member *s* serving for aerodynamic equilibrium.

I claim:

A carburetor comprising a fuel chamber having a float therein and air and fuel inlets, a needle valve for said fuel inlet controlled by said float, an intermediate chamber disposed in said float chamber having an inlet to the fuel in said float chamber and an inlet to the air space above said float in said float chamber, a spray nozzle from said intermediate chamber extending into the fuel inlet pipe of the engine, a surface member cooperating with said float for hydraulic regulation, said surface member which is subject to the variations of the aerodynamic pressure of the atmosphere of the tank being connected with the pivoted arm controlling the needle valve and is subject to the hydrostatic impulsion of the float.

In testimony whereof I affix my signature.

LÉON LE BRETON.