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M. PURVIS ET AL

CARBURETOR

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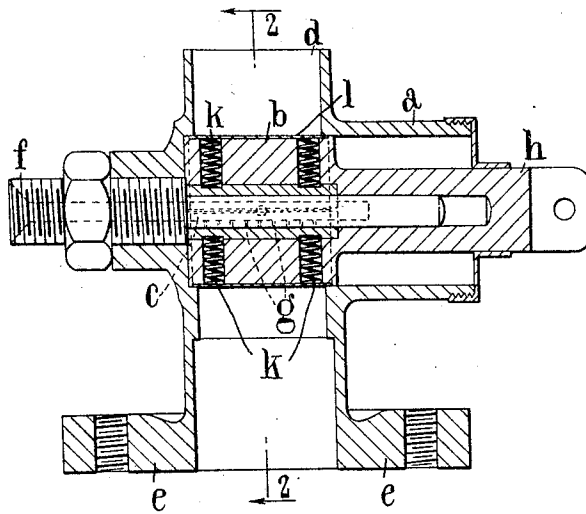


Fig. 1.

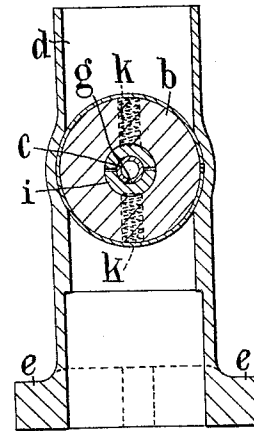


Fig. 2.

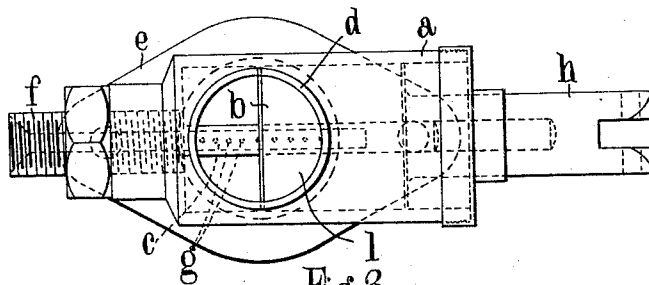


Fig. 3.

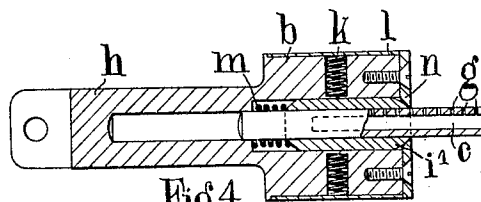


Fig. 4.

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UNITED STATES PATENT OFFICE.

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CARBURETOR.

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This invention relates to carburetors for internal combustion engines and has for its object to devise improvements in the construction and arrangement of carburetors which will obviate the necessity for any float chamber and choke tubes, will render the carburetor simple and cheap to manufacture and easy to manipulate and control, will facilitate the cleaning of the same when necessary and will lead to an increase in power obtainable for a given consumption of fuel.

The invention consists in a carburetor for internal combustion engines comprising a jet tube having a plurality of lateral openings or a slot therein and passing across the air inlet pipe and a movable piston surrounding the jet tube and controlling both the air and liquid fuel supplies simultaneously.

The invention also consists in other details and arrangements hereinafter described or indicated.

The accompanying drawings illustrate two modes of carrying out the invention.

Figure 1 is a sectional elevation of one convenient form of carburetor constructed in accordance with the invention.

Figure 2 is a section on the line 2—2 of Figure 1.

Figure 3 is a plan of Figure 1 but showing the piston moved into a position in which the air inlet and fuel jet openings are partially open.

Figure 4 is a sectional view showing a modification of a detail.

In carrying out our invention into effect in one convenient manner as illustrated in Figures 1 to 3, we form our improved carburetor with a cylinder *a*, piston *b* and jet tube *c*, the whole being united with the air inlet tube *d* and being provided with flanges *e* so that it may be mounted conveniently upon the top of the induction manifold, it being understood, however, that the carburetor may be fitted in any other suitable position and by any other suitable means.

The jet tube *c* is connected with the inlet *f* for the liquid fuel supply and passes across the air inlet tube *d* and in the form illustrated is provided with a plurality of downwardly directed openings or apertures *g*, this direction of the openings being chosen in the form illustrated which is adapted to be mounted upon the top of the induction mani-

fold so that the mixture of fuel and air may be allowed to sweep downwards in a very fine spray giving perfect acceleration while at the same time overcoming the difficulty experienced when starting cold since no priming will be necessary.

Any other suitable arrangement of the apertures may be chosen, however, depending upon the location of the carburetor, and, moreover, it will be understood that in place of such apertures we may adopt one or more longitudinal slots in the wall of the jet to replace the apertures or sets of apertures (when more than one set is employed).

The piston *b* is adapted to surround the jet tube in a fluid-tight manner and is controllable by any suitable Bowden wire or other actuating gear connected with the shank or extension *h* of the piston, the arrangement being such that when the piston is moved towards the right looking at Figure 1 the air inlet and the fuel jets will be gradually opened to an extent determined by the extent of movement of the piston so that thereby the air and fuel supplies will be simultaneously controlled and the proper mixture ratio maintained under all conditions of working.

Moreover since the piston surrounds the jet tube in a fluid-tight manner and completely closes the fuel jets and air supply tube when in the position shown in Figure 1 no float chamber will be needed thus conducing to simplicity and cheapness of construction and eliminating any float feed which is often a source of trouble.

In the form shown in Figure 1 the fluid tightness of the piston round the jet tube is obtained by means of a split bush *i* surrounding the jet tube and arranged within the cylinder, such split bush having its parts held together by means of springs *k* which also serve to control a split sleeve *l* round the piston so as to press the same tightly against the walls of the cylinder and thus maintain fluid tightness of the piston within its cylinder.

In an alternative form of fluid-tight connection in accordance with the invention illustrated in Figure 4 the jet tube is surrounded by a split bush *i'* having its ends coned or bevelled so that the parts may be pressed together by means of a spring *m* at one end and a plate *n* screwed to the

piston at the other end, the outer sleeve 7 being maintained in fluid-tight contact with the cylinder wall by means of the springs 8 which in this case however need not press upon the inner bush.

We find that very satisfactory results may be obtained from our carburetor when the same is combined with any suitable air heating system by which the incoming air may be heated either by the exhaust gas from the engine or otherwise.

We wish it to be understood that the invention is not to be confined to the foregoing details of construction which are given purely by way of illustration and not of limitation since we may vary the form of our jet tube and its location (whether vertical, horizontal or inclined) and we may also vary the means adopted for maintaining fluid-tight connection between the jet tube and controlling piston surrounding the same as also the means adopted for actuating the piston depending upon any particular practical requirements that may have to be fulfilled.

Having now described our invention what

we claim as new and desire to secure by Letters Patent is:—

1. A carburetor for internal combustion engines comprising in combination a jet tube through which the fuel may issue laterally, an air inlet pipe across which said jet tube extends, a piston surrounding said jet tube, a cylinder within which said piston is slidable and an axially split sleeve surrounding said piston and making fluid-tight contact with the wall of said cylinder.

2. A carburetor for internal combustion engines comprising in combination a jet tube from which fuel may issue laterally, an air inlet pipe across which said jet tube extends, a piston co-axial with said jet tube, a cylinder within which said piston is slidable, a split sleeve surrounding said piston, a split bush surrounding said jet tube and enclosed by said piston and springs interposed between said split bush and said split sleeve.

In testimony whereof we have signed our names to this specification.

MATTHEW PURVIS.
THOMAS LEE.