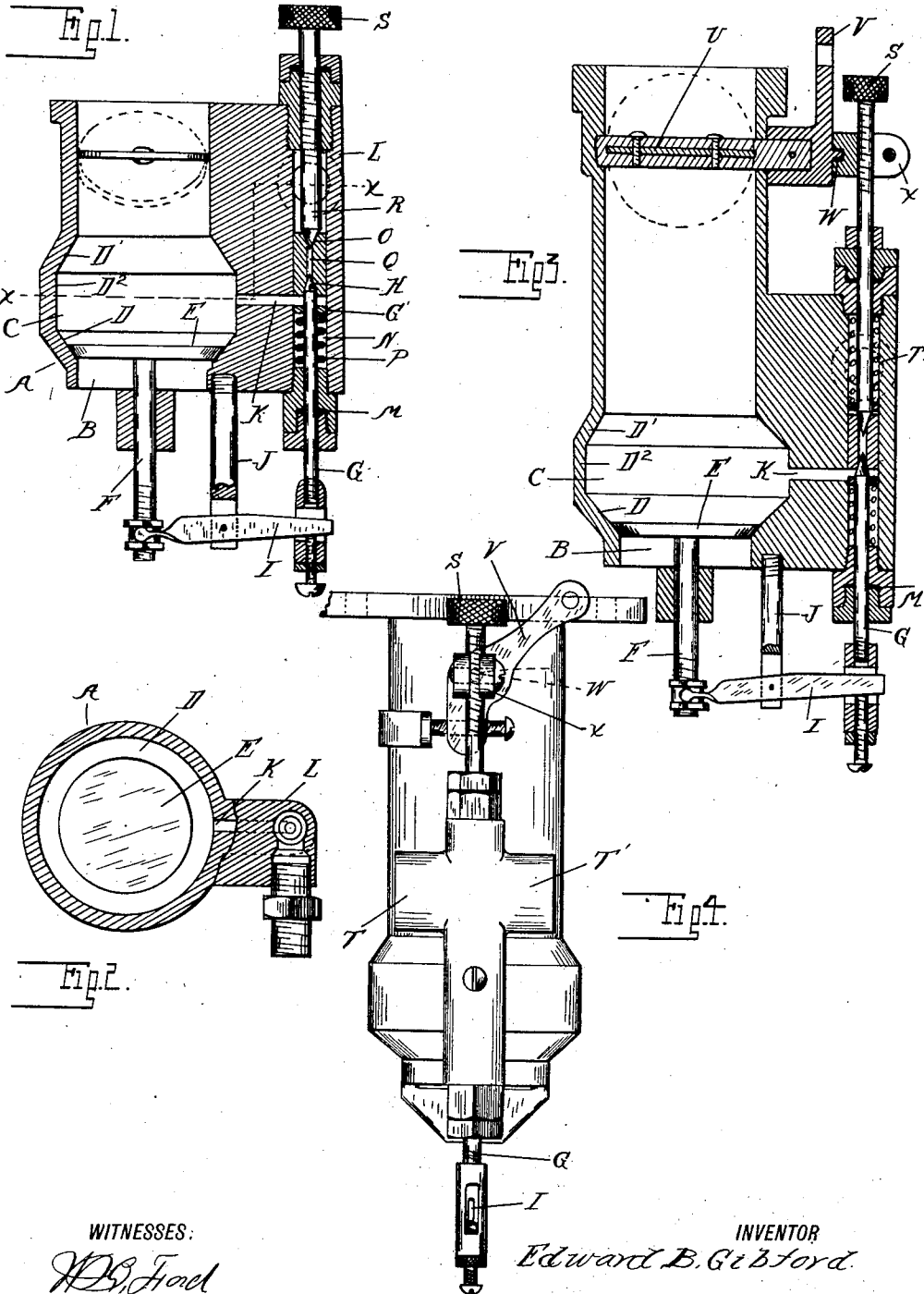


E. B. GIBFORD.
CARBURETER.

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CARBURETER.

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To all whom it may concern:

Be it known that I, EDWARD B. GIBFORD, a citizen of the United States of America, residing at Littleton, in the State of New Hampshire, have invented certain new and useful Improvements in Carbureters, of which the following is a specification, reference being had therein to the accompanying drawings.

The invention relates to carbureters and has reference, first, to the means employed for effectively commingling the liquid fuel with the air, and further, for controlling the admission of the fuel to the mixing chamber by which the carbureter may be quickly and easily adapted for use with different grades of fuel, or under other varying conditions.

In the drawings:

Figure 1 is a central longitudinal section through the carbureter;

Fig. 2 is a cross section thereof;

Fig. 3 is a view similar to Fig. 1 showing a modified construction; and

Fig. 4 is an elevation thereof.

A is a suitable casing containing a straightway air admission passage B having a bulbular enlargement C therein. This enlargement is preferably formed with oppositely-arranged obliquely-angling walls D and D' connected with a cylindrical wall D², as shown in Fig. 1. E is a valve or movable disk arranged within the bulbular enlargement and adapted to seat against the wall D. F is a stem connected to the valve E and having an operating connection to the stem G of a needle valve H which controls the admission of the liquid fuel. The arrangement is such that the suction in the admission conduit will cause the valve B to move away from its seat and in so doing to actuate the stem G of the valve H, opening the liquid fuel passage. Specifically, the connection between the stems F and G is shown as formed by a lever I fulcrumed upon a post J projecting from the casing A. The liquid fuel passage controlled by the valve H connects with the bulbular chamber C, preferably through the peripheral wall D² thereof, and as specifically shown this passage K is formed in a lug L projecting from one side of the casing A, in which the needle valve H is also seated. As specifically shown, the stem G is parallel to the axis of the passage B, and passes through a suit-

able packing gland M into a longitudinally-extending chamber N within the lug L. The valve H is preferably seated upon a detachable seat member O located in the chamber N, while a spring P sleeved upon the stem G bearing against a shoulder G' thereon, serves to normally hold the valve H to its seat. The liquid is admitted to the chamber N upon the opposite side of the seat member O, and when the valve is withdrawn from its seat will flow through a restricted passage Q in said seat member and through the lateral passage K into the bulbular chamber C.

With the construction as thus far described in operation, whenever suction is produced in the passage B the pressure upon the disk valve E will move the latter from its seat and through the medium of the lever I and stem G will withdraw the needle valve H. This will permit air to enter the bulbular chamber C around the periphery of the disk valve E, and sweeping around this chamber, will be directed inward by the oblique wall D', thereby causing eddies. At the same time liquid fuel entering through the passage K will be caught by the sweeping air current and by reason of the eddies produced will be thoroughly commingled with the air. Thus careful tests have demonstrated that the admission of the liquid fuel into the bulbular enlargement at the peripheral wall thereof is more effective than the admission centrally of the chamber or in any other part of the air conduit.

If the carbureter were always used with the same grade of liquid fuel it would only be necessary to properly proportion the restriction of the passage through the seat member O to obtain satisfactory results. However, as it is usual to employ varying grades of fuel, it is necessary to provide means of correspondingly varying the restriction in the oil inlet to produce the best results, and to this end I preferably provide a needle valve R seated upon the opposite end of the seat member O and passing into the chamber N through the opposite end of the lug L. This valve R may be actuated either manually, by a thumb-screw S, as shown in Fig. 1, or mechanically, as shown in Fig. 3. With the former construction the carbureter may be adjusted for the different grades of fuel, as, for instance, for gasolene

or kerosene, by merely turning the thumb-screw S and, as shown in Fig. 4, two conduits T and T' for the different grades of fuel may be connected to the same chamber N.

5 Thus, where desired, the carbureter may first be operated upon a light grade of fuel, such as gasoline, and after the engine is in full operation and properly warmed up, adjustment may be made for operation with the
10 kerosene or other heavier fuel.

The valve R may also be employed for regulating the flow of liquid fuel under different conditions of engine load, and, as shown in Figs. 3 and 4, U is the throttle
15 valve arranged in the passage B, which is operated by a lever V, and this lever has an eccentric connection W with a collar X on the stem of the valve. Thus when the throttle is open, it will mechanically withdraw
20 the needle valve R farther from its seat so as to lessen the restriction to the flow of the liquid fuel. An independent manual adjustment is also permitted by forming the threaded engagement between the stem
25 of the valve R and the collar X, and arranging the thumb-screw S beyond said collar.

What I claim as my invention is,—

1. In a carbureter, a casing having a
30 straightway passage and a bulbular enlargement therein, a liquid fuel passage connecting with the periphery of said bulbular enlargement, a disk arranged in the entrance end of said bulbular enlargement, a
35 stem connected to said disk, a valve controlling said fuel passage having a stem parallel to the stem of said disk, and connecting means between said stems by which a movement of said disk under the impact of
40 the air will withdraw said liquid-controlling valve from its seat.

2. In a carbureter, a casing having a
45 straightway passage and a bulbular enlargement, a lug projecting from the side of said casing having a liquid fuel inlet passage connecting with the periphery of said bulbular enlargement, a chamber in said lug, a valve seat in said chamber, valves engag-

ing the opposite ends of said seat controlling the flow of liquid, and means operated
50 by the flow of air through said air passage for operating one of said valves, and means for adjusting the other of said valves to variably restrict the flow.

3. In a carbureter, a casing having a
55 straightway passage therethrough and a bulbular enlargement, a lug projecting from one side of said casing having a liquid fuel inlet connecting with the periphery of said bulbular enlargement, a chamber extending
60 longitudinally of said lug, a valve seat in said chamber, axially alined valves engaging the opposite ends of said valve seat, means for manually adjusting one of said
65 valves to variably restrict the flow of liquid to said passage, and means for automatically operating the other of said valves by the flow of air through said air passage.

4. In a carbureter, the combination with
a casing having a straightway air passage
70 with a bulbular enlargement, a liquid fuel passage connecting with the periphery of said bulbular enlargement, of a valve for controlling said liquid passage automatically operated by the flow of air in said air
75 passage, connections for liquids of different gravity, and a second valve between said connections and said first valve for variably restricting the liquid passage.

5. In a carbureter, the combination with a
80 casing having an air passage with a bulbular enlargement, a liquid fuel passage connecting with the periphery of said bulbular enlargement, of a valve for controlling said
85 liquid passage automatically operated by the flow of air in said air passage, a throttle valve in said air passage, and a second valve for restricting the flow of liquid through
said liquid fuel passage operated through
90 said throttle valve.

In testimony whereof I affix my signature in presence of two witnesses.

EDWARD B. GIBFORD.

Witnesses:

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