A. THOMPSON.

CARBURETER.

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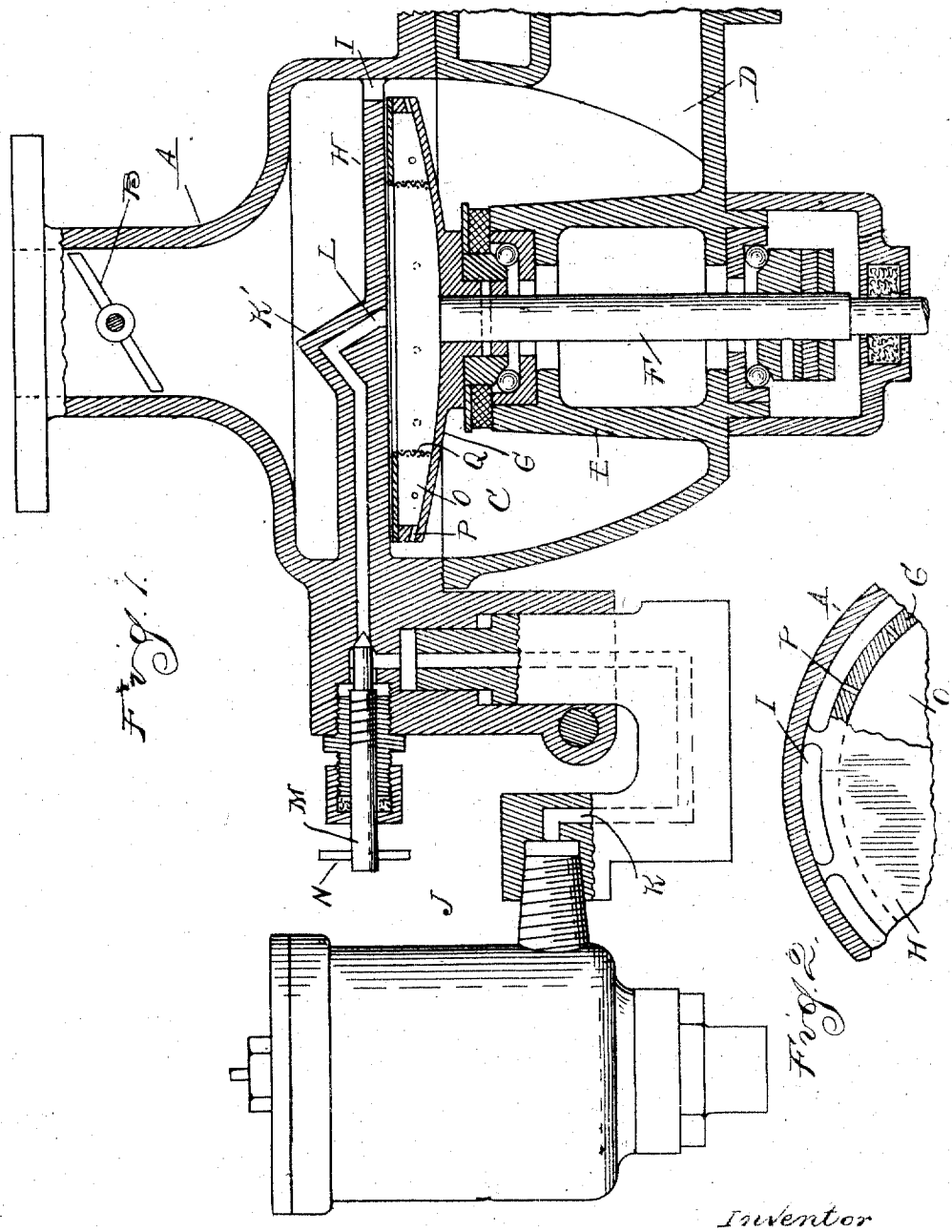


Fig. 1.

Fig. 2.

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CARBURETER.

1,243,897. Specification of Letters Patent. Patented Oct. 23, 1917.

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To all whom it may concern:

Be it known that I, ALFRED THOMPSON, a citizen of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful Improvements in Carbureters, of which the following is a specification, reference being had therein to the accompanying drawings.

It is the object of the invention to obtain a construction of carbureter which will operate equally well with liquid fuels of different specific gravity, as for instance gasolene or kerosene. To this end the invention comprises the novel construction of positively, mechanically operated sprayer and its arrangement and combination with other cooperating parts, as hereinafter set forth.

In the drawings:

Figure 1 is a sectional elevation of the carbureter;

Fig. 2 is a fragmentary sectional plan view thereof.

A is the carbureter casing in the upper portion of which is arranged the throttle valve B and beneath this valve an enlarged chamber C connected with an air inlet conduit D. Centrally within the chamber C is a bearing member E, within which is journaled a rotary shaft F having mounted on its upper end a hollow disk-shaped member G. This member G is arranged in close proximity to a parallel partition H extending across the chamber C, and having at its periphery a series of comparatively narrow segmental apertures I forming the air communicating passages between the lower and upper parts of the casing. J is a float chamber for maintaining a level of liquid fuel slightly above the rotary disk G and diaphragm H, and this float chamber is connected by a passage K extending through the partition H to a discharge aperture L centrally above the hollow disk G. There is also preferably arranged a valve M for restricting the passage K at one point and regulating the flow of liquid therethrough, said valve having a handle N. Near the discharge port L the passage K has an upwardly-deflected portion K′, extending to a point slightly above the level of the liquid in the float chamber J, which forms a trap and prevents the flow of the liquid fuel by gravity through the port L.

The hollow disk member G is preferably formed with an annular chamber O in its peripheral portion, provided with a series of discharge jet apertures P which are directed into the space between the periphery of the disk and the wall of the casing A. A fine mesh screen Q is preferably arranged at the inner edge of the annular chamber O, so as to exclude the entrance of any foreign material in the liquid fuel which might clog the jet apertures. In operation, the rotary shaft F is connected with a driver for imparting rotary movement thereto, preferably connected to the engine, so that the speed of rotation of the shaft will be proportional to the engine speed. Thus, when the engine is started the initial cranking will cause a rotation of the shaft F and disk member G, which will centrifugally force any liquid fuel in the hollow disk outward and through the jet apertures P. At the same time the suction from the engine cylinder will cause an annular envelop of air to pass by the periphery of the hollow disk member and through the segmental apertures I in the partition member H, thereby picking up the discharged liquid in the form of a finely-divided spray. The passage of the envelop of air by the periphery of the hollow disk also produces a suction or partial vacuum within the hollow disk, which causes the discharge of the liquid fuel through the port L, thereby maintaining a constant discharge of the liquid through the peripheral jet apertures. As the throttle is opened the velocity of air past the periphery of the disk is increased, which correspondingly increases the suction upon the liquid fuel, and when as a result of the opening of the throttle the engine speed is increased, there will be increased centrifugal action on the liquid fuel in the hollow disk member which will augment the discharge. Thus the liquid fuel and air will be proportioned to each other at varying speeds of the engine, and without regard to the specific gravity of the liquid,—as its discharge is effected by centrifugal action. Where an oil of relatively higher specific gravity such as kerosene, is used, the greater specific gravity will increase the centrifugal action, but this is compensated for by the greater viscosity of the oil and slower response to the air suction. On the other hand, where a fuel of low specific gravity, such as gasolene, is used, there will be a quicker response to the suc-

tion of air but less centrifugal force, which again will effect a compensation. It will also be understood that the commingling of the liquid fuel with the air is not dependent upon the volatilization of the liquid but is induced by the mechanical spraying,—so that differences in the volatility of the fuel will not affect the commingling result.

The presence of the diaphragm or partition H above the hollow disk G forms a partial seal, so that a partial vacuum is produced immediately below the discharge port L. This air seal is not, however, complete, and a certain amount of air passing between the diaphragm and disk from the periphery of the latter will commingle with the liquid in its discharge from the jet apertures, thereby facilitating the formation of the explosive mixture.

What I claim as my invention is:—

1. In a carbureter, the combination with a casing forming an air suction conduit, of a partition or diaphragm extending across said casing with apertures therethrough around the periphery only, a mechanically-driven hollow disk member of less diameter than said apertured periphery adjacent to said partition provided with peripheral jet apertures directed into a surrounding annular air space, and means for introducing liquid fuel through said partition member centrally within said hollow disk.

2. In a carbureter, the combination with a casing forming a suction conduit, of a partition extending across said casing and provided with a liquid fuel inlet passage therein having portions slightly above the normal level of liquid fuel and a central discharge port, a hollow disk member arranged adjacent to and approximately closed by said partition, the hollow space therein communicating with said central discharge port and the periphery of the disk being provided with discharge jet apertures directed into an annular air space between the disk and the walls of the casing, a shaft on which said disk is mounted, and journal bearings for said shaft within said casing.

3. In a carbureter, the combination with a casing forming an air suction conduit, of a partition or diaphragm extending across said casing with segmental apertures therethrough around the periphery, said partition or diaphragm being imperforate intermediate said apertures, a hollow disk member of less diameter than that of the peripheral segmental apertures adjacent to and slightly spaced from said partition provided with peripheral apertures directed into a surrounding annular space, and means for drawing liquid fuel through said partition member and air through the space between said partition member and disk member centrally into said disk member.

4. In a carbureter, the combination with a casing forming an air suction conduit, of a partition extending across said casing with narrow apertures therethrough around the periphery only, a mechanically driven hollow member of less diameter than that of the peripheral apertures, adjacent to and slightly spaced from said partition and provided with peripheral jet apertures, and a liquid fuel inlet in said partition, opening into said hollow member substantially centrally thereof.

5. In a carbureter, the combination with a casing having an enlarged annular chamber and an air inlet therebeneath, a solid partition near an end of said chamber and extending thereacross, provided with apertures adjacent to the walls of said chamber, a positively driven hollow member adjacent to said partition and spaced therefrom of less diameter than said chamber and provided with peripheral jet apertures directed into the annular space between said hollow member and the walls of said enlarged annular chamber, and a liquid fuel inlet located within said partition and directed substantially centrally into said hollow chamber.

6. In a carbureter, the combination with a casing forming an air suction conduit, of a partition or diaphragm extending across said casing with apertures therethrough around the periphery, a rotatable hollow disk member adjacent to said partition and having one side approximately closed thereby, said disk member being provided with peripheral jet apertures directed into a surrounding air space, and means for introducing liquid fuel centrally within said hollow disk.

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

ALFRED THOMPSON.

Witnesses:
H. E. BOWMAN,
A. D. PULVER.