No. 826,787.

PATENTED JULY 24, 1906.

J. P. KEMP.

CARBURETER.

APPLICATION FILED JULY 8, 1905.

Fig. 2.

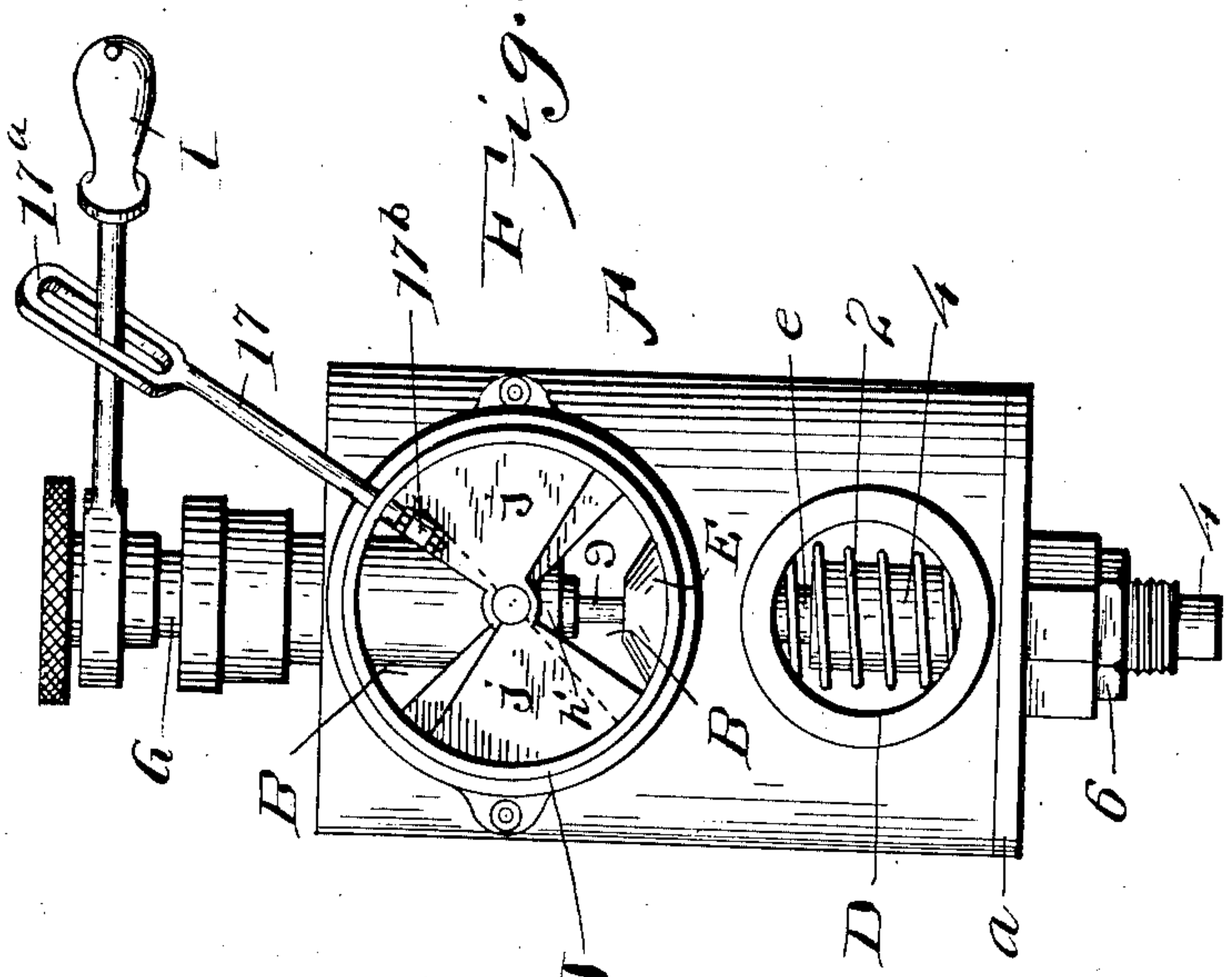
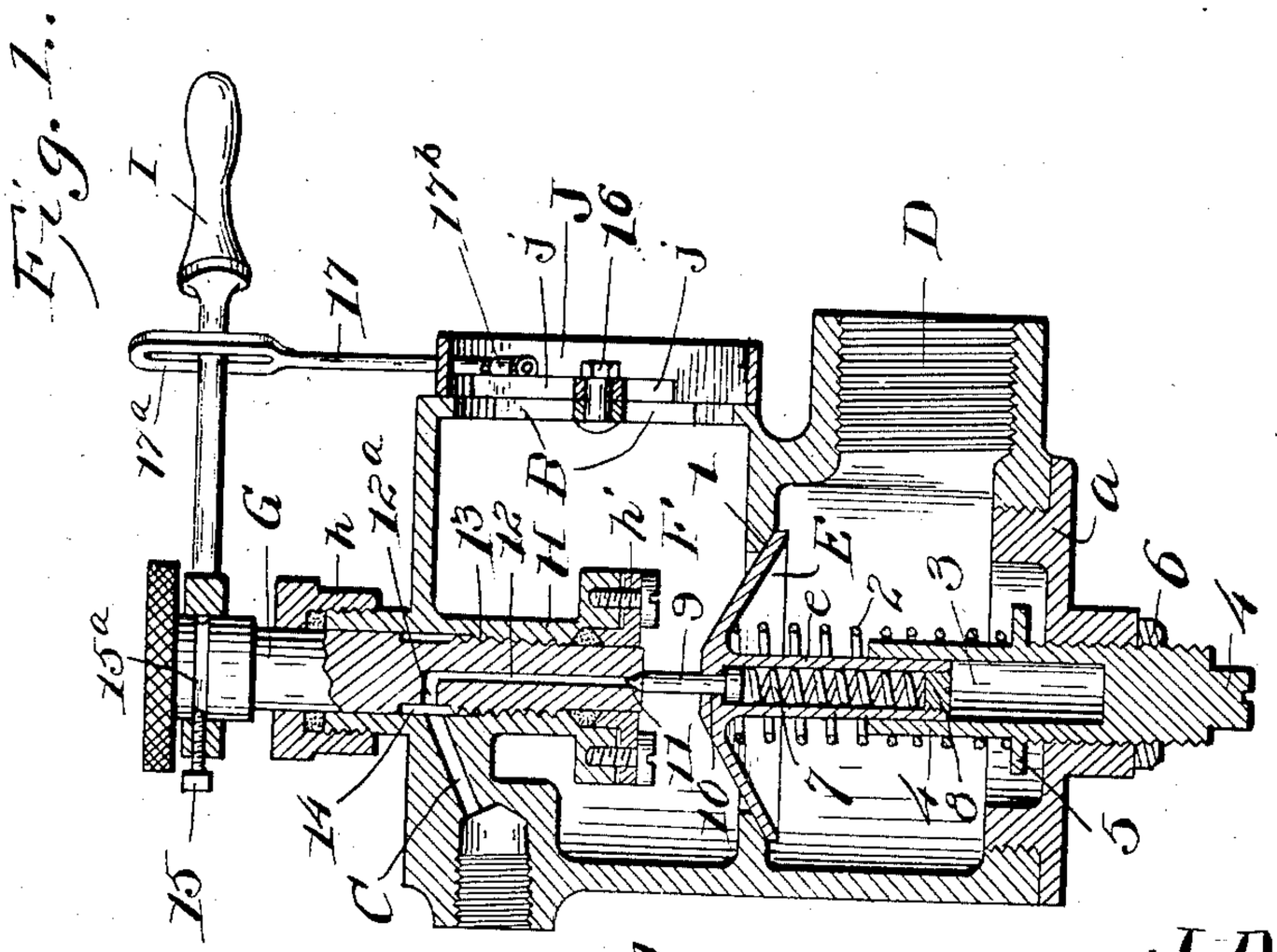


Fig. 1.



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CARBURETER.

No. 826,787. Specification of Letters Patent. Patented July 24, 1906.

Application filed July 8, 1905. Serial No. 268,765.

To all whom it may concern:

Be it known that I, JABEZ P. KEMP, a citizen of the United States, residing at Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Carbureters, of which the following is a specification.

This invention relates to improvements in carbureters for internal-combustion engines; and it includes an improved construction and arrangement of parts whereby the proportions of air and liquid fuel passing into the engine may be readily adjusted to make the most effective explosive mixture and the quantities of air and liquid fuel in proper proportions may be varied to vary the speed or power of the engine.

The details of construction and the various advantages of my invention will be clear from the following specification, taken in connection with the accompanying drawings, in which—

Figure 1 is a central vertical section through the carbureter, and Fig. 2 is a side elevation of the same looking from the right in Fig. 1.

Referring to the drawings, A indicates the casing of the carbureter, which is provided with air-inlet openings B, an opening C for the admission of gasolene or other liquid fuel, and an exhaust opening or port D. A spring-pressed induction or check valve E is arranged between the mixing-chamber F and the exhaust-port D. This valve, as shown, has a conical upper surface of comparatively large area, and the valve is normally pressed upward against the seat 1 in the valve-casing by means of a coiled spring 2. The stem *e* of the valve E, as shown, is tubular and is movable vertically within an opening 3 in a vertically-adjustable sleeve 4, having a shoulder 5, upon which the lower end of the spring 2 rests. The lower portion of the adjusting-sleeve 4, as shown, is exteriorly threaded and fits within a threaded opening in the cap *a*, which closes the lower end of the carbureter-casing and forms a part thereof. A lock-nut 6 is provided for holding the adjustable sleeve in any desired position. By properly adjusting the sleeve 4 the spring-pressure of the induction or check valve E may be adjusted so that the valve will operate with slight suction from the engine or the spring-pressure may be increased to any desired extent.

Within the tubular valve-stem *e* is arranged a compression-spring 7, which is supported by a stop or support 8, threaded into the lower end of said valve-stem, and the upper end of said spring bears against the head of a needle-valve 9, which projects upwardly through a guide-opening 10 at the center of the valve E. The upper pointed end of this latter valve normally fits against a seat 11 at the lower terminal of a passage-way 12 for liquid fuel in an adjustable plug G. This adjustable plug, as shown, has a threaded connection 13 with a fixed sleeve H and extends through said sleeve into the mixing-chamber. The sleeve H, as shown, is integral with the casing A. Suitable stuffing-boxes *h* and *h'* are arranged at the top and bottom of the sleeve H to prevent leakage between the plug and sleeve. The plug G has an annular recess 14, which registers with the fuel-inlet opening C in the casing, and this recess is of such length that in all ordinary adjustments of the plug the recess will register with the opening C, and thus admit fuel to the passage-way 12 through a lateral opening 12^a, connecting the upper end of said passage-way with the recess 14.

The plug G may be turned by means of a handle or throttle lever I, which is adjustably secured to the upper end of the plug by suitable means, such as a set-screw 15. A horizontal movement of the lever I causes the plug G to rotate in its threaded bearings 13, and the plug is thus adjusted vertically relatively to the fuel-valve 9.

The admission of air through the ports B is regulated by a circular valve or damper J, mounted upon a horizontal pivot-pin 16 and having segments *j*, which are adapted to open or close the ports B, which are of corresponding shape, when said valve is moved by means of an arm 17. A movement of the air-valve through an angle of ninety degrees entirely opens or closes the ports B. The arm 17 is arranged so that when the lever I is moved to adjust the plug G up or down the air-admission valve J will be simultaneously moved to increase or decrease the admission of air to the mixing-chamber. As shown, the arm 17 has a loop or slot 17^a, through which the lever I extends, so that the two

move together. To prevent the loop from binding on the lever I, the arm 17 may be arranged to turn about its axis in the bearing 17^b, by which it is connected to the valve J, as shown. Any other suitable means may be employed for connecting the valve J and plug G, so that they will turn together.

The operation is as follows: When the engine is started by hand in the usual manner, the induction or check valve E is drawn downward on the suction-stroke of the engine and the fuel-valve 9 is also moved away from its seat at the lower end of the plug G, thus admitting liquid fuel through the passage-way 12 to the mixing-chamber. The amount of fuel admitted to the mixing-chamber at each suction-stroke depends upon the length of time the valve 9 remains off of its seat, and this in turn depends upon the adjustment of the plug G. In order to adjust the device so that the proper proportions of air and liquid fuel may be obtained, the set-screw 15 is loosened, so that the plug G may be turned without moving the lever I or air-valve J. The air-valve may then be set so as to partly uncover the air-ports B, and while the engine is in motion the plug G may be adjusted up or down until it is found that the proper proportion of gasolene or other liquid fuel is being admitted to form the most effective mixture with the air flowing through the ports B. When this is obtained, the lever I is again secured to the plug G by means of the set-screw 15 or other means provided for the purpose. The pitch of the threads 13 and the openings in the valve J and the levers or handles I and 17 are so proportioned that after the device has been adjusted to obtain the proper mixture the proportions of air and liquid fuel admitted to the mixing-chamber will remain substantially the same thereafter when the plug G and valve J are moved together by the handle or lever I. The quantities of air and liquid fuel admitted to the mixing-chamber may thus be varied to vary the power or speed of the engine without varying the proportions of air and liquid.

It will be evident that in adjusting the device to obtain the proper proportions of air and liquid fuel the converse of the above-described method may be followed—that is, the plug G may remain fixed, while the valve J is adjusted until the proper proportions are obtained, and lever I may then be secured to the plug, so that the plug and valve will operate together.

In order to prevent the throttle-lever from sliding down on the adjustable plug when the set-screw 15 is loosened, the plug is provided with an annular recess 15^a, into which the end of the set-screw extends to support the lever.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a carbureter for explosive-engines, a casing having a mixing-chamber provided with air and fuel inlet openings, a vertically-arranged adjustable plug extending through the upper part of said casing into said mixing-chamber and having a passage-way extending from said fuel-inlet opening to the lower end of the plug, a spring-pressed check-valve, having a conical upper surface, arranged below said plug and normally closing the lower end of said chamber, said valve being arranged to open downwardly by atmospheric pressure, a spring-pressed fuel-valve supported by and movable with said check-valve and normally closing the end of said passage-way, a valve for said air-inlet opening and means for simultaneously adjusting said plug and air-inlet valve to vary the quantity of explosive mixture.

2. In a carbureter for explosive-engines a casing having a mixing-chamber and having a vertically-arranged sleeve extending into said chamber, said casing having also a fuel-inlet opening extending through the wall of said sleeve and an air-inlet opening, a plug having a threaded connection with the interior of said sleeve, said plug and sleeve having an annular recess registering with said fuel-inlet opening and said plug having a passage-way extending from said recess to the lower end of the plug, a spring-pressed check-valve arranged below said plug and normally closing the lower end of said chamber, a fuel-valve movable with said check-valve and normally closing the lower end of said passage-way, an air-inlet valve movable about a horizontal axis and having an arm attached thereto, and a lever connected to said plug and engaging said arm.

3. In a carbureter for explosive-engines a casing having a mixing-chamber and having a vertically-arranged sleeve extending into said chamber, said casing having also a fuel-inlet opening extending through the wall of said sleeve and an air-inlet opening, a plug having a threaded connection with the interior of said sleeve, said plug and sleeve having an annular recess therebetween registering with said fuel-inlet opening and said plug having a passage-way extending from said recess to the lower end of the plug, a spring-pressed check-valve arranged below said plug and normally closing the lower end of said chamber, a fuel-valve movable with said check-valve and normally closing the lower end of said passage-way, an air-inlet valve movable about a horizontal axis and having an arm attached thereto, and a lever adjustably connected to said plug and engaging said arm.

4. In a carbureter for explosive-engines, a casing having a mixing-chamber provided

with an air-inlet port at one side, an air-valve rotatable upon a horizontal axis for opening and closing said port, an arm projecting from said valve at right angles to its axis, a threaded plug extending vertically through said casing and having a passage-way for conducting liquid fuel into the mixing-chamber, a fuel-valve normally closing said passage-way, and a lever connected to said plug and operatively engaging said arm.

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

JABEZ P. KEMP.

Witnesses:
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