C. SMITH.

CARBURETER.

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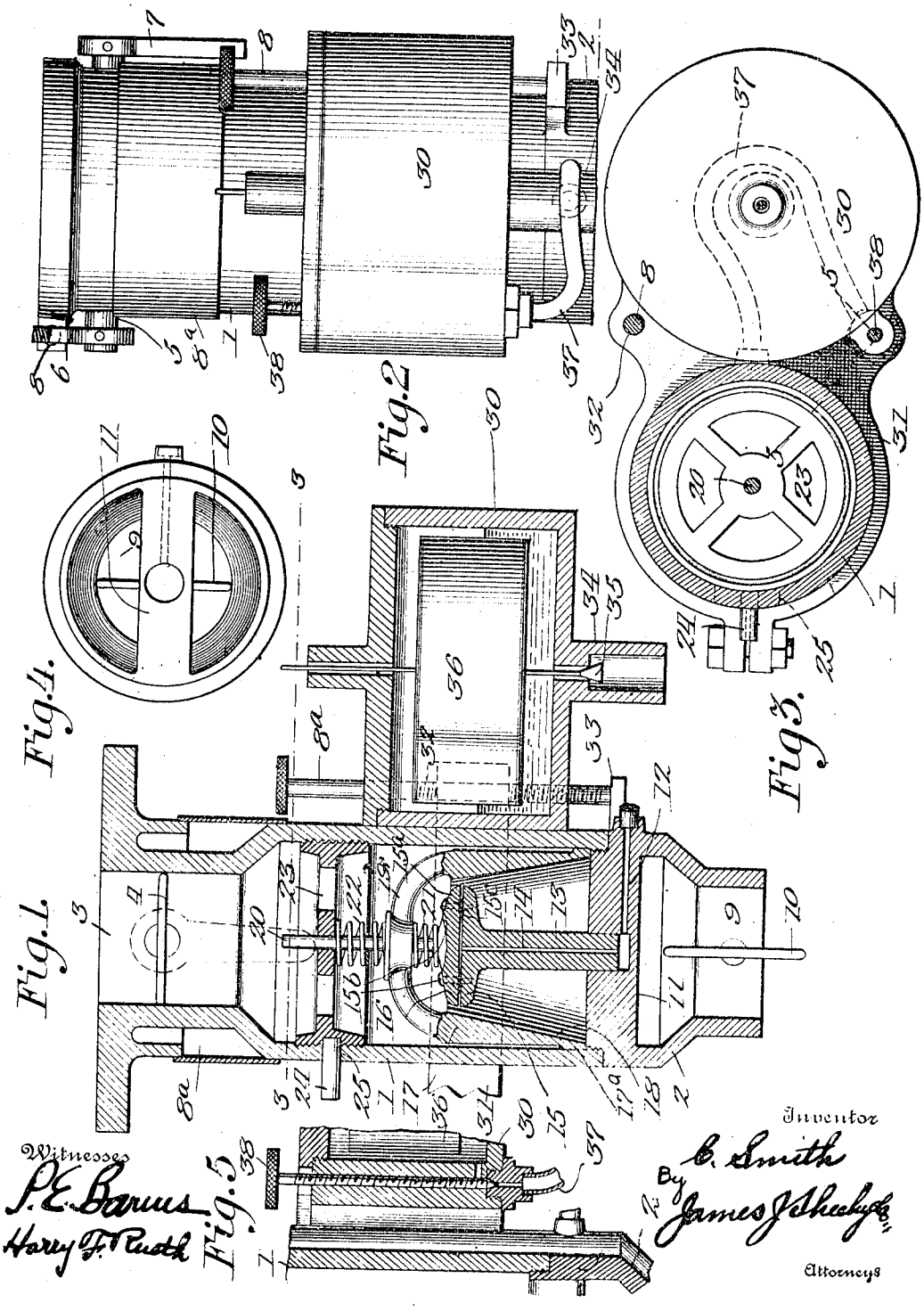
1,020,931.

Patented Mar. 19, 1912.



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CARBURETER.

1,020,931. Specification of Letters Patent. Patented Mar. 19, 1912.

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To all whom it may concern:

Be it known that I, CLEMENT SMITH, citizen of the United States, residing at Topeka, in the county of Shawnee and State of Kansas, have invented new and useful Improvements in Carbureters, of which the following is a specification.

My present invention pertains to carbureters; and it has for one of its objects to provide a carbureter calculated to spread the gasolene in a large circle and expose it to an annulus of air, which annulus is increased in thickness or volume as the speed of the engine with which the carbureter is connected increases, and which after receiving the gasolene is contracted, with the result that the two are thoroughly commingled.

Another object of the invention is to attain the above end by the use of a suction-controlled plunger valve, and to so guide the said valve as to assure it working freely at all times notwithstanding the fact that the fuel-gasolene prevents lubrication.

Another object is the provision in a carbureter of efficient means for adjusting and adjustably fixing the float chamber with respect to the carbureting chamber, to adjust the height of the gasolene level as occasion demands.

The invention will be best understood by reference to the following description when taken in connection with the accompanying illustration of one specific embodiment thereof, while its scope will be more particularly pointed out in the appended claims.

In the drawings which constitute part hereof: Figure 1 is a vertical section, partly in elevation, of a carbureter constructed in accordance with my invention. Fig. 2 is an elevation taken at right angles to Fig. 1. Fig. 3 is a horizintal section taken in the plane indicated by the line 3—3 of Fig. 1, looking downward. Fig. 4 is a plan of the lower section comprised in the carbureting chamber of the carbureter. Fig. 5 is a detail vertical section taken on the line 5—5 of Fig. 3.

Similar numerals of reference designate corresponding parts in all of the views of the drawings.

As will be readily understood the specific carbureting chamber comprises a main or body section 1 and a base section 2; the latter being threaded into the former. The carbureting chamber is provided at its upper end with a comparatively small or contracted eduction passage 3 designed to assure thorough commingling of the air and gasolene while the same are passing therethrough, and in the said passage is arranged the usual throttle valve 4 to the shaft 5 of which the usual levers 6 and 7 are fixed; the lever 6 being designed to bring up in one direction against an adjustable screw 8, Fig. 2, in a manner that is well known in the art. I prefer to surround the upper contracted portion of the carbureting chamber with a water jacket 8^a, but do not desire to be limited to the same, inasmuch as it may be employed or omitted without affecting my invention.

In the lower end of the carbureting chamber is a passage 9 for the admission of air, and in the said passage is the usual easy-starting butterfly valve 10, designed to be operated through a connection which I have not deemed it necessary to illustrate or describe.

The base section 2 of the carbureting chamber is provided with a cross-bar 11, Figs. 1 and 4, and in said cross-bar 11 is a gasolene duct 12 with which communicates the spray device of my improvement. In the best practical embodiment of my invention that I have as yet devised, the said spray device comprises an upstanding stem 13 in which is a duct 14, a horizontally-disposed and preferably circular head 15 on said stem, and a disk 15^a connected by screws 15^b to said head and spaced therefrom by washers 15^c, whereby a narrow horizontally disposed gasolene discharge passage 16 is afforded in communication with the duct 14.

Movable rectilinearly in the carbureting chamber is the plunger valve of the improvement. This plunger valve comprises a cylindrical portion 17 which surrounds the spray device and is provided with an upwardly tapered interior 18, and a cross-bar 19 arranged on the upper end of the cylindrical portion. In said cross-bar 19 is an aperture which loosely receives a stem 20, fixed to and rising from the disk 15^a of the spray device, and interposed between said disk of the spray device and the cross-bar 19 is a coiled spring 21, while arranged on the cross-bar 19 and surrounding the stem 20 is a coiled spring 22. Arranged above and contacting with the spring 22 is an adjusting nut 23 which loosely receives the stem 20 and is threaded into the body section 1, and is provided with a handle 24 that extends

through a horizontal slot 25 in said body section 1. See full lines in Fig. 1 and dotted lines in Fig. 3. By turning the nut 23 through a part of a circle the operator is enabled to increase or diminish the yielding pressure which the spring 22 exerts downwardly on the plunger valve, as occasion demands; the spring 21 serving merely to equalize the weight of the plunger valve.

By reference to Fig. 1 it will be noticed that the cylindrical portion 17 of the plunger valve is provided with a narrow portion 17ª which bears with an easy sliding fit in the bore of the carbureting chamber and that elsewhere the plunger valve does not contact with the wall of the bore. The said portion 17ª is assisted in guiding the valve rectilinearly in the chamber by the stem 20, and from this it follows that the valve is efficiently guided and at the same time is adapted to work freely or lightly without liability of binding in the bore. This will be appreciated as materially advantageous when it is borne in mind that were the bearing of the valve in the bore of the chamber made long enough to enable the valve to guide itself in the bore, the valve would bind in the bore and would be liable to be fixed by foreign substance drawn in with the gasoline especially in view of the fact that the gasolene prevents lubrication.

The operation of my improvement as thus far described is as follows: Gasolene being supplied to the duct 12, and the internal combustion engine with which the carbureter is connected being started, the upward suction exerted through the carbureter passage 3 will draw the plunger valve upward in proportion to the increase in speed of the engine, and in consequence as the speed of the engine increases the volume or thickness of the annulus of air that moves through the interior of the plunger valve and past the head of the spray device is increased, with the result that at all times the carbureter supplies explosive mixture of a quality best suited to the speed of the engine. Moreover as the speed of the engine is diminished the spring 22 gradually returns the plunger valve to the normal position shown in Fig. 1, and in that way assures the supply of air being commensurate with the speed of the engine. In this connection it will be noticed that it is the taper bore of the valve 17 that increases and diminishes the volume or thickness of the annulus on the up movement and down movement, respectively, of the valve. Arranged at one side of the body 1 of the carbureting chamber is a float chamber 30. This float chamber has formed integral with or fixed to it a portion 31, adapted to embrace the body 1 of the carbureting chamber in such manner as to hold the float chamber to the said body 1 and to be capable of sliding up and down on the same incidental to adjusting the height of the gasolene level in the chamber 30. The said adjustment is effected through the medium of a screw 8ª that is threaded at 32 through one side of the embracing portion 31 and bears at its lower end on the shelf 33 integral with the section 2 of the carbureting chamber. The float chamber 30 is supplied with gasolene from a suitable source of supply (not shown) through the pipe 34, and contains the usual valve 35 and float 36 that is fixed to and movable with the valve. It will also be noticed by comparison of several of the figures that the float chamber 30 is connected with the duct 12 through the medium of a flexible tube section 37, preferably of hollow wire, and consequently the continuity of the communication between the chamber 30 and the duct 12 will not be affected by bodily adjusting the chamber 30 up or down; also, that the float chamber 30 carries a needle valve 38, which has for its office to control the passage of gasolene from the chamber 30 to the duct 12.

While I have shown and described one form of my invention, it is to be understood that I am not limited to the details or the form or relative arrangement of parts disclosed, but that modifications may be made within the scope of my invention as claimed.

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

1. In a carbureter, the combination of a carbureting chamber adapted at one end for the admission of air and having its opposite end contracted, a suction-controlled, rectilinearly-movable valve arranged in the intermediate portion of the chamber and having an interior tapered toward the said contracted end of the chamber, means adjustably connected to the chamber at a point between the contracted end thereof and the valve and movable toward and from the valve, a spring interposed between said adjustable means and the valve, whereby the adjustable means is enabled to regulate the pressure which the spring exerts upon the valve, and fuel-supply means located within the valve.

2. In a carbureter, the combination of a carbureting chamber adapted at one end for the admission of air and having its opposite end contracted, a suction-controlled, rectilinearly-movable valve arranged in the intermediate portion of the chamber and having an interior tapered toward the said contracted end of the chamber, means adjustably connected to the chamber at a point between the contracted end thereof and the valve and movable toward and from the valve, a spring interposed between said adjustable means and the valve for yieldingly

pressing the valve in a direction away from said contracted end, whereby the adjustable means is enabled to regulate the pressure which the spring exerts upon the valve, a spring for pressing the valve in the opposite direction, and fuel-supply means located within the valve.

3. In a carbureter, the combination of a carbureting chamber, a spray device arranged in said chamber, a stem on said spray device, an adjusting nut threaded in said chamber and loosely receiving said stem and having a portion extending without the chamber, a suction-controlled rectilinearly-movable valve arranged in the chamber and surrounding the spray device and having an interior tapered toward the adjusting nut and also having a cross-bar loosely surrounding said stem, a coiled spring surrounding the stem and interposed between adjusting nut and valve, and a coiled spring surrounding the stem and interposed between the spray device and the cross-bar of the valve.

4. In a carbureter, the combination of a carbureting chamber having a shelf, a float chamber movable bodily at one side of the carbureting chamber and having a portion embracing the latter, a flexible conduit intermediate the float chamber and the carbureting chamber, and an adjusting screw threaded in one side of said embracing portion and bearing on said shelf.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

CLEMENT SMITH.

Witnesses:
E. E. BOWERS,
S. M. KETTERING.