C. SMITH.

CARBURETER.

APPLICATION FILED NOV. 2, 1910.

995,919.

Patented June 20, 1911

Fig. 1.

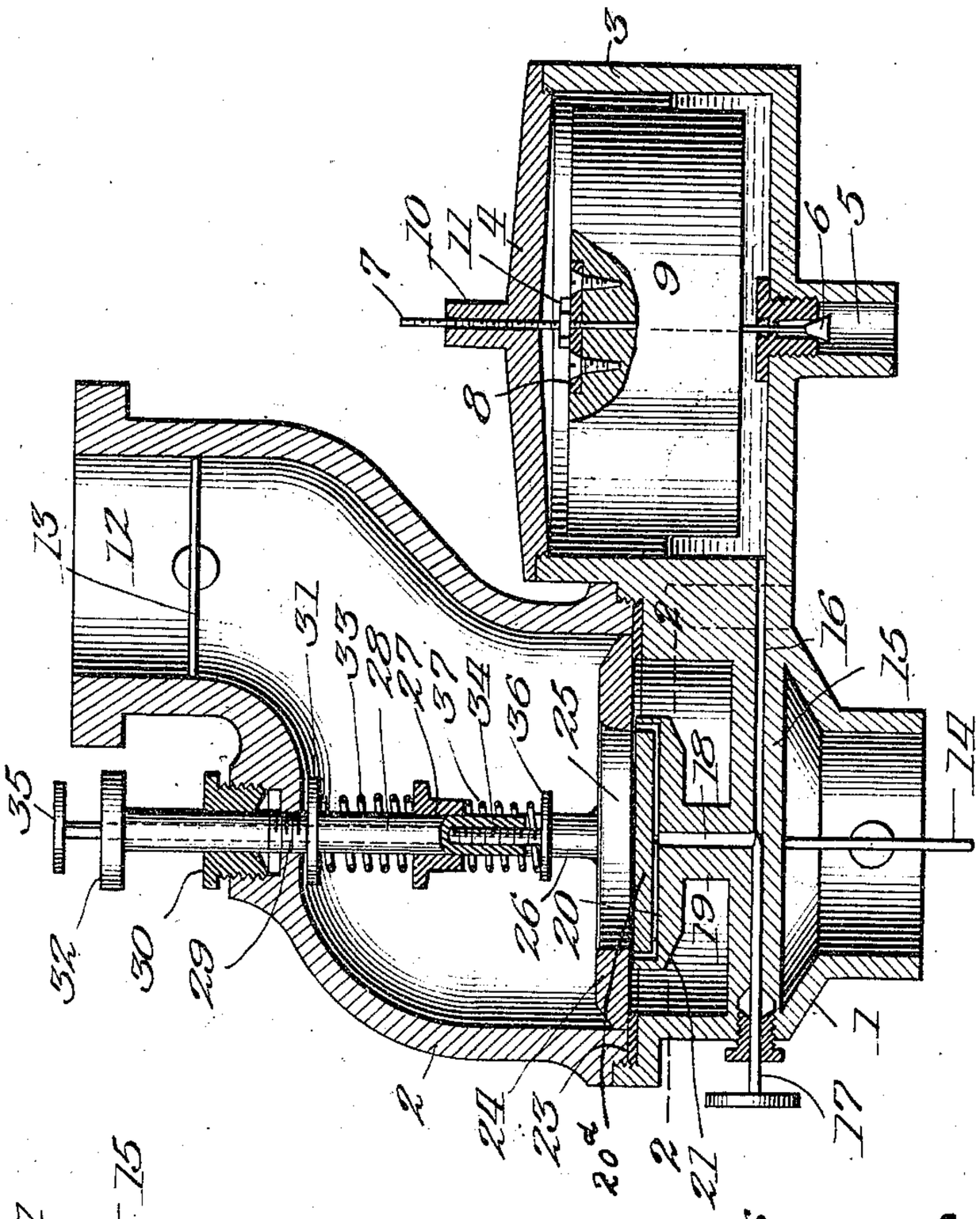

Fig. 2.

Fig. 3.

Witnesses

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UNITED STATES PATENT OFFICE.

CLEMENT SMITH, OF TOPEKA, KANSAS.

CARBURETER.

995,919. Specification of Letters Patent. Patented June 20, 1911.

Application filed November 2, 1910. Serial No. 590,325.

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 relates to carbureters; and it has for its object to provide a practical carbureter in which a suction-controlled valve is utilized to increase the thickness or volume of an annulus of air as the speed of the internal combustion engine increases, and liquid fuel is commingled with the air in the said annulus and while the air is passing the fuel supply.

With the foregoing in mind the invention will be fully understood from the following description and claims when the same are read in connection with the drawings accompanying and forming part of this specification, in which:

Figure 1 is a vertical section, partly in elevation, of a carbureter constituting one embodiment of my invention. Fig. 2 is a detail horizontal section taken on the line 2—2 of Fig. 1, looking downward. Fig. 3 is a side elevation of the suction-controlled valve *per se*.

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

The carbureter comprises a carbureting chamber and a float chamber, and the carbureting chamber includes or is formed by a base section 1 and a body section 2 threaded into the base section. The major portion 3 of the float chamber is integral with the base section 1 of the carbureting chamber, and in the said base portion 3 is threaded the top 4 of the float chamber.

The float chamber is designed to be supplied with gasolene through the conduit 5, and communication between the said conduit and the interior of the chamber is controlled by a valve 6 which has a stem 7 on which is threaded a plate 8 fixed to and carried by the float 9. It will also be noted that the stem 7 extends loosely through the float 9 and also through a guide aperture 10 in the cover 4, and that a jam-nut 11 is mounted on the stem and arranged to be moved against the plate 8. Thus when the cover 4 is removed, the float 9 can be conveniently adjusted on the stem 7, as occasion demands, and can then be as readily fixed adjustably on the said stem.

The body 2 of the carbureting chamber is provided with a contracted eduction passage 12 in which is arranged a butterfly valve 13 of the ordinary construction or any other construction consonant with the purpose of my invention. It will also be noted by comparison of Figs. 1 and 2 that the lower section 1 of the carbureting chamber is open for the admission of air, and that an easy starting valve 14 is arranged in the lower portion of said section 1. The said valve 14 and the connection to the valve 14 are of ordinary well known construction, and I have therefore deemed it unnecessary to illustrate the said connection. It will also be noted that the section 1 is provided with a diametrical portion 15 in which is arranged a duct 16 that leads from the float chamber, and a needle valve 17, which latter has for its office to control communication between the duct 16 and the upright duct 18.

The fuel supply or spray device comprised in the carbureter is made up of a stem 19 that is fixed to and rises from the diametrical portion 15 and contains the upright duct 18, and a head 20 arranged at the upper end of the stem 19. Said head 20 contains radial passages 21 which communicate with and extend horizontally outward from the upper end of the duct 18, and an annular upright eduction orifice 22, which is designed to receive liquid fuel, such as gasolene, from the passages 21 and discharge the same upward.

The head 20 may be made in any manner compatible with the purpose of my invention without involving departure from the scope of the same as claimed. For instance, a depression may be formed in the upper end of the lower or major portion of the head, and a disk 20^a fixed or fastened in the depression, by any suitable means that I have not deemed it necessary to illustrate, in such manner that the annular eduction orifice 22 is formed between the perimeter of the disk and the side wall of the depression and radial passages, which connect the upright duct 18 and the said orifice 22, are formed between the bottom of said depression and the under side of the said disk 20^a.

Interposed between the base section 1 and the body 2 of the carbureting chamber is a washer 23, preferably of leather, and on the inner portion of the said washer the suction-

controlled valve 24 is designed to normally rest as shown in Fig. 1. The said valve 24 is annular in form and has an aperture or opening 25 of considerable size; and it is designed when in its normal position to rest over and slightly above the annular fuel-discharging orifice 22 in the head of the spray device. By comparison of Figs. 1 and 3, it will be noted that the valve 24 is provided with an arch 26 in the uppermost portion of which is a vertically disposed, smooth bore aperture 27. This aperture 27 loosely receives an upright guide rod 28 of circular form in cross-section. The said guide rod 28, in turn, is threaded at 29 through the wall of the body section 2, and is extended upward through a stuffing gland 30. It will also be noted that the guide rod 29 is provided with an abutment 31 and a finger-piece 32; the abutment forming a bearing for a coiled spring 33 interposed between it and the valve arch 26. Interiorly the rod 28 is threaded for the engagement of a threaded rod 34, which is headed or provided with a finger-piece 35 at its upper end, and has an enlargement 36 at its lower end. This enlargement 36 forms a bearing for the coiled spring 37, which is interposed between it and the arch 26. Obviously the spring 33 is calculated to yieldingly resist upward movement of the suction-controlled valve 24, while the spring 37 serves merely to equalize the weight of the said valve 24. By turning or adjusting the rod 28, the pressure of the spring 33 may be increased or diminished as occasion demands, while by turning the rod 34 the spring 37 may be nicely regulated.

When my novel carbureter is properly connected with an internal combustion engine, and the engine is started, the suction upward through the passage 12 of the carbureting chamber will operate to lift the valve 24 against the action of the spring 33, whereupon the air drawn into the carbureting chamber and past the fuel supply device, will while in annular form, be commingled with the fuel or gasolene, and an explosive mixture produced, and in passing through the contracted passage 12 the air and gasolene will be thoroughly mixed and the value of the explosive mixture increased. The gasolene being spread out into as large a circle as practical and the air reduced to as small an annulus as possible gives an evenness of mixture that insures the production of more power and certainty of firing. It will also be apparent that as the speed of the engine with which the carbureter is connected, is increased, the valve 24 will be opened by suction to a greater extent, and in consequence the thickness or volume of the annulus of air will be increased to assure the quality of the explosive mixture being commensurate with the speed of the engine. Again, as the speed of the engine and the upward suction through the passage 12 diminish, the valve 24 will approach its seat on the washer 23 by reason of gravity and the action of the spring 33.

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 form or relative arrangement of parts disclosed, but that extensive modifications may be made therein without departing from the scope of the 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 having an eduction passage for explosive mixture and an entrance for air and also having an interior abutment disposed at a right angle to the said entrance, a spray device having an annular vertically-disposed fuel discharge arranged in said chamber and also having means for supplying fuel to said discharge; the said spray device being separated from the wall of the chamber by an annular intervening space and being arranged with its upper side in a horizontal plane slightly below that of the said abutment, and an annular, horizontally-disposed suction-controlled valve located in the chamber above and in the same vertical plane as said discharge and movable vertically away from and toward both abutment and fuel discharge.

2. In a carbureter, the combination of a carbureting chamber having an eduction passage for explosive mixture and an entrance for air, fuel-supply means located in the chamber, a suction-controlled valve having an apertured portion, a guide rod threaded through the chamber wall and extending loosely through the aperture in the said valve portion, a spring interposed between the valve portion and an abutment on the rod above said portion, a rod extending through and threaded in the first-named rod and having an enlargement disposed below the valve portion, and a spring interposed between the said enlargement and the valve portion.

3. In a carbureter, the combination of a carbureting chamber having an eduction passage for explosive mixture and an entrance for air and also having a crosswise portion adjacent said entrance, and a spray device on said crosswise portion which spray device comprises a stem and a head thereon and is provided in said head with an annular fuel discharge directed toward the eduction passage, an annular suction-controlled valve movable away from and toward the said annular fuel discharge and having an apertured arch, a guide rod threaded through the chamber wall and extending loosely through the aperture in the valve arch, a

spring interposed between the valve arch and an abutment on the rod above said arch, a rod extending through and threaded in the first-named rod and having an enlargement disposed below the valve arch, and a spring interposed between the said enlargement and the valve arch.

4. In a carbureter, the combination of a carbureting chamber having an eduction passage for explosive mixture and an entrance for air and also having an interior abutment disposed at a right angle to the said entrance, a spray device having an annular vertically-disposed fuel discharge arranged in said chamber and also having means for supplying fuel to said discharge; the said spray device being separated from the wall of the chamber by an annular intervening space and being arranged with its upper side in a horizontal plane adjacent that of the said abutment, and an annular horizontally-disposed suction-controlled valve located in the chamber above and in the same vertical plane as said discharge and movable vertically away from and toward both abutment and fuel discharge.

5. In a carbureter, the combination of a carbureting chamber having an eduction passage for explosive mixture and an entrance for air, fuel supply means located in the chamber, a suction-controlled valve having an apertured portion, a rod adjustable vertically in the carbureting chamber and with respect to the fuel supply means and extending loosely through the aperture in said valve portion and provided below said portion with means for supporting and moving the valve upward, and a spring surrounding said rod and interposed between said valve portion and an upper abutment in the chamber.

6. In a carbureter, the combination of a carbureting chamber having an eduction passage for explosive mixture and an entrance for air and also having a crosswise portion adjacent said entrance and a spray device on said crosswise portion which spray device comprises a stem and a head thereon and is provided in said head with an annular fuel discharge directed toward the eduction passage, an annular suction-controlled valve movable away from and toward the said annular fuel discharge and having an apertured arch, a rod adjustable vertically in the carbureting chamber and with respect to the fuel supply means and extending loosely through the aperture in said arch and provided below the arch with means for supporting and moving the valve upward, and a spring surrounding said rod and interposed between said valve portion and an upper abutment in the chamber.

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

CLEMENT SMITH.

Witnesses:
E. E. Bowers,
S. M. Kettering.