J. W. RAYMOND.

CARBURETER.

APPLICATION FILED MAR. 5, 1913.

1,088,181.

Patented Feb. 24, 1914.

2 SHEETS—SHEET 1.

Fig. 1.

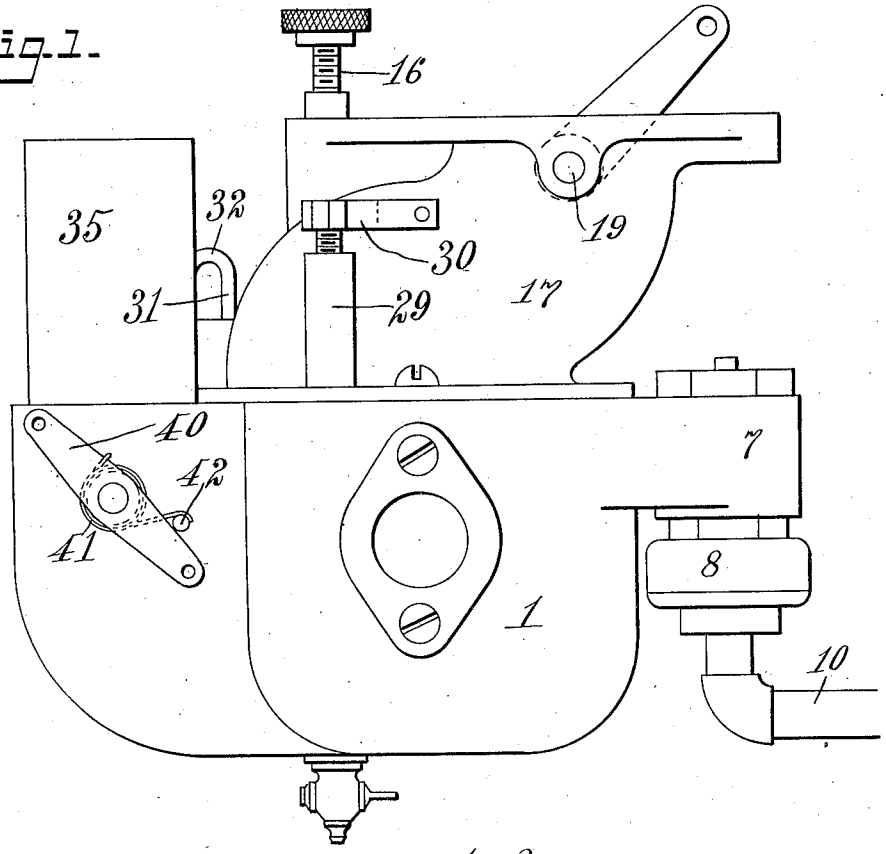
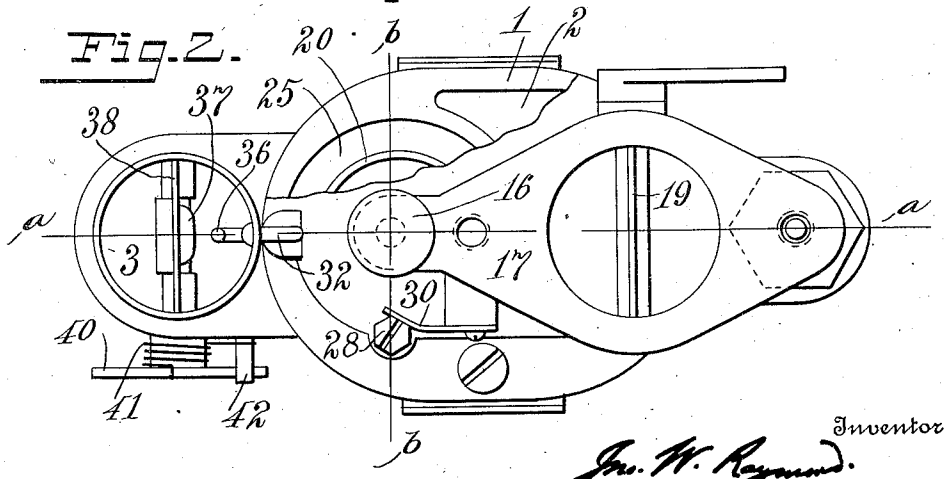



Fig. 2.




Witnesses

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2 SHEETS—SHEET 2.

Fig. 3.

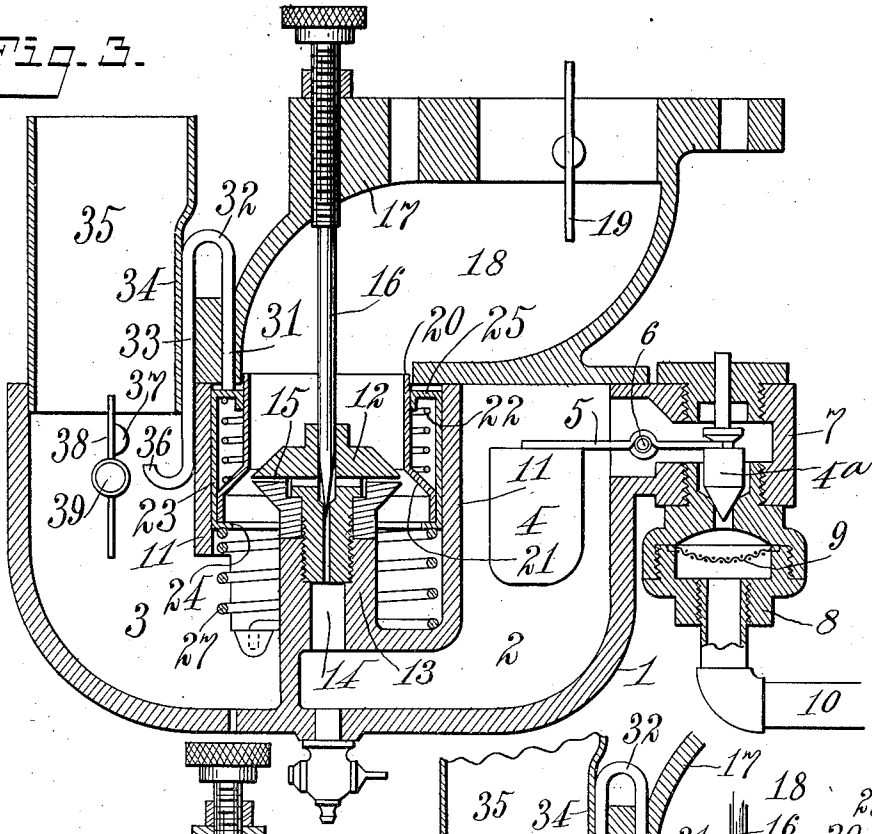
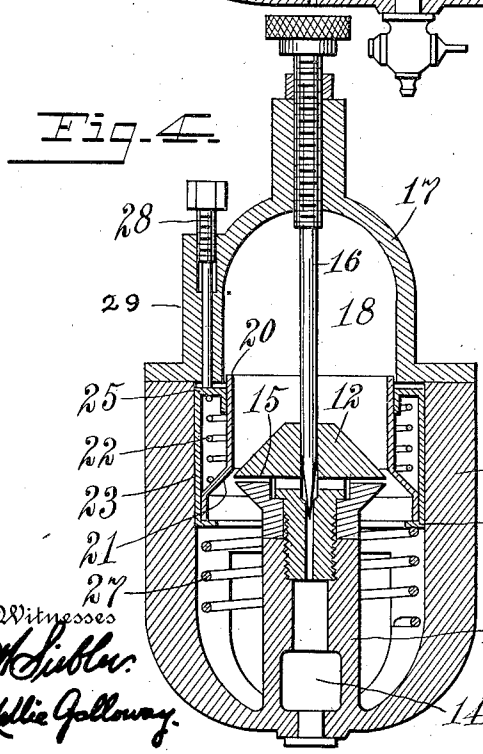



Fig. 4.



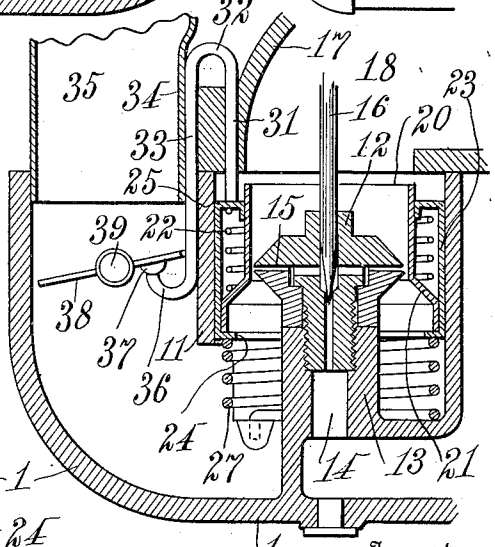




Fig. 5.

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# UNITED STATES PATENT OFFICE.

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## CARBURETER.

1,088,181. Specification of Letters Patent. Patented Feb. 24, 1914.

Application filed March 5, 1913. Serial No. 752,156.

*To all whom it may concern:*

Be it known that I, JOHN W. RAYMOND, a citizen of the United States, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Carbureters; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to new and useful improvements in carbureters and comprises certain improvements of the carbureter shown and described in Letters Patent granted to myself, September 3, 1912, No. 1,037,834.

The present invention relates particularly to means for decreasing the supply of the air at such times as when the motor is being started, thus providing a richer mixture and overcoming the condensing effect of the manifold and insuring an easy starting operation of the motor.

The object of the invention is to provide a carbureter which is capable of most efficiently meeting all demands of the motor, with a special view to furnishing a proper mixture or fuel for starting.

Referring to the accompanying drawings, Figure 1 is a side elevation of a carbureter provided with my invention; Fig. 2 is a top plan view of the same with parts broken away; Fig. 3 is a section on the line *a*—*a* of Fig. 2; Fig. 4 is a section on the line *b*—*b* of Fig. 2; Fig. 5 is a view of the mixing chamber similar to Fig. 3 with the parts shown in a different position.

In the specification and drawings, similar reference characters indicate corresponding parts.

Referring more particularly to the drawings, 1 represents the body or casing of the carbureter, the same being provided with a gasolene chamber 2 and an air inlet passage 3. The usual float 4 is located in the chamber 2 and connected with a gasolene inlet valve $4^a$ by a lever 5 pivoted at 6. The valve $4^a$ is mounted in a chambered extension 7 of the shell and seats on an apertured plug 8. The gasolene is introduced to the carbureter through a pipe 10 and enters the chamber 2 through said valve after passing through a strainer 9 mounted in said plug 8. Within the body of the carbureter is provided an annular wall 11 which forms a carbureting space which communicates with the air passage 3. Mounted in the said carbureting space is a jet or gasolene nozzle 12 which extends from a nipple 13 and communicates with the gasolene chamber 2 through a passage 14. The jet or nozzle 12 is constructed of upper and lower portions which combine to provide an annular orifice through which the gasolene is discharged into the carbureting space. The flow of gasolene through said jet 12 is controlled by a needle valve 16 mounted in an upper portion 17 of the carbureter casing. The said portion 17 is provided with a mixture outlet passage 18 which communicates with the manifold (not shown). The outlet to the manifold is through a well known type of throttle valve 19. Surrounding the jet or nozzle 12 is a shiftable sleeve 20, the lower end 21 of which is of conical form to increase the air space on the interior of said sleeve at that point. This sleeve controls the supply of air to the jet, and is vertically movable, and may be elevated by the suction due to the air passing the jet. The operation is such that the volume of air is proportional to the demands of the engine. The movement of the sleeve 20 is controlled by gravity, or preferably by a spring 22 which encircles the upper part thereof. The normal position of said sleeve is shown in Figs. 3 and 4. When in this position, however, the amount of air around the jet 12 does not provide a mixture sufficiently rich to insure an easy starting of said motor, owing to some of the mixture condensing on the walls of the manifold. To reduce the volume of the air, when starting the motor, the sleeve 20 is adapted to be depressed or lowered to the position shown in Fig. 5; this reduces the air space around the jet. The said sleeve is vertically movable, independently of or with an outer cylinder 23 which supports it. The said outer cylinder 23 is provided with a lower flange 24, upon which the sleeve 20 rests, and with an upper flange 25 which forms a guide for the upper end of said sleeve 20. The said cylinder 23 is vertically movable in the annular

wall 11. It is held in the upper position by a spring 27. The upper position of said cylinder 23, which position controls the normal position of the sleeve 20, is adjusted by a screw 28 which engages the upper flange 25 of said cylinder. The screw 28 is mounted in a boss 29 extending from the upper portion 17 of the casing and is provided with a locking spring 30. Adapted to engage said upper flange 25 to depress the cylinder 23 and sleeve 20, is the arm 31 of a yoke 32, which engages said upper flange. The said arm 31 moves in an opening, while the other arm 33 of said yoke is guided by a depressed portion 34 of an air-intake tube 35 which extends from the inlet which conducts the air to the passage 3. The lower end of the yoke arm 33 is provided with an upturn 36 which lies in the path of a projection 37 on a rotary valve 38 mounted in said air passage 3. The valve 38 is mounted on a shaft 39 and is controlled by a lever 40 and a spring 41. The movement of said valve is limited by a pin 42, and when said lever 40 is moved to actuate the valve 38, the supply of air passing through the passage 3 is materially reduced. The flow of air is restricted around the jet 12 by the sleeve 20, said sleeve being depressed by said valve 38 through the agency of the yoke 32 and cylinder 23. When the sleeve 20 is in a normal position, as shown in Figs. 3 and 4, the conical portion or lower end thereof extends above the orifice 15 and enlarges the surrounding air space, and, on the contrary, when said sleeve is in a lowered position, as in Fig. 5, the smaller diameter thereof surrounds the nozzle or jet 12 and materially restricts the flow of air, thus insuring a richer mixture or fuel.

It is to be understood that the lowering of the cylinder 23, against the tension of the spring 27, is accomplished manually and only for the purpose of the starting operation of the motor, and that the upward and independent movement of the sleeve 20, against the tension of the spring 22, is accomplished automatically, and is controlled by the demands of the engine as regulated by the throttle valve 19. The lever 40 is connected with a suitable flexible or other connection (not shown) which extends within reach of the operator.

While I have described my improved means for mechanically controlling the air gap around the gasolene spray with some particularity, I do not wish to be limited to unessential details as these may be more or less varied without affecting the results accomplished by the essentials, which essentials combine to produce a positive and simple manually operated means for controlling the air gap around the gasolene jet at the needful times.

Having described my invention, I claim—

1. In a carbureter, a casing forming a gasolene chamber, and an air passage, a jet mounted in the inner terminal of said passage, a tubular member surrounding said jet and controlling the air space therearound, an outer tubular member movable in conjunction with the first named tubular member to decrease the air space around the jet, a valve in said air passage, and means interposed between said outer tubular member and said valve to actuate both tubular members, whereby a mixture of greater richness may be obtained at desired times.

2. In a carbureter, a casing forming a gasolene chamber and an air passage, a jet mounted in said air passage, a sleeve surrounding said jet, a tubular member surrounding said sleeve, a spring holding said sleeve and said tubular member in the upper position, and means for lowering said tubular member and therewith the sleeve, to reduce the air gap surrounding said jet.

3. In a carbureter, a casing forming a gasolene chamber and an air passage, a jet in the inner terminal of said passage, a sleeve surrounding said jet, a slidingly mounted member supporting said sleeve, a valve in the entrance to said air passage, and means interposed between said valve and said slidingly mounted member for actuating said slidingly mounted member to decrease the air space around the jet.

4. In a carbureter, a casing forming a gasolene chamber and an air passage, a jet in said passage, a sleeve surrounding said jet, a member supporting said sleeve, a rotary valve in said air passage, and means interposed between said rotary valve and the member supporting said sleeve for operating said member to decrease the air space around the jet.

5. In a carbureter, a casing forming a gasolene chamber and an air passage, a jet in said passage, a sleeve constituting an air controller surrounding said jet, a slidable member supporting said sleeve or air controller, a spring exerting upward pressure on said slidable member, an air-admission valve in said air passage, and means interposed between said valve and said slidable member for operating the same against the pressure of said spring.

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

JOHN W. RAYMOND.

Witnesses:
MATTHEW SIEBLER,
MELLIE GALLOWAY.