J. W. SNEDEKER.

CARBURETER.

APPLICATION FILED JUNE 6, 1907.

958,897.

Patented May 24, 1910.

2 SHEETS—SHEET 1.

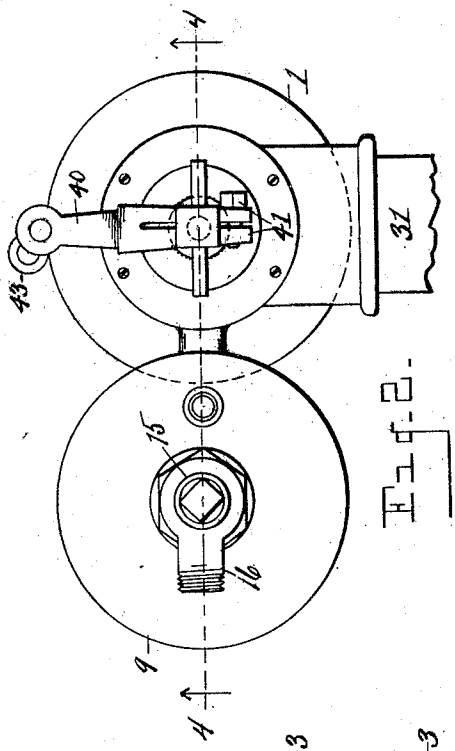

Fig. 2.

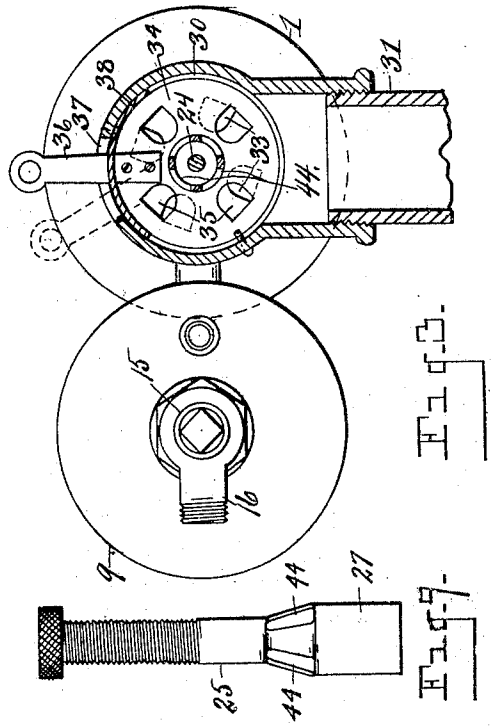

Fig. 4.

Fig. 7.

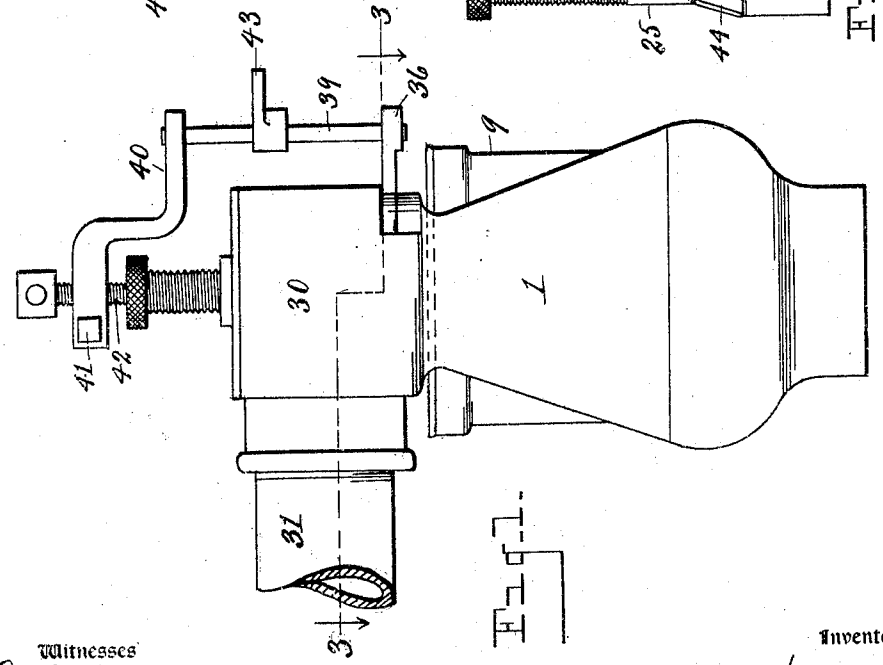

Fig. 1.

Witnesses

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2 SHEETS—SHEET 2.

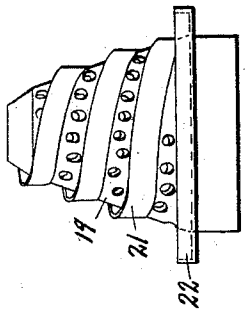

Fig. 7.

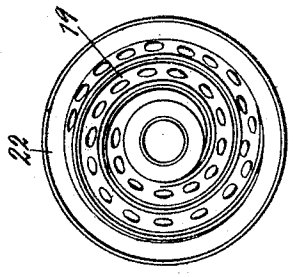

Fig. 8.

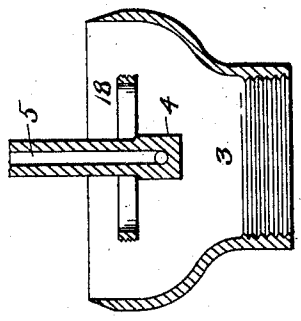

Fig. 5.

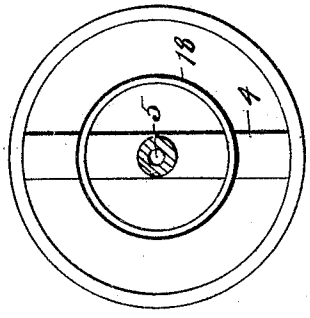

Fig. 6.

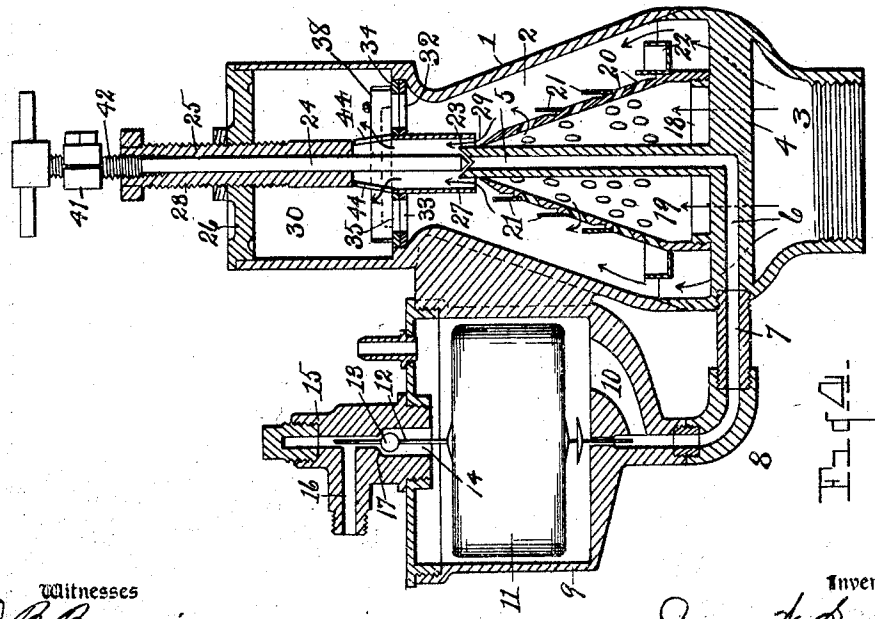

Fig. 4.

Witnesses

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CARBURETER.

958,897. Specification of Letters Patent. Patented May 24, 1910.

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To all whom it may concern:

Be it known that I, JAMES W. SNEDEKER, a citizen of the United States, residing at Adrian, in the county of Lenawee, State of Michigan, 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 figures of reference marked thereon, which form a part of this specification.

This invention relates to carbureters for internal combustion engines, and consists in the construction and arrangement of parts hereinafter fully set forth and claimed.

The object of the invention is to produce a constant level carbureter of simple and compact construction, wherein the arrangement is such as to enable a proper mixture to be obtained at all times, and wherein provision is made for concentrating the air current around the gasolene nozzle in the air passage way and directing the air blast forcibly by said nozzle to produce the proper atomizing effect as required when starting, especially in a low temperature. Provision is also made in my improved carbureter for exposing a large surface of gasolene to the action of the air, thereby insuring proper vaporization.

The above object is attained by the structure illustrated in the accompanying drawings, in which:—

Figure 1 is an elevation of a carbureter involving my invention. Fig. 2 is a plan view thereof. Fig. 3 is a horizontal section as on line 3—3 of Fig. 1. Fig. 4 is a central vertical section through the float and carbureting chambers and through the throttle and regulating valves as on line 4—4 of Fig. 2. Fig. 5 is a sectional view through the lower portion of the carbureting chamber forming the air intake port, the stand pipe or gasolene supply nozzle being in vertical section. Fig. 6 is a plan view of the structure shown in Fig. 5. Fig. 7 is an elevation of the perforated evaporating cone down which the gasolene is adapted to flow. Fig. 8 is a plan view of Fig. 7. Fig. 9 is an elevation of the adjustable sleeve, and of the strangle tube at the lower end thereof which embraces the upper end of the gasolene supply nozzle.

Referring to the characters of reference, 1 designates the body of the carbureter which is tapering in form and in which is located the carbureting chamber 2. At the bottom of the body of the carbureter is the air intake port 3 and crossing said port within the carbureting chamber is a bar 4 from which rises the centrally disposed gasolene supply nozzle 5 having a passage-way therethrough which communicates with a horizontal passage-way 6 in one end of the cross bar 4. Communicating at one end with the passage-way 6 is a pipe coupling 7 to the outer end of which is connected an elbow 8 which is in turn connected to the bottom of the gasolene reservoir 9, in which is formed a passage-way 10 that communicates with the elbow and with the coupling 7, thereby establishing communication between the reservoir and the gasolene feed nozzle.

Within the reservoir is a suitable float 11 carrying at its upper end a stem 12 to which is attached a ball valve 13 which lies in a chamber 14 in the fitting 15 screwed into the top of said reservoir. Formed through said fitting and communicating with the chamber 14 is the gasolene supply passage-way 16. Within the upper end of the chamber 14 is a valve seat 17 against which the valve is carried as the float is raised by the inflowing gasolene, thereby cutting off said flow until the float falls sufficiently to open said valve. By this arrangement the gasolene in the reservoir is maintained at a constant level which level is about on a plane with the upper end of the feed nozzle within the carbureting chamber.

Formed upon the cross bar 4 is an integral ring 18 which is threaded and onto which is screwed the base of the cone 19 which stands centrally within the carbureting chamber and the taper of whose wall coincides with the tapered wall of said chamber. The cone 19 is truncated and is seated over the feed nozzle 5, the upper end of which passes through the upper end of said cone. The position of the cone within the carbureting chamber is such that a portion of the air which enters through the port 3 will pass into said cone and a portion will pass around it, as shown by the arrows in Fig. 4. Formed through the wall of the cone are a number of apertures 20 which are not straight through the wall of the cone, but are inclined as shown, the outer ends of said apertures being lower than the inner ends there-

of. Encircling the cone from the top to the bottom is a spiral flange 21 which serves to prevent the gasolene flowing down one side of the cone under conditions where the carbureter may for some time be standing at an angle, said flange serving to form a spiral way down which the gasolene may pass in its travel from the top of the cone to the base thereof. At the base of the cone is a saucer 22 into which the gasolene flows and from which any excess of gasolene may be vaporized by the current of air passing through the carbureting chamber. The upper end of the feed nozzle is concaved, as shown at 23, forming a seat for the point of the regulating valve 24 which passes downwardly through a sleeve 25 screwed through the top 26 of the carbureter, said valve being threaded in said sleeve for the purpose of adjustment. Formed upon the lower end of the sleeve 25 is a flaring tube 27 of greater diameter than the upper end of the feed nozzle and surrounding said nozzle below the upper end thereof, the lower end of said tube standing adjacent to the upper end of the cone. By adjusting said sleeve through the medium of the screw threads 28 thereon, the tube 27 may be raised or lowered to vary the area of the opening 29 between its lower end and the upper end of the cone.

Above the carbureting chamber is a chamber 30 into which the explosive mixture passes and with which the pipe 31 communicates that leads to the engine cylinder, not shown. Dividing the chamber 30 from the carbureting chamber is a disk 32 having a number of apertures 33 therethrough, said disk 32 closely embracing the tube 27. Mounted upon the disk 32 and also embracing the tube 27 is a rotary throttle 34 having apertures 35 therein adapted to be made to register with the apertures 33 in the disk 32 by a rotation of said throttle. A movement of the throttle in a reverse direction will close the apertures through the disk 32 by carrying the solid portions of the throttle over said apertures.

To provide for actuating the throttle disk for the purpose of varying the area of the openings therethrough or for entirely closing the throttle openings, a lever 36 is attached to said disk which extends through a horizontal slot 37 in the wall of the chamber 30. By a movement of said lever, as shown by dotted lines in Fig. 3, the throttle disk may be partially rotated for the purpose before described. To cover the opening 37 through which said lever passes, the throttle disk is provided with a circular flange 38 which lies against the inner wall of the chamber 30 over the slot 37 and is of such length as to always cover said slotted opening no matter in what position the throttle disk may be placed.

For the purpose of regulating the feed of the gasolene in accordance with the area of the opening through the throttle, the outer end of the lever 36 is connected by a vertical standard 39 with the free end of an angle lever 40 which is clamped at 41 to the threaded stem 42 of the regulating valve 24. Attached to the standard 39 is an actuating bar 43 to which may be attached a rod leading to any desired point. By a movement of the bar 43, the lever 36 may be swung to vary the opening through the throttle, which operation will at the same time swing the lever 40 to turn the regulating valve 24 and thereby adjust the flow of gasolene in accordance with the volume of air passing through the throttle so that the mixture may be maintained uniform.

It will be noted that the upper end of the tube 27 is provided with openings 44 above the throttle disk, the purpose of which is to allow a limited flow of air through the tube 27 when the throttle is closed.

In the operation of this device at each inspiration of the engine, a strong current of air will be created through the carbureting chamber, the chamber 30 and through the pipe 31 to the engine. This rush of air through the carbureting chamber will create a partial vacuum therein which will cause the gasolene to flow from the upper end of the feed nozzle and trickle down upon the cone, being directed by the flange 21 in a spiral path around the cone and being subjected in its downward course to the action of the small currents of air which pass outwardly at a downward angle through the apertures 30, whereby the gasolene is readily vaporized and carried with the air current in the form of an explosive mixture into the engine cylinder. Any excess of gasolene not vaporized during its passage down the cone, will be retained in the saucer 22.

When starting an engine on a cold day, it is often difficult to vaporize a sufficient quantity of gasolene to fill the cylinder with an explosive mixture. To overcome that difficulty, the throttle is closed so that the only passage for the air from the carbureting chamber is through the lower end of the tube 27 around the top of the cone, and out the apertures 44 in said tube above the throttle disk. By adjusting said tube the opening 29 between its end and the cone may be regulated so that on an inspiration of the engine, the air will be drawn through said opening with great velocity, whereby it is caused to take up the gasolene from the end of the nozzle and atomize it, insuring the entrance into the cylinder of a sufficient charge of explosive mixture to give the engine the required impulse. After the engine shall have attained some speed, the throttle is opened such distance as may be required to supply the engine with a full charge.

Having thus fully set forth my invention,

what I claim as new and desire to secure by Letters Patent, is:—

1. In a carbureter for explosive engines, the combination of a carbureting chamber, a gasolene feed nozzle extending vertically into said chamber, means for maintaining the gasolene in said nozzle at a uniform level, a hollow, perforated cone through which air may pass, said cone extending into the carbureting chamber free from the wall thereof and around which the air is adapted to pass, said cone surrounding said feed nozzle from the apex of which said nozzle projects and onto which gasolene from the nozzle is adapted to flow, a receptacle at the base of the cone for the surplus gasolene and means for regulating the flow of gasolene through the nozzle.

2. In a carbureter, the combination of the carbureting chamber, a feed nozzle standing therein, means for maintaining the gasolene at a uniform level in said nozzle, a truncated cone surrounding the nozzle through the apex of which the nozzle projects, means for regulating the flow of gasolene through the nozzle, and means for directing gasolene in a spiral path around said cone.

3. In a carbureter, the combination of a carbureting chamber, an air intake passage below said chamber, a gasolene nozzle standing in the carbureting chamber and connected with a source of gasolene supply, a hollow cone within the carbureting chamber surrounding said nozzle and from the apex of which the nozzle projects, said cone having apertures therethrough which communicate with the air passage and with the carbureting chamber, an adjustable tube embracing the upper end of the gasolene nozzle, and means for directing the air passing through the carbureting chamber wholly through said tube.

4. In a carbureter, the combination of the carbureting chamber, a gasolene nozzle standing therein, a cone within said chamber embracing the nozzle and onto which the gasolene is adapted to flow, means for regulating the flow of gasolene through the nozzle, a tube embracing the upper end only of said nozzle and standing adjacent to the wall of the cone at the upper end thereof, and means for directing the air current passing through the carbureter exterior to the cone upwardly along the surface of said cone and wholly through said tube.

5. In a carbureter, the combination of the carbureting chamber, a gasolene feed nozzle standing therein, a cone embracing said nozzle onto which the gasolene is adapted to flow, an educt pipe communicating with the carbureter through which the explosive mixture is adapted to pass, means for regulating the passage of air from the carbureting chamber to said pipe, a tube above said cone freely embracing the gasolene nozzle at its lower end and communicating at all times at its upper end with said educt pipe.

6. In a carbureter for explosive engines, the combination of the carbureting chamber, a gasolene feed nozzle standing therein, a cone embracing said nozzle onto which the gasolene is adapted to flow, means for regulating the flow of gasolene through said nozzle, a throttle for controlling the passage of the carbureted air from the carbureting chamber, a tube passing through the throttle open at its upper end and at its lower end embracing the gasolene feed nozzle adjacent to said cone.

7. In a carbureter, the combination of a carbureting chamber whose walls are tapered, a gasolene feed nozzle standing therein, a cone embracing said nozzle and onto which the gasolene is adapted to flow, said cone being spaced from the wall of the carbureting chamber and having its surface substantially parallel with said wall, said cone being hollow and perforated and so positioned as to permit of the passage of air around said cone as well as through it, a tube freely embracing the upper end only of the gasolene nozzle, the lower end of said tube standing adjacent the apex of said cone.

In testimony whereof, I sign this specification in the presence of two witnesses.

JAMES W. SNEDEKER.

Witnesses:

GEO. K. BENNETT,

F. E. OSGOOD.