C. E. MAUD.

CARBURETER.

APPLICATION FILED MAY 14, 1909.

995,976. Patented June 20, 1911.

Fig. 1.

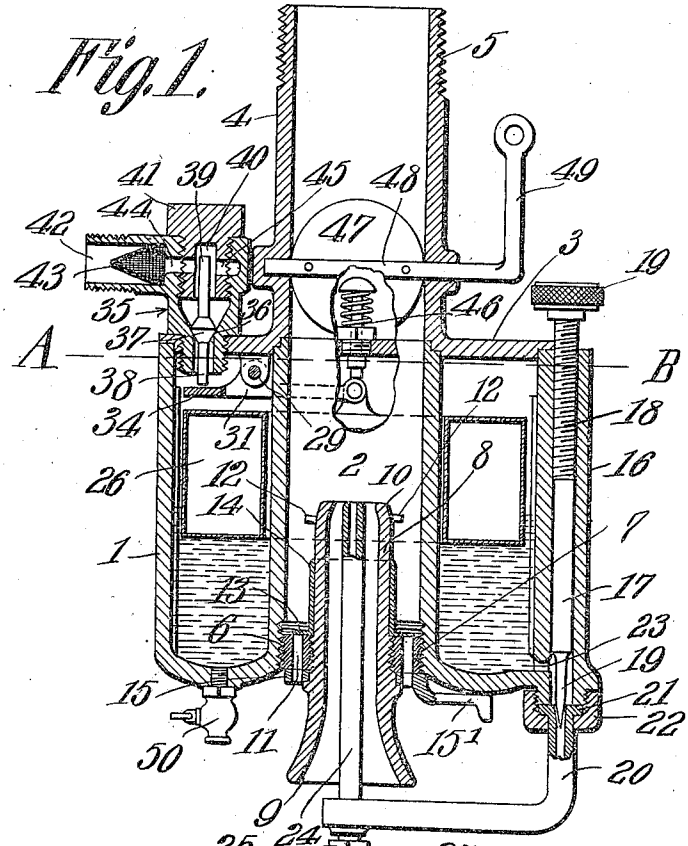
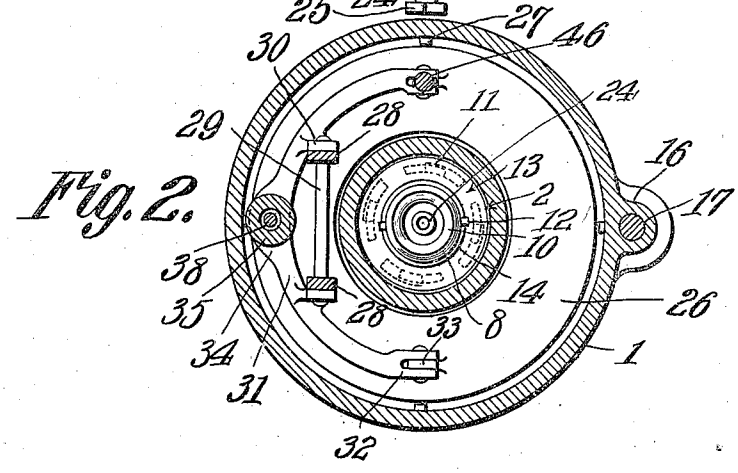


Fig. 2.



Witnesses

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CHARLES EDWARD MAUD, OF MONTEREY, CALIFORNIA.

CARBURETER.

995,976. Specification of Letters Patent. Patented June 20, 1911.

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To all whom it may concern:

Be it known that I, CHARLES EDWARD MAUD, a citizen of the United States, residing at Monterey, in the county of Monterey and State of California, have invented a new and useful Carbureter for Internal-Combustion Engines, of which the following is a specification.

This invention has reference to improvements in carbureters for internal combustion engines and its object is to produce a carbureter that will give the right mixtures at all speeds and in which, even on steep grades, the gasolene level is always maintained.

The invention will be best understood from a consideration of the following detail description taken in connection with the accompanying drawings forming a part of this specification, in which drawings,

Figure 1 is a central vertical section through the carbureter, Fig. 2 is a cross section on the line A—B of Fig. 1.

Referring to the drawings there is shown an annular reservoir 1 the inner walls of which form a central passage 2, and this reservoir is provided with a top or cap plate 3 on which is formed or to which is secured a pipe 4 in alinement with the passage 2 and terminating at the upper end in a threaded portion 5 for the attachment of a connecting pipe leading to the engine which latter however is not shown in the drawings. The lower end of the passage 2 has the walls screw-threaded as indicated at 6 and into this threaded portion is screwed a collar 7 threaded on its exterior surface and threaded interiorly to receive a tubular nozzle 8, which is threaded to screw into the collar 7 and the lower end 9 of which is open and flaring while the upper end 10 of the nozzle 8 is open and contracted. The nozzle 8 between the two ends is substantially cylindrical. The collar 7 adjacent to the nozzle 8 is formed with an annular series of equally spaced perforations 11. The upper face of the collar 7 forms a seat for a radial flange 13 on the lower end of a sleeve 14, snugly fitting the cylindrical portion of the nozzle 8, but not so snugly as to prevent it from moving longitudinally on said nozzle. This flange 13 is of such size as to cover the perforations 11 when seated on the collar 7 and when this flange is raised by the suction of the engine the passages 11 are opened to a commensurate extent. Spaced a short distance from the upper end of the sleeve 14 are stops 12 projecting from the nozzle 8 and preventing the sleeve from being moved too high by the suction of the engine pistons.

Surrounding the lower end of the nozzle 8 below the collar 7 is an annulus 15 having openings therethrough matching the openings 11 in the collar 7. The annulus 15 may be rotated about the longitudinal axis of the nozzle 8 so that the openings through the annulus may be moved more or less out of coincidence with the openings 11 and correspondingly throttle them, at the will of the operator. A handle 15′, on the annulus 15 is provided for this purpose.

Formed on one side of the outer wall of the reservoir 1 is a longitudinally disposed boss 16 having a longitudinal bore for the reception of a needle valve stem 17 appropriately threaded as shown at 18 to match a like threaded portion of the bore of the boss 16 and at the upper end exterior to the boss the stem 17 is provided with a manipulating head 19 by means of which the stem may be turned on its longitudinal axis at the will of the operator. The lower end of the stem 17 is formed into a needle valve 19 entering a valve seat formed in one end of a pipe 20 having at the said end a laterally extending flange 21 seated against a threaded extension formed on the lower end of the boss 16 and there held by a suitable gland or collar 22, it being understood that if needed suitable packing will be interposed to prevent leakage. The interior of the reservoir 1 communicates with the lower end of the passage in the boss 16 by means of a port 23.

The pipe 20 is appropriately bent and carried to a point coincident with the longitudinal axis of the nozzle 8 and there carries another pipe 24 extending axially through the nozzle 8 to the contracted end thereof and constituting a jet. The lower end of this pipe is accessible through an opening closed by a suitable plug 25.

Within the reservoir 1 there is lodged an annular float 26 and this float is centered in the reservoir by circumferentially spaced ribs 27 formed on the inner walls of the reservoir and longitudinal thereof so that the float may move up and down in the reservoir with the smallest degree of contact therewith to reduce friction.

Formed on the under side of the cover 3 are spaced ears 28 carrying a pintle 29 extending through other ears 30 close to the ears 28 and formed on the two arms of a

yoke 31 constituting an operating lever. The outer or free ends of this yoke lever are bifurcated as shown at 32 to receive ears 33 on the upper face of the float 26 so that the said float is pivotally connected to the lever yoke 31, the said lever yoke constituting a lever of the first class with the shorter arm formed at the connecting point of the yoke as indicated at 34.

Tapped through the cover 3 immediately above the lever arm 34 is a tee coupling 35, one member of the tee being bored out longitudinally to form a valve seat 36 for a valve 37 having a guiding stem 38 extending through the portion of the tee member entering the interior of the casing 1 through the cover 3 and into the path of the lever arm 34. The other end of the valve is formed with a guiding stem 39 entering a guiding socket 40 formed in a plug 41 closing the bored-out portion of the tee. The other member of the tee 35 is bored out as indicated at 42 to receive a screen member 43 and from this bored-out portion there is formed a passage 44 expanded into an annular passage surrounding the neck of the plug 41 and through the neck of this plug 41 there is formed a passage 45 which will be always in communication with the expanded portion of the passage 44 so that however deeply the plug 41 is screwed into the bored-out portion of the first named member of the tee, this bored-out portion above the valve 37 will always be in communication with the other member of the tee through the screen 43. The said other member of the tee is connected to a suitable reservoir of volatile liquid such for instance as gasolene and it is assumed that the reservoir is so located that the gasolene will gravitate to the valve 37 under all conditions of running. The device is provided with a priming pin 46.

Within the pipe 4 there is pivoted a damper 47, the arbor 48 of which extends through the wall of said pipe and terminates in a crank arm 49 which may be connected to operating means within reach of the operator as is customary in devices of this character.

The reservoir 1 is provided with a drain cock 50 so that any gasolene which may be within the reservoir may be removed therefrom for cleaning or other purposes.

When the supply of gasolene is turned on the gasolene will flow through the tee 35, the float 26 being in the lower position and consequently moving the lever 31 so as to hold the valve 37 in the upper or open position. Ultimately enough gasolene flows into the reservoir 1 to raise the float until it turns the lever 31 on its pivot to a sufficient extent to depress the end 34 of the lever and thus allow the valve 37 to close and cut off the supply of gasolene. Under these conditions the level of the gasolene within the float chamber is below the open end of the jet 24. The needle valve 19 being sufficiently open the gasolene will flow into the jet to the level of the gasolene within the reservoir 1. It will be noted that the area of the float very nearly approaches that of the gasolene within the reservoir 1 and so in order to prime the carbureter it is only necessary to depress the priming pin 46 which is so located as to engage one of the ears 33 and this depressing of the float will raise the level of the gasolene until it overflows the upper end of the jet 24 thus thoroughly wetting this portion of the device. When the engine is started the suction thereby generated on the turning over of the engine shaft causes air to be drawn to the chamber 2 which causes the evaporation of the gasolene forced out of the jet 24 and the admixture of the gasified gasolene with air entering through the nozzle 8 and through the passages 12 exterior to said nozzle. As soon as the priming operation is completed the pin 46 is released and returned to its original position under the action of a suitable spring and the float returns to its position of equilibrium on the surface of the gasolene within the reservoir 1. As the engine continues to run the suction produced will cause the drawing of gasolene from the jet 24 and the indrawing of air through the nozzle 8 and also through the passages 11 exterior to said nozzle but still into the chamber 2. The incoming air through the contracted opening 10 of the nozzle 8 tends to mix with the gasolene entering through the jet 24 and the mixture is further completed by the air coming through the passages 11 into the chamber 2. As the supply of gasolene within the reservoir 1 is drawn upon the level sinks and the float 26 follows thus turning the lever 31 on its pivot in a direction to elevate the end 34 and so engage and open the valve 37 whereupon more gasolene will flow into the reservoir or container 1 and the former level will be restored thus elevating the float and causing the closing of the valve 37. This action is quite sensitive and therefore the level of gasolene within the reservoir or container 1 is maintained sensibly constant.

The axis of connection of the lever 31 with the float is usually transverse to the length of the vehicle upon which the carbureter is mounted so that when the vehicle is upon an incline the lack of close fit of the float in the interior of the reservoir 1 will permit this float to turn a limited distance upon the axis mentioned without elevating or depressing the lever and consequently the change in level on one side or the other of the reservoir 1 because of the tilting of the vehicle will have no appreciable effect upon the float so far as the operation of the lever

31 is concerned. The level of gasolene is therefore maintained sensibly constant even when the vehicle is upon an incline of considerable steepness.

The operator has under control the flow of the mixture to the engine by means of the valve or damper 47, this being controllable from the operator's seat. The operator has also under control the amount of gasolene flowing through the jet by a suitable manipulation of the valve 19 which latter may be set by the operator in accordance with conditions. Furthermore, the operator has control over the amount of air flowing into the chamber 2 exterior to the nozzle 8 by the collar 15 thus throttling to a greater or less extent the openings 11. Furthermore, the operator has under control the relation of the upper end 10 of the nozzle 8 to the open end of the jet 24 by screwing the nozzle to a greater or less extent into the chamber 2, the jet 24 being in substantially fixed relation to the normal level of the gasolene within the reservoir 1 as determined by the float 26.

What is claimed is:—

A carbureter comprising a fuel chamber having an air passageway therethrough, a fuel jet connected with the chamber and arranged to discharge in the said air passageway, an air nozzle surrounding the fuel jet, a collar provided with air passages and supporting the nozzle in the before mentioned air passageway said collar and air nozzle being longitudinally adjustable in the air passage and with respect to the fuel jet and a valve flange slidably mounted upon the nozzle and normally closing the air passages in the collar.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

CHARLES EDWARD MAUD.

Witnesses:

P. H. GONCAERES,

E. E. JAMES.