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CARBURETER FOR GAS ENGINES.

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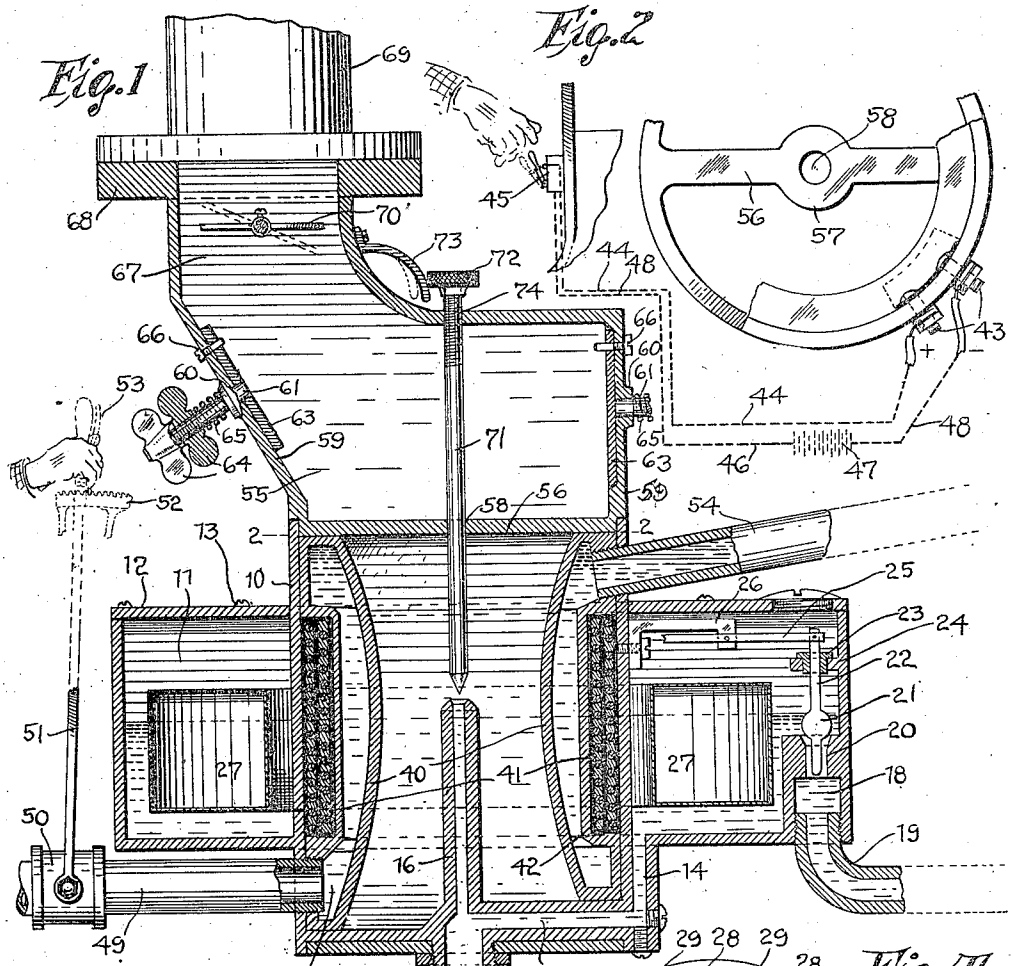

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CARBURETER FOR GAS-ENGINES.

1,043,342. Specification of Letters Patent. Patented Nov. 5, 1912.

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To all whom it may concern:

Be it known that we, MARK MUSGRAVE and CLAUDE E. MUSGRAVE, citizens of the United States, residing at Pittsburg, in the county of Crawford and State of Kansas, have invented certain new and useful Improvements in Carbureters for Gas-Engines, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to a carbureter for gas engines.

The principal object of the invention is to provide an improved form of carbureter wherein the gasolene passing into the carbureting chamber for the air and hydrocarbon will be heated and the carbureting chamber kept warm without making it necessary to heat the carbureter by external means as is frequently necessary.

Another object of the invention is to provide a water jacketed carbureter with an electric resistance coil arranged to heat the water in the water jacket, the latter surrounding the chamber wherein the incoming air is carbureted.

A third object of the invention is to provide means for regulating the mixture of air and hydrocarbon.

With the above and other objects in view, the invention consists in general of certain novel features of construction, combinations and arrangements of parts as will be hereinafter fully described, illustrated in the accompanying drawings, and specifically claimed.

In the accompanying drawings, like characters of reference indicate like parts in the several views, and:—Figure 1 is a vertical median section through a carbureter constructed in accordance with this invention. Fig. 2 is a partial detail view on the line 2—2, Fig. 1. Fig. 3 is an exterior view of one of the auxiliary air valves. Fig. 4 is a bottom view of a second air valve, certain of the parts being omitted better to show certain features of the device. Fig. 5 is a detail side elevation showing the arrangement for plugging certain passages in the device after the same have been drilled.

The body of the carbureter comprises a cylindrical casing 10 around the side walls of which extends an annular trough 11, the upper end whereof is adapted to be closed by means of a cover plate 12 secured by screws 13. Leading downward from the trough 11 is a passage 14 which opens into a horizontal passage 15. This latter extends to the center of the casing and opens into a tube 16 which extends upward and terminates at about the center of the vertical height of this casing 10. The lower end of the passage 16 extends downwardly below the bottom of the casing 10 in a tube 17 and threaded to this tube is a pet cock 18 of the ordinary type. Near the periphery of the trough 11 is an intake chamber 18 whereto is connected a feed pipe 19 leading from any suitable source of gasolene supply. Above the intake 18 is a port 20 which forms a seat for a valve 21. The upper end of this valve is extended to form a stem 22 which passes through a bushing 23 in a guide 24. To the end of the stem 22 which extends above the bushing is secured one arm of a lever 25 which is pivoted to a bracket 26 secured to the wall of the casing 10, and the other arms of this lever 25 are secured to a float 27 by any suitable means not deemed necessary here to be shown.

The bottom of the casing 10 is slotted as at 28 and below the bottom there is provided a valve plate 29 having a centrally disposed opening 30 which fits closely around the tube 17 and is held in position against the bottom of the casing 10 by suitable nuts 31. This valve plate is also slotted as at 32 with slots corresponding to those in the bottom of the casing 10. In Fig. 4 the slots 28 and 32 are shown as coincident but from an inspection of that figure it will be obvious that the spring 33 which has its ends connected to the arms 34 on the plate 29 and the arm 35 on the wall of the casing 10 will draw the plate around thus reducing the size of the openings. In order to limit the amount of this reduction a screw 36 is provided which works in a nut 37 fixed upon a bracket 38. By this means the size of the openings between the outer air and the casing 10 may be limited.

Within the casing 10 is an annular water jacket 39 the inside walls of which are curved inwardly as at 40 so that within the

casing 10 there is formed a species of tube, which is wide at both ends and narrow in the middle. This water jacket furthermore has an annular pocket 41 surrounding the outer middle portion thereof and in this annular pocket is mounted a resistance coil 42 so arranged that when current passes therethrough the coil will be heated to a sufficient degree to warm any water which may be in the water jacket. The ends of this coil are connected to binding posts 43, one of which is connected by means of a wire 44 with a switch 45. From the other pole of this switch a wire 46 extends to a suitable battery 47 which is connected by a wire 48 with the remaining binding post 43. A suitably threaded opening is made at the lower part of the outside wall of the casing 10 and connected with this opening is a water supply pipe 49 wherein is a valve 50 which is controlled by means of a lever 51 working over a quadrant 52, the lever 51 being provided with the usual latch 53. By this means the rate of influx of water is controlled. At a point preferably opposite the water supply pipe 49 and at the upper portion of the water jacket other threaded openings are made in the outer wall of the jacket and casing 10 and secured in these openings is a waste water pipe.

Seated upon the top of the water jacket and the side wall of the casing 10 is a mixing chamber 55 which is open at the bottom except for the fact that across this bottom extends a bar 56 having a centrally disposed enlarged portion 57 provided with a guide opening 58 concentric therewith. This mixing chamber 55 has its side walls 59 flat and provided with bosses 60 through which extend valve stems 61. Surrounding the bosses 60 are radial slots 62 formed in the side walls 59 and covering these slots on the inside of each side wall is a valve 63 mounted on the respective stem 61 is threaded for the reception of adjusting and jam nuts 64 between which and the respective boss 60 is a spring 65 which normally tend to keep the valve 63 closed against its seat. For the purpose of preventing the rotation of the valve 63 a pin guide 66 is threaded through each side wall 59 and extends through an opening of suitable dimensions formed in the respective valve so that the valve may slide on this pin guide without rotating thereon.

Above the mixing chamber 55 the portion of the device forming this chamber is carried up in a delivery pipe 67 having a suitable flange 68 at its upper end for connection to the supply pipe 69 of an internal combustion engine. Within this delivery pipe 67 is a valve 70 preferably of the butterfly type. Extending downward through the top of the mixing chamber and through the opening 58 is a needle valve 71 provided with a knurled head 72 which is kept from accidental rotation by means of a spring 73 secured to the side of the tube 67. This needle valve is, of course, threaded as at 74 to provide for close adjustment.

In the operation of this device gasolene will be admitted through the pipe 19 and flow upward into the trough 11 until the float 27 rises sufficiently high to close the port 20. It will be obvious that the level of the gasolene in the chamber 16 will be that of the trough 11. Upon movement of the piston in the engine suction will be created by reason of partial vacuum in the chamber 55 and casing 10, and this will cause an inrush of air through the ports 28 and 32 and as this air is drawn violently upward the gasolene in the tube 16 will be aspirated and mingled with the incoming air. At this time the switch 45 will have been closed so that a current will flow through the heating coil 42 and heat the water in the water jacket and gasolene in annular trough. This incoming air will thus be heated from the heat of the water jacket and the gasolene will be effectively carburized. As the carburized air flows upward into the chamber 55 if the engine is running too rapidly so that the carburization is too high the valves 63 will be opened. It will be obvious that one of these valves may be adjusted at a less vacuum than the other. The now mixed air and carburized air will pass through the delivery tube 67 to the engine. It will be obvious that proper adjustment of the needle valve 71 will tend to regulate the amount of gasolene aspirated and that adjustment of the screw 36 will regulate the amount of air taken in the casing 10. By nearly closing the valve 29 a very light degree of carburization may be obtained; by opening this valve to its fullest extent, as shown in Fig. 4, the valves 63 will not open and an extremely rich mixture will be obtained.

There has thus been provided a simple and efficient device of the kind described and for the purpose specified.

It is obvious that many minor changes may be made in the form and construction of this invention without departing from the material principles thereof, and it is therefore not wished to confine the invention to the exact form herein shown but it is wished to include all such as properly come within the scope of the appended claims.

What is claimed as new, is:—

1. In a carbureter, a cylindrical body portion, an annular water jacket fitted within said body portion and provided on its exterior with an annular groove whereby an annular chamber is formed between the wall of the body portion and said water jacket, and an electric heating coil held within said annular chamber.

2. In a carbureter, a cylindrical body portion, an annular water jacket fitted within said body portion and forming a carbureting chamber, said water jacket being provided with an annular groove on its exterior whereby an annular chamber is formed between the wall of the body portion and said water jacket, an oil supply chamber surrounding said body, and an electric heating coil held within the annular groove to simultaneously heat the water jacket and the oil supply chamber.

In testimony whereof we hereunto affix our signatures in presence of two witnesses.

MARK MUSGRAVE.
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Witnesses:
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