L. S. GARDNER.

THERMOSTATICALLY CONTROLLED CARBURETER.

APPLICATION FILED JUNE 24, 1916.

Patented Nov. 19, 1918.

1,285,115.

Fig. 1.

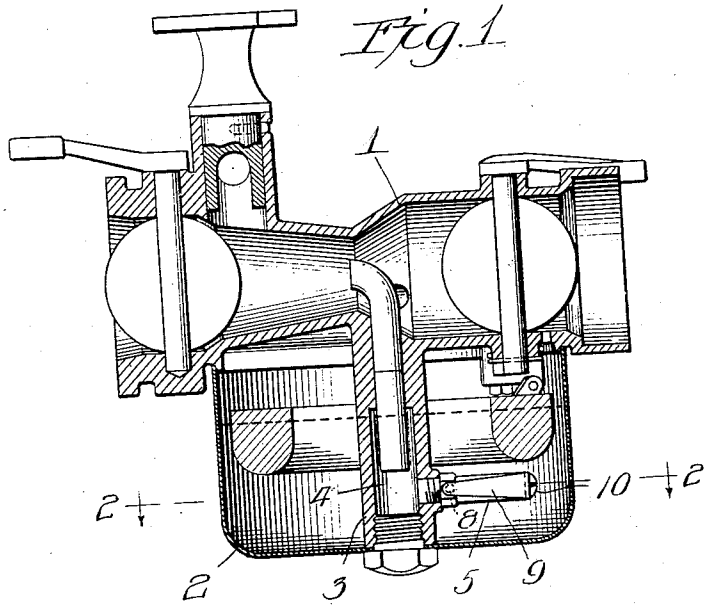


Fig. 2.

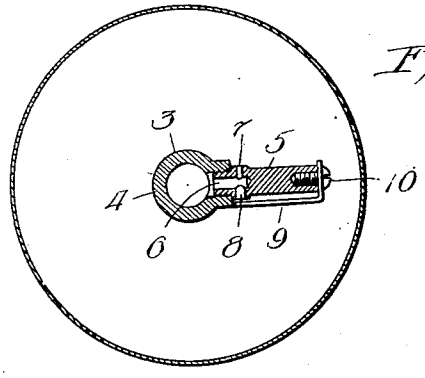
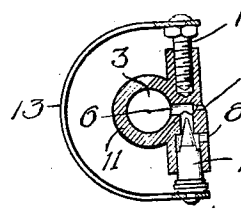


Fig. 3.



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UNITED STATES PATENT OFFICE.

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THERMOSTATICALLY-CONTROLLED CARBURETER.

1,285,115. Specification of Letters Patent. Patented Nov. 19, 1918.

Application filed June 24, 1916. Serial No. 105,560.

To all whom it may concern:

Be it known that I, LEVI S. GARDNER, a citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Thermostatically-Controlled Carbureters, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

One of the difficulties encountered in carbureter practice is the starting of the engine when cold and thereafter compensating for the rise in temperature in the engine. The object of the present invention is to produce a simple and novel means for automatically regulating the fuel supply so as to permit an excess of fuel to be delivered when the engine is cold and the supply to be thereafter reduced to normal as the parts become warm.

The various features of novelty whereby my invention is characterized will hereinafter be pointed out with particularity in the claims; but, for a full understanding of my invention and of its objects and advantages, reference may be had to the following detailed description taken in connection with the accompanying drawing, wherein:

Figure 1 is a vertical section through a carbureter arranged in accordance with a preferred form of my invention;

Fig. 2 is a section taken approximately on line 2—2 of Fig. 1; and

Fig. 3 is a section similar to Fig. 2 with the bowl omitted, illustrating a modification.

Referring to the drawing, 1 represents a carbureter as a whole having a fuel reservoir, 2, adapted to deliver fuel into a passage, 3, from which it is drawn to supply the engine. All these parts may be of any usual or suitable construction and I shall not, therefore, describe them in further detail.

In accordance with my invention, I provide a plurality of inlet ports from the fuel reservoir to the passage 3, controlling at least one of them by means governed by the temperature of the fuel in the reservoir. In the arrangement shown in Figs. 1 and 2, the passage 3 is formed in a post, 4, adapted to support the fuel reservoir. Screwed or otherwise fastened into the post is a plug, 5, having at its inner end a passage, 6, communicating with the passage 3. A small port, 7, opens out from the passage 6 through the side of the plug and forms a constantly open source of communication between the passage 6 and the interior of the reservoir. A second, larger port, 8, leads from the passage 6 through the side of the plug at a point remote from the port 7. The port 8 is controlled by a thermostatically-controlled valve which, in the arrangement shown, is a simple thermostat leaf, 9, secured at one end to the plug as indicated at 10 and having its opposite end lying in proximity to the inlet port 8.

The parts are so proportioned that the normal fuel level in the reservoir is above the ports 7 and 8; the port 8 being open when the fuel in the reservoir is cold, the extent of opening depending upon the degree of coldness of the fuel and the port being gradually closed as the temperature of the fuel rises so that at a predetermined temperature depending upon the engine to which the carbureter is applied, the port 8 will be closed completely.

For the purpose of utilizing my invention it is necessary that the carbureter be so placed or so constructed that it will be heated when the engine becomes warm or that the air which is drawn into the carbureter or the fuel, or both, be heated by the exhaust gases of the engine or otherwise so that their temperature will depend upon whether the engine is cold or warm. With such an arrangement containing my thermostatic device, when the engine is cold an excess quantity of fuel will be delivered because both of the inlet ports 7 and 8 are open; thus compensating for the condensation that takes place between the carbureter and the engine. When the engine begins to run the temperature of the fuel in the carbureter will rise and the thermostatic valve will gradually close until it closes completely at a selected temperature. It will be seen that while the location of the thermostat in the liquid fuel produces a very good construction and one which operates very successfully, it is evident that viewing my invention in its broadest aspects, this is not the only construction which will permit the thermal element of a controlling valve to be governed by the heat energy generated at the engine which may be said, broadly speaking, to be one of the objects of my invention. This also holds true with respect to regulation to compensate for changes in atmos-

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pheric temperatures which may also be said to be one of the objects of my invention.

It will be seen that the thermostatic device can be applied at a mere nominal cost and is so located that it is protected against injury and will therefore last indefinitely.

In Fig. 3 I have illustrated a slightly different arrangement which is, in fact, the device illustrated in my prior application 15,738, dated March 20, 1915 and of which the present application is a continuation in part. In this construction the passage 3 is formed in a post, 11, which also contains the inlet passage, 6, with its constantly open inlet port, 7, and larger port, 8. The port 8 is controlled by a needle valve, 12, which is carried on one end of a bow-shaped thermostat, 13, whose other end is carried by a part, 14, screwed into or otherwise adjustably mounted on the post so as to permit the initial adjustment of the valve to be regulated.

While I have illustrated and described only a single preferred form of my invention, with a slight modification, I do not desire to be limited to the structural details so illustrated and described; but intend to cover all forms and arrangements which come within the terms employed in the definitions of my invention constituting the appended claims.

I claim:

1. A carbureter having an air passage and a fuel-receiving passage communicating with said air passage, a fuel reservoir, a port leading from the reservoir into said fuel-receiving passage and having a cross sectional area sufficient to supply the fuel required for normal running after the engine has become warmed, an additional port opening from said reservior into said passage, and a thermostatic valve controlling the latter port and constructed and arranged to close the same when the thermal element is subjected to a predetermined temperature higher than the temperature of the carbureter when the latter is not in use.

2. A carbureter having an air passage and a fuel-receiving passage communicating with said air passage, a fuel reservoir, a port leading from the reservoir into said fuel-receiving passage and having a cross sectional area sufficient to supply the fuel required for normal running after the engine has become warmed, an additional port opening from said reservoir into said passage, a valve controlling the latter port. and a thermostat arranged within the reservoir and connected to said valve so as to close the same when the fuel in the reservoir reaches a predetermined maximum temperature.

3. A carbureter having an air passage and a member provided with a fuel-receiving passage, a fuel reservoir, a part extending from said member into said fuel reservoir, said part having a chamber in the same communicating at its inner end with said fuel-receiving passage and having at its outer end two independent ports leading into the fuel chamber, and a thermostatic valve controlling one of said ports.

4. A carbureter having an air passage and a fuel-receiving passage communicating with said air passage, a fuel reservoir, a port opening from said reservoir into said fuel-receiving passage and adapted to supply the fuel required after the engine has been running long enough to become warm, a second and larger port opening from said reservoir into said fuel-receiving passage, and a thermostatic valve associated with the latter port.

5. A carbureter having a member provided with an air passage and a fuel-receiving passage communicating with said air passage, a fuel reservoir, a plug extending from said member into said fuel reservoir said plug having at its inner end a chamber communicating with said fuel-receiving passage and having also two independent ports leading from said chamber into the fuel reservoir, and a thermostatic valve controlling one of said ports.

In testimony whereof I sign this specification.

LEVI S. GARDNER