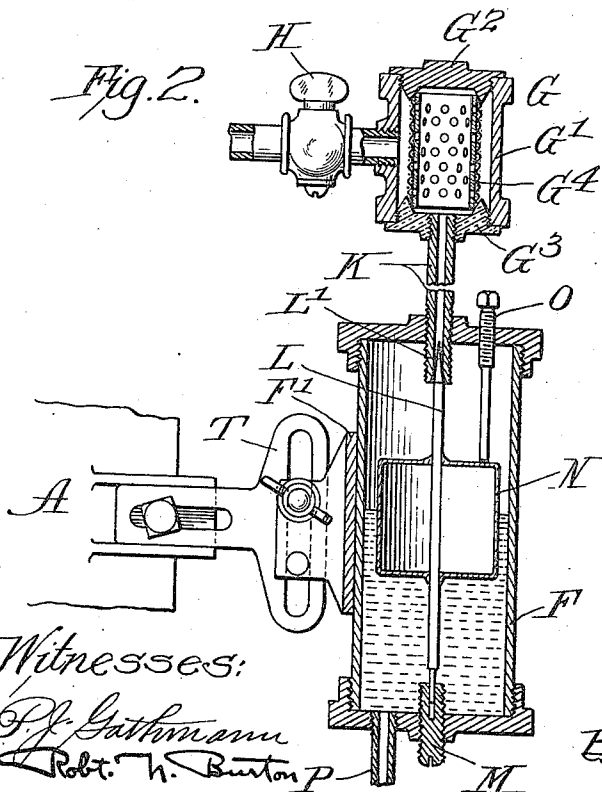
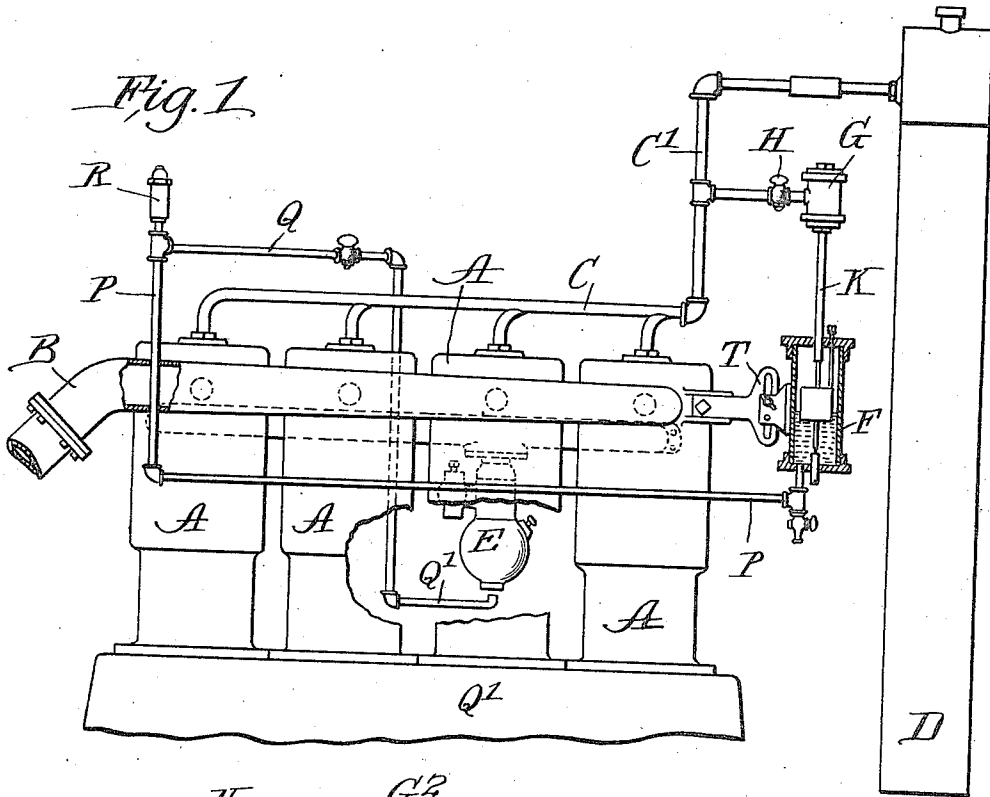


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STEAM SUPPLIED CARBURETER.
APPLICATION FILED AUG. 11, 1911.

1,059,967.

Patented Apr. 29, 1913.



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STEAM-SUPPLIED CARBURETER.

1,059,967.

Specification of Letters Patent.

Patented Apr. 29, 1913.

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To all whom it may concern:

Be it known that I, HARRY A. BABBITT, a citizen of the United States, residing at Little Rock, in the county of Pulaski and State of Arkansas, have invented new and useful Improvements in Steam-Supplied Carbureter, of which the following is a specification, reference being had to the accompanying drawings, forming a part thereof.

The purpose of this invention is to provide means by which steam may be injected into the carbureter of an internal combustion engine for increasing the efficiency of the explosive charge, and for regulating such supply of steam; and specifically, it is directed to means for deriving the steam for this purpose from the overflow water from the jacket by heating the same by means of the exhaust.

It consists in the elements and features of construction shown and described as indicated in the claims.

In the drawings:—Figure 1 is a side elevation of a four-cylinder internal combustion engine with its radiator and provided with devices embodying this invention. Fig. 2 is an axial section of the governing device and strainer.

In the drawings there is shown only so much of the engine to which the invention is applied as necessary to understand the mode of application of the devices constituting the invention. A, A, A, A are the four cylinders of a four-cylinder engine. B is the exhaust manifold. C is the overflow pipe leading from the water jackets of the cylinders. D is the radiator or cooler to which the overflow pipe, C, leads. E represents the carbureter. The particular form shown is immaterial and may be regarded as conventional; and indeed, all the parts thus far enumerated of an internal combustion engine may be regarded as conventionally shown, no specific form of these parts being material to the present invention.

For the purpose of the present invention there is mounted in fixed position with respect to the engine cylinders a water chamber, F, which is supplied with water through a strainer, G, which is connected for receiving water supply with the vertically extending arm, C¹, of the overflow pipe, C, a valve, H, being interposed in the connection between said pipe and said strainer.

The detail construction of the strainer may be described. It consists of an outer cylindrical member, G¹, interiorly threaded at both ends and provided at top and bottom with threaded plugs, G² and G³, which terminate inwardly in annular flanges beveled on their inner circumference, so that they are adapted to engage and center between them an interior perforated cylindrical member, G⁴. The water enters the outer cylinder through the connection controlled by the valve, H, and passing through the perforated cylinder or strainer member emerges through a pipe, K, screwed into the center of the lower plug, G³. The pipe, K, which is screwed into the top of the water chamber, F, has its lower discharge mouth conically counterbored for receiving the tapered terminal or valve element, L¹, of a float-and-valve stem, L, which extends axially in the chamber, F, being centered and guided at its lower end in a plug, M, screwed into the bottom of the chamber, F, and axially bored to receive and center the lower end of the stem, L. On the stem, L, is a float, N, positioned at the middle portion of the height of the chamber. A screw, O, set through the top of the chamber, F, can be adjusted to limit the upward movement of the float, and the plug, M, can be adjusted through the bottom of the chamber to limit the downward movement. In operation, the overflow water from the cylinder jackets is in part diverted from the upstanding member, C¹, of the overflow pipe through the strainer, G, into the chamber, F, wherein the float, N, determines the height at which the water can rise in said chamber.

The device is designed to be adjusted so that the water will be maintained in said chamber at a level above the bottom wall of the manifold, B, for reasons which will hereinafter appear. From the bottom of the chamber, F, discharge for the water is provided through a pipe, P, which extends up through the manifold at a point at which it may be exposed within the manifold to the exhaust discharge from all four of the cylinders. The detail construction at this point is not material, and the position and form of the pipe, P, where it passes through the manifold is only shown sufficiently to indicate the fact in general, that it is therein exposed as stated to the exhaust from all the cylinders. The height of the

water in the chamber, F, being controlled, as described, by the float, N, so as to be somewhat above the lower wall of the manifold, it will be seen that the water will rise in the pipe, P, so as to occupy the portion of said pipe which traverses the manifold, and being there exposed to the heat of the exhaust gases steam is generated which then passes up through the remainder of the pipe, P, and on through the pipe, Q, which extends in proper course to discharge at Q¹ into the carbureter E. A pop valve, R, may be provided at any convenient point in the pipe, Q. It will be seen that it is of the utmost importance that the water should not fail to reach the portion of the pipe, P, which traverses the manifold, and also that it should not occupy said pipe above or beyond that point to such an extent as to create liability of discharge of water instead of steam into the carbureter; and for this reason, it is important that the automatic governing device described should be provided.

It will be observed that any change of the height to which the water rises in the portion of the conduit, P, which extends through the exhaust manifold may cause a change in the amount of steam generated and discharged into the carbureter, and also may cause a change in the temperature dryness and tension and consequent force of discharge of such steam into the carbureter; and an adjustment of the chamber, F, or of the float, N, therein may be desirable for the purpose of modifying the amount and temperature of the steam. The entire chamber, F, is preferably, therefore, mounted so as to be adjustable vertically, the slotted bracket, T, mounted upon any fixed part of the engine structure being provided for that purpose, the lug or bracket arm, F¹, on the chamber, F, being secured to said bracket, E, by bolts passing through the slot of said last-mentioned bracket. In such adjustment, corresponding adjustment will be made of the pipe connection, K, between the strainer and the chamber, F, said pipe connection being screwed up more or less into the strainer. Usually, it will be convenient to connect the lower end of the chamber, F, with the portion of the conduit therefrom which extends through the manifold by a sufficiently long horizontal member of the pipe, P, to permit the necessary vertical adjustment of the chamber, F, by the flexure or spring of such horizontal pipe, and without adjusting the thread connection of the pipe with the bottom of the chamber, F. For slight adjustment, it will be usually more convenient, instead of bodily adjusting the chamber, F, as described, to adjust the float within the chamber, and this may be done by screwing the pipe connection, K, up or down through both the top

cap of the chamber, F, and the bottom cap or plug of the strainer so as to move the valve seat which is formed by the end of said connecting pipe, K, up or down in the chamber, F. A corresponding adjustment of the plug, M, may be made sufficiently to prevent the stem, L, from escaping either from the guidance of said plug or from that of the pipe, K.

I do not limit myself for all purposes to heating the water by means of the exhaust gases, though specifically this is the preferred method, and the construction for that purpose is specifically claimed.

I claim:—

1. In combination with the carbureter and the exhaust passage of an internal combustion engine, a source of water supply, and a conduit leading therefrom and discharging into the carbureter, and intermediately extending through the exhaust passage and automatic means controlling the level of water in said conduit at the portion thereof which extends through the exhaust passage.

2. In combination with the carbureter and exhaust passage of an internal combustion engine, a source of water supply and a conduit leading therefrom and discharging into the carbureter and intermediately extending through the exhaust passage; means for controlling the level of water in said conduit at the portion thereof which extends through the exhaust passage comprising a float chamber forming a part of the conduit; a float in said chamber and a valve carried thereby and a seat for such valve, the seat for said valve being adjustable vertically in the chamber for varying the height of water controlled by the float.

3. In combination with the carbureter and exhaust passage of an internal combustion engine, a source of water supply and a conduit leading therefrom and discharging into the carbureter and intermediately extending through the exhaust passage, said conduit comprising a float chamber mounted for vertical adjustment; a valve seat through which the water reaches said chamber, a float in said chamber and a valve mounted on said float and seating on said seat for controlling the passage of water through the chamber.

4. In combination with the carbureter and exhaust passage of an internal combustion engine, a source of water supply, a conduit communicating with said source and discharging into the carbureter, and intermediately extending through the exhaust passage, and means for controlling the supply of water passing through said conduit, said conduit comprising a water chamber whose cavity extends through the level of that portion of the conduit which extends through the exhaust passage, and said water-supply-controlling means comprising a valve con-

trolling the passage of water through said chamber, and a float in the chamber controlling such valve.

5. In an internal combustion engine, in combination with a carbureter and an exhaust passage, means for supplying steam to the carbureter comprising a water chamber and a source of water supply therefor; a discharge pipe from such chamber extending upwardly through the exhaust passage for exposure to the exhaust gases therein without communication therewith, and thence to the carbureter for discharge thereinto; a valve which controls the admission of water to such conduit, and a float which governs the valve positioned and connected for closing said valve to maintain the water level at a point within the vertical extent of said upwardly extending and exposed portion of said conduit.

6. An internal combustion engine, in combination with the carbureter and the exhaust passage, means for supplying steam to the carbureter, comprising a water chamber and a source of water supply therefor; a discharge connection therefrom into the carbureter which intermediately extends through the exhaust passage, said water chamber having its cavity extending through the level of the portion of said discharge connection which extends through the exhaust passage; a valve which controls the supply of water to said chamber and a float in the chamber governing the valve.

7. In combination with the water jacket, carbureter and exhaust passage of an internal combustion engine, a conduit communicating with the water jacket and discharging into the carbureter and intermediately extending through the exhaust passage, said conduit comprising a strainer intermediate the connection with the water jacket and the portion of the conduit which extends through the exhaust passage.

8. In combination with the water jacket, carbureter, exhaust manifold and radiator of an internal combustion engine, and the connection from the water jacket to the radiator, a conduit leading off from said connection intermediate the water jacket and the radiator discharging into the carbureter and intermediately extending through the manifold, said conduit comprising anterior to the portion extending through the manifold a water chamber; a valve which controls the entrance of water to said chamber, and a float in the chamber which controls said valve, said chamber being positioned so as to extend through the level of the portion of the conduit which extends through the manifold.

9. In combination with the water jacket,

carbureter, exhaust manifold and radiator of an internal combustion engine, and the connection from the water jacket to the radiator, a conduit leading off from said connection intermediate the water jacket and the radiator discharging into the carbureter and intermediately extending through the manifold, said conduit comprising a device for controlling the flow of water through the conduit, and a strainer anterior to said device.

10. In an internal combustion engine, in combination with a carbureter, a source of water supply; a conduit leading from said source and communicating with the carbureter; a passage containing a heating medium, said conduit intermediate the water source and the carbureter extending through said passage without communication therewith; means for controlling the level of water in said conduit at the portion which extends through said passage, said means comprising a float chamber which forms a part of the conduit; a float in said chamber and a valve carried thereby for controlling the passage of water through the chamber.

11. In combination with a carbureter of an internal combustion engine, a source of water supply and a heating means; a conduit leading from said source and discharging into the carbureter and intermediately extending through said heating means; means for controlling the supply of water passing through said conduit comprising a float chamber which forms a part of the conduit; a float in said chamber and a valve carried thereby for controlling the passage of water through the chamber, the seat for said valve being adjustable vertically in the chamber to vary the height of water controlled by the float.

12. In combination with a carbureter of an internal combustion engine, a source of water supply; a heating chamber therefor; a conduit leading from the water source and discharging into the carbureter and intermediately extending through the heating chamber, the conduit comprising a water chamber whose cavity extends through the level of that portion of the conduit which extends through the heating chamber; a valve which controls the supply of water to said chamber, and a float in the chamber governing the valve.

In testimony whereof, I have hereunto set my hand at Little Rock, Arkansas, this 7 day of August 1911.

HARRY A. BABBITT.

Witnesses:

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