Dec. 10, 1929. E. H. JOHNSON 1,739,073

AIR MOISTENER

Filed Nov. 18, 1927

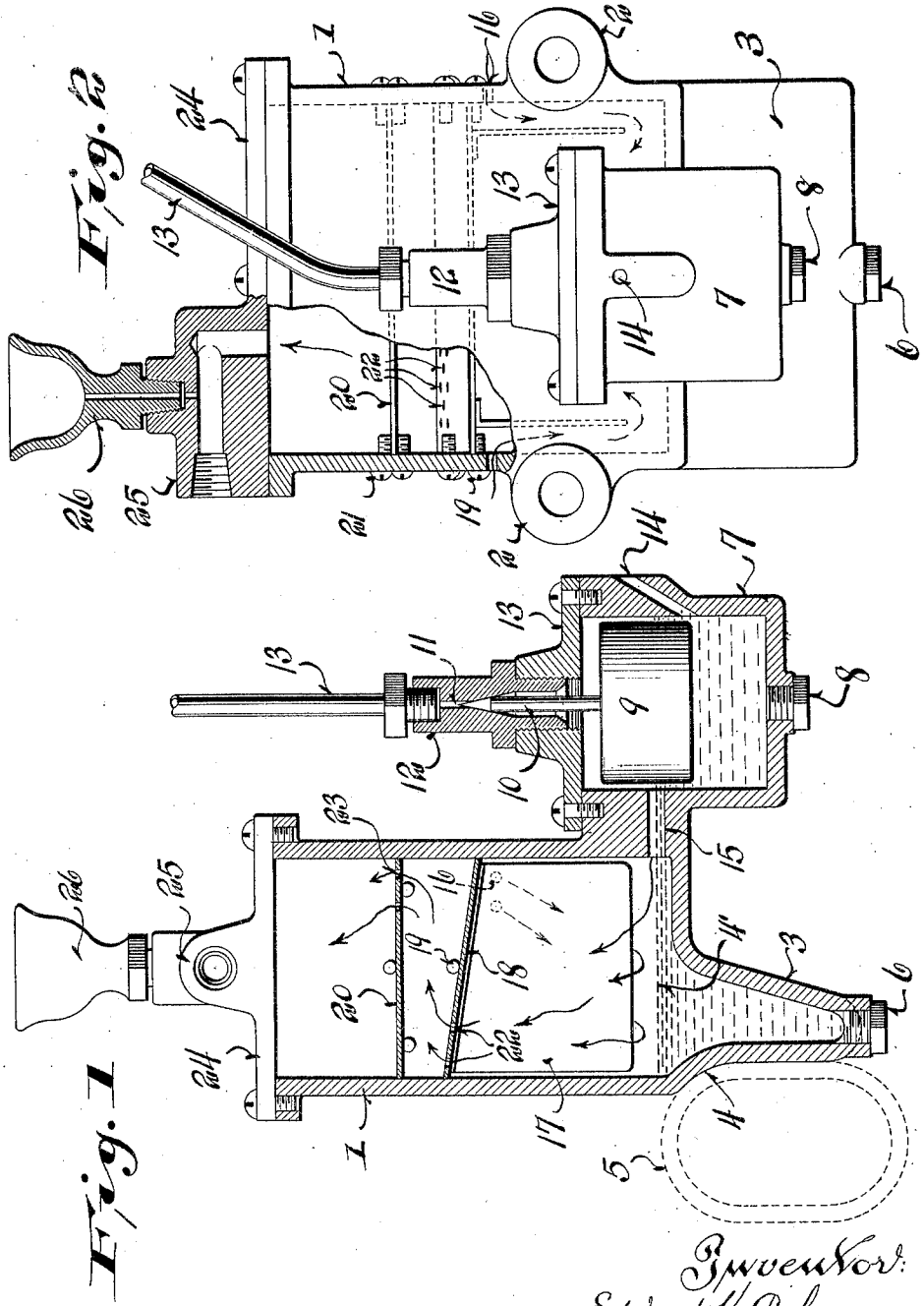


Fig. 2

Fig. 1

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Patented Dec. 10, 1929 1,739,073

UNITED STATES PATENT OFFICE

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AIR MOISTENER

Application filed November 18, 1927. Serial No. 234,172.

This invention relates to air moisteners and is particularly directed to an air moistener for use in connection with an internal combustion engine.

Objects of this invention are to provide a novel form of air moistener which will supply moistened air at the proper temperature to the mixture as it passes to the engine, thus insuring smooth operation, a material increase in the output of the engine, and comparative freedom from carbon.

Further objects are to provide a device which is very compact, which is easily installed, and which utilizes a portion of the heat of the exhaust to vaporize the water vapor prior to its mixing with the flowing stream of combustible mixture.

Further objects are to provide an automatic device in which the water level within the heating chamber is maintained and in which the heating chamber communicates with a float chamber through a restricted aperture, thus avoiding heating all of the water contained both in the float chamber and in the heating chamber and permitting heating of the water only in the heating chamber.

An embodiment of the invention is shown in the accompanying drawings in which:—

Figure 1 is a sectional view through the device;

Figure 2 is a view at right angles to Figure 1 with parts in section.

Referring to the drawings, it will be seen that the device comprises a body portion 1 which may be, if desired, of rectangular contour and which is provided with a pair of apertured ears 2 adapted for attachment to the exhaust manifold studs of an automobile, such for example as a Ford. The lower part of the body portion 1 is contracted and forms a V-shaped member 3 adapted to receive water to the level indicated by the reference character 4'. This lower portion 3 is inwardly curved, as indicated at 4, so as to fit against an exhaust manifold 5. Preferably, a drain plug 6 is positioned in the lowest part of the portion 3. The body portion has integrally formed therewith a float chamber 7 provided with a drain plug 8 and loosely carrying and guiding a float 9. This float is provided with an upstanding stem 10 equipped with a needle valve which closes the opening 11 through the fitting 12 screwed into the top plate 13 of the float chamber. This fitting 12 receives a water supply pipe 13 which is supplied from any suitable source, for instance, the radiator, if desired, or from a separate vessel.

The interior of the float chamber communicates with the outside air by means of a downwardly slanting over-flow passage 14. It communicates with the heating chamber and interior of the body portion 1 by means of the passageway 15. This passageway 15 extends slightly above and below the water level line 4'.

The body portion is provided with a plurality of apertures 16 on opposite sides, as shown in both figures. These apertures are adapted to admit air, air also passing through the downwardly extending aperture 14 in the float chamber and through the aperture 15 into the body portion. The air from the aperture 16 passes downwardly below the vertical baffle plates or guide plates 17 and sweeps across the upper face of the heated and steaming water. The baffle plates 17 are rigidly carried by a transverse slanting baffle plate 18. This baffle plate 18 is held in place by means of screws 19 which extend to the outer side of the body portion. Above the baffle plate 18, a second baffle plate 20 is positioned and is also held in place by screws 21. The baffle plate 18 is provided with apertures 22 adjacent one edge thereof and the baffle plate 20 is provided with apertures 23 adjacent the opposite edge. These baffle plates prevent the carrying over of any solid particles of the water.

The top of the body portion 1 is closed by a top plate 24 provided with an outlet fitting 25. Within this outlet fitting a priming cup 26 may be positioned, as shown.

The outlet portion 25 is adapted to receive an outlet pipe which may pass to any desired portion of the intake system of the engine. For example, it may pass directly to the intake manifold, if desired.

In using the apparatus, it will be seen that

the air passes inwardly and sweeps over the hot steaming water and picks up the water vapor. The air and water vapor are thus heated and in their heated state pass to the intake manifold of the engine. As the water is used up the water flows from the float chamber 7 through the passageway 15 into the heating chamber 3, which forms the lower part of the body portion. As the water supply in the float chamber is depleted the float descends and permits a fresh supply of water to flow into the float chamber. There is a gradual preheating of the water, that is to say, it becomes warm prior to its passage into the heating chamber 3 so that the operation of the apparatus even when the float operates, is still smooth and without any variations in the proportion of the moist air supply.

The priming cup 26 may be used in very cold weather for aiding in starting the engine. For instance, it furnishes a handy place to pour naphtha or other highly volatile starting fluids.

It is to be noted that by heating the water to a steaming temperature that the size of the apparatus may be very materially decreased over that required for a device in which the air merely sweeps over the cool water surface.

It will be seen instead that the water is caused to steam and thus to readily mix its vapor with the inwardly passing air.

It will be seen further that the device is simple, requires no thought on the part of the operator, and cannot flood the machine.

Although the invention has been described in considerable detail, such description is intended as illustrative rather than limiting as the invention may be variously embodied and as the scope of such invention is to be determined as claimed.

I claim:

1. An air moistener for internal combustion engines comprising a body portion, a heating chamber formed in the lower part of the body portion, means for heating said heating chamber, a float chamber communicating with said heating chamber and spaced from said heating chamber, a float positioned within said float chamber, a valve controlled by said float, a water supply pipe communicating with said valve, and means independent of said float chamber for conducting air through said heating chamber.

2. An air moistener for internal combustion engines comprising a body portion, a heating chamber formed in the lower part of the body portion, means for heating said heating chamber, a float chamber communicating with said heating chamber and spaced from said heating chamber, a float positioned within said float chamber, a valve controlled by said float, and a water supply pipe communicating with said valve, said body portion having air inlet apertures and having baffle plates to direct the air downwardly and cause the air to sweep across the surface of the steaming water in said heating chamber, said body portion having an outlet fitting adjacent its upper end.

3. An air moistening device for internal combustion engines comprising a body portion adapted to be bolted to the engine and having a heating chamber contoured to fit the exhaust manifold, said heating chamber being adapted to contain water, a float chamber rigidly carried by said body portion and having a passageway communicating with said heating chamber, a float carried within said float chamber, water supply means controlled by said float, said body portion and said float chamber having upper plates removably attached thereto, the upper plate of said body portion having an outlet fitting, said body portion having a plurality of baffle plates positioned therein, said baffle plates consisting of transversely and vertically extending plates, said body portion having air apertures adjacent said vertically extending plates, said vertically extending plates terminating above the water level in the heating chamber, whereby the incoming air is caused to sweep over the surface of the heated water.

4. An air moistening device for internal combustion engines comprising a body portion adapted to be bolted to the engine and having a heating chamber contoured to fit the exhaust manifold, said heating chamber being adapted to contain water, a float chamber rigidly carried by said body portion and having a passageway communicating with said heating chamber, a float carried within said float chamber, water supply means controlled by said float, said body portion and said float chamber having upper plates removably attached thereto, the upper plate of said body portion having an outlet fitting, said body portion having a plurality of baffle plates positioned therein, said baffle plates consisting of transversely and vertically extending plates, said body portion having air apertures adjacent said vertically extending plates, said vertically extending plates terminating above the water level in the heating chamber, whereby the incoming air is caused to sweep over the surface of the heated water, said float chamber having an aperture extended downwardly thereinto and opening below the water level.

In testimony that I claim the foregoing I have hereunto set my hand at Kohler, in the county of Sheboygan and State of Wisconsin.

EDWARD H. JOHNSON.