

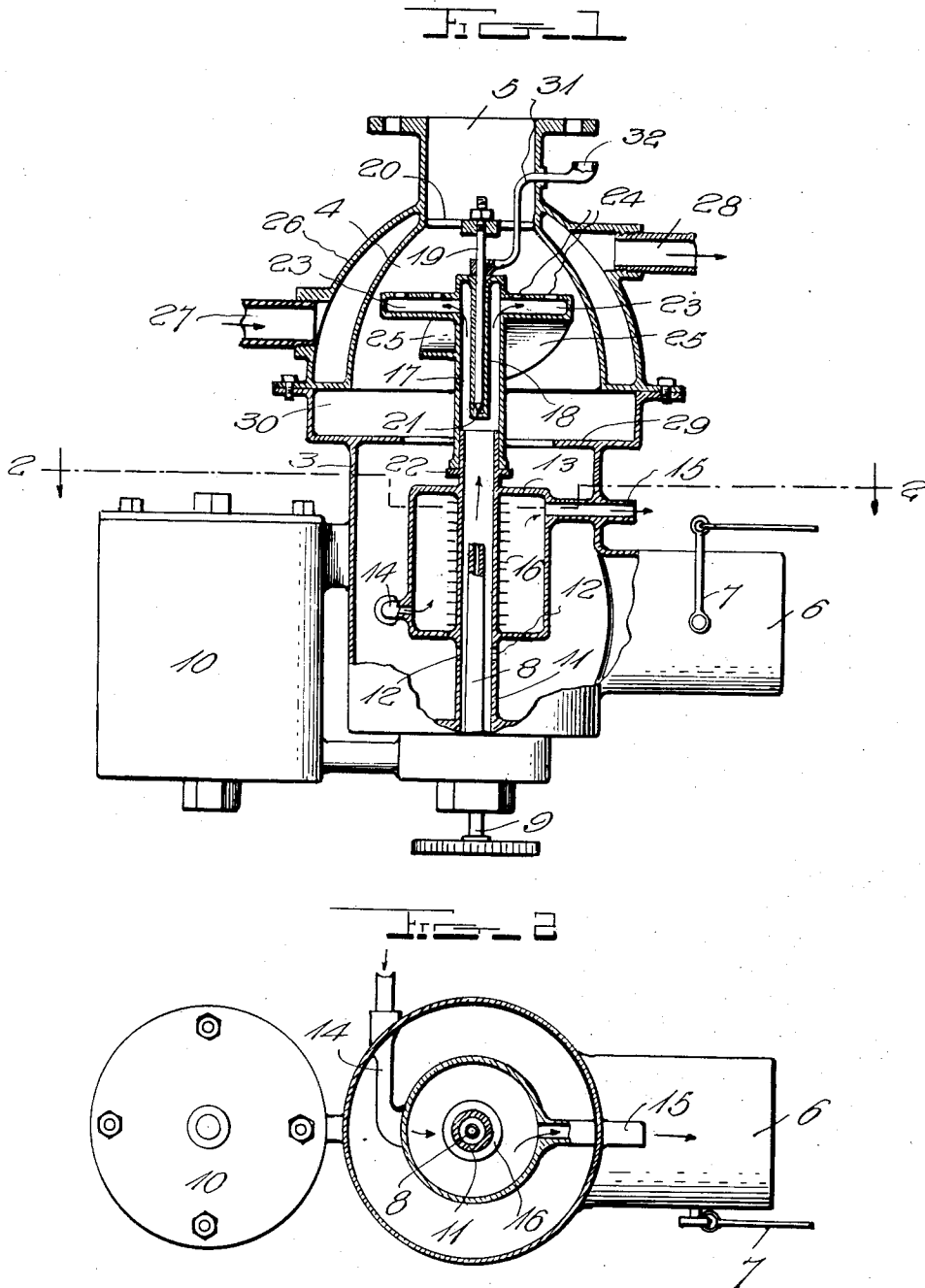
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CARBURETOR

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Witness

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UNITED STATES PATENT OFFICE.

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CARBURETOR.

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The invention relates to improvements in carburetors designed primarily for use with internal combustion engines, and it is the principal object of such invention to provide a new and improved carburetor construction which will effectively heat not only the air passing therethrough, but the fuel vapor drawn from the usual spray nozzle, thus insuring much more thorough vaporizing of the fuel, particularly in cold weather.

A further object of the invention is to provide rotatable means operated by the suction through the carburetor, for throwing the fuel vapor outwardly by centrifugal force, against a heated part of the carburetor casing, thus insuring such contact between vapor and heated surface, as to effectively raise the temperature and readily vaporize the particles of fuel.

Yet another object is to make novel provision whereby some of the air passing through the carburetor is conducted inside of a heated tube around the fuel nozzle, while additional air passes around the exterior of the heating means, thus obtaining a dual heating function from such means.

With the foregoing and minor objects in view, the invention resides in the novel subject matter hereinafter described and claimed, the description being supplemented by the accompanying drawing.

Fig. 1 is a vertical sectional view through a carburetor embodying my improvements.

Fig. 2 is a horizontal sectional view on line 2-2 of Fig. 1.

In the drawing above briefly described, the numeral 3 denotes a vertically disposed casing having a dome-like upper end 4 which is provided with an outlet neck 5 for connection with an intake manifold, the lower portion of said casing being equipped with an air inlet neck 6 having a choke 7 and provided if desired with a suction-controlled valve (not shown).

Rigidly mounted in the central vertical portion of the casing 3, is a fuel spray nozzle 8 which may be provided with an appropriate needle valve 9, and fuel is fed to said nozzle by a conventional float chamber 10. Surrounding this nozzle 8 in spaced relation therewith is a vertical tube 11 having openings 12 in its lower portion to admit air from the casing into the space between said tube 11 and said nozzle 8, so that the upwardly drawn air will pick up fuel from the nozzle.

Tube 11 projects above the nozzle 8 and the portion of this tube around the upper portion of said nozzle, as well as a portion of said tube projecting above said nozzle, are surrounded by heating means. This means is preferably in the form of a jacket or auxiliary casing 13 provided with an inlet 14 for a heating medium such as exhaust gas, or water from the engine jacket, and with an outlet 15 for the heating medium. Heat conducting vanes 16 are preferably provided on the tube 11 within the jacket or casing 13.

A second and rotatable tube 17 is disposed in the casing 3 in vertical alinement with the tube 11 and has its lower end telescoped with the upper end of said tube 11, the two tubes being in open communication. Tube 17 is preferably provided with a central tubular portion 18 integral with the upper end of this tube and spaced inwardly from the wall of the latter, said tubular portion 18 receiving a fixed vertical stem 19 which is suitably secured to a spider or the like 20 at the lower end of the neck 5. The lower end of the portion 18 is closed and the lower end of the stem 19 is pointed, providing an anti-friction bearing 21 holding the tube 17 against ascent, descent of said tube being prevented by an appropriate outstanding flange 22 on the tube 11. Tube 17 is provided with radiating arms 23 of hollow form and in communication with the interior of said tube, said arms having discharge openings 24 for the fuel vapor and air entering the tube 17 from the tube 11. The tube 17 is also provided with a helical vane or the like 25 which is acted upon by the main air current through the carburetor for the purpose of rapidly rotating the tube 17 and its arms 23. Thus, incident to such rotation, the fuel vapor is whirled as it is discharged from the openings 24 and consequently it is thrown outwardly by centrifugal force. It will be observed from the drawing, that this fuel whirling and discharging means is disposed within the dome-like upper end 4 of the casing 3. Consequently, the fuel will be by centrifugal force, thrown against said dome-like upper end. Provision is made for heating this end 4, and consequently the fuel and the air mixed with it, will be again heated before discharge from the carburetor and passage to the engine cylinders.

Preferably, the heating means for the dome or the like 4, consists of a jacket 26

around the same, said jacket having an inlet 27 and an outlet 28 for conducting a heating medium such as exhaust gases or water from the engine jacket, to and from said jacket 26.

5 By the construction described, air entering the tube 11 through the openings 12 and rising in said tube 11, will be heated by the heating means 13 around said tube. Also, the upper portion of the tube 11 which con-
10 fines the spray of fuel from the nozzle 8, is heated by said heating means 13 so that not only the air but the sprayed fuel also, are heated as they ascend. Then, as this mixture of air and fuel vapor is whirled and
15 thrown out by centrifugal force from the arms 23, through their perforations 24, the mixture strikes the dome-like upper end 4 of the casing 3 and is consequently further heated and gasified, insuring much better re-
20 sults than with the ordinary carburetor, particularly in cold weather.

Preferably, the interior diameter of the casing 3 is choked somewhat above the heating means 13, by the provision of an inward-
25 ly projecting annular flange 29. This causes the upgoing air around said heating means 13 to pass inwardly over the latter so that maximum air-heating by said means 13, may be accomplished. Directly above the chok-
30 ing means or flange 29, the casing is preferably enlarged somewhat in diameter, as denoted at 30, and this enlargement underlies the lower end of the heating space between the jacket 26 and the dome or the like 4, so
35 that here again air may contact with maximum heating surface to effectively heat said air, insuring much better results than could otherwise be obtained.

Suitable provision may be made for lubri-
40 cating the contacting surfaces of the stem 19 and the tubular portion 18. For this purpose, an oil conducting tube 31 is shown passing through the neck 5, leading to an appropriate point, and provided at its outer
45 end with a funnel or the like 32 into which oil may be supplied with an ordinary oil can.

As excellent results are obtainable from the general construction shown and described, such construction is preferably fol-
50 lowed. However, within the scope of the invention as claimed, numerous variations may be made.

I claim:

55 1. In a carburetor, a vertically disposed casing having an outlet at its upper end and air inlet means at its lower end, a vertical tube mounted rigidly in the lower portion of said casing and itself having an air inlet, a fuel nozzle within said tube and spaced from
60 the wall thereof, means around said tube within the casing for heating the tube and the air passing around the heating means, a rotatable fuel and air-receiving device in the upper portion of the casing positioned
65 to receive the fuel and air mixture from said

tube, said rotatable device being provided with an outlet for the mixture to discharge the same against the upper portion of the casing wall, and means for heating said portion of said casing wall, said device embodying pitched means acted on by the draught of air through the carburetor for rotating said device.

2. A structure as specified in claim 1; said casing being internally contracted immediately above the first named heating means and expanded immediately below the second named heating means.

3. A carburetor comprising a vertically elongated casing having a dome-like upper
80 end provided with an outlet neck, the lower portion of said casing having air inlet means, a vertical tube mounted rigidly in the lower portion of the casing and itself having an air inlet, a fuel nozzle disposed
85 within said tube and spaced from the wall of the latter, an auxiliary casing within the first named casing and spaced from the wall of the latter, said auxiliary casing surrounding said tube and having an inlet and an
90 outlet for a heating medium, an upper tube having its lower end telescoped with the upper end of the first named tube, means rotatably mounting said upper tube, tubular
95 arms projecting from and communicating with said upper tube, said arms having fuel discharge perforations for centrifugally delivering fuel against said dome-like upper end of the casing, means surrounding
100 said dome-like casing end for heating the same, and pitched means on said upper tube acted upon by passage of air through the casing for rotating said tube and its arms.

4. A structure as specified in claim 3; the first named casing being internally contracted
105 immediately above said auxiliary casing and increased in internal diameter at the lower extremity of said dome-like upper end.

5. In a carburetor, an air conducting casing having an upstanding tube formed with
110 an air inlet, a fuel nozzle disposed in said tube and spaced from the wall thereof, an auxiliary casing surrounding said tube and spaced from the wall of the first named casing, and means for conducting a heating
115 medium to and from said auxiliary casing.

6. In a carburetor, a vertically disposed air conducting casing having an outlet neck at its upper end and inlet means at its lower
120 portion, a tube mounted rigidly in the lower portion of the casing and itself having an air inlet, a fuel nozzle disposed in said tube and spaced from the wall thereof, an upper tube whose lower end is telescoped with the upper end of the first named tube, said upper
125 tube being provided with radiating fuel spraying arms and having a central tubular portion, said central tubular portion being closed at its lower end but open at its upper end, a stem disposed vertically and fixedly
130

mounted in the casing, said stem being received in said tubular portion to rotatably mount the upper tube and its arms, the lower end of said stem being in contact with
5 the lower end of said tubular portion to hold said upper tube against upward shifting, and pitched means on said upper tube

acted upon by air passing through the carburetor, to rapidly rotate said tube and its arms.

In testimony whereof I have hereunto affixed my signature.

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MOYLE SPENCER SKAER.