H. S. THOMASSON.

KEROSENE CARBURETER.

APPLICATION FILED APR. 26, 1917.

1,381,253. Patented June 14, 1921.

2 SHEETS—SHEET 1.

Fig 1

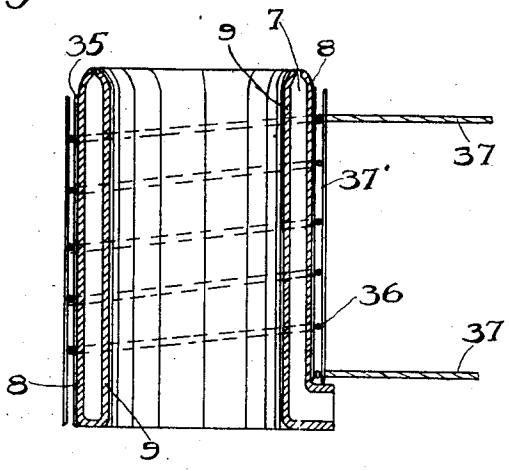
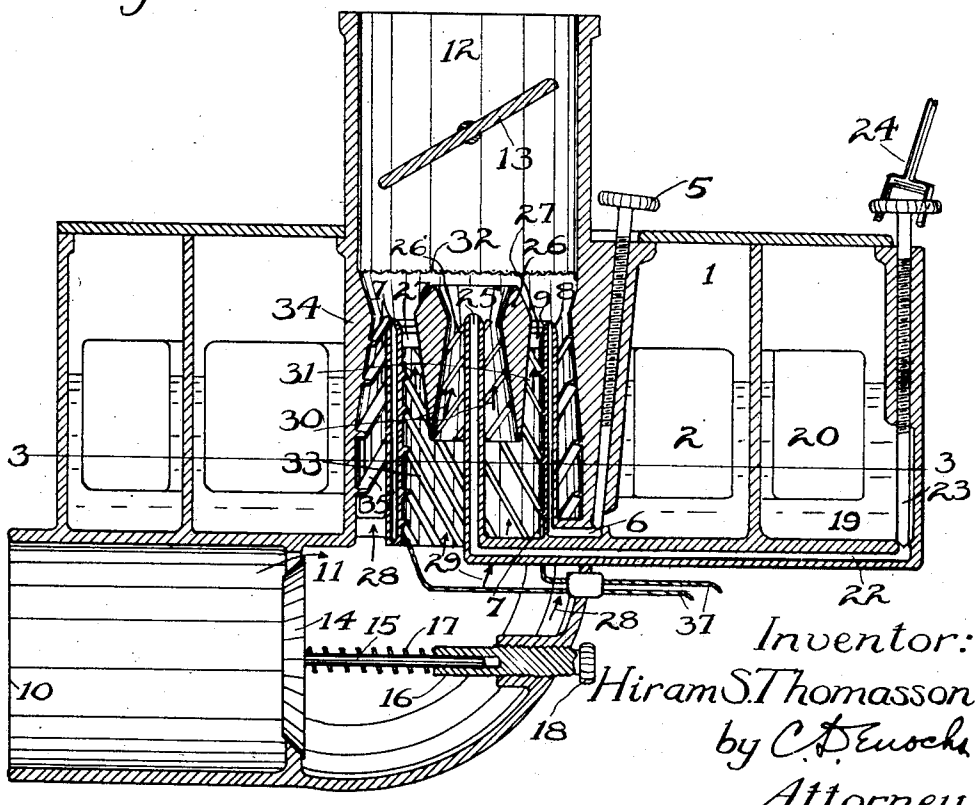


Fig. 2



Inventor:
Hiram S. Thomasson
by C. D. Enoch
Attorney

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2 SHEETS—SHEET 2.

Fig. 3

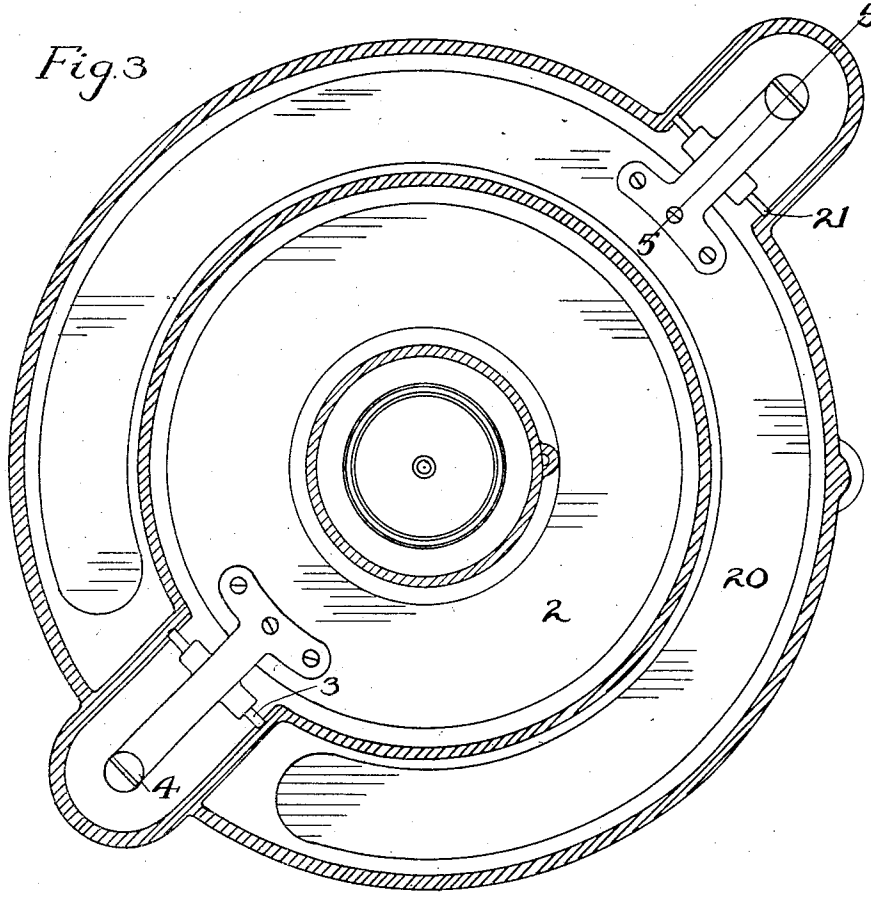


Fig. 4

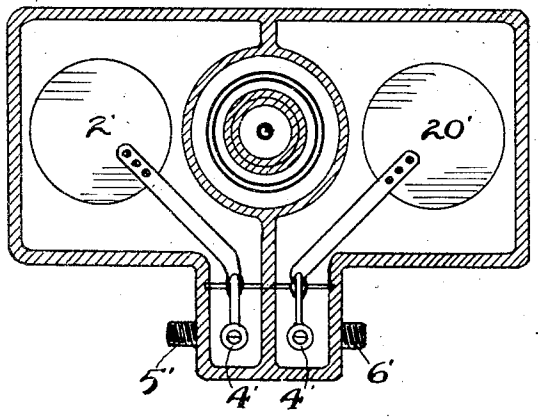
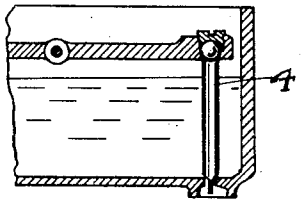


Fig. 5



Inventor:
Hiram S Thomasson
by C. D. Enochs
Attorney.

UNITED STATES PATENT OFFICE.

HIRAM S. THOMASSON, OF MINNEAPOLIS, MINNESOTA.

KEROSENE-CARBURETER.

1,381,253. Specification of Letters Patent. Patented June 14, 1921.

Application filed April 26, 1917. Serial No. 164,803.

To all whom it may concern:

Be it known that I, HIRAM S. THOMASSON, a citizen of the United States, and a resident of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Kerosene-Carbureters, of which the following is a specification.

The object of my invention is to provide improved means for mixing one or more grades of fuel or water vapor with air so as to make an efficient mixture for explosion in an internal combustion engine.

With these and incidental objects in view, the invention consists of certain novel features of construction and combination of parts, the essential elements of which are hereinafter described with reference to the drawings which accompany and form a part of this specification.

In the drawings, Figure 1 is an enlarged sectional detail of the kerosene jet nozzle and the heating element applied thereto; Fig. 2 is a sectional detail of my preferred construction of the carbureter described in this application; Fig. 3 is a section taken on the line 3—3, Fig. 2; Fig. 4 is a sectional plan view of a modification of the construction shown in Figs. 2 and 3; and Fig. 5 is a sectional side elevation detail taken on the line 5—5, Fig. 3.

A chamber 1, Fig. 2, preferably annular in shape, is provided to carry a certain amount of kerosene, the amount being regulated by the float 2, better shown in Fig. 3, hinged at 3 and controlling a shut-off valve 4, similar to the one shown in Fig. 5, the chamber being connected below the shut-off valve to a suitable supply tank.

A needle valve 5, Fig. 2, is provided to regulate the amount of kerosene that can be drawn through the intake pipe and this communicates by means of the opening 6 to the annular space 7 between the cylindrical walls 8 and 9, concentrically positioned.

A suitable connection is made at 10 to a supply of hot air provided in any suitable manner, and a certain amount of air is admitted freely through the aperture 11 under suction of the engine through the intake pipe 12, controlled by the butterfly throttle valve 13 in the usual manner.

A valve 14, having a stem 15, slidably mounted in a frame member 16 is normally held closed by the spring 17 which is adjustable by means of a thumb nut 18.

When the suction of the engine becomes sufficient under influence of the throttle valve, the valve 14 will be lifted to allow a greater quantity of air to be admitted, and the quantity of air admitted will depend upon the tension of the spring 17.

A second chamber 19 is provided for water or gasolene and will first be described as used for water.

This chamber 19 has a float 20, better shown in Fig. 3, pivoted at 21 and having a shut-off valve 4 operating as heretofore described for the chamber 1, and having a suitable connection to a supply reservoir.

This chamber connects by a tube or opening 22 controllable by needle valve 23 which is provided with means 24 for control from the dash board of the automobile to which it is applied, to a jet 25.

A Venturi tube 26, supported by suitable [illegible]s 27 from the cylindrical wall 9, is concentrically positioned about the jet 25, which in turn is centrally positioned in the cylindrical walls 8 and 9.

With the construction as shown, water is supplied at the jet 25 and kerosene is supplied at the cylindrical jet 7 and the level of these two liquids is of course controlled by the floats 20 and 2 respectively.

When air is drawn in through the aperture 11 or through the opening made by the valve 14, when it is lifted from its seat it will divide and part will pass up as indicated by the arrows 28, part as indicated by the arrows 29, and of the air taking the path indicated by the arrows 29 a portion will divide and pass as shown by the arrows 30, while a portion will pass as shown by the arrows 31.

Evidently then there is provided a jet 25 acted upon by the cylindrical column of air 30 and a cylindrical jet 27 acted upon by the cylindrical column of air 31 and 28 so that the kerosene and water, or both, vaporize and thoroughly mix with the air before they are admitted to the engine cylinder.

A screen 32 may be used to further break up the structure if desired.

The inner wall of the Venturi tube 26 has helical fins 26′ positioned therein, the inner wall 9 of the cylindrical casing has helical fins 33 positioned therein, and the outer

cylindrical casing 34 has helical fins positioned therein, and these fins give the air passing by them a whirling motion so that as it is drawn through and past the jets the liquid is sucked from the jets by the air with a whirling motion, and as the fins positioned on the inner wall of the cylindrical casing are helical in one direction, while the fins positioned on the Venturi tube and the outer casing are helical in the opposite direction, the central column of air will be given a whirling motion in one direction, while the inner and outer columns will be given a whirling motion in the opposite direction.

The result of the mixing of the oppositely whirling columns of air, the kerosene and the water is to thoroughly vaporize and mix both liquids with the air and introduce them into the engine to which the carbureter is applied in a highly efficient manner.

In Fig. 4 I show a modification of the structure shown in Figs. 2 and 3 in which the float 2 is replaced by the float 2′, the float 20 is replaced by the float 20′, a needle valve 4′ controls the level of the liquid, while the connections 5′ and 6′ are provided for the kerosene and water reservoirs respectively.

The outer cylindrical wall 8, Figs. 1 and 2, has a sheet of mica 35 wrapped around it for insulating purposes and over this mica is a coil of suitable wire 36 serving as a heating element and leading by terminals 37 to the storage battery or other source of electrical power.

A second sheet of mica 37′ encircles the heating element and the cylindrical jet 7 is thus heated and by this construction I am able to start an internal combustion engine directly on kerosene without the use of gasolene.

I find that I can heat this cylindrical jet to a sufficiently high temperature to cause the engine to start readily without gasolene and that as the engine is running the new kerosene constantly drawn through the cylindrical jet will absorb a sufficient amount of heat to prevent the heating element from overheating the liquid and yet the kerosene will be brought to a proper temperature for ready ignition in the engine.

For extremely cold weather, if desired, although I do not find this really necessary, gasolene may be carried in the chamber 19 in place of water and the engine may be started with a mixture of gasolene and kerosene, or all gasolene if desired, and then changed over to all kerosene, or may be continuously run with a mixture of kerosene and gasolene, the quality of the mixture being regulated by any suitable adjustment means 24 controllable from the dash board of the automobile.

While I have described my invention and illustrated it in two particular designs, I do not wish it understood that I limit myself to these constructions, as it is evident that the invention may be varied in many ways within the scope of the following claims.

Claims:

1. In a carbureter the combination of a thin cylindrical shell having multiple helical fins on the inner wall thereof, a second thin cylindrical shell concentric with said first shell and forming with said first shell a nozzle having an annular opening, an outer casing concentrical with said cylindrical shells but spaced therefrom and having helical fins on the inner surface of opposite pitch to the fins of said inner cylindrical shell, and an air passageway inside and outside of the walls forming said nozzle.

2. In a carbureter the combination of a central nozzle, a Venturi tube surrounding said nozzle, a second nozzle having an annular opening surrounding said Venturi tube but spaced herefrom, an outer casing surrounding said second nozzle but spaced therefrom, and an air passageway through said carbureter whereby air may pass by said central nozzle, a second column of air may pass between said Venturi tube and the inner wall of said second nozzle, and a third column of air may pass between the outer wall of said second nozzle and the inner surface of said casing to carry fuel from both of said nozzles into an internal combustion engine to which the device is applied.

3. In a carbureter the combination of a nozzle formed of two thin cylindrical shells concentrically positioned, leaving therebetween an annular space, means for supplying fuel thereto to a predetermined level, helical fins on the inner wall of the inner of said shells, a casing surrounding the outer of said shells, helical fins on the inner surface of said casing of a pitch opposite to that on the inner wall of said inner shell, and an air passageway whereby air may be drawn both inside and outside of the cylindrical shell formed by said two cylindrical walls, the air passing inside of said shell being given a whirling motion in one direction, and that passing outside of said shell being given a whirling motion in the other direction.

4. In a carbureter the combination of an intake chamber, a spring controlled valve positioned therein, an aperture for allowing a certain amount of air to pass therethrough when said valve is closed, a nozzle chamber communicating with said intake chamber, and a throttle chamber adapted to be connected with the intake manifold of an internal combustion engine communicating with said nozzle chamber, a centrally positioned nozzle in said nozzle chamber, a Venturi tube surrounding the centrally positioned nozzle, a second nozzle having an annular opening surrounding said Venturi

tube, means for admitting liquid to a predetermined level in said second nozzle, and means for imparting a rotary motion to air passing between said second nozzle and said Venturi tube in one direction, and to impart a rotary motion to air passing by the outside of said second nozzle in the opposite direction.

5. In a carbureter the combination of a fuel chamber, a nozzle communicating therewith, a Venturi tube surrounding said nozzle and having helical fins on its inner surface, a second nozzle having two cylindrical walls positioned concentrical with said Venturi tube and having helical fins on the inner cylindrical wall of a pitch opposite to the fins of the Venturi tube, an outer casing surrounding said second nozzle and having helical fins on its inner surface having the same direction of pitch as those of said Venturi tube.

6. In a carbureter the combination of a fuel chamber, a nozzle communicating therewith, a Venturi tube surrounding said nozzle, a second nozzle surrounding said Venturi tube, helical fins positioned on the inside of said Venturi tube to give air passing therethrough a whirling motion in one direction, and means for imparting a whirling motion in the opposite direction to air passing the outside of said Venturi tube.

HIRAM S. THOMASSON.