

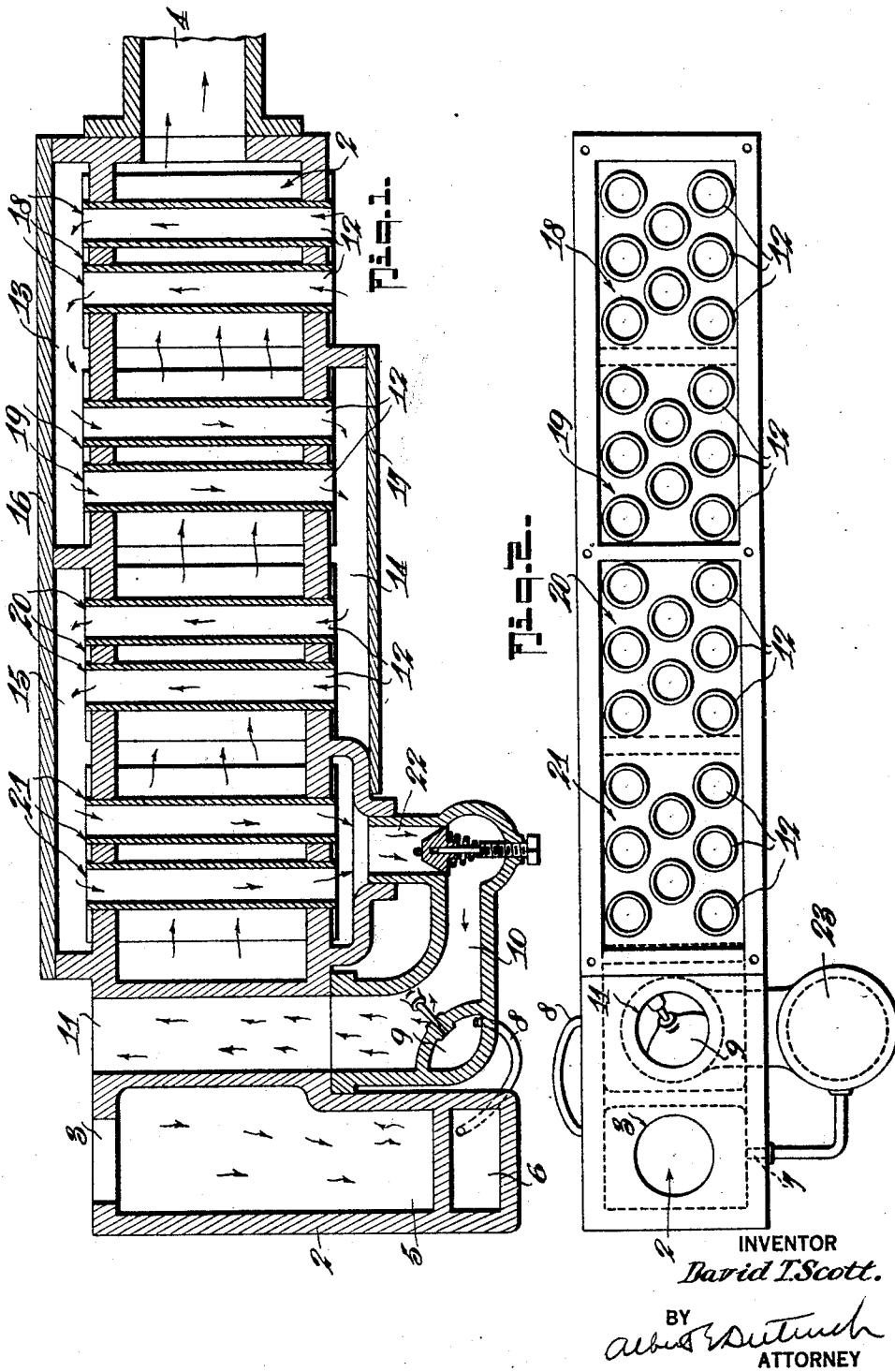
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HEAVY OIL VAPORIZER

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HEAVY-OIL VAPORIZER.

Original application filed December 3, 1924, Serial No. 753,689. Divided and this application filed
January 21, 1927. Serial No. 162,594.

This invention relates to a means for vaporizing a heavy oil for combustion in an internal combustion engine by the heat of the exhaust from the same. It comprises a means whereby the heat from the exhaust is applied to heat the oil and the air for its combustion before the former is sprayed into the latter and thereafter to heat the explosive mixture of atomized oil and air before its delivery to the intake of the engine.

These three requirements, the heating of the oil, the heating of the air for its combustion and the heating of the gaseous mixture of oil and air are effected within a single casting or body which is simple in construction, readily adaptable to existing engines and accessible for cleaning or repair.

The invention is fully described in the following specification, reference being made to the drawings by which it is accompanied, in which:

Figure 1 is a longitudinal section of the invention.

Figure 2 is a plan of the same with the top cover removed.

In these drawings 2 represents a relatively elongated rectangular body, to one end of which the exhaust from the engine is delivered at 3, and from the other end of which it finds its exit at 4. The end of this body to which the exhaust is delivered is downwardly extended as at 5 immediately opposite the exhaust entrance 3 to below the general level of the body, and has in the bottom a compartment 6 divided from it to which the fuel oil is delivered at 7 from the float chamber 23 of the carburetter and from which the oil, heated by exposure to the exhaust, is delivered at 8 to the pocket 9 of the carburetter 10, which is the subject of a separate application filed on the 26th of August, 1924, under Serial No. 734,282 and now pending in the office.

Immediately adjacent the end of the body 2 to which the exhaust is delivered, a passage 11 is carried vertically through the body, the lower end of which passage is connected to the carburetter 10 and the upper end of which is connected to the intake of the engine.

From the end of the body 2 which is adjacent this passage 11 to the other end near the exit 4, a series of short tubes 12 pass vertically through the body, the ends of which

tubes are expanded in the apertures provided for them in the upper and lower walls of the body.

The air for mixing with the fuel oil vapor is conducted through these tubes 12 where it is exposed to the heat of the exhaust as it passes through the body from 3 and 4.

To ensure effective circulation of the air through these tubes 12 the ends, where they pass through the walls of the body, are divided into groups 18, 19, 20 and 21, by flanges projecting from the top and bottom walls of the body on which flanges are seated cover plates 16 above and 17 below, leaving heading spaces 13, 14 and 15 successively connecting the several groups.

Atmospheric air is admitted to the lower end of the first group 18 of these tubes and passes upward through them to the heading space 13, from there downward through the tubes in the next group 19 to the heading space 14, upward through the next connected group 20 to the heading space 15 and downward through the last group 21 and is delivered at 22 to the carburetter 10 before referred to.

In this carburetter 10 the air, highly heated by its passage through the tubes 12, receives the atomized oil heated in the compartment 6 and in the pocket 9, and the combustible mixture of heated air and oil vapor passes through the pipe 11 where it is further heated by exposure to the heat of the exhaust before its delivery to the engine intake.

It will be noted that while the oil in the chamber 6 and the gaseous mixture in the pipe 11 are exposed to the high temperature of the exhaust gases as first delivered from the engine at 3, the air, passing through the tubes 12 from the end nearer the exhaust exit 4 toward the end to which the exhaust is first admitted at 3, is gradually heated until in the group 21 it is just before its delivery to the carburetter at 22 exposed to the hotter exhaust gases. After this hot air is mixed with the vaporized oil which has been highly heated in the chamber 6 and pocket 9, the gaseous mixture in passing through the pipe 11 is, immediately before its delivery to the engine intake, further exposed to the high temperature of the exhaust as first delivered to the chamber 2.

This application is a division of the parent

application Serial No. 753,689, filed by me December 3, 1924.

Having now particularly described my invention, I hereby declare that what I claim as new and desire to be protected in by Letters Patent, is:

1. A carburetter of the class described, comprising the combination with an elongated chambered body into the upper side of which at one end the exhaust from an engine is admitted and from the other end of which it is allowed to escape, said chambered body having immediately under the place of exhaust admission, a portion depressed below the general level of the bottom of the chambered body and partitioned off from it, and adjacent the place of exhaust admission a gas delivery duct extending across the chambered body through which the mixture from the carburetter is delivered to the engine intake, the space between this mixture duct and the other end of the chambered body having a plurality of groups of tubes extending across the chambered body, means for admitting air into a group of these tubes at the end toward the exhaust exit, means for connecting the ends of the tubes of adjacent groups whereby the air may pass serially through the respective groups toward the end of the body where the exhaust is admitted, means for passing the air so heated to the delivery duct, means for regulating by the suction of the engine intake the amount of hot air drawn into this duct, means for delivering a supply of oil into the portion of the chamber partitioned off, and means for delivering the oil therefrom into the heated air passing means adjacent the connection of it to the gas delivery duct.

2. A carburetter of the class described, comprising the combination with an elongated chambered body through which the exhaust of an engine is delivered from one

end to the other, a sub-chamber partitioned off adjacent the end to which the exhaust is admitted, a delivery duct across the chamber adjacent the same end, and a plurality of tubes extending across and through the wall of the chambered body between the gas delivery duct and the other end of the chambered body, said tubes being divided into a number of groups, and means for connecting the adjacent ends of the adjacent groups together whereby air admitted into the group adjacent the exhaust exit may pass successively through the several groups toward the other end, a pipe delivering the heated air to the delivery duct, a valve regulating by the suction of the engine intake the amount of air indrawn, means exterior to the pipe for varying the pressure under which said valve acts, means for delivering oil to the sub-chamber, means for delivering oil from that sub-chamber to a pocket in the wall of the heated air delivering pipe, and means for delivering the oil therefrom into the heated air delivering pipe.

3. In a device of the class described, means for preheating the air by passing it through but out of contact with exhaust gases, said means comprising an elongated hollow body having an exhaust gas intake opening at one end and an exhaust gas discharge opening at its other end, means adjacent the intake end of the body for delivering heated air to a carburetter intake, a plurality of groups of air tubes passing through the body, said body having extended chambers with which the ends of pairs of tube groups communicate, one end of the tubes of the group nearest the discharge end of the body being open to atmosphere, and one end of the tubes of the group nearest the body intake end discharging into said heated air delivering means.

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