J. H. HOLLOWAY.

MEANS FOR TREATING KEROSENE OR THE LIKE FOR USE IN HYDROCARBON ENGINES.

APPLICATION FILED JAN. 4, 1913.

1,160,897. Patented Nov. 16, 1915.

Fig. 1.

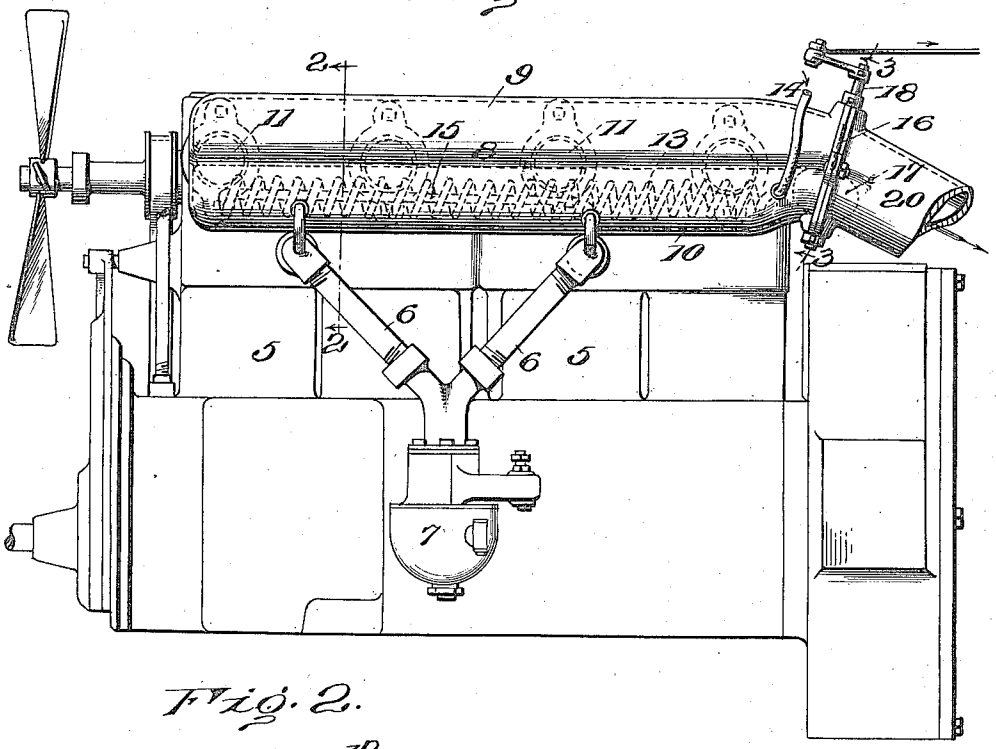


Fig. 2.

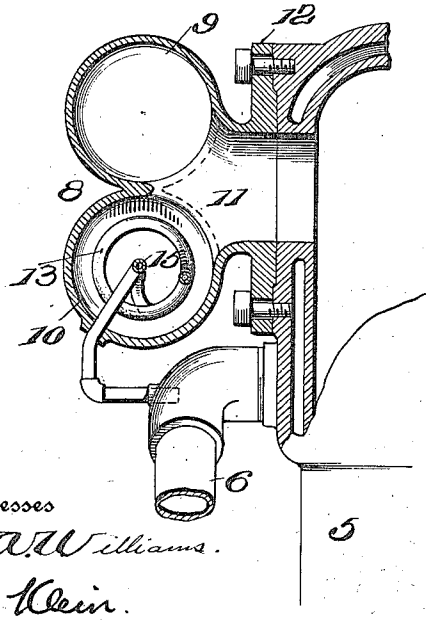
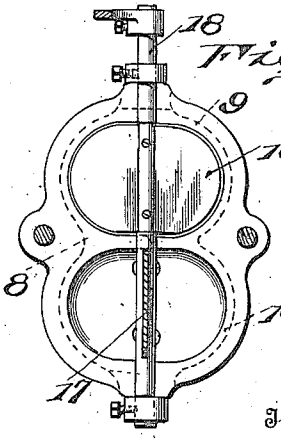


Fig. 3.



Witnesses

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UNITED STATES PATENT OFFICE.

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MEANS FOR TREATING KEROSENE OR THE LIKE FOR USE IN HYDROCARBON-ENGINES.

1,160,897. Specification of Letters Patent. Patented Nov. 16, 1915.

Application filed January 4, 1913. Serial No. 740,252.

To all whom it may concern:

Be it known that I, JOHN H. HOLLOWAY, a citizen of the United States, residing at La Fayette, in the county of Tippecanoe and State of Indiana, have invented certain new and useful Improvements in Means for Treating Kerosene or the like for Use in Hydrocarbon-Engines, of which the following is a specification.

My invention relates to a means by which kerosene or similar oil may be heated to the necessary temperature and introduced while at such temperature into the cylinders of hydrocarbon engines, so that kerosene can be used as the motive power for such engines.

The object of my invention is to provide means whereby the exhaust gases are utilized to heat the kerosene, and also whereby more or less of the total amount of the exhaust gases may be utilized to heat the oil, so that the temperature to which the oil is heated may be regulated or kept uniform irrespective of the amount of the exhaust gases or their temperature.

With the foregoing and other objects in view my invention consists in certain constructions, combinations and arrangements of parts, the preferred form of which will be first described in connection with the accompanying drawings and then the invention particularly pointed out in the appended claims.

Referring to the drawings wherein the same part is designated by the same reference numeral wherever it occurs Figure 1 is a side elevation of a standard type of hydrocarbon engine equipped with the preferred form of my invention; Fig. 2 is a section through the exhaust manifold taken on line 2, 2 of Fig. 1, and Fig. 3 is a section taken on line 3—3 of Fig. 1.

5 designates the cylinders of a standard type of hydrocarbon engine having the usual intake pipes 6 connecting an ordinary carbureter 7 to the intake ports. These parts are illustrated as of an ordinary standard type and form no part of my invention. They are shown merely for the purpose of giving a specific application of one form of my invention to a hydrocarbon engine.

In the preferred form of my invention I construct the exhaust manifold 8 in the form of a double pipe as shown, whereby there are two passages 9, 10 formed for the exhaust gases, the gases entering each passage of the manifold through openings 11 common to both passages. Each of these openings is preferably surrounded by a flange 12, which are adapted to be bolted to the cylinder and surround an exhaust port whereby the hot exhaust gas will pass directly from the engine into the manifold.

Located in one of the passages of the manifold as 10 is a heater by which the oil supplied thereto can be raised to the desired temperature. In the form of my invention shown this heater is in the form of a coil 13 which extends through the passage 10 and consequently is in position to be impinged upon by the hot gases as they enter the passage through the openings 11 direct from the exhaust ports.

14 designates the intake end of the coil and the outlet end is connected by a longitudinally extending pipe 15 to the intake pipes 6 closely adjacent the intake ports.

As the amount of heat supplied to the coil will vary both with the volume of exhaust gases and the atmospheric conditions, everything else being equal, it is highly desirable and in fact essential to obtaining the maximum efficiency under all the various working conditions under which the engine must operate, that means be provided for regulating the volume of gas flowing through the passage 10. In order to effect this I have provided a pair of butterfly valves 16, 17, mounted on a shaft 18 provided with a crank arm 19 adapted to be operated in any suitable way. These valves are mounted on the shaft 18 at right angles to each other with the shaft journaled in the manifold at the end thereof toward its outlet, with the valve 16 in the end of the passageway 9 and the valve 17 in the end of the passageway 10. In the form of construction shown the passageways in the manifold upon the valves are united to form a single pipe 20. In this construction it will be seen that as the shaft 18 is turned to open one of the butterfly valves, the other butterfly valve will be closing. Consequently the amount of gas passing through the passage ways 9 and 10 will be regulated. If for instance the oil in the heater 13 is being delivered to the engine too hot, then the shaft 18 is turned so as to partly close the valve 17, which operates to open the valve 16. Consequently less gas will pass

through the passageway 10 and thus the oil will be heated to a less extent. When the oil is not delivered to the engine at a sufficiently high temperature, then the movement of the valves is reversed.

It is understood of course that the engine is to be started by gasolene in the ordinary way, and for this purpose a carbureter 7 is provided. When the manifold is heated up to a sufficiently high temperature then the supply of gasolene to the carbureter is cut off and kerosene supplied to the heater coil and the motor power consequently changed from gasolene to kerosene. It will be further observed that the necessary air to mix with the kerosene will be obtained through the air valve in the carbureter and the intake pipe 6.

I realize that considerable variation is possible in the details of construction and arrangement of parts without departing from the spirit of my invention, and I therefore do not intend to limit myself to the specific form shown and described.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. The combination with a hydrocarbon engine having a cylinder with inlet and exhaust ports, of a manifold having an opening connected with the exhaust port and lying in close proximity to the inlet port, an oil heater located in said manifold adjacent the exhaust port, an intake pipe connected with the inlet port adjacent the manifold, a relatively short connection between the heater and a point in the intake pipe and immediately adjacent the inlet port, whereby the heated oil is mixed with unheated air immediately prior to entering the cylinder, and means for directing the exhaust flame toward or from the heater to regulate the temperature to which the oil is to be heated as desired.

2. The combination with a hydrocarbon engine having inlet and exhaust ports with pipes connected therewith, of an exhaust manifold therefor in close proximity to said ports having a pair of passage ways therethrough, the manifold being provided with openings extending into both passage ways with said openings connected to the exhaust port of the engine, an oil heater located in one of the passage ways with one end adapted to deliver heated fuel after passing through the same immediately to the intake pipe at a point adjacent the intake port of the engine whereby the oil will be cracked in the heater and delivered in cracked condition immediately to the inlet port at substantially the temperature at which it was cracked where it mixes with air at substantially atmospheric temperature.

3. The combination with a hydrocarbon engine, of an exhaust manifold therefor having a pair of passage ways therethrough, the manifold being provided with openings extending into both passage ways with said openings connected to the exhaust ports of the engines, a heater located in one of the passage ways, a pair of valves mounted on a common shaft, one for each passage way, with said valves arranged at substantially right angles to each other whereby as one valve is opened the other is closed and the amount of gas passing through each of the passage ways can be varied one with respect to the other.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN H. HOLLOWAY.

Witnesses:

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