

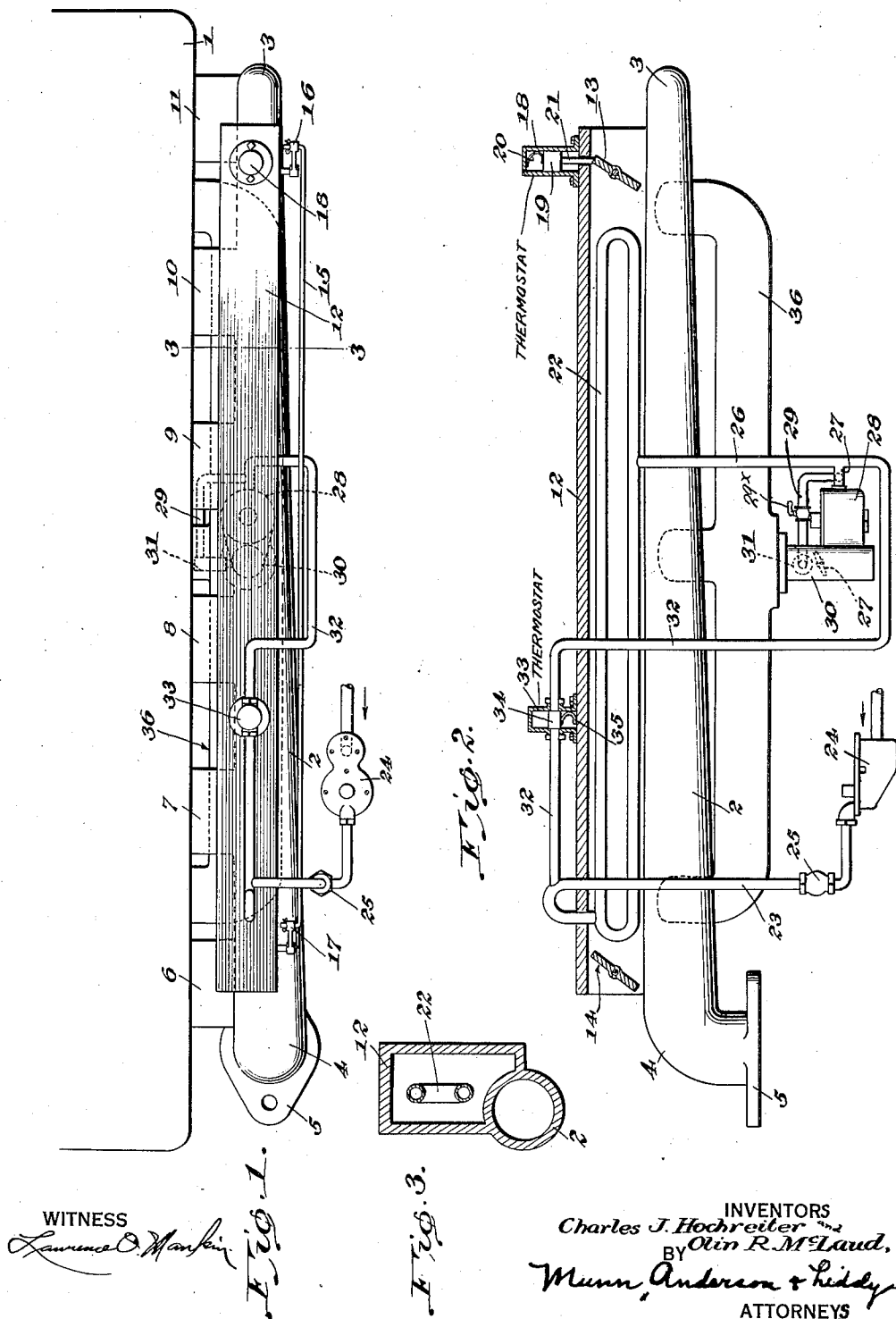
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VAPORIZING MANIFOLD FOR HEAVY FUEL OILS

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VAPORIZING MANIFOLD FOR HEAVY FUEL OILS

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4 Claims. (Cl. 123—133)

Our invention relates to improvements in manifolds for vaporizing heavy fuel oils, and it consists in the combinations, constructions and arrangements herein described and claimed.

5 An object of our invention is to provide a manifold which can be used with kerosene, #2 fuel oil, or other fuels less volatile than gasoline for driving internal combustion engines, such as those used in automobiles.

10 A further object of the invention is to provide a manifold which can be used on all types of engines, and therefore which can replace the ordinary manifold so as to enable an automobile engine designed particularly to use gasoline to make use of a cheaper heavier fuel.

15 A further object of the invention is to provide a manifold in which the vaporizing device is incorporated in such a manner as to preheat the fuel before it is taken into the carburetor or intake manifold.

20 A further object is to provide a manifold having a coil which is cast integrally therewith, and which is provided with thermostatic devices for regulating the temperature of the fuel, and also for preventing an abnormal heating of the manifold.

25 Other objects and advantages will appear in the following specification and the novel features of the invention will be particularly pointed out in the appended claims.

30 Our invention is illustrated in the accompanying drawing forming part of this application, in which:

35 Figure 1 is a plan view of a manifold embodying my invention.

Figure 2 is a side view of the manifold, a portion thereof being shown in section.

40 Figure 3 is an enlarged section on the line 3—3 of Fig. 1.

45 In the drawing, 1 indicates an engine block to which the manifold may be secured in any suitable manner. The manifold comprises a hollow casing 2 closed at one end 3 and having a right angle turn 4 at the other end provided with a flange 5 which is secured to the exhaust pipe (not shown). The manifold has the usual lateral extensions 6, 7, 8, 9, 10 and 11, through which communication is established with the cylinders of the engine block, the illustration showing a six cylinder engine.

50 Integral with the casing 2 is an extension 12 substantially U-shape in cross section. The ends of this extension 12 are open. A butterfly valve 13 is disposed at one end of the extension 12 and a similar valve 14 is disposed at the other end.

These valves are connected by means of a rod 15 and cranks 16 and 17 respectively, see Fig. 1, so that they will open or close simultaneously.

5 Secured to the extension 12 is a thermostatic member which is shown diagrammatically, since any suitable thermostatic member operating in a similar manner could be used without departing from the invention.

10 In the present instance 18 indicates a casing in which there is a slidable plunger 19 arranged to be moved by a thermostatic element 20, which when heated, will tend to straighten out, and thereby move the valves 13 and 14 to open position. As stated above, the showing is intended to be diagrammatic and allowances are made for the movement of the member 21, which is pivotally connected to the plunger 19 and to the valve 13.

20 On the interior of the casing of extension 12 is a coil or loop 22 in the nature of a hollow pipe. This, as will be seen, is in close proximity to the casing 2, through which the hot gases from the engine are escaping. Being enclosed in the casing portion 12 the heat is conserved so that this coil 22 is highly heated. The coil is connected at one end with a pipe 23 leading to a fuel supply 24, which in the present instance is shown as a fuel pump, a check valve 25 being disposed on the pipe 23. A pipe 26 leads from the coil 22 to a branch pipe 27 communicating with a carburetor 28, of the ordinary needle valve type.

30 The carburetor 28 as shown in the drawing communicates with the cylinder 30, which in turn communicates with the intake manifold 36 and which has disposed therein an electric heating coil 31 of any approved type for vaporizing the fuel, as will be explained later. This electric vaporizer is of the type commonly called a "fumer", such as that shown in the patent to Aske, 1,671,974, of June 5, 1928. A by-pass 29 having a cut-off valve 29x leads from the pipe 27 to the fumer 31, as shown in the drawing.

40 A branch pipe 32 leads from the upper end of the pipe 23 through a thermostat 33 and thence connects with the pipe 27 leading to the carburetor. The thermostat 33 is also indicated diagrammatically, the plunger 34 being actuated by a thermostatic element 35 to permit communication between the sections of pipe 32 on each side of the thermostat when the latter acts under abnormal temperature.

50 From the foregoing description of the various parts of the device the operation thereof may be readily understood. As is known, it is not possible to easily start an engine of this type on

heavy oil. The valve 29x is opened and the current is switched on to the fumer 31 from any suitable source as in the Aske patent mentioned. On pressing the starter of an automobile engine the fuel will be forced from the pump 24, past the check valve 25, through the pipe 23, the coil 22, the pipe 28, to the pipe 27. This heavy oil will not pass through the carburetor because the close adjustment of the needle valve will not permit it, but will be forced around the by-pass and will be vaporized by the fumer before it enters the intake manifold 36. This vaporized fuel will start the engine and it will continue to run, thus heating the oil 22 by its exhaust and tending to vaporize the fuel contained therein. Subsequently the fuel will be drawn into the carburetor 28 and thence into the intake manifold in the usual manner. The engine will now run on the vaporized heavy fuel.

In the event that the temperature of the manifold is too high the thermostat 33 will act to open the by-pass 32 so as to permit the fuel oil to be drawn directly to pipe 27 where it will mingle with the superheated fuel in the pipe 28, thus becoming vaporized and will pass into the carburetor at a normally heated state, the action being automatic.

As a further means of regulating the temperature and preventing the overheating of the manifold, the thermostat 19 may act to open the valves 13 and 14. The air drawn in by the fan through the radiator will be blown through hollow casing 12, thus tending to cool the carburetor to a point where both thermostats will act, one to shut off the by-pass 32 and the other to close the valves 13 and 14, so as to permit the fuel to pass through the coil 22 and to the carburetor in the manner described.

The throttle valve 37 is disposed in the pipe or cylinder 30 and is used in the usual manner. The manifold as described above may be used with heavy fuel, or it may be used with lighter fuel, such as gasoline, without making any change of any kind, and it thus provides a construction which will render the running of an engine more economical but which at the same time provides for use of a standard fuel when desired.

We claim:

1. In a manifold, a main casing, an auxiliary casing secured thereto, a heating coil in said auxiliary casing, means for delivering fuel to said heating coil, means for delivering vaporized fuel from the coil to an intake manifold and a thermostatically controlled by-pass around said vaporizing coil to said intake manifold.

2. In a manifold construction, a hollow main casing having ports for communicating with the cylinders of an engine and having an exhaust port, an auxiliary heating chamber carried by the casing, a coil disposed within the heating chamber in close proximity to said main casing, said heating chamber having open ends, valves for normally closing said open ends, and a thermostatic control for opening and closing said valves at predetermined temperatures.

3. In a manifold construction, a hollow main casing having ports for communicating with the cylinders of an engine and having an exhaust port, an auxiliary heating chamber carried by the casing, a coil disposed within the heating chamber in close proximity to said main casing, said heating chamber having open ends, valves for normally closing said open ends, a thermostatic control for opening and closing said valves at predetermined temperatures, and a thermostatically controlled by-pass around said heating coil.

4. In a manifold construction, a hollow casing closed at one end and having an exhaust opening at the other, said hollow casing having lateral openings for communication with the cylinders of an engine, an auxiliary heating chamber carried by said main casing, said heating chamber extending longitudinally of the main casing and being open at both ends, a vaporizing coil disposed within said heating chamber longitudinally of the manifold, means for delivering fuel to said vaporizing coil, means for conducting vaporized fuel from said heating coil to an intake manifold, and means for automatically controlling the temperature of the fuel delivered to the intake manifold.

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