H. F. PHILLIPS & H. V. DEAN.

HEATER FOR WATER COOLED ENGINES.

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1,298,254. Patented Mar. 25, 1919

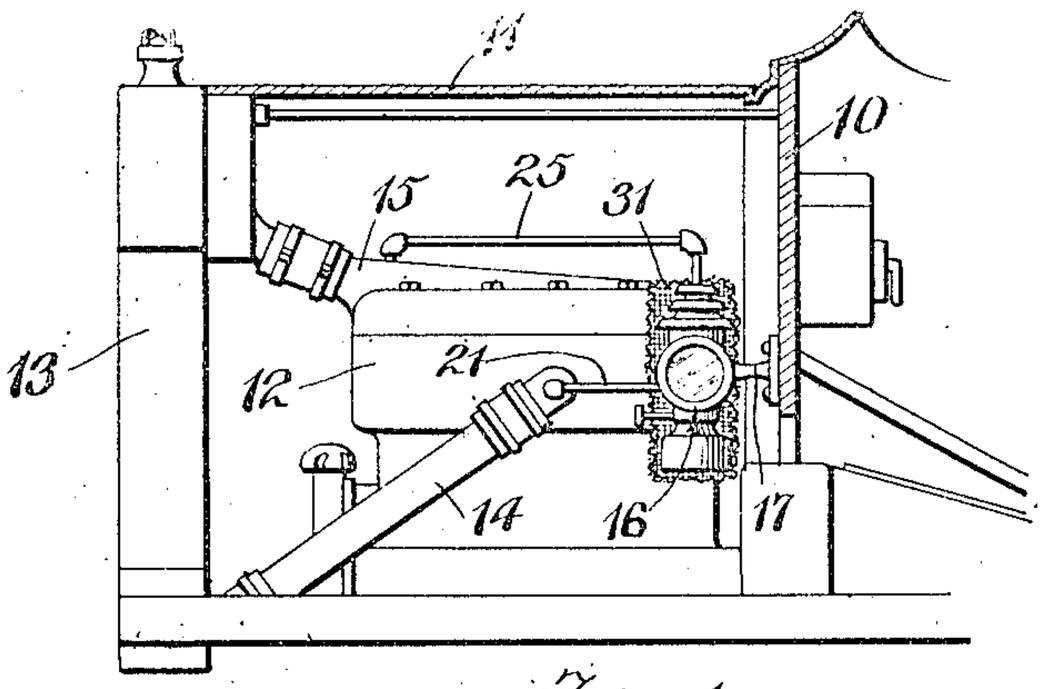

Fig. 1.

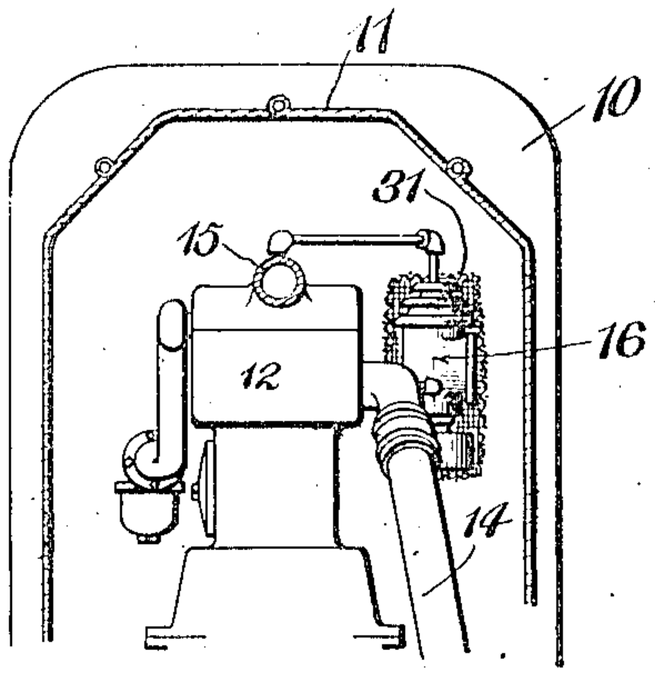

Fig. 2.

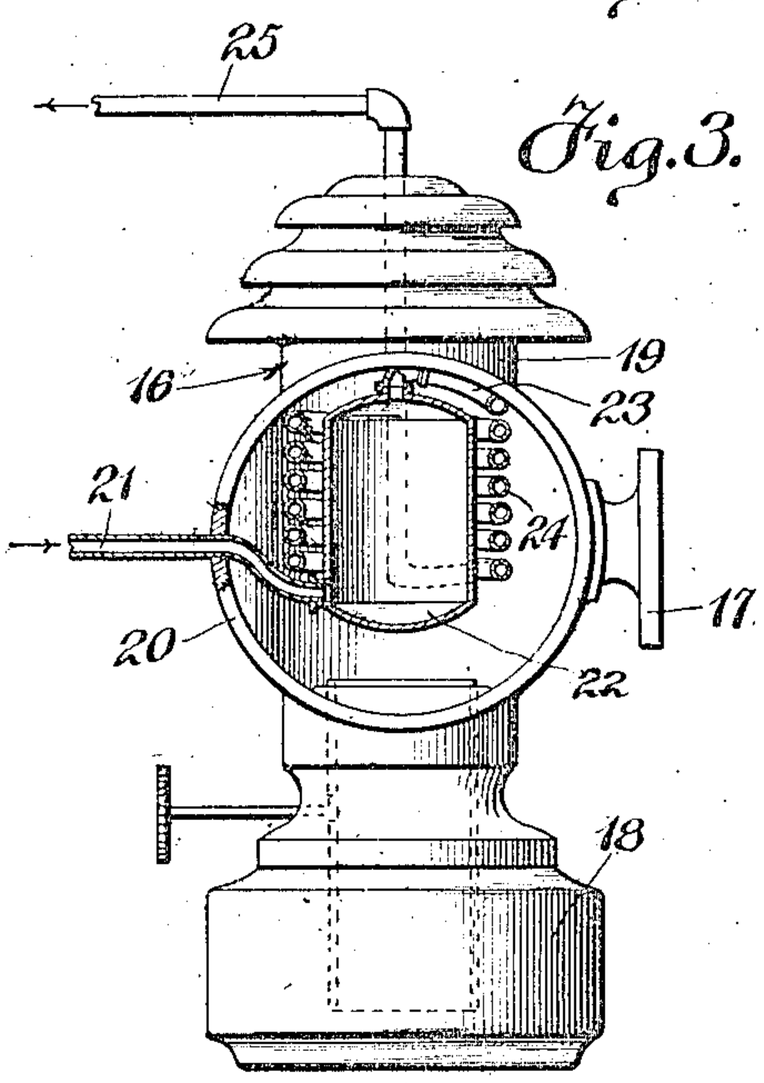

Fig. 3.

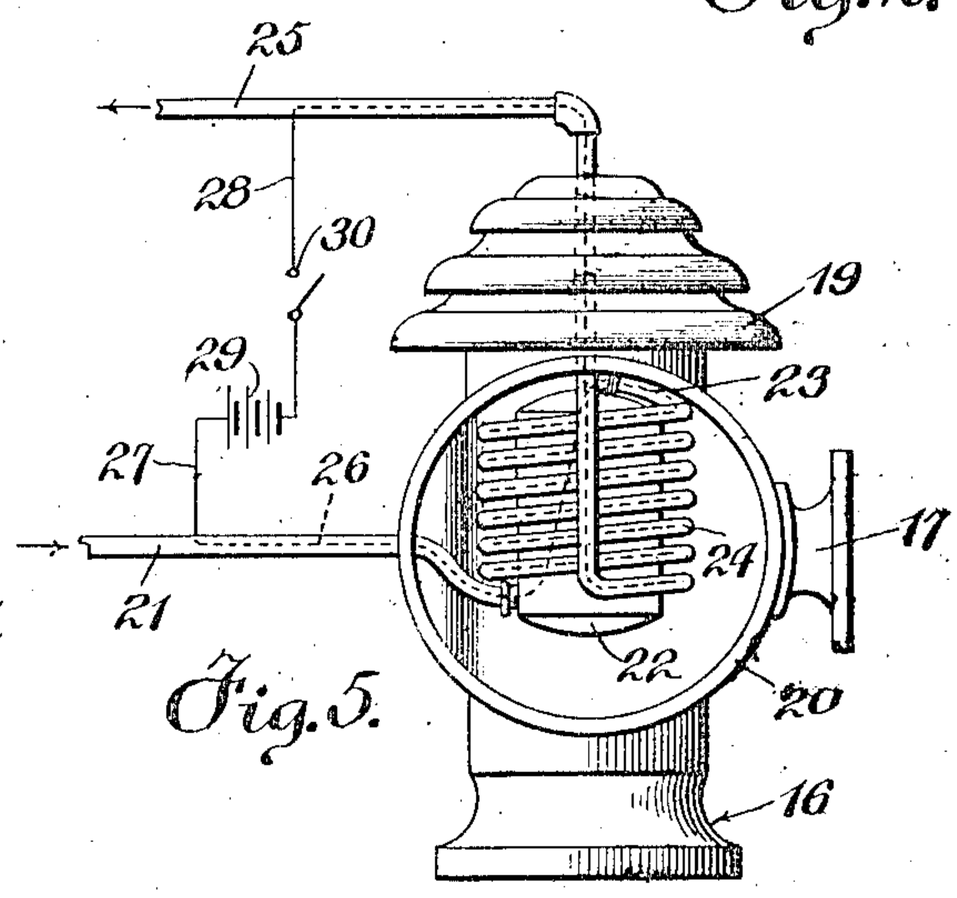

Fig. 5.

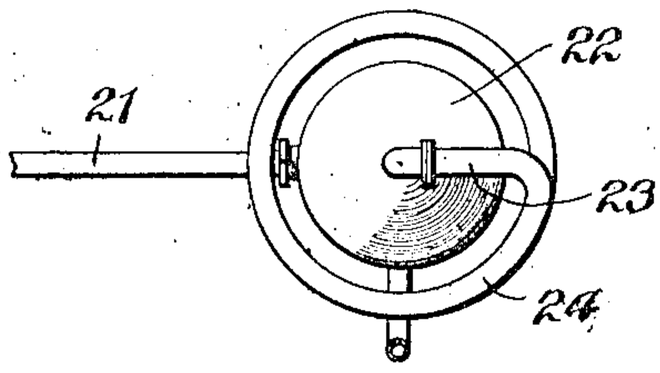

Fig. 4.

Witness

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HEATER FOR WATER-COOLED ENGINES.

1,298,254. Specification of Letters Patent. Patented Mar. 25, 1919.

Application filed December 14, 1916. Serial No. 137,022.

To all whom it may concern:

Be it known that we, HENRY F. PHILLIPS and HOMER V. DEAN, citizens of the United States, residing at Spokane, in the county of Spokane and State of Washington, have invented certain new and useful Improvements in Heaters for Water-Cooled Engines, of which the following is a specification.

Our invention relates to new and useful attachments for internal combustion engines and more particularly for internal combustion engines of motor vehicles having a water cooling system, the primary object of our invention being the provision of a heater coöperating with the water cooling system so that the water contained in the water jacket of the engine and in the radiator may be kept warm when the engine is not in use thereby doing away with the necessity of employing non-freezing solutions in the cooling system during cold weather.

In this connection, our invention includes a heater adapted to be supported within the hood of the vehicle and a water holding receptacle from which pipes lead to the inlet and outlet pipes of the water jacket of the engine.

In this connection, a still further object of our invention consists in the provision of a novel type of water receptacle which includes a relatively small tank surrounded by a heating coil which communicates with the tank, the two being exposed to direct heat from the burner forming part of the heater.

Another object which we have in view is the provision of a heater for the cooling system of automobiles in which the water or other cooling fluid may be heated either by a burner or electrically, as preferred.

With these and other objects in view, our invention will be more fully described, illustrated in the accompanying drawings, and then specifically pointed out in the claims which are attached to and form a part of this application.

In the drawings:

Figure 1 is a side elevation of a conventional form of internal combustion engine in connection with the hood and radiator of a motor vehicle;

Fig. 2 is a front elevation of the structure shown in Fig. 1;

Fig. 3 is an elevation of the auxiliary heater forming part of our invention, the water receptacle and coil being shown in section;

Fig. 4 is a plan view of the water receptacle and heating coil;

Fig. 5 is a view corresponding to Fig. 3, but illustrating the water containing receptacle and coil in elevation and showing provision for electrically heating the water contained therein.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

In order to insure a clear and accurate understanding of our invention, we have illustrated it in connection with a motor vehicle having the usual dash 10 and hood 11 inclosing an internal combustion engine 12 of conventional type and having a water jacket. Water is supplied from the usual radiator 13 to the water jacket through the inlet pipe 14 and passes back to the radiator through the usual outlet pipe 15.

Our invention, broadly speaking, includes a heater 16 which is preferably supported within the hood by a bracket 17 secured to the dash of the vehicle and which, as will be later explained, includes a liquid holding receptacle and heating coil communicating with each other and with the inlet and outlet pipes of the cooling system. This heater is preferably in the form of a conventional lamp and lamp casing including the lamp proper 18 which should be of cylindrical wick type and the lamp casing 19 having the usual bull's eyes 20 through which the burner may be seen. A pipe 21 has one end tapped or otherwise fitted into the inlet pipe 14 adjacent its juncture with the water jacket of the engine and its other end passed in through the side of the lamp casing to communicate with a substantially cylindrical water holding receptacle 22 mounted directly above the burner so that it will be highly heated when the wick is lighted. The pipe 21 communicates with the lower portion of the container 22 at one side and a second pipe 23 leads from the central upper portion of the container, the ends of which are preferably somewhat rounded, as shown, and is bent to provide a helical heating coil 24 extending downwardly and about the container

to a point adjacent its lower end. The free end of this pipe 23 is then bent upwardly and extended through the top of the lamp casing where it is connected to a pipe 25, the end of which is tapped or otherwise fitted into the outlet pipe 15 of the water jacket adjacent its juncture with the inlet pipe of the radiator.

Obviously, when the above described device is installed, the container 22, pipe 21, pipe 23, heating coil and pipe 25 will all become filled with water from the water cooling system of the engine. In cold weather, when there is danger of the water in this system freezing and so injuring the radiator or engine, when the engine is not running, the wick of the heater may be lighted to heat the water contained in the receptacle 22 and heating coil 24. The heating of this water will set up a slow circulation of the water through both the water jacket of the engine and the radiator so that in a short time all of the water in the cooling system will be warmed sufficiently to insure against freezing. The burner may be adjusted to give any desired degree of heat and if wished the device may be utilized to keep the engine warm to facilitate starting in cold weather, even though an anti-freezing solution is employed in the cooling system so that the device need not be kept burning over long periods when the engine is not in use.

If desired, the lamp or burner 18 may be omitted and the light casing alone employed with the container and heating coil and the heat supplied by electricity. Such an arrangement is illustrated in Fig. 5 in which the parts are identical with those shown in Fig. 3 and are given the same reference characters. As shown, however, a wire 26, which will offer relatively high resistance to the passage of an electric current, is run through a portion of the pipe 21, diametrically through the container 22, through the pipe 23 and heating coil and out through the side of the pipe 25. The terminals of this pipe are connected to wires 27 and 28 which lead to any suitable source of electrical energy, such as a battery 29, a manually operable switch 30 being preferably included in one of these wires. Obviously, with this structure, closing of the switch will cause passage of a current through the high resistance wire 26 and, consequent, heating of the water in the system. If desired, the form of heater illustrated in Fig. 3 may have a heating wire embodied in it in the manner shown in Fig. 5 and the water may then be heated either by means of the burner or electrically, as desired, or as conditions may direct.

Although we have illustrated and described our invention in all its details of construction, it will of course be understood that we reserve the right to make any changes, within the scope of the appended claims, without departing from the spirit of our invention. For instance, the entire burner or heater is preferably inclosed in a housing of fine wire gauze in order to prevent likelihood of fire in case of leakage of gasolene about the motor. This housing of gauze is shown in section in Fig. 1 of the drawings at 31.

Having thus described the invention, what is claimed as new is:

1. An apparatus of the class described comprising a water tank, a pipe leading into the lower end of the tank through the side wall thereof and adapted to be connected into the feed end of an engine water cooling system, a pipe leading from the top of the tank and bent to form a coil surrounding the tank and spaced laterally from said tank to form a circumferential heating chamber, the pipe at the lower end of the coil being carried upwardly on the outside thereof and adapted to be connected into the outlet end of the system, and means for heating the water in the tank.

2. An apparatus of the class described comprising a casing, a water tank disposed within the casing in spaced relation thereto and having its bottom unobstructed, a pipe leading through the side of the casing and through the side of the tank and into the lower end of said tank and adapted to be connected into the feed end of an engine water cooling system, a pipe leading from the top of the tank and bent to form a coil spaced laterally from the exterior of the tank to form an intermediate heating chamber, the coil terminating short of the bottom of the tank and the end thereof being extended upwardly on the outside of the coil and through the top of the casing and adapted to be connected into the outlet end of the system, and a burner supported by the casing below the tank to direct the heat against the bottom of the tank and upwardly through the intermediate heating chamber.

In testimony whereof we affix our signatures.

HENRY F. PHILLIPS. [L. S.]
HOMER V. DEAN. [L. S.]