P. DANIEL.

ELECTRIC HEATER.

APPLICATION FILED AUG. 27, 1920.

1,427,094. Patented Aug. 29, 1922.

Fig 2

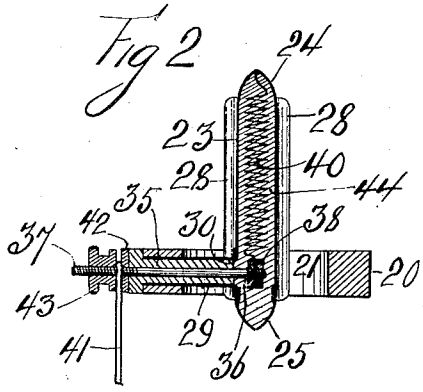


Fig 3

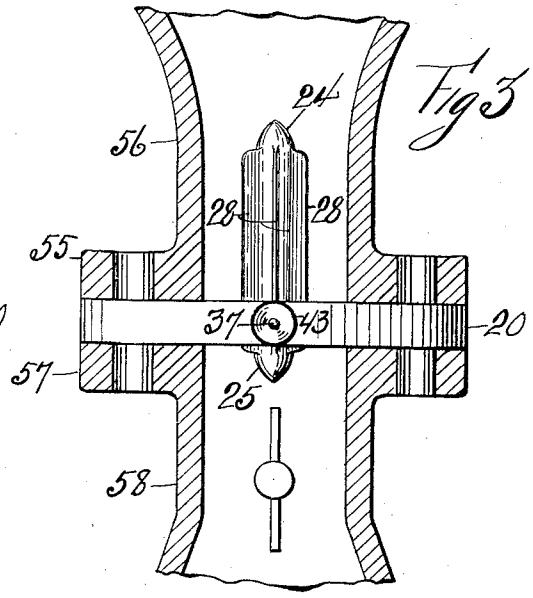
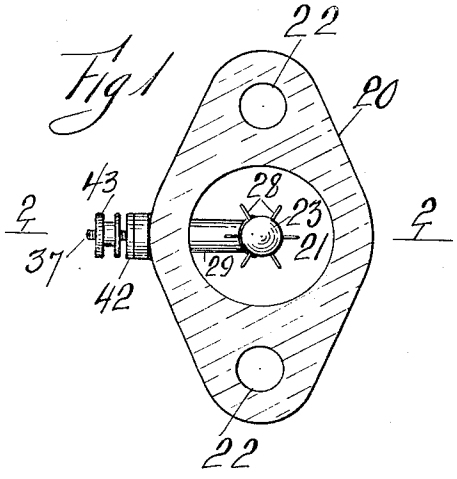


Fig 1



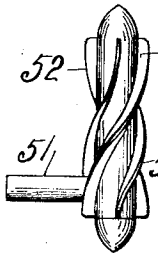


Fig 4

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UNITED STATES PATENT OFFICE.

PAUL DANIEL, OF BOUNDBROOK, NEW JERSEY.

ELECTRIC HEATER.

1,427,094. Specification of Letters Patent. Patented Aug. 29, 1922.

Application filed August 27, 1920. Serial No. 406,352.

To all whom it may concern:

Be it known that I, PAUL DANIEL, citizen of the Republic of France, and resident of Boundbrook, in the county of Middlesex and State of New Jersey, have invented certain new and useful Improvements in Electric Heaters, of which the following is a specification.

The invention relates to a heater for producing the necessary heat to quickly vaporize the gasoline from the spray nozzle of any carbureter, and thereby secure the easy starting and efficient operation of the engine to which the heater is attached.

The organization of the heater comprises a casing which is installed in the manifold of a vapor fuel engine. A resistance coil in said casing is imbedded in a non-electric conducting material, which holds the coil firmly in place. An electric current is conducted to the coil which is thereby heated. The heat is conducted to the wall of the casing, which in turn heats the fuel mixture in the manifold.

Fig. 1 represents a top plan view of an exemplification of the heater with its appurtenances; Fig. 2 shows a section of Fig. 1 on the line 2, 2; Fig. 3 is a left hand side view of Fig. 1 and sectional fragmentary portions of the manifold and carbureter of a fuel vapor engine and Fig. 4 shows an elevation of a modified casing for the heater.

The heater comprises the supporting flange 20 having the central opening 21 and the bolt openings 22. A cylindrical casing 23 is represented with the conical top end 24. To the bottom open end of the casing is securely positioned the conical shaped cap 25. Longitudinal radiating flanges or fins 28 extend from the outer surface of the casing 23. A tubular extension 29 is secured to the casing 23 over an opening 30 in the latter. A conductor rod 35 for electric current, and having the threaded ends 36 and 37 extends through the extension 29 and into the casing 23. A supporting block 38 is in threaded engagement with the threaded end 36 of the rod 35. A resistance or heating coil 40 is located in the casing 23 with its bottom end connected to the supporting block 38 and its upper end is connected and grounded to the apex of the top 24.

A wire 41 for electric current is connected to the conductor rod 35. Clamping nuts 42 and 43 on the rod 35 maintain said wire in plaee. A heat conducting and electric non-conducting material 44 is introduced in liquid or plastic form in the casing 23, and in the cap 25. The material 44 is also introduced into the extension 29 around the rod 35, and upon solidifying encloses the rod 35 and the coil 40, completely imbedding the windings of said coil. The said material 44 conducts the heat of the coil 40 to the casing 23 and prevents said coil and rod vibrating.

In the modification shown in Fig. 4, the casing 50 similar to 23 has extending therefrom an extension 51 similar to 29. Helical radiating flanges or fins 52 extend from the outer face of the casing and serve to give the mixture of gas and air a twirling motion in the manifold of the engine, enhancing the mixture of the fuel gas and air and increasing the length of time the mixture remains in contact with the casing 50 of the heater, and thereby increasing the efficiency of the heater.

The heater is installed in place with its supporting flange 20 bolted between the flange 55 of a manifold 56 and the flange 57 of a carbureter 58.

In the operation of the heater, electric current is furnished by the wire 41 which flows through the conductor rod 35, the resistance coil 40, and is grounded in the cap 24. The heat of the coil is transmitted by the material 44, the casing 23 and the radiating flanges 28 into the manifold 56. By this means the gas of the mixture in the manifold is heated and vaporized.

The function of the casing 23 is to transmit the heat units of the resistance coil 40 to the mixture in the manifold 56 at a temperature much less than the temperature of the said coil, preventing thereby preignition in the said manifold. By this means the coil is also prevented from entering the manifold in case of accidental breakage.

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

1. In a heater the combination of a supporting flange having a central opening, a casing extending through the opening, an extension connected to the casing and supported in the flange, a conductor rod in the extension, a heating coil in the casing in connection with one end of said rod, an electric insulating material in the casing and extension imbedding said coil and rod and a wire for electric current connected to the rod outside of said extension.

2. In a heater the combination of a supporting flange having a central opening, a casing extending through the opening and having radiating flanges on the outer face thereof, an extension extending through the flange and connected to said casing, a conductor rod for electric current extending through said extension and into the casing, a resistance coil in the casing with one end connected to the rod and its other end connected to the top of the casing, an electric insulating material in said extension and casing enclosing said rod and coil and a wire for electric current connected to said rod.

3. In a heater the combination of a supporting flange having a central opening, a casing extending through the opening and having helical rediating flanges on the outer face thereof, an extension supported on the flange and connected to said casing, a conductor rod extending through said extension and into the casing, a supporting block on the rod and in the casing, a resistance coil in the casing with one end connected to the block and the other end connected to the top of the casing, an electric insulating material in said casing and extension enclosing said rod and coil and a wire for electric current connected to the rod.

4. The combination in a heater for the manifold of a hydro-carbon engine of a casing, a heating coil in the casing grounded with a portion thereof, an electric insulating material in the heater completely imbedding the windings of said coil and means to conduct an electric current to the coil.

5. The combination in a heater detachably extending into the manifold of a hydro-carbon engine of a casing, fins extending from the outer surface of the casing, a heating coil in the casing with one end thereof grounded therewith, an electric insulating material in the casing completely imbedding the windings of said coil and means to conduct an electric current to the coil.

Signed at the borough of Manhattan, city of New York in the county of New York and State of New York this 25th day of August A. D. 1920.

PAUL DANIEL.