Dec. 31, 1946. A. A. SMITH 2,413,388

RAILWAY TRACK HEATER

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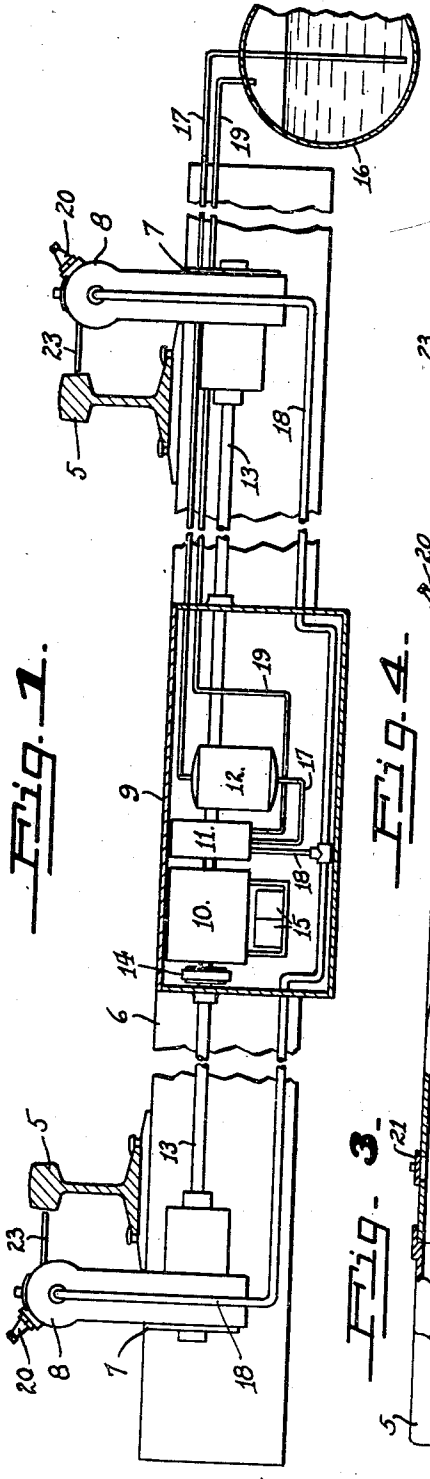


Fig. 1.

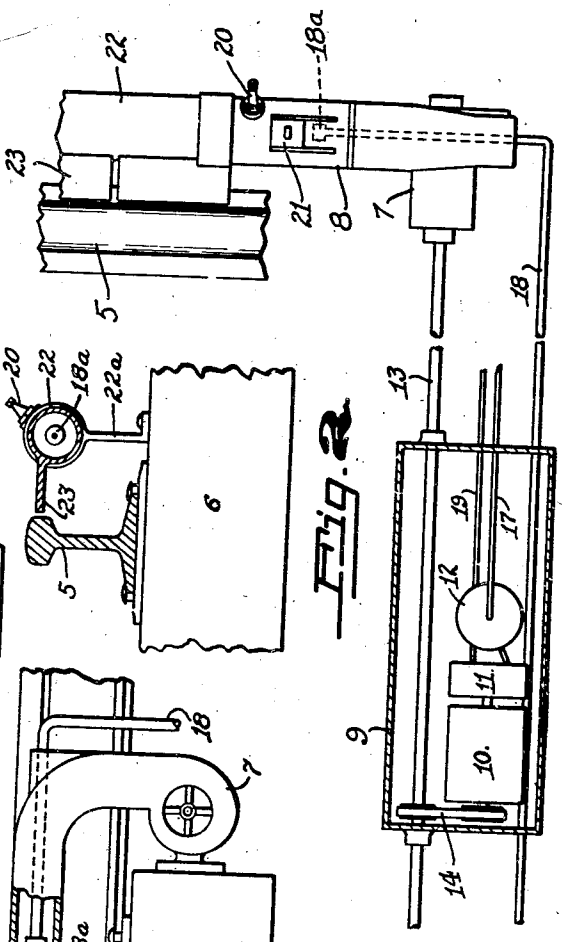


Fig. 2.

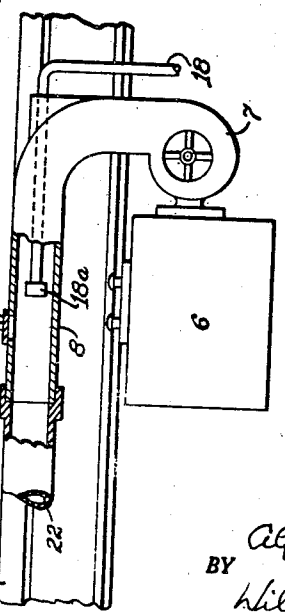


Fig. 3.

Fig. 4.

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RAILWAY TRACK HEATER

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5 Claims. (Cl. 246—428)

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The present invention relates to railway track heaters of the oil burning type, which are used to prevent track switches from being clogged and frozen by accumulated snow and ice.

The principal object of the invention is to provide an oil burning heater in which a plurality of burners are supplied with fuel oil and air under positive pressure by a single electric motor. Other objects are to provide a heater whose burners can be controlled either automatically or manually and which can be started and stopped either by direct or remote control; to provide means for directing the heat against the track and switch rails and away from the wood cross ties; and to provide for suitably enclosing the mechanism so that its operation will not be hindered by water, snow and ice.

Other objects and advantages of the invention will be apparent from the following specification which should be read with the understanding that changes, within the scope of the claims hereto appended, may be made in the form, construction and arrangement of the several parts, without departing from the spirit of the invention as defined in said claims.

A preferred form of the invention is illustrated, partly diagrammatically, in the accompanying drawing, wherein

Fig. 1 is a broken part sectional transverse view showing the heater installed in a railway track.

Fig. 2 is a broken part sectional plan of the same.

Fig. 3 is a part sectional side elevation of one blower and burner showing a portion of the combustion chamber.

Fig. 4 is a transverse view partly in section, as seen from the left of Fig. 3.

In the drawing, the reference numerals 5 designate the track rails, and 6 are the cross ties, only one of which is shown. My invention contemplates an oil burner unit, comprising a blower 7 and a combustion chamber 8, positioned close beside each rail for heating the same, and a single motor and pump unit, housed within a casing 9, for driving both blowers and supplying fuel oil to both burners.

The motor and fuel pump unit comprises a water proof casing 9 set in the ballast between two ties and between the rails 5. It houses an electric motor 10, a fuel oil pump 11 directly connected therewith, an oil filter 12, and a blower drive shaft 13 driven by a belt 14 from the motor 10. Spark coils 15 for igniting the burners, and various other accessories, not shown, such as a

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remote control contactor for controlling the motor, may also be housed within the casing 9.

The shaft 13 extends horizontally from each end of the casing 9, and drives the air blowers 7 within the burner units. The fuel oil pump 11 sucks oil from a storage tank 16 through a suction pipe 17 and delivers it under pressure to the burners through discharge pipes 18. Excess oil returns to the tank through a return pipe 19. A filter 12 is inserted in the suction pipe 17.

Each burner unit comprises a centrifugal blower 7 and a tubular combustion chamber 8 connected with or formed as an extension of the discharge of said blower, the whole forming a positive pressure burner of well known type. The fuel pipe 18 enters the rear end of the combustion chamber and terminates at a discharge nozzle indicated at 18a. A spark plug 20 is provided for ignition, and an aperture closed by a sliding gate 21 is provided for inspection and adjustment of the spark points. Various other parts and accessories, well known in the art, and therefore not shown, may be provided in association with the burner, such for example as a regulating damper in the air intake, a diffuser in the air discharge, an adjusting valve for the fuel discharge nozzle, a thermostatic element to control the ignition current, and so forth.

The tubular combustion chamber 8 is positioned parallel to and beside the rail 5 on the outside of the track. A hot gas directing tube 22 extends from the discharge end of said combustion chamber alongside the rail for as great a distance as may be necessary. The hot gas tube 22 may be made in lengths of about five feet each, and two or more such lengths may be coupled together to provide the desired over-all length. The hot gas tubes are supported in any convenient manner, as for example by brackets, one of which is shown at 22a. Horizontal guard plates 23 are welded along one edge to the hot gas tube, and extend laterally into close proximity to the side of the rail, for the purpose of excluding snow from, and retaining heat in, the space between the tube and the rail.

The flame and high temperature gases from the burner are confined within the tube 22. The length of said tube is such that the gases issuing from its end are cool enough not to ignite the ties or any wooden structures that may be placed close to the rail, and the spacing of said tube several inches above the ties insures that they will not be burned or charred by its hot walls. Heat reaches the rail by radiation and convection from the hot tube across the intervening air

space, such radiation and convection being assisted and confined by the guard plate 23.

It will be seen from the foregoing that the device provides simple, safe and efficient means for heating railway rails. One motor and pump unit, which is the most expensive and delicate part of the apparatus, can be used to operate and supply fuel to two or more burners, and is safely housed in its tight protective casing 9. If it is desired to heat two switches positioned in adjacent tracks, the motor and pump unit can be placed centrally between the two tracks and the fuel pipes 18 and the blower shaft 13 can be extended to serve and operate four burner units, one for each rail. The use of a single motor and pump unit for operating a plurality of burners makes for simplicity of control, and lends itself to remote control through the use of a suitable electric circuit.

I claim:

1. A heater for railway track rails comprising a casing positioned between the rails of the track, an electric motor in said casing, a fuel pump within said casing driven by said motor, means for supplying fuel to said pump, a rotatable shaft extending through said casing laterally of the track, said shaft being rotated by said motor, an air blower positioned beside each rail of the track, said blowers being connected with the ends of said shaft and driven thereby, a tubular combustion chamber connected with the discharge of each blower and positioned parallel with the adjacent rail, each blower and its connected combustion chamber forming a burner unit, and a pipe for conducting fuel from said pump to each burner unit.

2. A heater for railway track rails comprising a casing positioned between the rails of the track, an electric motor in said casing, a fuel pump within said casing driven by said motor, means for supplying fuel to said pump, a rotatable shaft extending through said casing laterally of the track, said shaft being rotated by said motor, an air blower positioned beside each rail of the track, said blowers being connected with the ends of said shaft and driven thereby, a combustion chamber connected with the discharge of each blower and forming a burner unit therewith, a pipe for conducting fuel from said pump to each burner unit, and a tube connected with the discharge of each combustion chamber for conducting the hot gases therefrom, said tubes being positioned parallel with the respective rails.

3. A heater for railway track rails comprising a casing positioned between the rails of the track, an electric motor in said casing, a fuel pump within said casing driven by said motor, means for supplying fuel to said pump, a rotatable shaft extending through said casing laterally of the track, said shaft being rotated by said motor, an air blower positioned beside each rail of the track, said blowers being connected with the ends of said shaft and driven thereby, a combustion chamber connected with the discharge of each blower and forming a burner unit therewith, a pipe for conducting fuel from said pump to each burner unit, a tube connected with the discharge of each combustion chamber for conducting the hot gases therefrom, said tubes being positioned parallel with the respective rails and spaced therefrom, and a guard plate having one edge connected with each tube and the other edge being in close proximity to the side of the rail, said plate forming a cover for the space between the tube and the rail.

4. A heater for a railway track, said track having spaced rails mounted on spaced cross ties, comprising a casing positioned between said rails and between two ties, an electric motor in said casing, a fuel pump in said casing driven by said motor, means for supplying fuel to said pump, a rotatable shaft extending through said casing transversely of the track, connecting means within said casing between said motor and said shaft for rotating the latter, a blower positioned beside each rail with its lower portion between said two ties and its upper discharge portion adjacent the side of the rail, said blowers being connected with the ends of said shaft and driven thereby, a tubular combustion chamber connected with the discharge of each blower and positioned parallel with and beside the adjacent rail, and pipes for conducting fuel from said pump to said combustion chambers.

5. A heater for railway track rails comprising an electric motor, a rotatable shaft driven thereby, a plurality of air blowers connected with and driven by said shaft, a combustion chamber connected with the discharge of each blower, a fuel discharge nozzle within each combustion chamber, means operated by said motor for supplying fuel under pressure to said nozzles, each blower with its associated combustion chamber and nozzle forming a burner unit, one of said burner units being positioned in proximity to each rail of the track and all said burner units being positioned remote from said motor, and a tube connected with each combustion chamber for conducting the hot gases therefrom, said tubes being positioned parallel with the adjacent rail.

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