Dec. 14, 1965 W. J. CHERRY ETAL 3,223,835

RAILROAD SWITCH HEATER

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FIG. 1.

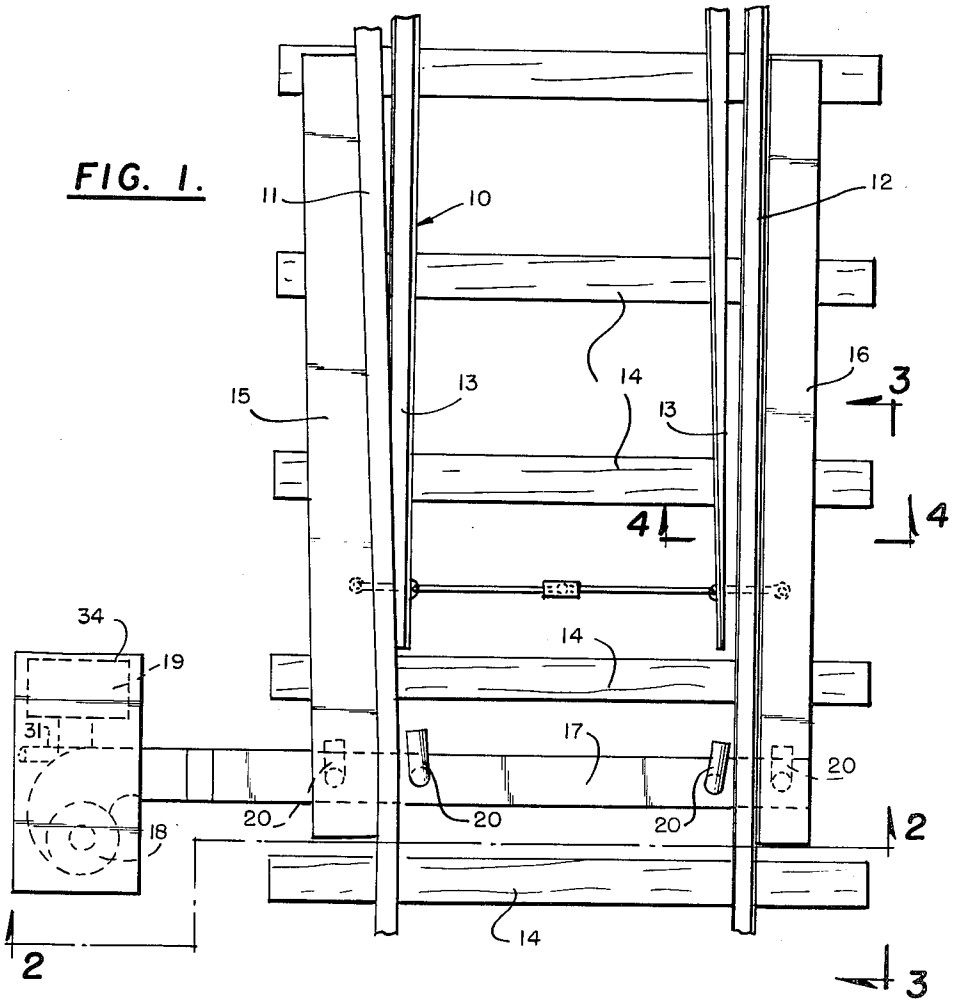
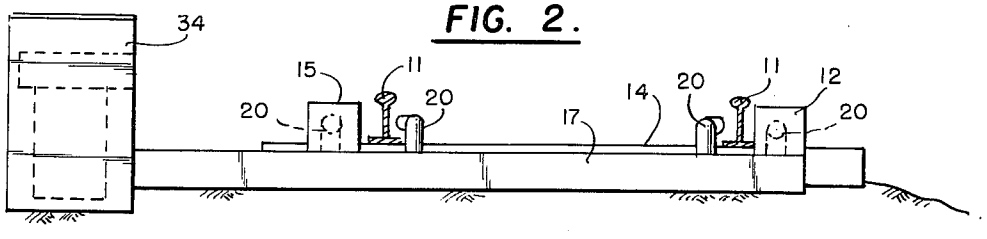


FIG. 2.



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FIG. 3.

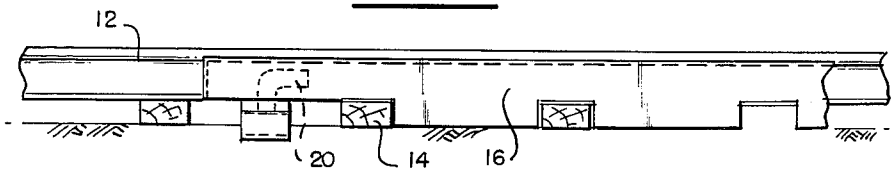


FIG. 4.

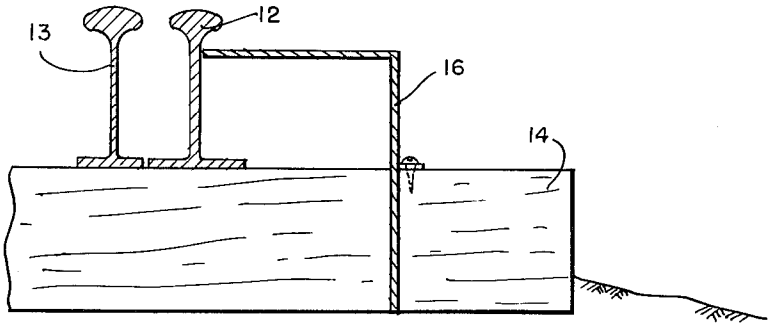
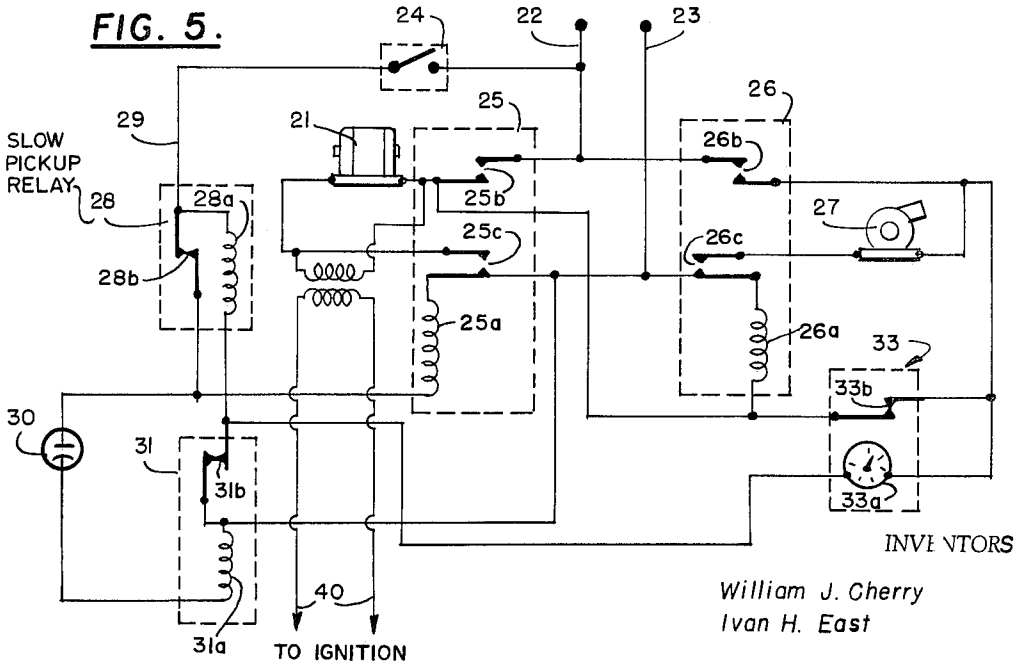


FIG. 5.



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RAILROAD SWITCH HEATER

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2 Claims. (Cl. 246—428)

The present invention appertains to new and useful improvements in heaters for railroad switches and the like.

One of the main difficulties railroads experience in the winter time is the freezing of snow and rain on its switches, thus making them next to impossible to operate. This is particularly true where the operation of the switches is automatic and there is, of course, no provision for extra power to operate the switches when they are covered with ice and snow and thus often frozen together.

It is therefore the principal object of this invention to provide a railroad switch heater that will automatically melt ice and snow from between the rails of a switch as well as that which has accumulated between the points and under them whenever it snows or freezes.

Another one of the objects of this invention is to provide a railroad switch heater that can be quickly assembled and installed.

Another object of this invention is to provide a railroad switch heater that is positive in its operation and will need but little maintenance.

Another object of this invention is to provide a railroad switch heater that is oil fired and therefore has little if any time lag in its operation unless it is so desired.

Still another object of this invention is to provide a railroad heater that is most efficient by reason of the fact that the rails are heated directly from an oil furnace burners rather than from electric heaters or other devices that sometimes fail to operate under severe snow and icing conditions.

Other objects will appear and be better understood from the embodiment of the invention disclosed in the accompanying drawings in which:

FIGURE 1 is a top plan view of the invention secured to a railroad switch.

FIGURE 2 is a sectional view taken substantially along line 2—2 of FIGURE 1.

FIGURE 3 is a view taken substantially along line 3—3 of FIGURE 1.

FIGURE 4 is a sectional view taken substantially along line 4—4 of FIGURE 1.

FIGURE 5 is a wiring diagram of the electric circuit of the invention.

Referring now in detail to the drawings, the reference character **10** designates a typical section of a railroad track embodying fixed rails **11** and **12**, movable rails **13** and cross ties **14**. A rail duct **15** is located along the outer side of fixed rail **11** while a second rail duct **16** is located along the outer side of fixed rail **12**. A main duct **17** is found to be between and below two of the rail cross ties **14**. This duct has one end adapted to the underside of rail duct **16** while duct **15** is suitably secured thereon at the location shown in FIGURE 1 of the appended drawings. The other end of the main duct **17** is adapted to the blower fan **18** along with its heater **19**. A plurality of nozzles **20** on top of the said main duct **17** directs the heated air through rail ducts **16** and **15** and against the said movable rails **13** as clearly shown in FIGURE 1 of the appended drawings. As shown in FIGURE 4, one side of at least one of the pairs of ducts is open and against the outside of the respective fixed rail.

Although shown only in the diagrammatic view, FIGURE 5, there is considerable necessary electric wiring that connects the electric motor **27** which drives the

blower fan **18**. The electric current for this motor comes in through the main lines **22** and **23**. A control switch **24** is located in line **22** which also leads to power relay **25**, which has a coil **25***a* and normally open contacts **25***b* and **25***c*, that operates the fuel pump motor **21** and ignition **40**. Relay **26**, with its coil **26***a* and normally open contacts **26***b* and **26***c*, controls the blower motor, as illustrated in the diagram. The motor designated by the reference character **27** is actually on the rear end of the same housing that contains the nozzles **20** noted in FIGURES 1 and 2 of the appended drawings. A slow opening, normally closed contact **28***b* controlled by heater coil **28***a* of delay relay **28** is connected to one terminal of the control switch **24** by means of wire **29**. Contact **28***b* of relay **28** is in turn connected to a variable resistance, flame monitoring and sensing means such as photo cell **30**, which serially connects to a coil **31***a* of photo cell relay **31** that has a contact **31***b* normally closed, and also to the coil **25***a* and second contact **25***c* in the first mentioned power relay **25**. A clock timer **33**, with its normally closed contact **33***b* operated by clock motor **33***a*, is hooked into the electric circuit of this novel invention in the manner clearly shown in the wiring diagram shown in FIGURE 5.

The blower fan **18**, heater **19** along with their housing **34**, as well as nozzles **20** and all electrical parts of this invention are conventional and no further description of the same need be given in this specification since their construction and basic method of operation is assumed to be well understood by those experienced in the art. For the same reason neither the fuel or ignition mechanism is shown since it can be assembled many ways and still fall within the scope of this invention.

The actual operation of this novel railroad switch heater is self explanatory when one examines the above mentioned wiring diagram (FIGURE 5).

When the control switch **24** is closed, electric current will flow through the wires **22** and **23** that are the main lines of the circuit to the first mentioned power relay **25** which is energized through the contacts **28***b* of the delay relay **28**, thus starting pump motor **21** and the ignition of the oil via lines **40**, at the same time energizing the second noted power relay **26** through the contacts **25***b* of the first mentioned power relay **25**, thereby starting the blower motor **27**. The second mentioned power relay **26** is also energized through its own contacts **26***b* and through the contacts **33***b* of the clock timer **33**. Ignition of the oil produces a flame which is reused by photo cell **30**, changing its resistance to cause energization of the coil of relay **31** to hold its contacts open as long as the flame continues. This, in turn, keeps the coils of relay **28** and timer **33** de-energized while the flame endures. In case of flame failure in the fire chamber, photo cell **30** will change resistance and pass insufficient energy through the photo cell relay **31**, thus closing its contact **31***b* and causing the heater coil **28***a* in the delay relay **28** to heat up and open the contacts **28***b*, thereby stopping the pump motor **21**. At the same time that energy through the contacts of the relay **26** and the photo cell relay **31** will operate the clock motor **33***a* of the clock timer **33**, and open contacts stopping blower motor **27**. The clock timer **33** is set for a time long enough to allow the blower motor to cool down the heater, thereby preventing any damage to the same. By opening the control switch the clock timer **33** will of course operate to stop the heater **19**.

This new and novel invention of a railroad switch heater has now had both its construction and operation described in detail.

From the above stated description of the invention and its operation, it will now be seen that we have provided an invention that accomplishes all of the objects set forth

in the specification, and many other advantages of considerable practical utility and commercial importance.

As many embodiments may be made in this invention and as many modifications may be made in the concept, hereinbefore shown and described in detail, it is to be understood that all matter herein shown and described is to be interpreted merely as illustrative and not at all in any limiting sense.

Therefore, what we do claim as our invention and desire to protect by Letters Patent is:

1. A heater apparatus for a railroad switch having two fixed rails and two movable rails comprising:

a pair of ducts, each positioned adjacent the outside of each one of the two fixed rails of a railroad switch;

a main duct positioned transverse to the two fixed rails and connected to the pair of ducts positioned adjacent to the outside of each one of the two fixed rails;

heater means secured to one end of the main duct for heating air;

blower means secured to one end of the main duct for blowing the heated air through the main duct; and

four nozzles extending from the main duct, two of the nozzles communicating with the interior of the pair of ducts positioned adjacent the outside of the fixed rails through one end of the ducts and directing heated air into the ducts to melt snow and ice from the rails and the other two nozzles being positioned between the fixed rails and in front of the two movable rails for directing heated air towards the points of the movable rails for melting snow and ice from the rails.

2. The heater apparatus defined in claim 1 wherein one side of at least one of the pair of ducts is open and is against the outside of the respective fixed rail.

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