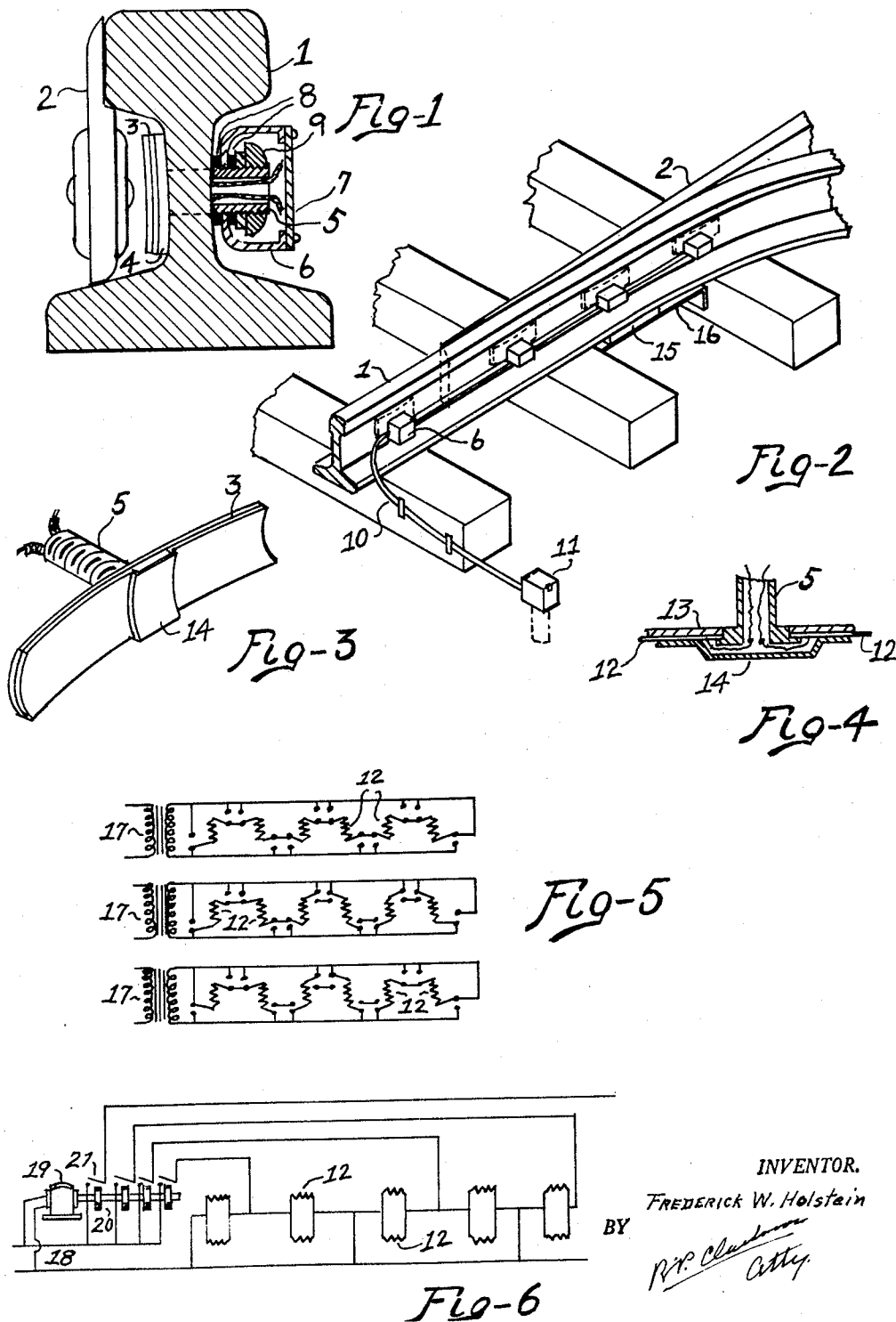


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THIN RADIATING HOT PADS

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THIN RADIATING HOT PADS

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1 Claim. (Cl. 219—19)

My invention relates to thin radiating hot pads for railroad switches to melt snow and ice and permit free movement of the switch point at all times in all weather.

Such pads, preferably about fifteen inches long, three inches wide and one-eighth of an inch thick and of about 500 watts capacity, are placed between the rail and the switch point, along the rail web, with approximately eight inches clearance between them, starting a few inches ahead of the switch point, each pad curved in one direction to conform to rail web curvature and, while held in contact with the rail web only at the middle portion of the pad, the pad is flared outwardly at the ends to radiate heat from both sides towards the switch point rather than confine the heat to the rail itself. Merely heating the rail permits snow to build up outside the switch point and, if the switch is closed for any length of time, this prevents full opening of the switch and consequent danger to traffic.

According to my invention, with these hot pads placed on the switch point side of the rail and held to the web, not only is the snow melted in the gap but when the switch point is closed, for example, the snow lying outside the point is melted, permitting full opening of the switch point, thus contributing to road safety. Moreover, with hot pad units, systems of flexible connections are such that greater heat may be generated at the point of the switch where movement is greatest, and less toward the heel. Wiring may be adapted to local conditions, with full output for heavy snow and low output under less severe conditions. Also, burning out of a pad does not prohibit sufficient action to keep the switch in safe operation.

A further unique and desirable feature of my invention is that the fastening stud for each pad is an integral part of the pad, extending through the rail web, acting not only as a pad fastening element but also as a conduit for the wiring to the pad and also supports a junction box on the outside of the rail from which connecting cables may run to the source of power, free of any entanglement with the switch point operation.

While details of construction mentioned permit variations in connections to give series and parallel operation for economy, further economy, if desired, may be obtained by the use of timing cams, actuated by a synchronous motor, to throw groups of heaters in action alternately for brief periods, particularly where available circuits are limited in power capacity.

Thus I aim to provide a safe switch heating system of low cost and great flexibility, of economy in operation and complete dependability, adaptable to all localities and to existing power supplies as well as to the particular requirements of different railroads.

With the foregoing and other objects in view, as will be apparent to those skilled in the art as the description proceeds, my invention resides in the combination and arrangement of parts, in the details of construction and systems of connection, all as described in this specification and particularly pointed out in the appended claim,

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it being understood that changes may be made in the particular embodiment of my invention within the scope of what is claimed, without departing from the spirit of the invention. I intend no limitation other than that of the claim when fairly interpreted in the light of the full disclosure and the present state of the art.

Referring now to the drawings illustrating a preferred form of my invention, Fig. 1 illustrates, partly in section, the application of a hot pad to a rail; Fig. 2 is illustrative of the application of a series of pads to a switch; Fig. 3 is a sketch of a hot pad unit; Fig. 4 is a sectional detail of pad construction; Figs. 5 and 6 are illustrative of flexible wiring systems.

Similar reference characters relate to similar parts in all the views.

In Fig. 1 between a rail 1 and an associated switch point 2 is positioned a thin radiating hot pad 3 which hugs the rail web only at the middle portion and flares out at the ends towards the switch point 2 to provide a radiation gap 4 whereby heat from both sides of the pad is radiated to the switch point and intervening snow. A threaded tubular stud 5, integral with the hot pad, extends through a hole in the web of rail 1 and supports a water-tight junction box 6, closed by a cover 7, the box shell sandwiched between silicon washers 8, followed by a cut washer and a nut 9, whereby to hold both the pad and the junction box to the rail but on opposite sides thereof. The silicon washers prevent vibration of the pad and act as lock washers as well.

As illustrated in Fig. 2, a series of spaced radiating hot pads, shown dotted, are positioned between the switch point 2 and the rail 1, preferably with one such pad slightly ahead of the switch point, as indicated, to provide extra heat radiation at the point where movement is greatest. A cable 10 provides the electrical connections between the various junction boxes and the bootleg or terminal box 11 where connection is made to the power supply.

The hot pad (Fig. 3) curved in one direction to conform to the curvature of the rail web, comprises a heating element 12 (Fig. 4) encased between a thin base plate 13 affixed to the hollow stud 5 and an outer cover plate bowed outwardly at the center opposite the stud, as at 14, to provide room for connections to the wires going through the stud to the other side of the rail.

If desired, hot pads of similar construction may be positioned at 15, below the rail (Fig. 2) held in position by tie brackets 16 and connected, of course, to any convenient junction box 6.

In Fig. 5 are shown some of the many methods of flexible connections to provide extra heat at different portions of the switch and varying economies of operation. In the middle diagram three units at the right towards the point of the switch are in parallel for maximum heat while the three at the left, towards the heel of the switch, may be in series. I have found this to be the usual desired connection. In the lower diagram, the two center units are in parallel while at each end two units are in series. In the upper units all heating units are connected in series for greatest economy and mild action. In all cases the power is provided by means of a transformer 17.

In the diagram of Fig. 6, there is shown corresponding heating units on both rails connected across and different groups connected to different switch 21 actuated by cams 20 turned by a geared synchronous motor 19 connected to the line 18, the cams being timed to close the switches selectively in rotation for varying periods of 15 or 30 minutes each, for example.

Thus it is possible to apply full voltage to each unit for a period but at no time is the full load necessarily on the line. Hence, where available power is limited

or maximum economy desired, various patterns of power application to the heaters may be worked out for operation during the actual snow fall when, of course, intermittent heat is effective just as intermittent plowing would be.

What I claim is:

As an article of manufacture for a switch heating system, a thin radiating hot pad for attachment to a rail web on the switch point side comprising a heating unit, a casing for said heating unit comprising a thin base plate, a hollow threaded stud integral with said base plate and extending outwardly therefrom and a cover plate bowed outwardly at the middle portion opposite said stud to provide room for connections to said heating unit, wires passing from said connections through said hollow stud, said casing curved in one direction to

fit the curvature of the rail web and flared outwardly in the longitudinal direction away from said stud at both ends to provide heat radiating surfaces on both sides of said casing out of contact with said rail web when said pad is positioned.

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