This application is a division of my pending application, Serial No. 486,897, filed October 7, 1930, disclosing my invention having as one of its principal objects the provision of means for applying heat to predetermined zones of a railway track by direct radiation from a high resistance heating element, this element being in the form of an electric resistor which is adapted to raise the temperature of the rail in the zone in which the element is located to a degree sufficiently high to prevent the formation of sleet, snow or ice in said zone.

An object of the present invention is the provision of a quick-detachable clamping device which is capable of securing the heating unit in position against the rail to be heated in such manner as to effectively concentrate the heat in the desired zone whereby the loss in heat transmission from said unit to the rail is reduced to a veritable minimum, the said clamping device functioning efficiently to maintain the heating unit securely in position against the vibrations and shocks to which the heating unit is ordinarily subjected while in use.

Still another object of the invention is the provision of a clamping device having a spring-pressed bail which is designed to resiliently maintain the rail heating unit in operative position with respect to the rail, the said device being operative, without necessitating the use of any special tools, to permit the ready removal or replacement of the heating unit.

Still another and important object of the invention is the provision of spring-pressed means for quick-detachably securing the heating unit in operative position against the rail, said securing means being of such character as to entirely eliminate the necessity for screw or bolt holes in the rail.

Other objects of the invention, such as those relating generally to simplicity in design, economy of manufacture and efficiency and durability in use and specifically to details of construction will appear more fully hereinafter.

The invention consists substantially in the combination, construction, location and relative arrangement of parts, all as will be described more fully hereinafter, as shown in the accompanying drawings and contemplated by the appended claims. In the accompanying drawing wherein have been illustrated preferred embodiments of the invention:

Figure 1 is an elevational view of a rail equipped with a heating unit constructed in accordance with and embodying the principles of the present invention;

Figure 2 is a cross-sectional view taken on the line 2-2 of Figure 1;

Figures 3 and 5 are plan views respectively of different forms of spring clamps for retaining the heater unit in position; and

Figures 4 and 6 are sectional views taken respectively on line 4-4 of Figure 3 and line 6-6 of Figure 5.

Referring now to the drawing and more particularly to Figures 1 and 2 thereof, it will be observed that the rail heating unit, designated generally by the reference numeral 10, is adapted to be mounted in position within the angle formed between the base flange and web of a main rail R. It will be understood that this rail R may be a portion of an ordinary track switch or frog or a portion of a conductor rail for supplying electric power to electrically driven cars or trains.

It will further be understood that the rail heating units 10 are designed to be located at spaced intervals along the track, particularly at points where the formation or the accumulation of ice, sleet or snow would entail more or less serious consequences.

The heating unit 10 essentially comprises an electrical resistance element 11 which is supported upon the inner surface of a main casing or housing 12. As appears quite clearly in Figures 1 and 2 this housing 12, which is preferably in the form of a sheet metal stamping, is provided with an inclined wall or plate 13 the upper and lower longitudinally extending edges of which are flanged, as at 14 and 15. The side edges of the housing plate 13 are respectively turned to provide a pair of substantially parallel, triangularly shaped side walls 16. These triangular side walls 16 are so shaped that when the bottom edges 17 thereof rest upon the upper surface of the base flange of the rail the vertical edges 18 thereof will abut the web of the rail. The main back plate 13 of the sheet metal housing lies in a plane substantially subtending the free edges of the triangular side walls thereof, as most clearly appears in Figure 2. When the housing is applied to the rail an enclosed space or chamber is formed therebetween, this space being bounded at its outer side by the inclined back plate 13, at its sides by the triangular side walls 16, at its bottom by the base flange of the rail and at its inner side by the web of the rail. The heating element 11 is supported upon the inclined back plate in the manner to be described more fully hereinafter.

UNITED STATES PATENT OFFICE

1,980,916

CLAMP FOR RAIL HEATERS


Original application October 7, 1930, Serial No. 486,897. Divided and this application July 30, 1932, Serial No. 626,574

2 Claims. (Cl. 24—253)
and in spaced relation with respect to the enclosed portions of the rail.

In order to most effectively concentrate the heat and to direct it against the rail with a minimum loss in heat transmission the main back plate 13 of the housing or casing is provided with a lining of suitable heat resisting material. Maximally as the heating unit 10 forms no part of this divisional application except as it is particularly related to the clamping device therefor, no attempt will be made herein to describe in detail the heating unit, reference being made for this purpose to the above identified parent application, Serial No. 466,897.

Integrally formed in the inclined plate 13 of the housing or casing at longitudinally spaced points thereof are a pair of outwardly pressed portions 20 providing a pair of sockets the axes of which lie in a plane outwardly offset with relation to but parallelly of the inclined plate. The upper end of these socketed portions 20 are curved as at 21 (see Figure 2) to merge into the plane of the inclined back plate 13 while the lower ends of the said socketed portions 20 are open for reception of the conductor plugs 22. These plugs 22, which are electrically connected to the ends of conductors 23 for supplying current to the resistance element, are adapted for cooperation with the socketed elements of the heating unit, the latter elements being respectively enclosed within the upper ends of the socketed portions 20.

I have provided spring-pressed clamping devices for maintaining the heating unit 10 in the operative position shown in Figures 1 and 2, the advantage of this type of clamping device being that it requires no special tools for its installation or removal nor any screw or bolt holes or other structural changes in the rail. My improved clamping device generally comprises a flat body or plate 24 which is adapted to underlie the base of the rail and a spring-pressed pivot member 25 adapted to overlie the inclined back plate 13 of the heater. The plate 24 of this clamp is preferably provided at opposite ends thereof with upstanding flanges 26 and 27 for respectively engaging the upper portion of the rail base flange. The central portion of the flange 27 is rolled, as at 28, to provide a bearing for a horizontally extending sleeve 29 within the opposite ends of which are inserted the free lower ends of the rail member 25, this latter being preferably in the form of a rod bent into the shape most clearly shown in Figure 1. Embracing the oppositely projecting portions of the sleeve 29 is a coil spring 30 which is operative to constantly urge the upper portion of the rail member 25 toward and against the plate 13 of the heater unit, thereby definitely forcing the latter into the angle formed between the base and web of the rail.

The use of a spring clamp of the character just described eliminates the necessity of employing screws or bolts for securing the heater to the rail at the same time that it greatly facilitates the ease with which the unit may be secured to and removed from the rail. Should it be desired to remove the unit from the rail for purposes of inspection, replacement or repair it is merely necessary to pull the plugs from their sockets and then swing the rail member 25 outwardly about the sleeve 29 as an axis whereupon the unit may be bodily removed from the rail, no tools of any sort being required in this operation.

In certain instances the base flange of the rail may vary from the standard and accordingly it may be desirable to employ a spring clamp having an adjustable base plate as shown in Figures 3 and 4. In the form of clamp shown in Figures 3 and 4 the base plate is formed of two members 31 and 32, these members being provided with a spring-pressed bail member 33 similar in design and function to the hereinbefore described member 25. The inner portions of the members 31 and 32 are adapted to be arranged in the superposed relation shown, the side edges of these portions being respectively kerfed to provide the reality of alternately arranged tongues 34 and slots 35. These tongues are all inclined with respect to the planes of their respective body members and are relatively so arranged that the tongues of member 31 interlock with the tongues of member 32 when said members are assembled in the relation shown. Obviously, the distance between the outer ends of the members 31 and 32 may be varied with in wide limits to accommodate base flanges of different widths merely by changing the interlocked relation between the kerfed portions of the members.

In Figures 5 and 6 an alternative arrangement is shown wherein the member 36 of the spring clamp is provided in opposite sides thereof with a plurality of longitudinally spaced slots 37, the member 36 being provided with a turn of laterally spaced downwardly presenting lugs 39 adapted to be projected through any desired set of slots 37. In this alternative arrangement, it is preferable, when the members 36 and 38 are assembled in properly adjusted relation, to bend the lugs 39 upwardly against the bottom surface of the slotted member whereby to more positively lock the members 36 and 38 together.

It will be understood of course that the invention is susceptible of various changes and modifications other than those hereinbefore pointed out, all without departing from the general principles or real spirit of the invention, and it is accordingly intended to claim the same broadly, as well as specifically, as indicated by the appended claims.

What is claimed as new and useful is:—

1. A clamp for a rail-heating device including a main body member of a width sufficient to extend entirely across the bottom of the base flange of a rail and continuously flat in one face thereof to adapt it to underlie the base flange of a rail, upstanding flanges formed upon opposite ends of said member for respectively engaging the longitudinally extending edges of said rail base flange to prevent lateral displacement of said body member relatively to said rail, and a spring-pressed bail pivotally secured to one end of said member, said bail being normally urged toward the plane of said member to engage a rail heater located within the angle formed between the web and the base flange of the rail.

2. A clamp for a rail heating device comprising a plate having an upstanding flange at one end thereof, a bail pivotally secured to the flanged end of said member, spring means tending constantly to urge the rail toward the plane of said member, a second member having a flanged outer end, and cooperative means in the inner portions of said members for interlocking the same together whereby to vary the effective distance between the flanged ends thereof.

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