Dec. 27, 1927. 1,653,917

L. M. LEEDOM

HEATING DEVICE FOR RAILROAD RAILS AND SWITCHES

Filed Oct. 4, 1926

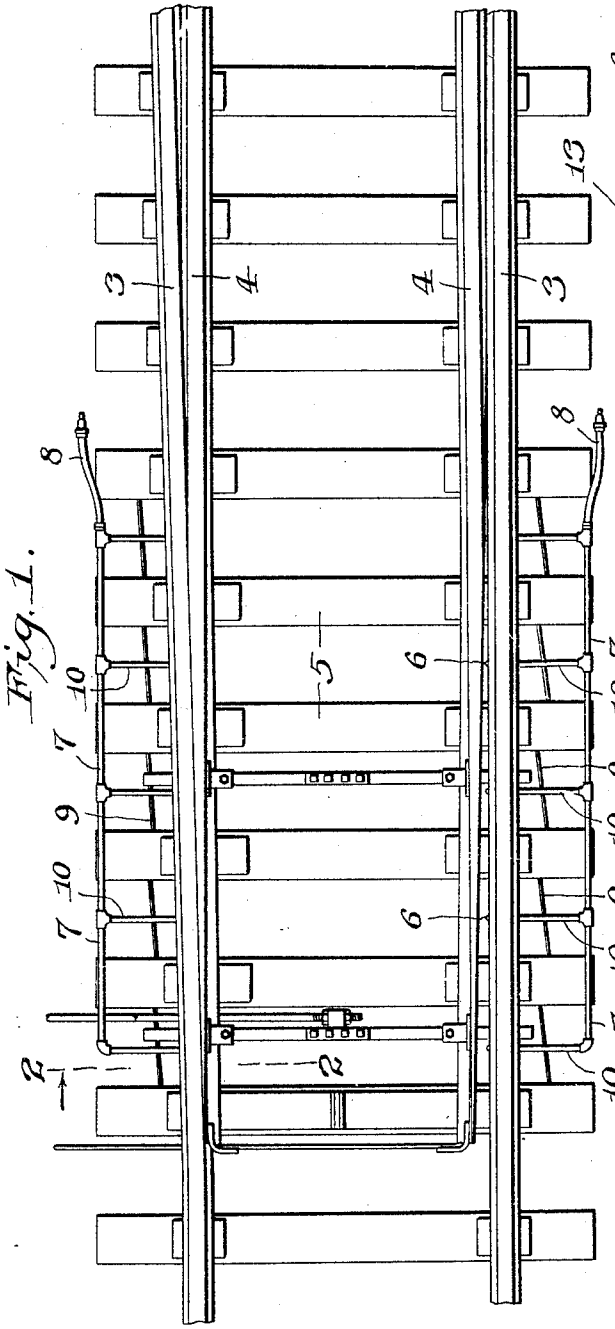


Fig. 1.

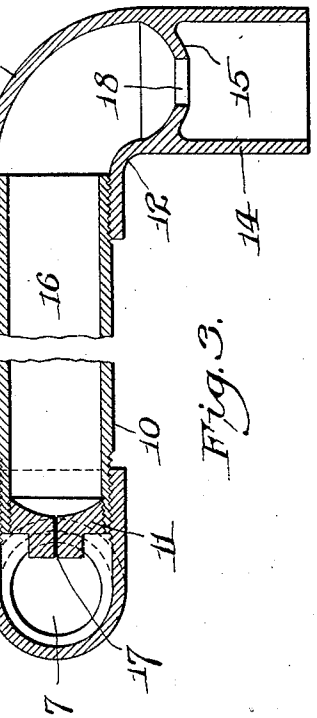


Fig. 3.

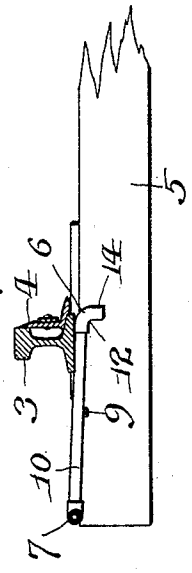


Fig. 2.

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UNITED STATES PATENT OFFICE.

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HEATING DEVICE FOR RAILROAD RAILS AND SWITCHES.

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This invention relates to improvements in heating devices such as are employed in the heating of railroad rails and switches for the purpose of preventing the accumulation of ice and snow in regions close to the main rails and to the switch rails, and for the purpose of melting accumulated ice and snow in such regions, and for the purpose of thawing out frozen switches.

An object of the invention is to provide a gas burning heating device of novel and rugged construction which may be cheaply made and maintained in service, which will not clog or close up on account of grease or dirt, which will remain active under unfavorable conditions, which will not be likely to short circuit and which will effectually melt and also prevent the accumulation of ice and snow where they would otherwise interfere with the proper operation of the railroad.

Another object of the invention is to construct and relate the parts of the gas burner to each other and to the rail and cross ties of a railroad structure that the flame of the burner will not char the ties and will not be blown out by air currents induced by passing trains.

With the foregoing and related objects in view, the invention consists in the novel construction and combinations of parts hereinafter described and claimed.

In the accompanying drawings illustrating the invention,

Figure 1 is a plan of a portion of a railroad structure provided with heating devices embodying my invention.

Figure 2 is a transverse section through a part thereof, on line 2—2 of Fig. 1.

Figure 3 is a longitudinal, vertical section through one of the gas burners.

Referring to the drawings, 3 designates the track rails, 4 the movable switch rails and 5 the cross ties supporting the rails. The construction of these parts and the operation of the switch rails are well known in this art and need not be described in detail herein.

Two of my improved heating devices are shown in Fig. 1, one on each side of the track. Each device comprises a series of heating units or gas burners 6 which are connected to and extend from a pipe 7 which forms a common gas supplying conduit for the several burners. One end of the pipe 7 is closed and the other end thereof terminates in a flexible extension 7^a formed of insulating material by means of which the pipe 7 may be connected to a suitable source of gas supply in a manner to ele trically insulate the heating device from the pipes of the source of supply.

The gas supplying pipe 7 is supported upon the outer end portions of the cross ties 5, and the heating units or burners 6 extend longitudinally between the ties 5 and they are supported upon suitable bars 9 which extend transversely between the ties and which are connected thereto.

Each gas burner 6 comprises a casing formed by a pipe section 10, a plug 11 screwed into the outer end of the se tion 10, and an elbow fitting 12 screwed on to the inner end of the section 10.

The horizontal arm 13 of the elbow fitting 12 is screwed on to the pipe se tion 10 and the vertical arm 14 of the fitting 12 is directed downwardly and is located in the usual open space between two adjacent ties 5 and below the rails 3 and 4, and it is also located beneath the region which it is desired to heat.

The vertical arm 14 of the fitting 12 is provided with a transverse interior wall 15, and a gas expansion chamber 16 is formed within the pipe section 10 and the upper portion of the fitting 12 between the plug 11 and the wall 15.

The plug 11 is provided with a central orifice 17 extending therethrough for the passage of fuel gas from the supply pipe 7 into the chamber 16, and the wall 15 of the fitting 12 is provided with a downwardly directed discharge opening 18 for the discharge of gas from the chamber 16. When the burner is in operation the gas issuing from the opening 18 is ignited below the wall 15 and the flame of burning gas is directed downwardly by the opening 18 into and through a surrounding flame shield having an open bottom and being formed by the lower portion of the arm 14 of the fitting 12.

The outlet opening 18 is of greater area than that of the orifice 17 and of less area than that of the chamber 16, and the area of the orifice 17 is much less than that of the supply conduit 7 and than that of the chamber 16 so that the gas under pressure from

the source of supply will expand and decrease its velocity as it passes through the chamber 16 and will be delivered from the outlet opening 18 at less pressure than the pressure within the supply pipe 7.

I have discovered that by constructing gas burners and relating the same to the parts of a railroad structure as herein shown and described, the regions above the burners and above the spaces between them and for some distance beyond the outermost burner of each set thereof on the respective sides of the track or switch will keep the rails and the spaces between the main rails and the switch rails free from ice and snow and permit the proper operation of the switch under all kinds of weather conditions; and also that with gas supplied to the pipe under approximately the usual pressure of about one inch of water, a suitable flame will burn within the shield 14 of each burner and issue from the bottom thereof and rise around the same which will not only accomplish the heating and snow and ice melting purpose intended but which will also not be extinguished by adverse weather and other unfavorable conditions.

I claim as my invention:

1. The combination with a railroad structure including a rail and spaced ties supporting it, of a heating device comprising a gas supplying pipe extending longitudinally of the rail in spaced relation thereto and resting upon the ties, a series of heating units connected to and extending from the pipe between the ties and having their free ends terminating in gas burners located in the regions of spaces between the ties and beneath the rail, and a flexible connecting pipe of electrical insulating material extending from one end of the first named pipe.

2. In a gas burner for track heaters, a casing having an expansion chamber, an inlet orifice opening into the chamber, and a downwardly directed outlet opening discharging from the chamber; and a gas supplying conduit communicating with the inlet orifice.

3. In a gas burner for track heaters, a casing having an expansion chamber, an inlet orifice opening into the chamber, a downwardly directed outlet opening discharging from the chamber, and a flame shield surrounding the space beneath said opening and having an open bottom; and a gas supplying conduit communicating with the inlet orifice.

4. In a gas burner for track heaters, a casing having an expansion chamber closed to external air, an inlet orifice opening into the chamber, and an outlet opening of greater area than that of the orifice and of less area than that of the chamber, and a gas supplying conduit communicating with and of greater area than the inlet orifice.

5. In a gas burner for track heaters, a casing having an expansion chamber, an inlet orifice opening into the chamber, a downwardly directed outlet opening of greater area than that of the orifice and of less area than that of the chamber, and a flame shield surrounding the space beneath said opening and having an open bottom; and a gas supplying conduit communicating with and of greater area than the inlet orifice.

In testimony whereof I affix my signature.

LAURIE M. LEEDOM.