May 5, 1931. A. F. SCHUMANN 1,803,358

RAILWAY SWITCH HEATING SYSTEM

Filed April 5, 1930 2 Sheets-Sheet 1

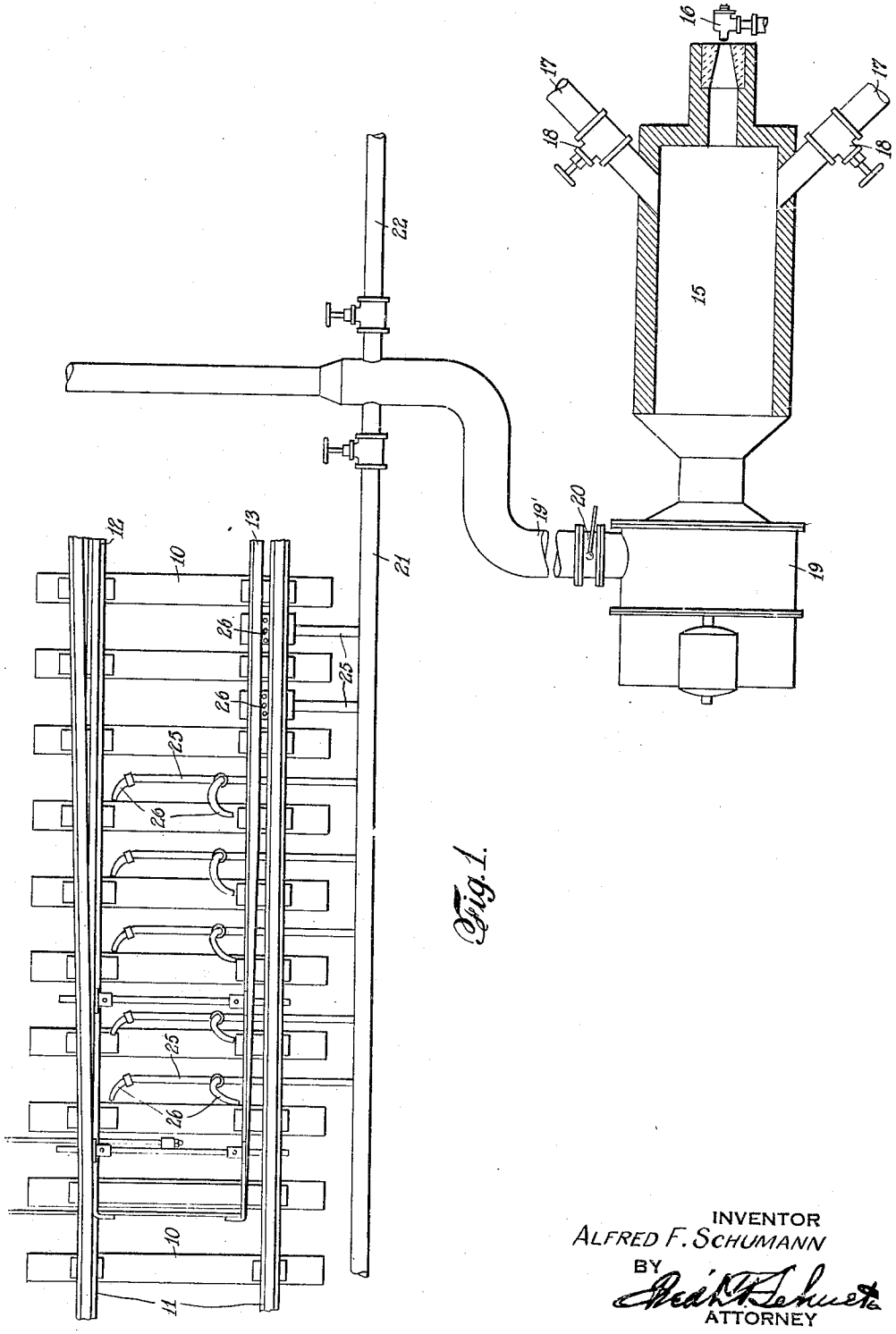


Fig. 1.

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Fig. 2.

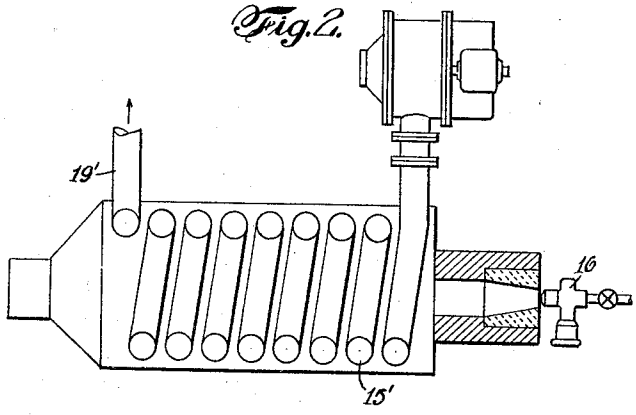


Fig. 3.

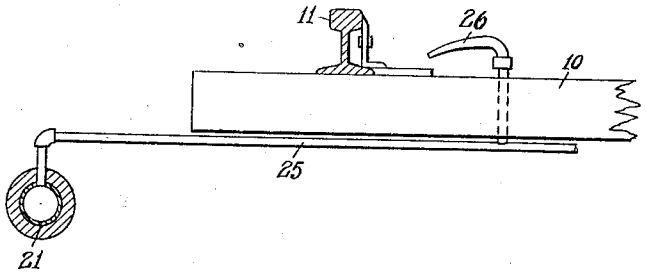
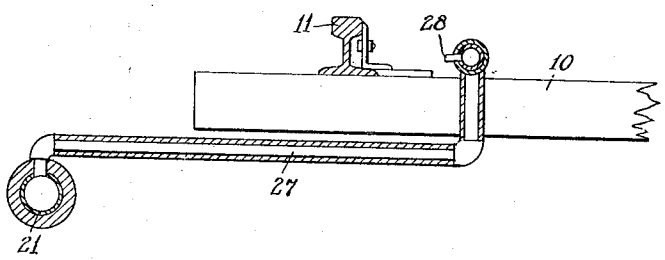


Fig. 4.



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UNITED STATES PATENT OFFICE

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RAILWAY-SWITCH-HEATING SYSTEM

Application filed April 5, 1930. Serial No. 442,026.

The invention relates to a heating system more especially for use with railway switches, frogs and the like during the season of the year when the same are subject to freezing or to clogging by snow; and it has for its object simple and effective means whereby established railway schedules may be maintained through keeping the switches in proper condition free from snow and ice so as to allow of their shifting freely and fully at any time, as required. This involves maintaining, also, the rails or switch elements sufficiently warm to prevent any accumulation of snow and ice thereon.

It has been the practice heretofore, either by hand-operated or permanently installed devices, to effect this thawing operation and heating of the rails and associated parts by means of oil and like burners; but such arrangements involving the use of an open flame present serious objections and are dangerous to those operating the same. Moreover, it is not generally permissible to pass a loaded car over an open flame; and such flame when in action is subject to be blown out or extinguished, particularly during a heavy rain or sleet storm and wind; and in such cases unless proper precautions are taken, oil, which is the usual medium provided for affording the heat, may leak over the trackage, and increase the fire hazard in subsequently becoming ignited. Not only does this involve a loss of the fuel but, due to the ignition thereof, serious damage may result to the ties and signal wiring.

Also, in the case of the use of expensive electrical heating devices which are associated in immediate proximity to the track, it is to be noted that the insulation frequently breaks down, and short-circuits occur therein; and that in case of ignition thereby of inflammable liquids, leaking from a car passing thereover, serious damage may result.

The present invention has for its object to obviate entirely the use of any open flame or the delivery of combustible material at the point of application of the desired heat; and if leakage of the heating medium does occur at said point, it is merely of an inert heated fluid which, if anything, would be of value in effecting further thawing and in maintaining the surroundings at an elevated temperature. A further object of the invention resides in an arrangement whereby delivery of the heat is so effected that also its mechanical force may be utilized, as in blowing away light snow or sleet, as well as counteracting the effect of strong wind to deflect the heat from the point where it is desired.

To this end, the invention contemplates the use of heated air or products of combustion as a medium to be applied directly to the parts to be heated, said medium, however, being brought to the desired temperature at a point remote from the trackage and distributed thereto by means of suitable devices which will admit, furthermore, of taking advantage of the mechanical effect of the medium projected at a considerable velocity.

The nature of the invention, however, will best be understood when described in connection with the accompanying drawings, in which:

Fig. 1 is a more or less diagrammatic view illustrating a section of track, equipped with the novel heating system, and of the means for affording a supply of properly heated medium.

Fig. 2 is an elevation, partly in section, of a modified means for providing the heated medium.

Figs. 3 and 4 are fragmentary views, partly in section, illustrating different devices for applying the heated medium to the track.

Referring to the drawings, a conventional arrangement of cross-ties 10 is indicated, the same being spaced from one another and receiving rails 11 and the movable switch points 12 and 13 to which a heated gaseous medium is to be applied in order to maintain the same in operative condition. The invention contemplates, also, the provision of similar means to frogs and other elements involved in the trackage system, as is well understood.

In accordance with the invention, there is provided at a point more or less remote from the track a central heating plant embodying, for example, the combustion chamber 15 associated with an oil burner 16 and

having air inlets 17 for maintaining combustion and also for diluting the products of combustion and regulating the volume as through valves 18 therein. The outlet of said combustion chamber is connected with the inlet of a suitable blower, as the motor-driven fan 19, which delivers then a supply of heated air or products of combustion, or both, into a pipeline or delivery main 19′, the flow being controlled by a suitable valve or blast gate 20. Or a heating coil 15′, Fig. 2, may be utilized, the gaseous medium to be heated being then blown therethrough.

The main is continued substantially to the track and from the same are taken suitable headers 21, 22, etc., extending to various track portions within the radius of the system, said headers generally being located parallel to the track, as indicated.

The respective headers are designed to deliver the heated gaseous medium to a series of nozzle members 25 located, for example, between the tracks and pairs of the cross-ties and adapted to deliver to the necessary portions of said track, as along the points 12 and 13, streams of heated gaseous medium. For example, the connections from a header may be in the nature of flexible metal hose terminating in an adjustable nozzle 26, Figs. 1 and 3.

In thus making the connections more or less flexible, it is possible to direct said nozzle member and nozzle to positions best adapted for effecting the thawing, that is to say in a direction such that the heated air delivered will not be opposed by the prevailing wind, and thus serving to reach a desired point with full force and effect.

However, fixed connections 27 may be taken from a header 21 and brought up between the cross-ties and provided with fixed outlets or orifices 28 directed toward the points to be heated.

Moreover, it is to be understood that the supply main as well as the headers, and preferably also the nozzle connections, are to be suitably thermally insulated to conserve the heat of the medium so that a maximum effect may be obtained at the point of application. However, any leakage in the vicinity of the track will not be entirely a loss as the same will serve to heat the immediate surroundings. It will be appreciated, also, that such leakage involves no fire hazards, as in the case of liquid fuel; nor will clogging of the nozzles occur or accumulation of inflammable material take place in vicinity of the tracks and signal wires associated therewith.

A further advantage in thus supplying a heated gaseous medium rather than a flame, especially during periods of darkness, is that the same does not interfere with the signal lights of the railway system nor produce an objectionable glare. The nozzles also require no attention to maintain them effective; nor is any individual attention at the point of application required, particularly after said nozzles have been set, during the entire operation of thawing and maintaining of the movable parts clear of snow and ice.

I claim:

1. A heating system for railway-switches and the like embodying in combination a heating plant for a non-condensible gaseous medium, means to place said heated medium under pressure and to deliver the same to a distributing main, and nozzle elements associated with the portions of the track to be heated and connected with said main for applying directly to said track portions of the heated gaseous medium.

2. A heating system for railway-switches and the like embodying in combination a heating plant for a non-condensible gaseous medium, means to place said heated medium under pressure and to deliver the same to a distributing main, a header connected thereto, and nozzle connections from the header, the outlets of said connections being located in proximity to the portions of the track to be heated for applying directly thereto the gaseous medium.

3. A heating system for railway-switches and the like embodying in combination a heating plant for a non-condensible gaseous medium, means to place said heated medium under pressure and to deliver the same to a distributing main, a header, connected thereto, and flexible nozzle connections from the header, the outlets of said connections being located in proximity to the portions of the track to be heated for applying directly thereto the gaseous medium.

4. A heating system for railway-switches and the like embodying in combination a heating plant for a non-condensible gaseous medium, means to place said heated medium under pressure and to deliver the same to a distributing main, and adjustable nozzle elements associated with the portions of the track to be heated and connected with said main for applying directly to said track portions of the heated gaseous medium.

In testimony whereof I affix my signature.

ALFRED F. SCHUMANN.