F. BOARDMAN.

PROTECTIVE DEVICE FOR RAILWAY SWITCH POINTS AND THE LIKE.

APPLICATION FILED DEC. 13, 1918.

1,325,977. Patented Dec. 23, 1919.

2 SHEETS—SHEET 1.

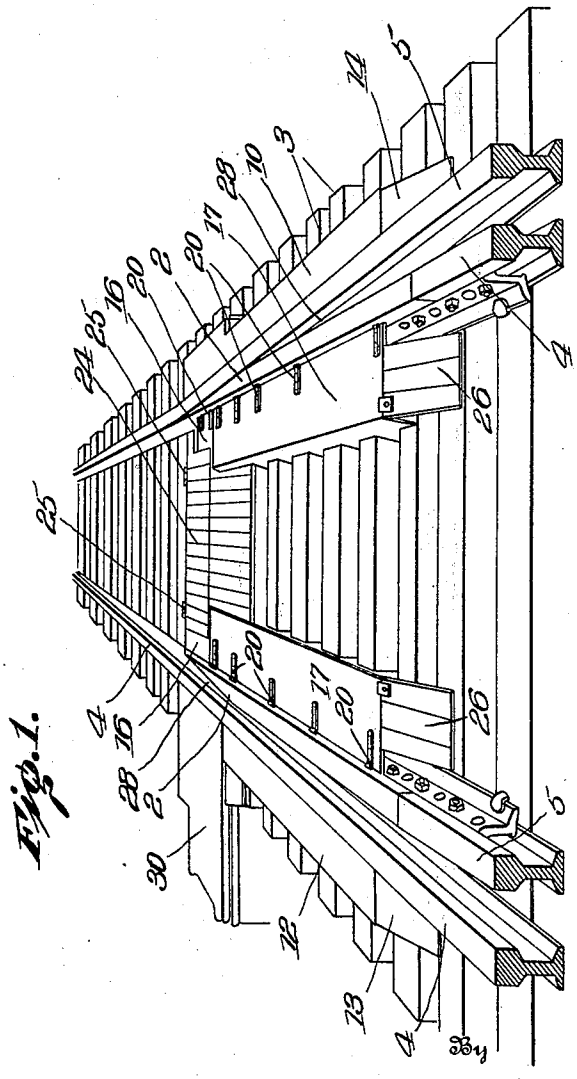


Fig. 1.

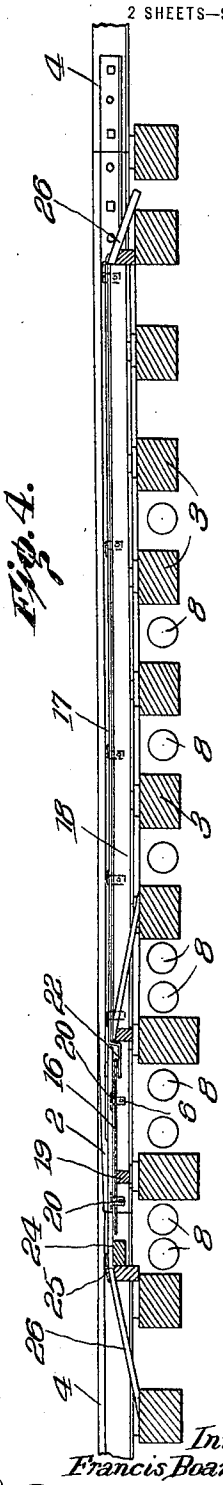


Fig. 4.

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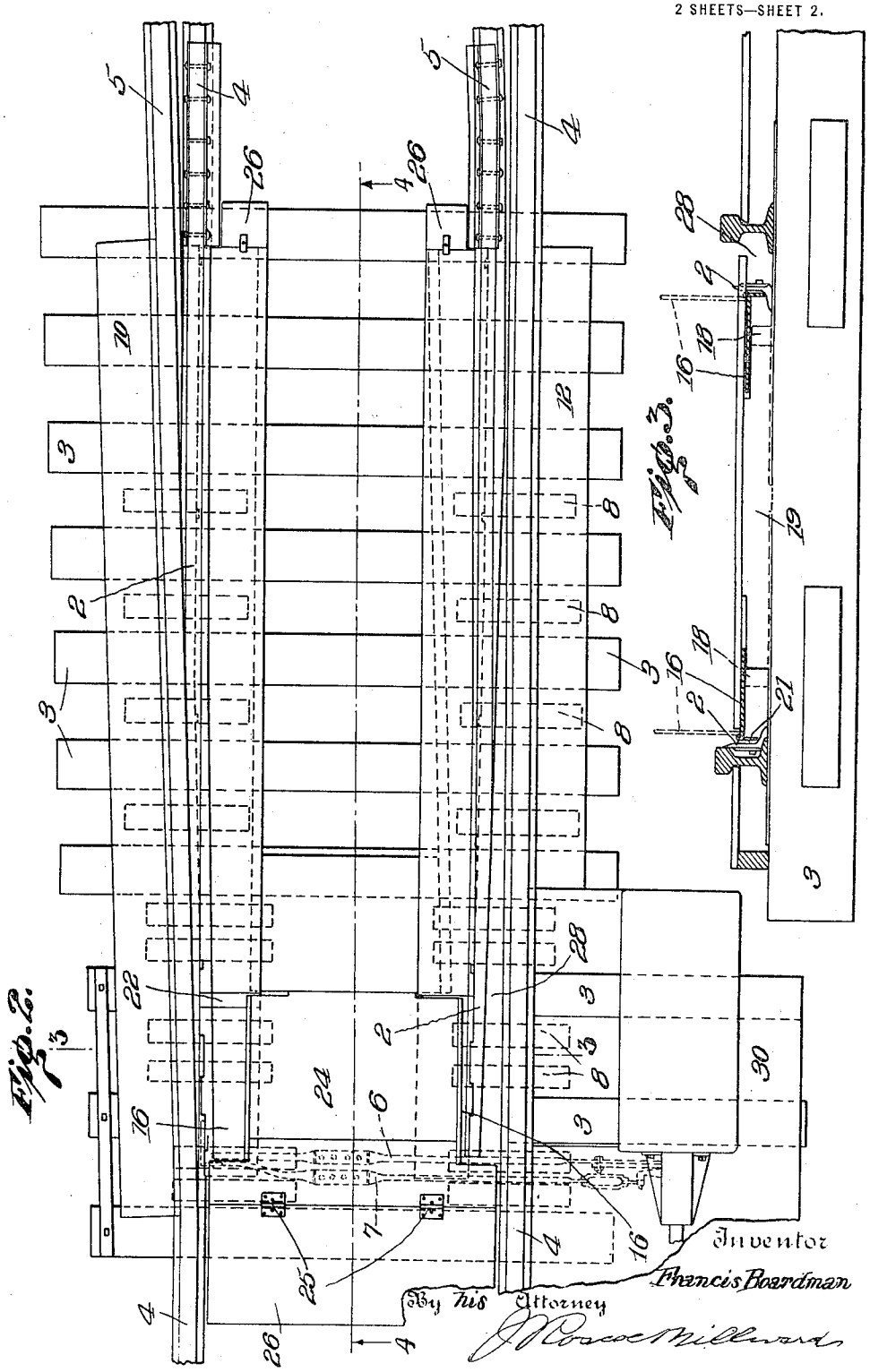


Fig. 2.

Fig. 3.

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UNITED STATES PATENT OFFICE.

FRANCIS BOARDMAN, OF NEW YORK, N. Y.

PROTECTIVE DEVICE FOR RAILWAY-SWITCH POINTS AND THE LIKE.

1,325,977. Specification of Letters Patent. Patented Dec. 23, 1919.

Application filed December 13, 1918. Serial No. 266,522.

To all whom it may concern:

Be it known that I, FRANCIS BOARDMAN, citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented new and useful Protective Devices for Railway-Switch Points and the like, of which the following is a specification.

This invention relates to protective devices particularly adapted for the protection of railway switches, movable point frogs and the like from interference with their proper operation by freezing and the accumulation of ice and snow. As is well known, during the severe winter weather the interruption to the proper operation of railway devices by the accumulation of snow and ice is a troublesome and costly factor in maintaining the operation of railroads.

The present invention has for its object to provide a simple and effective means for protecting devices having movable parts exposed to the elements and is particularly adapted to coöperate with protective heating devices as customarily employed for such protection and especially with the electrical heating units of my invention as described in my application for Letters Patent Serial No. 243,941, filed July 8, 1918. As therein disclosed, heating means employed consists of a plurality of self-contained portable heating units of cylindrical form flexibly connected whereby they may be independently positioned and so as best to distribute the heat and in series arrangement to obtain the required resistance value. As will be readily appreciated, my improved protective device is also adapted for use with other heating means, as steam or gas and may be readily employed in conjunction with existing installations. An important feature of my present invention resides in the arrangement whereby when used in conjunction with the heating means or units described the heat generated will be concentrated and confined to the important points requiring protection whereby the effectiveness of the heating devices is materially increased and dissipation of the heat avoided.

The aforesaid and other important features and advantages of my invention will be understood by reference to the accompanying drawing wherein there is disclosed a preferable embodiment of my invention and wherein the reference characters of this description are applied to the corresponding parts in the several views.

Of the views, Figure 1 is a perspective view illustrating the protective device of my invention in a typical installation. Fig. 2 is a plan view thereof. Fig. 3 is a vertical cross-sectional view on line 3—3 of Fig. 2 and Fig. 4 is a vertical longitudinal section on line 4—4 of Fig. 2.

In the embodiment of my invention here shown, I have illustrated a desirable installation associated with the movable points 2—2 of a railway switch and the operating connections therefor. In the illustration at 3—3 are shown the usual ties and 4—4 are the main line rails and 5—5 the rails of a side track or branch line. In the customary manner, the movable points 2—2 of the switch are each supported in pivotal relation to one of the track rails on opposite sides, that on the left forming a continuation of the branch line rail and the movable point on the right hand side forming a continuation of the main line rail as shown. The movable points 2—2 are connected together to be moved in unison by the usual cross-bar or connecting rod 6 and at 7 is indicated the usual operating connection or connections therefor by means of which the movement is transmitted to the switch points from the usual switch stand or lever.

In the disclosed arrangement, I have illustrated the use therewith of electrical heating devices or heating units 8—8 which may desirably be of the type and arrangement described in my application Serial No. 243,941, filed July 8th, 1918. These heating units are each composed of a container or metal cylinder protectively inclosing a heating resistance coil and are flexibly connected to permit of their being positioned between the ties as illustrated. These portable units may thus be positioned in the ballast of the roadbed where most effective in protecting the switch from ice and snow and moreover are readily capable of being assembled in series arrangement to provide the desired electrical resistance. As indicated the heaters 8—8 are positioned between the ties and immediately beneath the switch points and rails adjacent thereto whereby the heat therefrom will be most effective in affording the protection desired.

According to my present invention, I have designed means for further protecting the

switch members or other movable parts which comprises a protective covering arrangement adapted to cover over the movable parts to be protected in a manner which will not interfere with the proper operation thereof. An approved embodiment thereof as illustrated herewith is desirably employed in conjunction with the heating means or units described and consists of a covering arrangement for the parts adapted to retain the heat in proximity to the parts to be protected and to afford covering protection therefor.

As here shown, the protective covering consists of the outer covering members 10 and 12 desirably of wood construction which may be built as a permanent protection on the outer sides of the rail section to be protected so as to cover over the outer ends of the heating units and to afford protection against snow drifting in between the ties. As indicated, the end walls 13—14 of the outer covering members are inclined so as to offer no abrupt obstruction and to prevent damage by contact therewith of loose chains or other parts of rolling stock.

A similar protecting covering is provided between the rails which in accordance with a further feature of my invention is peculiarly constructed to provide the maximum of protection to the parts without impairing the proper movement thereof and to provide for convenient access thereto. The inner protective covering as here shown consists of forward and rearward sliding covers or plates 16 and 17 attached to each of the movable rail points 2—2 at their outer longitudinal edges and at their inner marginal portions slidably bearing upon suitable supports, here shown consisting of longitudinally arranged wooden supporting strips 18—18 upon which the rear sliding plates rest and a transversely arranged supporting block 19 upon which the forward cover plate slidably bears. The supporting strips 18 and bearing block 19 are desirably firmly secured to the ties and the forward and rearward cover plates 16 and 17 are preferably pivotally connected to the shiftable points whereby they may be readily and conveniently raised to give access to the heating units and parts thereunder for inspection, adjustment or replacement of parts, etc. The sliding plates as indicated are secured to the movable point by suitable hinges 20 which are desirably secured to the switch points by means of the bolts employed for securing thereto the usual reinforcing plates 21 (Fig. 3).

The forward sliding plates in the arrangement as shown are desirable in that they may be independently raised to give access to the space adjacent the extremities of the switch points and to the operating connections which they partially overlie and protect. As best illustrated in Fig. 4, these forward plates 16, to permit of their being independently raised and to afford full protection, are arranged at their rearward marginal portions to overlie the forward marginal edges 22 of the rearward sliding plates 17 which may be depressed as shown. The overlapping arrangement thus provided effectually prevents the snow from entering beneath the covering and onto the usual slide plates upon which the switch points operate.

To co-act with the forward slide plates 16 in protecting the operating connections there is provided an overlying top cover 24 hinged at 25—25 and adapted to span the space between the plates 16—16 and when in closed position to overlap the inner marginal edges of the plates 16 and to rest upon the supporting timber 19 as indicated in Fig. 3. To complete the inclosure of the operating connections 7 suitable inclined end walls 26—26 are provided in fixed installation.

In the preferred embodiment of my invention as described, it will be noted that the heaters and parts to be protected are fully covered and inclosed to prevent the entry of snow and sleet and the only space left open is the space 28 between the switch points and the line rails. This arrangement is particularly desirable and advantageous wherein the inclosed heating means are employed for the heat therefrom is thus confined and concentrated in its escape to pass upwardly through the space between the points and rails against which they operate where protection is most desired and essential to prevent interference by accumulated snow and ice.

With the protective covering arrangement as described, I desirably employ wood or other non-conductive material in the construction of all of the members with the exception of the slide plates 16 and 17 which may desirably be of sheet metal, particularly when the heating units are associated therewith for the heat therefrom acts to keep the plates warm so that there can be no disturbing collection of snow thereon. The construction, as described, provides for the free sliding movement of the protective plates with the switch points and the heating of these plates, as will be readily understood further contributes to the assurance of their proper operation.

In my improved arrangement as described, by the hinging of the sliding plates 16 and 17 along their outer marginal edges to the switch points, as will be readily understood, they may conveniently be lifted into vertical position, as shown in dotted lines in Fig. 3, to give access to the protecting space beneath. Thereby, the heating units may be readily inspected and replaced

as desired. In similar manner the hinging of the cover 24 by hinges 25 permits of its being raised to get at the operating connections for the switch. At 30 I have shown the protective covering extended to the side of the track for the protection of the operating connections 7.

While I have described a preferable embodiment of my invention in association with heating means, it will be understood that many modifications may be made without departing from the scope thereof. For example, steam or gas may be employed as the heating means or the heating means may be omitted and my improved protective covering employed without the application of heat.

By the construction, as shown, of the forward and rearward slide plates having overlapping arrangement provision is made for relative movement of said plates to allow for the slight deflection or bending of the switch point when subject to switching stress which, were the forward and rearward plates 16 and 17 formed as a continuous single plate, would tend to buckle it unless other provision thereagainst were provided.

I claim:

1. In a device of the character described, the combination with a movable switch point, of a protective covering adjacent thereto comprising bearing timbers longitudinally arranged adjacent thereto and slide plates connected to the switch points to be movable therewith and slidably bearing on said bearing timbers substantially as described.

2. In a protective device for railway switches, the combination with the rails and movable switch points shiftable with relation thereto, of a protective covering arranged adjacent said switch points and comprising movable slide plates connected to the switch points to be movable therewith and said slide plates being hingedly connected to give access to the protected space thereunder, substantially as described.

3. In a protective device for railway switches, the combination with the rails and switch points movable with relation thereto, of a protective covering arranged adjacent thereto comprising bearing members longitudinally arranged adjacent to the points and slide plates connected to the switch points to be movable therewith and said slide plates being suitably hinged to permit of their being raised to afford access to the space thereunder, substantially as described.

4. In a protective device for railway switches, the combination with the rails and switch points movable with relation thereto, of heating means arranged adjacent to the switch points to be protected, a protective covering arranged adjacent said switch points to inclose the heating means, said covering comprising movable slide plates connected to the switch points to be movable therewith and said covering being adapted to confine the heated air whereby the latter is concentrated in its escape to pass outwardly between the switch points and the rails, and said slide plates being suitably hinged to permit of their being shifted to afford access to the space thereunder.

5. In a protective device for railway switches, the combination with the rails and switch points movable with relation thereto, of protective covering means arranged adjacent to the switch points comprising suitable bearing members longitudinally arranged adjacent to the switch points and slide plates connected to the switch points to be movable therewith, said slide plates being in plural arrangement longitudinally of each switch point substantially as described.

6. In a protective device for railway switches, the combination with the rails and switch points movable with relation thereto, of protective covering means arranged adjacent to the switch points comprising suitable bearing members longitudinally arranged adjacent to the switch points and slide plates connected to the switch points to be movable therewith, said slide plates consisting of forward and rearward plates arranged in overlapping arrangement and hingedly connected to the switch points to permit of access to the space thereunder, substantially as described.

7. In a protective device for railway switches, the combination with the rails, switch points movable with relation thereto and operating connections therefor, of protective covering means associated therewith comprising bearing members arranged longitudinally of the switch points, forward and rearward slide plates hingedly connected at their marginal edges to the switch points and slidably bearing on the bearing members to be movable with the switch points, heating means arranged beneath the rails and switch points and inclosed at their inner ends by the slide plates, outer covering members arranged adjacent the rails to inclose the outer ends of the heating means and a removable covering means for the operating connections, and said forward and rearward slide plates being arranged in overlapping arrangement, substantially as described.

In testimony whereof I have signed my name to this specification.

FRANCIS BOARDMAN.