July 10, 1934. W. M. POST ET AL 1,965,803

RAILWAY SWITCH

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FIG. I.

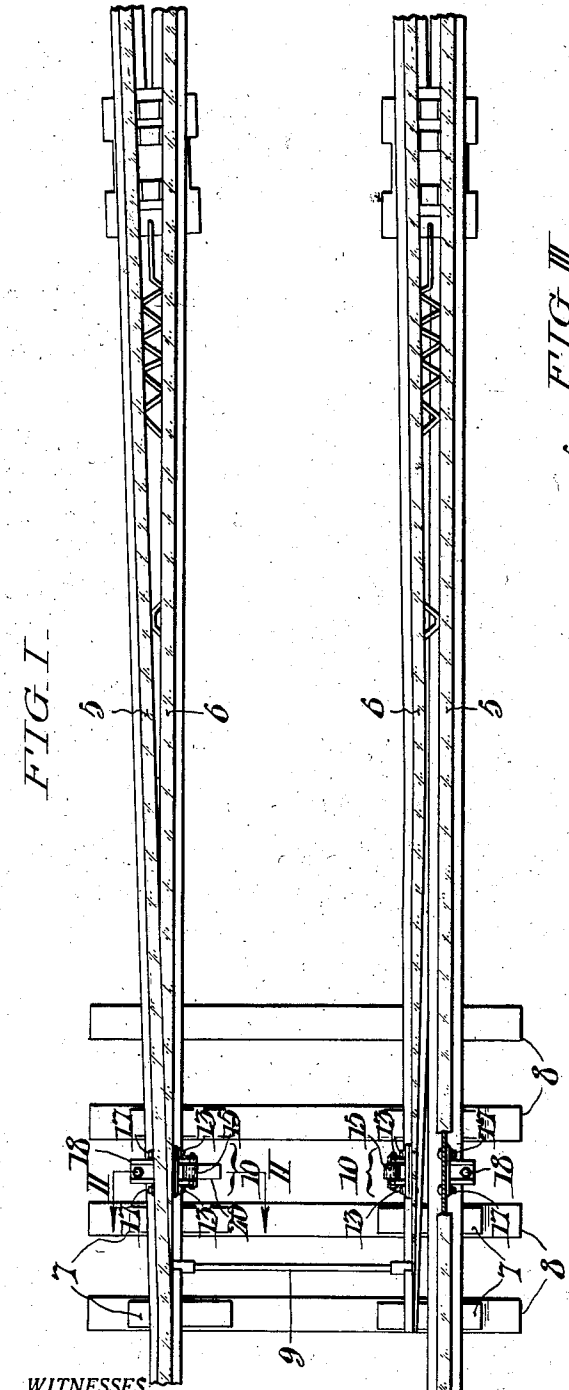


FIG. III.

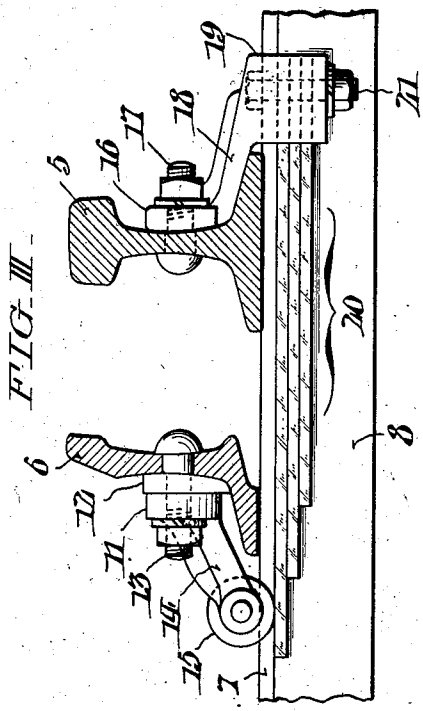
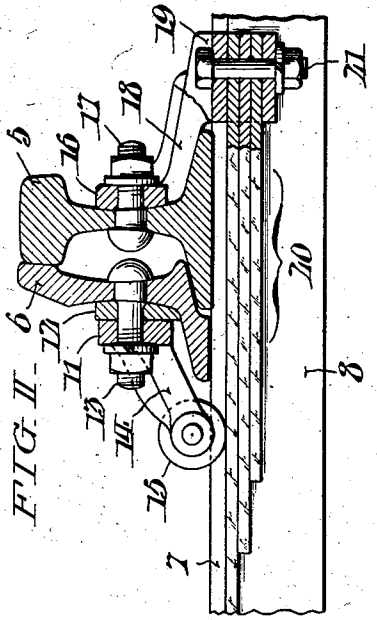


FIG. II.



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FIG. IV.

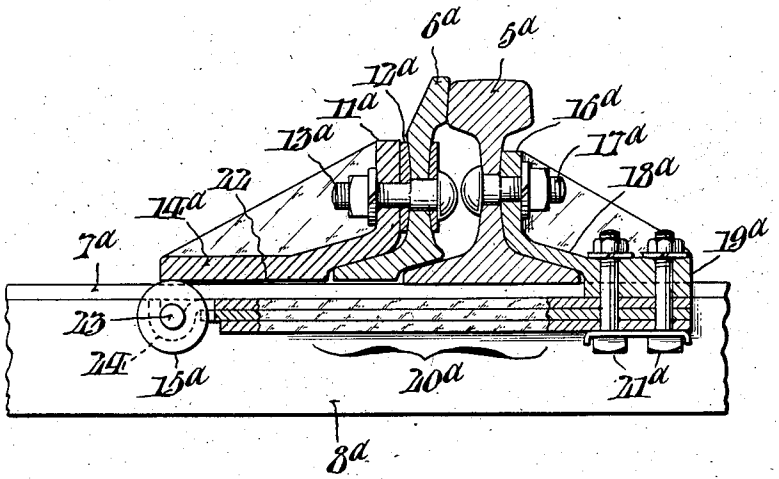
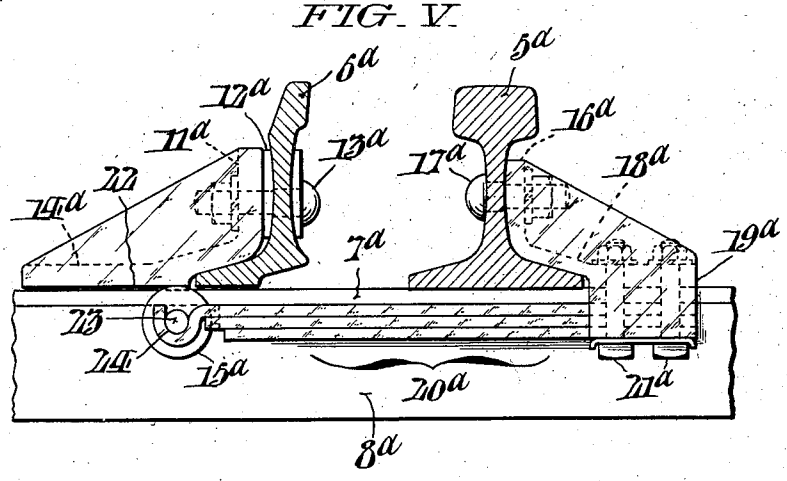


FIG. V.



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UNITED STATES PATENT OFFICE

1,965,803

RAILWAY SWITCH

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Application July 25, 1933, Serial No. 682,068

10 Claims. (Cl. 246—435)

This invention relates to railway switches; and it has reference more particularly to track switches which are remotely operated or controlled as for example from a switch tower.

The throwing of switches by means of hand levers in the control towers entails the expenditure of a very considerable effort on the part of the operators due to the resistance occasioned by the friction of the switch tongues on the tie plates whereby said tongues are slidingly supported. Recently there has been a trend in railroad construction toward the use of heavier track rails as well as heavier and longer switch tongues with correspondingly increased throw, so that when these heavier and longer switches were arranged in the usual way, it was found to be impractical to operate them manually and accordingly power throwing mechanisms were installed. Such power equipment is not only very costly from the standpoint of installations, but exceedingly expensive to maintain.

The chief aim of our invention is to overcome the drawbacks to which attention has been directed, that is to say, we aim to provide in connection with railway switches, simple, practical and reliable anti-friction means whereby the switch tongues are floatingly supported free of contact with any part of the track structures incident to being shifted or thrown from one position to another. Our invention thus makes it possible to operate the newer and heavier track switches manually in accordance with customary practice heretofore, and so dispenses with the necessity for installation of power equipment for the purpose.

Other objects and attendant advantages of this invention will be manifest from the detailed description following of the attached drawings, wherein Fig. I is a fragmentary plan view of a railway switch conveniently embodying the present improvements.

Fig. II is a detail cross sectional view taken as indicated by the arrows II—II in Fig. I and drawn to a larger scale.

Fig. III is a view corresponding to Fig. II with the switch tongue moved to open position; and

Figs. IV and V are illustrations like Figs. II and III showing an alternative embodiment of our invention.

With more detailed reference to these illustrations, the numeral 5 designates the fixed rails of the track and the numeral 6 the switch tongues. The track rails 5 are supported in the usual manner upon tie plates 7 which are spiked to the ties 8; and the switch tongues 6 are suitably incorporated in the track structure to permit them to be shifted or thrown in the usual manner when a passing train is to be diverted from one track to another. The transverse connector by which the switch is actuated, through intermediary connections (not shown) from the control tower, is indicated at 9.

In order to ease the movement of the switch tongues 6, we have provided anti-friction devices which are comprehensively indicated at 10 in Fig. I, there being one such device shown in association with each switch tongue and located in the interval between a pair of the ties 8 near the swinging end of the tongue adjacent the transverse connector 9. As illustrated, each device 10 comprises a bracket 11 which is secured, with interposition of a filler piece 12, to the vertical web of the switch tongue 6, by a pair of screw bolts 13, the laterally projecting arm 14 of said bracket affording a bearing for a freely revolving element in the form of a roller 15. In addition to the parts thus far described, each anti-friction device 10 comprises another bracket 16 which is directly secured to the vertical web of the fixed rail 5, likewise by a pair of screw bolts 17. The bracket 16 is similar to the bracket 11 except in that its laterally projecting arm 18 has a hollow pendant end portion 19 for the reception and anchorage of a composite horizontal cantilever leaf spring 20 which underreaches the fixed rail 5 as shown in Figs. II and III. The component leaves of the composite spring 19 are graduated as to length with the longest uppermost in the group, and said leaves are rigidly secured in the end 19 of the bracket arm 18 by a screw bolt 21. From Figs. II and III it will be observed that the leaf spring 20 constitutes a yielding rolling surface for the roller 15 on the switch tongue 6, and moreover that the tongue is "floatingly" supported with its bottom surfaces clear of contact with the spring 20 and the tie plates 7 incident to throwing of the switch from the open position shown in Fig. III to the closed position of Fig. II, or vice versa. During passage of trains over the switch, it will be seen that the leaf springs 20 of the devices 10 will permit the tongues 6 to yield downwardly to permit the bottom edges of said tongues to rest on the tie plates 7 and on the base flanges of the rails 5 to carry the load.

Ordinarily, one of the devices 10 will suffice for each switch tongue, but in instances where the tongues are of relatively great lengths and heavy, several of the devices may be employed along the lengths of each tongue to carry the

weight of the latter and thus prevent frictional contact of the same with the tie plates.

In the alternative embodiment of our invention shown in Figs. IV and V, the arm 14*a* of the bracket 11*a* attached to the switch tongue 6*a* is horizontally extended and has a straight bottom edge 22 to ride on a roller 15*a* whereof the trunnions 23 are engaged in a notch depression 24 in the free end of the upper leaf of the multi-leaf spring 20*a*. This spring 20*a* is secured to a bracket 16*a* which is attached to the rail 5*a* in substantially the same manner as the bracket 16 of Figs. II and III. All other corresponding parts not specifically mentioned in connection with Figs. IV and V are identified with the same reference numerals previously used with the addition however of the subscrip "*a*" in each instance for the purpose of distinguishment and to obviate the necessity for repetitive description. Incident to shifting of the switch tongue 6*a* in Figs. IV and V, the weight of the tongue will be floatingly supported by the roller 15*a* on the spring 20*a* with attainment of a downward yielding action as the train passes the switch exactly as described of the first embodiment.

From the foregoing, it will be apparent that we have provided a very simple, inexpensive and easily attached means for obviating friction in the railway track switches. The antifriction means of our invention is moreover immune against the possibility of easy derangement, requires little care except for occasional lubrication, and is especially advantageous in connection with the heavier and longer switches which are rapidly coming into use at the present time.

Having thus described our invention, we claim:

1. In a railway switch, a track rail, supporting ties for the rail; a switch tongue; and means comprising a roller and a multi-leaf cantilever spring to yieldingly support the switch tongue clear of the ties while the switch is being thrown.

2. In a railway switch, supporting ties for the rail; a switch tongue; a freely revolvable member attached to the switch tongue; and multi-leaf spring means affording a yielding rolling surface for the freely revolvable member whereby said switch tongue is supported clear of the ties while the switch is being thrown.

3. In a railway switch; a track rail; supporting ties for the rail; a switch tongue; a roller attached to the switch tongue; and a multi-leaf spring means affording a yielding rolling surface for the roller aforesaid whereby the switch tongue is supported clear of the ties while the switch is being thrown.

4. In a railway switch, a track rail; supporting ties for the rail; a switch tongue; a freely revolvable member attached to the switch tongue; and a multi-leaf cantilever spring affording a yielding rolling surface for the freely revolvable member aforesaid, whereby the switch tongue is supported clear of the ties while the switch is being thrown.

5. In a railway switch, a fixed rail element; a shiftable tongue element; a freely revolvable member attached to one of said elements; and a multi-leaf spring member attached to the other of said elements and affording a yielding rolling surface for the freely revolving member aforesaid, whereby the switch tongue element is supported clear of the ties while the switch is being thrown.

6. In a railway switch, a track rail; supporting ties for the rail; a switch tongue; a bracket secured to the switch tongue; a roller carried by the bracket; a fixed bracket; and a leaf spring secured in the latter bracket and affording a yielding rolling surface for the roller on the switch tongue, whereby said tongue is supported clear of the ties while the switch is being thrown.

7. In a railway switch, a track rail; supporting ties for the rail; a switch tongue; a freely revolvable member attached to the switch tongue; and a multi-leaf cantilever spring secured to the track rail and affording a yielding rolling surface for the revolvable member on the switch tongue, whereby said tongue is supported clear of the ties while the switch is being thrown.

8. In a railway switch, a fixed rail element; supporting ties for said element; a switch tongue element; a multi-leaf spring with a revolvable member at its free end attached to one of said elements; and a bracket secured to the other of said elements, said bracket having a straight edge for engaging the revolvable member in yieldingly supporting the switch tongue clear of the ties while the switch is being thrown.

9. In a railway switch; a track rail; supporting ties for the rail; a switch tongue; a multi-leaf cantilever leaf spring secured to the rail and carrying a roller at its outer end; and a bracket secured to the switch tongue, said bracket having a straight edge to ride the roller of the spring in yieldingly supporting the tongue clear of the ties while the switch is being thrown.

10. In a railway switch; a track rail; supporting ties for the rail; a multi-leaf cantilever spring secured to the track rail, said spring having a roller at the end of one of its leaves; and a bracket on the switch tongue, having a straight edge to ride the roller on the spring in yieldingly supporting the tongue clear of the ties while the switch is being thrown.

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