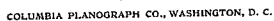


1,052,248.

2 SHEETS—SHEET 1.



M. T. HEARN.
RAILWAY SWITCH.
APPLICATION FILED FEB. 24, 1912.

1,052,248.

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2 SHEETS-SHEET 2.

Fig. 2.

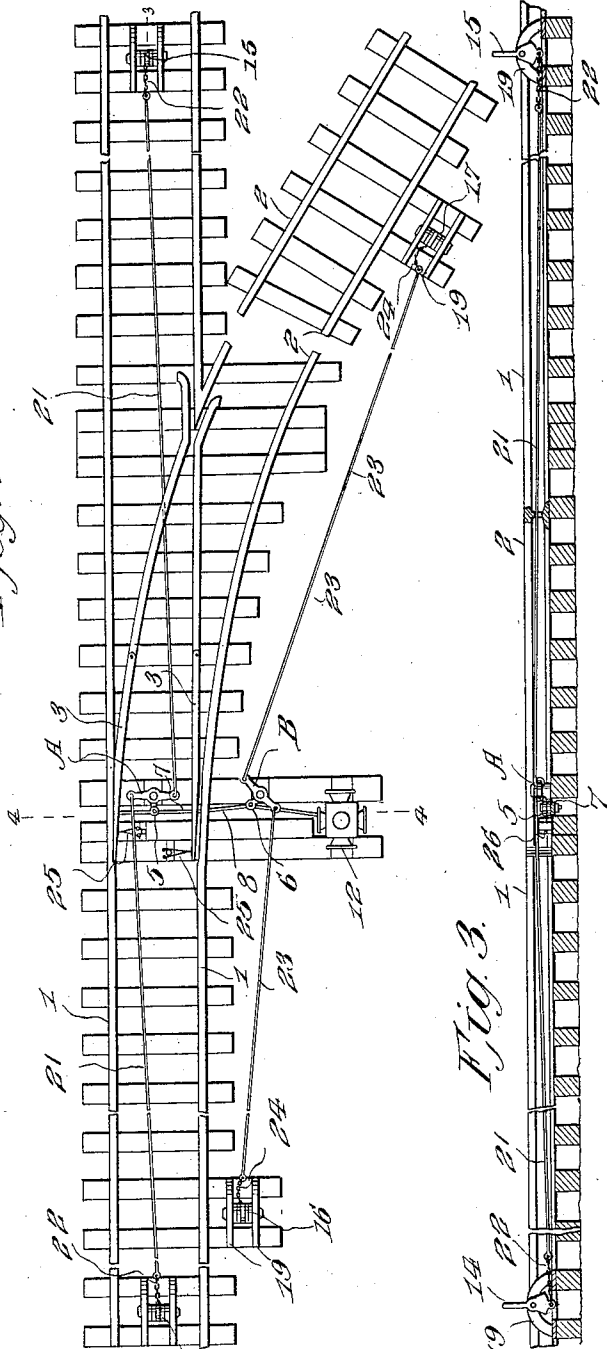


Fig. 3.

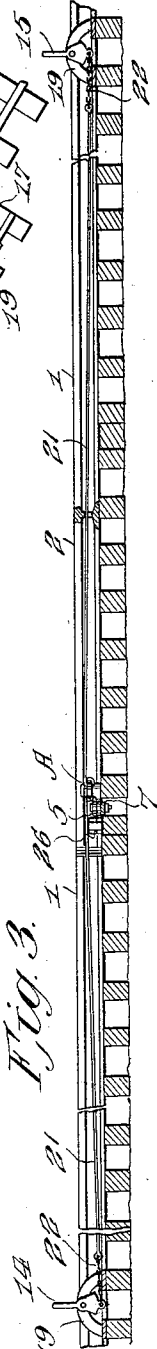


Fig. 6.

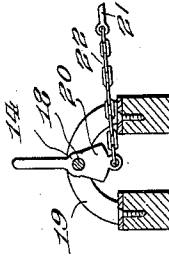
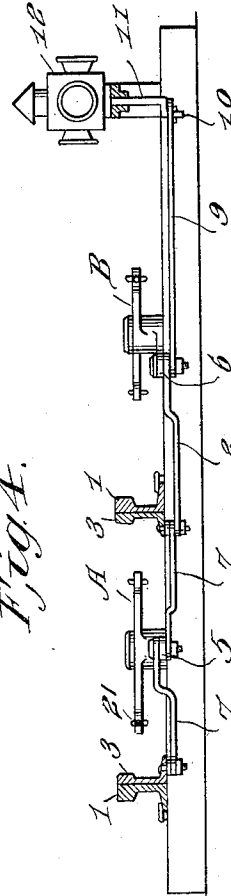


Fig. 4.



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UNITED STATES PATENT OFFICE.

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RAILWAY-SWITCH.

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Specification of Letters Patent.

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Application filed February 24, 1912. Serial No. 679,585.

To all whom it may concern:

Be it known that I, MARTIN T. HEARN, a citizen of the United States, residing at East Palatka, in the county of Putnam and State of Florida, have invented new and useful Improvements in Railway-Switches, of which the following is a specification.

This invention relates to railway switches, and it has for its object to produce simple and improved means whereby a switch may be efficiently and automatically operated by means connected with an engine or car of a railroad train and capable of being controlled by the engineer or by some member of the crew.

The particular object of the invention is to provide switch actuating means including levers positioned to be engaged by tripping means associated with the train, such tripping means being adapted to be moved to an engaging or non-engaging position with reference to the levers.

With these and other ends in view which will readily appear as the nature of the invention is better understood, the same consists in the improved construction and novel arrangement and combination of parts which will be hereinafter fully described and particularly pointed out in the claims.

In the accompanying drawings has been illustrated a simple and preferred form of the invention, it being, however, understood that no limitation is necessarily made to the precise structural details therein exhibited, but that changes, alterations and modifications within the scope of the claims may be resorted to when desired.

In the drawings,—Figure 1 is a plan view of a portion of a railroad track including the improved switch, and showing the main line open. Fig. 2 is a similar view showing the switch open to the siding. Fig. 3 is a longitudinal sectional view taken on the line 3—3 in Fig. 2. Fig. 4 is a sectional view, enlarged, taken on the line 4—4 in Fig. 2. Fig. 5 is a detail top plan view showing the ends of the switch tongues and the operating means for the same. Fig. 6 is a detail view enlarged of one of the levers. Fig. 7 is a perspective detail view enlarged showing one of the spring devices for maintaining the switch tongues in adjusted position. Fig. 8 is a sectional detail view transversely of a portion of the track showing conventionally a portion of an engine and the tripping means carried thereby.

Corresponding parts in the several figures are denoted by like characters of reference.

Referring to the drawings, 1, 1 designate the main line rails, 2, 2 the siding rails and 3, 3 the switch tongues, all of which are arranged in the usual or in any convenient or well known manner.

Pivotally supported on the track between the switch tongues is a lever A, and a similar lever B is fulcrumed adjacent to the outer siding rail, said levers A and B being each movable in an approximately horizontal plane on a vertical pivot or fulcrum member. These levers A and B are positioned at an angle to one another. Thus, when, as in Fig. 2, the lever A is disposed transversely of the track and substantially at right angles to the main line rails, the lever B will be positioned at other than a right angle to the main line rails and obliquely with reference to the lever A, as seen. When, on the other hand, as in Fig. 1, the lever A is positioned at other than a right angle to the main line rails, the lever B will be positioned substantially at a right angle to said rails. This relative position of the two levers is maintained by the connections between said levers and with the switch tongues which will be best seen in Figs. 4 and 5 of the drawings.

The lever A has an intermediate arm or crank 5, and the lever B has a similar arm or crank 6 positioned intermediate the ends thereof. The arm or crank 5 of the lever A is connected with the switch tongues 3, 3 by means of links 7, 7. The arms 6 of the lever B is connected by a link 8 with the proximate switch tongue 3, and said arm 6 is also connected by a link 9 with a crank 10 on a vertically disposed shaft 11 carrying a signal 12. It will be readily seen that when the switch tongues are moved from the position shown in Fig. 2 to the position shown in Fig. 1 for the purpose of closing the switch to the siding, the relative positions of the levers A and B will be changed from that shown in Fig. 2 to that shown in Fig. 1, and vice versa. Conversely, it will be readily understood that by actuating either one of the levers A or B, the relative position of the other lever, as well as that of the switch tongues will be shifted. It will, furthermore, be understood that when the position of the levers and the switch tongues is shifted, the position of the signal will be correspondingly changed to indicate

that the switch is open or closed, as the case may be.

For the purpose of actuating the lever A, two tappet levers 14 and 15 are provided, and for the purpose of actuating the lever B two tappet levers 16 and 17 are provided. Each of these tappet levers is fulcrumed upon a pin or bolt 18 supported by brackets 19, and each of said levers carries the weight 20, whereby such lever is supported normally in an upright or approximately vertical position. The tappet levers 14, 15 are preferably positioned about centrally between the main line rails and at suitable distances from the switch, the lever 14 facing the points of the switch tongues, while the lever 15 is positioned adjacent to the siding. The levers 16 and 17 are positioned, respectively, adjacent to the inner main line rail and to the outer siding rail at a distance from said rails about equal to one-half the gage of the track, the lever 16 facing the points of the switch tongues. The lower ends of the levers 14, 15 are connected with the arms of the lever A by flexible connections each including a rod 21 and a plurality of links 22. The lower ends of the levers 16 and 17 are likewise connected with the arms of the lever B by flexible connections, each including a rod 23 and a plurality of links 24. The length of these flexible connections is so proportioned to the other parts that when either of the levers A, B occupies a position transversely of or at right angles to the main line rails, the members connecting the arms of such lever with the co-operating tappet levers will be substantially taut, and such tappet levers will occupy a vertical position. When either of the levers A, B is positioned obliquely with reference to the main line rails the flexible elements connecting such lever with the co-operating tappet levers will be slackened, but the tappet levers will maintain their upright or vertical positions by virtue of the weights with which they are provided. It may be here stated that obviously springs may be substituted for weights as a means for maintaining the tappet levers normally in an upright position.

Each of the switch tongues 3 is connected by means of suitable leaf springs 25 with pivoted arms 26, whereby said springs are tensioned so as to keep the switch tongues securely in adjusted position. It is evident that when the switch tongues are thrown or adjusted from one position to another, the ends of the springs that are connected with the pivoted arms 26 will be shifted or moved from one side of the pivotal axis of the arms 26 to the other side of such axis, and the springs will thus be maintained under tension to retain the switch tongues in adjusted position.

The train apparatus consists of one or

more bars, arms or levers that may be moved to tripping or non-tripping position with reference to the tappet levers of the improved switch apparatus. In Fig. 8 of the drawings there has been shown a suitably supported U-shaped bar 27 which may be associated with the engine or with any convenient part of the rolling stock, said U-shaped bar having terminal tripping arms 28, 29. By properly adjusting the bar 27, one of said tripping arms, 28, may be adjusted in the path of the tappet levers alongside the track; by moving the bar 27 in the opposite direction, the other arm 29 may be placed in the path of the tappet levers intermediate the rails of the main line, and by moving the bar 27 to a tripping position, the arms 28 and 29 may both be placed in tripping position. The bar 27 has been shown as being formed or provided with a rack 30 engaged by a rack segment 31 which may be actuated in any convenient manner by the engineer or by some member of the train crew.

On a train approaching the switch on the main line, and desiring to keep on the main line the bar 27 is adjusted to place the tripping arm 29 in the path of the tappet lever 14 intermediate the main line rails. If the main line is already open, as in Fig. 1, the arm 29 will tilt the foot lever 14, but the connection of said lever with the lever A being slack, the foot lever will simply be tilted and will return by gravity to its initial or normal position without affecting the position of the switch. Should the switch be open, as in Fig. 2, the tappet lever 14 being tilted will tension the flexible connection 21, whereby it is connected with the lever A, and said lever A will swing on its fulcrum, thereby shifting the position of the switch to open the main line. Should it be desired to take the siding, the bar 27 of the approaching train will be adjusted to place the arm 28 in the path of the tappet lever 16. If the switch is already open to the siding, no change will occur, but if the main line is open, the switch will be thrown automatically to connect the main line with the siding. In a train approaching from the opposite direction, or backing out from the siding, the same rules will be observed, and the switch will thus be operated automatically and without necessity of manual attention. The signal 12 will be operated concurrently with the switch, and the position of said signal will thus indicate to the approaching train the position of the switch.

Having thus described the invention, what is claimed as new, is:—

1. In a railway switch, the combination with conventionally arranged main line rails, siding rails and switch tongues, of a horizontally disposed lever intermediate the

switch tongues, a second horizontally disposed lever adjacent to the outer siding rail and in approximate alinement with the switch tongues, said levers being disposed 5 obliquely with reference to one another, and said levers being each provided with a lever arm, links connecting the lever arm of the first mentioned lever with the switch tongues, a link connecting the lever arm 10 of the second horizontal lever with one switch tongue, and means for automatically actuating one of the horizontal levers to change the position of the other horizontal lever and of the switch tongues.

2. In a railway switch, the combination 15 with conventionally arranged main line rails, siding rails and switch tongues, of a horizontally disposed lever intermediate the switch tongues, a second horizontally disposed lever 20 adjacent to the outer siding rail and in approximate alinement with the switch tongues, said levers being disposed obliquely with reference to one another, and said levers being each provided with a lever arm, 25 links connecting the lever arm of the first mentioned lever with the switch tongues, a link connecting the lever arm of the second horizontal lever with one switch tongue, gravity actuated tappet levers supported between 30 the main line rails at suitable distances from the switch, gravity actuated

tappet levers supported adjacent to the inner main line rail and to the outer siding rail at suitable distances from the switch, flexible connections between the gravity levers 35 positioned between the main line rails and the arms of the first mentioned horizontal lever, flexible connecting means between the tappet levers supported adjacent to the outer siding rail and the inner main line 40 rail and the arms of the second horizontal lever, and means adjustably associated with a train to lie in the path of one set of tappet levers.

3. In a railway switch, the combination 45 with a switch tongue, of leaf springs connected therewith, and a pair of pivotally supported arms terminally connected with the ends of said leaf springs.

4. In a railway switch, a pair of pivotally 50 supported switch tongues, connecting means for the same, pairs of leaf springs associated with and extending from the switch tongues, and pairs of pivotally supported arms terminally connected with the pairs 55 of springs.

In testimony whereof I affix my signature in presence of two witnesses.

MARTIN T. HEARN.

Witnesses:

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FRANK. S. BROWNING.