No. 887,183. PATENTED MAY 12, 1908.

A. BILEK.

RAILWAY SWITCH.

APPLICATION FILED MAR. 29, 1907. RENEWED MAR. 30, 1908.

3 SHEETS—SHEET 1.

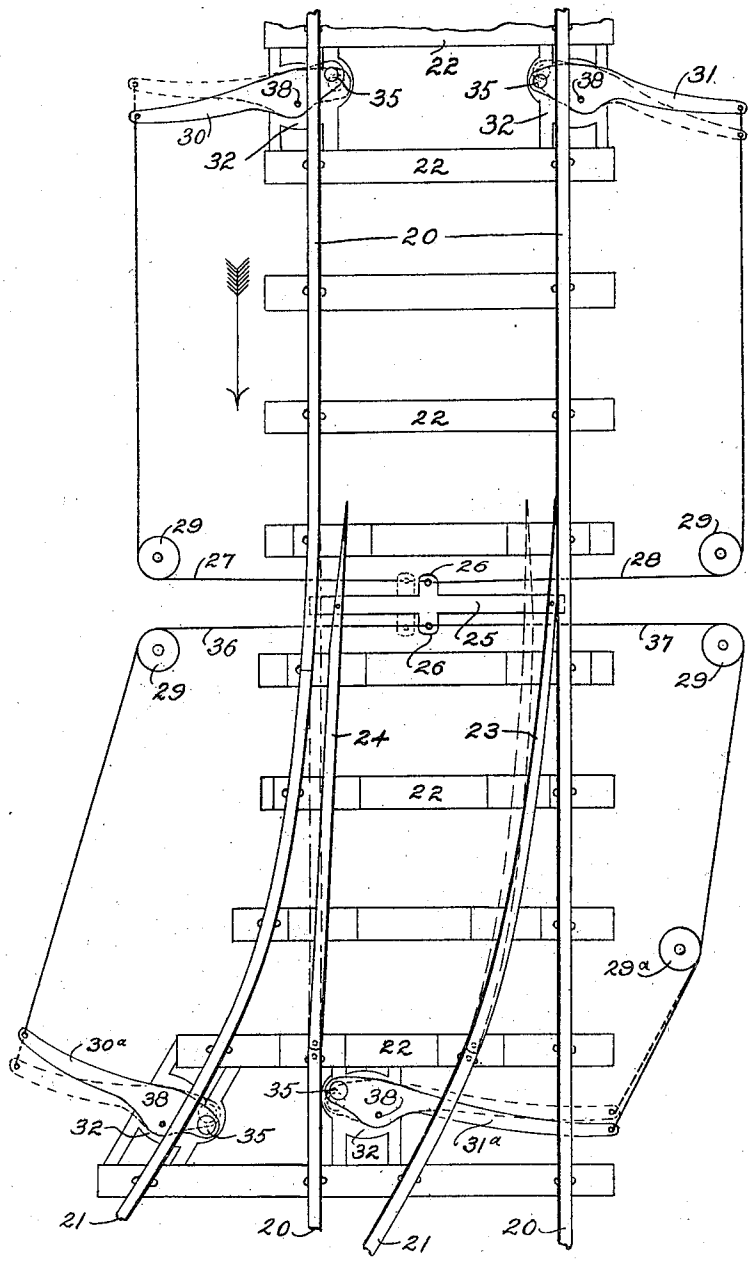


Fig. 1

Witnesses
W. C. DeLong
M. A. Nyman.

Inventor
Adolph Bilek.
per Chas. A. Gillman
Attorney.

THE NORRIS PETERS CO., WASHINGTON, D. C.

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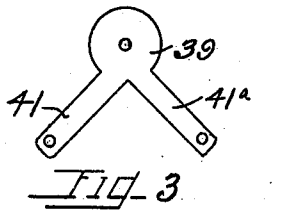


Fig. 3

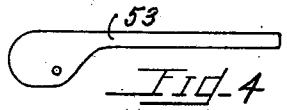


Fig. 4

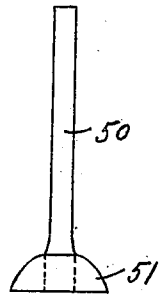


Fig. 5



Fig. 6

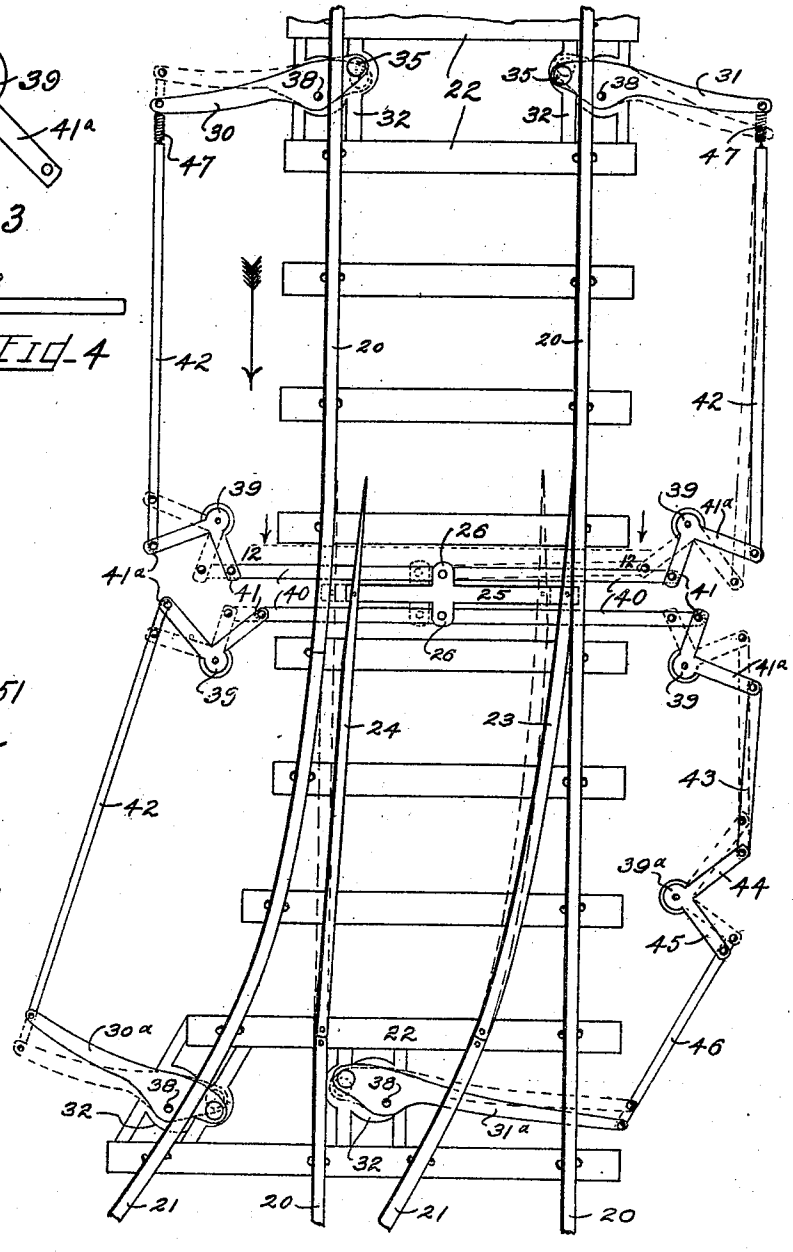


Fig. 2

Witnesses
W. C. De Long
M. A. Wyman.

Inventor
Adolph Bilek.
per Chas. C. Tillman
Attorney.

THE NORRIS PETERS CO., WASHINGTON, D. C.

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3 SHEETS—SHEET 3.

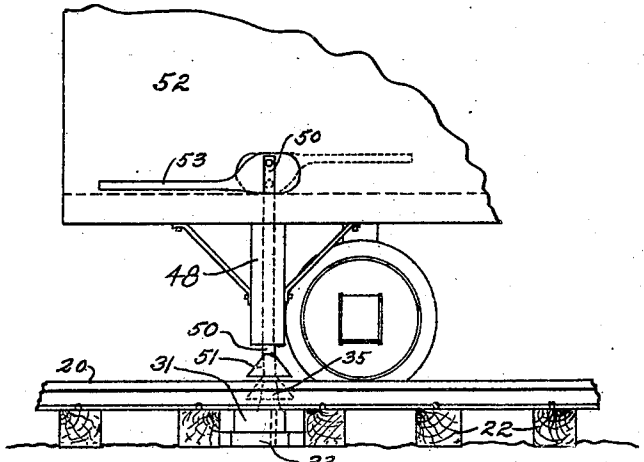


Fig. 7

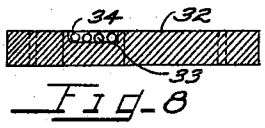


Fig. 8

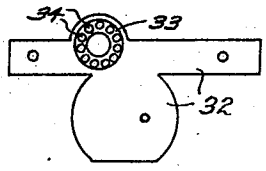


Fig. 9

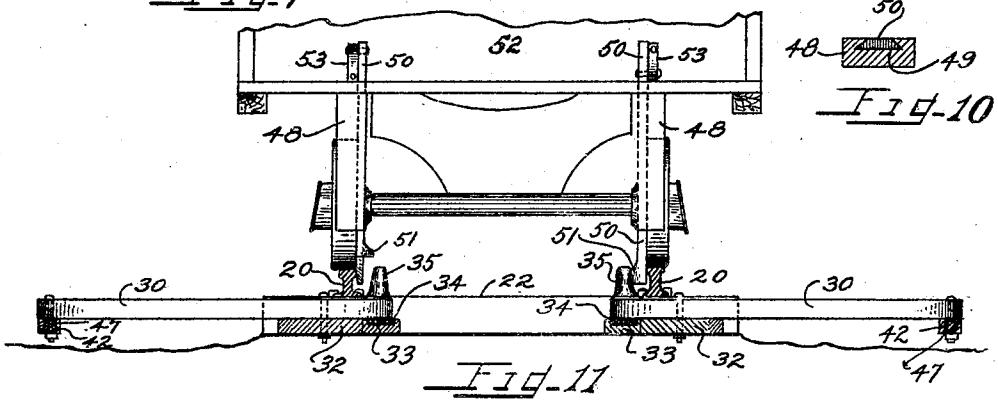


Fig. 11

Fig. 10

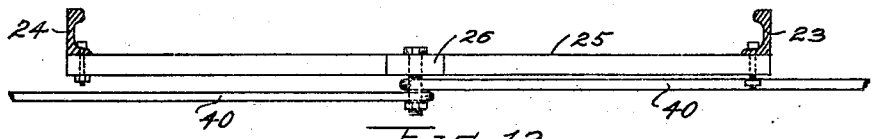


Fig. 12

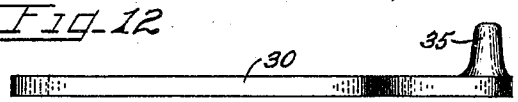


Fig. 13

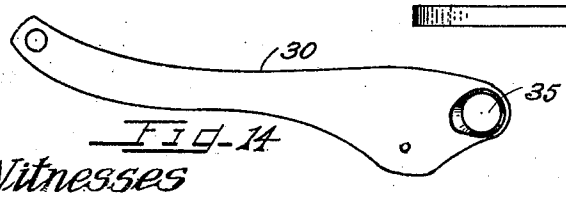


Fig. 14

Witnesses
T. C. DeLong
M. A. Wyman

Inventor
Adolph Bilek.
per Chas. A. Wilman
Attorney.

THE NORRIS PETERS CO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

ADOLPH BILEK, OF CHICAGO, ILLINOIS.

RAILWAY-SWITCH.

No. 887,183. Specification of Letters Patent. Patented May 12, 1908.

Application filed March 29, 1907, Serial No. 365,235. Renewed March 30, 1908. Serial No. 424,115.

To all whom it may concern:

Be it known that I, ADOLPH BILEK, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Railway-Switches, of which the following is a specification.

This invention relates to improvements in means to be used on railway tracks for switching the cars or guiding the wheels thereof from one track onto another, and it consists in certain peculiarities of the construction, novel arrangement, and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

The principal object of my invention is to provide a railway switch, which shall be simple and inexpensive in construction, strong, durable, efficient in operation, and so constructed that the switching rails may be moved to the desired position to guide the cars from one track to the other by means of devices located on the locomotive or one of the cars, and while the train is in motion, thus dispensing with the necessity of stopping the train prior to the switch being thrown, and also obviating the expense and employment of a man to attend to the switching.

A further object of the invention is to so construct the parts of the apparatus that the switching may be operated from the train while traveling in either direction and on either track.

Other objects and advantages of the invention will be disclosed in the subjoined description and explanation.

In order to enable others skilled in the art to which my invention pertains, to make and use the same, I will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 is a plan view of a railway switch embodying one form of my invention, showing by full lines the positions the switching rails will occupy when it is desired to guide the train to a side track, and by dotted lines when they are in position for the main track to be used. Fig. 2 is a similar view of like parts, correspondingly arranged, but illustrating a modification in the construction of parts of the apparatus. Fig. 3 is a detached plan view of one of the bell crank levers employed in the modified form shown in Fig. 2. Fig. 4 is a side view in elevation of one of the cam-levers used for operating the shoes for throwing the movable rails. Fig. 5 is a view of one of the shoes and its stem. Fig. 6 is a plan view of one of the shoes, showing the stem thereof in section. Fig. 7 is a fragmental view of a portion of one of the cars mounted on a part of the track and showing the means for supporting and operating one of the tripping shoes. Fig. 8 is a sectional view of one of the ball bearing plates used to support the operating levers. Fig. 9 is a plan view thereof. Fig. 10 is a cross-sectional view of one of the brackets which support the stems of the shoes. Fig. 11 is a view partly in section and partly in elevation, showing a portion of a car mounted on the rails of one of the tracks, and one of the tripping shoes carried thereby in the act of throwing the operating levers so as to move the switch rails to the desired position. Fig. 12 is a similar view taken on line 12—12 of Fig. 2 looking in the direction indicated by the arrows. Fig. 13 is a side view of one of the operating levers; and Fig. 14 is a plan view thereof.

Like numerals of reference, refer to corresponding parts throughout the different views of the drawings.

The reference numerals 20 designate the rails of the main track, while the numerals 21 those leading to the side track, all of which rails are mounted on cross-ties 22, in the usual or any preferred manner. Pivotally secured at one of its ends on a cross-tie or plate thereon, at the end of one of the side track rails 21, is a switch rail 23, which has its free end tapered and adapted to rest against the inner surface of one of the main rails 20, as is clearly shown in Fig. 1 of the drawings. Pivotally secured at one of its ends on the support or cross-tie on which the rail 23 is pivotally secured is another switching rail 24, which has its free portion tapered and adapted to rest against the inner surface of the other rail 20, as shown by dotted lines in Fig. 1 of the drawings. The switching rails 23 and 24 are transversely secured together near their free ends by means of a cross-bar 25, which has at about its middle an apertured and laterally projecting extension 26 on each side thereof. To the extension 26, projecting in the direction of the free ends of the switching rails 23 and 24, are secured cables 27 and 28, which extend in opposite

directions and are passed around grooved pulleys 29 horizontally journaled on suitable supports on each side of the rails 20 of the main track. These cables lead and are connected to the outer ends of operating levers 30 and 31, respectively, which are horizontally fulcrumed on plates 32 which are located between two of the cross-ties 22, and each of which plates is provided in its upper portion near its inner edge with a race or cup 33 for a series of anti-friction balls 34 (see Figs. 8, 9 and 11 of the drawings), to be used for reducing the friction of the levers 30 and 31 in their movements, which, as before stated, are horizontally fulcrumed on the said plates. Each of the levers 30 and 31 is provided on its upper surface near its inner end with an upwardly extending projection 35, which are located above the ball bearings 34 and near the inner surfaces of the rails 20, under which the levers 30 and 31 are horizontally disposed. Secured at one of their ends to the extension 26 on the cross-bar 25, adjacent to the ends of the side rails 21, are cables 36 and 37, which extend in opposite directions and are passed around grooved pulleys 29 horizontally journaled on each side of the track on suitable supports. The other end of the cable 36 is connected to the outer end of an operating lever 30^a horizontally journaled under one of the side rails 21 on a plate 32, of the same construction as those above described and shown in detail in Figs. 8 and 9 of the drawings. The cable 37 is also extended around another grooved pulley 29^a located on one side of the main track at a short distance from the pivoted end of the switching rail 23, and is connected to the outer end of an operating lever 31^a, which is horizontally fulcrumed under one of the main track rails 20 and one of the side track rails 21 on a plate 32, of the same construction as above described and clearly shown in Figs. 8 and 9 of the drawings. The operating levers 30^a and 31^a are of the same construction as the operating levers 30 and 31 and above described, and as will be observed by reference to Fig. 1 of the drawings, each of said levers is eccentrically fulcrumed as at 38, in order to afford the greatest movement of the outer ends of said levers with the least movement of their inner ends.

In Fig. 2 of the drawings I have shown a modification in the construction of my switch, which consists in employing the operating levers 30, 31, 30^a and 31^a located and mounted on plates 32, all of the same construction as above set forth, but in this modified construction of the switch I substitute bell crank levers 39 and 39^a for the grooved pulleys 29 and 29^a, respectively, and fulcrum said levers on suitable supports on the sides of the tracks in about the same arrangement as said pulleys are located. In this modification I also substitute for the flexible connections, which unite the various operating bars to the transverse bar 25, bars or stiff connections.

As shown in Fig. 2, the switching rails 23 and 24 are transversely connected near their free ends by a bar 25, having at about its middle lateral extensions 26, as in the other construction, to each of which extensions is pivotally secured at one of their ends bars 40, which are pivotally secured at their other ends to one of the arms 41 of each of the bell crank levers 39, the other arm 41^a of each of which levers has pivotally secured thereto, at one of their ends, bars 42 and 43, the other ends of the bars 42 being connected to the outer ends of the operating levers 30, 31 and 30^a, while the other end of the lever 43 is pivotally connected to one of the arms 44 on the bell crank lever 39^a, the other arm 45 of which is pivotally connected by means of a bar 46 with the outer end of the operating lever 31^a, as is clearly shown. That end of each of the bars 42 adjacent to the levers 30 and 31 is provided with a spring connection 47, to afford resiliency or yielding action of the parts in operation, but it is apparent that I may sometimes omit the spring connections, and pivotally secure the bars 42 to said levers.

In order to throw the switching rails to the desired position, so as to switch the train of cars from one track to the other, any suitable means on a car or locomotive may be employed for being interposed between the inner surface of one of the main track rails 20 or the inner surface of one of the side track rails 21, and one of the projections 35 on the operating levers fulcrumed under said rails, and while I do not desire to be limited in the employment of any specific construction of such device, or on any specific kind of a car, yet I have shown in Figs. 7 and 11 means mounted on an ordinary box-car for said purpose, which consists in securing on the bottom of the floor of the car, in alinement with the wheels thereof, two vertically disposed brackets 48, each of which is provided with a groove 49, preferably dove-tailed in cross-section, in which is fitted correspondingly shaped stems 50 of the tripping shoes 51, one of which is mounted on the lower end of each of the stems 50 and is tapered toward its front and rear ends, as is clearly shown in Fig. 6 of the drawings. Each of the stems 50 of the shoes 51 is slidably mounted in its supporting bracket 48, and its upper end extends into the car body 52, and has fulcrumed thereon a cam-lever 53, to be used for raising and lowering the shoes, so as to bring either one of them into contact with one of the projections 35 on the operating levers.

From the foregoing and by reference to the drawings, it will be readily understood and clearly seen that by employing a switch constructed according to my invention, when a

train is traveling on the main track rails 20 in the direction indicated by the arrow in Figs. 1 and 2 of the drawings, it can be side tracked by lowering the shoe 51 on that side of the car or locomotive adjacent to the switch rail 23, which operation will cause said shoe to be interposed between the rail 20 on that side of the main track, and the projection 35 on the operating lever 31, when, in passing between said rail and projection, the shoe will contact with the latter on its inner or inclined surface, and cause the lever 31, as well as the lever 30 on the opposite side of the track by reason of their connections, to be thrown from the positions shown by dotted lines in Figs. 1 and 2 to that indicated in full lines in said figures in which operation it will be understood that the connections uniting said levers and the transverse bar 25, whether said connections be of the flexible type shown in Fig. 1, or of the bar type shown in Fig. 2, will operate to bring the free and tapered portion of the switch rail in contact with one of the main track rails 20, and to space the other switching rail 24 from the other main track rail, thus guiding the cars onto the side track rails 21, as is apparent. In this operation, it is evident that the levers 30^a and 31^a, by reason of their connections with the transverse bar 25, which connects the switch rails near their free ends, will also be moved from the positions shown in dotted lines to those indicated in full lines. If a train is traveling on the main track in the direction indicated by the arrow in Fig. 1, and the switching rails are located as shown by continuous lines in said figure and it is desired that the train shall proceed on the main track and not be switched onto the side track, it is evident that the shoe on the side of the car adjacent to the switching rail 24 may be lowered so as to contact with the projection 35 on the operating lever 30, which operation will cause the switching rails, by reason of their connections with the levers 30 and 31, to be shifted to the positions indicated by dotted lines in said figure of the drawings. It will, therefore, be understood that the arrangement of the operating levers are such that they will co-act with one another in throwing the switching rails to the desired position when the train is switched from the main track to the side track, or vice versa.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters-Patent, is—

1. In a railway switch, the combination with the paralleled main track rails and the paralleled side track rails, of a switching rail pivotally secured near the end of one of the side track rails and another switching rail pivotally secured near the end of one of the main track rails, a bar transversely uniting the switching rails near their free ends to cause them to move in unison and having laterally projecting extensions, an operating lever horizontally fulcrumed under one of the main track rails and carrying on its inner portion an upwardly extending projection, a grooved pulley journaled at one side of the main track near the said transverse bar, an operating lever horizontally fulcrumed under one of the side track rails and having on its inner portion an upwardly extending projection, a grooved pulley journaled near one side of the side track, and connections passing around said pulleys and uniting the outer ends of said operating lever to the lateral extensions on the transverse bar.

2. In a railway switch, the combination with the paralleled main track rails and the paralleled side track rails, of a switching rail pivotally secured near the end of one of the side track rails and another switching rail pivotally secured near the end of one of the main track rails, a bar transversely uniting the switching rails near their free ends so as to cause them to move in unison and having lateral extensions, an operating lever horizontally fulcrumed under each of the main track rails and each of said levers carrying on its inner portion an upwardly extending projection, an operating lever horizontally fulcrumed under each of the side track rails and having on its inner portion an upwardly extending projection, a series of grooved pulleys journaled on each side of the track rails, and flexible connections extended around said pulleys and uniting the outer ends of the operating levers to the extensions on the transverse bar.

3. In a railway switch, the combination with the paralleled main track rails and the paralleled side track rails, of a switching rail pivotally secured near the end of one of the side track rails and another switching rail pivotally secured near the end of one of the main track rails, a bar transversely and movably uniting the switching rails near their free ends, a plate located beneath one of the main track rails and having on its upper surface a race, anti-friction balls located in said race, an operating lever horizontally fulcrumed on said plate and carrying on its inner portion an upwardly extending projection, and a connection uniting the outer portion of the operating lever to the said transverse bar for operating the latter.

ADOLPH BILEK.

Witnesses:
CHAS. C. TILLMAN,
M. A. NYMAN.