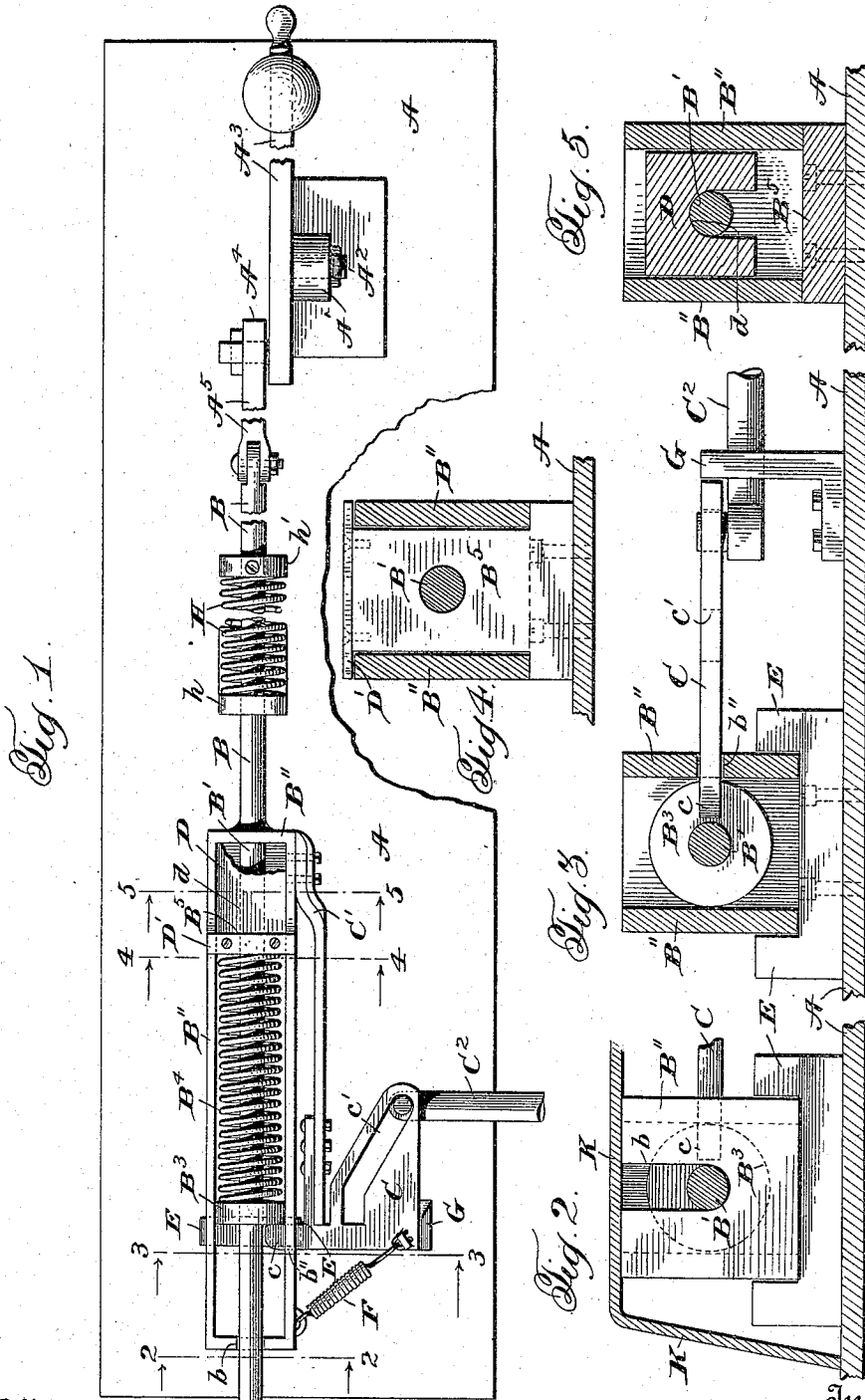


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RAILWAY SWITCH.
APPLICATION FILED JUNE 3, 1908.

932,560.

Patented Aug. 31, 1909.



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UNITED STATES PATENT OFFICE.

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RAILWAY-SWITCH.

932,560.

Specification of Letters Patent.

Patented Aug. 31, 1909.

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To all whom it may concern:

Be it known that I, GEORGE E. LEMMON, a citizen of the United States, residing at Bedford Springs, in the county of Campbell and State of Virginia, have invented certain new and useful Improvements in Railway-Switches, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to an improvement in railway switches and more particularly to improvements in railway switch operating mechanism which can be operated under ordinary conditions the same as a straight or single bar switch, but which will be provided with mechanism or features whereby the switch will be operated automatically by a passing train to close, when the siding switch has been left open by negligence or mistake.

One of the most frequent causes of railway disasters is that of the "open switch." Many attempts have been made in the past to provide mechanism for automatically closing such switches, which mechanism is actuated by a passing train. In many of such structures, however, the construction and arrangement is such as to render the switch complicated and objectionable, in that the same cannot be actuated under ordinary conditions without an adjustment of the parts during each actuation, and also requiring much time and special skill and understanding of the mechanism.

The object of my invention is to provide a switch actuated mechanism which can be operated conveniently for the usual purposes of opening and closing the switch without requiring the attention of the operator other than that of throwing the switch lever backward and forward, and at the same time to provide automatic means for closing the switch, should the same be left open by inadvertence or neglect.

In my former patents, Nos. 770,686 of September 20, 1904, and 796,436 of August 8, 1905, I have shown automatic switch devices which accomplish the objects above stated, and my present invention is designed more particularly as an improvement on such devices, the object being primarily to simplify the construction; to render the normal operation of the switch less laborious; and to maintain the automatic closing spring in a normal condition, rather than in a compressed state, when the switch is closed.

In the accompanying drawing, I have shown the improvements in a form which has by test proven to be satisfactory, but it is to be understood that various modifications in the construction and the arrangement of parts can be made without departing from the nature and principle of the invention.

In the drawing, Figure 1 is the plan view of the improvement showing the cover plate removed; Fig. 2 is a sectional elevation through a part of the construction shown in Fig. 1, the same being taken on the line 2—2 of Fig. 1; Fig. 3 is a cross section on the line 3—3 of Fig. 1, showing in addition the cover plate. Figs. 4 and 5 are respectively cross sections on the lines 4—4 and 5—5 of Fig. 1.

In the drawing, A designates a base plate which may conveniently extend from the stand to a point adjacent the track. The outer end of the base plate is provided with a bearing A' supporting the crank shaft A² which carries on its outer end the lever handle A³, and at the inner end the rod actuating crank A⁴ to which the rod A⁵ is attached. This construction may be of the usual form or of any desired form and in this particular it is to be understood that, in common with the usual switch, a target indicator may be employed.

In common with the construction shown in the aforementioned patents, I prefer to have the point actuating rod constructed in two parts B and B', the same being movable under certain conditions independently of each other but normally locked against movement. With this in view, I construct the part B with a yoke B'' at its outer end, having a slot b at its inner end through which the section B' of the point actuating rod passes. This yoke or frame B'' is provided with a side opening b'' at or near its forward portion, through which passes a locking tongue c mounted on a spring actuated plate C carried by a spring C', secured to the yoke in any convenient manner. The parts thus far described are somewhat similar to the parts shown in my Patent No. 796,463 of August 8, 1905, with slight variations, one difference being that the yoke is open on its top and bottom. The plate C is connected through the slot c' with the tripping bar C², in a manner similar to my last mentioned patent, and for the purposes therein mentioned.

The section B' of the point throwing bar

or rod is prolonged and is normally held at its outer end close against the outer end of the yoke B'', as shown in Fig. 1 and surrounding the inclosed part of the section B' is a sleeve or collar B³, against which a spiral spring B⁴ abuts, the same surrounding the outer end of the section. The opposite or outer end of the coil spring B⁴ abuts a stationary abutment B⁵ secured to the base plate A, in any convenient manner and having a perforation therein through which the section B' passes. This fixed abutment is designed to fit between the branches of the yoke of the section B and is positioned normally a short distance inwardly beyond the outer end wall of the said yoke. At this point a locking block D is placed between the fixed abutment and the end of the yoke. The block D is formed to exactly fill the space between the abutment and the normal position of the yoke (normal meaning main track closed) and is in the form of a rectangular block having a curved longitudinal seat *d* in its under surface, which rests on the upper surface of the inner end of the section B', for the purposes presently to be stated. The yoke is guided by suitable U-clips or guides E at one end, riveted to the base plate and by the fixed abutment B⁵ at the other end, so that no lateral play can be had. To prevent vertical movement of the parts, a suitable plate D' is secured to the top of the abutment B⁵, its end overlapping the top edges of the yoke, it being understood that the section B' is prevented movement by passing through the abutment B⁵ and its connection to the track points.

The spring B⁴ is of a length to fit between the abutment B⁵ and the collar B³ normally, with the exception of a sufficient pressure or compression to maintain the switch point firmly in place. When the switch is to be opened, the switch lever is moved back carrying the yoke backward and, owing to the position of the tongue *c*, back of the fixed collar B³ on the section B', the said section will be moved with the section B. This construction renders the entire mechanism operative substantially as a single rod, the parts moving in unison and being prevented from independent movement during the opening of the switch. By the said backward movement of the sections the spring B⁴ is compressed against the fixed abutment B⁵. Should the switch be accidentally left open in this condition, the train striking the lever on the rod C², which by the action of the switch has been moved forward by the incline of the plates C and has its end resting in the straight part of the groove, the locking tongue *c* will be drawn out of the yoke from behind the collar B³ and the spring B⁴ will immediately force the section B' outward and hold it in that position, closing the main track. To prevent the re-

setting of the switch and also to prevent the rebounding, the position of the fixed abutment B⁵ is such that the end of the section B' in its outward independent throw will be carried slightly into the aperture in the abutment, thereby depriving the block D of its support, which is the end of the section B', and permitting the block to fall downward across the end of part B' and thereby prevent the return or outward movement of the section B'. I have found this type of block locking device to be effective, but other forms may be employed.

To insure a positive, quick and accurate movement of the locking tongue *c* with the plate C, I may employ a supplemental spring F connecting the same at one end to the end of the yoke and the other end to the heel of the plate C, as shown in Fig. 1. This spring, however, may be dispensed with. When the switch is under normal set to prevent tampering by the actuation of the automatically actuated rod C², I place below the heel of the plate C, a fixed lug G on the base plate A. This lug is slightly curved on its outer edge and the heel or corner of the plate is also curved so that as the plate C is moved toward the track, it will be forced inward by its springs and engaging the incline of the lug G will ride thereover and rest directly above. As shown in this position, the plate is locked against movement by the locking of the switch but is permitted to be drawn out as the yoke is moved outwardly by the switch lever.

I have found it expedient to provide a balancing spring on the section B of the rod so as to relieve the operator of the necessity of exerting pressure sufficient to fully compress the spring B⁴. This balance spring is shown at H surrounding the section B, its inner end abutting affixed abutment *h* on the base through which the rod passes, while its opposite end abuts an adjustable collar *h'* on the rod. In setting the switch, the spring B⁴ is under expansion and the spring H is compressed so as to exert sufficient pressure to largely balance or assist in compressing the spring B⁴ the work of the operator being only to compress the spring B⁴, a difference between the balance between the two springs. This renders the switch easy of operation.

It will be observed that by the above construction I do away with considerable of the mechanism shown in my Patent No. 796,463, of August 8, 1905, in the way of spring catches and retarding devices and have simplified the construction in other particulars. It will of course be understood that when the switch is automatically operated the same cannot be reset, except by removing the cover K which is bolted to the base plate and incloses the entire operating mechanism, conveniently. By removing the cover and lifting the locked lock D from behind the

end of the section B' and by using a crow bar or other means pressing against the point of the switch, the section B' can be forced back, in which particular the end of the tongue *c* is slightly inclined so as to automatically slip past the collar B³ on the section B', the tongue normally resting against the spring when the collar B³ has passed beyond the same, after the switch has been automatically tripped. Obviously by suitable means the part C may be operated by a train going in the opposite direction, should conditions require.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

1. In a switch, the combination with a sectional rod, the end of one section normally abutting the other section a spring for forcing the same apart, means for locking the sections against independent movement, means for automatically permitting the unlocking of such parts, and means for compressing the spring upon the opening of the switch.

2. In a switch for railways, the combination with a stand, its lever and a switch rod, the latter being formed in sections, the end of one section normally abutting the other section means for normally preventing the independent movement of the sections, a spring interposed between the sections, means for compressing the spring upon the opening of the switch and for maintaining it in its compressed condition, and an automatic trip for releasing the spring.

3. In a switch for railways, the combination with a switch actuating rod formed with independently movable sections, a spring interposed between the sections, an independently movable trip for maintaining the sections in their normal positions, and the spring under partial compression, a fixed abutment against which the spring rests whereby the same is compressed upon the opening of the switch, and means for releasing the spring to permit the independent movement of one of the rod sections.

4. In a switch, the combination with a sectional rod having a yoke at one end, means for guiding the yoke and securing it in position, a complementary rod entering the yoke, a fixed abutment through which the complementary rod passes, means for normally holding the sections against independent movement, a spring normally expanded, means for compressing the spring upon the movement of the rod, and a lock engaging one of the sections acting automatically to prevent the return of the parts to their normal position.

5. In a switch, the combination with a sectional rod, one of said sections fitting in the end of the other section, a locking block supported by the end of the inner section, a spring for forcing the sections apart, and a trip for retaining the sections in their normal position.

6. In a switch, the combination with a sectional switch rod, a spring for forcing the sections apart, means for compressing the spring upon the actuation of the switch, and a balancing spring for assisting in the compressing of the said other spring.

7. In a switch, the combination with a sectional rod, of a spring interposed between the sections, means for compressing the spring, a catch for preventing the independent movement of the sections, means for releasing the catch upon the passage of the train on the track, and means for preventing the movement of the catch when the parts are in their normal position with the switch closed.

8. In a switch, the combination with a sectional switch rod, one of said sections having a yoke thereon in which the end of the other section projects, a fixed abutment within the yoke, a shoulder on the section within the yoke, a spring interposed between the sleeve and the abutment, a spring actuated tongue projecting through the yoke in the rear of said sleeve, and means for automatically moving the tongue to release the sections.

9. In a switch, the combination with a sectional rod, a yoke on one section into which the end of the other section passes, a fixed abutment within the yoke, a sleeve on the section within the yoke, a spring interposed between the sleeve and the abutment, automatically operated means for retaining the sections against movement, and a lock interposed between the fixed abutment and yoke section.

10. In a switch, the combination with a sectional rod, a yoke on one section into which the end of the other section passes, a fixed abutment within the yoke, a sleeve on the section within the yoke, a spring interposed between the sleeve and the abutment, automatically operated means for retaining the sections against movement, a loosely supported locking block located between the abutment and the yoke and normally supported by the inner section of the rod.

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

GEORGE E. LEMMON.

Witnesses:

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HOWARD G. ROBERTS.