

No. 837,387.

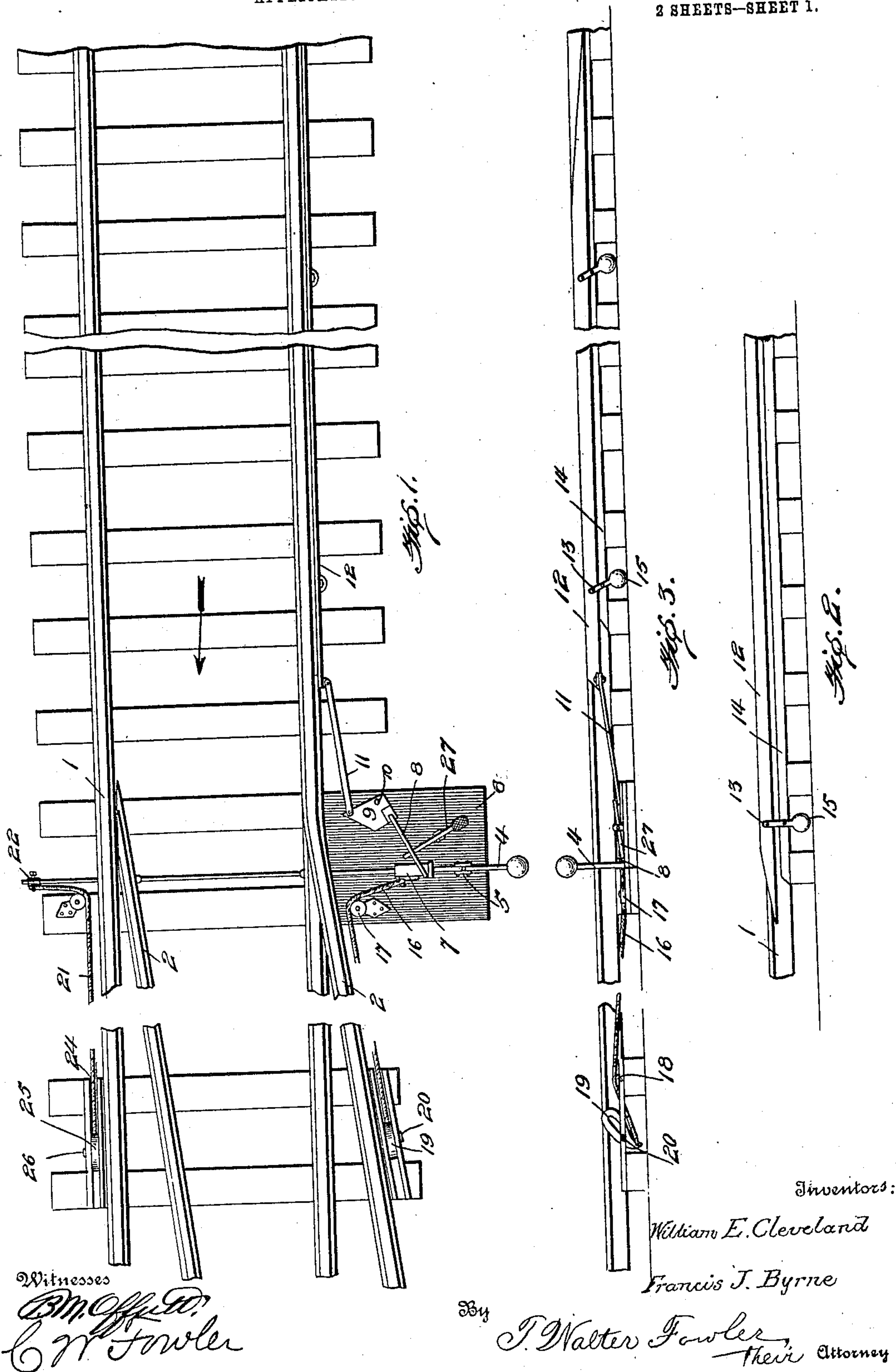
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W. E. CLEVELAND & F. J. BYRNE.

SAFETY RAILWAY SWITCH.

APPLICATION FILED AUG. 1, 1906.

2 SHEETS--SHEET 1.



UNITED STATES PATENT OFFICE.

WILLIAM E. CLEVELAND AND FRANCIS J. BYRNE, OF MEMPHIS,
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SAFETY RAILWAY-SWITCH.

No. 837,387.

Specification of Letters Patent.

Patented Dec. 4, 1906.

Application filed August 1, 1906. Serial No. 328,714.

To all whom it may concern:

Be it known that we, WILLIAM E. CLEVELAND and FRANCIS J. BYRNE, citizens of the United States, residing at Memphis, in the county of Shelby and State of Tennessee, have invented new and useful Improvements in Safety Railway-Switches, of which the following is a specification.

Our invention relates to certain new and useful improvements in railways, and particularly to that part of railway construction which is commonly known as "safety railway-switches;" and our invention consists of the parts and the constructions, arrangements, and combinations of parts, which we will hereinafter describe and claim.

The essential objects of our invention are to provide a simple mechanism capable of being attached to a switch and which will make it impossible for a train to take the wrong track at the switch or to break a switch by reason of its being thrown against an approaching train, the said mechanism being adapted to throw the switch to the main-line position when the train is approaching the point of the switch, which will permit the switch to be then specially thrown by hand, so that a train may take the siding, and which will throw the switch for the track on which the train is approaching.

In the accompanying drawings, forming part of this specification, and in which similar reference-numerals indicate corresponding parts throughout the several views, we disclose a suitable embodiment of our invention, although this precise mechanism may be modified within reasonable limits without departing from the spirit of the actual invention.

Figure 1 is a plan view of a railroad-switch embodying our invention. Fig. 2 is a side elevation of a portion of the main track, showing the auxiliary rail in its elevated position, as when the switch is open. Fig. 3 is a side elevation of Fig. 1, showing the auxiliary rail in its depressed position, as when the switch is closed. Fig. 4 is an enlarged plan view of the base-plate and the switch-operating devices which are arranged thereon. Fig. 5 is a sectional view on the line 4 4 of Fig. 4. Fig. 6 is a side view of Fig. 4.

In said drawings the railroad-rails 1 1, the switch-points 2 2, and the switch-actuating rod 3 are of the usual or suitable construction

and may represent the most modern and approved types of these devices; likewise the switch-lever 4 and the link 5, by which the movement of the lever is transmitted to said rod, said lever and rod being used normally to open and throw the switch and said lever being pivotally mounted upon a base-plate 6, which forms a proper support at one side of the track for those devices which operate to throw the switch, as I will hereinafter describe.

Our improvement consists, essentially, of a collar or lug 7, fastened by appropriate means to the switch-rod 3, and of arm 8, carried by a bell-crank 9, which bell-crank is pivoted to the base-plate at 10. A rod 11 connects the bell-crank 9 with an auxiliary rail 12, which lies alongside the main rail 1 and is carried by arms 13, which are pivoted in a frame 14, which frame rests on the ties.

15 represents counterbalance-weights on the ends of arms 13, said weights counterbalancing the weight of the auxiliary rail and holding the latter normally in a raised position.

16 is a cord or flexible connection which extends from the lug 7 around the pulley 17, journaled on the base-plate, and thence alongside the railroad-rail over a second pulley 18 to a dog 19, which is pivoted in a frame 20, which dog normally stands with one end above the rail when the switch is closed.

A cord or other flexible connection 21 extends from the lug 22 around a pulley 23, thence alongside the rail over a second pulley 24 to a dog 25, (similar to dog 19,) which is pivoted in a frame 26, which dog 25 has its upper surface normally level with the top surface of the rail. When the switch is open, the dog 25 stands with one end above the rail and in position to be engaged by a passing train to close the switch.

27 is a foot-lever pivotally mounted on the base-plate.

28 is a block fastened to the base-plate 6 and beside the lug 7 on the rod 3, behind which block the arm 8 rests when the switch is closed. When in this position the auxiliary rail 12 is held level with the rail.

The operation of a switch having our improvement will be as follows: A train approaching in the direction of the arrow depresses the auxiliary rail 12, thus pushing the rod 11 forward. This rod operates the

bell-crank 9 about its pivot 10 and swings the arm 8 around. If the switch is open, the lug 7 (see especially Fig. 4) would be in the dotted position 7^a and would be engaged by the arm, as shown by dotted lines at 8^a, and moved by it until the switch is closed. It will be especially noted in this connection that the arm 8 is devoid of actual connection with the rod 3 and simply comes against the lug 7. Should a train approaching in the direction of the arrow wish to take the siding, the trainman presses the foot-lever 27 down, which forces the arm 8 up and free of lug 7. He then throws the switch and lets the arm 8 down on top of the lug, as in the dotted position 7^a in Fig. 4. The train then passes off the auxiliary rail, which now returns into normal position, by which means the arm 8 is pulled back over the lug at 7^a and drops into place in front, as at dotted position 8^a, which places the train in position on the side track. This action leaves the switch open. Should the switchman then desire to close the side track against an approaching train from either direction, he can do so, or if it be accidentally or by design left open the approaching train will close it thus: If the train be coming in the direction of the arrow, the switch is closed by striking the auxiliary rail 12. If the train be coming in the opposite direction, the switch is closed by striking the pivoted dog 25. Now if the train on the side track wants to go back on the main line and the switch be closed it depresses the dog 19, which throws the switch open. The train backs entirely over the auxiliary rail 12, which moves back into position to close the switch against the side track. The train then goes forward in the direction of the arrow depresses the auxiliary rail, which in turn throws the switch for the main line and allows the train to proceed onward, leaving the switch closed. Should the train on the side track want to go forward to the main line instead of backing onto it, it can do so by proceeding onward and depressing the dog 19 at the other end of the side track, which opens the switch and allows the train to go forward on the main line. The switch at this end of the side track is now left open, which will be closed by the next approaching train from either direction. It is thus seen that the services of a switchman are necessary only when the train is going into the side track and that in all other instances the device works automatically.

Most of the parts may be incased, if necessary, so as to protect them from climatic influences, leaving slots in the case where needful for the proper working of the lever, &c.

If it is desired to make the device self-locking, the dog 19 may be left off, in which case the services of a switchman as to trains for the side track would be necessary.

It will be especially noted, as before stated, that the arm 8 is free from the lug 7 or any connection with the bar 3. A train, therefore, passing the switch from the rear of same would depress the auxiliary rail and throw the arm 8 in an opposite direction from that already described without affecting the switch. It will be further noted that the auxiliary rail is of sufficient length to cause it to remain depressed during the passage of the entire train.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. A safety railroad-switch having in combination switch-points and a connecting throw-rod, said rod having a projecting portion, a shiftable member having a portion extended into the range of action of the projecting portion of the rod, but devoid of connection therewith, and means actuated by a passing train for shifting said member to cause it to positively engage the projecting member of the rod and close the switch-points.

2. A safety railroad-switch having in combination the switch-points, the switch-rod connected thereto, the switch-lever connected to the rod, said rod having a lug fixed to it, a bell-crank lever pivoted at one side of the rod and having an arm extending to and into the range of action of the rod, and devoid of connection with the rod, and means actuated by an approaching train for rocking the bell-crank to cause its arm to engage the lug of the switch-rod and close the switch-points.

3. A safety railroad-switch having in combination the switch-points, the switch-rod connected thereto, said rod having a lug fixed to it, a switch-lever connected to the rod, a bell-crank lever pivoted at one side of the rod and having an arm extending substantially at right angles to the rod, said arm extending to and resting loosely upon the rod proximate to the lug thereof when the switch is open, and means including an auxiliary rail and connections between the same and the bell-crank lever adapted to rock the latter to cause its arm to engage the lug and move the rod to close the switch-points.

4. In a safety-switch, the combination with the track, the switch-points, the switch-rod, and the switch-lever, of a lug on said rod, an arm engaging said lug, a bell-crank carrying said arm, an auxiliary rail, weighted arms pivotally supporting said auxiliary rail alongside of said track and above said track-rail, and rod connecting said bell-crank and said auxiliary rail, substantially as and for the purposes set forth.

5. In a safety-switch, the combination with the track, the switch-points, the switch-rod, the switch-lever, a lug on said rod, an arm engaging said rod, and means for operating said arm controlled by a train ap-

proaching the point of said switch, of similar
dogs pivoted alongside the rail of the main
track and the siding back of said switch, and
a cord connecting each of said dogs with said
5 switch-rod, substantially as and for the pur-
poses set forth.

In testimony whereof we have hereunto

set our hands in presence of two subscribing
witnesses.

WILLIAM E. CLEVELAND.
FRANCIS J. BYRNE.

Witnesses:

E. L. ROGERS,
M. S. MCGHEE.