

No. 609,436.

Patented Aug. 23, 1898.

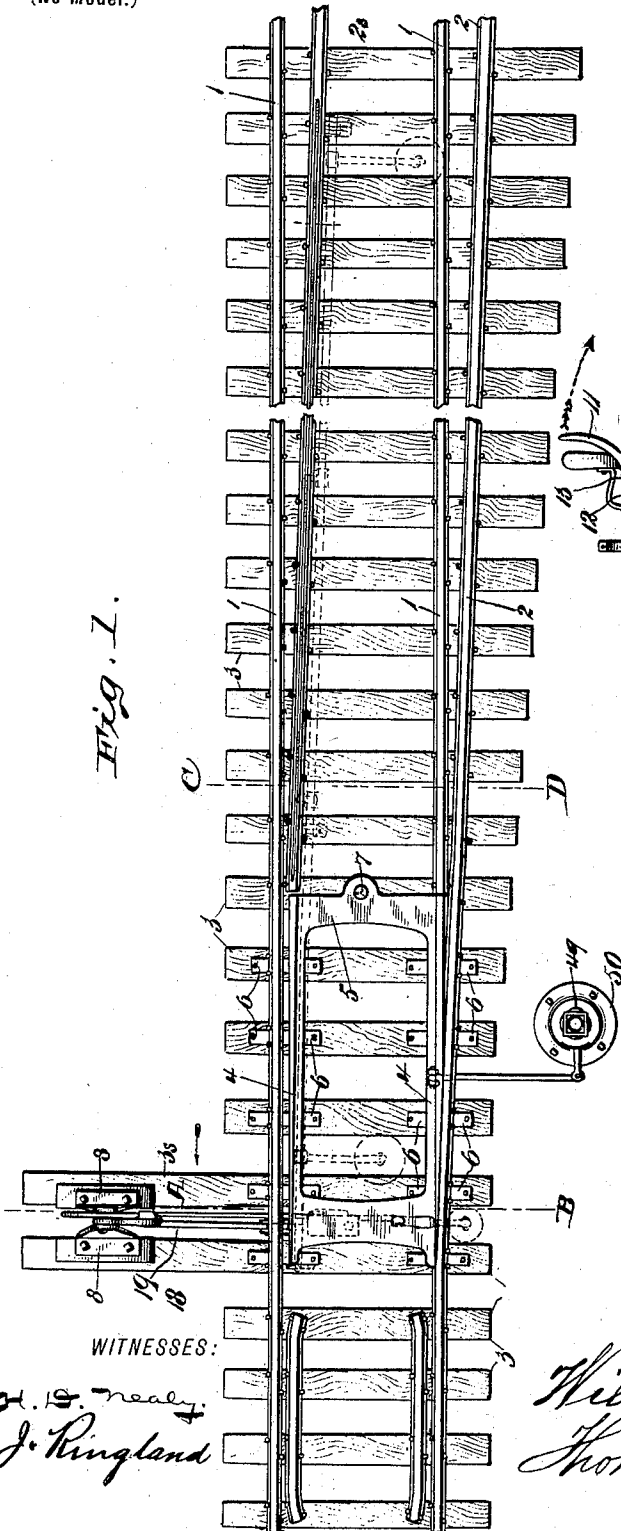
W. H. JACKSON.
AUTOMATIC LOCKING SWITCH.

(Application filed Aug. 2, 1897.)

(No Model.)

2 Sheets—Sheet 1.

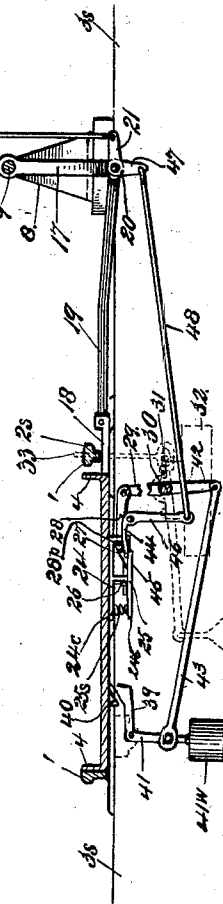
Fig. 1.



WITNESSES:

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Fig. 2.



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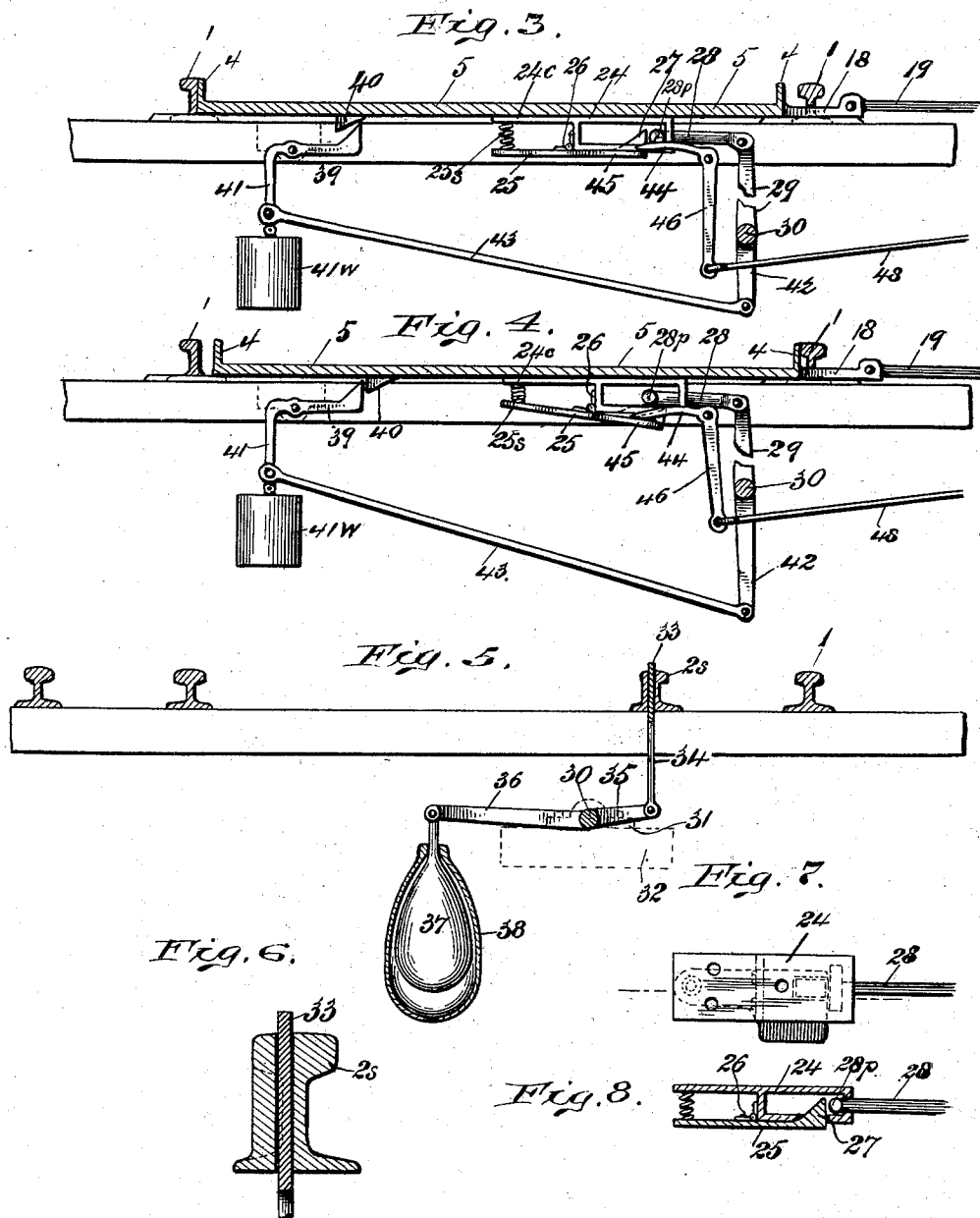
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UNITED STATES PATENT OFFICE.

WILLIAM H. JACKSON, OF INDIANAPOLIS, INDIANA, ASSIGNOR TO HIMSELF
AND WILLIS F. MARTIN, OF SAME PLACE.

AUTOMATIC-LOCKING SWITCH.

SPECIFICATION forming part of Letters Patent No. 609,436, dated August 23, 1898.

Application filed August 2, 1897. Serial No. 646,845. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. JACKSON, a citizen of the United States, residing at Indianapolis, in the county of Marion and State of Indiana, have invented new and useful Improvements in Automatic-Locking Switches, of which the following is a specification.

My invention relates to certain new and useful improvements in automatic-locking switches; and it consists in a novel construction and arrangement of parts hereinafter more fully set forth.

The objects of this my invention are to provide a suitable mechanism whereby the said switch-rails, after having been opened or thrown to permit a car or any number of cars of a train to be shifted to and onto the side track, will be locked automatically in position open to said side track and cannot be released or unlocked to close said switch until the entire train has been either entirely moved off said side track or on said side track, and to provide means whereby the said switch mechanism will be locked automatically to retain said switch-rails closed to said track. I attain these objects by means of the automatic switch-locking mechanism illustrated in the accompanying drawings, in which similar numerals of reference designate like parts throughout the several views.

Figure 1 is a plan view of a railroad-track and a portion of a side track and showing my switch applied thereto. Fig. 2 is a transverse sectional elevational view of the same, taken through the line A B, (see Fig. 1,) looking in the direction of the arrow and showing the switch-rail plate locked to retain the said switch-rails in closed position. Fig. 3 is a similar broken-off enlarged view of the same, showing the switch-rails in same position. Fig. 4 is a similar transverse sectional view of the same, showing the switch-rail plate locked to retain the said switch-rails open to said side track. Fig. 5 is a transverse sectional view of the main and side tracks, taken through the line C D and showing the trip-rail, counterbalancing-shaft, and counterweights. Fig. 6 is a detail transverse sectional view of the side-track rail, showing the slotted portion thereof through which the switch-trip rail slides vertically. Fig. 7 is a detail

plan view of the switch automatic locking device, and Fig. 8 is a detail longitudinal sectional view of the same.

The rails 1 of the main line and the rails 2 of the side track or siding are of the conventional form and are held in place and secured to the ties or sleepers 3 by spikes in the usual and well-known manner. The switch-rails 4 are either formed integral with or are secured on the top surface of the switch-rail plate 5, by which plate said rails are maintained at their gage distance apart, and are moved simultaneously to open or close said switch-rails to said main or side track, as desired, by means of the switch mechanism hereinafter set forth.

The switch-rail plate 5 rests on the bearing-plates 6, which are preferably of plate metal, and said plate is pivoted at its heel or rear end at a point intermediate between the said switch-rails by the pivotal pin 7, secured on one of the ties 3 at a point intermediate between the main-track rails 1.

The main feature of this my invention rests particularly in the construction of my automatic locking device, which I will now proceed to fully describe.

The switch-lever stand 8 is firmly secured on the prolonged ends of the ties 3, and on the pin 9, secured to the top end of and supported by the said switch-stand, the switch-lever is pivoted, said lever provided with a suitable latch-lever 11, pivoted on the end of said switch-lever at or sufficiently near the handle end thereof to be conveniently grasped by the operator, said latch-lever 11, provided with a suitable spring-lock 12, secured on the arm 13, the bolt 14 of which lock is adapted to engage in a slot 15, formed in the segment 16, which latter is secured firmly on said switch-lever. The lower lever-arm 17 of the switch-lever 10 is connected to the arm 18 of the switch-rail plate 5 by a suitable connecting-rod 19. A bell-crank lever 20 is pivoted on the lower end of the arm 17 and has its arm 21 connected to the arm 22 of the latch-lever 11 by the connecting-rod 23. To the under side of the switch-rail plate 5 is firmly bolted or otherwise secured the latch or lock case 24, which is preferably made with open sides for the purpose of preventing water or melted snow collecting or accumulating therein. The

latch or bolt 25 is either pivoted on or hinged to the said latch-case 24 by a hinge 26, which latter is secured to said latch at a point intermediate between the ends thereof and to the rear end of the said latch-case. An engaging or locking tooth 27 is formed integral on the locking end of the said latch 25 and is adapted to contact with or abut the locking end 28^o of the pawl 28 when the said latch 25 is in the position shown in Figs. 2 and 3 and at or near the opposite end of the free arm of the said latch. Between the latter and the prolonged end 24^o of the latch-case 24 I provide the latch-spring 25^a, which operates to move said latch 25 into engagement or locking position when the latter is released or not held in unlocking position by the releasing mechanism herein-after set forth. The pawl 28 projects through the open end of the case 24 and has its opposite or pivotal end pivoted on the top end of the lever 29, which latter is firmly secured on the counterweight-shaft 30 and turns therewith. The counterweight-shaft 30 is journaled in suitable journal-bearings 31, which latter may be either firmly secured to the under sides of the ties 3 or to any suitable bed or foundation-plate, as the plate 32, (see Fig. 2,) secured in the ground beneath the level of said ties. One of the side-track rails, as 2^a, has its web enlarged or thickened up, as shown in Fig. 6, and is slotted longitudinally to permit the trip-rail 33 to work freely therein in a vertical direction therethrough. A series of connecting-rods 34 are arranged at certain intervals apart along the said trip-rail 33 and are provided for the purpose of connecting the said trip-rail to the levers 35, which latter are firmly secured on the counter-shaft 30 and turn therewith. A series of counterweight-levers 36 are secured on said counterweight-shaft 30, and suspended from the free ends thereof are the counterweights 37, which latter are inclosed in suitable inclosing casings 38, which are firmly embedded in the ground. (See Fig. 5.) A bell-crank locking-lever, which may be pivotally secured to the side of one of the ties 3, is provided with the locking-arm 39, which latter is adapted to engage the tooth 40, which is either formed integral on or is secured to the under side of the switch-rail plate 5, said tooth 40 provided for the purpose of forming a stop to maintain the switch-rail plate 5 in position to maintain the switch-rails 4 open to the side track. (See Fig. 4.) The depending arm 41 of the said bell-crank lever is connected to the depending lever-arm 42, secured on the counterweight-shaft 30 by a suitable connecting-rod 43, said lever 42 being preferably much shorter than the lever-arm 41 for the purpose of causing a less rapid movement of the bell-crank lever-arm 39 to prevent the latter ascending into engagement with the tooth or stop 40 when the switch-rail plate 5 is automatically operated to close the switch-rails 4 to the side track and open the said rails to give a clear main track, which movement is caused by means of the

counterweighted shaft 30, which operates through its connecting mechanism immediately the trip-rail 33 thereof is released. I suspend a suitable counterweight 41^v to the depending arm 41 of the said bell-crank locking-lever to secure the prompt upward movement of the locking-arm 39 of said lever, and such weight becomes particularly useful when the joints of the parts become loose by wear to produce lost motion.

The latch-releasing or unlocking mechanism consists of a bell-crank lever which is pivoted to the side of one of the ties 3^a, which bell-crank lever has its releasing or unlocking arm 44 adapted to engage the latch-lug 45, formed integral on the latch 25 for the purpose of pressing said latch downwardly out of engagement with the end of the pawl 28^o, said bell-crank lever having its depending arm 46 connected to the depending arm 47 of the bell-crank lever, hereinbefore referred to, pivoted on the lower end of the switch-lever arm 17 by the connecting-rod 48. Thus as the latch-lever 11 is grasped by the hand of the operator simultaneously with the act of grasping the handle of the switch-lever 10 the said latch-lever is moved to impart motion to the arm 46 of the releasing-arm 44 to release the said latch-tooth 27 by depressing said latch 25, as previously described, which accomplished the switch-plate 5 may be moved directly by means of the switch-lever 10 into the position shown in Fig. 4—that is, open to the side track—in which position said plate is securely locked and held by the locking-arm 39, as shown.

A suitable signal-lamp 49 is pivotally mounted on a signal-stand 50, which signal-lamp is turned and operated simultaneously with the movement of the switch-rail plate 5, to which said pivotal support of said lamp is connected by suitable mechanism well-known and applicable in cases of this kind and needs no special description.

The operation of this my invention will be readily understood from the following description: The key to the spring-lock 12 is first applied to release the locking-bolt 14 from the segment 16, which permits the free movement of the latch-lever 11, which movement of the latter operates to cause the lever-arm 44, through the connecting mechanism by which motion is transmitted from said lever 11 to said lever 44, to depress the latch 25 to release and retain released the locking-tooth 27 from the end 28^o of the pawl 28, thereby permitting the free movement of the switch-lever 10 in the direction of the arrow shown in dotted lines in Fig. 2, by the movement of which lever the switch-plate 5 and the switch-rails 4 thereof are moved into the position shown in Fig. 4—that is, the switch is opened to receive the train on the side track 2, as previously described, and the said switch is held in such position by the locking-arm 39. The wheels of a car or train of cars in moving over the switch-rails 4 to

and onto the side-track rails 2 press down the trip-rail 33 to its lower position, and said rail is retained in such position as long as any of the wheels of the cars rest thereon.

5 Simultaneous with the movement of depression of the trip-rail 33 a movement of rotation is transmitted to the counterweight-shaft 30 through the trip-rail rod 34 and the lever 35, by which movement of rotation the pawl 28 is moved into the position shown in the detail Fig. 8, at which position of said pawl the latch 25 ascends to cause the tooth 27 thereof to engage the end 28^a of the pawl 28. While said pawl 28 is in said position the arm 39 is depressed to its lower position and out of engagement with the tooth 40 of said switch-rail plate 5, and immediately said trip-rail 33 is released the said switch-rail plate 5 is moved into its former position, as shown in Fig. 20 3. It will be readily understood that when the wheels of the train have all passed over and off the said trip-rail 33 unto the side tracks 2 the said trip-rail is released of all pressure, which circumstance permits the counterweights 37 to exert their force of gravity through the levers 36 to the counter-shaft 30 to cause a rotation of the same and to operate the switch automatically, as previously described.

30 Having thus fully described the operation and construction of this my invention, what I claim as new and useful, and desire to cover by Letters Patent of the United States therefor, is—

35 1. In an automatic-locking switch, the combination with a switch-rail plate pivotally secured between the rails of a track, of a side-track rail, having a longitudinally-extending slotted portion, a trip-rail fitted in said slot, 40 a latch, a pawl, means whereby said latch is automatically operated to engage said pawl, and whereby power is applied automatically to said pawl to move said switch-rail plate into normal position.

45 2. In an automatic switch, the combination

with a switch-rail plate pivotally secured between the rails of a track, of a side-track rail having a longitudinally-extending slotted portion, a trip-rail in said slot and projecting above the surface of said side-track rail, a 50 shaft beneath said rail, opposing horizontally-extending levers on said shaft, counterweights on one of the series of levers, and suitable connecting-rods connecting said trip-rail and the other series of levers, a pawl 55 lever on said shaft, a pawl pivoted on said lever, and means whereby said pawl is automatically engaged to said switch-rail plate to move the same when said trip-rail is released.

3. In an automatic switch, the combination 60 with a switch-rail plate pivotally secured between the rails of a track, of a switch-lever, a rod connecting said lever and said switch-rail plate, a pawl, a pawl-engaging latch, a latch-releasing lever, a switch-latch lever on 65 said switch-lever, suitable means whereby said latch-lever and releasing-lever are connected, and means for automatically moving said switch-rail plate when released, all substantially as and for the purpose set forth. 70

4. In an automatic switch, the combination with a switch-rail plate, pivotally secured between the rails of a track of a suitable switch-lever, a rod connecting said lever and said switch-rail plate, a pawl, a pawl-engaging 75 latch, a latch-releasing lever, a suitable latch-lever on said switch-lever, suitable means for connecting said latch-lever on said switch-lever to said releasing-lever, and a gravity-actuated lever-arm adapted to engage said 80 switch-rail plate, all substantially as set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILLIAM H. JACKSON.

Witnesses:

THOMPSON R. BELL,
WILLIS F. MARTIN.