

bar having the inner ends of its parts slotted, a plate telescoping with said slotted ends, and having its end portions formed with longitudinal slots, pins, or like fastenings, connecting the ends of the switch bar parts with the slotted ends of the said plate, and locking pins adapted to secure the said plate and the parts of the switch bar in firm relation, substantially as and for the purpose set forth.

3. The herein shown and described train-operated lever, having its operative end bent upward at approximately a right angle, and provided with an outwardly-extending flange to prevent accidental disengagement of the train-operating bar therefrom, substantially as set forth.

4. In a railroad switch, the combination of the movable switch rails, a sectional switch bar connected therewith, a switch plate, and a hand-operated lever connected with the respective parts of the said switch bar, a plate having its end portions slotted and telescoping with the opposing ends of the switch bar section, and having connection therewith by

means of pins, or like fastenings, operating in the slots of the said plate, locking pins rigidly connecting the said plate and the switch bar sections, train-operated levers connected with the said locking pins, train-operated switch levers, and connections between said train-operated switch levers and the switch plate, said connections having their inner ends separated and having a sliding connection with the switch plate on opposite sides of its pivotal support, whereby after operating either of the said switch levers the switch plate will be subjected to an equal force on each side of its pivotal support, whereby the movable switch rails will be maintained in alignment with the rails of the main track, substantially as set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

BENJAMIN F. LOUGHMILLER.

Witnesses:

W. P. SMITH,
A. F. PRICE.

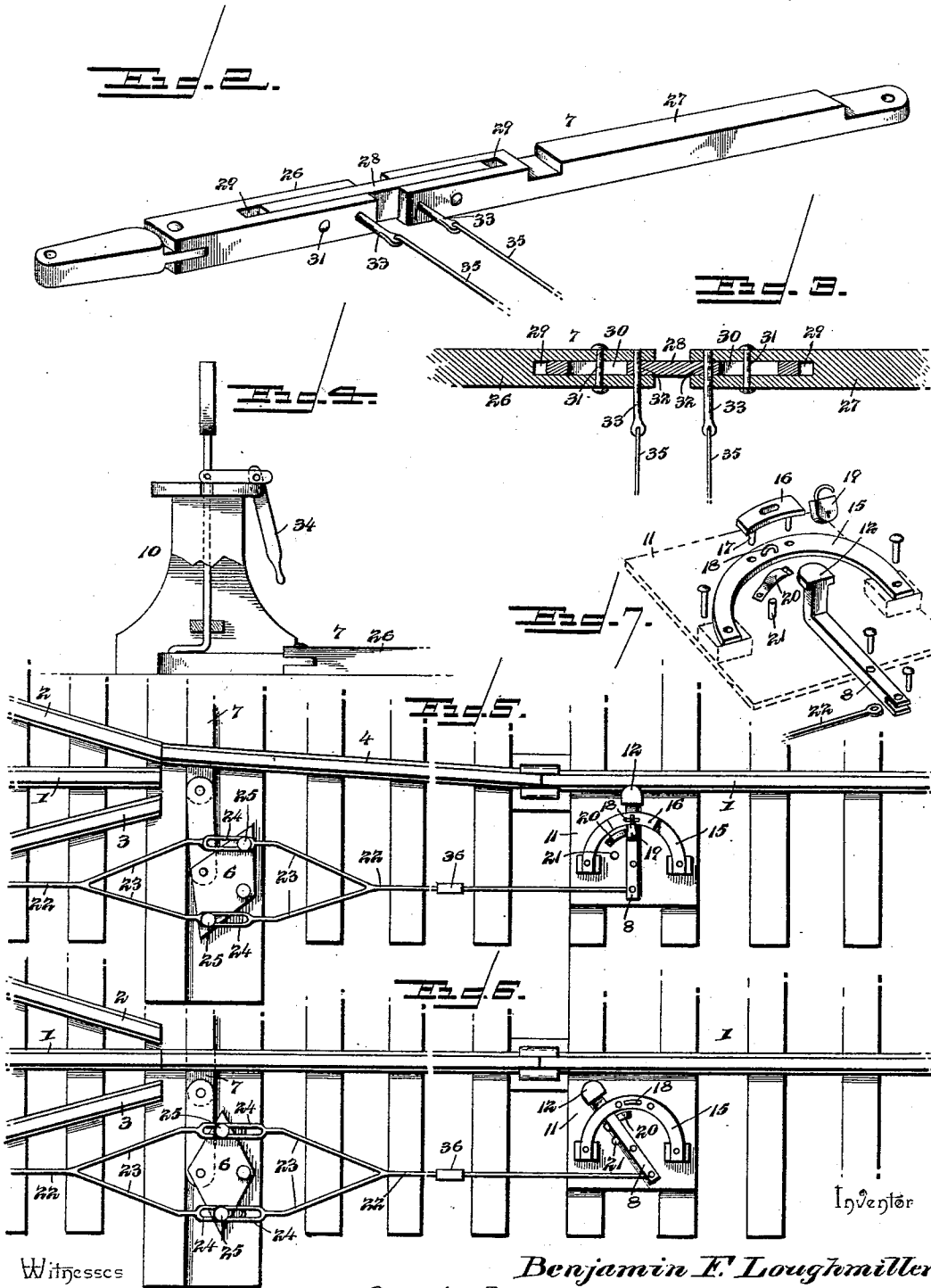
(No Model.)

2 Sheets—Sheet 2.

B. F. LOUGHMILLER.
RAILROAD SWITCH.

No. 551,218.

Patented Dec. 10, 1895.



Inventor

Benjamin F. Loughmiller

By *W. B. Hillyard* Attorneys.

W. B. Hillyard

Witnesses

E. H. Stewart
W. B. Hillyard

UNITED STATES PATENT OFFICE.

BENJAMIN F. LOUGHMILLER, OF ASPEN, COLORADO, ASSIGNOR OF ONE-HALF
TO A. J. ROBINSON AND A. S. LAMB, OF SAME PLACE.

RAILROAD-SWITCH.

SPECIFICATION forming part of Letters Patent No. 551,218, dated December 10, 1895.

Application filed March 28, 1895. Serial No. 543,487. (No model.)

To all whom it may concern:

Be it known that I, BENJAMIN F. LOUGHMILLER, a citizen of the United States, residing at Aspen, in the county of Pitkin and State of Colorado, have invented a new and useful Railroad-Switch, of which the following is a specification.

The purpose of the present invention is to improve that class of railroad-switches in which the switch-rails are actuated in an emergency to close the switch and prevent derailment of an approaching train, and is designed particularly as an improvement on the switch for which Letters Patent of the United States were granted me November 13, 1894, No. 529,126. The switch disclosed in said patent is adapted to be used in connection with a single siding.

The purpose of the improvement is to devise a switch similar in operation to the switch illustrated in my previous patent, and which will operate in connection with two oppositely-disposed sidings, thereby adapting the invention to what may be termed a "three-throw" switch.

One of the vital features of the present improvement is to obviate the jar and strain upon the switch-operating lever when the switch is actuated by an approaching train. To this end a specially-constructed joint comprising telescoping parts is provided, which will be described more fully hereinafter.

Another essential feature of the invention is to provide connections between the switch-plate and the train-operated switch-levers, whereby on the closing of the switch by an approaching train said switch will be held in closed relation by a strain which is equally divided upon the opposite ends of the switch-plate, thereby preventing any possible opening or displacement of the switch when the latter is brought into working position by means of an approaching train.

The improvement consists, essentially, of the novel features and the peculiar construction and combination of the parts which hereinafter will be more fully described and claimed, and which are shown in the accompanying drawings, in which—

Figure 1 is a plan view of a three-throw switch having the invention applied thereto.

Fig. 2 is a detail view of the switch-bar. Fig. 3 is a detail view in section of the joint between the component parts of the switch-bar. Fig. 4 is a detail view of the switch-stand, showing the connection between the hand-operating lever and the switch-bar. Fig. 5 is a detail view of the switch-plate, showing the relative position of the connecting-rods when the switch is open. Fig. 6 is a view similar to Fig. 5, showing the position of the parts when the switch is closed. Fig. 7 is a detail view of one of the train-operated switch-levers and the means for locking the same, detached. Fig. 8 is a detail view in side elevation of one of the train-operated switch-levers.

Referring to the drawings, the numeral 1 represents the main track, 2 and 3 sidings, 4 the pivoted switch-rails, 5 the frogs, 6 the switch-plate, 7 the switch-bar, 8 the train-operated switch-levers, 9 the train-operated levers for unlocking the switch-bar joint, and 10 a switch-stand, all of well-known construction and arrangement.

The train-operated switch-levers 8 and unlocking-levers 9 are of similar construction, and a description of one will be sufficient. These levers are pivoted near one end to a tie or plate 11, secured alongside of the tracks at a convenient point, and have their opposite ends bent upward and provided with flanged extensions 12, to be engaged by an operating-bar 13, provided on the front end of an engine 14 and under the control of the engineer, so as to be brought into operative relation when it is required to close the switch. A segment 15 is secured at its ends to the plate 11, and the train-operated lever works between the plate 11 and the said segment 15, and is locked in the required position by means of a plate 16 having depending pins 17 to pass through corresponding openings in the segment 15 and lie upon opposite sides of the said train-operated lever. This plate 16 is apertured for the passage of a staple 18 upon the segment 15, so as to receive a lock 19, by means of which the parts are secured against tampering by mischievous persons. The pins 17 are adapted to be broken when the train-operated lever is struck by the operating-bar 13, so as to admit of the closing

of the switch. A spring 20 is provided for holding the train-operated levers in place after having been adjusted to the closed position, so as to prevent displacement of the switch-rails by vibratory motion when the locking devices 16 and 19 are not in place. The throw of the train-operated levers is limited by a stop-pin 21 projecting vertically from the plate 11.

The switch-plate 6 is substantially diamond-shaped, and is pivoted to a suitable base at one of its obtuse angles, the switch-bar 7 having pivotal connection with the opposite obtuse angle. The train-operated switch-levers 8 are similarly connected to the acute-angled ends of the switch-plate 6 by means of rods 22, each having a forked end 23, the separated parts 24 of which are slotted to receive pins 25 secured at the acute angles of the switch-plate 6.

For the sake of economy of construction, the form of rod just described is preferred. Obviously the same results would be attained by extending the separated parts 24 back to, and connecting each directly with, the train-operated switch-levers.

The switch-bar comprises two parts 26 and 27, which are connected by means of a plate 28, the latter having its end portions entering slots 29 in the opposing ends of the parts 26 and 27. Slots 30, provided in the end portions of the plate 28, receive pins 31, by means of which attachment is had between the respective parts of the switch-joint and the plate 28. Openings 32 in the plate 28 register with corresponding openings in the parts of the switch-joint and receive locking-pins 33, by means of which the parts 26, 27, and 28 are secured in locked relation, so that the switch-bar will move as a unit when actuated by means of the hand-lever 34 when it is required to throw the switch in either of its three positions. These locking-pins 33 are connected with the train-operated levers 9 by means of rods 35, or any suitable means whereby when the said levers 9 are actuated the locking-pins will be withdrawn, so as to admit of the main portion of the switch-bar being actuated without transmitting any jar or shock to the switch-stand and the parts connected therewith.

The train-operated levers and the train-operated unlocking-levers will be suitably disposed along the length of the main track, and in such relation so that in an emergency the unlocking-levers will be actuated in advance of the switch-levers, so as to release the switch-bar joint prior to the throwing of the switch to close the latter in the event of its being open when a train is approaching from either direction on the main track.

Assuming that the switch is open and the hand-lever 34 locked, and that a train is approaching the switch from either direction on the main track, the operation will be as follows: The operating-bar 13 on the engine being thrown into operative relation will en-

gage first with the lever 9 and actuate it so as to withdraw the locking-pin 33, and in an instant thereafter will engage with the lever 8 and pull upon the rod 22 and close the switch. When the rod 22 is pulled upon to close the switch, the strain will be equally divided upon the switch-plate 6 by means of the separated parts 24, thereby holding the switch in closed relation and insuring the proper alignment of the switch-rails with the rails of the main track. The flanged extensions 12 of the train-operated levers hold the operating-bar in engagement with and prevent its riding over the ends of the said levers, with which it makes engagement when throwing the switch. The several connecting-rods will be provided with the ordinary turnbuckle 36, by means of which any slack in the said connections may be compensated for in the usual manner. It must be remembered that in the event of the train-operated lever being locked the pins 17 will be broken when the said lever is actuated by means of a passing train.

By having the plate 28 telescope with the parts 26 and 27 of the switch-bar the ends of the latter parts will be held in alignment when the said switch is thrown by means of an approaching train, and all strain and shock will be relieved from the switch-stand and the parts immediately connected therewith. By connecting the train-operated switch-levers to the switch-plate 6 on opposite sides of its pivotal connection the switch when closed by means of a train will be held in such position beyond the possibility of its being thrown a little too far or not far enough, so as to align with the rails of the main track. Thus jumping of the track by the train is obviated and perfect safety assured.

In adapting the invention to the different styles of switches now in use, it is obvious that changes in the form, proportion, and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of this invention.

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

1. In a railroad switch, the combination with the movable switch rails, a switch plate, and a train-operated lever having connection with the said switch plate, of a sectional switch bar having one part connected with the switch plate, a hand-operated lever connected with the other part, a plate telescoping with the opposing ends of the switch bar parts, and having its end portions slotted to receive pins, or similar fastenings, passing through the said respective parts, locking pins rigidly connecting the plate and the ends of the switch bar parts, and train-operated levers connected with the said locking pins, substantially as and for the purpose set forth.

2. In a railroad switch adapted to be closed by an approaching train, the combination with the movable switch rails, of a sectional switch

bar having the inner ends of its parts slotted, a plate telescoping with said slotted ends, and having its end portions formed with longitudinal slots, pins, or like fastenings, connecting the ends of the switch bar parts with the slotted ends of the said plate, and locking pins adapted to secure the said plate and the parts of the switch bar in firm relation, substantially as and for the purpose set forth.

3. The herein shown and described train-operated lever, having its operative end bent upward at approximately a right angle, and provided with an outwardly-extending flange to prevent accidental disengagement of the train-operating bar therefrom, substantially as set forth.

4. In a railroad switch, the combination of the movable switch rails, a sectional switch bar connected therewith, a switch plate, and a hand-operated lever connected with the respective parts of the said switch bar, a plate having its end portions slotted and telescoping with the opposing ends of the switch bar section, and having connection therewith by

means of pins, or like fastenings, operating in the slots of the said plate, locking pins rigidly connecting the said plate and the switch bar sections, train-operated levers connected with the said locking pins, train-operated switch levers, and connections between said train-operated switch levers and the switch plate, said connections having their inner ends separated and having a sliding connection with the switch plate on opposite sides of its pivotal support, whereby after operating either of the said switch levers the switch plate will be subjected to an equal force on each side of its pivotal support, whereby the movable switch rails will be maintained in alignment with the rails of the main track, substantially as set forth.

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