(No Model.)

# M. MILES.

## RAILROAD SWITCH.

No. 345,440. Patented July 13, 1886.

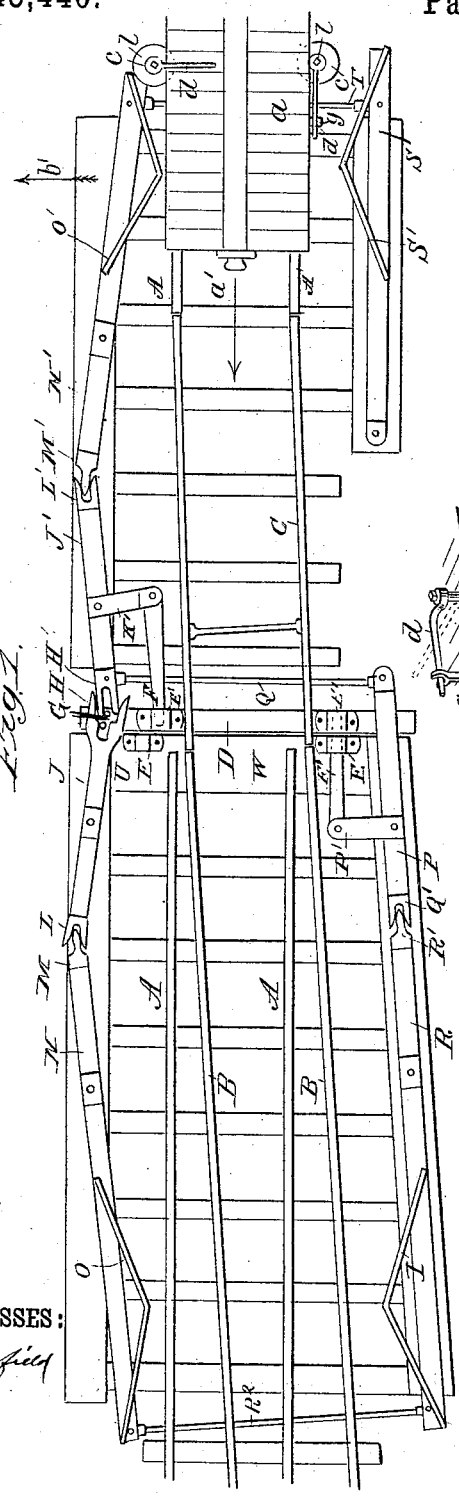

Fig. 1.

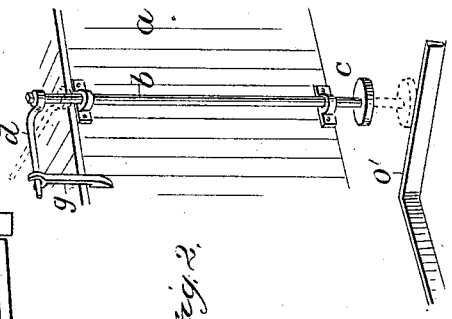

Fig. 2.

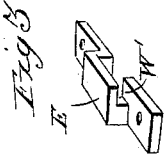

Fig. 3.

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## RAILROAD-SWITCH.

SPECIFICATION forming part of Letters Patent No. 345,440, dated July 13, 1886.

Application filed September 25, 1885. Serial No. 178,155. (No model.)

*To all whom it may concern:*

Be it known that I, MANOAH MILES, of Russell, in the county of Russell and State of Kansas, have invented a new and Improved Railroad-Switch, of which the following is a full, clear, and exact description.

The object of my invention is to provide a new and improved railroad-switch which can be set and shifted automatically by the cars, the cars being provided with automatic devices for shifting the switch.

The invention consists in the construction and combination of parts and details, as will be fully described and set forth hereinafter.

Reference is to be had to the accompanying drawings, forming part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a plan view of my improved railway-switch. Fig. 2 is a perspective view of part of the side of a car, showing the device for operating the switch. Fig. 3 is a detail perspective view of the pocket for the locking-bolt.

A are the main-line rails, B the siding-rails, and C the swinging switch rails or tongues resting on and connected with the sliding switch-bar D, provided on its upper surface and at the ends with the pockets E E′, for receiving the locking-bolts F F′. The bar D is provided at one end with the upwardly-projecting pins G, which are located between the prongs of two forks, H H′, formed on the ends of levers J J′, pivoted to swing in the horizontal plane. The lever J′ has an arm, K′, on which the bolt F is pivoted.

To prevent the locking-bolts F F′ from binding in the pockets in unlocking the switch, it is necessary that they be withdrawn from the pockets before the switch-bar is moved. To permit this, the fork of the lever J′ is to be of such a size that the lever will be moved a sufficient distance to operate the said locking-bolts before the fork engages the pin on the sliding switch-bar D. The levers J J′ have forked ends L L′, into which prongs M M′ on the ends of levers N N′ pass, which are pivoted to swing in the horizontal plane. The levers N N′ are provided with bevel or angle pieces O O′, projecting from their upper surfaces. A lever, P, pivoted to swing in the horizontal plane, has one end connected by a rod, Q, with the lever J′, and on its farther end a fork, Q′, is formed, into which a prong, R′, on the end of the lever R, passes, connected by a rod, $R^2$, with the lever N. The lever R also carries a bevel or angle piece, I. A lever, S, pivoted to swing in the longitudinal plane, has a bevel or angle piece, S′, and is connected by the rod T with the lever N′. The bolt F is pivoted on an arm, P′, of the lever P. Pockets E are secured on the sleeper W, as shown.

On each side of the car *a* a vertically-sliding shaft, *b*, is mounted, on the lower end of which a roller, *c*, is mounted. The upper end of the shaft is provided with a handle-arm, *d*. A forked piece, *g*, for receiving the end of the arm *d* and holding the shaft *b* raised, projects from the roof of the car. One locking-bolt is always in a pocket, E, on the sleeper, and the other bolt, F, is in the pocket E′ on the switch-bar. The pocket E′ on the switch-bar opposite that pocket E on the sleeper in which the bolt F′ is at all times is provided with a slit, W′, in its side. The other pocket, E, on the sleeper adjacent to that pocket E′ on the switch-bar D is also provided with a slit, W′, the slits being of such size that the flattened ends of the bolts can pass through them.

The operation is as follows: As shown in the drawings, the switch-tongues are set to run a train on the siding-rails B. The car *a* runs in the direction of the arrow *a′*, Fig. 1, and the disk *c*, which is lowered, strikes the bevel of angle O′ and moves the same in the direction of the arrow *b′*, Fig. 1, thereby moving that end of the lever J′ acted upon by the lever N′ in the inverse direction of the arrow *b′*, and the switch-bar D is moved in the direction of the arrow *b′*, whereby the ends of the tongues C are shifted from the ends of the siding-rails B, to register with the ends of the main-line rails A. At the same time the rods N and J are moved, as they are acted upon by the switch-bar, and the bars P and R are moved, as the bar P is connected with the bar J′ by the rod Q. By the above-described movements of the bars J and P the bolt F′ is withdrawn from the pockets E and E′, which registered before the switch-bar was shifted, and the bolt F is passed into the pockets E and E′, which register after the switch-bar has been

shifted. The switch-bar is thus unlocked automatically before it is shifted, and is locked in place automatically after it has been shifted. When a train runs in the direction of the arrow *a'* and the switch is set for the main line, the angle-piece S' is in relatively the same position as that which the angle-piece O' has in Fig. 1. The disk *c* on the other side of the car then strikes the angle-piece S', whereby it and the lever N', connected with it, are moved in the inverse direction of the arrow *b'*. The adjacent ends of levers J' and N' are moved in the direction of the arrow *b'*, and the bar D is moved in the inverse direction of the arrow *b'*, whereby the tongues C are shifted from the main-line rails to the siding-rails and are brought into the position shown in the drawings.

In case the train runs on the main line A in the inverse direction of the arrow *a'*, and the spring-tongues are set as shown in the drawings—that is, so that they register with the siding-rails B—one disk, *c*, strikes the angle-piece O and moves the same and the bars N and R, connected by the rod $R^2$, in the direction of the arrow *b'*, whereby the adjacent ends of the bars N and J are moved in the inverse direction of the arrow *b'*, and the switch-bar D is moved in the direction of the arrow *b'*, whereby the tongues are shifted to register with the main rails. In case a train runs on the siding in the inverse direction of the arrow *a'* and the switch-tongues are set to register with the main-line rails, one of the disks *c* strikes the angle-piece I and moves the levers R and N, connected by the rod $R^2$, in the inverse direction of the arrow *b'*, whereby the adjacent ends of the levers N and J are moved in the direction of the arrow *b'*, and the tongues C are moved to register with the siding-rails. In all cases the car adjusts the switch automatically, and it is almost impossible for a mistake to be made. The pockets E and E' must be slit in the manner set forth, so that the ends of the bolts can enter the other pocket before the pockets register—that is, when the edge of the end piece of one pocket is against the opening of the other the bolt shoots forward and passes through the slit, and when the switch-bar D completes its lateral movement the end of the bolt will be in the pocket on the switch-bar and is then moved forward to the end of the pocket. As the slits W' do not extend the entire length of the sides of the pockets, the bolts and pockets will not be disengaged by a movement of the switch-bar in the direction of its length, and the bolts can easily be withdrawn by movement direct from the bars with which they are connected.

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

1. In a railway-switch, the combination, with the main rails, siding-rails, switch-tongues, and a sliding bar, to which the said tongues are connected, of a system of levers for operating the sliding bar, arranged outside and along the track, and sliding locking bolts pivoted to laterally-projecting arms of said levers, and adapted to be operated in advance of the sliding bar, substantially as herein shown and described.

2. In a railway-switch, the combination, with the main rails, the siding-rails, switch-tongues, and a sliding bar provided with pins at one end, of pivoted levers having forked ends for receiving the pins of the switch-bars, a series of levers engaging said levers, having forked ends, sliding locking-bolts, and intermediate mechanism for connecting the sliding bolts to one of the said levers that engage the switch-bar, substantially as herein shown and described.

3. In a railroad switch, the combination, with a switch-bar, of pockets on the same, fixed pockets adjacent to the pockets on the switch-bar, sliding bolts which can be passed through the pockets, the said pockets having slits in the sides through which the bolts can enter, substantially as herein shown and described.

4. In a railroad-switch, the combination, with the main and siding rails and the swinging tongues, of the switch-bar, on which the tongues are secured, levers pivoted to swing in the horizontal plane and operated from the switch-bar, bolts pivoted on the arms of said levers, pockets on the sleeper adjacent to the switch-bar, and pockets on the switch-bar, into which pockets the bolts are passed, and of a series of levers connected with and operated by the above-mentioned levers, the latter levers having angular lateral projections on their upper surfaces, substantially as herein shown and described.

5. In a railway-switch, the combination, with the main rails, the siding-rails, switch-tongues, and a sliding bar, to which the switch-tongues are connected, having pins G, of the levers J J', having forked ends, the levers N N', the lever S, connected to the lever N', the lever R, connected to the lever N, the lever P, connected to the lever J', the projections O O' I S', the pockets E E', and the locking pivoted bolts F F', connected to the levers J' and P, respectively, substantially as herein shown and described.

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