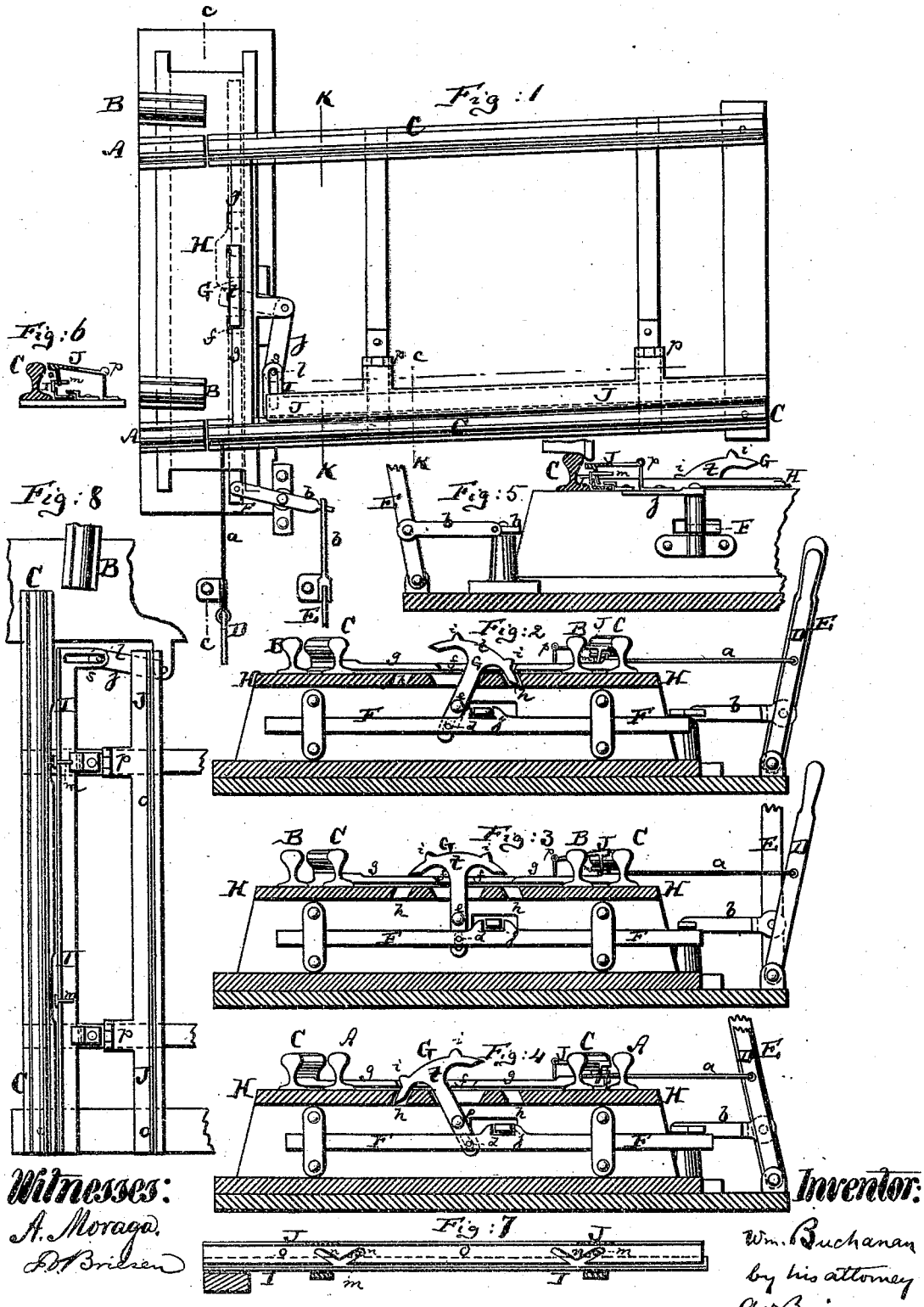
W. BUCHANAN.

RAILROAD SWITCH.

No. 180,539. Patented Aug. 1, 1876.



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UNITED STATES PATENT OFFICE.

WILLIAM BUCHANAN, OF YONKERS, NEW YORK.

IMPROVEMENT IN RAILROAD-SWITCHES.

Specification forming part of Letters Patent No. **180,539**, dated August 1, 1876; application filed June 26, 1876.

To all whom it may concern:

Be it known that I, WILLIAM BUCHANAN, of Yonkers, in the county of Westchester and State of New York, have invented a new and Improved Railway-Switch, of which the following is a specification:

Figure 1 represents a top view of my improved railway-switch and actuating mechanism. Figs. 2, 3, and 4 are vertical transverse sections of the same on the line *c c*, Fig. 1, showing the parts in different positions. Fig. 5 is a vertical transverse section on the line K K, Fig. 1. Fig. 6 is a detail transverse section on the line C K, Fig. 1; Fig. 7, a detail inner face view, partly in section, of the mechanism applied to one of the switch-rails. Fig. 8 is a top view of the switch-rail, showing the adjustable guard-plate folded back to expose the devices underneath.

Similar letters of reference indicate corresponding parts in all the figures.

This invention relates to a new mechanism for moving and locking the points or switch-rails of railway-tracks, and for preventing accidents to trains or vehicles that pass or are about to pass over switches.

The invention consists in a novel locking mechanism, of which the principal characteristic is a T-shaped lever or locking-bolt, and also in a peculiar rail-guard, which prevents the unlocking of the switch after a train or car has come in line with said guard, all as hereinafter more fully described.

In the accompanying drawing, the letter A represents part of the main track; B part of the side track, and C the switch of a railway-track. D is the switch-moving lever, connected with the switch by a suitable rod or rods, *a*. E is the locking and unlocking lever, pivoted to a stationary support in line with the lever D, and connected directly, or by suitable intermediate link or links *b*, with a sliding rod, F, that extends across the plane of the switch, as indicated in Figs. 2, 3, and 4. This rod F connects by a pin, *d*, with the end of a T-shaped bolt, G, as clearly shown, in such manner that by sliding the rod F in the direction of its length the bolt G will be vibrated on its pivot *e*, and brought into the several positions which are indicated in Figs. 2, 3, and 4. The bolt G is, by the pin *e*, pivoted to a stationary support. The pin *d* passes through a slot of the bolt to permit the vibration thereof, in the manner stated. The upright shank of the bolt G extends through a slot or recess, *f*, which is formed in one of the ties or cross-bars, *g*, of the switch, the upper cross-bar *t* of the T-bolt G being longer than said recess or slot, as indicated in Fig. 3. The upper cross-bar of the T-bolt is rounded near the ends, as shown, to enable it to properly enter the recess *f*. When the bolt G is inclined, as in Figs. 2 and 4, so that one of the ends of its upper cross-bar enters the recess *f*, and, if desired, also a slot, *h*, in a lower bed-piece, H, the tie *g*, and with it the entire switch, will be locked; but when, by a movement of the lever E, the bolt G is brought into the position shown in Fig. 3—that is, with its cross-bar entirely above or clear of the tie *g*—the switch will be free to move. The pivots of the levers D E being in line, and the connecting-rods of the proper length, so that the two levers D E will also be in line with each other whenever the switch is properly locked, as in Figs. 2 and 4, their position to that effect will always inform the switch-tender that the switch is properly locked. Whenever the levers are not in line the switch is not locked.

In operating the switch to bring it, for example, from the position shown in Figs. 1 and 2 into the position shown in Fig. 4, the locking-lever E is first moved to so swing the bolt G that the same will unlock the switch. This position of lever E and bolt G is clearly shown in Fig. 3. The lever D can now be used to move the switch into the desired position, and thereupon the lever E is again moved to lock the switch in the new position, as shown in Fig. 4.

I have shown the bolt G in a vertical position; but it will operate with substantially the same effect in a horizontal, inclined, or reversed position.

With the mechanism above described the misplacing of a switch will be rendered nearly impossible, as the switch cannot be moved without first being unlocked, and as the relative positions of the levers D and E must always inform the attendant whether or not the switch is properly locked.

Suitable stops *i i* are formed on or in the way of the bolt G, to terminate the respective

locking motions. These stops may, however, as well be placed in the way of the lever E, or of a projection of the rod F. The rod F of the locking mechanism is also connected with a bell-crank, *j*, which has a projecting crank-pin, *l*, that enters a slotted lug, *s*, projecting from a sliding plate, I. This plate I is placed against the inner side of one of the switch-rails, and may extend beyond the end of said rail, along the contiguous rail of the track with which the switch is permanently connected. Whenever the lever E is moved to unlock or lock the switch-sliding motion is imparted to the plate I in the direction of the length of the switch-rail.

In place of the connecting mechanism F *j l*, other equivalent devices may be used to join the locking-lever E to the plate I, for sliding said plate by vibrating said lever.

The plate I is made with one or more horizontally-projecting pins, *m*, which extend into V-shaped slots or grooves *n*, that are formed in the vertical flange *o* of a plate, J. Said plate J extends also along the switch-rail, or beyond the same, as stated with reference to the plate I, and is hinged at *p p* to lugs that project from the cross-ties of the switch or from the sleepers of the track proper. On its hinges the plate J is capable to swing up and down. In its highest position it will be about flush with the top of the rail near which it is placed, as indicated in Figs. 3 and 6. In its lower position it will be so far below the treading-face of the rail as to be cleared by the flanges of the wheels, as indicated in Fig. 5. Now, the arrangement of the pins *m* and slots *n* is such that the plate J will be raised, as in Fig. 6, whenever the switch is unlocked, and lowered, as in Fig. 5, whenever the switch is locked. The consequence is that said plate J will prevent the unlocking of the switch in case a train or car is on the same, as in that case the flanges of the wheels will prevent the elevation of the plate J, and thereby also the unlocking of the switch. The unlocking being prevented, it follows that the switch cannot be moved while a train is on the same, and thus, by said plate J and its connection with the unlocking-lever, I prevent the disastrous dividing of trains on switches which has frequently occurred. A negligent attendant cannot move my switch while a train is passing over or standing on the same, and can therefore not cause the rear cars to go to the track B when the front cars of the same train have gone to the track A, or vice versa.

In case the plate J is placed along the stationary rail of the main track, the unlocking of and interference with the switch is prevented as soon as the train has arrived near the switch.

I claim as my invention—

1. The combination of the pivoted bolt G, carrying a locking cross-piece, with the slotted or recessed cross-bar *g* of a railway-switch, substantially as herein shown and described.

2. The combination of the switch-lever D with the locking-lever E, rod F, and T-shaped bolt G, all arranged so that the relative positions of said levers will indicate the locked or unlocked condition of the switch, substantially as specified.

3. In combination with the vibrating bolt G, which serves to lock the railway-switch, the stops *i i*, applied to limit the motion of said bolt, substantially as set forth.

4. The vertically-adjustable plate J, placed near the rail, and combined with the switch-unlocking mechanism in such manner that said plate is raised whenever the switch is unlocked, substantially as herein shown and described.

5. The combination of the plate J, which has the V-shaped slots *n*, with the pins *m* and sliding plate I, substantially as herein shown and described.

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