2 Sheets—Sheet 1.

D. A. BURR.

RAILROAD-SWITCH.

No. 188,851. Patented March 27, 1877

Fig. 1.

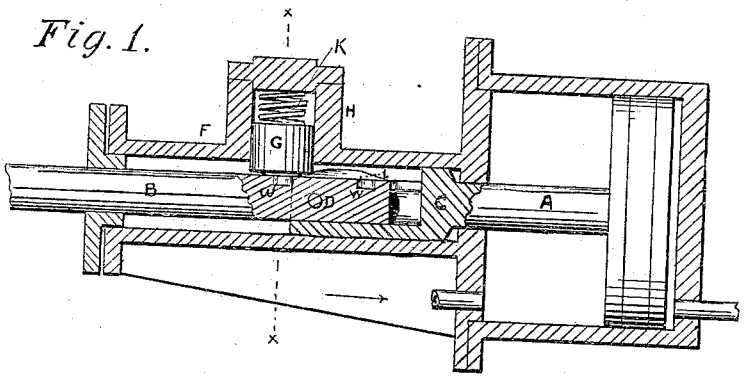


Fig. 2.

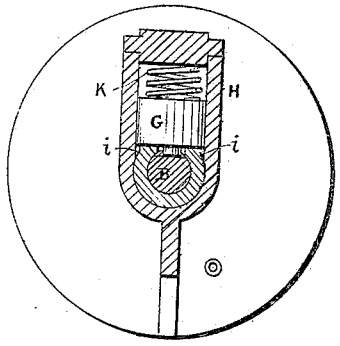


Fig. 4.

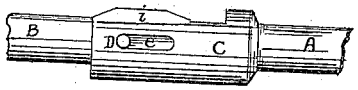
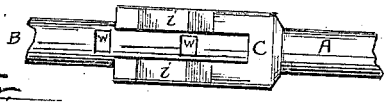


Fig. 3



Attest:
Charles E. Foster
Courtney A. Cooper

INVENTOR,
David A. Burr

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

2 Sheets—Sheet 2.

D. A. BURR.

RAILROAD-SWITCH.

No. 188,851. Patented March 27, 1877.

Fig. 5.

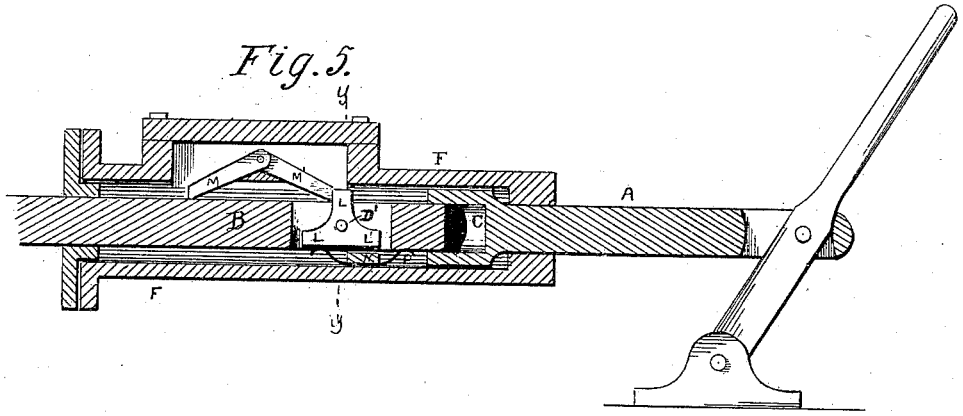


Fig. 7.

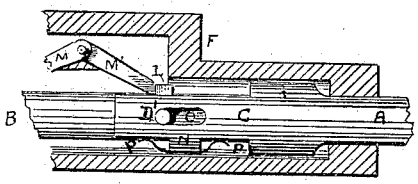
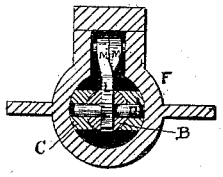


Fig. 6.



Attest:

Charles Hosler

Courtney A. Cooper

INVENTOR

David A. Burr

N. PETERS, PHOTO-LITHOGRAPHER, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

DAVID A. BURR, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN RAILROAD-SWITCHES.

Specification forming part of Letters Patent No. 188,851, dated March 27, 1877; application filed May 26, 1876.

To all whom it may concern:

Be it known that I, DAVID A. BURR, of Philadelphia, in the State of Pennsylvania, have invented a new and useful Improvement in Automatic Locks for Railway-Switches, which is fully set forth in the following specification, reference being had to the accompanying drawings.

The nature of my invention consists in so coupling or connecting, by means of an extension-joint, the rod of a railway-switch lever or piston with the bar connected directly with and immediately controlling the movements of the switch, as that the rod of the lever or piston shall have a longer movement than the switch-bar, the excess of movement of the lever or piston in either direction before it operates to move the switch serving, by means of a simple mechanical movement, to throw out or disengage a latch or bolt (which otherwise engages and locks the switch-bar) before causing the switch-bar itself to move.

The object of said invention is to lock and automatically unlock the movable rails of a railway-switch by means of the direct movements of the lever or piston produced for the purpose of operating the switch, it being designed chiefly for use in connection with an independent interlocking system, (such, for instance, as the English Saxby and Farmer system,) by which the switch levers or pistons are themselves separately locked and controlled.

In the accompanying drawings, Figure 1 is a longitudinal sectional view of my improved locking device operated by a pneumatic piston, Fig. 2 being a transverse section thereof in line *x x* of Fig. 1; and Figs. 3 and 4, detached top and side views, respectively, of the socket on the end of the piston-rod. Fig. 5 is a longitudinal sectional view of a modification of my locking device connected with a switch-lever, Fig. 6 being a transverse section thereof in line *y y* of Fig. 5, and Fig. 7 a side elevation of the socket on end of the lever-rod detached.

A is the rod of a piston or of a lever for operating a railway-switch; B, the bar connected with the movable rails of the switch, and by which they are moved; C, a socket formed in the end of the rod A, to receive the end of the bar B and couple the two together; D, a pin driven transversely through the end of the bar B, to project through longitudinal slots *e e* (see Figs. 4 and 7) on either side or face of the embracing-socket C, so as to connect the bar and rod, and yet permit a longitudinal movement of the one independent of the other to an extent measured by the length of the slots.

F is a casing inclosing and supporting the ends of rod A and bar B, and the extension-joint by which they are coupled, as above described.

G, Figs. 1 and 2, is a short cylindrical bolt, fitted to play vertically in a chamber formed in an offset, H, in the casing F, over the end of the bar to receive it, and whose diameter is about equal to that of the embracing-socket C.

i i (see Figs. 1, 2, and 4) are double-inclined narrow cams or keys projecting upward tangentially, longitudinally, and parallel to each other from the two sides of the socket C, so as to pass under the lower end of the bolt G near its edges without covering the central portion thereof, which is extended to project down between the cams. The upper portion of the socket C is cut away between the cams, so as to permit the central projecting part of the bolt G to rest immediately upon the bar B when the bolt is not upheld by the cams.

W W (see Figs. 1 and 3) are notches cut in the bar B, for the purpose of engaging the lower end of the bolt when the movement of the bar and of the switch-rails actuated thereby is completed in either direction. The inclined faces of the cams *i i* operate, when the socket is drawn or forced in either direction from its extreme position, as wedges to slip under the bolt and gradually lift it, and the keys are so proportioned in length with reference to the notches or locking-recesses W W in the bar as that the cams shall pass under the bolt, lift it, and disengage its locking-pin from the notches in the bar at the first movement of the socket in either direction before its movement is communicated, by means of the coupling-pin D, to the bar itself, and will then pass out from under the bolt before the joint movement of the socket and bar is com-

pleted, allowing, thereby, the bolt to again drop and engage the remaining notch in the bar.

The automatic action of the bolt G in engaging the bar B when left unsupported by the cams *i i* of the socket C is accelerated and insured by means of a spring, K, Figs. 1 and 2.

It is evident that the positions of the pin on the bolt G, and of the recess on the bar B, may be reversed, so that a pin on the bar shall engage a recess in the bottom of the bolt.

In the modification of my invention illustrated in Figs. 5 to 7 a pin or dog, L, projects upwardly from the bar B to engage alternately two pivoted bolts or latches, M M′, projecting more or less obliquely in opposite directions from a common pivotal center fixed in a recess formed in the casing over the end of the bar B, as shown in Fig. 5.

The pin L is pivoted at its lower end within a slot cut in the bar B, so that it may vibrate therein, and it is kept in an upright position, so that its free end shall project out vertically beyond the upper side of the bar, and engage the latch M or M′ by means of two arms, L′ L′, projecting from its lower pivoted end opposite to each other in a right line, and at right angles to its length. The lower sides of these arms L′ L′ are kept flush with the lower face of the bar B when the pin L is in its upright position. The ends of the pivot D′, upon which the pin L vibrates, project through the slots in the socket C, and serve to couple together the bar and socket. A cross-piece, N, is formed on the under side of the socket, and so placed and adjusted, with reference to the pin L and its arms L′ L′, (or that, when the socket is drawn back from the bar, as shown in Fig. 5,) the cross-piece N will rest under the arm at that end, and prevent the pin from yielding or turning in that direction, leaving it, however, free to turn in the opposite direction; and when the socket is forced forward onto the bar the cross-piece N will rest under the opposite arm, and prevent the pin from turning in that direction, leaving it free to turn the other way. Springs P P, Figs. 5 and 7, secured to the cross-piece N, project therefrom, to bear against the arms, and operate to restore the pin L to its normal upright position whenever it has been thrown over in either direction.

The operation of my improved locking device is simple. When, by the movement of the piston or lever rod A, the switch has been drawn over to its proper position the coupling-socket C is drawn out from the end of the switch-bar B so far as the slots *e e* will allow, and, when the switch has been similarly pushed or forced over, the socket will be driven upon the end of the bar until it strikes home. In either case a reverse movement of the switch-lever or piston to cause it to draw, after it has pushed, or to push after it has drawn, necessarily produces an independent movement of the socket C before the bar B can be acted upon in extent equal to the length of the slots *e e*.

This independent movement of the socket in either direction operates to raise, by the action thereon of the keys *i i*, the bolt G entirely clear from its engagement with the rod B; or, in the modification of the apparatus illustrated in Fig. 5, to release the pivoted pin L by changing the position of the cross piece N, so that the latter shall no longer uphold the former to engage the latch M.

Hence, so soon as the independent movement of the socket is completed, and the switch-bar B is acted upon by the rod A, the bar is free to move, being no longer locked and held by bolt G or pin L. The joint movement of the socket C and bar B, following the independent movement of the socket, will now carry the keys *i i* out from under the bolt G, leaving it free to drop into and engage a second recess in the bar B to lock it as soon as the movement is completed; or, in the form of device shown in Fig. 5, will carry the pin L beyond the second latch, M′, which, being pivoted, will lift, to allow it to pass, and then drop before it to form a lock, preventing a reverse movement of the bar B and its pin L so long as the latter is held upright, and prevented from yielding by the cross-piece N.

Thus a preliminary movement of the rod A and its socket is absolutely required in order to unlock and release the switch-bar B and its connected switch, and permit a movement thereof.

I claim as my invention—

The piston or lever rod A and switch-bar B, connected directly with each other by an extension-joint, coupling the two, but allowing an independent movement of the rod A, and combined with a locking device to engage the switch-bar and be operated by the independent movement of the rod, substantially in the manner and for the purpose herein set forth.

DAVID A. BURR.

Witnesses:

CHARLES E. FOSTER,

COURTNEY A. COOPER.