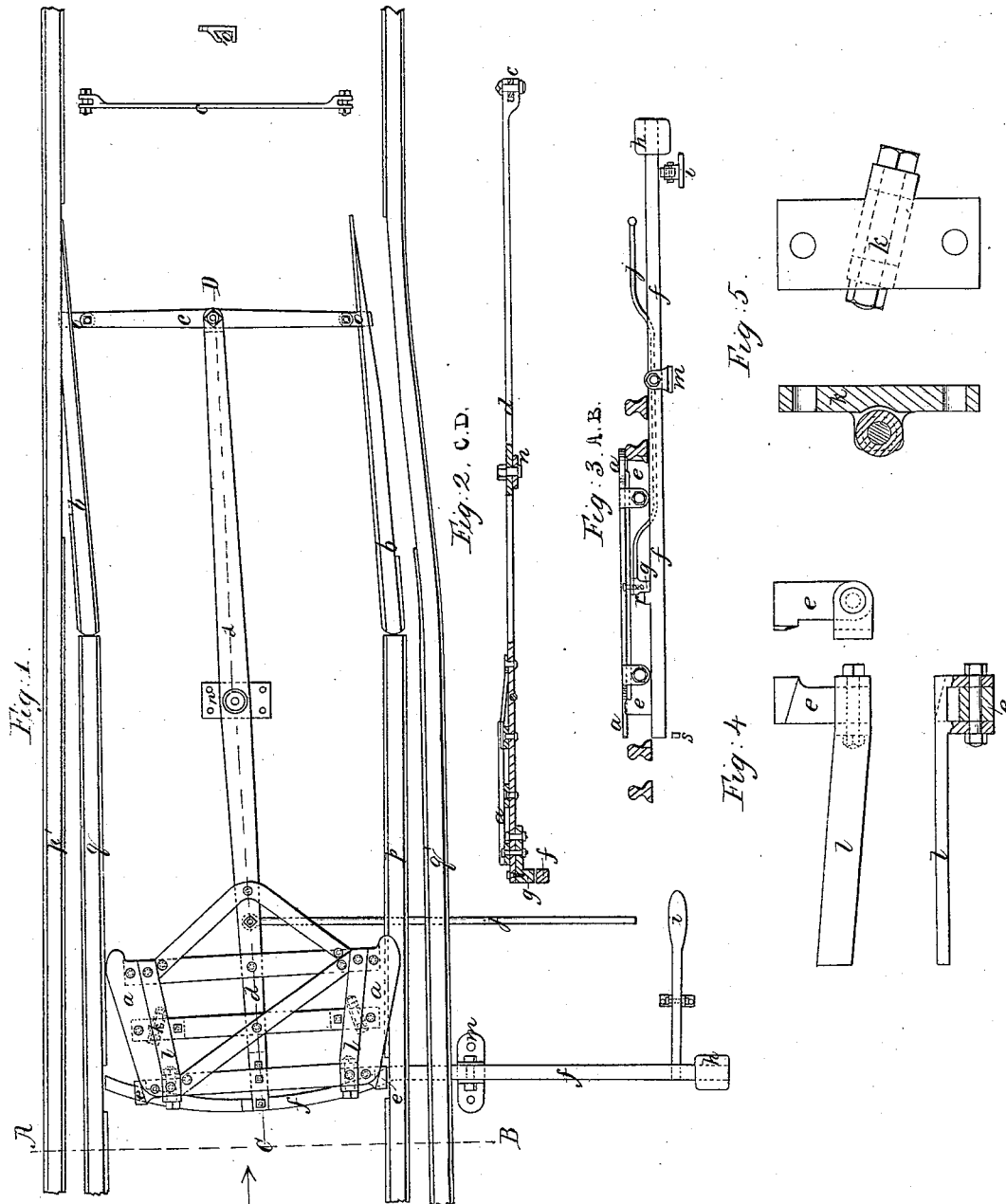


Emery & Prince,

Railroad Switch,

Nº 53,593,

Patented Apr. 3, 1866.



Witnesses,
C. F. Emery
Albert G. Collier

Inventors,
Stephen Emery
Frederic A. Prince

UNITED STATES PATENT OFFICE.

STEPHEN A. EMERY AND FREDERIC A. PRINCE, OF PORTLAND, MAINE.

IMPROVED RAILWAY-SWITCH.

Specification forming part of Letters Patent No. 53,593, dated April 3, 1866.

To all whom it may concern:

Be it known that we, STEPHEN A. EMERY and FREDERIC A. PRINCE, of Portland, in the county of Cumberland and State of Maine, have invented a new and useful Machine or Device entitled a "Safety-Switch," for preventing rail cars and engines from running off their rail-tracks in consequence of a displacement of railway-switches; and we hereby declare the following to be a full, clear, and exact description of the construction and operation of the same, reference being had to the annexed drawings, making a part of this specification.

Figure 1 gives a general view of the position of the stationary rails, the movable rails, and the relation of our safety-switch thereto.

Letters *d d* represent a wrought-iron lever firmly attached by a pivot, on which it moves, to an iron plate *n*. Letter *e* is an iron bar attached to one end of this lever and connecting the movable or switch rails *b b* by clutches *o o*. At the opposite end of this lever are two beveled wings, *a a*, made of steel or steel-faced, strongly bolted to the three cross-bars seen in the figure, which are firmly riveted to lever *d*, and also strongly braced, as in the figure represented. These wings are so constructed that the widest portion of the flare thereof will project and easily slide over the rails nearest each, respectively.

Supposing the wheel of a car or locomotive to be moving in the direction of the arrow on the rail *p*, the wings *a a* being in the position indicated in Fig. 1, the wing nearest the rail *p* is so constructed that the flange of the approaching wheel will, on coming in contact with that wing, move it, and consequently the end of the lever *d*, with which it is connected, over toward the rail *q*, and by this operation move the other end of the lever *d* in an opposite direction, so as to bring the movable rail nearest the rail *q* in juxtaposition therewith, and thereby making a continuous rail for the passage over it of the car, or, in other words, properly adjusting the switch. The movement just described will also cause the wing nearest the rail *q* to adjust itself with relation to that rail in a manner similar to that which the other wing occupied with respect to the rail *p* before being moved away therefrom in the manner above mentioned, so that a wheel ap-

proaching on rail *q* will adjust the movable rails for itself in like manner to that above described. This lateral movement of the lever is facilitated by use of two trucks or friction-rollers, *k k*, upon which the winged end of the lever rests, which trucks, placed diagonally, as shown in Figs. 1 and 5, roll over smooth iron plates on the cross-tie beneath.

In order to hold the switch-rails firmly when adjusted in the manner above stated, underneath the winged end of the lever *d* is what may be designated a "lock-lever," *f*, Figs. 1 and 3, fixed to the fulcrum *m*, one end thereof extending outside the track, kept down by a suitable weight, *h*, and the other end extending under the rails and across the track. On the upper side of lever *f*, Fig. 3, is a square-edged shoulder, *r*, so constructed as to receive on either side a key, *g*, which key is firmly bolted to the under side of the end of lever *d*, operating as a lock to prevent lateral motion of lever *d* until unlocked or thrown out of gear by the car or locomotive wheel in the manner following: Two short drop-levers, *e e*, Figs. 1, 3, and 4, are hung on bolts to the braces *l l*, Figs. 1 and 4, and so adjusted that the flange of the approaching wheel will bear them down, and by means of them depress the lever *f*, on which their lower surfaces rest, sufficiently to throw the shoulder *r* out of gear with the key *g* just before the wheel-flange acts upon the wing *a* to move it. As the winged end of lever *d*, in its action before mentioned, describes the arc of a circle lock-lever *f* is curved, as shown in Fig. 1, so that drop-levers *e e* may properly correspond with or apply to the lock-lever *f*.

Letter *J* is the rod for the hand-switch. Letter *i* is a foot-lever used by the switch-tender to unlock lever *f* when adjusting the switch by hand.

The plate *n* is confined with great firmness to the cross-tie, and the cross-tie itself is fastened sufficiently strong to enable the plate *n* and pivot to effectually resist the shock received when the wheel of the car or locomotive acts upon the wings *a a*.

The switch-rails *b b* are so fastened in the chairs where they unite with the main rail as to prevent their working ahead, but at the same time so as to admit of their proper play in adjusting the switch.

The upper surfaces of drop-levers *e e* are sufficiently beveled for receiving the approaching wheel as it comes in contact therewith to prevent too abrupt a shock, and sufficiently so to suitably depress the drop-levers *e e* to enable them to perform their function above described. The upper surface of drop-lever *e* farthest from the fulcrum *m* is also as much higher than the other as the dip of the lever *f* at that point is lower than at the point under the lever *e* nearest the fulcrum. The fulcrum *m* is so constructed, or other equivalent means are employed, to prevent lateral motion of the lever *f*, so as to defeat its purpose above explained.

In order to prevent too great a depression of the end of the lever *f* at the end farthest from the fulcrum a stop, *s*, is employed. Instead of the weight *h* its function may be performed by means of a suitable spring, or its equivalent.

For the practical working of this safety-switch the hand-switch should be left unfastened and free to play, such fastening being rendered unnecessary by reason of the operation of the lever *f*.

The points of switch-rails *b b*, to prevent be-

ing battered, should be steeled. The clutches *o o* are fitted tightly to the rails *b b* to assist in holding them in their places.

We do not claim as our invention either the construction and position of the movable rails *b b*, as seen in Fig. 1, or the use of a common lever lying between the rails, or the general principle of adjusting a switch by means of the approaching wheel or its flange.

What we do claim as new is—

1. The peculiar construction of the lever *d* with wings in manner above described, or their equivalents.

2. The peculiar construction of lever *f* and its adjustment in connection with shoulder *r*, and key *g*, and drop-levers *e e*, in manner above described, or their equivalents.

3. The combination and use of lever *d* with lever *f*, in conjunction with the wheel of a car or locomotive, operating in the manner above described.

STEPHEN A. EMERY.
FREDERIC A. PRINCE.

Witnesses:

GEO. F. EMERY,
ALBERT G. CORLISS.