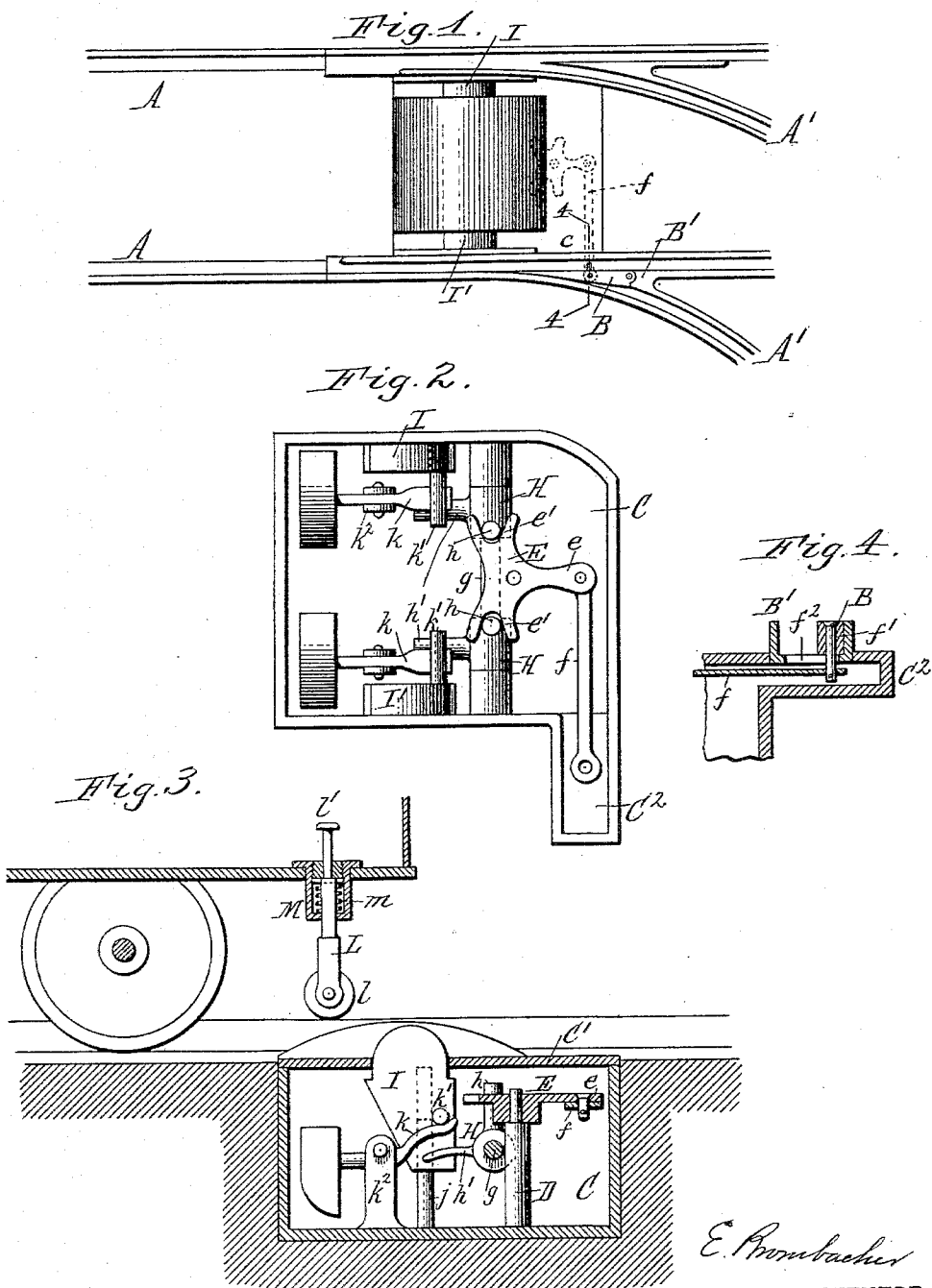


(No Model.)

E. BROMBACHER.
RAILWAY SWITCH.

No. 531,769.

Patented Jan. 1, 1895.



WITNESSES:

Chas. F. Burkhardt
Thos. L. Popp.

E. Brombacher
INVENTOR.

By Wilhelm H. Pomer
ATTORNEYS.

UNITED STATES PATENT OFFICE.

EMIL BROMBACHER, OF BUFFALO, NEW YORK, ASSIGNOR OF TWO-THIRDS
TO CHRISTIAN FLÖERL AND EDWARD F. STEIN, OF SAME PLACE.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 531,769, dated January 1, 1895.

Application filed September 11, 1894. Serial No. 522,683. (No model.)

To all whom it may concern:

Be it known that I, EMIL BROMBACHER, a citizen of the United States, residing in Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Railway-Switches, of which the following is a specification.

This invention relates to that class of railway switches which are employed more especially on street railroads and in which the shifting of the switch tongue is effected by a trip device mounted on the car and controlled by the operator on the car.

My invention has for its objects to produce an efficient switch of this character which can be put in place without requiring the tracks to be taken up, and in which the operating mechanism is so combined with the switch tongue that the tongue can be shifted independently of its operating mechanism in case the latter becomes inoperative from any cause.

In the accompanying drawings: Figure 1 is a top plan view of my improved switch. Fig. 2 is a detachable top plan view, on an enlarged scale, of the casing and the parts contained therein, with the cover of the casing removed. Fig. 3 is a longitudinal section of the switch, shown in connection with a trip device on the car. Fig. 4 is a cross section in line 4—4, Fig. 1, on an enlarged scale.

Like letters of reference refer to like parts in the several figures.

A represents the rails of the main track, A' the rails of the side or branch track, and B the pointed switch rail or tongue which is pivoted at its rear end to the bed plate B' on which the adjacent rails are arranged in a well known manner.

C is a box or casing arranged between the main rails opposite the switch tongue and sunk in the ground, with its cover or top plate C' on a level with the surface of the street. The casing is provided with a hollow lateral extension C² which extends under the bed plate of the switch tongue, and the cover of the casing has a corresponding wing c, forming the cover of said extension.

D is an upright stud or spindle projecting upward from the bottom of the casing and E is a horizontal rock lever pivoted at the upper end of said spindle and provided on the rear

side of the spindle with an arm e with which the switch tongue is connected by a transverse rod f. The inner portion of this rod is arranged in the lateral extension of the casing and is attached to a pin f' secured to the under side of the switch tongue in front of its pivot and passing through a transverse slot f² formed in the bed plate B', as shown in Fig. 4.

The rock lever E is provided on opposite sides of its pivot with bifurcated arms or forks e'.

g is a horizontal rod or shaft arranged in front of the spindle D and having its ends supported in the side walls of the casing.

H represents upright elbow levers pivoted upon the horizontal shaft g on opposite sides of the spindle D and engaging with their upper arms h in the forks of the rock lever E, respectively, so that the movement of said bell crank levers is imparted to the rock lever.

I and I' represent vertically movable shifting bars or plungers arranged in the casing in front of the bell crank levers H and mounted upon vertical guide stems j which project upward from the bottom of the casing and enter vertical sockets formed in the lower portions of the plungers, as shown by dotted lines in Fig. 3. These plungers project through apertures formed in the cover of the casing and their upper ends are rounded to facilitate the passage over the same of the trip devices carried by the car. Each of the plungers is held in its normal or elevated position by a weighted lever k which engages with its rear arm against the under side of a pin or stud k' projecting laterally from the plunger. These levers are pivoted to the upper ends of standards k², rising from the bottom of the casing. The overhanging weights of the levers k tend to swing the rear arms of the levers upward thereby sustaining the plungers in their elevated position.

The lower arms h' of the bell crank levers H project forwardly underneath the rear arms of the weighted levers k, so that when either of the plungers is depressed the rear arm of its elevating lever strikes the lower arm of the adjacent bell crank lever and swings the latter on its pivot.

Upon the car are located two tripping de-

vices, one in line with each of the plungers, in a manner well known in this class of switches. Any suitable trip device which can be lowered to ride over the plungers, or raised to clear the same, may be employed for this purpose. In the construction shown in the drawings, each trip device consists of a roller *l* journaled at the lower end of a vertically movable rod *L* which passes through an opening in the car platform and terminates above the latter in a button or knob *l'* adapted to be depressed by the foot of the operator. The rod *L* is normally held in its elevated position by a spring *m* surrounding the same between a pin or shoulder on the rod and the bottom of a casing *M* which incloses the spring. When the plunger of the switch is depressed by the trip device of the car riding over it, the pin *l'* of the plunger swings the rear arm of the weighted lever downward and this lever in turn depresses the lower arm of the adjacent bell crank lever *H*, causing the upper arm of the bell crank lever to swing forward. This movement of the bell crank lever causes the rock lever *E* to be swung on its pivot and the movement of the rock lever is in turn transmitted to the switch tongue by the connecting rod *f*, thus shifting the switch tongue accordingly.

When the switch is set for the main track and it is desired to run upon the side track, the switch device on the left hand side of the car is lowered so as to trip the corresponding plunger *I*, while when the switch is set for the siding, and it is desired to run along the main track the right hand trip device of the car is lowered so as to depress the right hand plunger *I'*.

The lower arms of the bell crank levers *H* do not bear against the rear arms of the plunger levers *k*, when at rest, but are located a short distance below said arms, so that the plungers have a certain amount of dead movement before actuating the bell crank levers. This construction permits the switch tongue to be shifted by hand independently of the plungers in case the latter should bind or become inoperative from any other cause. When the tongue is shifted by hand the rock lever and the bell crank levers are actuated, but the plungers remain undisturbed.

The actuating devices of my improved switch and the inclosing casing are located between the tracks and the switch can therefore be readily placed without tearing up the tracks.

I claim as my invention—

1. In a railway switch, the combination with the main and branch tracks and a switch tongue or rail, of a horizontal rock lever connected with the switch rail and provided with laterally extending arms arranged transversely of the main track, upright bell crank levers arranged below said rock lever swinging lengthwise of the main track and having their upper arms engaged directly with the arms of the rock lever, and plungers operating upon the lower arms of said bell crank levers, substantially as set forth.

2. In a railway switch, the combination with the main and branch tracks and a switch tongue or rail, of a horizontal rock lever connected with the switch rail and having laterally extending arms provided at their ends with forks, upright bell crank levers pivoted below said rock lever and swinging lengthwise of the main track and engaging with their upper arms in the forks thereof, and plungers arranged in front of said bell crank levers and operating upon the lower arms of the latter, substantially as set forth.

3. In a railway switch, the combination with the main and branch tracks and the switch tongue or rail, of a horizontal rock lever connected with said switch tongue and having laterally projecting forks, upright bell crank levers arranged in front of said rock lever and having forwardly projecting lower arms and upwardly projecting upper arms engaged with said forks, vertically movable plungers arranged in front of said bell crank levers and having projections, and elevating levers interposed between said projections and the lower arms of the bell crank levers, substantially as set forth.

Witness my hand this 27th day of August, 1894.

EMIL BROMBACHER.

Witnesses:

JNO. J. BONNER,
ELLA R. DEAN.