

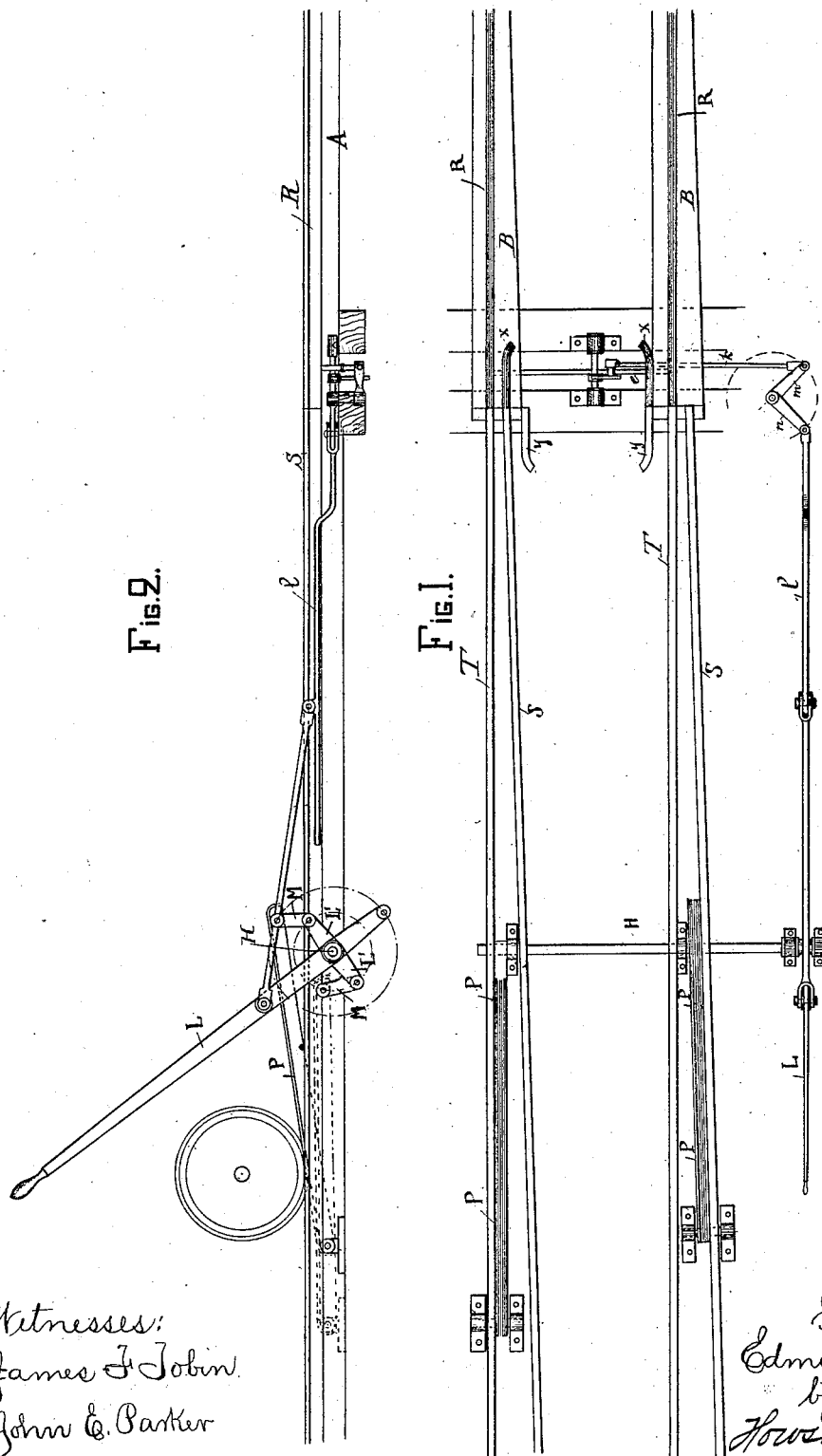
(No Model.)

3 Sheets—Sheet 1.

E. BIVORT.
RAILWAY SWITCH.

No. 305,275.

Patented Sept. 16, 1884.



Witnesses:
James F. Jobin.
John C. Parker

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by his Attys
Howson & Sons

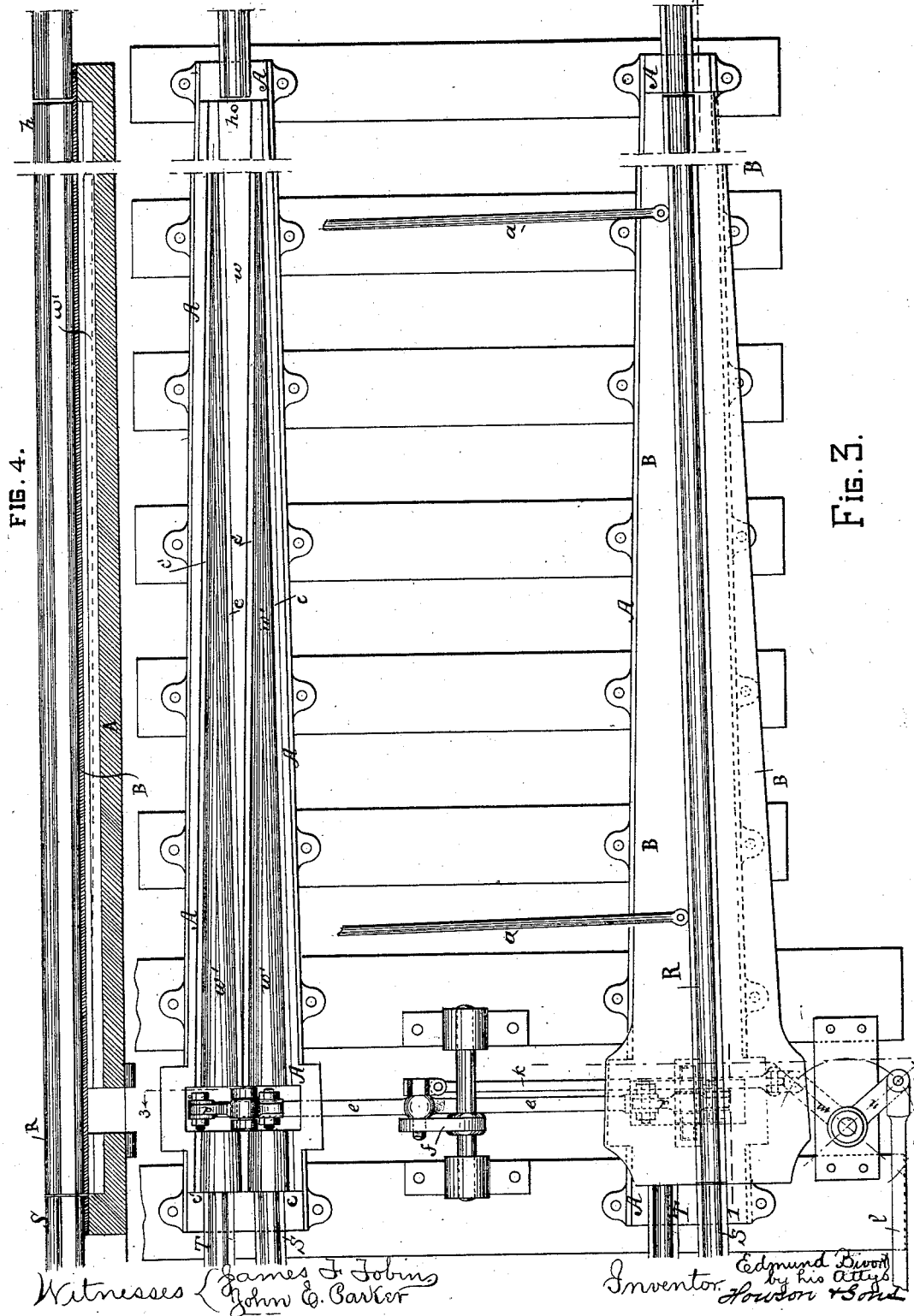
(No Model.)

3 Sheets—Sheet 2.

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3 Sheets—Sheet 3.

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FIG. 5.

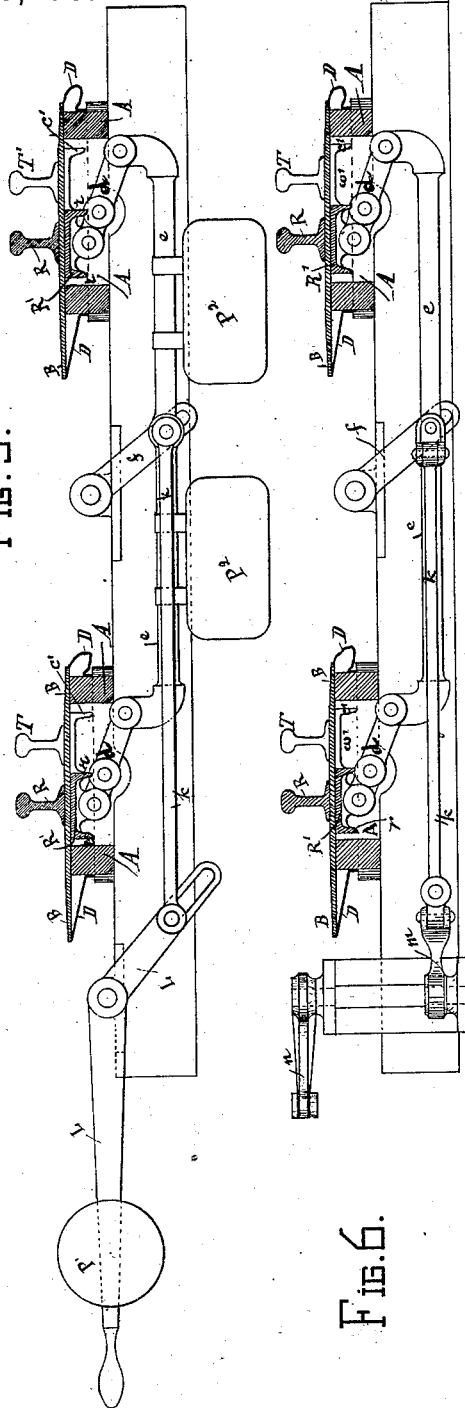


FIG. 6.

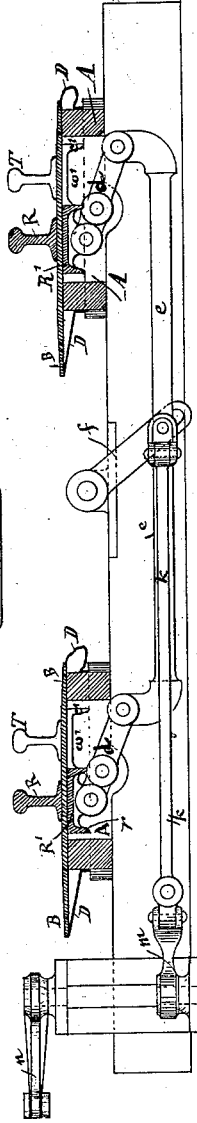
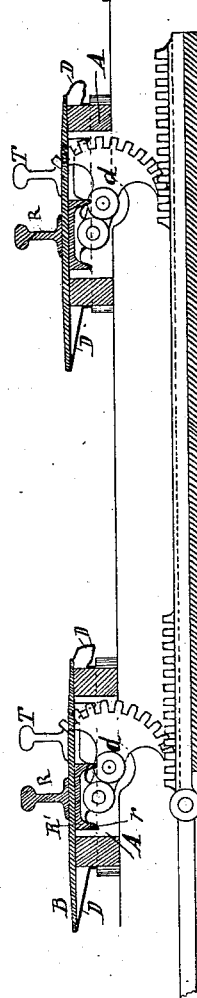


FIG. 7.



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UNITED STATES PATENT OFFICE.

EDMOND BIVORT, OF FONTAINE L'EVEQUE, BELGIUM.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 305,275, dated September 16, 1884.

Application filed September 19, 1883. (No model.) Patented in Belgium February 8, 1883, No. 60,393, June 25, 1883, No. 61,823, and February 20, 1884, No. 64,225; in France October 3, 1883, No. 157,828, and March 1, 1884; in England October 3, 1883, No. 4,709; in Germany October 4, 1883, No. 27,177, and in Austria-Hungary October 5, 1883, No. 37,620 and No. 55,704.

To all whom it may concern:

Be it known that I, EDMOND BIVORT, a subject of the King of Belgium, and a resident of Fontaine l'Eveque, Belgium, have invented certain Improvements in Railway-Switches, of which the following is a specification.

My invention consists of certain improvements in the construction of switches, principally with the view of increasing their safety and certainty of action, and preventing the accidental misplacement of the switch-rails.

In the accompanying drawings, Figure 1 is a plan view of a switch system embodying my improvements. Fig. 2 is a side view or elevation of the same. Fig. 3 is a plan view, on a larger scale, of the movable portion of the switch, showing the arrangement of the bed-plates for receiving the switch-rails, one of the switch-rails and its attachments being removed to illustrate the invention more clearly. Fig. 4 is a longitudinal section on the line 1 2, Fig. 3, of the base-plate carrying the switch-rail. Fig. 6 is a transverse section of the switch on the line 3 4, Fig. 3; and Figs. 5 and 7 are similar views embodying modifications.

The switch-rails R R are pivoted or otherwise hinged at *h* to the longitudinal bed-plates A A, and are united by the usual tie-rods, *a*. Each switch-rail has secured to its under side a ribbed or flanged base, R', Figs. 5, 6, and 7, with an intermediate wide cover-plate, B, for a purpose explained hereinafter.

The bed-plates A A for the switch-rails, and which are fixed to the usual cross-ties, are of the tapering form shown in Fig. 3, and each bed-plate has on its upper surface two pairs of longitudinal grooves, *c c* and *c' c'*, of a size and depth adapted to receive the ribs or flanges *r r* of the bases R' of the switch-rails, Figs. 5, 6, and 7. At the pivoting end *h* these grooves converge into a single pair, and thence they diverge into two pairs, until, at the opposite end of the bed-plate, one groove of one pair merges into the adjacent groove of the other pair. The surface portion *w* of the bed-plate between the grooves *c c'* is preferably flat, while the parts *w' w'* are rounded or conical and merge into the grooves. When the ribs or flanges *r r* of the bases R' R' of the

switch-rails lie in the grooves *c c*, Fig. 3, the switch-rails coincide with the rails S of the main track, Fig. 1, while, when they are transferred to the grooves *c' c'*, the switch-rails coincide with the rails T of the siding. When in either position, the switch-rails are firmly held in the bed-plates, and accidental lateral displacement is precluded by the fitting of the flanges of the bases R' R' in the grooves in the bed-plate A, and the weight of the passing train renders this still more secure. In order to insure the switch-rails and the adjoining ends of the track-rails being on the same level, the bed-plates A extend for a short distance under the ends of the track-rails, as shown in Fig. 3. These bed-plates may be made of cast-iron or steel, and may be made in one piece, or in several sections joined together, of sheet or plate iron, or constructed in any other convenient way, and they are firmly bolted to the cross-ties or sleepers.

The plate B, which is secured between each switch-rail and its base R', extends on each side thereof sufficiently to cover the bed-plate A, no matter in which of the two positions the switch-rails may be, and I prefer to combine therewith protecting-strips D, of flexible material, as shown in Figs. 5, 6, and 7, to exclude the water and dirt. In moving the switch-rails from one position to the other, they must be lifted over in the arc of a circle from one set of grooves in the bed-plate A to the other, and for this purpose I prefer to employ the arrangement of levers illustrated in Figs. 3 and 6.

To the flanged bases R' R' are connected levers *d d*, which are pivoted to the bed-plates, and have their outer ends united by a connecting-rod, *e*. To the center of the latter is connected a rod, *k*, united by a double hinge or universal joint to an arm, *m*, on the lower end of a vertical pivot, carrying at its upper end an arm, *n*, at an angle to the arm *m*, Fig. 3, and to the arm *n* is hinged a connecting-rod, *l*, to be operated by any suitable system of switch-levers at a distance. A lever, *f*, mounted in bearings in the cross-ties, is also connected by a pin and slot to the rod *e*, and acts as a guide or radius bar. In Fig. 5 I

have shown a similar arrangement of levers d , connecting-rod e , and rod k , which in this instance, however, is operated directly by a weighted lever, L , having a motion in a vertical plane. The counter-weight P' on the lever L is used to insure the switch-rails being normally kept in line with the main-track rails. To change the switch-rails to the siding, it will be readily seen that it is merely necessary to raise this lever L ninety degrees to throw the levers d d to the reverse position and place the switch-rails with their flanged bases R' in the grooves c' c' .

Instead of pivoting a connecting-rod, e , to the levers d d , the latter may be provided with toothed sectors, as shown in Fig. 7, gearing into racks on a horizontally-sliding rod, replacing the connecting-rod e , as will be readily understood. When the connecting-rod e is used, however, it may, as shown in Fig. 5, be provided with weights P^2 P^2 , to facilitate the movement of the switch-rails.

If desired, the switch-rails may be arranged to be operated by the automatic devices illustrated in Figs. 1 and 2, so that when a train is coming down the siding or the main track with the switch in the wrong position, the engine will cause the switch-rails to be moved over into proper position.

Adjacent to one of the rails of each track S and T , on the inner side, is pivoted a long arm, P , these arms being connected through links M with opposite arms, L' L' , on a horizontal shaft, H , Figs. 1 and 2, which carries a hand-lever, L , connected to the rod l , for operating the switch-rails. When the switch-rails R R are in line with the main track, the arm P adjacent to the main track will be depressed, and the arm P for the siding raised. Under these circumstances, should a train be coming down the siding, the flange of the locomotive will strike the arm P , depress it, and move the switch-rails R R over into line with the

siding. At the same time the arm P at the main track has been raised, so that should a train come down the main line it will depress its arm P and cause the switch-rails to return to their normal positions.

I prefer to provide the plates B of the switch-rails with guards x , one of which will be in line with a fixed guard, y , while the other guard, z , is in line with one of the fixed track-rails, (main or siding,) as shown in Fig. 1, so that the flanges of the wheels can in no case strike against the ends of the rails.

I claim as my invention—

1. The combination of the main track and siding with switch-rails having flanged bases R' R' , and bed-plates A A , having grooves c c and c' c' , for the reception of said flanged bases, as and for the purpose set forth.

2. The combination of the main-track, siding, and switch rails having flanged bases R' R' , with grooved bed-plates A A to receive said bases, and swinging levers d d , pivoted to the bases, and devices for operating said levers, substantially as described.

3. The combination of the main-track, siding, and switch rails having flanged bases R' , with grooved bed-plates A to receive said bases, pivoted levers d d , connected to the latter, connecting-rod e , rod k , and operating-levers, substantially as described.

4. The combination of the main track and siding with grooved bed-plates A , and switch-rails having flanged bases R' , and plates B , extending over the bed-plates, substantially as specified.

The foregoing specification of my improvement in railway switches or points signed by me this 3d day of September, 1883.

EDMOND BIVORT.

Witnesses:

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EMILE HUYTS.