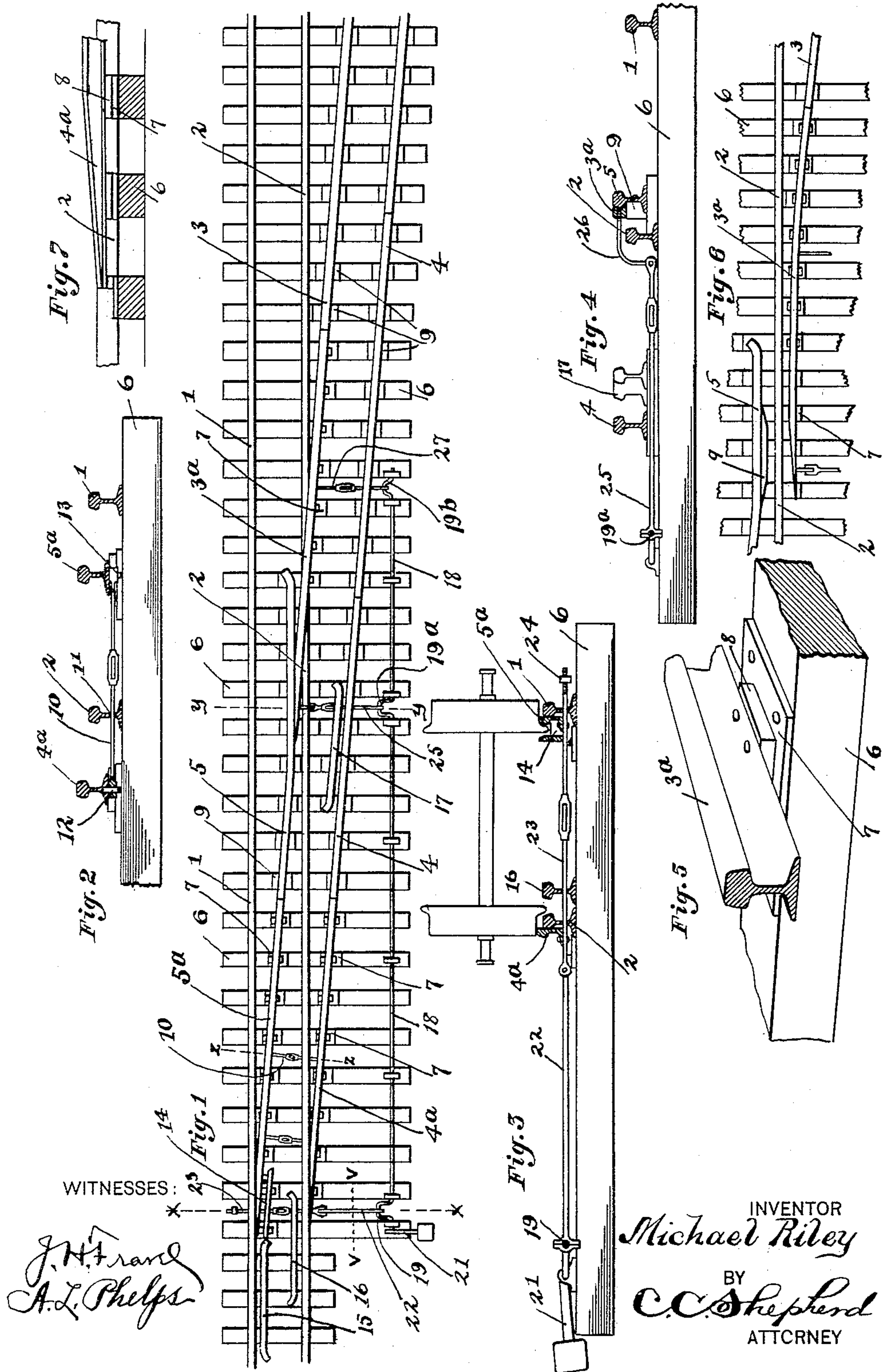


(No Model.)

M. RILEY.
FROGLASS SWITCH.

No. 606,086.

Patented June 21, 1898.



UNITED STATES PATENT OFFICE.

MICHAEL RILEY, OF LONDON, OHIO.

FROGLESS SWITCH.

SPECIFICATION forming part of Letters Patent No. 606,086, dated June 21, 1898.

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To all whom it may concern:

Be it known that I, MICHAEL RILEY, a citizen of the United States, residing at London, in the county of Madison and State of Ohio, have invented a certain new and useful Improvement in Frogless Switches, of which the following is a specification.

My invention relates to the improvement of frogless railway-switches of that class in which the main-track rails are retained clear and unbroken at the points of intersection with the switch-rails, and the novelty resides in the construction and combination of parts, all as more fully hereinafter described, shown in the drawings, and then particularly pointed out in the claims.

The invention is clearly illustrated in the accompanying drawings, which, with the numerals thereon, form a part of this specification, and in which—

Figure 1 is a plan view of a portion of a railway track and switch, showing my improvements in use and showing the switch-rails in position for the transfer of a car from the switch-rails to the main-track rails. Fig. 2 is an enlarged sectional view on line *z z* of Fig. 1. Fig. 3 is an enlarged sectional view on line *x x* of Fig. 1. Fig. 4 is an enlarged sectional view on line *y y* of Fig. 1. Fig. 5 is a detail view in perspective of a portion of one of the switch-rails, illustrating the manner of supporting the same from a tie. Fig. 6 is a detail plan view of a portion of one of the main-track rails, taken at the point of intersection with the switch-rail and showing the position of the latter when the main track is in use; and Fig. 7 is an enlarged transverse section on line *v v* of Fig. 1.

Similar numerals refer to similar parts throughout the several views.

1 and 2 represent, respectively, the main rails of a railway-track.

3 and 4 represent the outer rails, which form portions of the switch-track and which in the usual manner lead from said main-track rails tangentially or at an angle therewith.

3^a represents the transfer or crossing rail-section of the line of switch-rail sections 2, this transfer-section 3^a having its outer end portion suitably connected with the adjoining rails 3. The forward or inner end portion of the switch-rail line 4 terminates in a switch-

rail section 4^a, which is movably connected with the adjoining fixed rail of said line 4. The movable switch-rail 4^a has its inner side at its forward end beveled or cut away to, and said beveled face is adapted to be brought into contact with, the outer side of the main-track rail 2. This forward end portion of the rail 4^a is also beveled or inclined on its upper side toward its forward end, as shown more clearly in Fig. 7 of the drawings.

The outer or forward end of the switch or crossing section 3^a, which is adapted in the manner hereinafter described to be moved across the main-track rail 2, is beveled on its outer face, as prescribed for the rail 4^a, said beveled surface being adapted to be brought into contact with the side of a switch-rail section 5, the rear portion of which extends longitudinally between the main-track rails 1 and 2 and adjacent to the latter. This switch-rail section 5, which is secured to the ties 6, has movably connected with its inclined forward portion a movable switch-rail continuation thereof 5^a, the forward end of said switch-rail 5^a having one side beveled or cut away to bear against the inner side of the main-track rail 1 at a point opposite the contact of the rail 4^a with the rail 2.

As indicated more clearly in Figs. 3, 4, and 5, and particularly in the latter, the movable switch-rail sections 3^a 4^a are elevated from the ties 6 to a greater height than the main-track rails, said section 3^a being sufficiently elevated to admit of its base passing over the tread of the main-track rail 2. The elevation of these rails is preferably accomplished by first securing to the ties below said rails plates 7 and then securing to the bottom of each said rails metallic bearing-blocks 8, which are adapted to rest and slide upon said plates 7. The remaining sections of the rail-lines 3, 4, and 5 may be raised correspondingly or to desirable heights by the use of suitable blocks or plates 9. Immediately below the point of contact of the rail-section 3^a with the section 5 when the former is thrown across the main-track rail 1 provide said section 5 with a laterally-projecting shoulder 9, on which the beveled or pointed end portion of the section 3^a is adapted to rest.

The movable rail-sections 5^a and 4^a are connected by means of suitable connecting-rods

10, which pass loosely through openings 11 in the main-track rail 2 and are pivotally or jointly connected with the under sides of the rails 4^a and 5^a, as indicated at 12 and 13 in Fig. 2. On the inner side of the forward end portion of the rail 5^a I provide a guard-rail 14, which, as shown in the drawings, is suitably united with said switch-rail and which is of equal height with the latter. Beyond this guard-rail 14 I also provide on the inner side of the track-rail 1 a guard-rail 15, and on the inner side of the track-rail 2, opposite the guard-rails 14 and 15, I provide a guard-rail 16. Opposite the point of connection of the switch-section 3 with the section 5 I provide on the inner side of the section 4 a guard-rail 17.

Suitably journaled on the corresponding outer ends of the ties 6 is a horizontal switch-operating rod 18, the latter extending from a point opposite the central portion of the rail 3^a to a point opposite the forward end portion of the rail 4^a. This rod 18 has formed therein opposite the end portions of the rails 4^a and 3^a crank-bends 19 and 19^a and opposite the center of the rail 3^a a crank-bend 19^b, the outer end of said crank portion 19 carrying a weighted lever-arm 21. With the crank-bend 19 is connected a switch-rail-shifting rod 22, the inner end of which is jointly connected with a rail-connecting rod 23. This rod 23 is secured to the under side of the switch-rails 4^a and 5^a, as indicated more clearly in Fig. 3 of the drawings, and passes loosely through openings formed in the main-track rails 1 and 2. On its outer end and on the outer side of the rail 1 said rod is provided with a suitable adjusting-nut 24, which is adapted by contact with the rail 1 to limit the movement of said rod. The crank-bend 19^a has fulcrumed thereto an inwardly-extending shifting arm or rod 25, which, as shown more clearly in Fig. 4 of the drawings, passes beneath the rails 4 and 17 and has its inner end connected with an angular arm 26, the upper horizontal portion of which is adapted to be projected over the main-track rail 2 and the outer end portion of which is connected with the rail 3^a. The crank-bend 19^b is through the medium of a rod 27, which is fulcrumed thereto, connected with the central portion of rail 3^a.

Attention is called to the fact that in imparting the required incline to the outer ends of the movable switch-rails and guard-rail, which is connected with the rail 5^a, said rail ends are not bent downward, but receive their incline from a gradual decrease in the height of the rail-webs.

It is obvious that when the rod 18 is so rotated as to cause its crank-bends 19, 19^a, and 19^b to project outwardly the rails 4^a and 5^a will have been drawn out of contact with the main-track rail and the rail 3^a will have been drawn out of contact with the rail 5 off its seat 9 and over the main-track rail 2. It will thus be seen that the rails forming the main track will be rendered perfectly clear of ob-

struction and will present unbroken lines at the points of connection with the switch-rails, as shown more clearly in Fig. 6 of the drawings. By reversing the rotation of the rod 18 it is obvious that the movable switch-rail sections will be again forced to the positions indicated in Fig. 1 of the drawings, in which positions the elevated switch-rail 3^a will be moved across the main-track rail 2 and the sections 4^a and 5^a will have been moved into such contact with the sides of said main-track rails as to result in the wheels of a car moving toward the main track on the switch-rails being directed onto said main-track rails. In case a car is moving in the direction of the arrow indicated in Fig. 1 and on the main track it is obvious that its wheels will be directed up the inclined ends of the rails 4^a and 5^a and onto said switch-rails. Owing to the crossing of the main track 2 by the switch-rail 3^a and the connection of the latter with the rail 5 it will readily be seen that that car-wheel which is running on said rail 5 will be directed onto the section 3^a and rail-line 3.

From the construction and operation of my improved switch parts it will readily be seen that simple, reliable, and effective means are provided for switching a car from a main to a switch track or from a switch-track to a main track and that these means do not necessitate the employment of a frog and the consequent separation of one of the main-track rails. By supporting the switch-rails at the heights indicated in the drawings it will also be seen that the necessity of weakening the crossing-section 3^a by cutting the same away on its under side is entirely unnecessary, said crossing-section in my construction being, with the exception of the beveled end portion, of full size in cross-section.

It will also be seen that the construction of my improved switch parts is such as to admit of their being produced and placed in operation readily and at a low cost of manufacture.

Importance is attached to the angular arm 26, which extends over the main-track rail. This arm is connected to the section 3^a near its free end and serves to more positively operate and hold it immovably at the free end when in operative position. It will be noticed that this connection 26 is in addition to the connection 27, whereby the switch-section is actuated at or near its extreme end as well as near its mid-length.

Having now fully described my invention, what I claim, and desire to secure by Letters Patent, is—

1. The combination with the unbroken main-track rails, and the movable switch-rail sections elevated as described, one being adapted to be moved over the main-track rail and the others to contact with the side of the main-track rails, of a guard-rail between the main-track rails independent of but connected to and movable with one of the last-men-

tioned sections, as and for the purpose specified.

2. In a frogless switch, the combination with the unbroken main-track rails, of the 5 movable switch-rail sections having their ends beveled to engage the sides of the main-track rails, the movable switch-rail section elevated to move over the main-track rail, means for moving all of said sections simultaneously, 10 and a guard-rail between the main-track rails, independent of but connected to and movable with one of said sections, substantially as shown and described.

3. The combination with the unbroken main-track rails, of the movable sections of 15 the switch-rails, a rod secured to the under side of the said sections and passed loosely through openings in the main-track rails, means for actuating said rod and sections, and 20 an adjusting-nut on the outer end of said rod to contact with the main-track rail, substantially as and for the purpose specified.

MICHAEL RILEY.

In presence of—

C. C. SHEPHERD,
EDWARD M. TAYLOR.