

(No Model.)

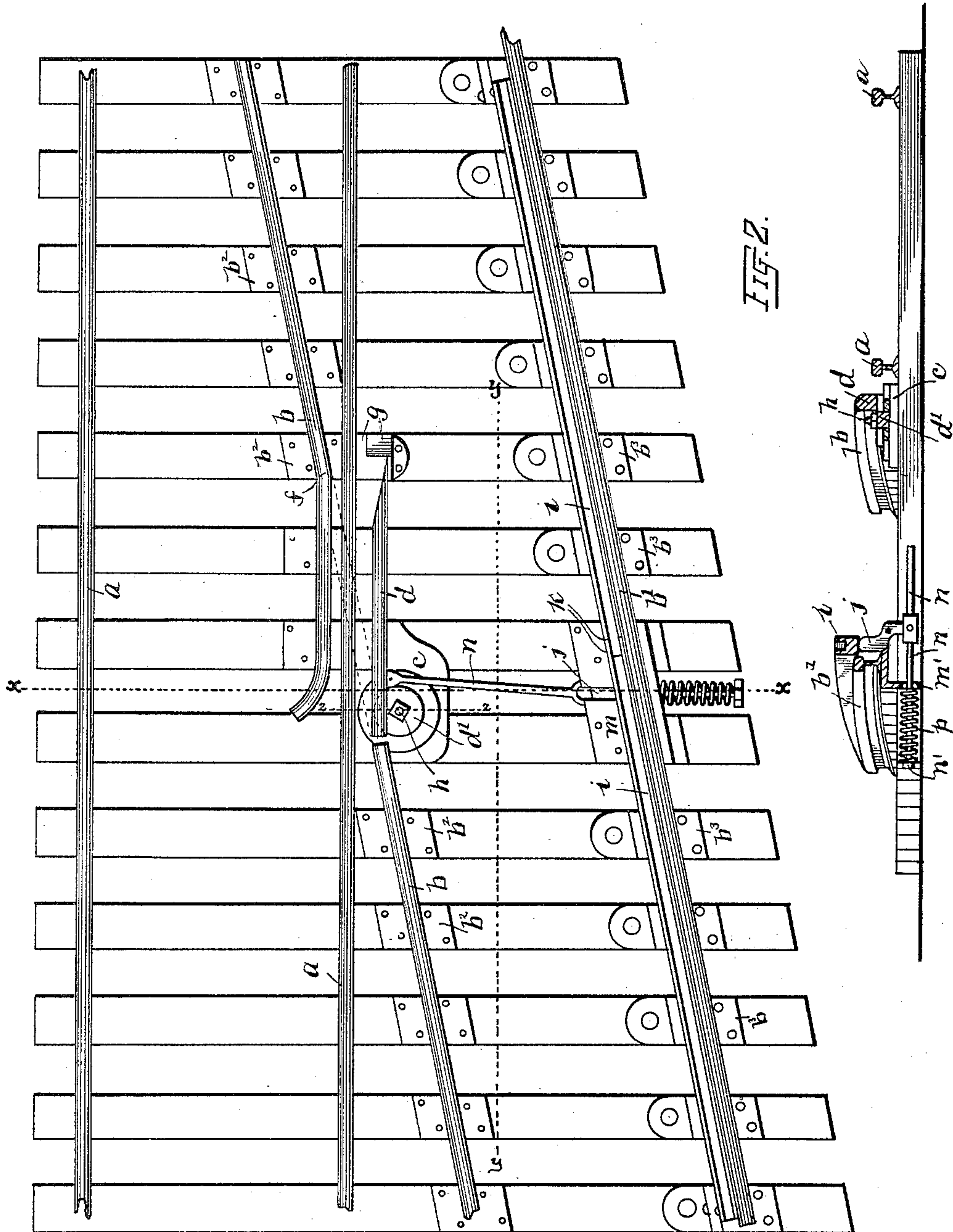
2 Sheets—Sheet 1.

N. RATCHFORD & L. D. EVANS.

RAILWAY FROG.

No. 433,148.

Patented July 29, 1890.



WITNESSES:

J. H. Travel.
L. Donaldson

FIG. 1.

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Nicholas Ratchford
and *Lewis D. Evans.*
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ATTORNEYS

(No Model.)

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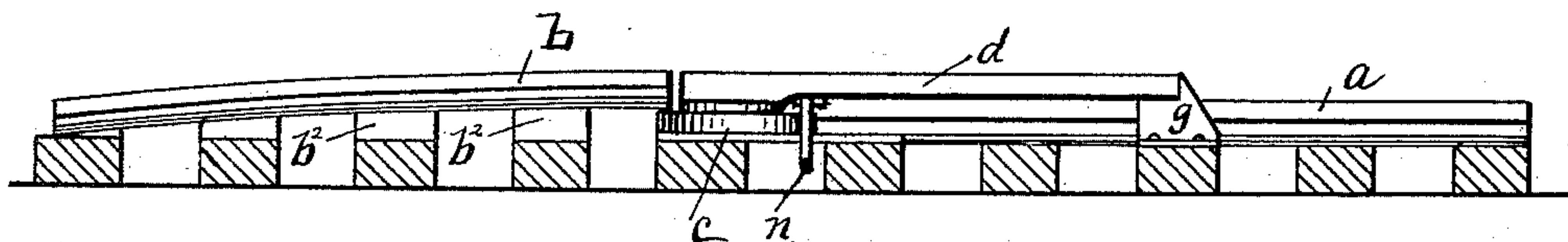


FIG. 3.

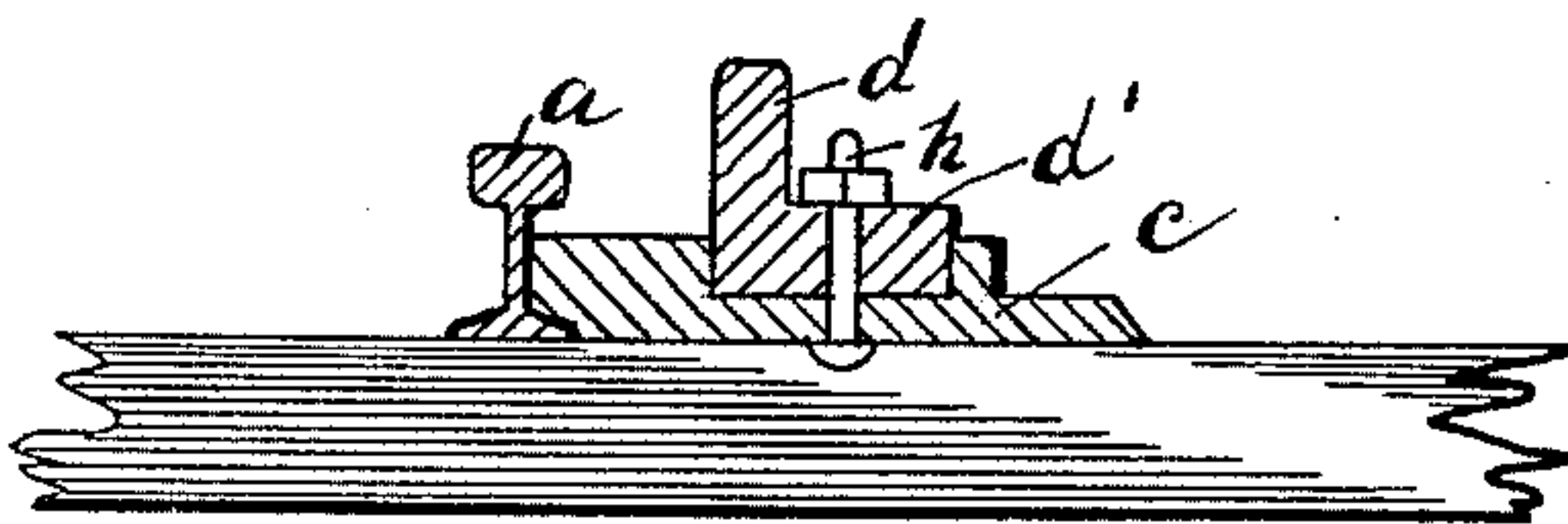


FIG. 4.

WITNESSES:

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INVENTOR
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UNITED STATES PATENT OFFICE.

NICHOLAS RATCHFORD AND LEWIS D. EVANS, OF PLAIN CITY, OHIO, ASSIGN-
ORS OF ONE-FIFTH TO CHARLES N. BOYD, OF SAME PLACE.

RAILWAY-FROG.

SPECIFICATION forming part of Letters Patent No. 433,148, dated July 29, 1890.

Application filed April 18, 1890. Serial No. 348,492. (No model.)

To all whom it may concern:

Be it known that we, NICHOLAS RATCHFORD and LEWIS D. EVANS, citizens of the United States, residing at Plain City, in the county of Madison and State of Ohio, have invented a certain new and useful Improvement in Railway-Frogs, of which the following is a specification.

Our invention relates to the improvement of that class of railway-frogs in which the continuity of the rails of the main track is preserved at the frog-point and a shifting frog-rail pivoted at one side of the main track is adapted to be made to cross the main-track rail and meet the side-track rail.

The objects of our invention are to obviate the necessity of using a block of such length as to support the shifting frog-rail throughout its length and to obviate the necessity of using a supporting-block of the same height as the tread of the main rail, to provide adjacent to the outer side-track rail an improved form of operating-rail, and otherwise simplify the construction of the parts. These objects we accomplish in the manner illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a portion of the main and side track rails of a railway, showing the position of our shifting rail when not in use and in dotted lines the position of said rail when in use. Fig. 2 is a sectional view taken on line $x x$ of Fig. 1. Fig. 3 is a view taken on line $y y$ of Fig. 1, and Fig. 4 is a sectional view on line $z z$ of Fig. 1.

Similar letters refer to similar parts throughout the several views.

a represents the main-track rails, and $b b'$, respectively, the inner and outer side track rails. As shown in the drawings, and as is common in this class of invention, the inner side-track rail b is broken or divided to admit of the main-track rail passing between its two sections. Supported upon the ties adjacent to the outer side of the inner main-track rail is a short fixed block c of a height less than the height of the tread of the main rail. This block c is provided in its upper side with a circular seat or socket, as shown.

d represents a shifting frog-rail, which is designed, as heretofore described, to form a continuation of the inner side-track rail by filling the space between its two sections.

As shown in the drawings, this shifting frog-rail is thickened on its under side at its heel or rear end portion and has formed with said thickened portion a disk-shaped pivot-plate d' . This bearing or pivot plate d' bears and is pivotally supported within the socket or seat previously mentioned as having been formed in the block or plate c . A pivot-bolt h connects the pivot-plate d' and block c , as shown.

The rear end of the rail d is in close proximity to the broken end of the side-track rail b , which is on the corresponding side of the main-track rail, and said shifting or frog rail is normally supported in a position parallel with the main-track rail, as hereinafter described. That section of the side-track rail which is within the main-track rails has its end portion bent for a short distance from a point f in the direction of the main-track rail, said bent portion being designed to operate as a guard-rail.

Fixed upon one of the ties beneath the outer and beveled end or point of the frog-rail d is a guard-block g , which is adapted to perform the double office of supporting the point of the frog-rail and guarding the latter from displacement or injury which may result from contact therewith of any depending or dragging part of a moving train. This latter result is attained by forming on said block in front of frog-rail point an upwardly-projecting lug or shoulder, the outer side of which is beveled, as shown.

The thickened rear portion of the shifting rail d , heretofore mentioned, is of such height as to admit of the forward portion and main body of the shifting rail being pressed over and across the main-track rail, where, as shown in the drawings, its beveled outer end meets the side-track rail at the point f and forms a continuation thereof. In this movement of the swinging rail the rear end of the latter is brought into alignment with the outer section b of the inner side-track rail. The rails $b b'$ as they approach the main-track rail are gradually elevated by inclined blocks b^3 until their upper sides or treads are of the height of the upper side of the shifting rail. The outer side-track rail b' is also elevated by blocks b^3 to conform to the elevation of the rails b and the shifting rail d .

i represents an operating-rail, which is provided with a grooved or channeled upper side, and which is formed of two hinged or jointed sections, as shown at *k*. This sectional operating-rail is supported adjacent to and on the inner side of the outer side-track rail *b'* by having its outer ends pivotally secured to the body of said side-track rail.

We preferably form the blocks *b*³, which elevate the outer side-track rail, with upwardly-projecting guide-lugs from the inner ends thereof, which form lateral bearings for the inner side of the operating-rail.

While the construction of the operating-rail differs from that shown in our former application, Serial No. 321,128, for an improvement in railway-frogs, the means for conveying motion therefrom to the shifting frog-rail are substantially the same as that shown in said former application, and are as follows: The operating-rail, with the exception of its pivoted ends, normally projects above the tread of the side-track rail, in which position it is supported by the upturned upper end of a bell-crank lever *j*, which is pivotally supported within a central slot of a supporting-plate *m*, which is made to connect two ties at points beneath the side-track rail and operating-rail. The lower end of the bell-crank *j* is, as shown in Fig. 2 of the drawings, pivotally connected with a horizontal bar or rod *n*, which extends approximately in the direction of and between two of the ties beneath the plate *m*.

The outwardly-extending portions of the rod *n* pass loosely through an opening formed in a downwardly-projecting lug *m'* on the outer edge of the plate *m* and has fixed on its outer end a nut or head *n'*. Bearing between the lug *m'* and rod-head or nut *n* and surrounding the rod is a coiled spring *p*. The inner end of the rod *n* is connected with the outer side of the shifting rail *d*, substantially as shown in our said former application.

The operation of our device is as follows: In case a car or train of cars passes upon the side track, the flange of the outer side car-wheels will travel upon and into the channel of the operating-rail *i*. The weight thus imparted to said operating-rail will, through its contact with the upturned end of the bell-

crank *j*, force the lower end of the latter inward, and in so doing impart an inward motion to the rod *n* and produce a compression of the coiled spring *p*. This inward movement of the rod *n* will operate to force the free end of the shifting rail across the main track until it meets the side-track rail, as shown in the dotted lines in Fig. 1 of the drawings. When the operating-rail is relieved from the weight of the cars, the tension of the spring *p* will result in the withdrawal, through the rod *n*, of the shifting rail *d* to its normal position.

From the construction herein shown and described it will be seen that the shifting frog-rail will be supported in position for crossing the main track without the necessity of having the supporting-block at the height of the tread of the main rail and without the necessity of using a supporting-block of the length of the shifting rail, as shown in our said former application. It will also be observed that the grooved or channeled operating-rail will serve as a guide for the flange of the car-wheels and obviate the necessity of using in connection with the said side-track rail a guard-rail.

If desired, we may provide the heel of our shifting rail with a spring-actuated pivot, as claimed in said former application.

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

In a railway-frog, the combination, with the main and side track rails, the latter elevated as described, a short fixed block *c* of a height less than the height of the tread of the main-track rail and supported adjacent to the latter, and a shifting frog-rail pivotally supported upon said block *c*, of the sectional and channeled operating-rail *i*, supported, as described, adjacent to the outer side rail, its pivoted bell-crank-support *j* and spring-actuated rod *n* connecting with the shifting rail, substantially as described.

NICHOLAS RATCHFORD.
LEWIS D. EVANS.

In presence of—

CHAS. W. HORN,
HOWARD C. BLACK.