No. 613,679. Patented Nov. 8, 1898.

E. C. HOLZWORTH.

RAILWAY.

(Application filed Aug. 20, 1897.)

(No Model.) 2 Sheets—Sheet 1.

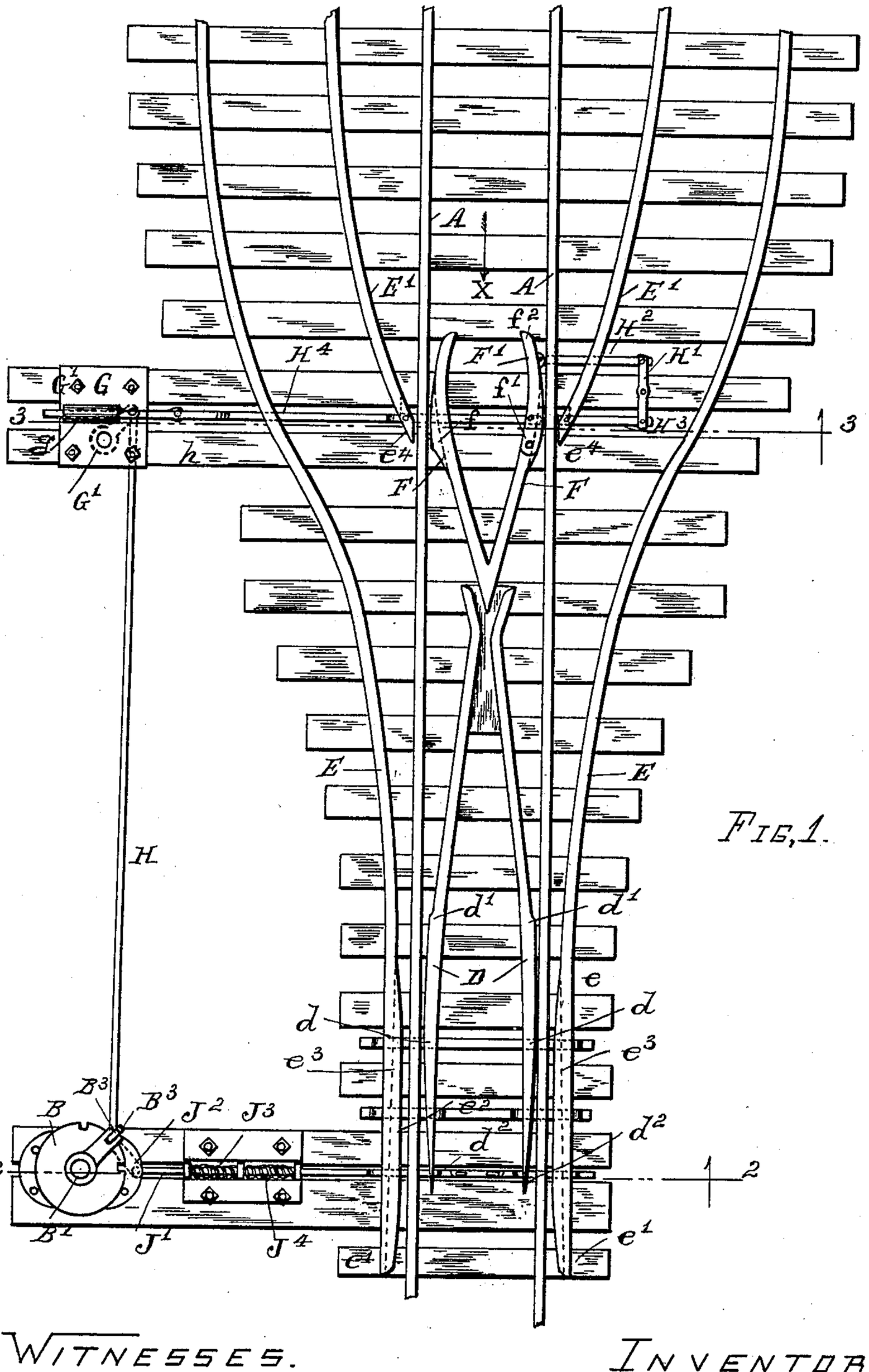

FIG. 1.

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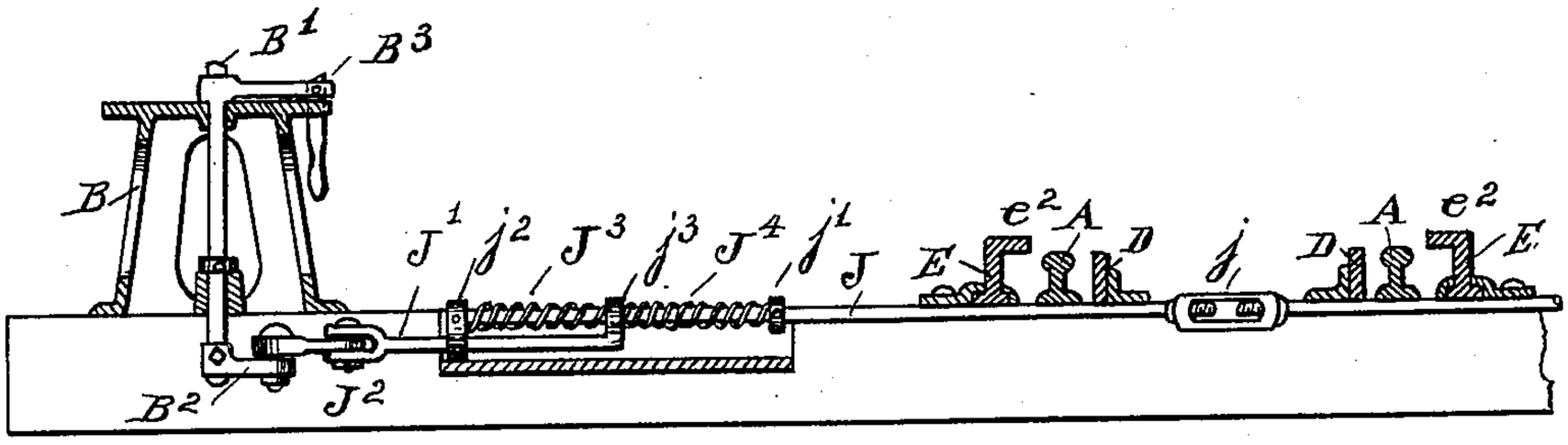

FIG. 2.

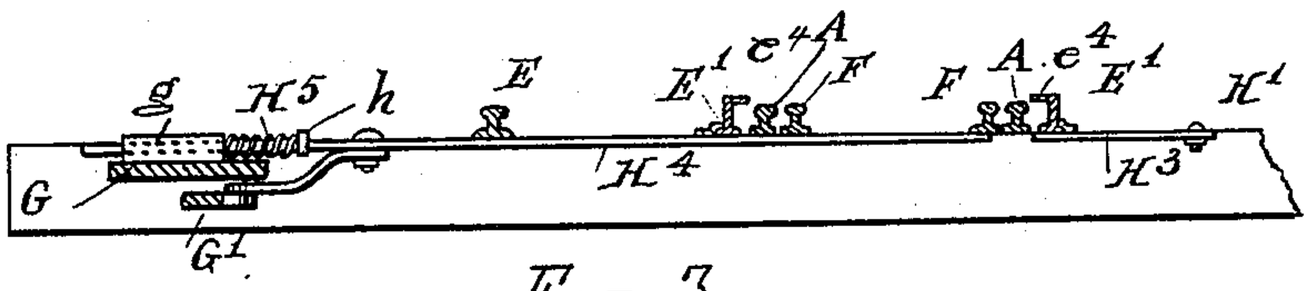

FIG. 3.

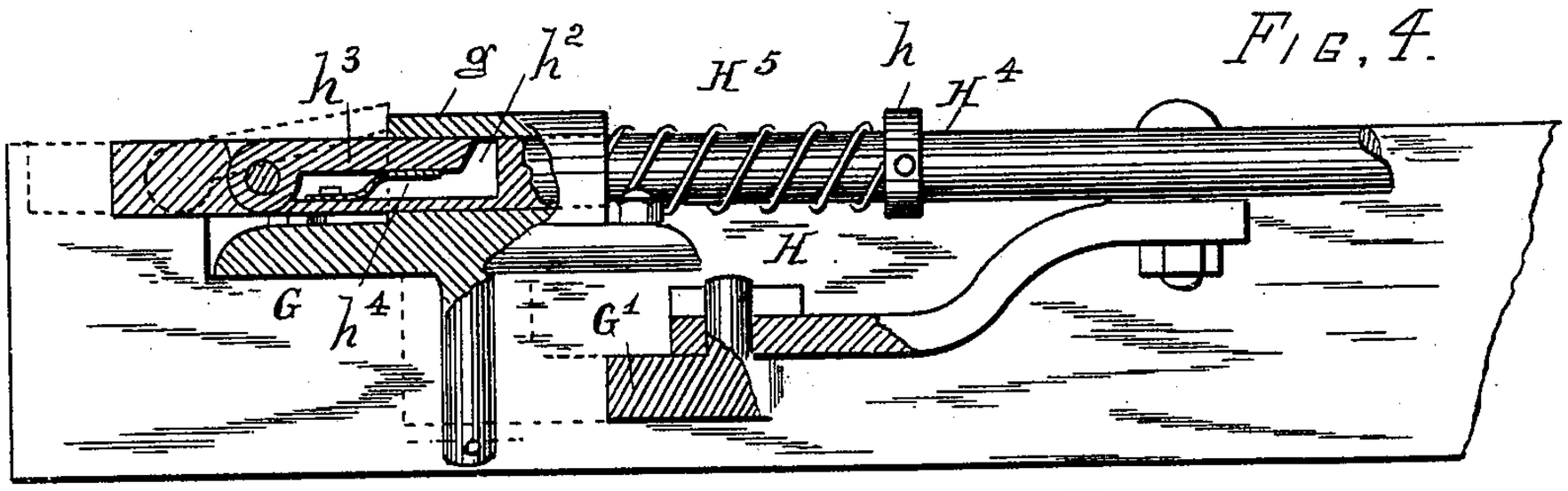

FIG. 4.

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UNITED STATES PATENT OFFICE.

EDWARD C. HOLZWORTH, OF SPRINGFIELD, ILLINOIS.

RAILWAY.

SPECIFICATION forming part of Letters Patent No. 613,679, dated November 8, 1898.

Application filed August 20, 1897. Serial No. 648,921. (No model.)

To all whom it may concern:

Be it known that I, EDWARD C. HOLZWORTH, a citizen of the United States, residing at Springfield, in the county of Sangamon and State of Illinois, have invented certain new and useful Improvements in Railways, of which the following is such a full, clear, and exact description as will enable others skilled in the art to which it appertains to make and use my said invention.

My invention relates to three-throw switches of that class which are usually operated by means of a switch-stand for the purpose of transferring trains from the main track of a railway to switches on either side thereof.

The purposes of my invention are to provide a system of switches so constructed and arranged that the main track may be formed of continuous or unbroken rails throughout the entire length of the line; to provide simple and effective means whereby a single switch-stand may serve to operate the system of switches, so that the main track may be clear and unobstructed, or so as to open or close a turnout to the right, or so as to open or close a turnout to the left, as may be required; to provide simple and effective means whereby in case of a misplaced switch the flange of the front wheel of an engine or car running on the main track facing the switch may automatically move the switch-rails so as to clear the main track, to provide simple and effective means whereby the switch-rails when shifted by the flange of the wheel, so as to clear the main track, may be locked in their shifted positions, so as to prevent the knocking of the ends of the switch-rails against the sides of the rails of the main track and against the flanges of the passing wheels of the train, which would occur if the ends of the switch-rails were acted against by the flange of every wheel of a train running on the main track, and to provide simple and effective means whereby the movable ends of the switch-rails and the toes of the split rails may be yieldingly held in contact with the side of the rails of the main track.

With these ends in view my invention consists in the novel features of construction and combinations of parts shown in the annexed drawings, to which reference is hereby made, and hereinafter particularly described, and pointed out in the claims.

Referring to the drawings, Figure 1 is a top plan view of a part of a railway embodying my improvements. In this view only the heads of the rails are shown, the flanges of the rails being omitted for the sake of greater clearness in the drawings. Fig. 2 is an enlarged vertical transverse section on the line 2 of Fig. 1. Fig. 3 is a partial vertical transverse section on the line 3 of Fig. 1. Fig. 4 is an enlarged combined side elevation of and vertical axial section through the device for locking the inner switch-rails in position after they have been automatically moved by the flange of a wheel running on the main track, as hereinafter set forth.

Similar letters of reference designate like parts in all of the views.

The main-track rails A are the usual well-known T-rails and extend continuously and without break throughout the entire length of the line.

The switch-stand, which is of the class known as "three-throw" switch-stands, may be an upright lever-stand or may be a tumbling lever-stand or may be of any other suitable and convenient form adapted to shift the free ends of the split rails and the free ends of the switch-rails, as hereinafter set forth.

In the drawings I have shown a switch-stand of the class known as a "monkey-switch," having an upright stand B, a vertical spindle B′, a horizontal crank B^2, secured to the spindle, and a hinged lever B^3, secured to and adapted to operate the spindle B′, so as to throw the crank as may be required.

The split rails D are secured for a part of their length to the ties of the track and for a part of their length are free to move on the ties. The free ends of the split rails have a tapering part d' d^2, as shown, and are of such form that when the split rails are shifted to the right or to the left, as the case may be, the tapering sides of the split rails will abut against the adjacent sides of the main-track rails A.

The central part d of the tapering part of the split rails D is of somewhat greater height than the main-track rails A, and the upper

surface of the split rails slopes gradually in one direction from the central part d to the heel d' of the split rail and slopes in the opposite direction from the central part d to the toe d^2 of the split rail, the heel d' and the toe d^2 being of the same height as the main-track rails A.

The outside switch-rails E are secured for a part of their length to the ties and for a part of their length are free to move on the ties. The free ends of the switch-rails E have an enlarged part $e\ e'$, provided with a lateral flange e^2, the flange e^2 being of such height that when the free end of the switch-rail is shifted close against the main-track rail A the flange e^2 will overlap and rest on top of the rail A. The central part e^3 of the enlarged part of the rail is of somewhat greater height than the extremities $e\ e'$ of the enlarged part, and the upper surface of the enlarged part of the rail slopes in both directions from the part e^3 to the extremities e and e', respectively.

The inner switch-rails E', which are somewhat higher than the main-track rails, are secured to the ties, except for a part of their length adjacent to the rails A, which is free to slide on the ties. At the free end of the rails E' the flange and the web of the rail are cut away, so as to form projections e^4, which overlap and rest on top of the rails A and lie close to the adjacent outer edge of the frog-rail F when the switch-rails are shifted to the right or to the left, as the case may be, so as to bring the end of either switch-rail into contact with the side of the main-track rail A and permit the wheels of passing cars to run from the frog-rail onto the adjacent switch-rail or from the switch-rail onto the adjacent frog-rail, as the case may be.

The frog-rails F are secured to the ties between the rails A and have lateral enlargements f, which for a part of their length lie approximately parallel to the inner sides of the rails A and at such distance therefrom as to permit the flanges of car-wheels running on the rails A to pass between the rails A and the frog-rails F.

A shifting rail F' is pivotally connected, as at f', with one of the frog-rails F and forms a continuation thereof.

The frog-rails F and the shifting rail F' are of the same height as the inner switch-rails E' and extend above the top of the rails A sufficiently to permit the wheels of cars running on the frog-rails F and the switch-rails E' to pass over the rails A without the flanges of the wheels riding on the top of the rails A.

The free end f^2 of the shifting rail F' is curved inward, as shown, so that the flange of a wheel traveling on the rails A in the direction indicated by the arrow X may engage with the end f^2, so as to shift the rail F' and move the free ends of the rails E' outward by means of rods and a lever connecting the several parts, as hereinafter described.

At one side of the railway-track a plate G is secured in place in line with the switch-stand B. An arm G' is pivotally supported on the plate G. A rod H, Fig. 1, connects the arm G' with the crank B^2. A lever H' is pivotally supported on one of the ties. A rod H^2 connects one end of the lever H' with the free end of the shifting rail F'. A rod H^3 connects the lever H' with the free end of the switch-rail E' adjacent to the shifting rail F'. A rod H^4 connects the shifting rail F' and that switch-rail E' which is remote from the shifting rail with the arm G'.

From the foregoing it will be seen that when the arm G' is turned so as to move the rod H^4 outward in a direction transverse to the main track the rod and its connections will cause the shifting rail F' to move toward the adjacent rail A and will also cause the rails E' to move inward, so that the projections e^4 of the rails E' will overlap the main-track rails A, respectively, and when the rod H^4 is moved in the opposite direction it will cause the shifting rail F' and the switch-rails E' to move away from the rails A, so as to leave the main track clear, as shown in Fig. 1. It will also be seen that (owing to the peculiar construction and arrangement of parts which I have described) when either the right-hand or the left-hand turnout is open the projections e^4 of the rails E' will overlap the rails A and the shifting rail F' will lie close to the adjacent rail A. If then a train on the main track proceeds in a direction indicated by the arrow X, the flange of the front wheel of the engine will engage with the part f^2 of the shifting rail F' to move the free end of the shifting rail toward the center of the track, thereby causing the free end of the right-hand rail E' to move outward by means of the rod H^2, the lever H', and the rod H^3, and causing the free end of the left-hand rail E' to move outward by means of the rod H^4 connecting the switch-rail E' with the shifting rail F', thus automatically closing the turnouts and leaving the main track clear.

A rod J extends transversely under the rails A, D, and E, and the rails D and E are secured to the rod and are shifted thereby, as hereinafter explained. The rod J is preferably made in two parts, connected by a turnbuckle j, by means of which the points of the split rails D may be accurately adjusted relative to the rails A. A collar j' is secured to the rod J. At one end of the rod J is an eye j^2, through which the rod J' passes. The rod J' has a hinge connection with a link J^2, and also has an eye j^3, through which the rod J passes. The link J^2 connects the rod J' with the crank B^2. A spring J^3 surrounds the rod J between the eyes j^2 and j^3, and a spring J^4 surrounds the rod J between the collar j' and the eye j^3. The springs J^3 and J^4 are of such rigidity that the rails D and E may be shifted by means of the rods J and J' without the springs yielding; but in case of obstruction getting between the rails or in case the parts are otherwise subjected to undue strain the

springs will yield, so as to permit the rods J and J′ to slide on each other, thereby preventing the breaking of or damage to any of the parts.

On the plate G is a guide g, in which the rod H^4 slides. A collar h is secured to the rod H^4. A spring H^5 surrounds the rod H^4 between the collar h and the guide g and acts against the collar h to press the rod H^4 outward. The spring H^5 is of such rigidity that when the rod H^4 is moved outward to shift the rails E′ and F′, as already described, the spring will yield under any undue pressure, so as to avoid injury to any of the parts.

Near the outer end of the rod H^4 is a longitudinal recess h^2. A latch h^3 is hinged in the recess h^2, and a spring h^4 in the recess under the latch acts to raise the latch.

When the rod H^4 is in such position that the projections e^4 of the rails E′ overlap the rails A and the shifting rail F′ lies close to the adjacent rail A, if a train running on the main track proceeds in the direction indicated by the arrow X the front wheel of the engine will engage with the part f^2 of the shifting rail F′, and thereby move the rails F′ and E′ and slide the rod H^4 so as to withdraw the latch h^3 from the guide g and permit the latch to rise to the position indicated by dotted lines in Fig. 4, the upper end of the latch abutting against the end of the guide g, so as to retain the rod in its shifted position, thereby locking the parts, so as to prevent the ends of the rails E′ and F′ from knocking against the flanges of the passing wheels and against the rails A.

In order to restore the parts to operative position, it is only necessary to press down the latch h^3, so as to permit the latch to again enter the guide g.

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

1. In a railway, the combination of a main track; a shifting rail, inside switch-rails, split rails and outside switch-rails the free ends of all of which are shiftable transversely relative to the main track; a yielding rod connected with said shifting rail and with the free end of one of said inside switch-rails; a rod pivotally connected with the free end of the other inside switch-rail; a rod pivotally connected with the shifting rail near the free end thereof; a lever with which said two last-named rods are connected, means for shifting said yielding rod; and means for automatically locking said yielding rod; as set forth.

2. A locking mechanism for railways consisting of a block provided with a guide, a rod slidable in said guide, and a spring-actuated latch pivotally connected with said rod; in combination with a main track; and a shifting rail and switch-rails connected with and operated by said rod, as set forth.

In witness whereof I have hereunto subscribed my name, at Springfield, Illinois, this 26th day of June, 1897.

EDWARD C. HOLZWORTH.

Witnesses:
ALEX. MCCOSKER,
IRVING BARKER.