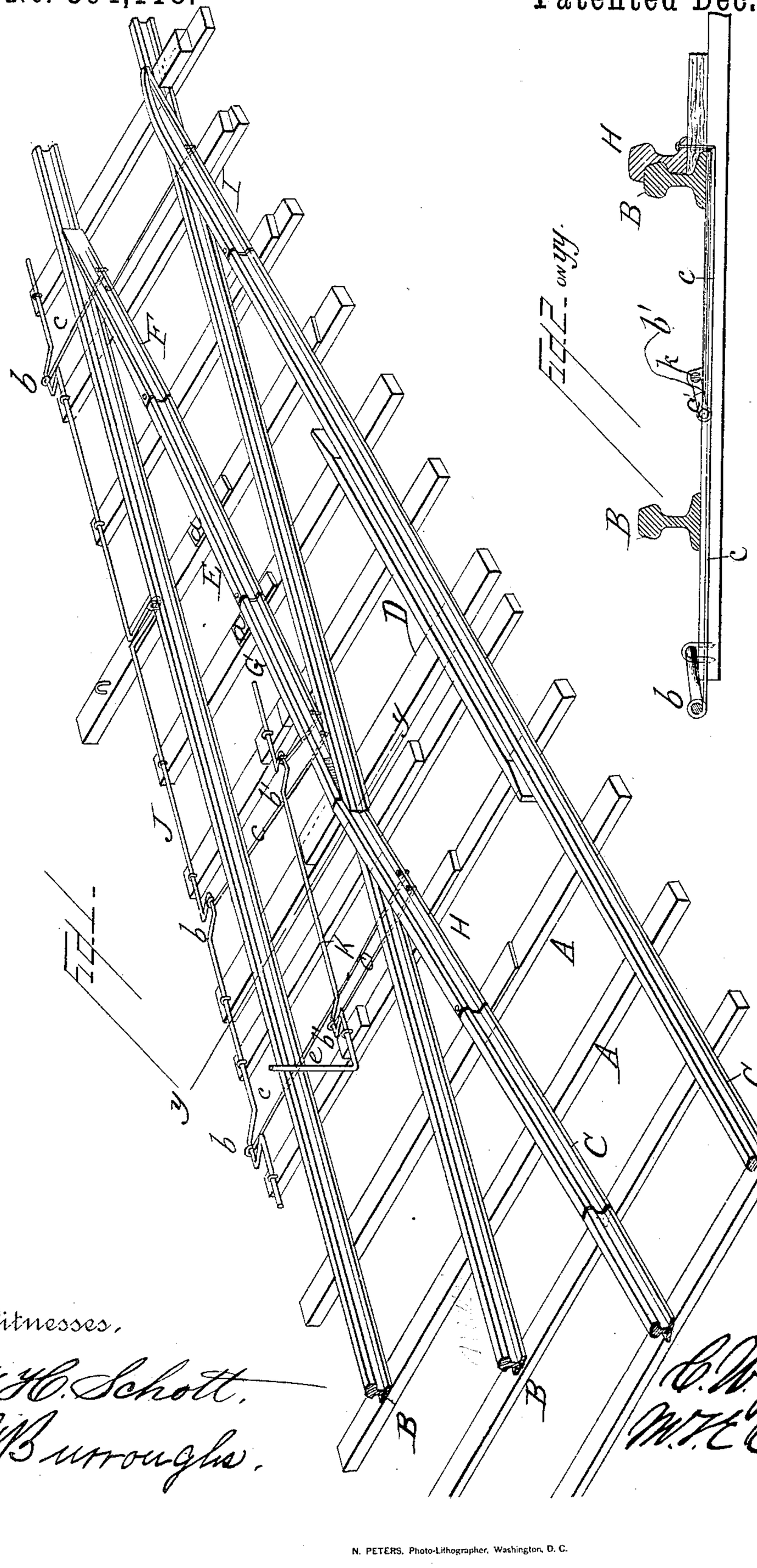
(No Model.)

2 Sheets—Sheet 1.

C. W. JONES.

FROGLESS SWITCH.

No. 394,118. Patented Dec. 4, 1888.



Witnesses.

H. C. Schott.

W. Burroughs.

Inventor.

C. W. Jones.

M. F. Chandler.

Attorney.

(No Model.) 2 Sheets—Sheet 2.

C. W. JONES.

FROGLESS SWITCH.

No. 394,118. Patented Dec. 4, 1888.

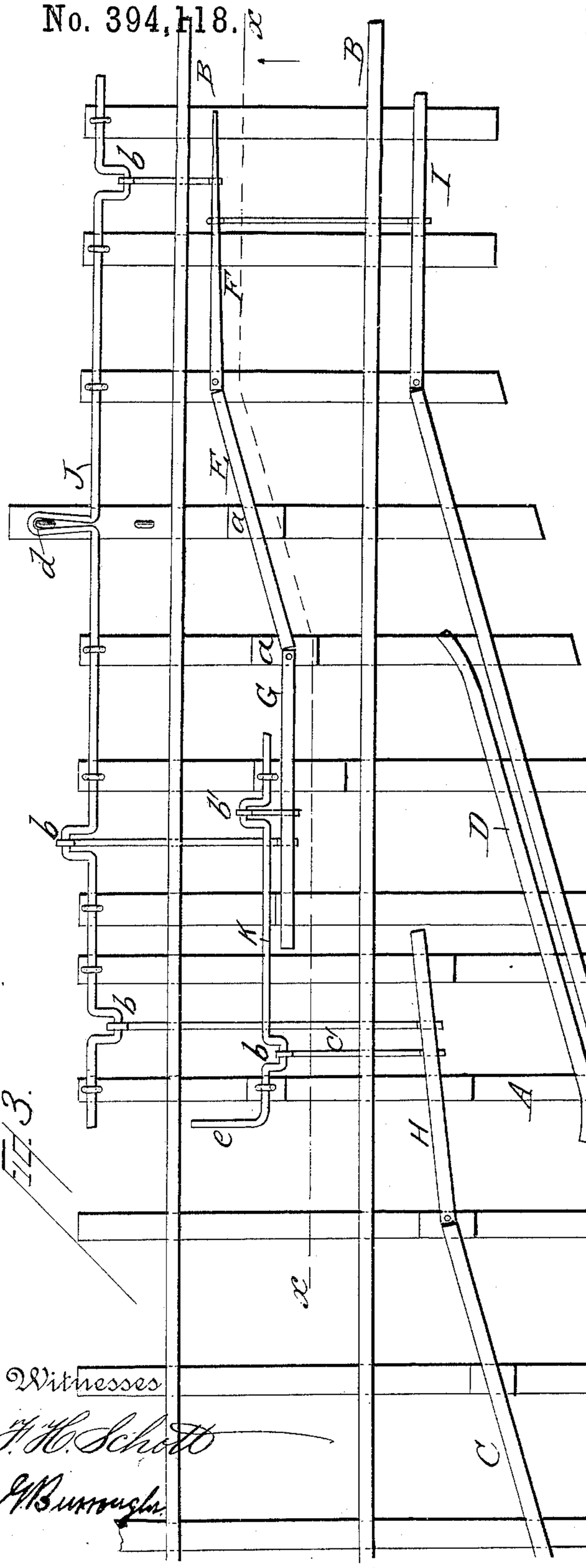


FIG. 3.

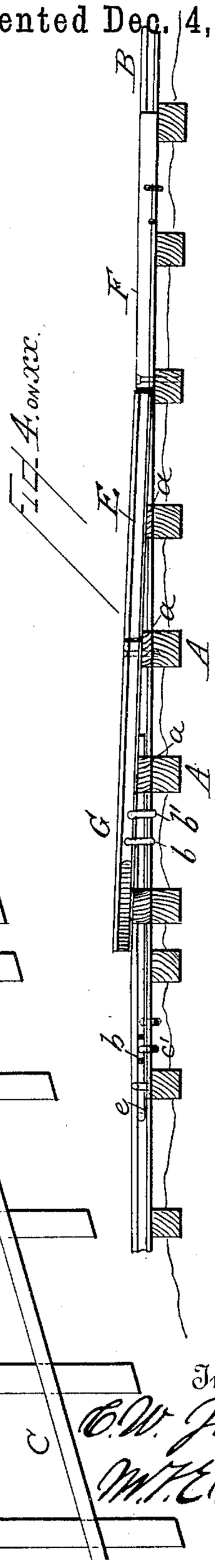


FIG. 4. ON xx.

Witnesses
F. H. Schott
W. Burroughs

Inventor,
C. W. Jones.
W. E. Chandler
Attorney.

UNITED STATES PATENT OFFICE.

CHARLES WALTER JONES, OF JUNCTION, VIRGINIA.

FROGLESS SWITCH.

SPECIFICATION forming part of Letters Patent No. 394,118, dated December 4, 1888.

Application filed June 30, 1888. Serial No. 278,628. (No model.)

To all whom it may concern:

Be it known that I, CHARLES WALTER JONES, a citizen of the United States, residing at Junction, in the county of Hanover and State of Virginia, have invented certain new and useful Improvements in Frogless Switches; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to improvements in railroad-switches by which a frog is dispensed with and the main line of rails is left undisturbed, the especial object being to provide a switch by which a side track may be connected with the main line either permanently or for a temporary use without disturbing the rails forming said main line, and a further object is to provide means for opening the switch automatically by the pilot of an engine if it be, by accident or otherwise, left closed. To accomplish these results I arrange the several parts of the switch as follows: The rails of the main line run uninterruptedly, while those of the siding are brought into near contiguity therewith on the proper curve. Pivoted at the extremity of the outer rail of the siding is a switch-rail having its free end beveled to fit the main rail when placed against it, and with an extension or shoe which passes over the top of the main rail to receive the tread of the wheel. The inner rail of the siding is raised upon blocks, so as to have its face above the level of that of the main rail, and also terminates in a switch-rail pivoted at one end in the same manner as the outer one, and having the lower part of its free end cut to a bevel coinciding with the side of the main rail, but with its upper part above the face of said main rail left of its full dimensions and its end cut square across, so that the joint between it and the adjacent end of the switch-rail, between the rails of the main line, shall be at right angles to the tread of the wheels, thus preventing the danger arising from the flange of a wheel striking and bending the extremities of said switch-rails, as it is liable to do when they are beveled to a sharp point. A short piece of rail is secured to the ties slightly higher and between the main rails at an angle to them and parallel with the outer rail of the siding. A movable switch-rail connects each end of this intermediate rail with the main rails. The switch-rail connecting with that of the siding has its end beveled and extending over the main rail. The other at the opposite end of the intermediate rail is simply beveled at one side, so that when lying adjacent to the main rail it will catch the flange of the wheel and deflect the same onto the siding. A cranked shaft is placed parallel with the main line, its cranks connected by suitable rods with the movable switch-rails, so that by rotating the shaft said rails may be simultaneously moved to connect with the main line or to leave it open for the continuous passage of trains. In order to prevent the danger of derailment to an advancing train should the switch be left closed to the main line, a short shaft is placed between the rails of the main line a little to one side of the center thereof, and cranks upon the same connected by rods with the movable switch-rails. This shaft is also provided with an arm which, when the switch is closed to the main line, projects upward above the rail far enough to be struck by the pilot of an approaching engine. The inclined side of said pilot, acting upon the arm, turns the shaft and opens the switch, all as will be hereinafter more fully described in connection with the drawings, in which—

Figure 1 is a perspective view of the switch complete, the same being closed to deflect a train upon the siding. Fig. 2 is a transverse section of Fig. 1 upon the line *v v*. Fig. 3 is a plan view of the switch open to the main line, and Fig. 4 is a longitudinal section on the line *x x* of Fig. 3.

In the several figures, A A represent the ties upon which both the main line and siding are supported.

B B are the rails of the main line, and C C the rails of the siding, D being a guard-rail placed adjacent to and within the outer rail of the siding to prevent any slight disarrangement of the meeting ends of the shifting rails from derailing the train. An intermediate rail, E, is also secured to the ties be-

tween the main rails and at an angle thereto equal to the divergence of the siding from the main line. At each end of this intermediate rail, E, is pivoted a movable switch-rail. That at the end farthest from the siding (designated by the letter F) is beveled to a wedge-point at its free end, so that it may be drawn into close contact with the inner side of the main rail to enter between the flange of a wheel, and said rail thus deflecting the wheel from the main line to the siding. At the opposite end of the intermediate rail is pivoted the switch-rail G, its free end cut away and beveled to fit the side of the main rail; but as this switch-rail and the intermediate rail are raised upon blocks *a a*, placed upon the ties, it will be seen that the head of the switch-rail is above that of the main rail, but extends its full width to the end which when the switch is closed rests upon the top of the main rail, and is partly supported thereby.

Another movable switch-rail, H, similar in construction to the rail G, is pivoted at the end to the inner siding-rail, its free end coming into alignment with the rail G and resting on the main rail when the switch is closed, the two switch-rails thus forming a bridge which carries the wheel-flanges over and clear of the main rails.

Another switch-rail, I, is provided at the extremity of the outer rail of the siding and rests upon blocks which raise it slightly above the level of the main rails, its free end being cut away to allow said end to come into close contact with the side of the main rail, the head of the switch-rail passing over it and being cut away or beveled on top, so that the wheels may readily mount it in passing from the main rail to the siding. In order to operate this switch, a shaft, J, is secured in suitable bearings upon the ties at one side of the track. This shaft is provided with a series of cranks, *b b*, placed at different angles to each other, so as to give the necessary movement to the switch-rails, with which the cranks are connected by rods *c c*, when the shaft is turned. The rotation of the shaft J may be accomplished readily by an arm or lever, *d*, connected with the shaft in such a manner that when it lies horizontally upon one side of the shaft the switch will be open to the main line and the passage of the train thereover be uninterrupted; but when said lever is turned so as to lie horizontally upon the opposite side of the shaft the switch will be closed and an approaching train turned onto the side track.

In order to prevent the derailment of a train on the main line by the switch being left closed, a shaft, K, is placed between the rails of the main line a little to one side of the center. This shaft is provided with cranks *b' b'*, connected with the switch-rails G and H by rods *c' c'*. This shaft K is also provided with a projecting arm, *e*, which, when the switch is closed, stands in a position to be struck by the inclined side of the pilot of an approaching engine, which forces the arm to one side, turns the shaft, and opens the switch, thus allowing the trains to pass without danger.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent, the following:

1. As an improvement in railway-switches, the combination, with the rails of the siding and main tracks, of the shifting rails F G H I, constructed as shown and described, the shafts J and K, provided with cranks, as set forth, and the rods connecting said cranks and switch-rails, as specified.

2. As an improvement in railway-switches, the shifting rails and their operating devices, consisting of the shafts J K, their connections with the rails, and the upwardly-projecting arm *e*, attached to shaft K, forming an automatically-acting switch-opening device placed between the rails of the main line and arranged to be operated by the pilot of an approaching engine, as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

CHARLES WALTER JONES.

Witnesses:

JAMES B. DENTON,

J. A. BROWN.