# D. F. CAVANAUGH.

## Railroad-Switch.

No. 166,186. Patented Aug. 3, 1875.

Fig. 1

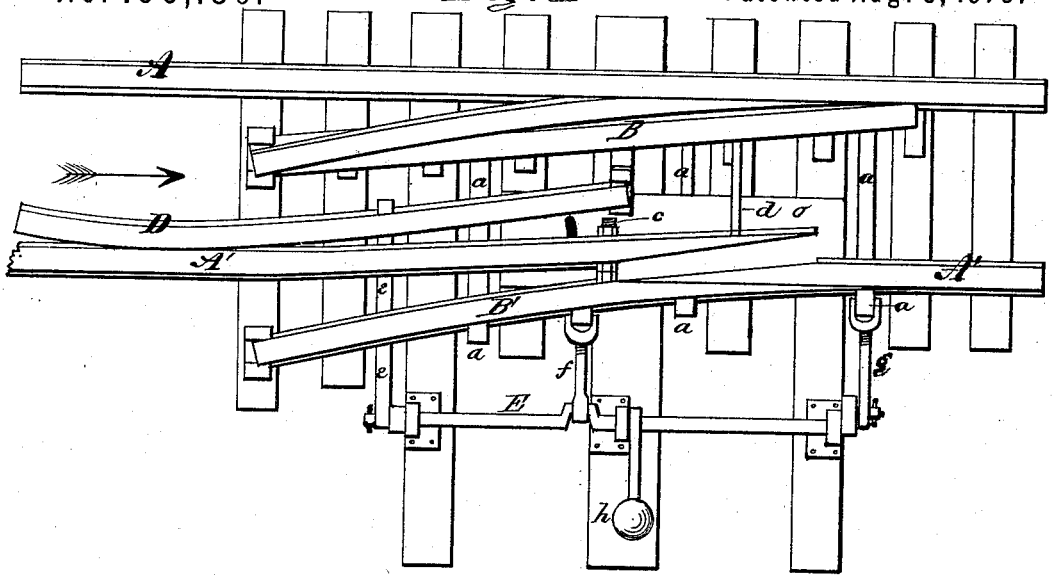
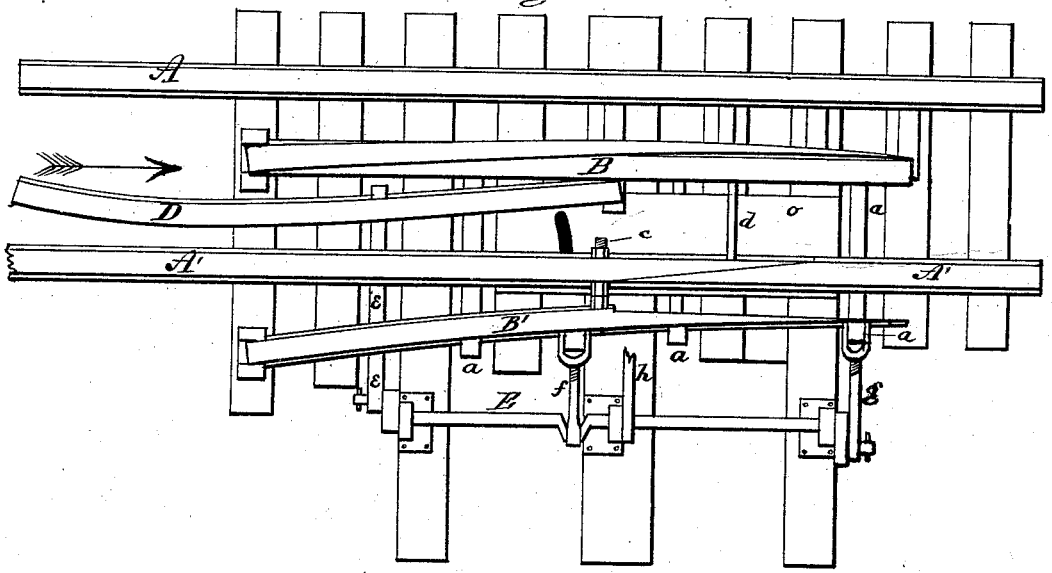



Fig. 2




Witnesses

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# UNITED STATES PATENT OFFICE.

DENNIS F. CAVANAUGH, OF GREENSBURG, PENNSYLVANIA.

## IMPROVEMENT IN RAILROAD-SWITCHES.

Specification forming part of Letters Patent No. **166,186**, dated August 3, 1875; application filed July 15, 1875.

*To all whom it may concern:*

Be it known that I, DENNIS F. CAVANAUGH, of Greensburg, in the county of Westmoreland and State of Pennsylvania, have invented certain new and useful Improvements in Railway-Switches; and I do hereby 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 pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification, in which—

Figures 1 and 2 are plan views of my invention, showing different adjustment, respectively, of parts.

This invention relates to that class of railway-switches in which the rails are thrown into position by the flange of the foremost wheel of car or engine setting devices in operation, whereby the switch is adjusted instantly.

The switch embodying my improvements comprises a diagonal splice-joint in the main rail, on the side next the turn-out or siding, a tapering rail on the turn-out to fit the other main rail, a little longer than the splice-joint, the movable main rail and two siding-rails being fastened permanently together, with the ends of all three pivoted, the turn-out and main rail having an adjusting tie-rod between, a guide or trip rail pivoted at one end, working a lever which is attached to a three-crank shaft, one crank attached to the lever, the middle one holding a stay-rod for the siding-rails, and the third working a lever for operating the switch by hand, the manipulating-lever of which is placed near the middle of the shaft, and is weighted. It consists, further, in the general construction and combination of the parts for the purpose of giving greater lateral strength against displacement or spreading and facility for working.

Referring to the accompanying drawings, A A′ are the main rails, rail A′ being cut into a diagonal splice-joint. The rail A′ (its movable end) is spiked down for about one-third its length at the end opposite its splice-cut, the remainder being free from the ties. Under the splice of the main rail A′ I place a plate, *o*, to support the joint, as well as to give a smooth surface for working on. The two switch-rails B B′ are both pivoted in chairs or other devices. They are stayed firmly together by means of three or more connecting-rods, *a a a*, so placed as to give the greatest possible stability to the connected rails. The switch-rail B′ and the main rail A′ are connected firmly by means of the adjusting tie-rod C, passing through both, and provided between an outside with adjusting-nuts to keep them always tightened up to proper position. The rails B and A′ are further stayed by the rod *d* crossing from near both ends for greater security and stability. A curved trip or guide rail, D, is placed inside the main rail A′, curving away from it, having one end pivoted near the splice, and its other end free or working in a slide on the tie. To this, in a position which makes it a lever of the second order, is fixed a bent rod, *e*, passing under the main rail A′ and rail B′ of the switch, and attached to a crank on one end of the crank-shaft E, so that when the trip-rail D moves outward from the rail A′ the rod *e* turns the crank-shaft and closes the switch. The crank-shaft E passes through a bearing at each end and at its middle point. It has an elbow at one side of the middle bearing, carrying an adjustable stay-rod, *f*, which supports the switch-rail B′ at the very point where it needs support—*i. e.*, at the first point of junction with the permanent main rail, where, in turning out, the tread of the wheels first strikes the rail B′. At the same time the stay-rod *f*, being fastened to the switch-rail B′, serves as an operating-lever to open or close it in connection with another stay and operating rod or lever, *g*, at the other end of the crank-shaft, also attached to the switch-rail B′, but almost at its very point. On the crank-shaft a weighted lever, *h*, is keyed or otherwise fastened, for the purpose of manipulating the switch, as well as cause the switch, when tripped, to perform its full functions. The plate *o*, under the splice of rail A′, is slotted laterally, in which plays a pin depending from the rail A′. The purpose of this is to prevent the rail A′ from creeping away from its fellow and producing a defective joint. The switch-rails B B′ move on metal slides spiked to the ties. In order to give a perfect fit, and to prevent the wheel-flanges from battering the point of switch-rail B, its outer face is made to conform to the shape of the main rail A, and thus its point is under

the head of the rail and out of the reach of the flanges.

The *modus operandi* is as follows: Suppose, through neglect, the switch is left open to the siding, and a train approaches in the direction indicated by the arrows. The forward wheel while yet on the spiked end of main rail A′, with its flange, strikes the curved face of the guide-rail D, and throws its end over suddenly toward main rail A, thus causing the crank-shaft, by means of its two stay-rods and operating-arms, to throw the switch into closed position by opening the siding-rails and closing the joint on the main rail A′. If the train advance in the contrary direction it will not run off the track, as the switch is set for the siding; so in either case there is no danger.

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

1. In combination with the laterally-adjustable rail A′ of the main or direct track, the movable switch-rails B′ B and pivoted guide-rail D, said rails being connected by means substantially as described, whereby, when the switch is open and rails B′ B in communication with the rails A A′, the impact or pressure of the wheels against rail D will effect the closing of the switch, substantially as specified.

2. The laterally-movable switch-rail B′, pivoted at one end only, and direct rail A′, connected together by means of the adjusting tie-rod *c*, substantially as and for the purposes set forth.

3. In combination with the pivoted trip-rail D, movable switch-rails B B′, and movable direct rail A′, the crank-shaft E, and connecting-arms *a*, *a*, *a*, *e*, and *d*, as shown and described.

4. In combination with switch-rail B′ and the elbowed crank-shaft E, the operating and brace lever *f*, supporting the rail B′ at its first point of junction with the permanent rail A′, as shown.

In testimony that I claim the foregoing I have hereunto set my hand this 7th day of July, 1875.

DENNIS F. CAVANAUGH.

Witnesses:

FRANK A. POLLOCK,

THOS. J. MCTIGHE.