

(No Model.)

J. MURPHY.  
RAILWAY SWITCH.

No. 274,643.

Patented Mar. 27, 1883.

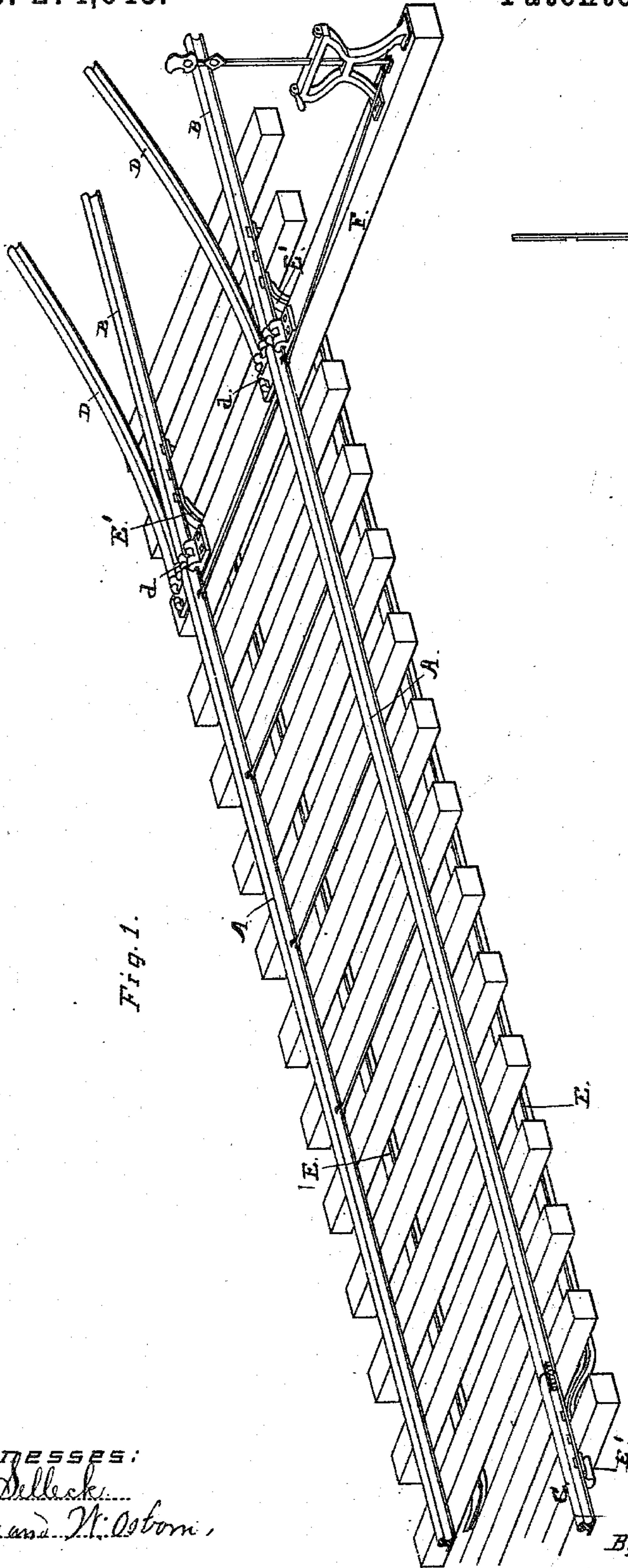


Fig. 1.

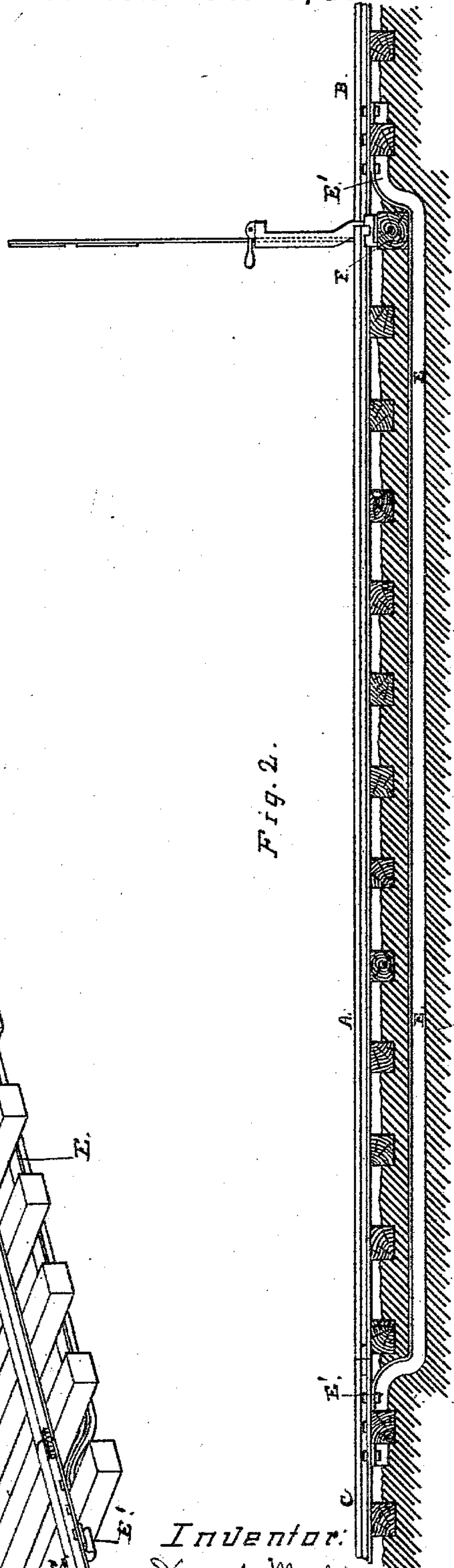


Fig. 2.

Witnesses:  
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# UNITED STATES PATENT OFFICE.

JOSEPH MURPHY, OF SAN JOSE, CALIFORNIA.

## RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 274,643, dated March 27, 1883.

Application filed February 18, 1882. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH MURPHY, of the city of San José, county of Santa Clara, and State of California, have invented a new and useful Improvement in Railway-Switches; and I do hereby declare that the following is a full, clear, and exact description of my said invention, reference being had to the accompanying drawings.

My invention has reference to a means or device for application and use in the construction of railway-tracks to keep a movable section—such as a switch-rail—at all times in proper working relation and contiguity to the fixed or stationary sections or lengths of rail composing a track, so that the expansion and contraction of the sections in the line of track shall not affect or act upon the movable rails to spring them out of line or move them longitudinally out of position.

By means of my improvement, as will be more fully described, I prevent the ends of the movable rails in a switch from being pressed against or drawn away from the adjoining ends of the fixed rails in the line of track by the extension and contraction of the sections, produced by changes of temperature, to which the track is exposed when laid.

Referring to the accompanying drawings, Figure 1 is a perspective view of the device. Fig. 2 is a vertical longitudinal section.

In each of these views, A A represent the two springing or movable rails that may form a switch-section in the main line of track, while B B C C show the adjoining sections of the stationary or permanent rails in the main line.

D D are the rails of the branch line, and *d* *d* are the head-blocks, in which the ends of the fixed rails B B D D are held and kept from moving out of position. Upon these head-blocks *d* the free ends of the switch-rails A A, when thrown by the lever and connecting mechanism, have a lateral movement in front of the ends of the fixed rails B D; but the opposite ends of these rails A are permanently connected to the adjoining sections C C of the main rail or line of track. This is the construction now generally followed in placing stub or jump switches in lines of track. It is, however, defective and unsafe, and renders the

working condition of such switches uncertain and unreliable from the fact that each section or length of rail in the main line of track, being subject to considerable amount of longitudinal expansion and contraction from the exposure to extremes of temperature, causes a variation in the length of the line to take place as the weather changes, and the amounts of such expansion and contraction accumulate and are multiplied at the last section or length, where the rails A of the switch or movable section are connected. As the result of this the rails A A are in warm weather often moved forward longitudinally until their free ends butt and press tightly against the ends of the fixed rails; or under the effects of cold weather their ends are drawn away from the fixed rails, so as to leave a gap or space between the ends of the rails. In the one case the switch-rails are frequently held against the ends of the adjoining fixed rails with such longitudinal force or pressure that the switch cannot be thrown, and the movable rails not being spiked or held down to the ties, they are often sprung out of line either vertically or laterally, while in the other case the space produced between the ends of the switch and fixed rails by the contraction of the main line is sometimes great enough to cause the wheels to miss the switch in passing from one rail to the other at the switching-point.

To overcome and remedy these defects in the construction an operation of these movable sections in lines of railway-track is the object of my improvement. This consists essentially of a stay rail or bar, E, bolted to the under side of the section or length of rail in the main track that adjoins the fixed end of the movable section or switch-rail, and then carried under and parallel with this switch-rail along the bed and bolted at the other end to the section or length of rail that forms the last section of the main line, and adjoins the opposite free end of the switch-rail. This stay rail or bar is long enough to extend somewhat beyond the switch-rail at each end, so as to be bolted or otherwise firmly secured or connected to the length of rail on the main line at both sides of the switch-rail, and it is laid beneath the ties and under the surface of the bed, so as to be out of the way of the switch, and yet be practi-



5 cally an extension or continuation of the rails  
 of the main line, and lying under the surface  
 of the bed, so as to be out of the effect of the  
 weather, and free from expansion or contrac-  
 10 tion very largely. The effect of such appli-  
 cation of a stay-rail is to arrest the longitudi-  
 nal movement of the main rails at each end  
 of the switch-section, and cause the expansive  
 and contractile forces to act or be distributed  
 15 on the rails of the main line away from the  
 switch. The free ends of the switch-rails are  
 then maintained at proper working distance  
 from the ends of the adjoining fixed rails, and  
 are not moved longitudinally by the expansion  
 20 and contraction taking place in the lengths of  
 the track on either side of the switch. These  
 rails or bars E are laid one to each line of rail  
 in the main track, so that they form a continua-  
 tion of the fixed rails around the movable sec-  
 25 tion and practically isolate it from the main  
 track.

For applying my improvement in an eco-  
 nomical as well as a substantial manner I take  
 30 old worn-out rails, and placing them upside  
 down, or with the flange uppermost, I make a  
 double bend at each end—first upward at right  
 angle and then horizontally—to give a length  
 or portion, E', at each end, to fit and be bolted  
 against the under side of the rail B C of the  
 35 track, as clearly shown in Fig. 2. At the cross-  
 timber F, on which the switch-stand is secured,  
 I carry the end portion of the stay-rail directly  
 beneath and against its under side, and then  
 upward to the fixed rail. The vertical bend on  
 40 the end of the stay-rail will then be made about  
 equal to the thickness of this timber. This  
 brings the main portion of the stay-rail below  
 the ties on which the switch-section swings and  
 takes the rail below the surface of the road-  
 way, so that it can be covered up and pro-  
 45 tected from the weather, if so desired. It also  
 forms a solid bearing and anchorage at the  
 point of attachment of the rails with the stay-  
 rail.

I am aware that the movable switch-rail 45  
 length of track has been spanned by station-  
 ary rails which connect the two stationary  
 lengths of track. The rails hitherto in use for  
 this purpose have been straight, and are se-  
 50 cured either at the side of the track by being  
 fastened to extended offset-plates or let into  
 the ties immediately beneath the switch-rail.  
 My rail E, with the bends near both ends and  
 the plane portions E', is capable of being set  
 at an offset from the other rails without the in- 55  
 terposition of a plate or other holding means.

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

1. In a switch, the combination of the mov- 60  
 able switch-rail and the adjoining stationary  
 rails of the stay-rail E, having the bend, as  
 described, near each end, and having straight  
 portions E', for fastening to the stationary rails,  
 whereby the rail may be secured at an offset 65  
 without the addition of offset connecting means,  
 as herein set forth.

2. In a switch, the combination, with the mov-  
 able switch-rail and the adjoining stationary  
 rails, of the stay-rail E, secured to the station- 70  
 ary rails at either end, and bent down and ex-  
 tended under the ties, thus connecting the two  
 stationary rails, as set forth.

3. In a railroad-switch, the combination of  
 the stub-switch appliances and the adjoining 75  
 stationary rails of the stay-rail E, connected  
 with the stationary rails and connecting them,  
 the said stay-rail E being run beneath the sur-  
 face of the road-bed, so as to be free from the  
 action of heat and cold, as herein set forth.

Witness my hand and seal.

JOSEPH MURPHY. [L. S.]

Witnesses:

EDWARD E. OSBORN,  
 D. SELLECK.