2 Sheets—Sheet 1.

C. HARREFF.

RAILROAD-SWITCH.

No. 175,699. Patented April 4, 1876.

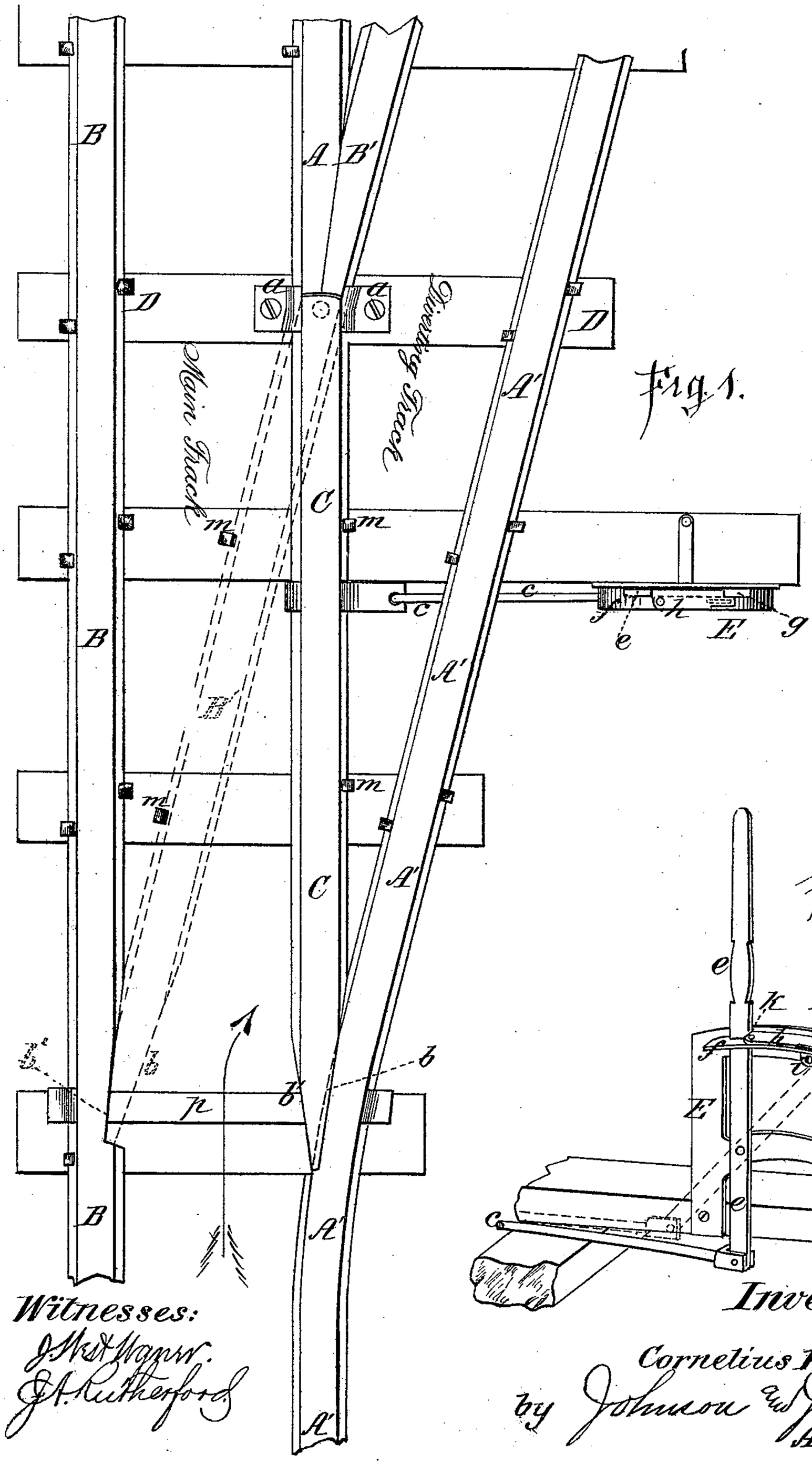

Fig. 1.

Fig. 3.

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2 Sheets—Sheet 2.

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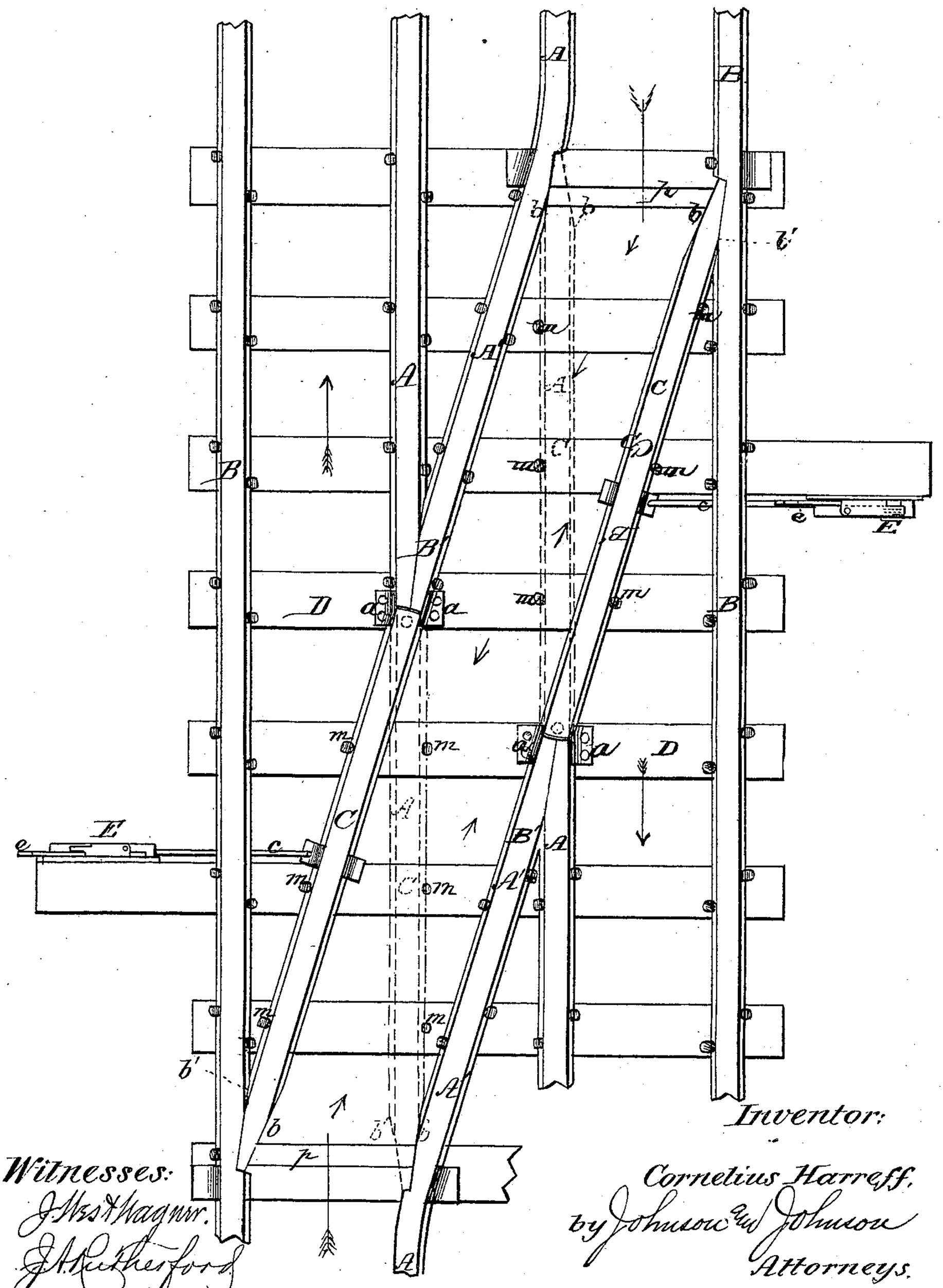
Fig. 2.



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UNITED STATES PATENT OFFICE.

CORNELIUS HARREFF, OF CANFIELD, OHIO.

IMPROVEMENT IN RAILROAD-SWITCHES.

Specification forming part of Letters Patent No. **175,699**, dated April 4, 1876; application filed February 25, 1876.

To all whom it may concern:

Be it known that I, CORNELIUS HARREFF, of Canfield, in the county of Mahoning and State of Ohio, have invented new and useful Improvements in Railroad-Switches, of which the following is a specification:

The object of my invention is to simplify the construction of railroad-switches, and, hence, cheapen their cost.

In most of the switches in use hitherto—especially the ordinary "fly" switch—a multiplicity of rails are necessary exclusive of the guides, and "frogs" are required to pass the flanged wheels of the train. The frogs frequently break the wheels and throw the train from the track.

In using my invention the rim of the flanged wheels is free, and frogs are rendered entirely useless, and their great expense and danger avoided.

I carry out my object by shifting a section of the outer continuous rail of the track to the opposite rail, which section then, in combination with the connecting-rail of the diverting track, forms the beginning of the latter. The shifting section is pivoted or hinged to the union of its continuous rail and the inner rail of the diverting track. Its free end is beveled sufficiently on each side to make it coincident with the rails it joins, or a flush junction, when forming a part of the main track, and also when initiating the diverting track. This shifting section of the continuous rail is operated by a lever and connecting-rod, and is locked at the target-rack when in the desired position.

I have thus briefly stated the aims and nature of my invention, and, in order that others skilled in the art may make and use the same, I shall more particularly describe it with reference to the accompanying drawings, wherein—

Figure 1 is a plan view of a single track, showing by dotted lines the manner of initiating the diverting track. Fig. 2 shows a double track and the method of diverting "up" or "down" trains; and Fig. 3, details of the locking device of the target.

Referring to these drawings, where the main and diverting tracks are clearly defined, A is the outer rail, or that rail which is on the right of the advancing train, and B the inner rail. The train which is to be diverted has its direction indicated by an arrow in Fig. 1; although in both Figs. 1 and 2 the trains may go in both directions, it being understood that the shifting section C is shifted to render it an integral part of the straight continuous and and stationary rails of the tracks upon which it is used, or as a diverter of trains. The drawings show the shifter C pivoted to the outer or right side of the main track, for the reason that the diverting track therein shown branches to the right. Were the diverting track to the left, the shifter C would necessarily be pivoted to the inner or left-hand rail of the main track. The outer rails of the diverting tracks are designated A′, and their inner rails B′. The shifting section is designated C, and is about thirty feet long. The outer rail A of the main tracks forms a union with the inner rail B′ of the diverting track, which is upon the long cross-tie D at their junction. A suitable chair or clamps, *a a*, preserve the joint. The shifting section C is shown in Fig. 1 as being one of the sections which make up the continuous rail A of the main track. The dotted lines in this figure show it as one of the sections making up the continuous rail B′ of the diverting track. The free end of this section C is beveled upon both sides, as shown at *b b′*, the bevel *b* rendering it coincident with the rail A when it forms part of the main track, and the bevel *b′* rendering the rails B and B′ one and the same when said section C is shifted to the opposite rail to form the diverting track. It is locked in these positions by means of a connecting-rod, *c*, operated by the target-standard *e*, which, in this case, performs the function of a lever. Suitable lap-headed spikes *m m m m* or equivalent devices, driven into the cross-ties, engage with the lower flanges of this rail or switch piece C, to hold it down to its bed upon the ties and prevent jumping. The target-rack E approaches the usual construction, except that the segmental projection *f*, within which is the slot or way *g*, for the lever *e*, has a concentric hasp, *h*, which is fastened thereon by a staple, and passes its eyed bolt *i* through a hole in said segment *f*, where it is fastened by a switch-lock or otherwise. This hasp has a front and rear shoulder, *k k′*, the shoulder *k*

locking the lever when the section C forms part of the main track, and the shoulder *k'* locking it when the section C forms part of the diverting track being shifted. A bed-clamp, *p*, passing under the rails, and clamped to their outer lower flanges, serves to form a traveling way for the free end of switch C.

The trains following the direction of the arrows, it will be seen by tracing their course that the flanges of the wheels being upon the inside meet no obstacle in pursuing their course, and that no joints or turns are so open as to need the interposition of a frog. In fact, as before stated, it is one of the prime objects of my invention to avoid the use of a frog and all its attendant constructions and evils.

My invention is as well applicable to double tracks as to single ones, since its use is easily understood from one track.

The crossing of rails is done without frogs, it being obvious that when the tread of the wheel travels over any flat surface it is only necessary to cut a narrow gutter to pass the flange.

It will be observed that my switch has the two straight rails A B of the main track stationary and unbroken, (with an exception to be immediately stated below,) that the rails of the diverting track are in an angular, or nearly angular, position to said rails, and are also unbroken and stationary, that the only break in these integral lines of rails is made necessarily, and only when the section C is shifted. It will also be observed, as a matter of importance, that I only move out of its station one single section of rail, which I make answer its purpose by merely beveling its end, which fits into notches in the main rails.

I claim—

1. The combination, with two stationary rails, A B, and a rail, B', set angularly to one of said rails, and also stationary, and forming a union, *a a*, therewith, of a shifting-rail section switch, C, of uniform width throughout its length, pivoted to said union, operated substantially as described, whereby to render said switch C continuous and integral with either rail of the main track, to permit at will a train to pass straight on or to be diverted.

2. The switch-rail C, consisting of a single railroad-rail section of the usual length and width, beveled at *b b'*, in combination with notches or shoulders in the straight unbroken rails A or B of the main track, as and for the purpose described.

In testimony whereof I have annexed my signature in the presence of two witnesses.

CORNELIUS HARREFF.

Witnesses:

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