(No Model.)

3 Sheets—Sheet 1.

R. P. WILLIAMS.

RAILWAY SWITCH.

No. 251,083. Patented Dec. 20, 1881.

Fig. 1,

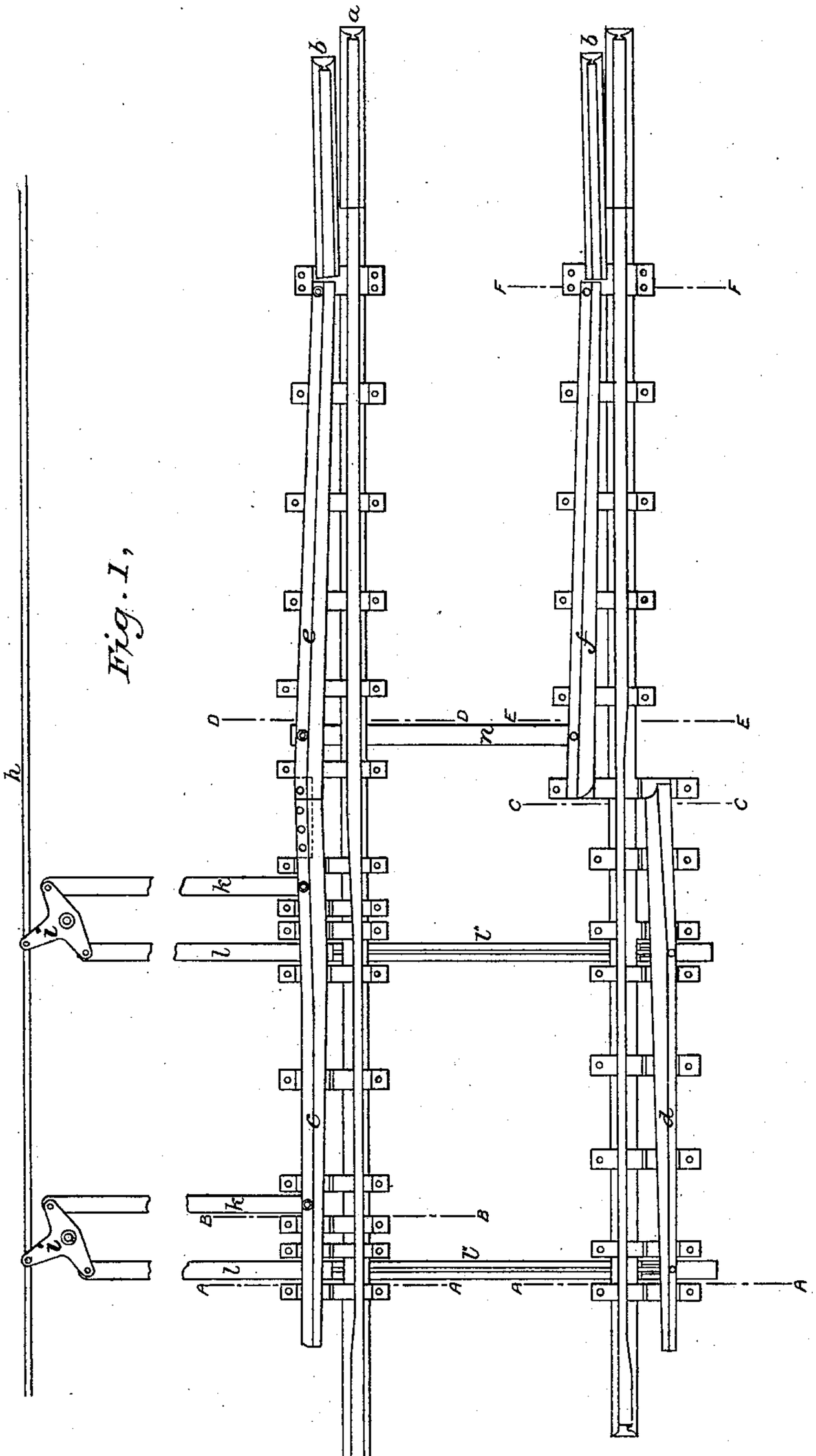


Fig. 6,

Sec. D.D,

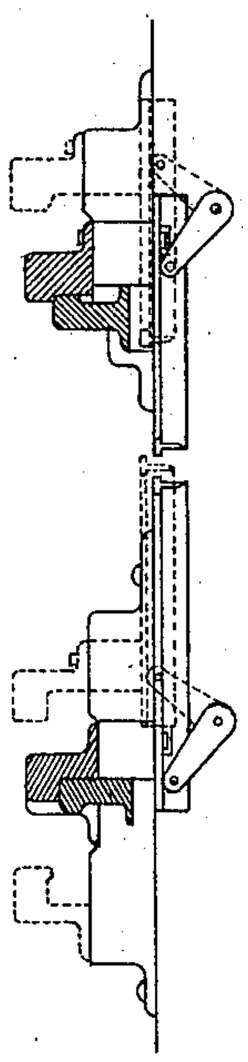


Fig. 7,

Sec. E.E,

Fig. 8,

Sec. F.F,

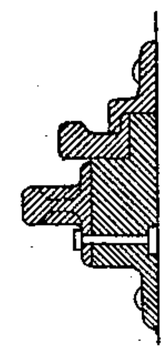
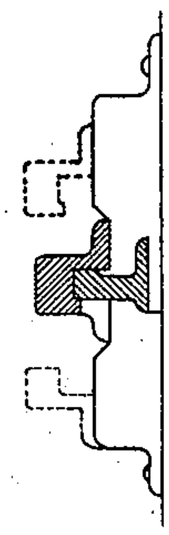


Fig. 5,

Sec. C.C,



WITNESSES

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(No Model.) 3 Sheets—Sheet 2.

R. P. WILLIAMS.

RAILWAY SWITCH.

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Fig. 2,

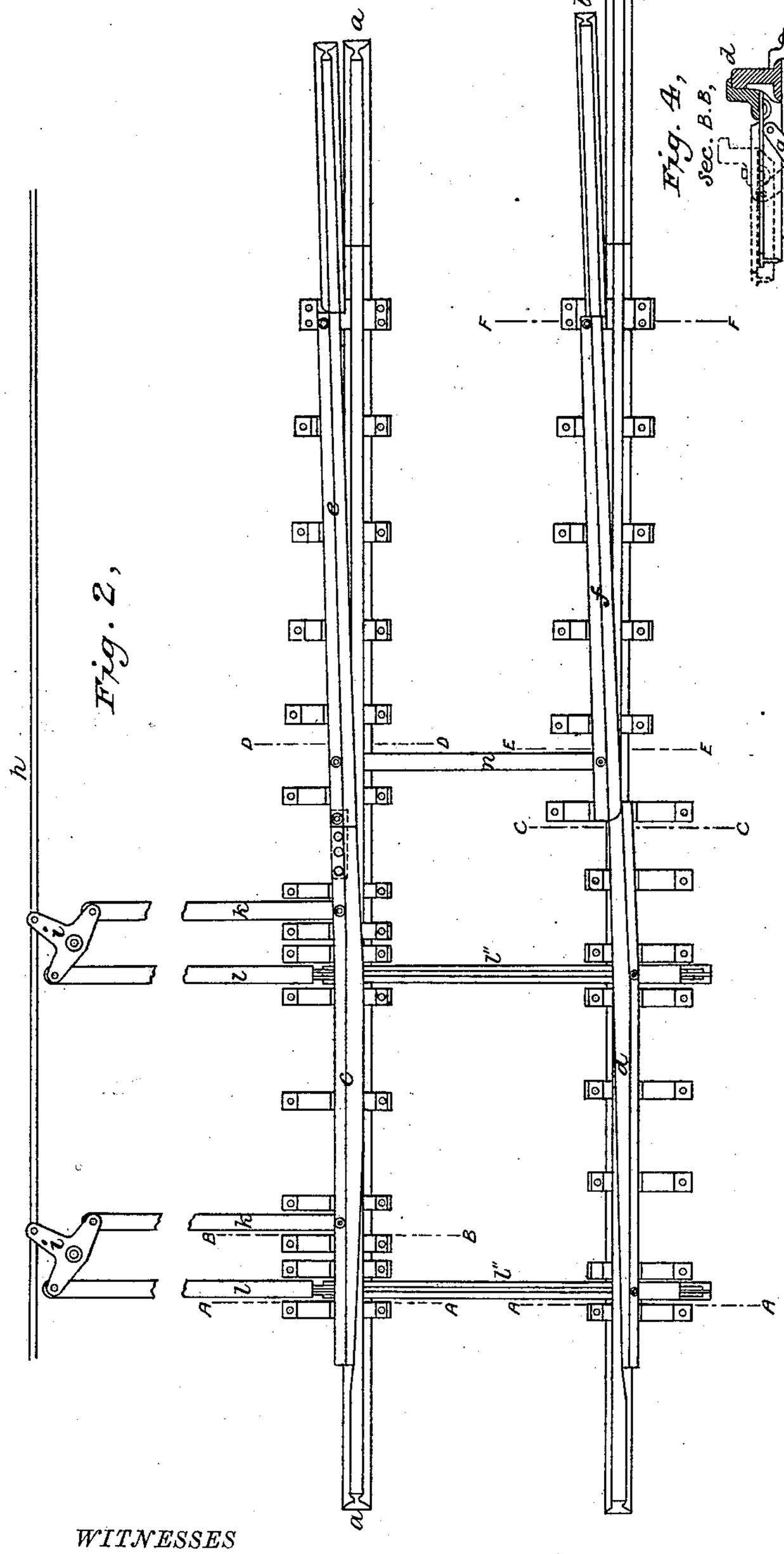


Fig. 4,

Sec. B.B,

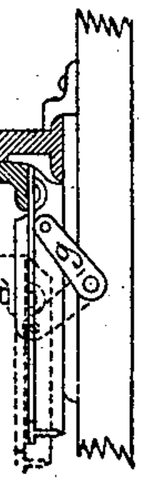


Fig. 3,

Sec. A.A, A.A,

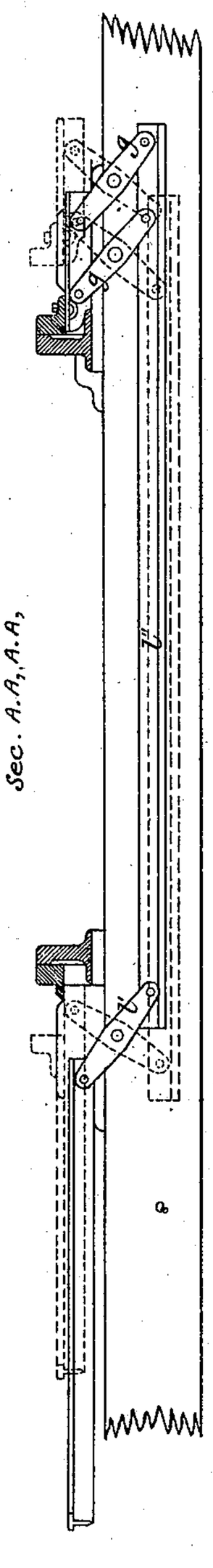
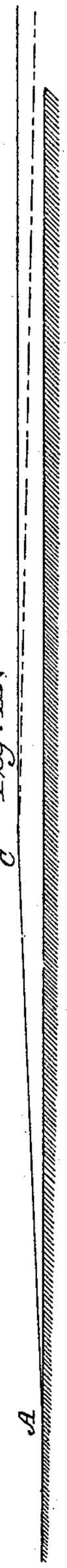


Fig. 13,



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(No Model.)

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R. P. WILLIAMS.

RAILWAY SWITCH.

No. 251,083. Patented Dec. 20, 1881.

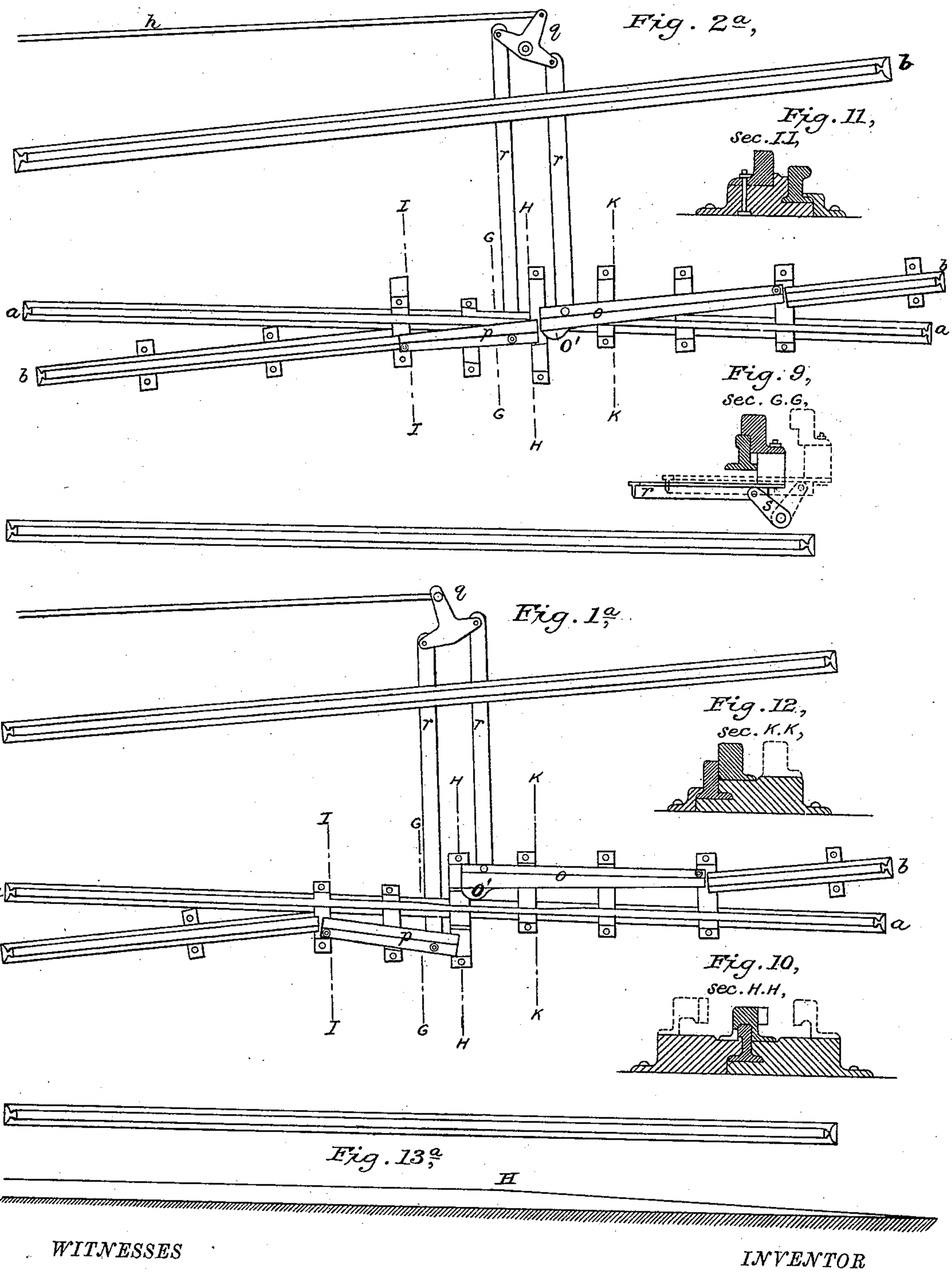

Fig. 2a,

Fig. 11, Sec. I.I,

Fig. 9, Sec. G.G,

Fig. 1a,

Fig. 12, sec. K.K,

Fig. 10, sec. H.H,

Fig. 13a,

WITNESSES

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By his Attorneys

Baldwin, Hopkins & Peyton.

UNITED STATES PATENT OFFICE.

RICHARD P. WILLIAMS, OF WESTMINSTER, ENGLAND.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 251,083, dated December 20, 1881.

Application filed February 24, 1881. (No model.) Patented in England November 2, 1880.

To all whom it may concern:

Be it known that I, RICHARD PRICE WILLIAMS, a subject of the Queen of Great Britain, residing at 38 Parliament Street, in the city of Westminster, England, civil engineer, have invented certain new and useful Improvements in Apparatus Forming the Junctions with Railways of Branch Lines and Sidings, (for which I have received Letters Patent in England, No. 4,477, dated 2d November, 1880,) of which the following is a specification.

This invention has for its object improvements in apparatus forming the junctions with railways of branch lines and sidings.

I form railway junctions without breaking or interfering with the main line at the switch, so that main-line trains may pass the junction at speed with the same security with which they pass over other portions of the line. I lay the fixed rails of the branch line where the train enters upon the branch at a somewhat higher level than the main line, and I provide movable rails or pieces, which can be brought into position to form inclines leading from the main-line rails to the branch. The movable rails forming the junction are each in two lengths, so that in all there are four movable rails at the point of the junction with the main line. Two of them constitute the incline above referred to. These are mounted outside the main line, one on each side, and they are laid over the main-line rails when it is required to direct a train onto the branch or to receive a train therefrom. Their bearing-surfaces then overlap the heads of the main-line rails and rest upon them. These two movable rails are coupled together by rods and levers, and they move simultaneously inward or outward, as the case may be. They are carried by levers or links so arranged that the movable rails are lifted in passing from one position to the other, and they are carried over ridges or elevations formed upon the chairs. Each section is thus transferred from a bed on one side of the ridges or elevations to another bed upon the other side, into which it is deposited securely, so that it cannot move laterally. The two other movable rails, or those next to the branch, are arranged somewhat differently the one from the other. That on the side of the main line to which the branch diverges is simply pivoted to a chair near where it meets the branch-line rail, while its other end is jointed to one of the movable rails previously described, of which it forms simply the prolongation. The opposite movable rail lying inside the main-line rails is also jointed to a chair near where it meets the branch rail. It is connected also across the line with the corresponding movable rail on the other side, so that these two sections move simultaneously and in the same direction, whereas the other movable sections, or those adjacent to the point of junction with the main line, move simultaneously, but in opposite directions. When the movable rails are placed to direct a train from the main line to the branch the wheels of the train passing from the main line first mount the incline until the flanges can pass over the main-line rails, and then by the curvature of the movable rails the train is conducted across and landed onto the rails of the branch line. Similarly, in passing from the branch to the main line, the wheels descend the incline formed by the movable rails.

Bearing-pieces or ramps may be provided for the edges of the wheel-flanges to run upon as the wheels pass over the points of the movable rails. If such bearing-pieces be provided, they should be connected across the line with the movable rail on the other side, so as to move simultaneously with it into and out of position.

At the crossing, or place where the branch rail crosses the main-line rail, suitable arrangements are made, as will be described in detail, in connection with the above-referred-to apparatus, which apparatus alone constitutes my improvement, as hereinafter specifically designated by the claim.

In order that my said invention may be most fully understood and readily carried into effect, I will proceed to describe the drawings hereunto annexed.

In the drawings, Figure 1 is a plan of a line of railway at a junction. On the left the figure shows the switch portion of the junction and on the right the crossing part of the junction. As seen in Fig. 1, the parts are set for the main line. The main-line rails are clear of all obstruction, and are as continuous at the junction as at any other part of the line of rail-

way. Fig. 2 is also a plan of the same parts, but set for branch-line trains to pass. Figs. 1ª and 2ª are plan views in continuation of Figs. 1 and 2, respectively, showing portions of the apparatus to the right of the parts represented by said figures. Fig. 3 is a section taken on the line A A in Figs. 1 and 2, looking toward the right. Fig. 4 is a section taken on the line B B in Figs. 1 and 2, looking toward the right. Fig. 5 is a section taken on the line C C in Figs. 1 and 2, looking toward the right. Fig. 6 is a section taken on the line D D in Figs. 1 and 2, looking toward the left. Fig. 7 is a section taken on the line E E in Figs. 1 and 2, looking toward the left. Fig. 8 is a section taken on the line F F in Figs. 1 and 2, looking toward the right. Fig. 9 is a section taken on the line G G in Figs. 1ª and 2ª, looking toward the right. Fig. 10 is a section taken on the line H H in Figs. 1ª and 2ª, looking toward the right. Fig. 11 is a section taken on the line I I in Figs. 1ª and 2ª, looking toward the left. Fig. 12 is a section taken on the line K K in Figs. 1ª and 2ª, looking toward the left. Fig. 13 is a profile indicating the levels to which the rails are laid, and Fig. 13ª a similar view.

The dotted lines in the sectional figures indicate the positions when the movable rails are at a distance from the main rail.

a a are the continuous fixed main-line rails.

b b are the fixed rails of the branch line, standing at a higher level than the rails *a a*.

c, *d*, *e*, and *f* are the four movable rails at the point of the junction. *c* and *d* are the movable rails which form the incline, by which the wheels ascend in passing from the main line to the branch, or descend, if the train be passing from the branch to the main line. The movable rails *c* and *d*, as seen in Fig 1, are at a distance from the fixed rails of the main line on the outer side; but when the line is set for the branch they are brought together, so that they rest close against the main-line rails and overlie them. These rails are carried and moved bodily laterally by levers or links *g g* and *l'*, which are pin-jointed to suitably-formed supports, and at their upper ends they are also jointed to pieces fixed onto the movable rails. The links, in moving around their fulcra, cause the movable rails *c* and *d*, as they pass from one position to another, to rise from the bed in which they lie when in one position, to pass over projections upon the chairs, and to descend again onto the bed they should occupy when in their other position, which is on the other side of the projection on the chairs. By this contrivance it is insured that the movable rails shall have no tendency to move from their places when the traffic is taking place over them. It is convenient that the main-line rails should be notched where the movable rails *c* and *d* lie against them, as the drawings indicate, to admit of greater substance being given to the movable rails. In Fig. 5, also, the rail *d* is seen to hook itself onto the main-line rail, so that it is rendered impossible that it should rise from its place while the wheels are passing over, owing to the weight of the train upon it. The other movable rails, *e* and *f*, and also the gate-pieces *o* and *p*, hereinafter further described, also rise over projections in passing from one position to another, and in some cases they hook upon the main-line rails, as appears from the sectional views.

h is a rod operated by a hand-lever or otherwise, and from this rod all the movable parts of the junction are operated simultaneously. It gives motion to two T-shaped levers, *i i*, and one arm of each of these levers is connected, by a rod, *k*, with the movable rail *c*, while the other arms of these levers, by means of other rods, *l*, levers *l'*, and rods *l''*, passing underneath the line of railway, give movement to the levers or links *g g*, by which the movable rail *d* is carried. The movable rail *e* is connected at one extremity by a pin-joint to the end of the rail *c* and at the other a pin connects it with one of the chairs. The movable rails *c* and *e* might, but less conveniently, be made in one piece. The movable rail *f* is pivoted at one end upon a chair and at the other is carried by a lever or link, *m*, and a rod, *n*, passing beneath the fixed rails, to the movable rail *e* on the other side, so that the movable rail *f* moves with the rail *e*, and the two approach to and recede from the main-line rails simultaneously.

At the crossing there is no gap in the main rail *a*, but in the branch rail *b*, which is at a higher level, there is a gap; and *o p* are two movable rails or gate pieces by which this gap is bridged when branch-line trains are to pass. Each of these gate-pieces is at one end pivoted to a chair and at the other is carried by a lever or link, *s*. The gate-pieces receive their motion from the rod *h* through a T-form lever, *q*, and connecting-rods *r r*, so that the gate-pieces are closed together at the same time that the movable rails *c*, *d*, *e*, and *f* are closed up against the main-line rails. The line is thus prepared for branch trains. Similarly, the gate-pieces *o* and *p* are separated, or the gates are opened at the same time that the movable rails *c*, *d*, *e*, and *f* are withdrawn from the main-line rails. The main line is thus left clear for main-line trains. The gate-piece *o* may conveniently be longer than the gate-piece *p*, and it may carry a projection, *o'*, so that a train backing along the main line and finding the crossing set for the branch may open the gates automatically, and at the same time set the points. These gate-pieces admit of the main line being crossed at a more acute angle than is practicable by the means at present in ordinary use.

The shaded line in Fig. 13 represents the level of the main line and the upper full line the level of the gap-rail. The dotted line gives the level of the farther rail of the branch, which, being laid lower than the gap-rail, provides the proper cant for the curve. Double-headed or other section of rails may be employed instead of the form of rail shown by the drawings.

Having thus described the nature of my said invention and the manner of performing the

same, I would have it understood that I claim—

The combination, in a switch, of a main line without break or opening, the branch line laid at a higher level than the main line, the two rails *d* and *f*, the former outside and the latter within the line of railway, the said rails having the capability of movement to approach a main rail, by which movement the rail *d* is shifted bodily laterally and brought to overlie the main rail and form an incline for the wheels of passing vehicles to ascend, while the rail *f* meets with its end the end of the rail *d* to convey the wheels onto the branch line, and means for connecting the opposite main and branch rails, substantially as hereinbefore set forth.

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Witnesses:

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