(No Model.) 2 Sheets—Sheet 1

A. BOYD.

RAILWAY SWITCH.

No. 335,209. Patented Feb. 2, 1886.

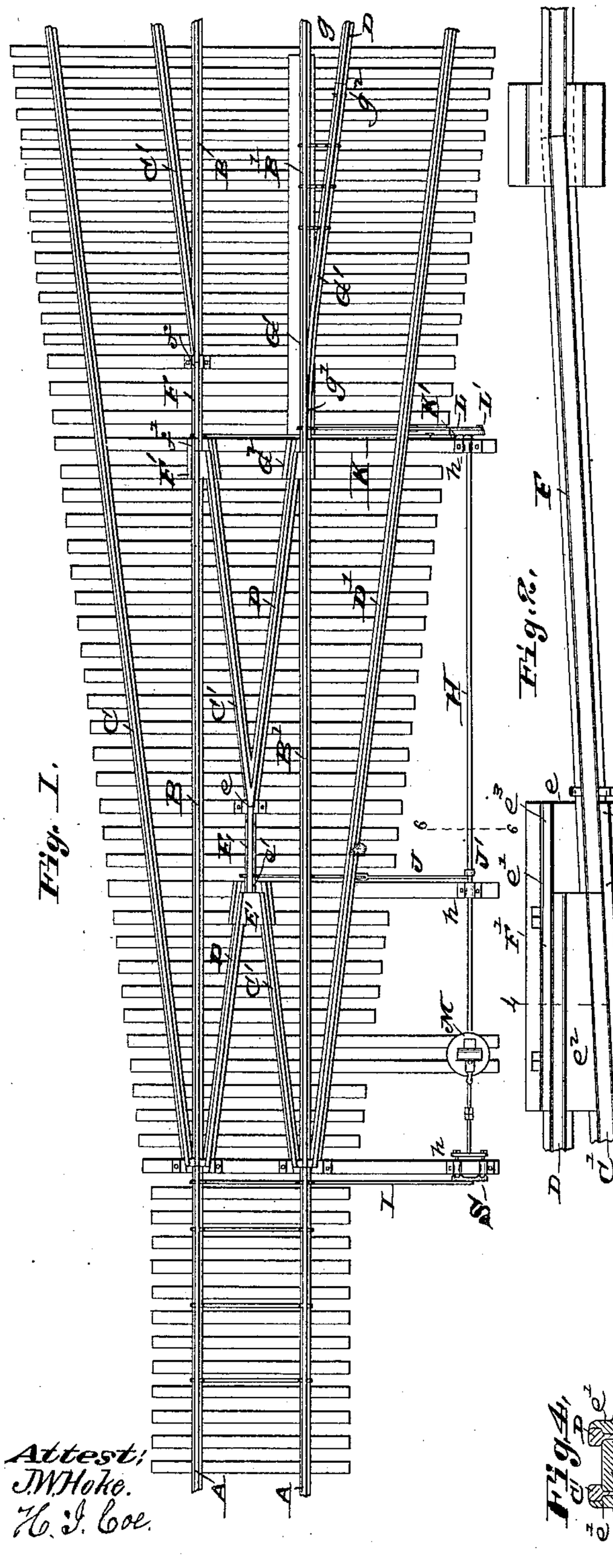

Fig. 1.

Fig. 2.

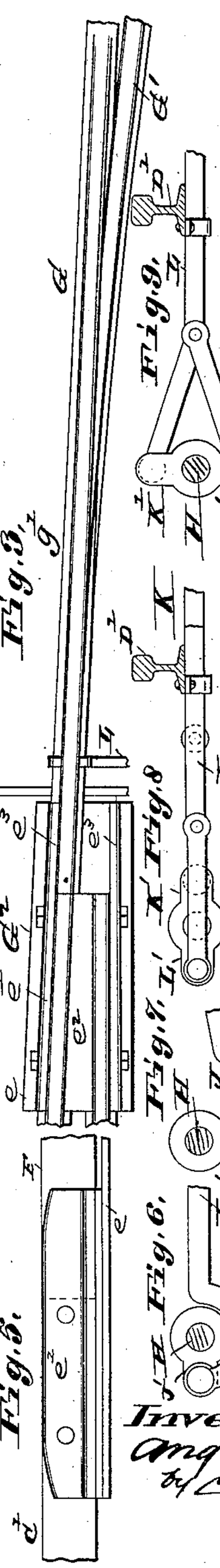

Fig. 3.

Fig. 4.

Fig. 5.

Fig. 6.

Fig. 7.

Fig. 8.

Fig. 9.

Fig. 10.

Attest;
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Inventor:
Angus Boyd
by C. D. Moody
atty

(No Model.)

2 Sheets—Sheet 2

A. BOYD.

RAILWAY SWITCH.

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Fig. 12.

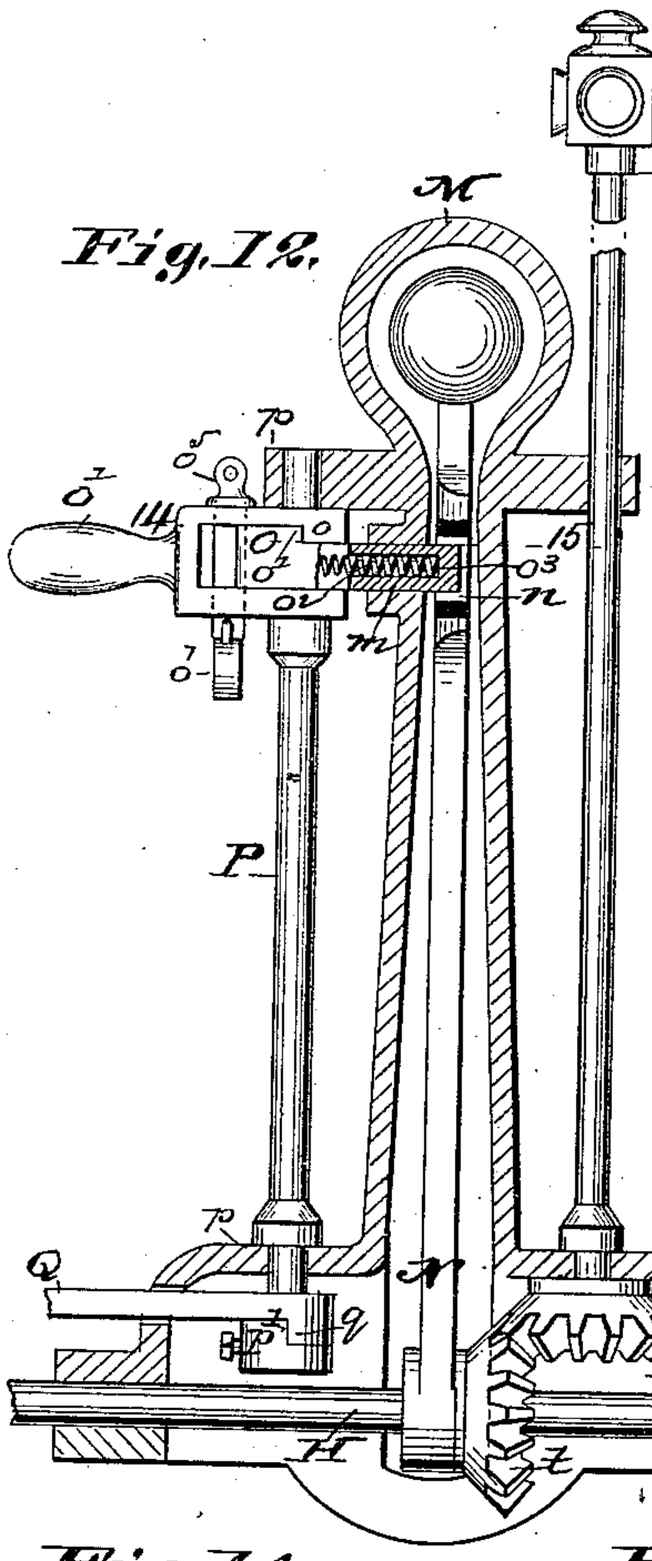


Fig. 13.

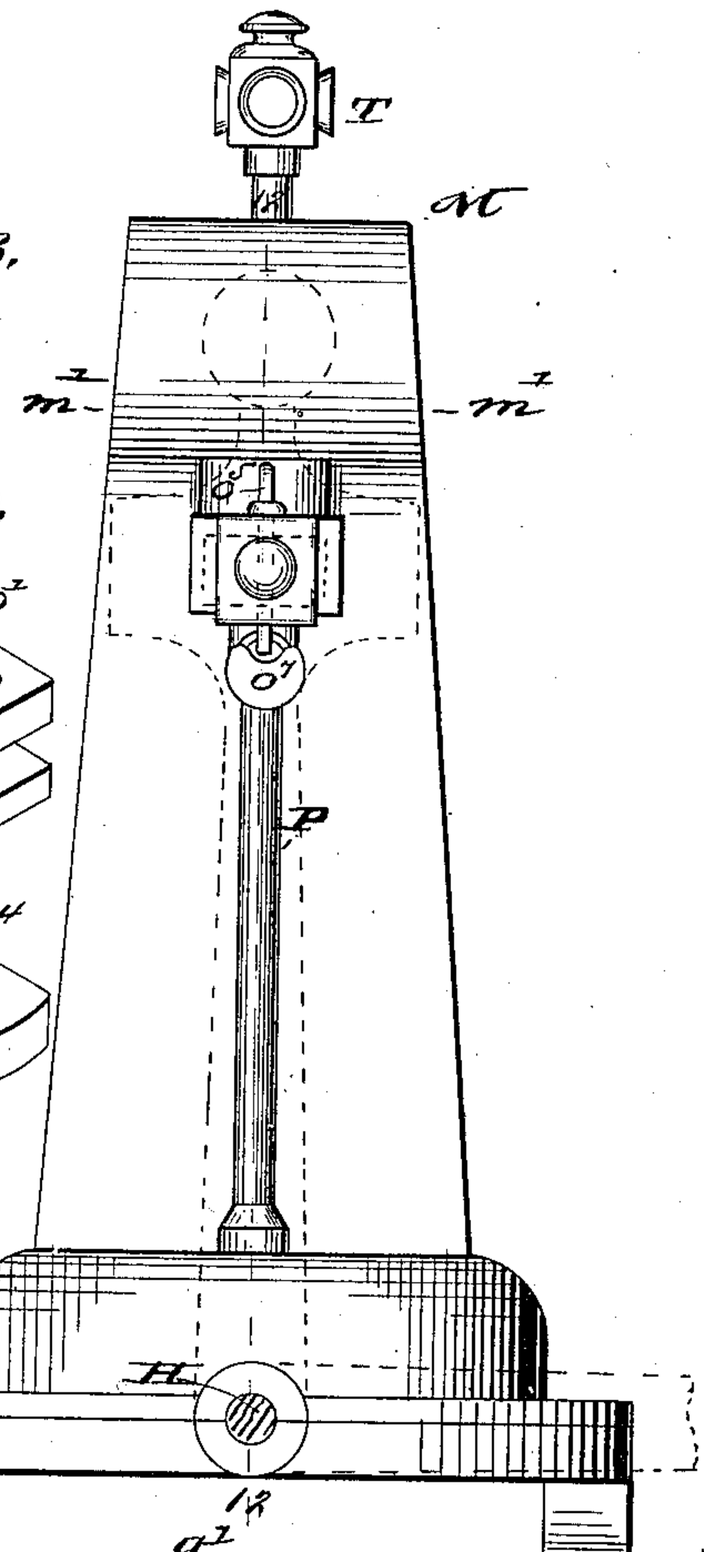


Fig. 19.

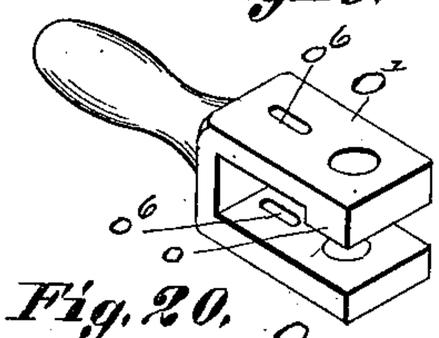


Fig. 20.

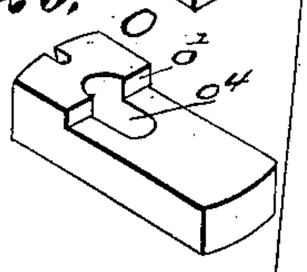


Fig. 14.

Fig. 15.

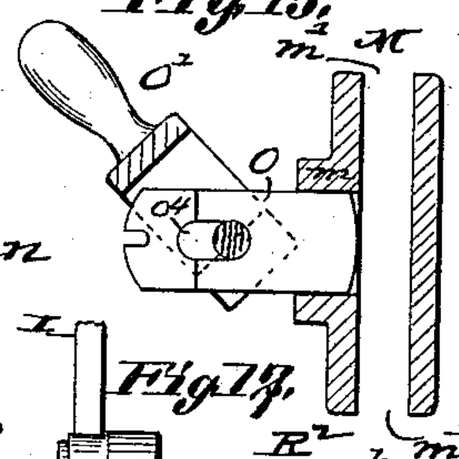


Fig. 21.

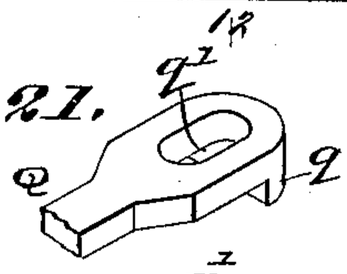


Fig. 22.

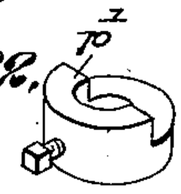


Fig. 16.

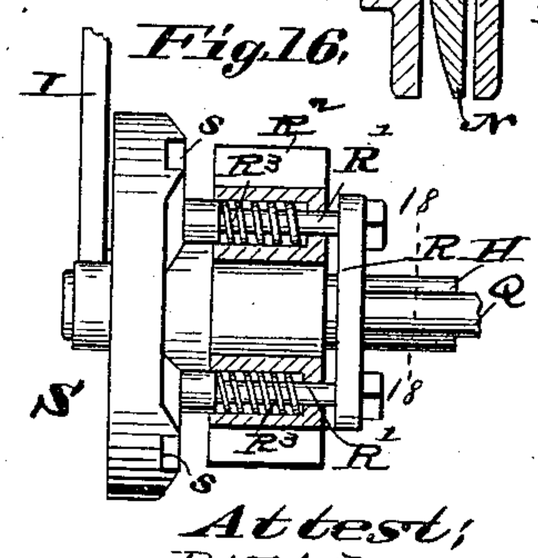


Fig. 17.

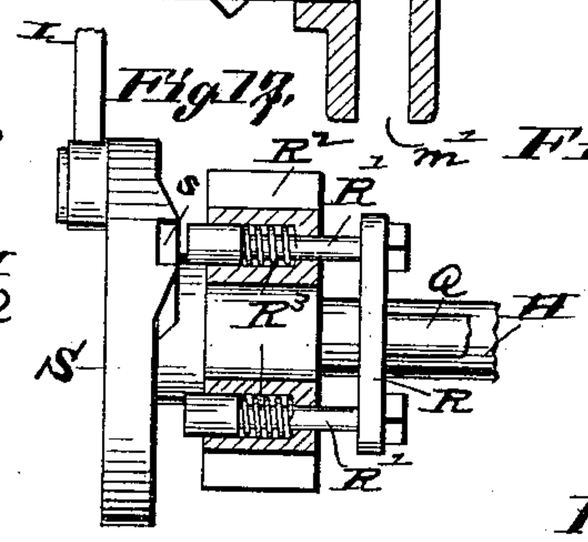
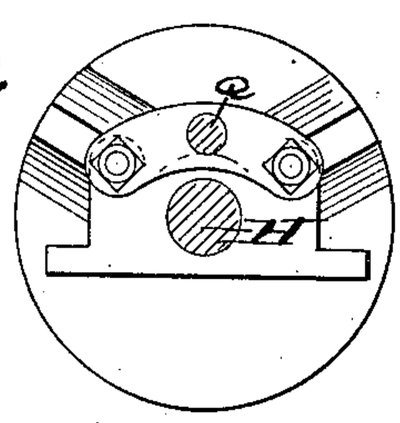


Fig. 18.



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H. J. Coe.

Inventor;
Angus Boyd
by C. D. Moody
atty

UNITED STATES PATENT OFFICE.

ANGUS BOYD, OF MOBERLY, MISSOURI.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 335,209, dated February 2, 1886.

Application filed May 9, 1885. Serial No. 164,956. (No model.)

To all whom it may concern:

Be it known that I, ANGUS BOYD, of Moberly, Missouri, have made a new and useful Improvement in Railway-Switches, of which the following is a full, clear, and exact description.

The improvement relates to that class of railway-switches in which a movable rail is substituted for the ordinary frog, the movable rail being so connected and combined with the switch-rails and the switch-stand that as the switch-rails are thrown one way or the other to connect with the main or with the side track, as the case may be, the movable rail is thrown in the opposite direction, and in both of its positions made to form part of a continuous line of rail.

The improvement relates more especially to the switch-stand, its construction and operation, and to the means used to connect the switch-stand with the switch-rails and movable rail or rails.

The annexed drawings, making part of this specification, illustrate the most approved mode of carrying out the improvement.

Figure 1 is a plan showing the improvement applied to a switch where a side track passes off to either side of the main track. Fig. 2 is a plan, upon an enlarged scale, of the movable rail and the parts immediately therewith connected. Fig. 3 is a plan, upon an enlarged scale, of the combined movable rail and point. Fig. 4 is a cross vertical section on the line 4 4 of Fig. 2. Fig. 5 is a side elevation of the chair used in connection with the movable rail. Fig. 6 is a section on the line 6 6 of Fig. 1, the crank being on the dead-center, as when the switch-rails are in connection with one of the side tracks. Fig. 7 is a similar section, the crank being on the live center, as when the switch-rails are in connection with the main track. Fig. 8 is a section on the line 8 8 of Fig. 10. Fig. 9 is a section on the line 9 9 of Fig. 11. Fig. 10 is a plan of the parts shown in Fig. 8. Fig. 11 is a plan of the parts shown in Fig. 9. Fig. 12 is a vertical section on the line 12 12 of Fig. 13, being a sectional view of the switch-stand. Fig. 13 is an end elevation of the switch-stand. Fig. 14 is a horizontal section on the line 14 15 of Fig. 12. Fig. 15 is a section similar to that of Fig. 14, but showing the locking-bar lever turned to release the switch-lever. Fig. 16 is a plan, partly in horizontal section, of the locking mechanism at that end of the rock-shaft which is toward the switch-rails. Fig. 17 is a view similar to that of Fig. 16, but showing the parts as when the switch-rails' rod-disk is unlocked, and as when the switch-rails are in connection with one of the side tracks. Fig. 18 is a section on the line 18 18 of Fig. 16. Fig. 19 is a view in perspective of the switch-stand locking-bar lever. Fig. 20 is a view in perspective of the switch-stand locking-bar. Fig. 21 is a view in perspective of the switch-stand end of the rod used in unlocking the switch-rails' rod-disk, and Fig. 22 is a view in perspective of the part which operates in connection with the part shown in Fig. 21.

The same letters of reference denote the same parts.

A A represent the switch-rails.

B B′ represent the rails of the main track.

C C′ represent the rails of one of the side tracks, and D D′ represent the rails of the other of the side tracks.

E represents the movable rail used in the center of the main track in connecting and disconnecting the rails C′ D, as hereinafter described.

F represents the movable rail used in connecting and disconnecting the rails B C′, as hereinafter described.

G G′ represent the combined movable rail and point used in connecting and disconnecting the rails B′ D, as hereinafter described.

H represents a rock-shaft journaled in bearings *h*, and by means of the rods I J K L connected, respectively, with the switch-rails A A, the movable rail E, the movable rail F, and the combined movable rail and point G G′. The rod I is connected with the rock-shaft by means of the disk S, Figs. 1, 16, 17, 18, the rod J by means of the crank J′, Figs. 1, 6, 7, the rod K by means of the crank K′, and the rod L by means of the crank L′, Figs. 1, 8, 9, 10, 11.

The switch-rails slide in the ordinary manner. The movable rail E is held at its end *e*, and its end *e′* is adapted to be swung in the chair E′. The movable rail F is held at its end *f*, and its end *f′* is adapted to be swung in the chair F′. The combined movable rail and point G G′ is held at the forked end *g*, and

its end g', by reason of the sufficient length therefor of the rail G, can be sprung laterally in the chair G^2, and in its movement the rail G carries the point with it, the point at the end g^2 being sufficiently free to permit of the movement of the point. The rail E can be swung to connect with either the rail D or the rail C', the rail F with either the rail B or the rail C', and rail and point G G' with either the rail B' or the rail D.

The construction of the chairs E', &c., is as follows: The chair consists of the base E^0, the side pieces, or what may be termed the "brace-rails," E' E', and, preferably, the interposed block E^2 between the rails, substantially as represented in Figs. 2, 3, 4, 5. It will be noticed that the brace-rails are extended at E^3 beyond the ends of the rails D C', to form shoulders for the end of the movable rail to encounter, and thereby be braced in its two positions, respectively. At the same time the brace-rails that extended serve, in conjunction with the fixed and movable rails, to form a continuous rail for the brace-rail, as seen in Fig. 4, is preferably extended upward to the level of the top of the fixed and movable rails, and thus made to form a continuous bearing for the car-wheel past the joint between the fixed and the movable rail. The brace-rails, fixed rails, and interposed block are suitably, and substantially as indicated in Figs. 2, 3, bolted together.

M, Figs. 1, 12, 13, represents the switch-stand. It is adapted to admit the lever N, which is fastened to the rock-shaft H. The lever N resembles the lever used in a ground-switch—that is, it is provided with a ball or weight attached to its outer end, and can be thrown from a horizontal position at one side of the rock-shaft upward into a vertical position within the switch-stand, and thence through the switch-stand downward into a horizontal position at the opposite side of the rock-shaft. By thus operating the lever N the rock-shaft can be rotated and the switch adjusted either for the main track or for either of the side tracks. When in a vertical position, as in Figs. 1, 12, the lever can be locked in the switch-stand by means of the locking-bar O, Figs. 12, 14, 15, 20, which is adapted to work longitudinally through a bearing, m, in the switch-stand, and when thrown forward to engage in a slot, n, in the lever N, Figs. 12, 14.

The preferable means for operating the locking-bar are as follows: A lever, O', is fastened to the upright shaft P, which in turn is adapted to be rotated in the bearings p p in the switch-stand. By swinging the lever to the right or left the locking-bar, by reason of a shoulder, o, upon the lever O' bearing against a shoulder, o', upon the locking-bar, is withdrawn from the lever N, Fig. 15. When the lever O' is swung back again into the position of Fig. 14, a spring, o^2, which is held in a recess, o^3, Fig. 12, and bears at one end against the outer end of the locking-bar and at the other end against the shaft P, acts to throw the locking-bar forward again into engagement with the lever N. The locking-bar is slotted at o^4 to enable it to be moved as described. The locking-bar and locking-bar lever can be locked in the position of Figs. 12, 14 by passing a key, o^5, downward through a slot, o^6, which is partly in the lever and partly in the bar, and the key can be secured by means of the padlock o^7.

The switch-rails can be locked in the position shown in Fig. 1 as follows: At its lower end the shaft P is provided with the shoulder p', Figs. 12, 22. This shoulder operates in combination with an opposing shoulder, q, upon a tie-rod, Q, Figs. 12, 16, 17, 21, which is slotted at q' to admit the shaft P, and extends from its connection with the shoulder p' to the cross-bar R, Figs. 16, 17, which in turn is attached to one or more bolts, R', that are held and adapted to work longitudinally in a fixed box, R^2. When the switch-rails are set to connect with the main track, the tie-rod Q does not act upon the bolts R', and they, by reason of the springs R^3, Fig. 16, are pushed out from the box R^2 and so as to engage in the slots s s of what may be termed the "switch-rails' rod-disk" S, and which disk is fastened to the rock-shaft H, Figs. 16, 17, 18. As long as the bolts remain in engagement with the disk the rock-shaft is prevented from rotating and the switch remains locked. By rotating the shaft P, which occurs when the locking-bar is being withdrawn from the lever N, the tie-rod Q acts to withdraw the bolts from the disk S, and the switch is free to be moved. This last-named position of the bolts R' is shown in Fig. 17. The rock-shaft H, by means of the bevel-pinions t t', is adapted to operate a signal or target, T, in the ordinary manner.

It will be noticed that the cranks K L are on their live centers when the switch is in position for side track and the cranks J and S are on their dead-centers, and that the cranks K L are on their dead-centers and the cranks J S are on their live centers when the switch-rails connect with the main-track rails. Therefore, should a train approach the switch from the main track, the car-wheels will exert a spreading action upon the movable rails F G, causing the rods K L, or either of them, to rotate the rock-shaft, and thereby shift all the movable rails into connection with the main track, and cause the lever N to assume a vertical position when the locking-bar O and the bolts R' simultaneously and respectively engage with the lever N and the disk S, and the switch thereby to be locked in position for the main track. The switch-stand being open at its sides m' m' permits of the lever N being thrown over. It will also be observed that when the switch is in position for the side track the lever N, which is weighted substantially as shown, lies in a horizontal position. It is therefore unnecessary to lock the switch when in that position, and at the same time the switch is free, to enable it to be shifted

automatically by an approaching train, as above described, to close the main track. The brace-rails prevent the movable rails from going beyond gage, and also prevent the rail ends from being battered and the car-wheels in passing from being jarred.

I claim—

1. The combination of the track C C′, the track B B′, the switch-rails A A, the movable rail F, the rods K L, the rock-shaft H, the switch-stand M, open at its sides *m′ m′*, and the lever N, substantially as described.

2. The switch-stand M, open at its sides *m′ m′*, in combination with the rock-shaft H and the lever N, substantially as described.

3. The combination of the switch-stand M, the rock-shaft H, the lever N, and the locking-bar O, substantially as described.

4. The combination of the switch-stand M, the lever N, the locking-bar O, having the shoulder *o′*, and the pivoted lever O′, having the shoulder *o*, substantially as described.

5. The combination of the lever O′, the switch-stand M, the shaft P, the shoulder *p′*, the tie-rod Q, the bolts R′, the rock-shaft H, and the slotted disk S, substantially as described.

6. The combination of the rock-shaft H, the box R^2, the bolts R′, the springs R^3, and the slotted disk S, substantially as described.

ANGUS BOYD.

Witnesses:
L. A. CHAMIER,
C. D. MOODY.