

No. 778,738.

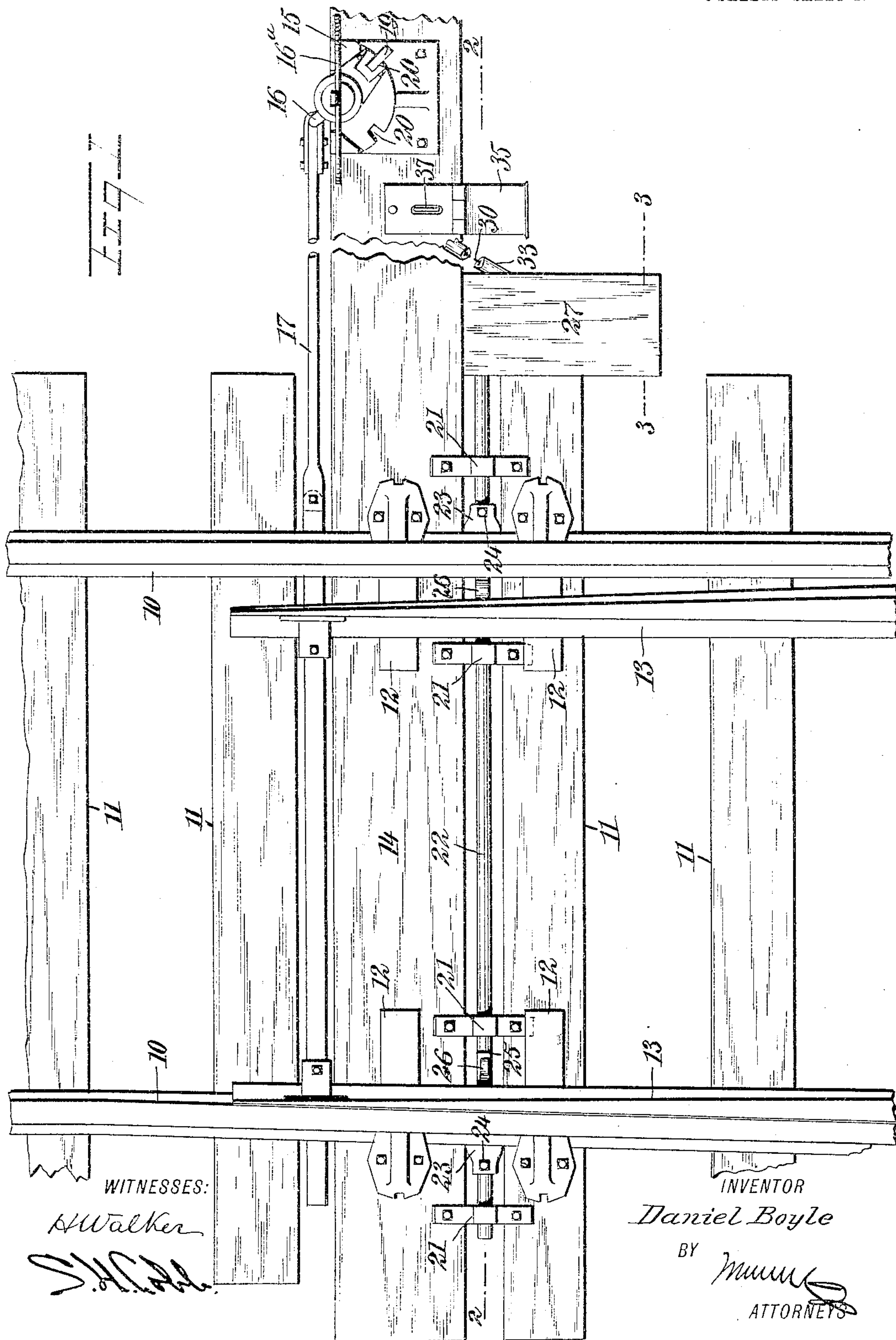
PATENTED DEC. 27, 1904.

D. BOYLE.

LOCK FOR RAILWAY SWITCHES.

APPLICATION FILED JUNE 10, 1904.

3 SHEETS—SHEET 1.



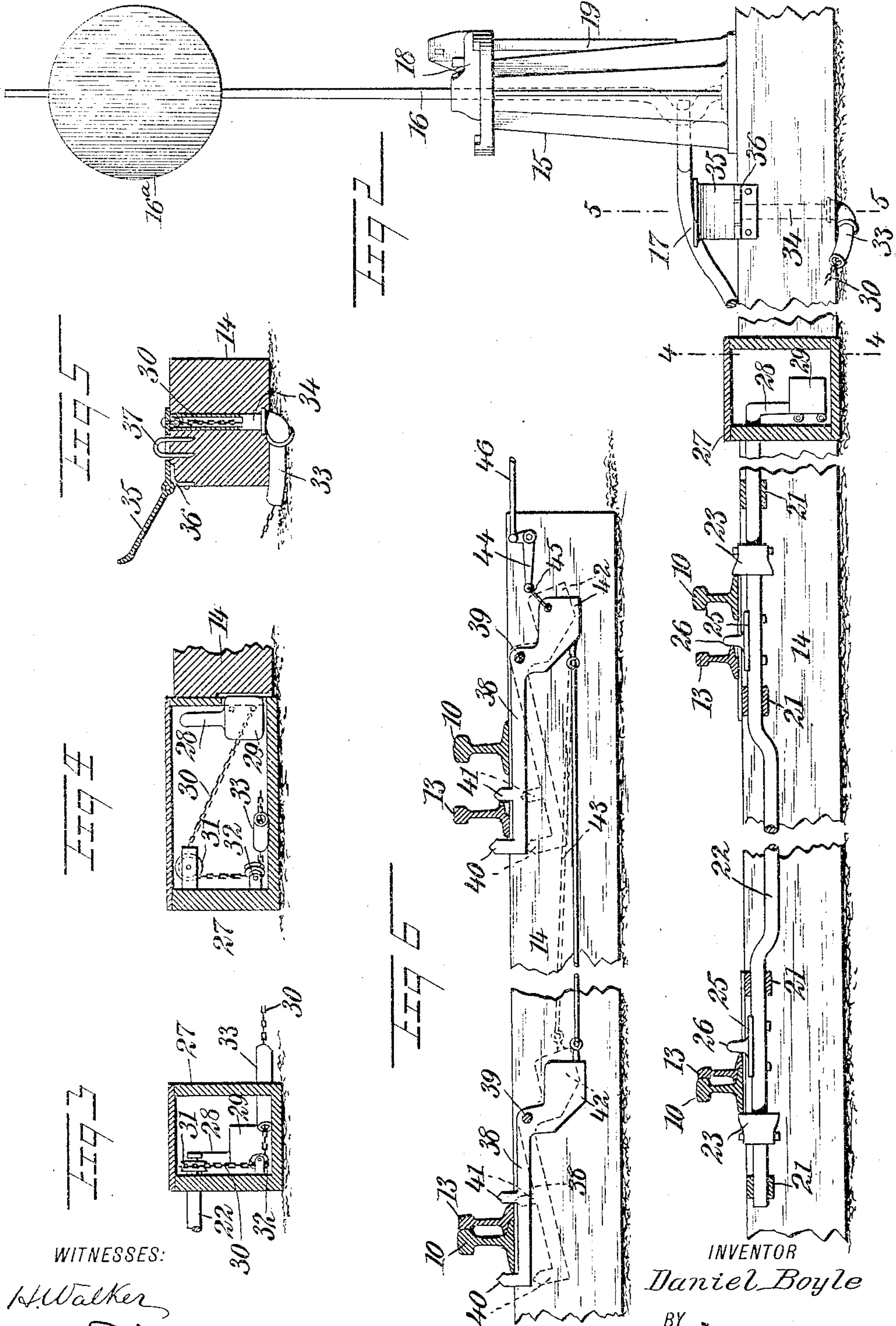
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WITNESSES:

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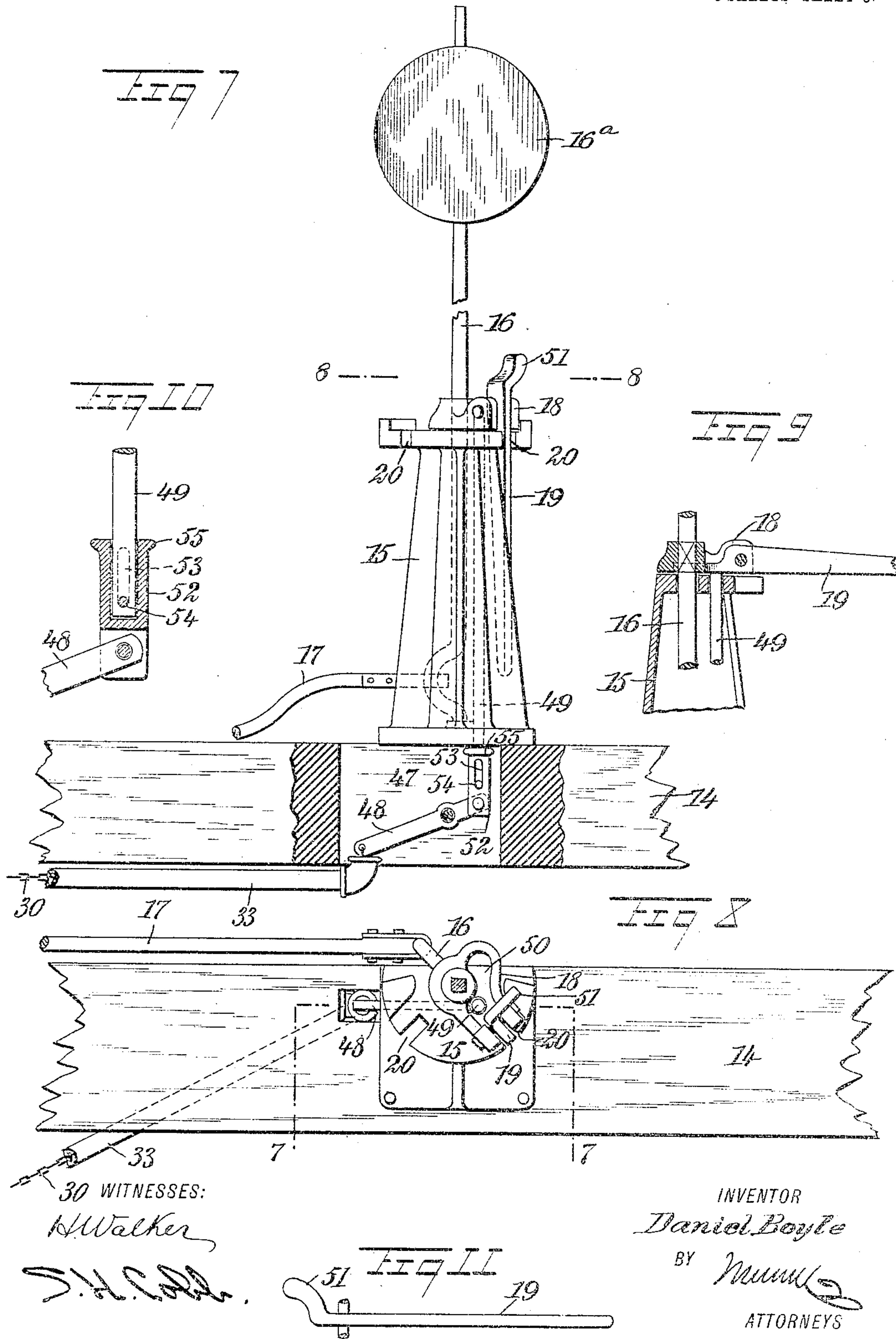
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# UNITED STATES PATENT OFFICE.

DANIEL BOYLE, OF LIVINGSTON, MONTANA.

## LOCK FOR RAILWAY-SWITCHES.

SPECIFICATION forming part of Letters Patent No. 778,738, dated December 27, 1904.

Application filed June 10, 1904. Serial No. 211,968.

*To all whom it may concern:*

Be it known that I, DANIEL BOYLE, a citizen of the United States, and a resident of Livingston, in the county of Park and State of Montana, have invented a new and Improved Lock for Railway-Switches, of which the following is a full, clear, and exact description.

My invention relates to locks for railway-switches, and has for its principal object the provision of a secure device convenient to operate which will not be liable to become disarranged even if the associated switch-stand be overturned.

It consists in the various features and combinations hereinafter described and more particularly claimed.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a top plan view of a portion of a railway-track, including switch-points and a switch, to which one embodiment of my invention is applied. Fig. 2 is a transverse vertical section therethrough on the line 2 2 of Fig. 1. Fig. 3 is a sectional detail on the line 3 3 of Fig. 1. Figs. 4 and 5 are similar views on the lines 4 4 and 5 5, respectively, of Fig. 2. Fig. 6 is a transverse vertical section through a track, showing another form of my invention applied thereto. Fig. 7 is an elevation of the switch-stand broken away on the line 7 7 of Fig. 8, showing my improved locking mechanism connected for operation by the switch-lever. Fig. 8 is a horizontal section thereof on the line 8 8 of Fig. 7. Fig. 9 is a detail in vertical section, showing the switch-lever raised. Fig. 10 is a sectional detail illustrating the connection between the sections of the operating-rod, and Fig. 11 is a detail of the switch-lever.

10 designates the main or stock rails of a railway-track laid in the customary manner upon ties 11. Over these ties upon plates 12 move switch-points 13, leading to another line of rails. Upon a head-block 14, extending between the ties and projecting beyond the end thereof at one side, is mounted a switch-stand 15 of any usual type, it being shown in the present instance as comprising a cranked

spindle 16, carrying the target 16<sup>a</sup> and serving to actuate by its cranked portion the switch-bar 17. This switch-stand has fulcrumed upon an arm 18, secured to the spindle, an operating-lever 19, which in its extreme positions may hang vertically and engage one or another of recesses 20 in the stand.

At each side of each of the rails and switch-points, here shown as secured to the head-block and to an adjacent tie, are bearing-blocks 21, in which is rotatably mounted a locking-bar 22, here shown in the form of a cylindrical rod. Upon this locking-bar at each side of the main rails are gage-blocks 23, preferably retained in place by set-screws 24, which determine the position of the locking-bar and are adjustable for various sizes of rails and gage of track. Upon the bar 22 are fastened by bolts or otherwise plates 25, from which project locking members or lugs 26. The relation of these lugs to the rails and switch-points is such that when the switch is set as illustrated in Figs. 1 and 2 of the drawings the lug at the right will lie outside the switch-point between it and the rail, while that at the left will be inside the switch-point. When the switch is thrown, the relation will be reversed, the lug at the right then lying inside the point and that at the left outside, but in either case locking the points against accidental movement.

The locking-bar preferably extends at the side of the track toward the switch-stand into a box 27, situated to a great extent below the upper face of the ties, and is there provided with an arm or crank 28, which carries a weight 29, by which the locking-bar is turned in its bearings to normally hold the lugs in a vertical position and in coaction with the switch-points. To the weight is connected means for operating the locking mechanism, consisting in the present instance of a flexible member or chain 30, which passes over a grooved roll 31, rotatably mounted near the top of the box, then downward to a similar roll 32, from which it enters a pipe or conduit 33, made into the side of the box. This pipe 33 extends toward the switch-stand and in Figs. 1 and 2 of the drawings is illustrated as having a vertical portion 34 rising through



the head-block. At the upper end of this vertical pipe the chain is connected to a treadle 35, fulcrumed upon a bracket 36. This treadle may have a slot, through which a staple 37 will extend in the raised position of the locking-lug and serve to receive a padlock to prevent the device from being tampered with.

It will be seen that when the lugs are raised and in coaction with the switch-points it will be impossible to move the latter either through intention or by accident; but when it is desired to operate the switch the padlock is removed from the treadle, and this may then be depressed by the foot. This raises the weight through the pull of the chain and rotates the locking-bar in its bearings, turning the lugs below the level of the under side of the switch-points and permitting them to be shifted to their opposite position by means of the switch. During the movement of the switch-points the lugs will rest against the under sides thereof, and upon their reaching their extreme position when the switch-lever is lowered into coöperation with its recess the weight will cause them to rise at the opposite sides of the points and there lock them. At the same time the chain restores the treadle to its original position, bringing the staple and slot into coöperation and permitting them to be padlocked.

In the form of my invention illustrated in Fig. 6 instead of the rotatable locking-bar swinging bars 38 38 are employed, one operating in connection with each of the switch-points and being pivoted at 39 conveniently upon the head-block. Each of these bars 38 is provided with locking-lugs 40 and 41. Those at the right of Fig. 6 are shown as separated by a greater space than their companions, and in the position of the point illustrated they lie on opposite sides of the rail and point, while at the other extreme position the lug 41 would lie between the stock-rail and point. At the other side of the track the lugs are so spaced that when the point is separated from the stock-rail they lie upon its opposite sides; but when it is moved into coaction with said rail the lug 40 is idle, while the lug 41 locks the point against the rail. The lugs are normally held in coaction with the switch points or rails by a weight 42, here shown as formed integrally with the bar 38, these weights being connected with one another by a rod 43. Fulcrumed upon the head-block is a bell-crank lever 44, which is connected to the weight adjacent to it by a link 45, while a rod 46 leads to the actuating mechanism.

Instead of operating the locking mechanism by a treadle it may be desired to control it through the switch-lever, and means for effecting this is illustrated in Figs. 7 to 11 of the drawings. Here the head-block is provided with an opening 47, extending beneath the switch-stand, and in this opening is fulcrumed a lever 48. The outer end of this lever has

connected to it the chain 30, while over the opposite end a rod 49 slides in bearings in the stand, extending at its upper extremity through an opening 50 in the switch-arm 19. The switch-lever 18 is preferably provided with an inner curved extension 51, projecting over the end of the rod, so that it may coact with it in all positions of the switch mechanism. The rod 49 is shown as provided with a lower section or sleeve 52, having at its opposite sides longitudinal slots 53, which are engaged by a pin 54, fixed to the lower end of the rod. A collar or enlargement 55 upon the upper end of the sleeve limits its movement in this direction by contact with the base of the stand.

It will be seen that when the switch-lever is raised for the purpose of throwing the switch its extension 51 will contact with the head of the rod, forcing the pin against the lower end of the slot and turning the lever 48 upon its fulcrum. This through the chain rotates the locking-bar and lowers the locking-lugs to permit the shifting of the switch-points, as has been previously described. When the lever is released and assumes its vertical position in engagement with the stand-recess, it frees the rod 49, which is then returned to its original position by the weight upon the locking-bar. The loose or pivotal connection between the sections of the rod by means of the pin and slots may be made to introduce sufficient relative movement between the parts to render the locking mechanism to such an extent independent of the stand that if this be broken or overturned it will not interfere with the locking of the switch-points.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with rails and switch-points, of locking mechanism for the switch-points comprising a locking-bar, locking members mounted upon the bar, an arm projecting from the bar, a weight carried by the arm and normally holding the locking members in coaction with the switch-points, and flexible means attached to the weight for moving the locking members to release the points.

2. The combination with rails and switch-points, of locking mechanism for the switch-points comprising a rotatable locking-bar, locking members mounted upon said bar, a crank-arm projecting from the bar, a weight carried by the crank-arm for rotating the bar to normally hold the locking members in coaction with the switch-points, and means operating upon the crank-arm for moving the locking members to release the points.

3. The combination with rails and switch-points, of locking mechanism for the switch-points comprising a rotatable locking-bar, locking members mounted upon said bar, a box within which the end of the bar rotates, a crank-arm projecting from the bar within



the box, a weight carried by the crank-arm for normally holding the locking members in coaction with the switch-points, and means operating upon the crank-arm within the box 5 for moving the locking members to release the points.

4. The combination with rails and switch-points, of locking mechanism for the switch-points comprising a locking-bar, locking members mounted upon the bar, a box into which 10 the bar extends, a pipe leading from the box to a point adjacent to the switch-stand, a flexible member connected with the bar within the box and extending through the pipe, and 15 means for moving the flexible member.

5. The combination with rails and switch-points, of locking mechanism for the switch-points comprising a locking-bar, locking members mounted upon the bar, a box into which 20 the bar extends, a weight operable within the box and normally holding the locking members in coaction with the switch-points, a pipe leading from the box to a point adjacent to the switch-stand, a flexible member connect- 25 ed with the weight and extending through the pipe, and means for moving the flexible member.

6. The combination with rails, switch-points and a switch-stand having a lever, of locking mechanism for the switch-points operable by 30 the lever and movable independently thereof.

7. The combination with rails, switch-points and a switch-stand having a lever, of locking members for the switch-points, a flexible mem- 35 ber connected with the locking members, a lever joined to the flexible member, and a rod pivoted to the lever and with which the switch-lever may coact.

8. The combination with rails, switch-points and a switch-stand having a lever, of locking 40 members for the switch-points, a flexible member connected with the locking members, a lever joined to the flexible member, and a rod having relatively movable sections pivoted to the lever and with which the switch-lever may 45 coact.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

DANIEL BOYLE.

Witnesses:

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E. A. EWING.