No. 610,420. Patented Sept. 6, 1898.

J. W. THOMAS, JR.

MECHANISM FOR OPERATING RAILWAY SWITCHES.

(Application filed July 16, 1898.)

(No Model.) 4 Sheets—Sheet 1.

Fig. 1

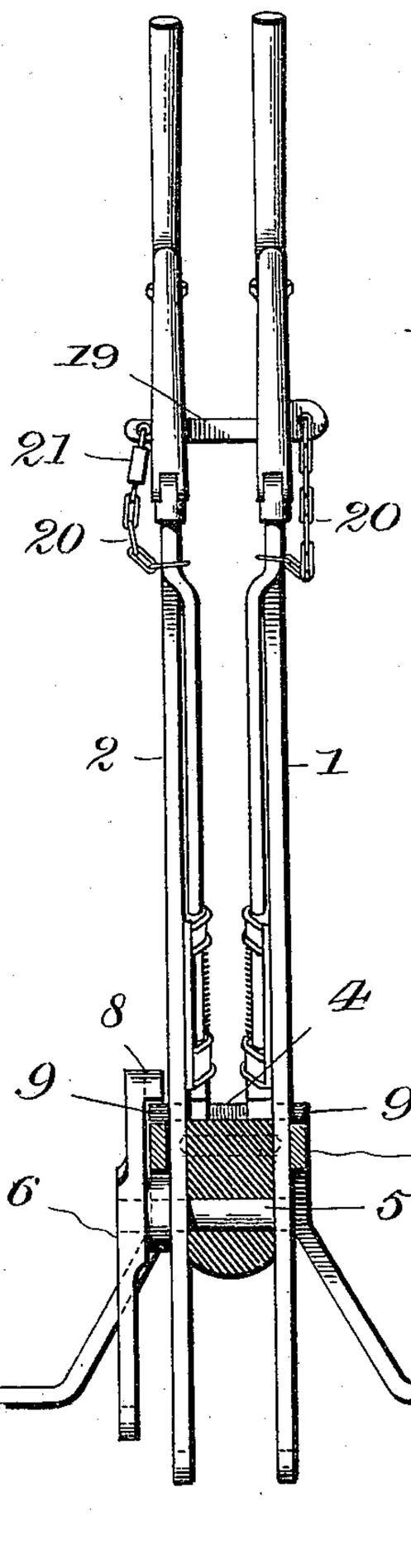

Fig. 2.

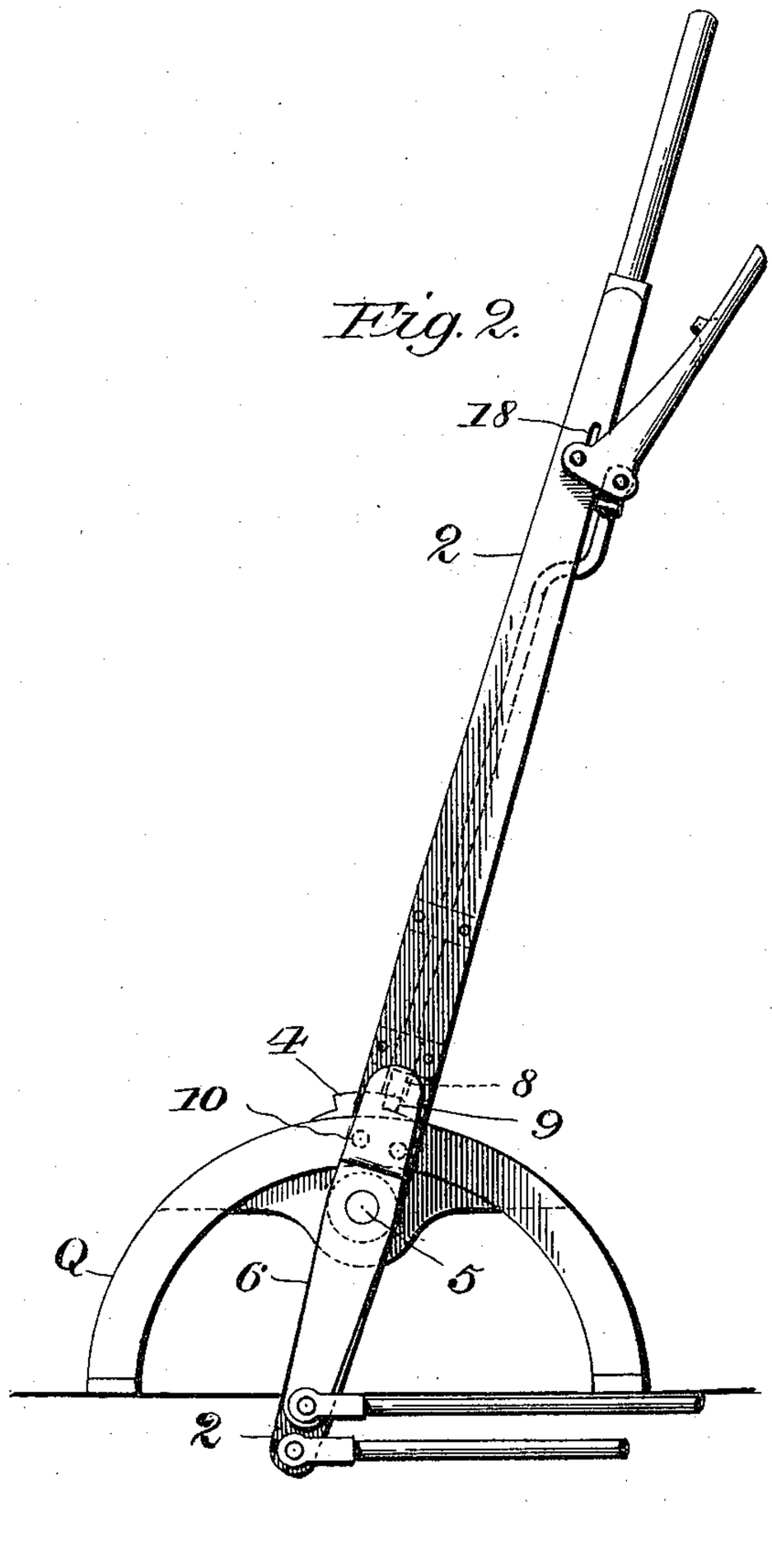

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Fig. 3.

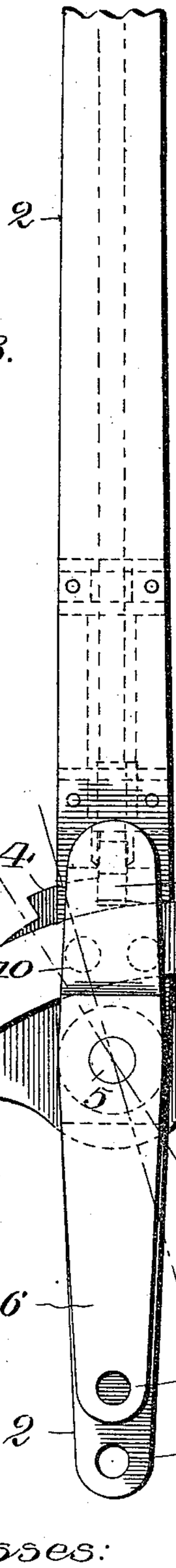


Fig. 5.

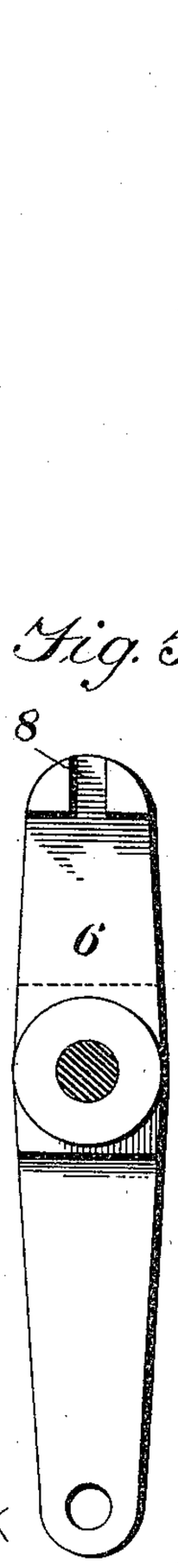
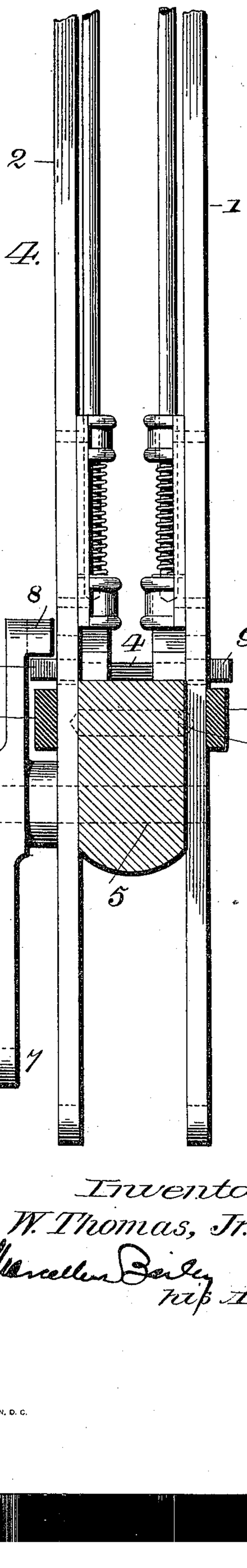


Fig. 4.



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(No Model.) 4 Sheets—Sheet 3.

Fig. 6.

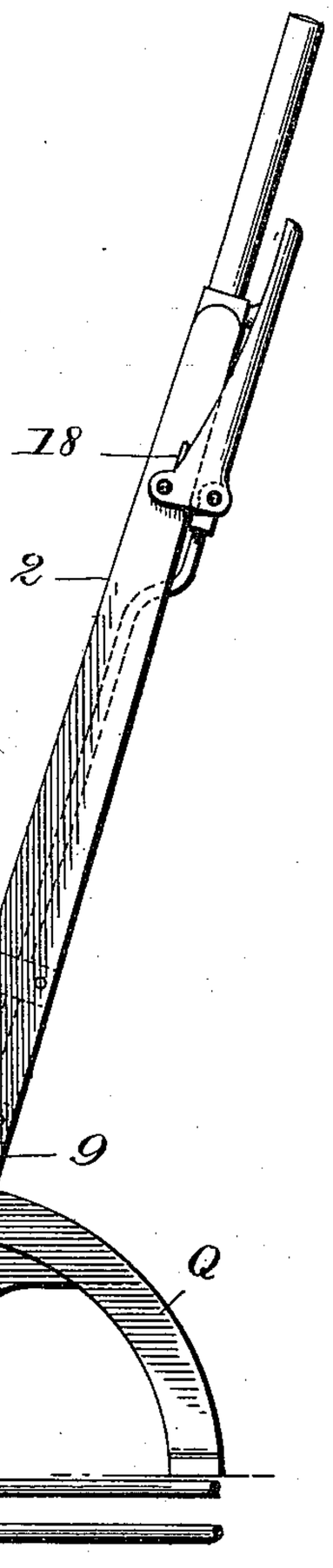
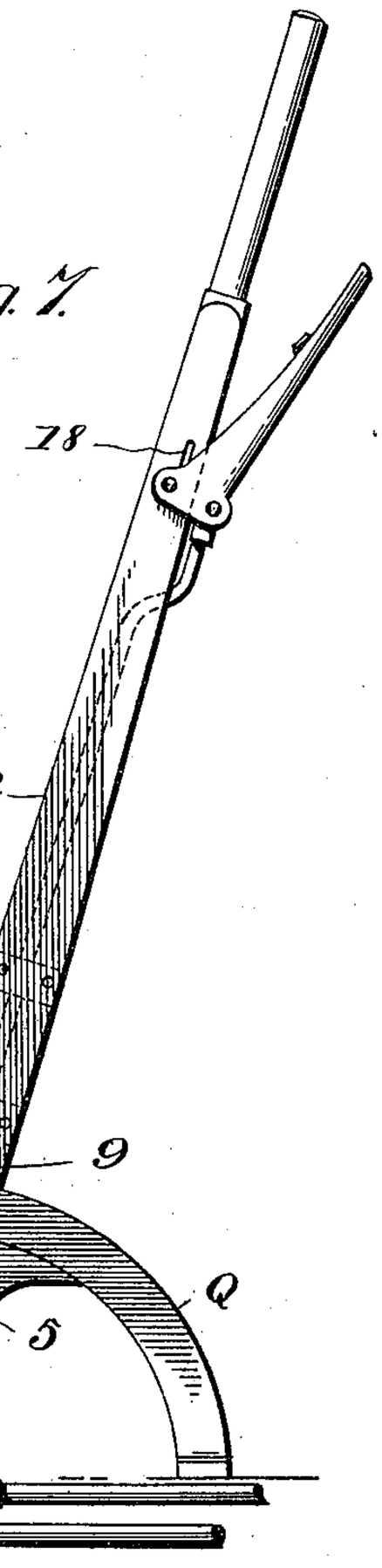


Fig. 7.



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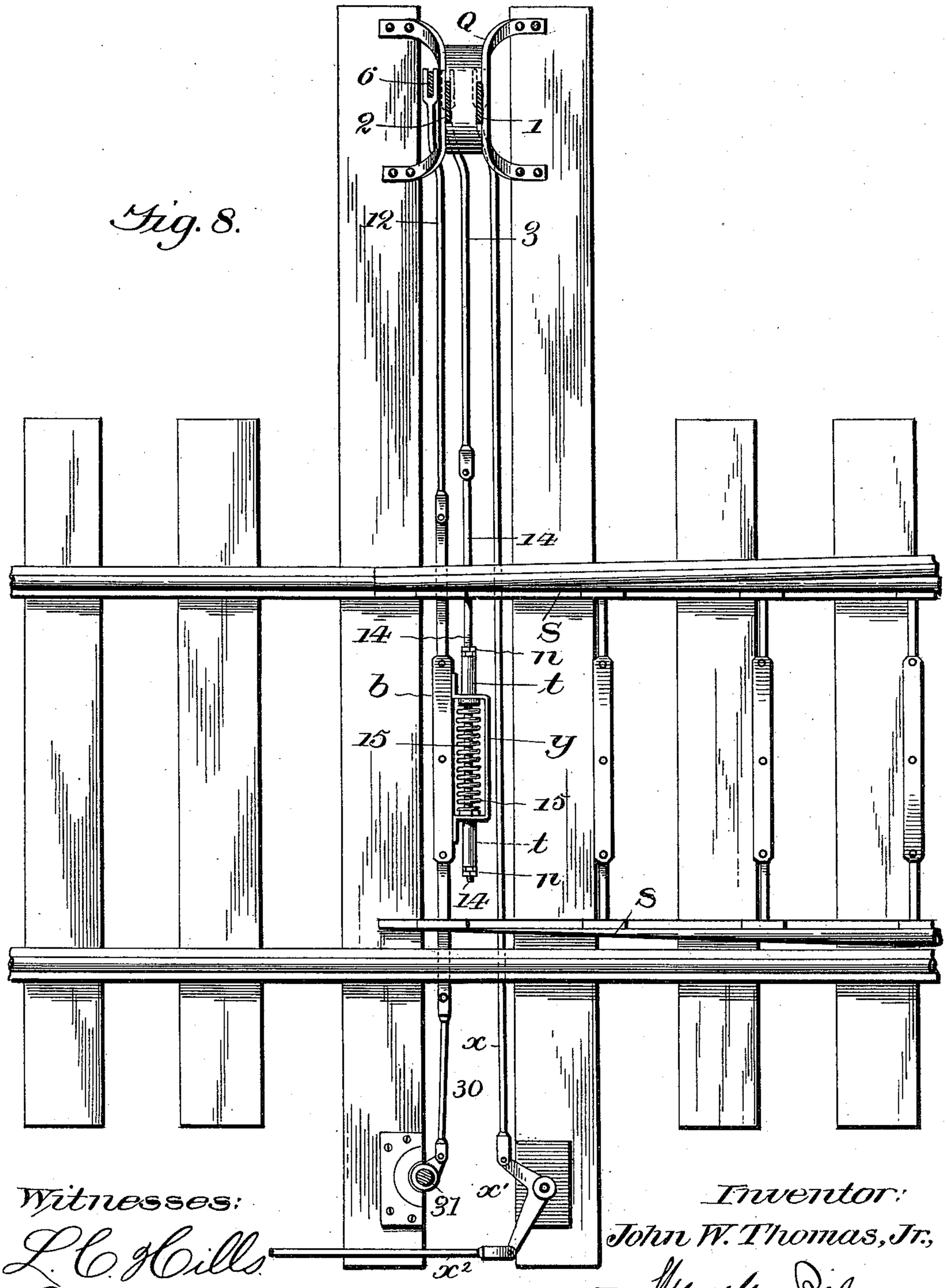
(No Model.) 4 Sheets—Sheet 4.

Fig. 8.



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UNITED STATES PATENT OFFICE.

JOHN W. THOMAS, JR., OF NASHVILLE, TENNESSEE.

MECHANISM FOR OPERATING RAILWAY-SWITCHES.

SPECIFICATION forming part of Letters Patent No. 610,420, dated September 6, 1898.

Application filed July 16, 1898. Serial No. 686,200. (No model.)

To all whom it may concern:

Be it known that I, JOHN W. THOMAS, Jr., of Nashville, in the State of Tennessee, have invented a certain new and useful Improvement in Mechanism for Operating Railway-Switches, of which the following is a specification.

It is the object of my invention to insure complete throw of the switch-points of a railway-switch before the switch-operating lever can be locked in either its normal or reversed position, as the case may be. To this end I connect the switch-lever with the switch-points by a permanent spring-yielding connection or "spring throw-bar" of any known suitable kind and also by an independent stiff connection, which latter, however, is not permanent, but is intermittent and exists only when and so long as the switch-lever is unlocked and in condition to make its stroke or is in course of movement, this stiff connection being severed only after the switch has completed its throw in either direction. A mechanism possessing these characteristics is, broadly considered, not new with me.

My invention resides in the construction and arrangement of instrumentalities hereinafter described for accomplishing the result above specified.

I will first describe my improvement by reference to the drawings accompanying and forming part of this specification and will then point out the same more specifically in the claims.

In the drawings, Figure 1 is a rear elevation, partly in section, of the "switch-stand" portion of a mechanism embodying my invention. Fig. 2 is a side elevation of the same with the levers in normal position. Figs. 3, 4, and 5 respectively show, on an enlarged scale, a sectional side elevation and rear elevation of the levers and a view of that face of the lever 6 which is contiguous to lever 2. Fig. 6 shows in side elevation the levers 2 6 in their normal position, but with the latch 9 of lever 2 raised and engaged with the notch 8 of lever 6 preparatory to handling the switch-points with the stiff connection. Fig. 7 shows in side elevation the lever 2 in normal position and the lever 6 in the position it will assume while a train is trailing through the points when they happen to be set wrong. Fig. 8 is a plan view showing the connections between the points and the switch-stand.

The particular stand shown in the drawings is one which is usually termed a "distant switch-signal stand," having two levers 1 2, the former for operating the distant signal through connections x x' x^2, &c., Fig. 8, the latter for operating and controlling the switch through the connections which will presently be described. My invention, however, is applicable equally to ordinary switch-stands or switch-signal stands, as will be readily understood.

The two levers 1 2 are pivoted in the stand at 5. Q is the quadrant, into which they are latched in the usual way at 4. Their latches are shown at 9 9', respectively, these latches being operated through the usual intermediaries by the latch-levers L L.

The two levers are interlocked by means of the transverse pin 10, adapted to slide in a guideway in the stand between the two levers and having its ends formed as conical points, one or the other of which engages a countersunk hole properly located in the lever next to it, the arrangement being such that lever 2 cannot be moved from normal until lever 1 is fully reversed and that lever 1 after lever 2 starts from its normal position is locked and so remains until lever 2 is latched again in its normal position. This arrangement, however, is not of my invention and is too well known to require detailed description.

To prevent the levers 1 2 from being handled by unauthorized persons, they are provided with slots 18, through which is passed a key 19, secured at one end to one of the levers by a chain 20 and at the other end to the other lever by a lock 21.

I come now to that portion of the mechanism in which my invention mainly resides.

The lever 2 is connected to the switch-points S by the usual yielding connection, consisting of the rod 3, jointed at one end to the lower end of the lever and at the other end to the rod 14, which has on it the thimbles t, adjusted and held by nuts n and containing between them the spiral spring 15, which encircles the rod 14. The thimbles pass through and are supported in the yoke y, which engages the heads or flanges of the thimbles in

the usual way and is fast to the bar *b*, which connects the switch-points. This is the spring-yielding connection usually employed between the switch-points and the switch-lever 2, and *per se* is not of my invention. The spring-yielding connection between these two parts—the lever and the switch-points—is a permanent one, and it permits the points when they are set wrong to yield to the wheels of a train trailing through the switch without endangering the connections or bending or breaking the mechanism. So much for the permanent spring-yielding connection.

The intermittent stiff connection between the same two parts—the lever 2 and the switch-points S—will now be described. This consists of the lever 6, a short lever pivoted at 5 and having its lower end connected to the stiff cross-bar *b* of the switch-points by a rod 12, jointed at one end to the bar *b* and at the other end to the lever 6. At 30 31 are represented the connections usually employed to operate the switch-target proper from the switch-points. The lever 6 is actuated from and by the switch-lever 2. Normally it is disconnected from said lever and is free to move independently thereof; but whenever it is desired to throw the switch then and during the subsequent throw of the switch-lever the latter is jointed rigidly to the lever 6. One simple and effective way of obtaining this result is as follows: In a part of the lever 6 which projects above and overhangs the latch 9 of the switch-lever 2 is a notch or groove 8, and the arrangement of parts is such that the latch 9 when it is lifted so as to unlock the lever 2 from the quadrant will enter and engage the notch 8 in the lever 6, as indicated in Fig. 6. The lever 6 already has a stiff connection with the switch-points, and thus through the engagement of the latch 9 with the lever 2 a stiff connection between the latter and the switch-points is established. If now lever 2 be reversed, it will be seen that should there be an obstruction between the switch-points and the main rails it will be impossible to complete the stroke of the lever or, indeed, to latch it, the latch 9 being held up in engagement with the lever 6 and maintaining a stiff connection between the switch-lever and the switch-points. Thus the stroke of the lever cannot be completed unless the switch-points are fully thrown; but so soon as the stroke of the lever 2 is complete and the switch consequently is fully set then the lever can again be latched, the effect of which is to withdraw the latch 9 from the notch 8, and consequently to sever the stiff connection between the lever 2 and the switch-points. If after this a train should trail through the points while they are wrong, the only connection between the lever 2 and the switch-points at this time is the permanent spring-yielding connection hereinbefore described, so that the points are free to yield. The lever 6, being at this time independent of and disconnected from the lever 2, will be free to move also and will assume the position shown in Fig. 7 while the train is passing through the switch. After the passage of the train the spring 15 returns the points to their place, and consequently the lever 6 will also reassume its original position, as in Fig. 6, where it is ready to be engaged by the latch of the switch-lever. The spring 15 is thus free to act at all times except whenever and so long as the latch 9 of the switch-operating lever 2 engages the lever 6.

Having described my improvement and the best way now known to me of carrying the same into practical effect, what I claim herein as new and of my own invention is as follows:

1. The combination of the switch-lever; the spring-controlled latch-lever and its latch; the quadrant; the switch-points, the permanent spring-yielding connection between the switch-points and the switch-lever; the intermediate lever 6 provided with a notch or slot arranged in the path of movement of and adapted to be engaged by, the latch when the latter is lifted out of engagement with the quadrant; and a stiff connection between the switch-points and the intermediate lever 6, independent of and separate from the spring-yielding connection between the switch-points and the switch-lever, substantially as and for the purposes hereinbefore set forth.

2. The combination of the switch-lever; the spring-controlled latch-lever and its latch; the quadrant; the switch-points; the intermediate lever 6 provided with a portion which overhangs the latch and is slotted or notched to receive and engage the latch when the latter is lifted out of engagement with the quadrant; and a connection between the intermediate lever 6 and the switch-points, substantially as and for the purposes hereinbefore set forth.

In testimony whereof I have hereunto set my hand this 5th day of July, 1898.

JOHN W. THOMAS, JR.

Witnesses:
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