

No. 864,669.

PATENTED AUG. 27, 1907.

B. L. MURPHY.
SWITCH.

APPLICATION FILED MAY 8, 1907.

3 SHEETS—SHEET 1.

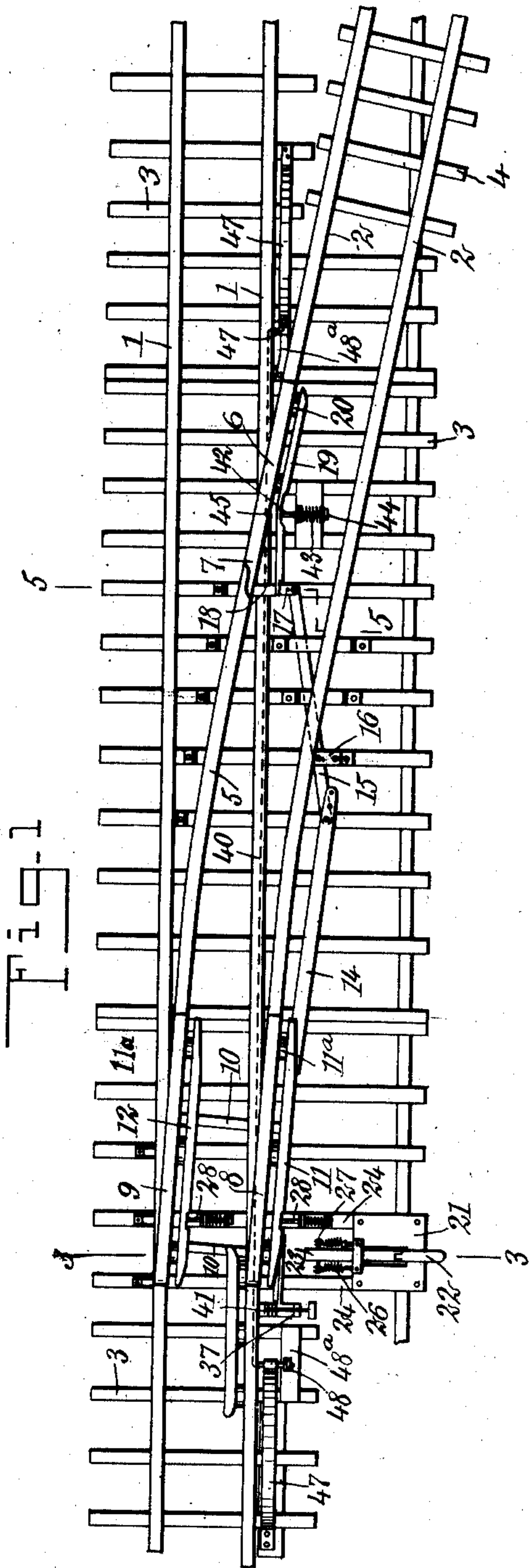


Fig. 1

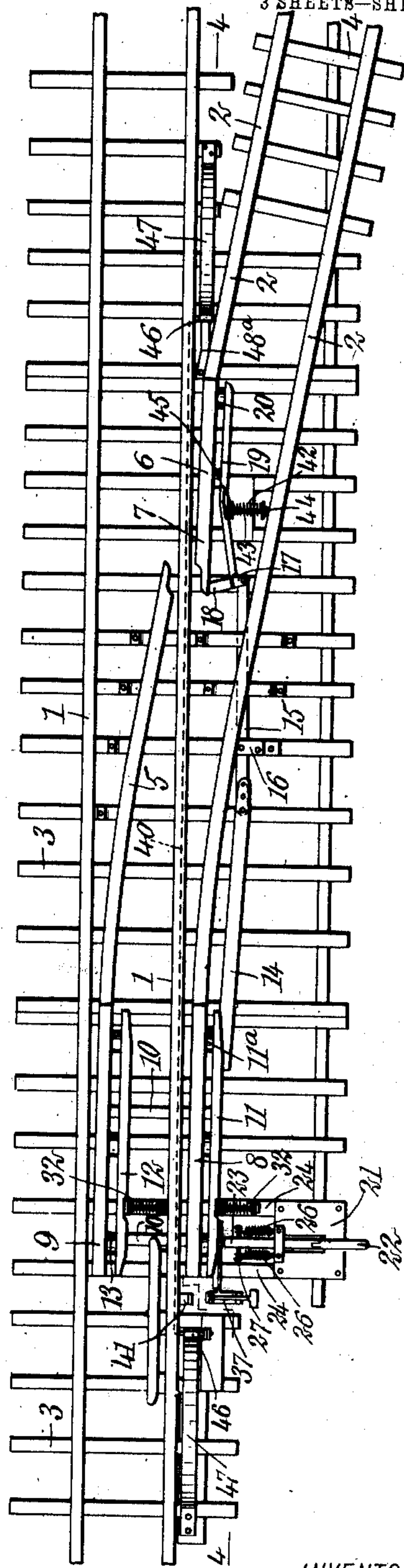


Fig. 2

WITNESSES

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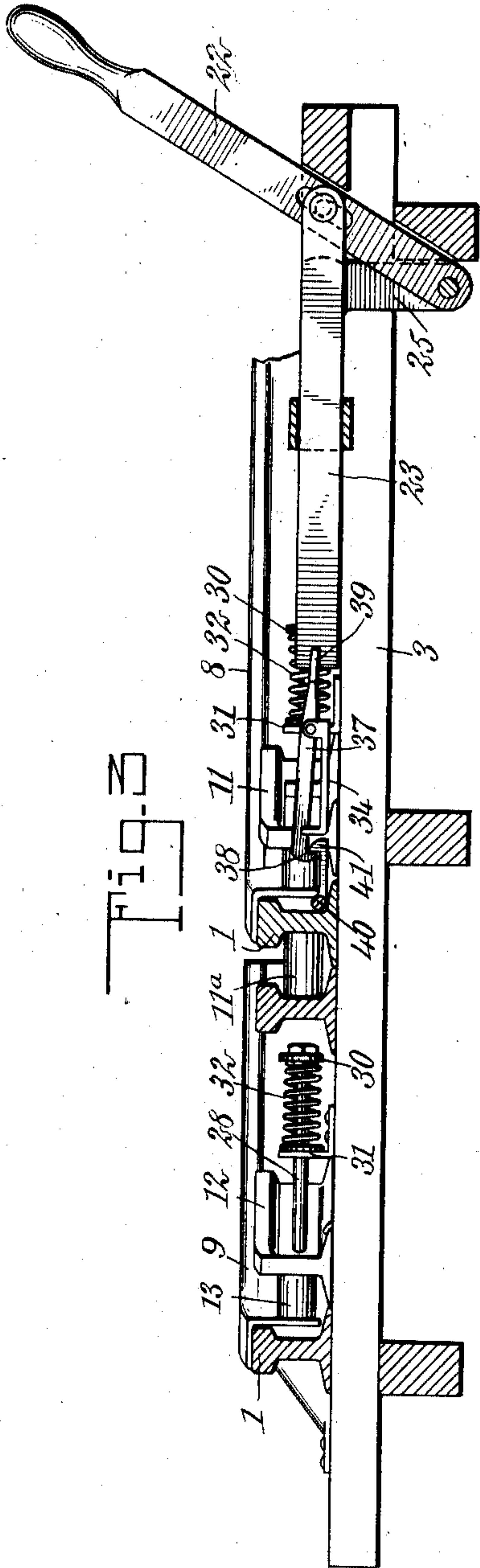
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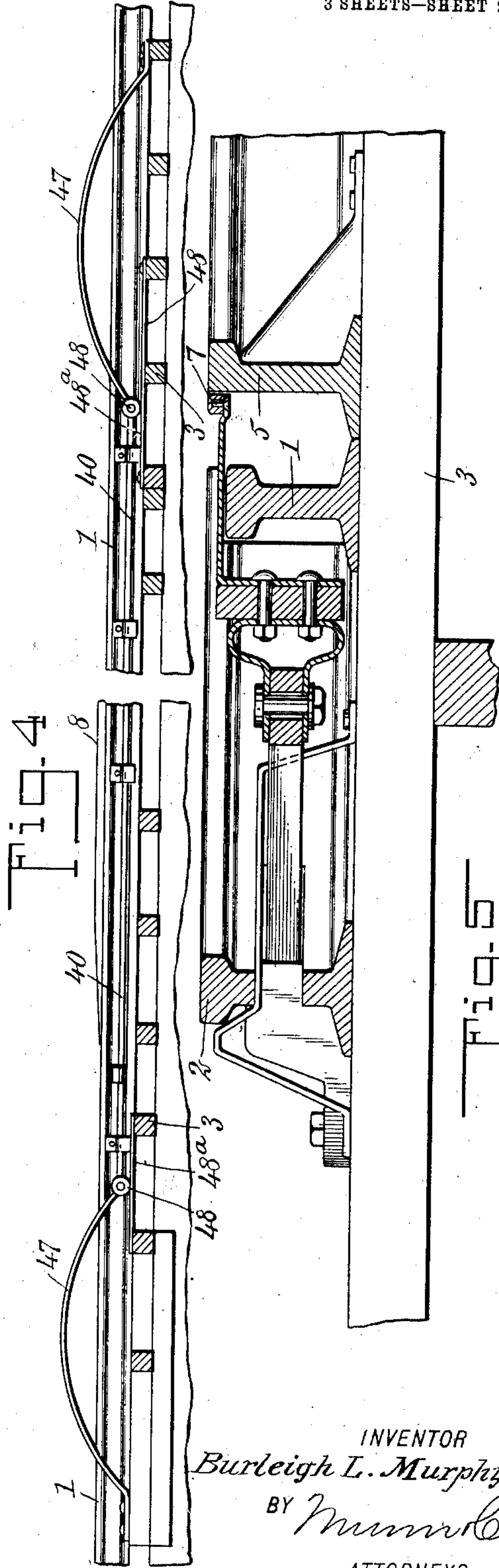
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3 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

BURLEIGH LUCENE MURPHY, OF COLORADO SPRINGS, COLORADO.

SWITCH.

No. 864,669.

Specification of Letters Patent.

Patented Aug. 27, 1907.

Application filed May 8, 1907. Serial No. 372,523.

To all whom it may concern:

Be it known that I, BURLEIGH LUCENE MURPHY, a citizen of the United States, and a resident of Colorado Springs, in the county of El Paso and State of Colorado, have invented a new and Improved Switch, of which the following is a full, clear, and exact description.

This invention relates to switches and it is particularly useful in connection with switches for railroad tracks and the like.

The object of the invention is to provide a simple, strong and efficient switch at which the main line track is continuous and unbroken, which can be operated manually at the switch itself, and which can be operated from a moving train approaching the switch from either direction.

A further object of the invention is to provide a switch having the switch rails and switch points so constructed, that a train in passing from the main track to the branch track rides upon elevated rails and passes over the rails of the main line track without coming in contact with the same.

The invention consists in the construction and combination of parts to be more particularly described hereinafter and fully set forth in the claims.

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, and in which

Figure 1 is a plan view of my switch showing the same open; Fig. 2 is a similar view showing the switch closed and the main line track clear; Fig. 3 is a transverse section on the line 3—3 of Fig. 1; Fig. 4 is a longitudinal section on the line 4—4 of Fig. 2; Fig. 5 is a transverse section on the line 5—5 of Fig. 1; Fig. 6 is an enlarged plan view of a part of the switch-controlling mechanism; and Fig. 7 is a diagrammatic side elevation of the controlling mechanism carried by the locomotive for operating the switch.

Referring more particularly to the drawings, 1—1 represent the main track rails carried upon the usual cross-ties 3. The main track rails are continuous and unbroken at the switching point.

2—2 are the branch track rails carried upon cross-ties 4 and adjacent to the main track upon extended ties 3. Adjacent to the main track rails, the branch track rails are elevated above the main track rails for a purpose which will appear hereinafter. A switch rail 5, elevated above the main track rails in the same degree as the adjacent extremities of the branch track rails, is arranged between the main track rails at an angle therewith, and having an end substantially in alinement with the branch track rails. A switch point 6 is arranged at the end of the branch track rail nearest the main track and is adapted to swing about

the end of the branch track rails. The point 6 has a toe 7 extending across the inner main track rail and engaging with the end of the switch rail 5 as is shown most clearly in Fig. 1. The end of the switch rail 5 is cut away at one side in a compound reverse curve and the toe of the point 6 is similarly cut away in the reverse direction to register with the end of the switch rail when placed in engagement therewith.

The outer branch track rail 2 is curved in substantial alinement with the inner main track rail 1. A switch point 8 is arranged at the extremity of the outer rail 2 and is adapted to swing about this extremity. A similar switch point 9 is arranged at the extremity of the switch rail 5 and is rigidly joined by means of cross-bars 10 to the switch point 8. Guard-rails 11 and 12 are rigidly mounted upon the cross-bars 10 adjacent to the switch points 8 and 9 and separated therefrom by spacing blocks 11^a and 13. The pivoted ends of the switch points 8 and 9 are substantially similar in cross-section to the cross-sections of the rails 2 and 5. The switch points 8 and 9 are inclined and present lateral flanges projecting in an increasing degree towards the toes and being substantially wedge-shaped to constitute inclined planes, adapted to carry the car-wheels from the main track rails to the branch rails when the switch points are in operative engagement with the main track rails. The switch point 8 has a rigid arm 14, the outer end of which is pivoted to a lever 15 pivoted in a suitable bracket 16 carried by a cross-tie 3. The lever 15 has its opposite end pivoted to a bracket 17 secured by means of an arm 18 to the switch point 6. A guard-rail 19 is mounted adjacent to the switch point 6 and rigid therewith being separated from the same by spacing blocks 20, and one end of the guard-rail 19 is laterally disposed away from the switch point 6 and is secured to the bracket 17.

When the switch points 8 and 9 are moved into engagement with the main track rails the arm 14 is swung outwardly away from the main track rails, swinging the lever 15 about its pivot and forcing the switch point 6 into engagement with the switch rail 5, the toe 7 of the switch point extending over the inner main track rail 2 when the switch is in the open position shown in Fig. 1. It will be understood that the switch rail 5 and the adjacent extremities of the branch track rails are elevated sufficiently above the main track rails to permit the wheel flanges to clear the latter when a train is passing from the main track to the branch track. The inclination of the switch points 8 and 9 permits the wheels to ride easily from the main track to the branch track.

Adjacent to the main track rails at the side of the same is a lever plate 21 carried upon the cross-ties and having a hand-lever 22 pivotally mounted thereupon. The push-rod 23 is slidably mounted between the arms 24 of the lever plate and extends towards the main

track. The hand-lever 22 has its extremities pivotally secured to an arm 25 at the under side of the lever plate. By swinging the hand lever towards the main track rails the push rod 23 is projected towards the same into
 5 engagement with the guard rail 11 of the switch point 8 and forces the same together with the switch point 9 into operative engagement with the main track rails. Helical springs 26 having the ends secured to the lever plate and a cross-bolt 27 of the push-rod, normally hold
 10 the push-rod from engagement with the guard-rail 11.

Bolt-rods 27 and 28 are secured by means of nuts 29 to the guard-rails 11 and 12 and extend laterally therefrom having rigid heads 30 at the outer extremities. Between the heads 30 are rigid stops 31 carried by a
 15 cross-tie 3 and helical springs 32 mounted upon bolt-rods 28, the latter passing through suitable openings in the stops. The springs 32 normally hold the switch point in inoperative position and out of engagement with the main track rails.

20 The guard rail 11 has an arm 35 at the end thereof presenting a transverse part 34 having a bearing 35 and a stop 36 at the opposite ends thereof. A pedal lever 37 having a laterally disposed catch 38 at one end, and a pedal 39 at the opposite end is pivoted at the
 25 bearing 35 and rests normally upon the stop 36, which holds the lever in a substantially horizontal position.

A slidable rod 40 extending from the switch point 8 to beyond the switch point 6 is arranged adjacent to the inner track rail 1 and has a rigid catch member 41 nor-
 30 mally adjacent to the pedal lever 37.

When the switch points 8 and 9 are forced into engagement with the main track rails by means of the hand lever 22, the catch 38 at the end of the pedal lever slips into engagement with the catch member 41 to hold
 35 the switch 1. The end of the pedal lever and the outer end of the catch member are suitably curved to permit the former to slip into engagement neatly with the catch member when the switch points are forced into operative position. It will be understood that the
 40 switch can be closed by depressing the pedal 39 to release the catch, the springs 32 instantly returning the switch points 8 and 9 to an inoperative position. At the same time, the switch point 6 is thrown from engagement with the switch rail 5, through the action of
 45 the lever 15.

A helical spring 42 is mounted upon a laterally projecting pin 43 carried by the guard-rail 19 and engages the head 44 carried by the pin, and a stop 45, the spring
 50 tending normally to force the switch point 6 into an inoperative position, and thereby assisting the closing of the switch when the catch is released.

The ends of the slidable rod 40 are outwardly disposed and are arranged in sleeves 46 at the extremities of upwardly curved leaf springs 47 the opposite ex-
 55 tremities of which are rigidly secured to the cross-ties. The laterally-disposed extremities of the slidable rod 40 are provided with heads beyond the sleeves 46 engaging the slide plates 48^a so that when the springs are depressed the heads can slide upon the slide plates 48^a,
 60 whereby the lateral displacement of the rod is effected. When one or the other of the curved springs 47 is depressed, the slidable rod is moved longitudinally of the main track rail, and the catch member 41 is thereby laterally displaced from the pedal lever, whereupon the
 65 same is disengaged and the switch is closed, leaving the

main track open and unobstructed for passage. The openings 47 are placed at suitable distances from the switch, to allow for the high speed of express or other fast trains.

I provide a pivoted lever 53 adapted to be mounted
 70 upon a locomotive or a railroad car and having a roller 49 at one end thereof. A link 50 connects the lever 53 with a hand lever 51 by means of which the lever 53 may be operated to dispose the roller 49 towards the track or away from the same. The arrangement is such
 75 that when the roller 49 is in its lowest position the lever 53 engages a stop 52 adapted to limit its movement. In its lowest position the roller 49 comes into operative engagement with the spring 47 when the locomotive or car reaches the track at that point, and in this way serves to
 80 operate the switch if the same is open.

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

1. In a switch, in combination, a main track, a branch track, switch points adjustably connecting said tracks and
 85 having inclined toes resting upon the bearing surfaces of the main track rails when the switch is open, resilient means for normally holding said points from engagement with the main track rails, means for holding said switch open against the resistance of said resilient holding means,
 90 and means for releasing said points to close the switch, said releasing means being controllable from a train and from the track.

2. In a switch, in combination, a main track, a branch track, switch points adjustably connecting said tracks and
 95 having inclined toes resting upon the bearing surfaces of the main track rails when the switch is open, springs for normally holding said points from engagement with the main track rails, means for holding said switch open against the resistance of said springs, and means for re-
 100 leasing said points to close the switch, the said releasing means being controllable from a train and from the track.

3. In a switch, in combination, main track rails, branch track rails, a switch rail, switch points adjustably connecting one of said branch track rails and said switch rail
 105 to said main track rails, a further switch point mounted at the end of a branch track rail to swing in a horizontal plane and having a toe adapted to extend over one of said main track rails to connect said branch track rail and said switch rail, resilient means for normally holding said
 110 switch closed, means for holding said switch open, and means controllable from a train and from the track, for releasing the holding means to close the switch.

4. In a switch, in combination, main track rails, branch track rails, a switch rail, switch points adjustably connecting one of said branch track rails and said switch rail
 115 to said main track rails, said points having inclined toes resting on the bearing surfaces of the main track rails when said switch is open, a further switch point connecting the other of said branch rails and said switch rail and
 120 having a toe extending over one of said main track rails to said switch rail, resilient means for normally holding said switch closed, means for holding said switch open, and means controllable from a train and from the track for releasing said holding means, to close the switch.
 125

5. In a switch, in combination, main track rails, branch track rails, a switch rail, said branch track rails adjacent to said main track rails and said switch rail being elevated above said main track rails, switch points adjustably connecting said rails, said switch points being inclined to permit a train to pass from the main track rails to the branch track rails, resilient means for normally holding said switch closed, means for holding said switch open, and means controllable from a train and from the track, for releasing said holding means to close the switch.
 135

6. In a switch, in combination, main track rails, branch track rails, a switch rail, said branch track rails adjacent to said main track rails and said switch rail being elevated above said main track rails, switch points adjustably connecting one of said branch track rails and said switch rail
 140 to said main track rails, a further switch point pivoted at

one of said branch track rails and having a toe adapted to extend over one of said main track rails to connect said branch track rail and said switch rail, and means for simultaneously operating said switch points, said first points increasing the height from the height of the main track rails to that of the branch track rails.

7. In a switch, in combination, main track rails, branch track rails, a switch rail, said branch track rails adjacent to said main track rails and said switch rail being elevated above said main track rails, switch points adjustably connecting one of said branch track rails and said switch rail to said main track rails, a further switch point pivoted at one of said branch track rails and having a toe adapted to extend over one of said main track rails to connect said branch track rail and said switch rail, resilient means for normally holding said switch closed, means for holding said switch open, and means controllable from a train and from the track, for releasing the holding means, to close the switch.

8. In a switch, in combination, main track rails, branch track rails, a switch rail, said branch track rails adjacent to said main track rails, and said switch rail being elevated above said main track rails, switch points adjustably connecting one of said branch track rails and said switch rail to said main track rails, a further switch point having a toe extending over one of said main track rails and connecting another of said branch track rails and said switch rail, and means for simultaneously operating said points, resilient means for normally holding said switch closed, means for holding said switch open, and means controllable from a train and from the track for releasing said holding means to close the switch.

9. In a switch, in combination, main track rails, branch track rails, a switch rail, switch points adjustably connecting one of said branch track rails and said switch rail to said main track rails, a further switch point having a toe extending over one of said main track rails and adjustably connecting another of said branch track rails and said switch rail, said first switch points being rigidly connected, means for forcing said first switch points into operative engagement with said main track rails, means for holding said first switch points in an operative position, and means controlled by said first switch points for operating said further switch points.

10. In a switch, in combination, main track rails, branch track rails, a switch rail, switch points adjustably connecting one of said branch track rails and said switch rail to said main track rails, said points having inclined heads and presenting toes engaging the bearing surfaces of said main track rails when the switch is closed, a further switch point having a toe extending over one of said main track rails and adjustably connecting another of said branch track rails and said switch rail, said first switch points being rigidly connected, means for normally holding said first switch points from engagement with said main track rails, means for forcing said first switch points into operative engagement with said main track rails, means for holding said first switch points in operative position, and means controlled by the movement of said first switch points for operating said further switch points.

11. In a switch, main track rails, branch track rails, a switch rail, switch points adjustably connecting one of said branch track rails and said switch rail to said main track rails, means for resiliently holding said points in an inoperative position, means for forcing said points into an operative position, and means for holding the switch open, a further switch point adjustably connecting the other of said branch track rails and said switch rail, a lever secured to said first switch points and controlling said further switch point, and resilient means for resisting the movement of said further switch point into an operative position.

12. In a switch, main track rails, branch track rails, a switch rail, switch points adjustably connecting one of said branch track rails and said switch rail to said main track rails, a spring normally forcing said switch points away from said main track rails, means for operating said switch points, a catch for holding the switch open, said catch being adapted to be released from a train or from the track, a further switch point adjustably connecting the

other of said branch track rails and said switch rail, a lever secured to said first switch points and controlling said further switch point, and resilient means for resisting the movement of said further switch point into an operative position.

13. In a switch, main track rails, branch track rails, a switch rail, switch points adjustably connecting one of said branch track rails and said switch rail to said main track rails, a spring normally forcing said switch points away from said main track rails, manually controllable means for operating said points, a catch for holding said switch open, a slidable member extending beyond said switch at both sides thereof and adapted to be controlled from a train, said slidable member having means for engaging said catch to hold said switch open, said points being released when said slidable member is operated, a further switch point adjustably connecting another of said branch track rails and said switch rail, a lever secured to said first switch points and controlling said further switch point, and a spring forcing said further switch point into an operative position.

14. In a switch, main track rails, branch track rails, a switch rail, switch points adjustably connecting one of said branch track rails and said switch rail to said main track rails, said points having inclined toes resting on the bearing surfaces of said main track rails when the switch is open, means for resiliently holding said points in an inoperative position, means for forcing said points into an operative position, and means for holding the switch open, a further switch point adjustably connecting the other of said branch track rails and said switch rail and having a toe extending over one of said main track rails to said switch rail, a lever secured to said first switch points and controlling said further switch point, and resilient means for resisting the movement of said further switch point into an operative position.

15. In a switch, main track rails, branch track rails, a switch rail, switch points adjustably connecting one of said branch track rails and said switch rail to said main track rails, a spring normally forcing said switch points away from said main track rails, manually controllable means for operating said points, a catch for holding said switch open, a slidable member extending beyond said switch at both sides thereof and having upwardly curved slidable spring members adapted to be engaged by a train to operate said slidable member, said slidable member having an extension adapted to engage said catch to hold said switch open, said points being released when said slidable member is operated, a further switch point adjustably connecting another of said branch track rails and said switch rail, a lever secured to said first switch points and controlling said further switch point, and a spring forcing said further switch point into an operative position.

16. In a switch, main track rails, branch track rails, a switch rail, switch points adjustably connecting one of said branch track rails and said switch rail to said main track rails, said points having inclined toes resting at the bearing surfaces of said main track rails when the switch is open, a spring normally forcing said switch points away from said main track rails, manually controllable means for operating said points, a catch for holding said switch open, a slidable member extending beyond said switch at both ends thereof and having an extension adapted to engage said catch to hold said switch open, said slidable member having at the opposite end upwardly disposed spring members adapted to be engaged by a train to operate said slidable member, said points being released when said slidable member is operated, a further switch point adjustably connecting another of said branch track rails and said switch rail and having a toe adapted to extend over one of said main track rails to said switch rail, a lever secured to said first switch points and controlling said further switch point, and a spring forcing said further switch point into an operative position.

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

BURLEIGH LUCENE MURPHY.

Witnesses:

BESSIE M. CORRIGAN,
W. I. WIGTON.