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PATENTED JAN. 23, 1906.

C. M. HURST.
RAILWAY SWITCH AND SIGNAL MECHANISM.

APPLICATION FILED MAY 27, 1905.

3 SHEETS—SHEET 1.

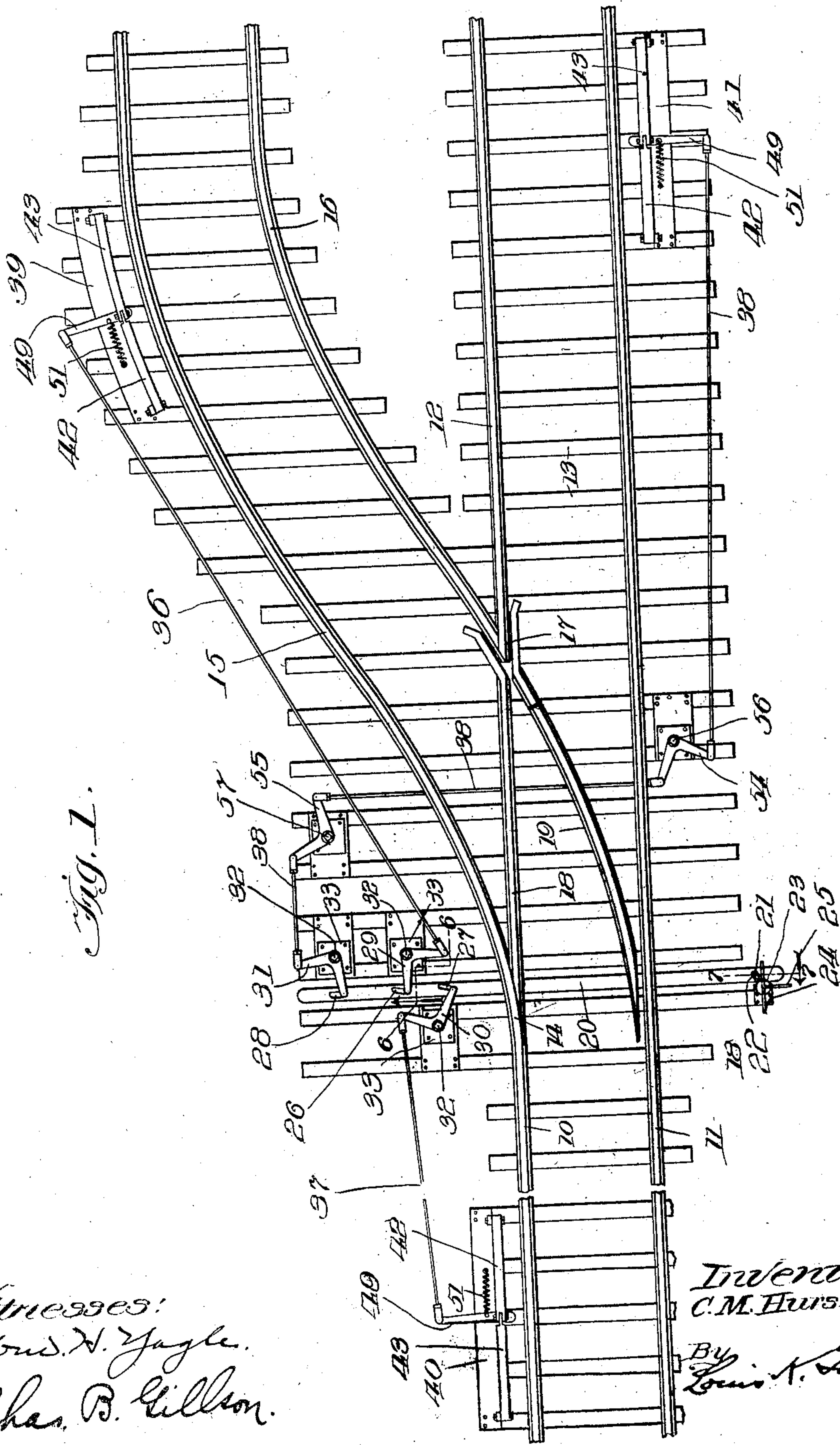


Fig. 1.

Witnesses:

Wm. H. Yagle.

Chas. B. Gillson.

Inventor:
C. M. Hurst

By
Louis A. Green

att'y

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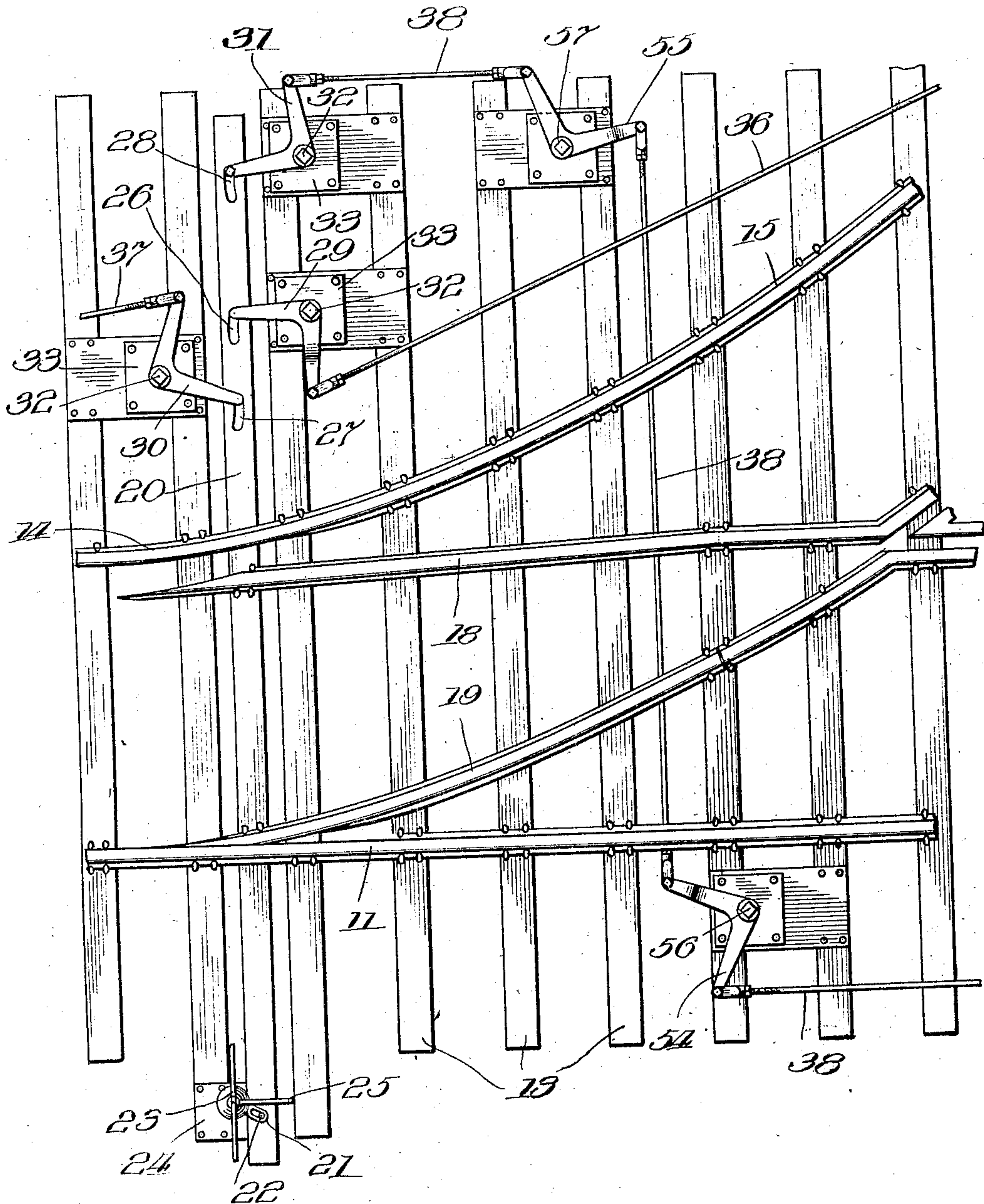
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3 SHEETS—SHEET 2.

Fig. 2.



Witnesses:
Wm. H. Zagle
Chas. B. Gillon.

Inventor:
C. M. Hurst
by Louis A. Gleason
att'y

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3 SHEETS—SHEET 3.

Fig. 3.

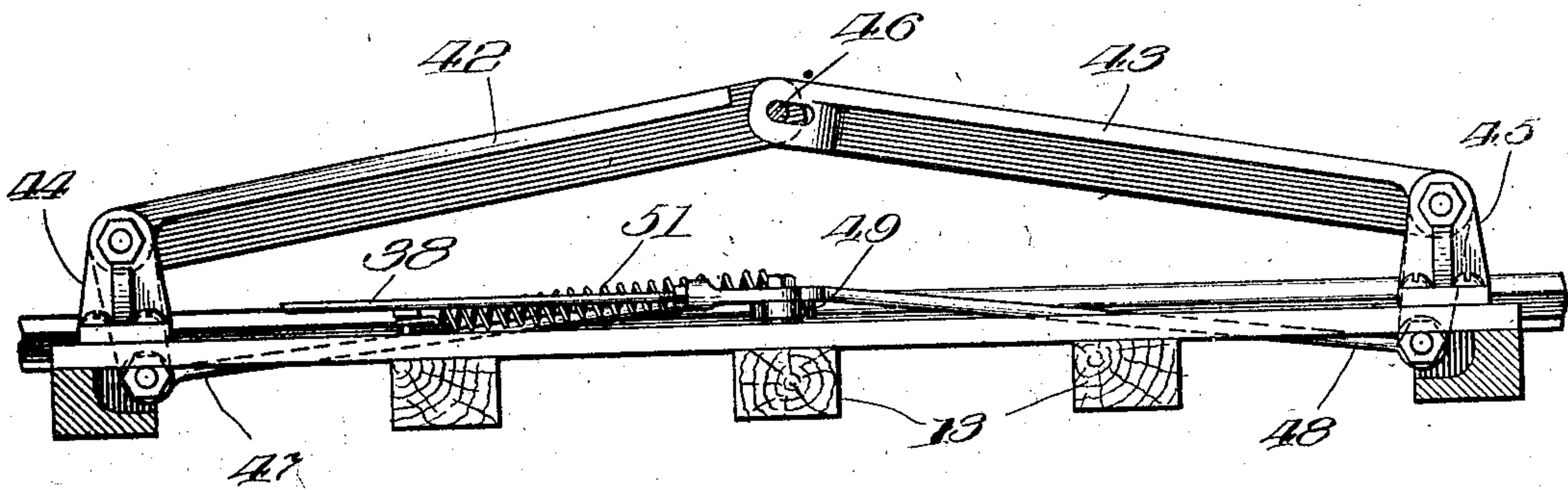


Fig. 4.

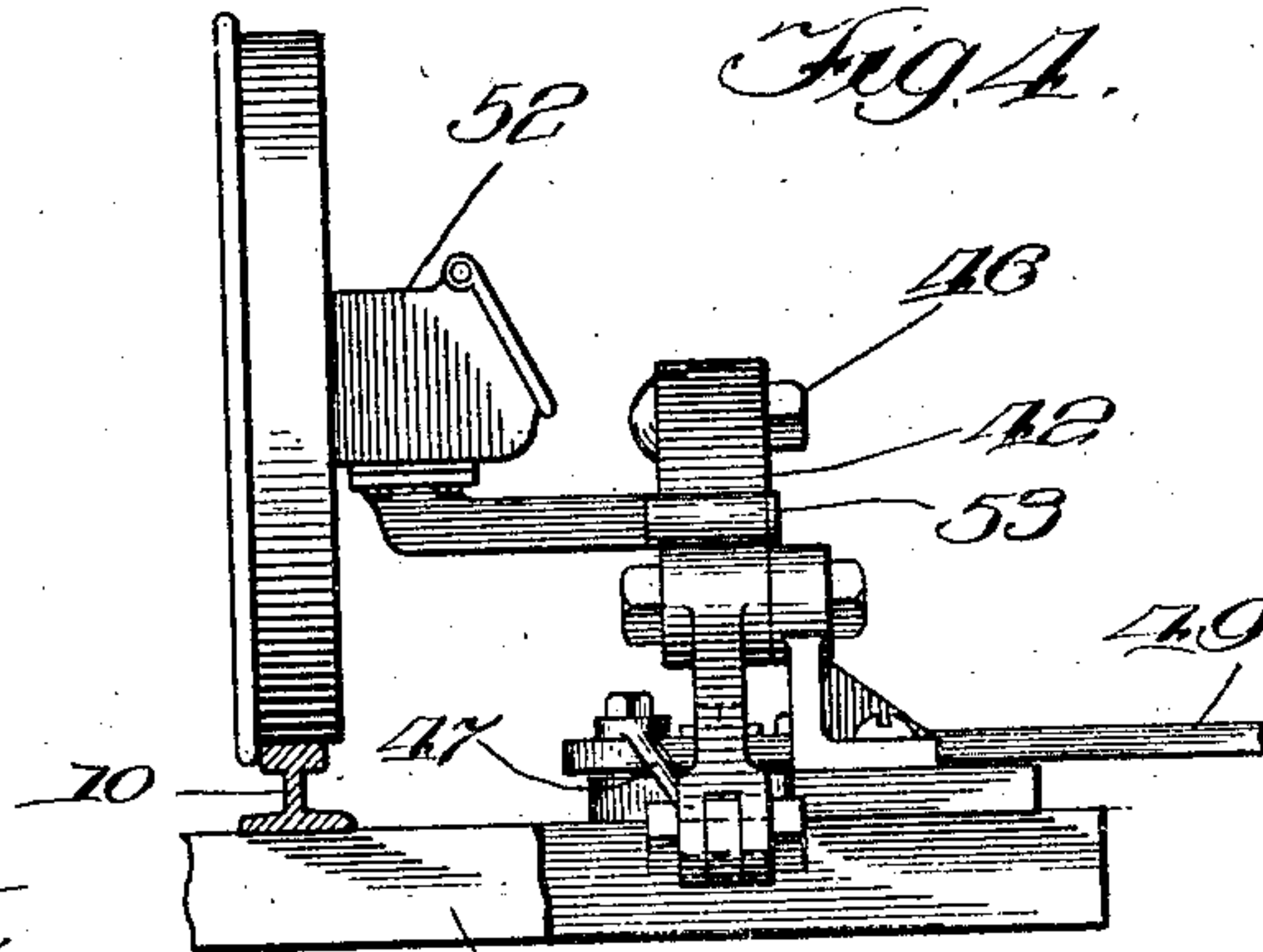


Fig. 5.

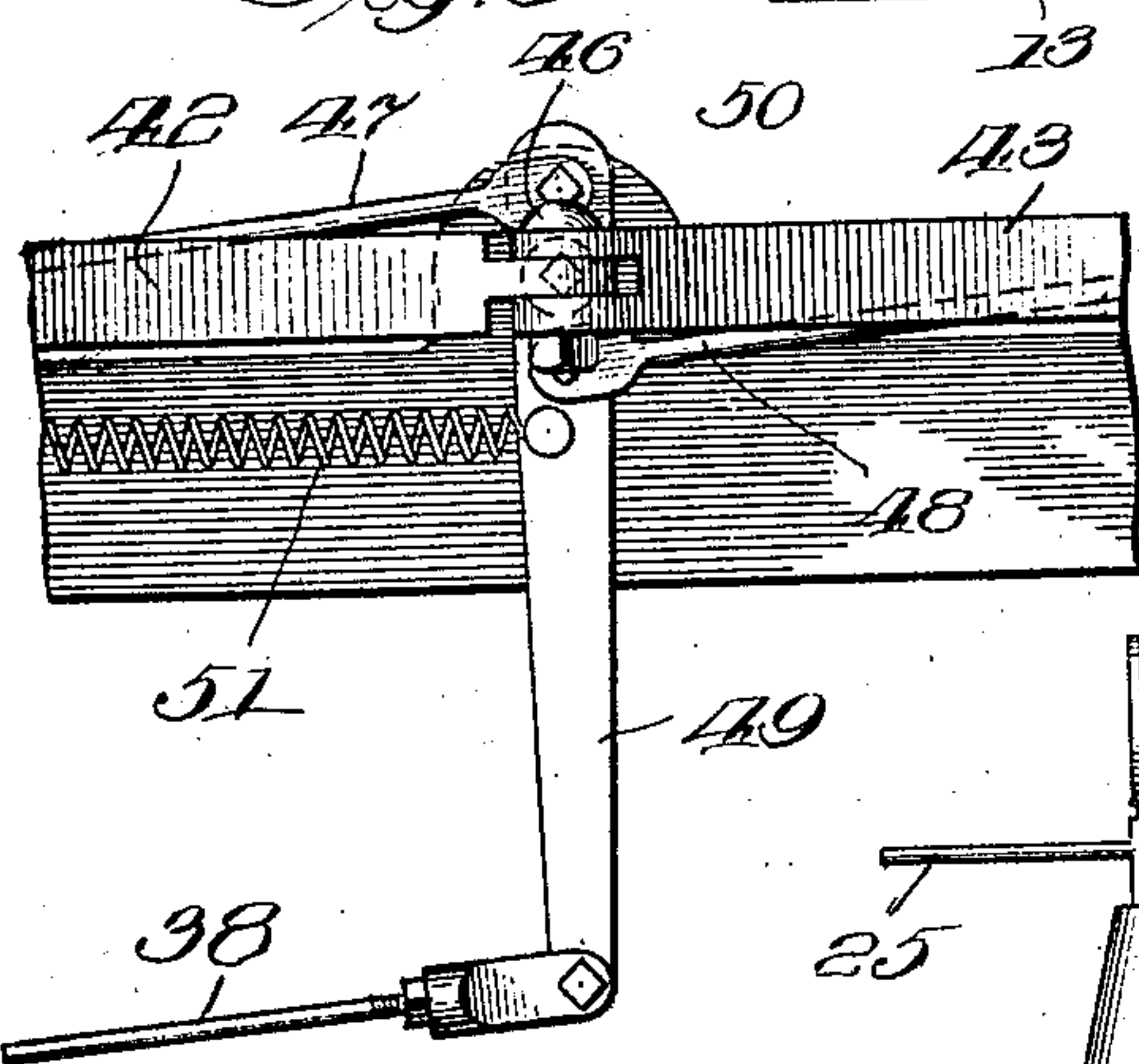


Fig. 6.

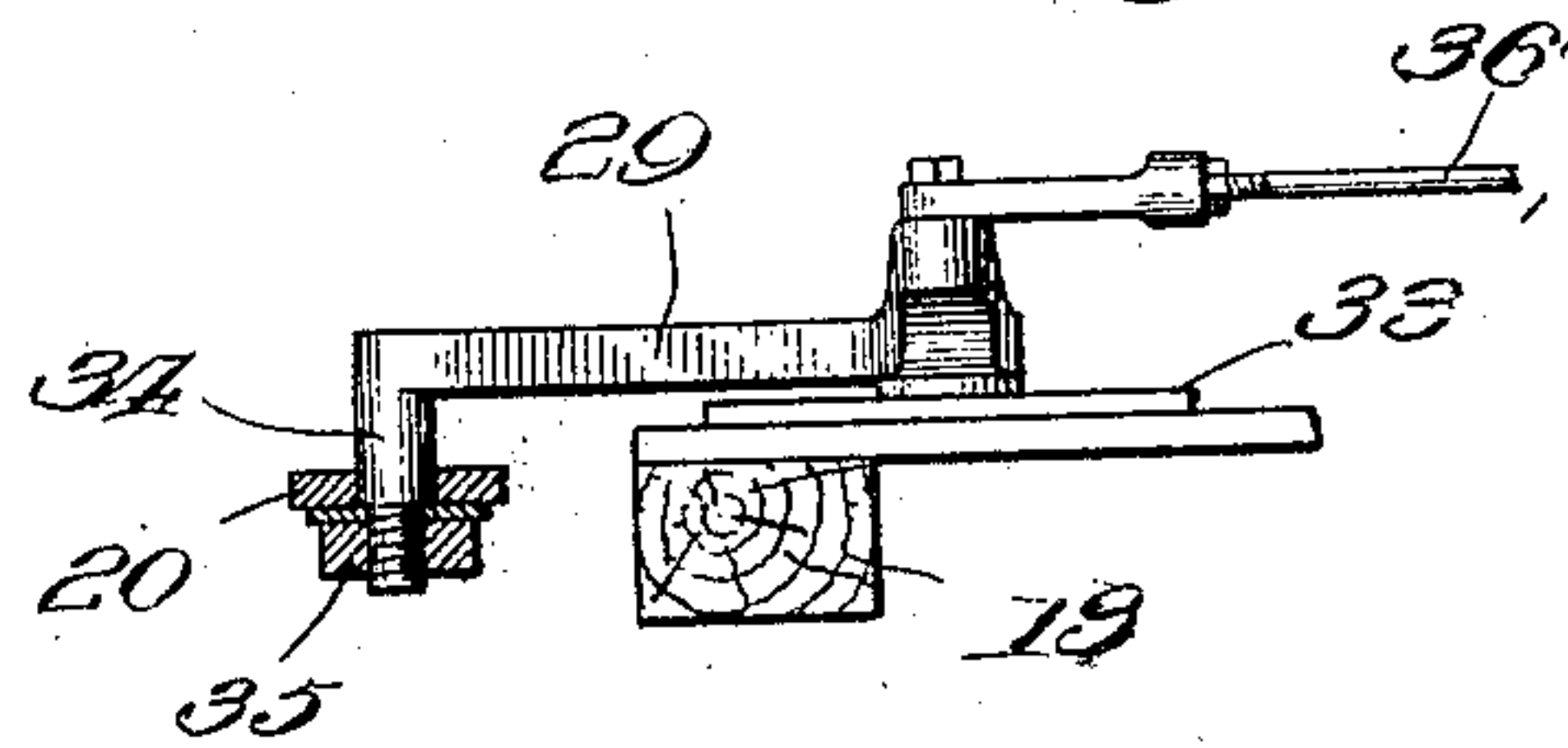
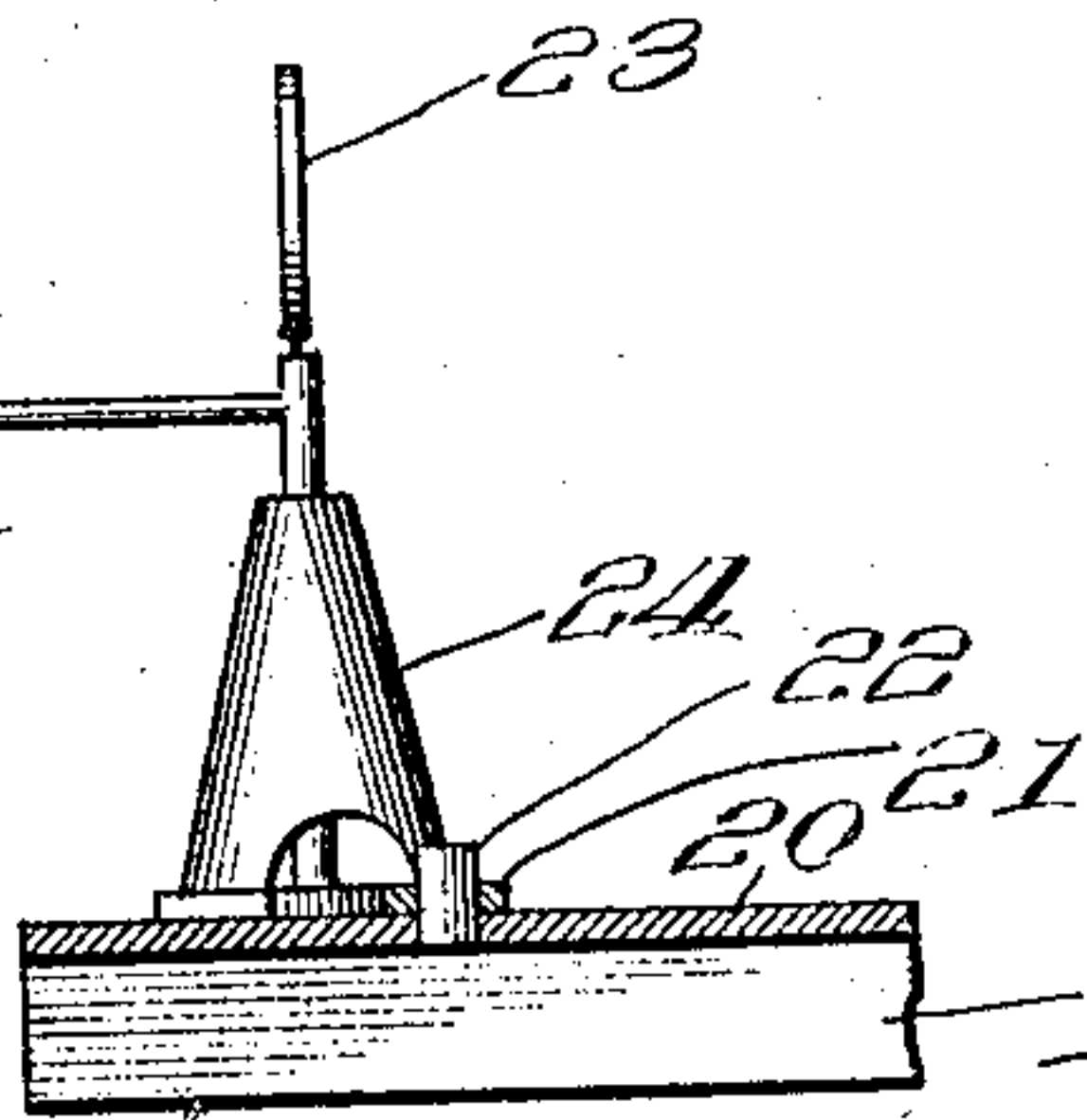


Fig. 7.



Witnesses:
Eben H. Ziegler.
Chas. B. Hillen

Inventor:
C. M. Hurst
by Louis L. Green
att'y.

UNITED STATES PATENT OFFICE.

CHARLES M. HURST, OF RAWLINS, WYOMING.

RAILWAY SWITCH AND SIGNAL MECHANISM.

No. 810,867.

Specification of Letters Patent.

Patented Jan. 23, 1906.

Application filed May 27, 1905. Serial No. 262,564.

To all whom it may concern:

Be it known that I, CHARLES M. HURST, a citizen of the United States, and a resident of Rawlins, county of Carbon, and State of Wyoming, have invented certain new and useful Improvements in Railway Switch and Signal Mechanism, of which the following is a specification and which are illustrated in the accompanying drawings, forming a part thereof.

This invention relates to the class of switch and signal mechanisms by means of which the switch and the signal indicating the position of the switch are set to accommodate the movement of a passing train by a contacting appurtenance of the engine or car of that train.

The object of the invention is to provide a mechanism of the kind described of simple and durable construction and one whose action will be positive and reliable.

The invention consists in the construction and arrangement of parts to be hereinafter described and which are illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of a section of a railway-track, showing the invention applied thereto. Fig. 2 is an enlarged detail of the same, showing the parts in a different position. Figs. 3 and 4 are detail elevations drawn to a larger scale. Fig. 5 is a plan view of a detail shown in Fig. 3; and Figs. 6 and 7 are sectional views on the lines 6-6 and 7-7, respectively, of Fig. 1.

In the drawings my invention is illustrated as being employed in connection with a switch joining a siding and a main line or through-track and contemplates means for opening the switch to accommodate the movement of a train coming out of the siding and for closing the switch by a train approaching it on the main line from either direction. The adaptation of the device to more complicated systems of track requires merely a duplication of the parts herein shown and described.

At 10, 11, and 12 are indicated the rails of the main line or through-track, which are secured to the usual cross-ties 13. The rail 10 is bent outwardly, as shown at 14, a continuation of the same forming the outer rail 15 of the siding, while the inner rail 16 of the siding joins the rail 12 of the through-track at the frog 17.

The movable or switch rails are shown at 18 and 19. These are attached at one end near the frog 17 and form, respectively, either

a connection between the parts 10 and 12 of the inner rail of the through-track or a connecting means between the outer rail 11 of the through-track and the rail 16 of the siding. The points of the switch-rails 18 and 19 are firmly secured to a bridle-rod 20, placed beneath the track and extending laterally for some distance in both directions. At one side of the track this bridle-rod is connected, by means of a lever 21 and pin 22, to the base of a signal or target 23, which is rotatably mounted in a tubular post 24, secured to one of the cross-ties 13, and is provided with the usual hand-lever 25, by means of which the target may be manually rotated, thus moving the bridle-rod 20 and setting the switch. Beyond the track at the opposite side from the target 23 the bridle-rod 20 is provided with a plurality of curved slots 26, 27, and 28, each of which is engaged by one arm of a bell-crank lever, as 29, 30, or 31. Each of these bell-crank levers is pivoted upon a bolt 32, secured in a plate 33, spiked to the cross-ties 13, and the end of one of the arms of each is turned downwardly, as indicated at 34, such end passing through the correspondingly-curved slot in the bridle-rod 20 and being provided below such rod with a nut and washer 35. The other arm of each of the bell-cranks is connected, by means of a tension-rod 36, 37, or 38, respectively, with the operating-lever 49 of a tripping device 39, 40, 41. This tripping device may be of any desired construction, but preferably will be of the type having an oscillating apron located beside the track and adapted to be engaged by an appurtenance of a passing train. In the drawings I show in this connection a tripping device of this type, for which I filed an application for patent November 24, 1904, Serial No. 234,290, and which consists of a pair of bell-crank levers 42 and 43, pivoted in chairs 44 and 45, secured to the track adjacent one of the rails, so that one arm of each extends parallel to the rail and is inclined upwardly. These arms are depressed when engaged by the passing train, and being joined by a pin and slot 46 the depression of one causes the depression of the other. The other arms of these bell-crank levers are substantially vertical and are connected, by means of links 47 and 48, to the operating-lever 49 at opposite sides of its pivot 50, so that the depression of the inclined arms causes this lever to swing always in the same direction. For contacting with the tripping device there is a shoe

53. This is preferably mounted upon one of the trucks and shown attached to a journal-box, as 52, of the train and extends outward laterally in such a position as to ride upon the inclined arms of the levers 42 and 43. A spring 51 is employed for returning the parts of the tripping device to their normal position and preferably has one end attached to the lever 49 and the other secured to the track.

The tension-rod 38 is led across the track beneath the rails, so as to join the bell-crank 31 with the tripping device 41 by means of two bell-crank levers 54 and 55, spliced into the tension-rod intermediate of its ends and pivoted at 56 and 57 in suitable plates secured to the cross-ties at opposite sides of the track.

The operation of the device is as follows: Assuming the parts to be in the position illustrated in Fig. 1, a train coming out of the siding and provided with such a shoe as is shown at 53 will depress the levers 42 and 43 as it passes the tripping device 39, thereby causing a pull on the rod 36, which will swing the bell-crank 29 and move the bridle-rod 20, setting the switch-rails 18 19 to the "open" position, Fig. 2, and turning the target 23 so as to indicate such a position of the switch-rails. After the shoe 53 has passed over the tripping device the spring 51 will raise the inclined arms of the levers 42 and 43 and retract the tension member 36, moving the downwardly-turned end 34 of the bell-crank 29 in the slot 26. During the movement of the bridle-rod 20 corresponding to the setting of the switch just described the bell-cranks 30 and 31 remain stationary, the rod riding along on the downwardly-turned ends 34 of such cranks. The slots in the rod are of such length that when the switch is completely open the crank-arms will bear against their outer ends, as shown in Fig. 2. When now the train after having passed out of the siding reaches and depresses the tripping device 40, the bell-crank 30 will be swung by the tension on the rod 37 and moving the bridle-rod 20 by bearing against the outer end of the slot 27 will return the switch-rails and signal to the closed position of Fig. 1. A train approaching the switch on the main track from either direction will depress one of the tripping devices 40 or 41 before reaching the switch and if the latter be already closed will merely oscillate the downwardly-turned end 34 of the bell-crank 30 or 31 in the corresponding slot in the bridle-rod 20. If, however, the switch has been left open, the depression of the tripping device will close it and prevent the train running out on the siding if coming from the left as viewed in Fig. 1 or damaging the switch-rails 18 19 if coming from the right. To avoid closing the switch by a train coming out of the siding before its last cars have reached the main track,

the tripping device 40 will necessarily be placed at some distance from the switch.

I claim as my invention—

1. In a railway switch mechanism, in combination, a slotted bridle-bar; bell-crank levers, each having a crank-pin entering one of the slots; spring-supported trips for engagement by a passing train and located respectively adjacent the switch and main tracks; rods connecting each trip mechanism with one of the bell-crank levers; the bell-crank levers controlled by the switch and main-track trips, respectively, being so mounted as to open and close the switch respectively when actuated in opposition to their retracting-springs.

2. In combination, a main railway-track; a switch-track connected therewith; a bridle-rod for actuating the switch; trip mechanism located adjacent the main track and adjacent the switch-track for engagement by a moving train; connection between such trip mechanism and the bridle-rod, and arranged reversely, whereby the action of the trip adjacent the main track will close the switch and the action of the trip adjacent the switch-track will open the switch.

3. In combination, a reciprocative bridle-rod for railway-switches; spring-retracted mechanism adapted to be actuated by a passing train and acting on the bridle-rod to move it in one direction only and independent train-actuated means for positively moving the bridle-rod in the opposite direction.

4. In combination, a pair of spring-retracted mechanisms adapted to be actuated by a passing train and each acting on the bridle-rod to move it in one direction only, the direction of action of the two mechanisms being reverse.

5. In combination, a pair of vertically-swinging spring-raised interlocking bell-crank levers; an oscillating lever; links connecting the opposite ends of the oscillating lever with each bell-crank lever; a bridle-rod having a longitudinal slot; a bell-crank carrying a pin running in the slot; and a link connecting the other arm of the last-named bell-crank with the oscillating link.

6. In combination, a bridle-bar having longitudinal slots; a pair of bell-crank levers, each having a pin engaging one of such slots; spring-retained trip mechanisms adapted to be actuated by a passing train; a link connecting each bell-crank lever with one of the trip mechanisms, such bell-crank levers being so mounted that they act in opposite directions under the influence of their respective trip mechanisms.

CHARLES M. HURST.

Witnesses:

J. F. HURST,
W. E. HURST.