

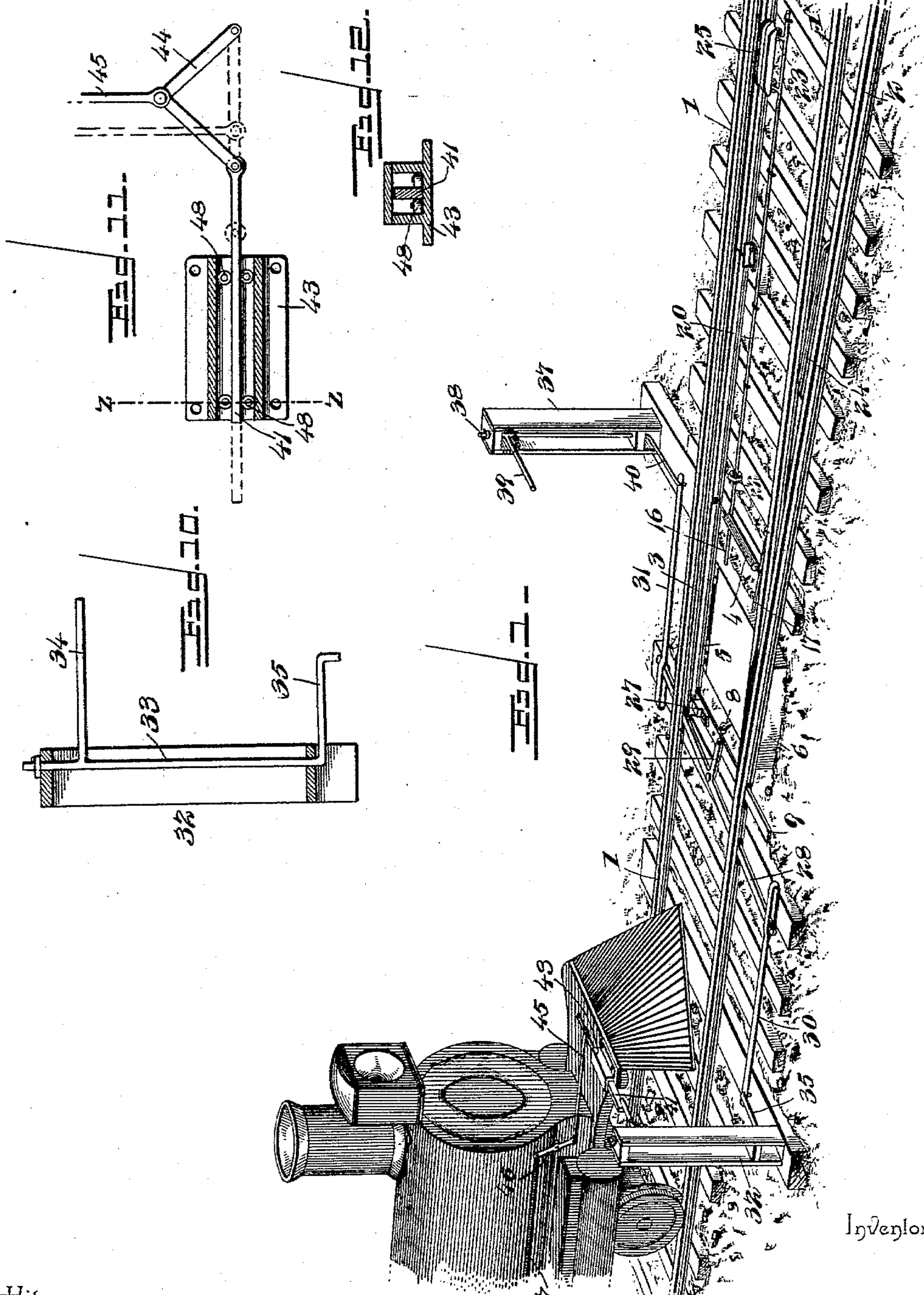
(No Model.)

3 Sheets—Sheet 1.

L. S. LEWIS.
RAILROAD SWITCH.

No. 571,674.

Patented Nov. 17, 1896.



Inventor

Witnesses
C. H. Stewart
V. B. Hillyard

By *his* Attorneys, *Lyman S. Lewis*

C. A. Snow & Co.

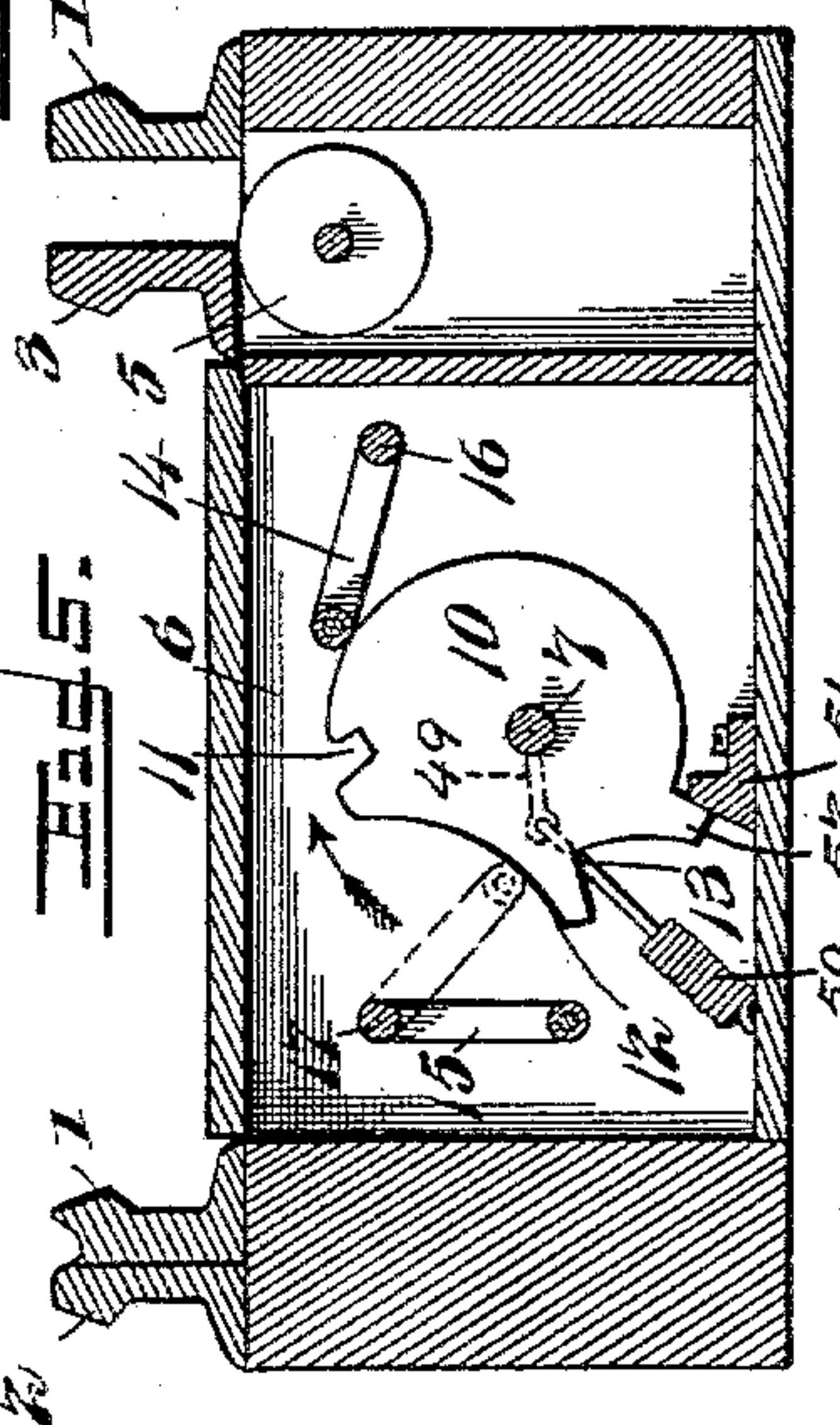
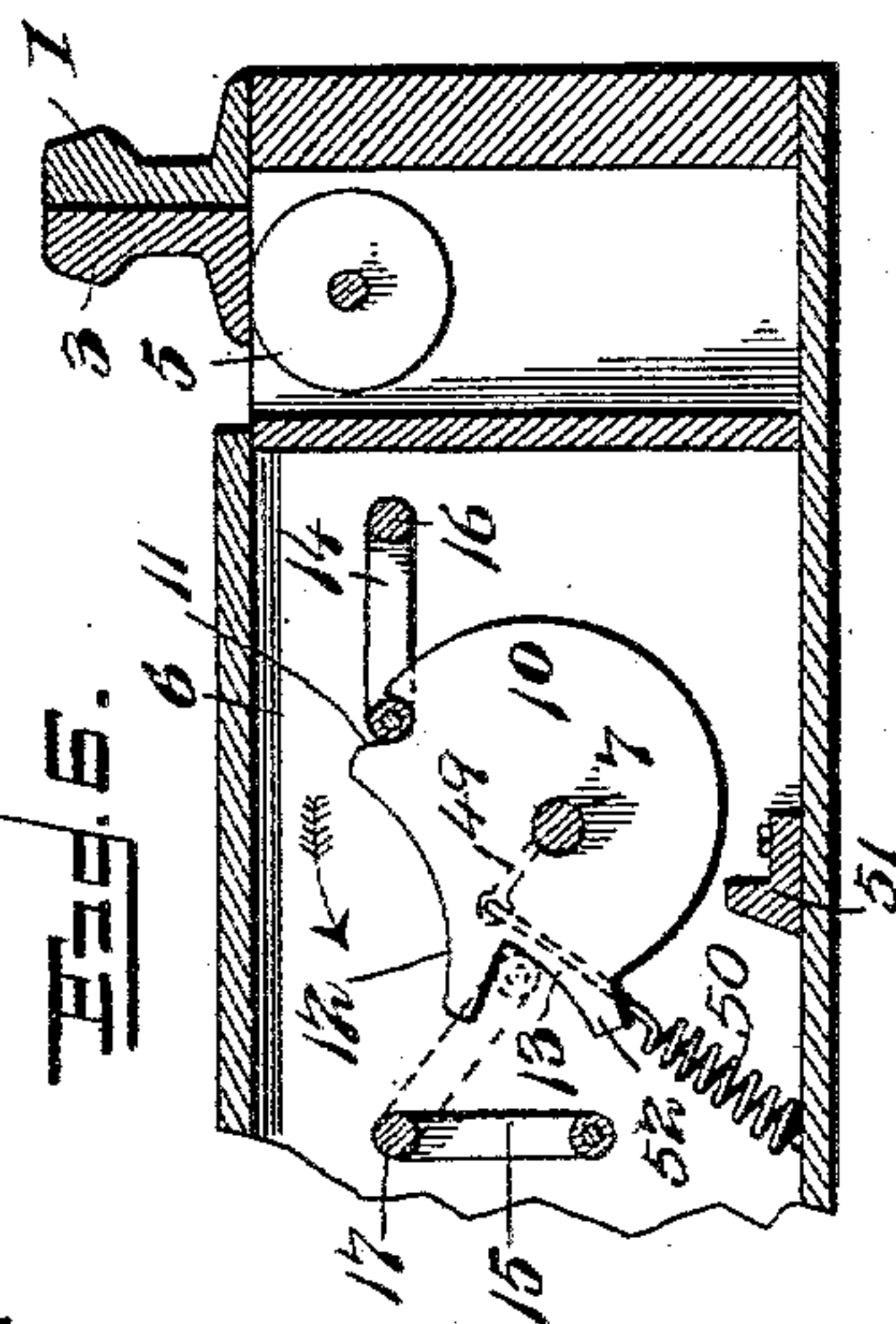
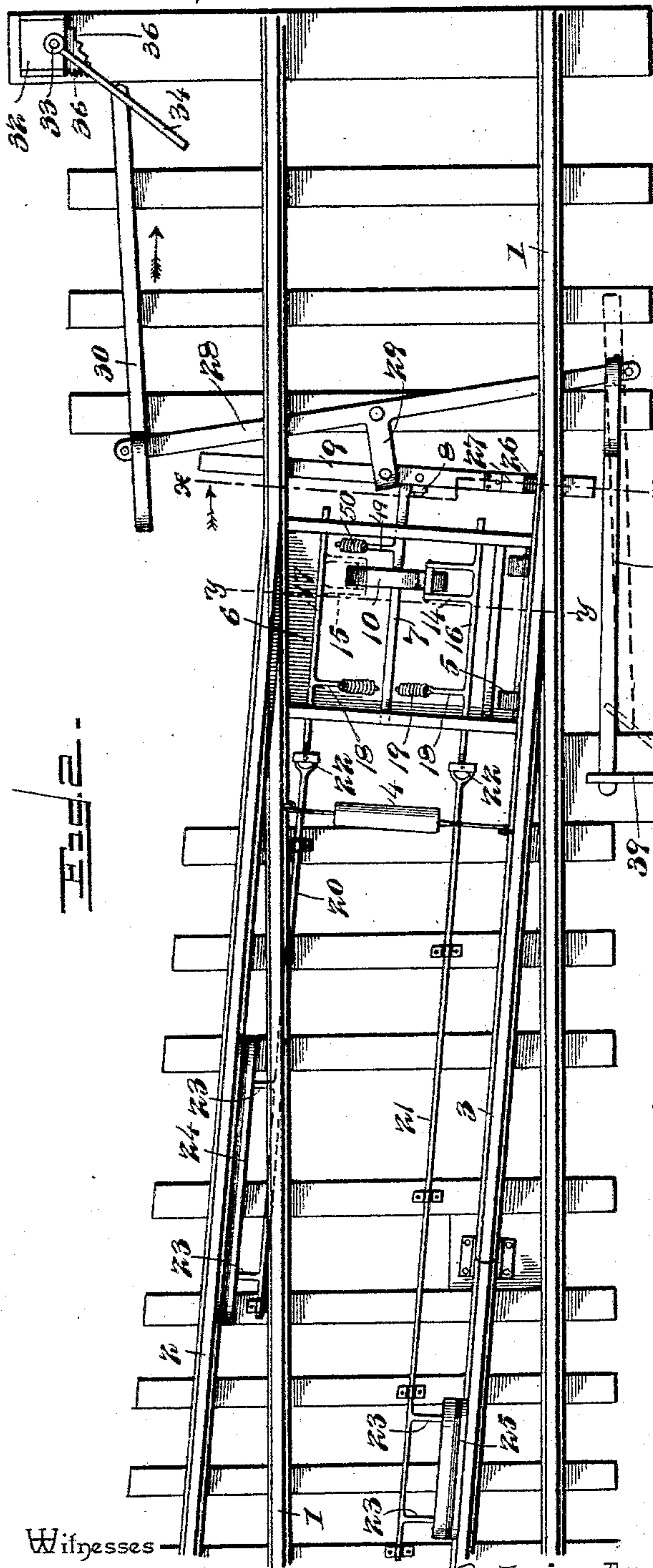
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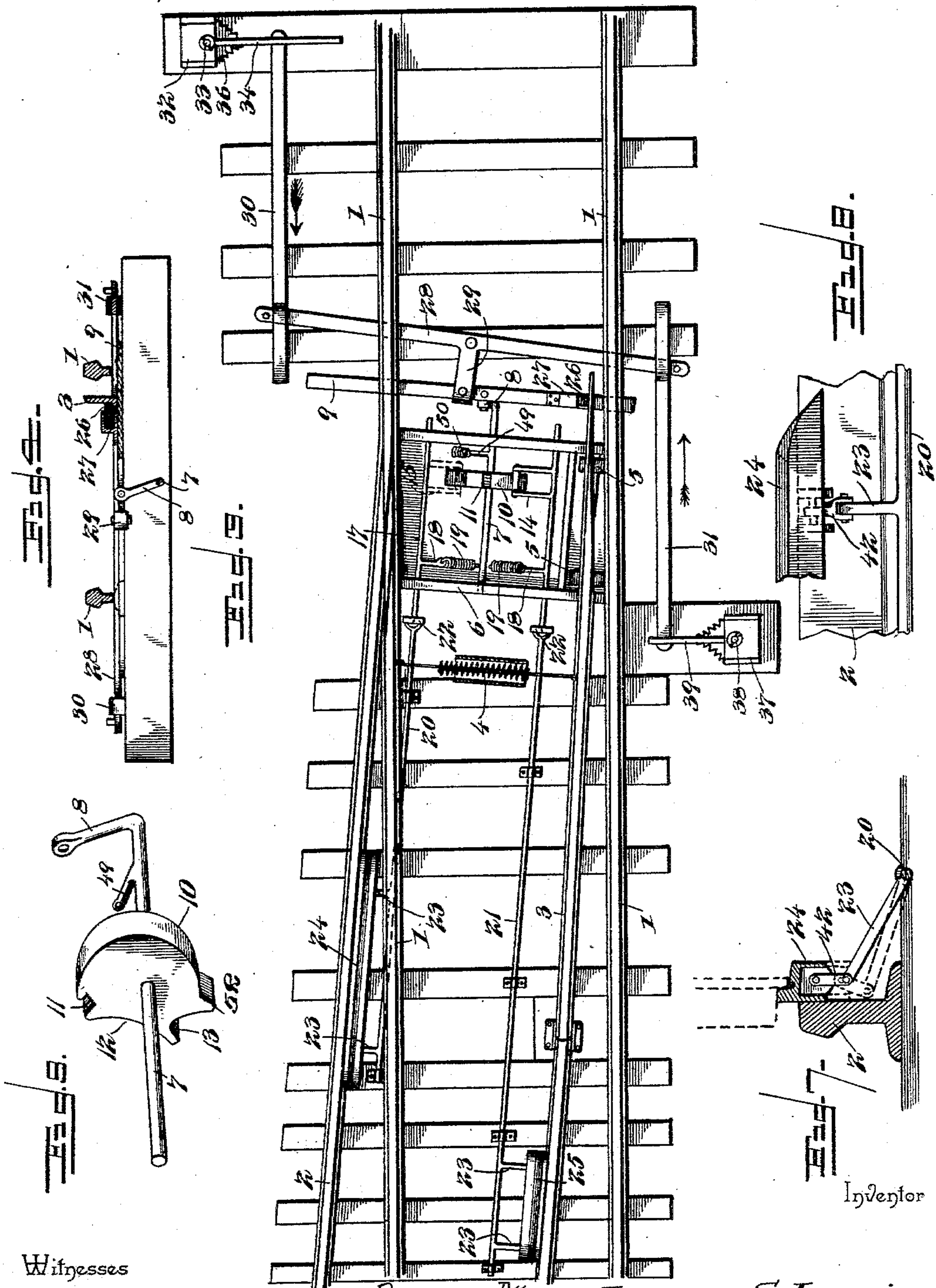
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Inventor

UNITED STATES PATENT OFFICE.

LYMAN S. LEWIS, OF GUTTENBERG, IOWA, ASSIGNOR OF ONE-HALF TO
WILLIAM L. KORDS, OF SAME PLACE.

RAILROAD-SWITCH.

SPECIFICATION forming part of Letters Patent No. 571,674, dated November 17, 1896.

Application filed July 23, 1896. Serial No. 600,295. (No model.)

To all whom it may concern:

Be it known that I, LYMAN S. LEWIS, a citizen of the United States, residing at Guttenberg, in the county of Clayton and State of Iowa, have invented a new and useful Railroad-Switch, of which the following is a specification.

This invention relates to railroad-switches, and aims to provide an appliance of this character which can be operated from a moving train, so as to open or close the siding or branch at will, whereby the whole or a portion of the train may be side-tracked or moved from the main stem on to a branch.

The switch is so constructed that normally the branch or siding is open, thereby admitting of uninterrupted traffic upon the main stem in either direction except when it is required to close the siding, which is effected from the moving train by the engineer or fireman projecting a part within the path of a trip, whereby the switch is automatically thrown.

An essential feature of the invention is to lock the switch when closed and to automatically open the same after the hindmost wheels of the rear truck pass the switch, thereby insuring a closing of the main stem to the siding, a spring or other yielding connection holding the switch-rail closed in such a manner as to admit of the said switch-rail moving when the flange of a wheel wedges between the main and switch rails, thereby admitting of a portion of a train passing by the switch when the latter is closed and one or more of the cars moved back upon the siding, the switch being opened automatically by the last car upon the siding, whereby the train can be made up and continue upon the main stem without requiring the engineer or fireman to dismount to operate or set the switch.

For a full understanding of the merits and advantages of the invention reference is to be had to the accompanying drawings and the following description.

The improvement is susceptible of various changes in the form, proportion, and the minor details of construction without departing from the principle or sacrificing any of the advantages thereof, and to a full disclosure of

the invention an adaptation thereof is shown in the accompanying drawings, in which—

Figure 1 is a perspective view of a railroad-switch constructed in accordance with the principles of this invention, showing the manner of operating it automatically from the pilot of an engine. Fig. 2 is a top plan view showing the switch closed with respect to the main track. Fig. 3 is a view similar to Fig. 2, showing the switch open. Fig. 4 is a transverse section on the line X X of Fig. 2. Figs. 5 and 6 are cross-sections on the line Y Y of Fig. 2, showing the means for locking the switch. Figs. 7 and 8 are detail views showing the means of connecting an operating-shaft with a rail-trip. Fig. 9 is a detail view of the tumbler and its shaft. Fig. 10 is a detail view of a switch-stand, showing the relative position of the shaft bearing the trip and operating-crank. Fig. 11 is a detail view of the mechanism provided on the pilot of the engine for setting the switch. Fig. 12 is a cross-section on the line Z Z of Fig. 11.

Corresponding and like parts are referred to in the following description and indicated in the several views of the accompanying drawings by the same reference-characters.

The rails of the main track or stem are represented by the numeral 1 and those comprising the siding or branch by the numeral 2.

The switch-rail 3 is normally held away from the contiguous rail of the main track at its free end by means of a spring 4, and the friction incident to the movements of the switch-rail to open and close the siding is reduced to a minimum by rolling supports 5, which consist of small wheels suitably journaled to a box or housing 6, let into the road-bed opposite the switch. The top of the box or housing 6 comes about flush with the bottom side of the rails, so as not to interfere with the latter, and protects the mechanism employed for locking the switch when closed. A shaft 7 is journaled in the box or housing 6 and has a radius-arm 8 at one end which projects through an opening in the switch-bar 9, operating freely beneath the rails. A tumbler 10 is fixedly mounted upon the shaft 7 and has a notch 11 at one end and an extension 12 at the opposite end, the top side of the extension 12 being hollowed and the lower

side formed with a crotch 13 a short distance from its outer extremity. The notch 11 and crotch 13 cooperate with loops 14 and 15 on shafts 16 and 17 to lock the switch-rail 3 when closed. The shafts 16 and 17 extend parallel with each other and with the shaft 7 and are journaled in the box or housing 6, and the loops 14 and 15 are secured thereto in any substantial manner, so as to attain the desired end. Radius-arms 18 extend inwardly from the shafts 16 and 17, and springs 19 connect their outer ends with a convenient portion of the housing, so as to hold the loops 14 and 15 in proper position. Shafts 20 and 21 form extensions of the shafts 17 and 16 and are connected with the latter by means of knuckles 22, so as to compensate for and obviate torsional strain. Radius-arms 23 are provided at the outer ends of the shafts 20 and 21 and support rail-trips 24 and 25, the latter being located a greater distance from the switch, so as to release the latter and permit it to open under the action of the spring 4 after the train or car passes by the switch and the trip 25.

The switch-bar 9 carries a spring 26, which is adapted to bear against the switch-rail 3 and hold the latter against the contiguous rail of the main stem when the siding is closed, and this spring is located within a housing 27, by means of which it is protected against the elements and from injury from any cause. When the switch-rail is closed, a train or car passing along the main track will crowd the free end of the switch-rail 3 away from the contiguous main rail by reason of the flange of the wheels wedging into the angular space formed between the adjacent rails 1 and 3. The yielding connection 26 renders possible this action. This operation will take place only when a train or car is moving toward the switch in a direction away from the branch or siding, because if the train or car were moving toward the siding it would leave the main stem and enter upon the siding. The spring 26 is stouter and stronger than the spring 4 and overcomes the latter when the switch-rail is moved, so as to close the siding.

A lever 28, extending transversely of the road-bed and pivoted intermediate of its ends, has a short arm 29, connected with the switch-bar 9, so as to move the latter when it is required to close the switch. The opposite ends of the lever 28 project beyond the rails 1 and pass through slots in operating-bars 30 and 31, the slots being sufficiently long to admit of the lever having a movement sufficient to close the switch and admit of the bars 30 and 31 returning to a normal position.

A switch-stand 32 is located to one side of the main track, and a shaft 33 is journaled vertically therein and is provided with a trip 34 and a crank 35, the latter engaging with the bar 30. Springs 36, acting upon opposite sides of the trip 34, hold the latter in a normal position, so as to be struck by a projecting part on the pilot of an engine. The stand

32 incloses the shaft 33 and protects the same from injury and affords a support therefor.

A switch-stand 37, corresponding to the switch-stand 32, is located upon the opposite side of the track, and a shaft 38 is journaled therein and is provided with a trip 39 and a crank 40, the latter making connection with the rod 31. The trips 34 and 39 project inward, and, when operated upon by a projection 41, serve to vibrate the lever 28 and move the switch-bar 9, so as to close the switch. As the switch-bar 9 moves to close the switch the shaft 7 is locked in its bearings, thereby bringing the notch 11 of the tumbler 10 in position to be engaged by the loop 14, by means of which the switch is locked against opening until released by the wheels pressing upon the rail-trip 25, when the shafts 21 and 16 will be turned so as to disengage the loop 14 from the notch 11. When the train is passing by the switch, the rail-trip 24 will be depressed and turn the shafts 20 and 17, so as to bring the loop 15 into engagement with the crotch 13, thereby locking the switch closed during the time that the loop 14 is out of engagement with the notch 11 by reason of the wheels pressing upon the rail-trip 25. From this construction it will be seen that the tumbler 10 is engaged by either one or the other of the loops 14 and 15, thereby locking the switch during the passage of a train or car. When the rearmost wheels of the last car pass the rail-trip 24, the trip 25 will be depressed and release the tumbler and the switch, and the latter will be opened by the action of the spring 4.

The rail-trips 24 and 25 are similarly formed and are placed alongside of the respective rails of the siding, so as to be depressed by the wheels of the train moving thereover, and each has connection with the radius-arms 23 by links 42 connecting the ends of the arms 23 with plates riveted or otherwise secured to the inner side of the trips. The ends of the rail-trips are beveled on their top sides to admit of the wheels gradually riding thereon when moving upon or leaving the said rail-trips. The projection 41 may be a slide-bar, pivoted arm, or other movable part under the control of the engineer or fireman, so as to be extended within the path of either of the trips 34 or 39, so as to operate the latter when it is required to close the switch.

As shown, the projection 41 is a slide-bar, and it operates in a box 43, secured to the pilot of the engine, and toggle-levers 44 connect the inner end of the slide-bar 41 with the said pilot, so that upon operating the toggle-levers the slide-bar will either be projected or withdrawn, as required. A rod 45 connects the toggle-levers with a lever 46, and the latter is operated by means of a rod 47, extending within convenient reach of the engineer or fireman. The slide-bar 41 operates between pairs of antifriction-rollers 48, located within the box 43.

The shaft 7 has a radius-arm 49, which

makes connection with a spring 50, by means of which the shaft 7 with its attendant parts is returned to a normal position when released after being actuated. A stop 51, secured to the bottom of the box or housing 6, is adapted to engage with a projection 52 of the tumbler 10 and limit the return movement of the shaft 7 and its tumbler, thereby holding the parts in a normal position.

The main rail is slotted or grooved at the juncture therewith of the rail 2 to provide passages for the flanges of the wheels in the usual way. However, if preferred, the main rail at the said juncture may be constructed substantially as the rail 3 and be operated from a slide-bar in substantially the same way and by the same mechanism as the rail 3. This is an obvious construction to any one skilled in the art of railroad construction and is a well-known equivalent for the arrangement illustrated. Hence a detailed detailed description is not deemed necessary.

Having thus described the invention, what is claimed as new is—

1. In a railroad-switch, the combination with a switch-rail, a switch-bar, and means for actuating the latter to operate the switch, of a shaft operated by means of the switch-bar, a tumbler mounted upon the shaft, and a second shaft having a projection to engage with the tumbler and lock the switch, substantially as and for the purpose set forth.

2. In a railroad-switch, the combination of a switch-rail, an operating-bar for closing the switch, a shaft having connection with the operating-bar, a tumbler mounted upon the shaft, a second shaft having a projection to engage with the tumbler and lock the latter and the switch, and a rail-trip operatively connected with the said second shaft to disengage the projection thereof from the tumbler, substantially as and for the purpose set forth.

3. In a railroad-switch, the combination of a switch-rail, an operating-bar, a shaft having connection with the operating-bar, a tumbler secured to the said shaft, two shafts having projections to alternately engage with and lock the tumbler, and rail-trips connected with the respective shafts and located at different distances from the switch, substantially as and for the purpose set forth.

4. In a railroad-switch, the combination of a switch-rail, an operating-bar, a trip connected with the operating-bar and adapted

to be struck by the approaching train to throw the switch, a shaft having connection with the operating-bar, a tumbler mounted upon the shaft, parallel shafts disposed upon opposite sides of the tumbler and having projecting portions to alternately engage with and lock the tumbler, and rail-trips located at different distances from the switch and connected with the respective shafts upon opposite sides of the tumbler, substantially as and for the purpose set forth.

5. In a railroad-switch, the combination of a switch-rail, a switch-bar, a lever having an arm in engagement with the switch-bar, a trip located to one side of the track to be struck by the advancing train, a bar for transmitting motion from the said trip to the lever and having a limited play, whereby the switch may be closed and the trip returned to a normal position, a shaft having connection with the switch-bar, a tumbler secured to the said shaft, and a second shaft having a projection to engage with the tumbler and operatively connected with a rail-trip, substantially as and for the purpose set forth.

6. In a railroad-switch, the combination of a switch-rail, trips located upon opposite sides of the track and adapted to be struck by a passing train, a lever, connections between the lever and trips to admit of the switch being thrown and the trip actuated returning to a normal position, a switch-bar operated by means of the lever and bearing a spring to engage with the switch-rail, a spring for opening the switch when the latter is released, a shaft operatively connected with the switch-bar, a tumbler mounted upon the shaft, parallel shafts located upon opposite sides of the tumbler and provided with projecting parts to alternately engage with and lock the tumbler and the switch, means for holding the last-mentioned shafts in position to engage with and lock the tumbler, and rail-trips adapted to engage with the last-mentioned shafts and located at different distances from the switch, substantially as and for the purpose set forth.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

LYMAN S. LEWIS.

Witnesses:

JOHN H. SIGGERS,
THEODORE DALTON.