

F. M. HALL.
SAFETY AUTOMATIC SWITCH.
APPLICATION FILED JAN. 21, 1909.

915,854.

Patented Mar. 23, 1909.

2 SHEETS—SHEET 1.

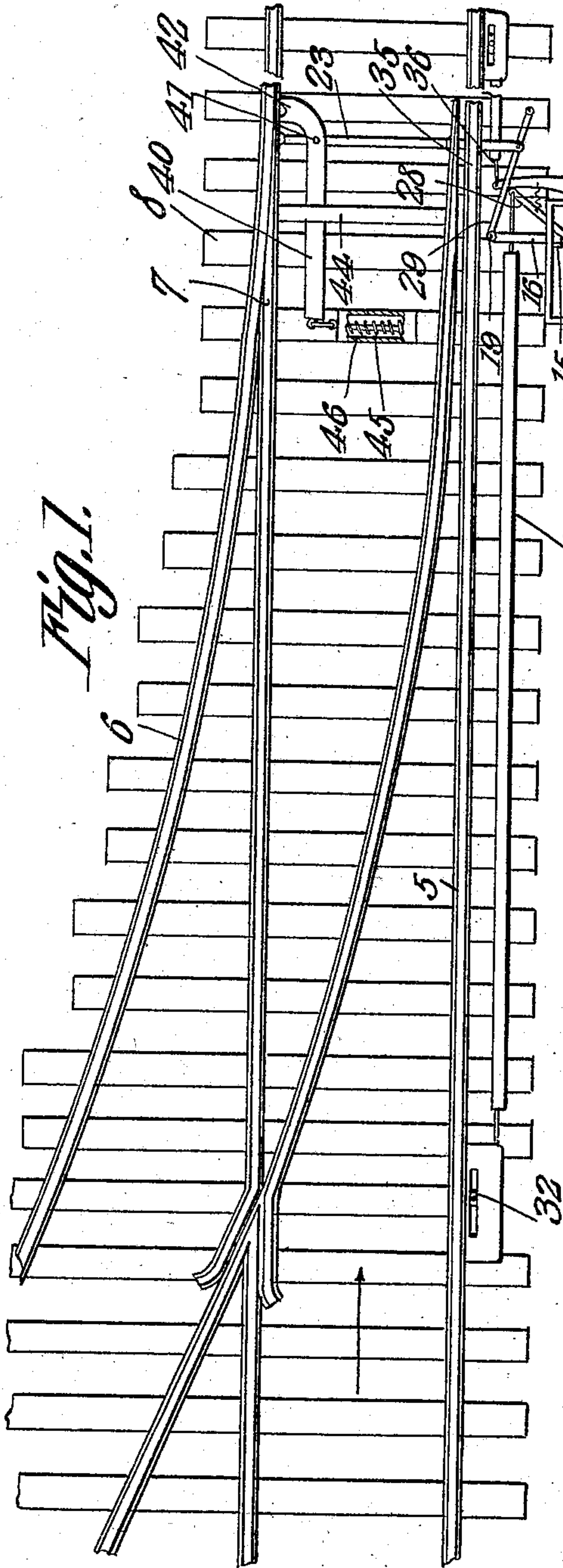


Fig. 1.

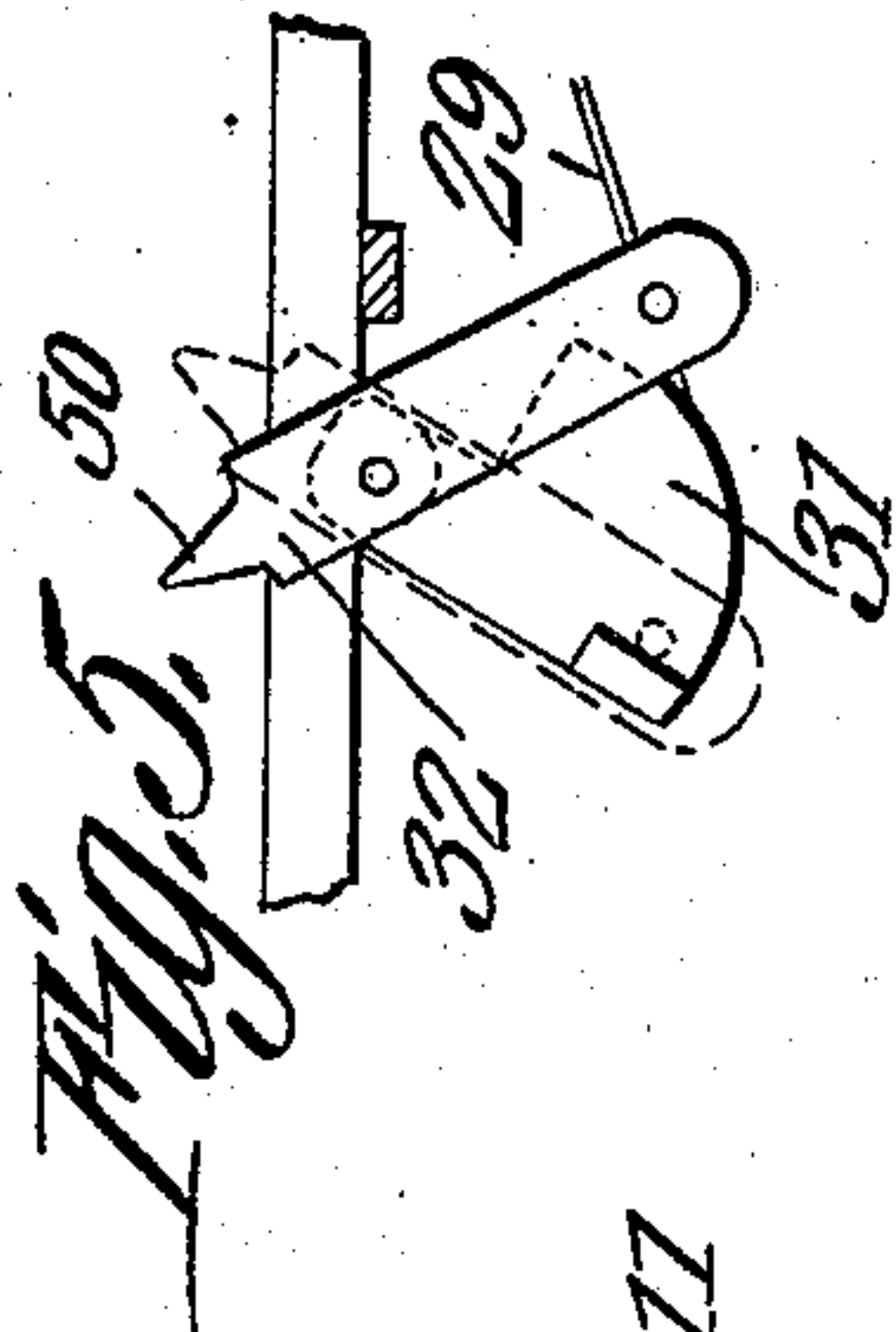


Fig. 5.

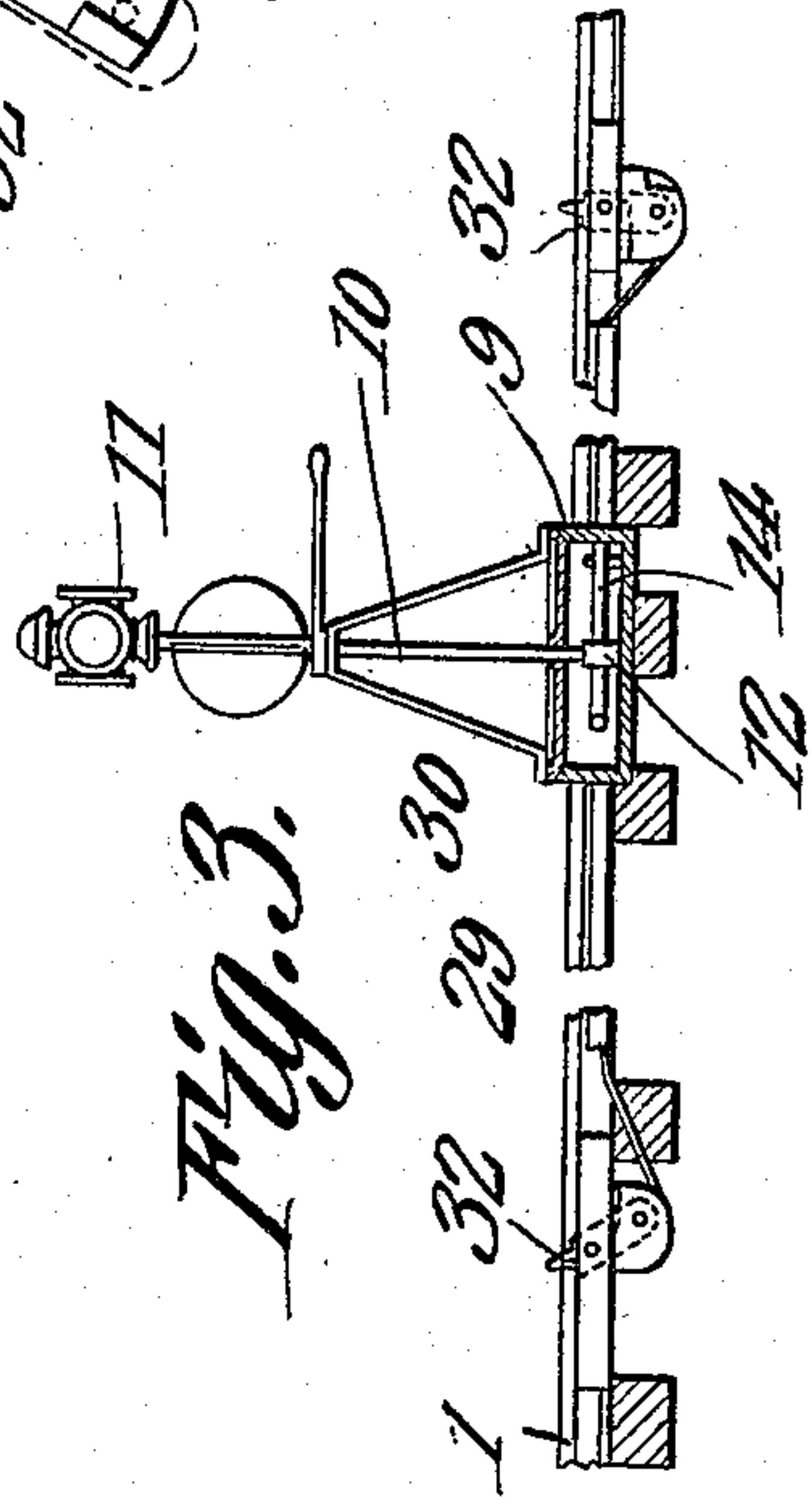


Fig. 3.

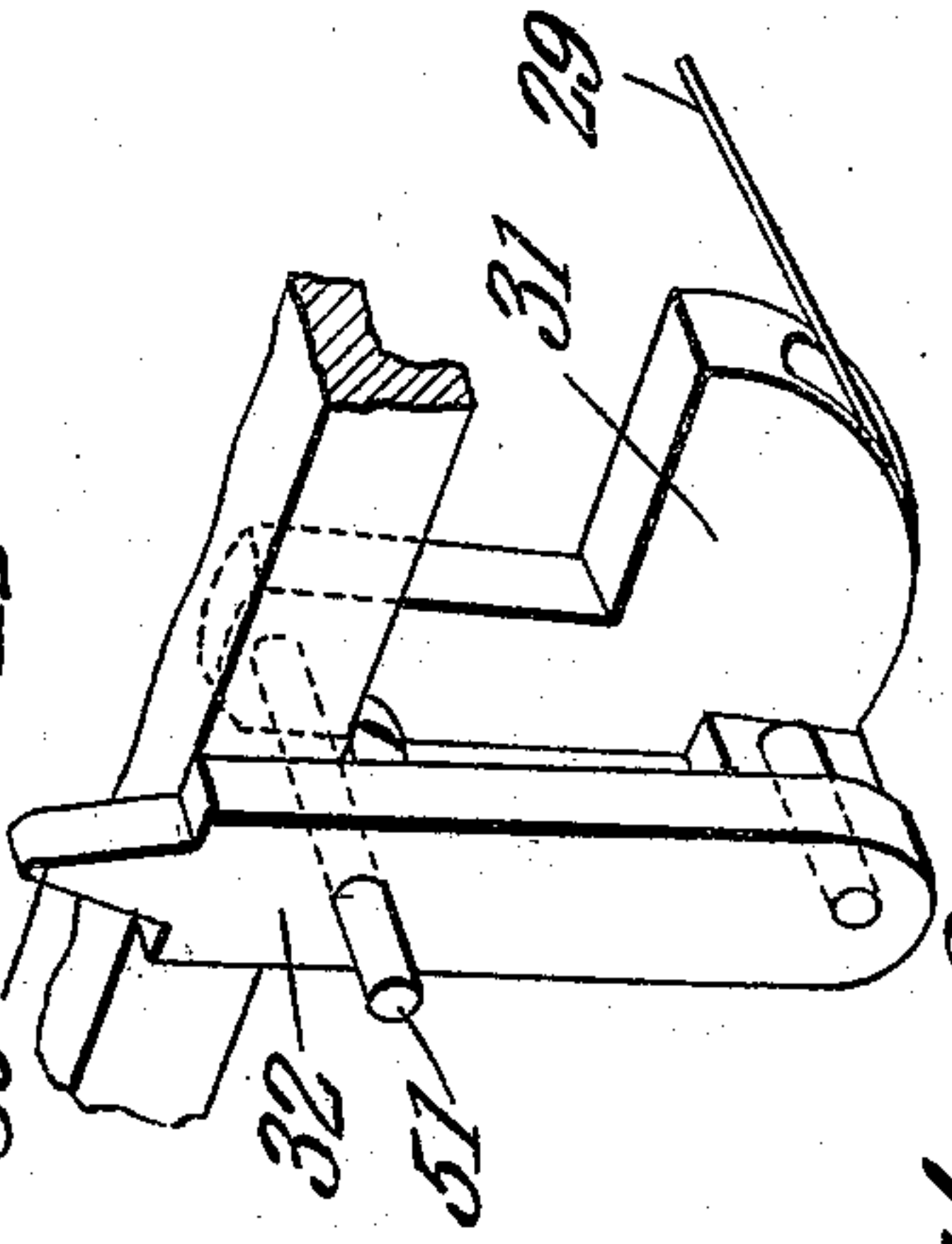


Fig. 6.

Witnesses

E. M. Hall
C. Daniels

Francis M. Hall. Inventor

C. A. Snow & Co. Attorneys

F. M. HALL.
SAFETY AUTOMATIC SWITCH.
APPLICATION FILED JAN. 21, 1909.

915,854.

Patented Mar. 23, 1909.

2 SHEETS—SHEET 2.

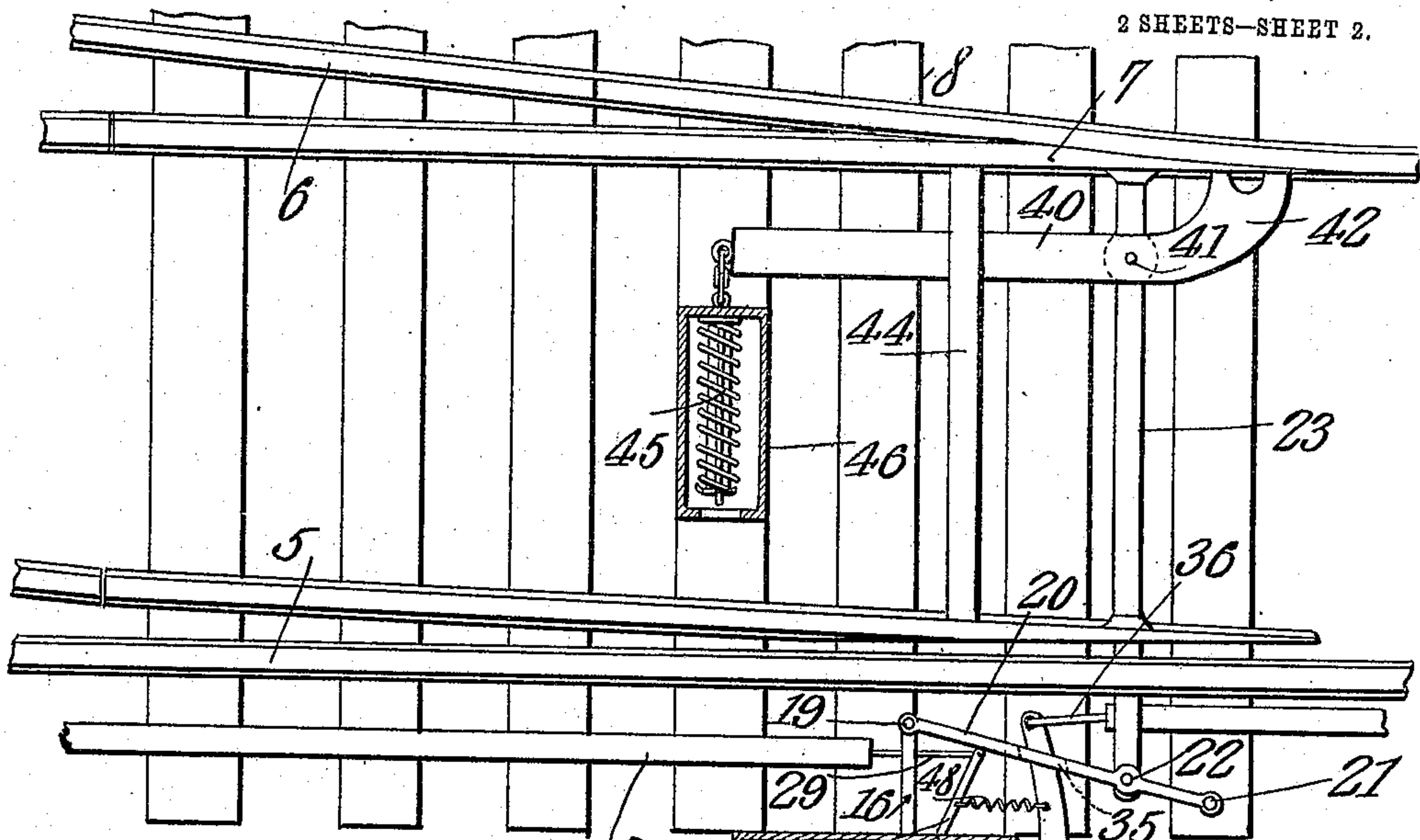


Fig. 8.

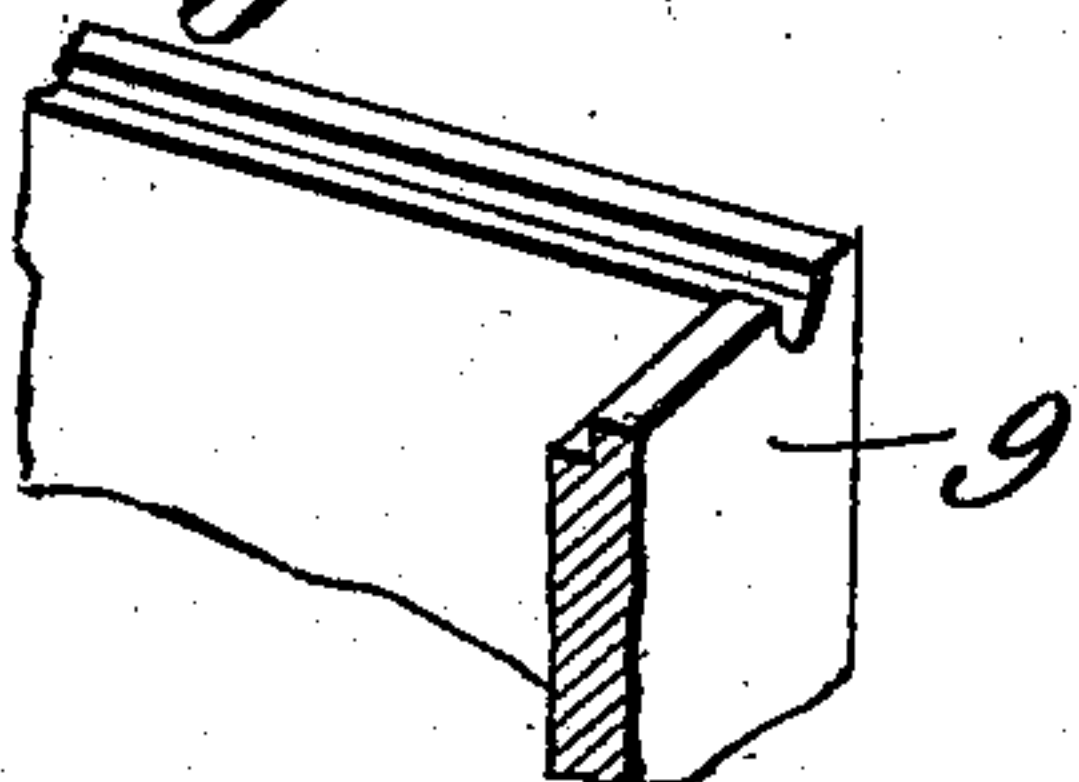


Fig. 9.

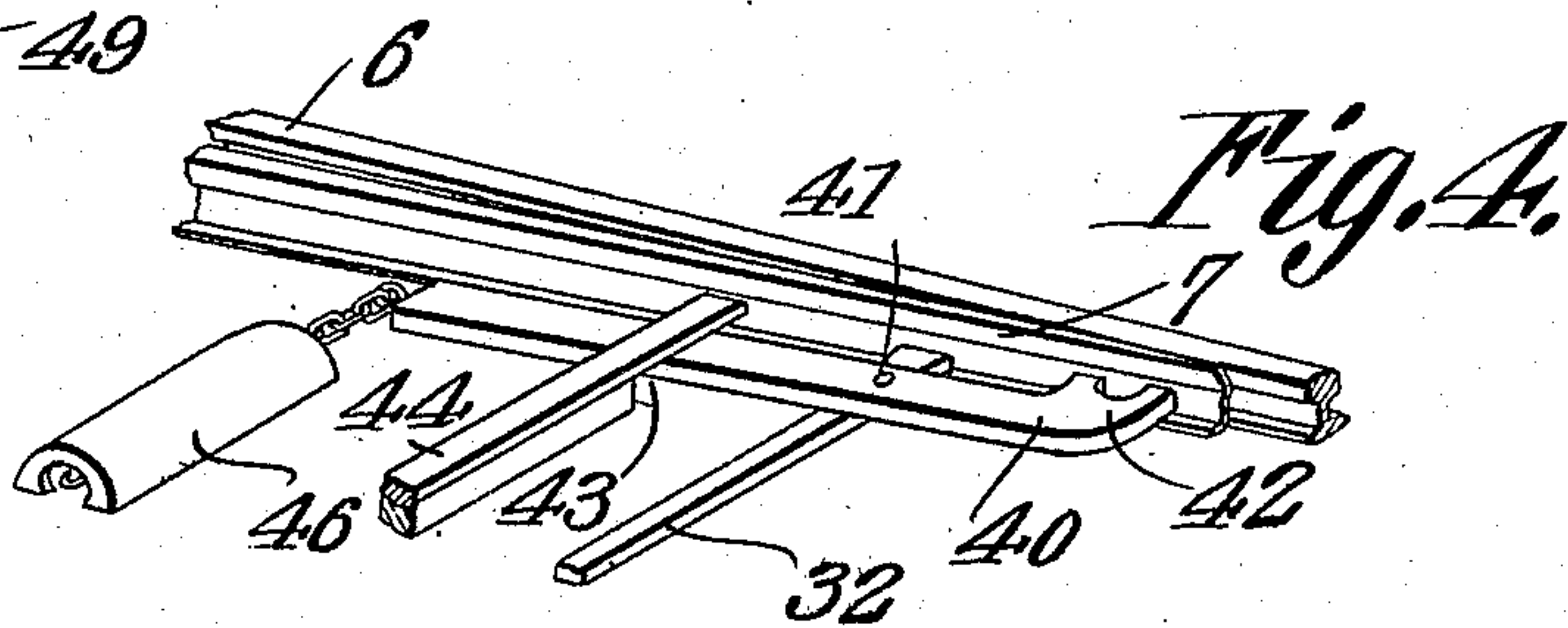


Fig. 7.



Witnesses

E. J. Stewart
E. L. Smith

Francis M. Hall. Inventor

By C. A. Snow & Co. Attorneys

UNITED STATES PATENT OFFICE.

FRANCIS M. HALL, OF POTOMAC, ILLINOIS, ASSIGNOR OF ONE-THIRD TO JOHN GOODWINE
AND ONE-THIRD TO ULYSSES S. GOODWINE, OF POTOMAC, ILLINOIS.

SAFETY AUTOMATIC SWITCH.

No. 915,854.

Specification of Letters Patent.

Patented March 23, 1909.

Application filed January 21, 1909. Serial No. 473,424.

To all whom it may concern:

Be it known that I, FRANCIS M. HALL, a citizen of the United States, residing at Potomac, in the county of Vermilion and State of Illinois, have invented a new and useful Safety Automatic Switch, of which the following is a specification.

This invention has relation to safety automatic switches, and it consists in the novel construction and arrangement of its parts, as hereinafter shown and described.

The present invention is an improvement upon that shown in my prior patent, issued September 15th, 1908, No. 898,879, and has for its object to provide means whereby the switch point will be held in proper position against one of the track rails, notwithstanding the fact should parts of the switch-operating mechanism become disarranged or fractured. By making such provision, the safety of the switch mechanism is enhanced for the reason that it is impossible for the point to leave its position against one of the track rails while a train is passing over the switch, and therefore the possibility of causing a wreck by reason of the point moving out of position during the passage of a train is reduced to a minimum.

In the accompanying drawings:—Figure 1 is a top plan view of the switch mechanism, with parts removed. Fig. 2 is an enlarged plan view of the switch mechanism, with parts removed and parts in section. Fig. 3 is a side elevation of the switch mechanism, with parts in section. Fig. 4 is a perspective view of the safety appliance of the switch. Fig. 5 is a side elevation of a tappet used in the mechanism. Fig. 6 is a perspective view of the tappet. Fig. 7 is a broken perspective view of a spring used in the mechanism. Fig. 8 is a perspective view of a portion of a housing used in the mechanism. Fig. 9 is a sectional view of a portion of a cover for the housing.

The switch mechanism, in combination with which the present invention is employed, is used in connection with a main track line designated at 5, and a siding designated at 6. The switch point 7 is mounted upon the cross-ties 8. The switch mechanism consists of the housing 9, which is arranged adjacent the main track 5, and is provided with a standard or semaphore shaft 10, mounted for rotation therein, and having at

its free end a signal 11 of any approved construction.

Secured to the base of the casing or housing 9 is an overhanging arm or bracket 12, one end of which is spaced from the base of the casing, and is provided with an opening 13 which forms a bearing for the lower end of the standard 10.

Interposed between the bracket 12 and the base of the casing 9 is a cross-arm 14 having its intermediate portion pierced by the adjacent end of the standard 10 and to which it is rigidly secured, so that any movement imparted to the arm 14 will cause a corresponding movement of the semaphore shaft or standard 10.

Disposed within the housing 9 and slidably mounted within a keeper 15 is a bar 16, one end of which is provided with an elongated slot 17, for the reception of a bolt or similar fastening device 18, carried by the adjacent end of the arm 14, the opposite end of the bar 16 being projected beyond the housing 9 for pivotal connection at 19 with a switch-throwing bar 20. The bar 20 is pivotally connected at 21 with the adjacent cross-tie 8, and is also pivotally connected at 22 with a bridle-bar 23, so that lateral movement imparted to the bar 20 will effect the opening and closing of the switch. Pivotaly mounted within the housing 9 is a locking member 24, having a notch or recess 25 formed therein for the reception of the adjacent end of the arm 14, said locking member being normally and yieldably held in engagement with the arm 14 by means of a coil spring 26.

Pivotaly mounted at 27 is an operating lever 28, the short end of which is pivotally connected with the adjacent end of the locking member 24, while the long end thereof is secured to one end of a cord or cable 29. The opposite end of the cord or cable 29 extends within a conduit or case 30 disposed parallel with the main track and connected with the crank arm 31 of a tappet 32, pivotally mounted on the track and disposed in the path of movement of a passing train, said tappet being actuated by one of the wheels of car to operate the switch-throwing mechanism.

Pivotaly mounted between a pair of ears or lugs 33 secured to the casing or housing 9 is a bar 34, the free end of which extends through an elongated slot 35 in the bar 20,

and is connected through the medium of a cord or cable 36 with a tappet similar in construction to the tappet 32, so that a train approaching the switch from either direction will operate the latter.

Secured to the bar 34 is a chain or other flexible medium 37, which latter extends through an opening in the casing or housing 9 for connection with the locking member 24, there being a lug or projection 38 formed on the locking member for limiting the lateral throw of the latter.

A spring 39 connects one end of the arm 14 with the casing or housing, said spring serving to tilt the cross-arm when the locking member 24 is released, to close the switch. It will thus be seen that when a train approaches the switch in the direction of the arrow indicated in Fig. 1 of the drawing, one of the car wheels will engage and depress the adjacent tappet 32, and, through the medium of the cable 29, operate the lever 28 to release the locking member 24, the spring 39 moving the arm 14 out of engagement with the notch 25 in the locking member 24. As the arm 14 is swung it will move the sliding bar 16 in the direction of the main track 5, and thus swing the bar 20, and through the medium of the bridle-bar 23, move the switch to closed position. Should the train approach the switch in the opposite direction the car wheel will engage the adjacent tappet, and, through the medium of the cable 36, move the bar 34 to release the locking member, so that the spring 39 will actuate the arm 14 to effect the closing of the switch in the manner before stated. When the switch-point 7 is closed against the track rail 6, it is essential that the said switch-point shall be maintained in this position during the passage of a train. Otherwise, should the said switch-point move away from the said track 6 while a train is passing over the same, a serious accident would be the result. The means for holding the switch-point 7 in the position indicated consists of a presser-bar 40, which is pivotally connected at the point 41 with the bridle 23, and which bears at its shorter end 42 against the side of the switch-point 7. The opposite end portion of the said presser-bar 40 passes through an opening 43 in the cross-bar 44, which lies, at its end portions, under the track rail. The longer end of the bar 40, measuring the end from the point 41, is attached to the traction spring 45, the major portion of which is housed within the cylinder 46, which is located between the track rails. As the spring 45 is under tension with a tendency to hold the attached end of the presser-bar 40 away from the side of the switch-point 7, the said bar 40 is swung upon the wall of the opening 43 in the bar 44 as a fulcrum, and the shorter end of the bar 40 will force the end of the switch-point 7 against the side of the track

rail. This is the position of the said switch-point 7 when a train is passing over the same. Consequently, should any of the parts of the mechanism above described become disarranged or fractured during the passage of a train, the tension of the spring 45, acting through the presser-bar 40, will hold the switch-point 7 in position against the track rail, thereby preventing accident.

As additional precautionary measures for holding the parts in their proper positions as indicated while a train is passing over the switch point 7, a flat spring 47 is interposed between one of the walls of the casing or housing 9, and the adjacent edge of the locking bar 24. The said spring 47 is approximately V-shaped in edge elevation, and the tension of the spring has a tendency to spread its ends, whereby the tension of the said spring will hold the locking bar 24 in the position as shown in Fig. 2 of the drawings, when the switch point 7 is against the rail 6 of the siding. A coil spring 48 is connected at one end with the bar 28, and at its opposite end with the bar 34 and is under tension with a tendency to hold the inner ends of the said bars together. Consequently, after the said bars (either one) have been moved as a consequence of the cables 29 or 36 moving longitudinally in their respective conduits, the tension of the spring 48 comes into play, and the inner ends of the said bars are drawn together, whereby the said cables are moved longitudinally in the direction opposite to that above indicated, whereby the tappets are brought into upright position.

A cover 49 is provided for the casing or housing 9, and the said cover has practically a water-tight connection with the upper edges of the said housing, as indicated in Fig. 3 of the drawings.

The tappets used in combination with the switch mechanism, herein shown and described, may be of any approved design or pattern, but in Figs. 5 and 6 of the drawings I have illustrated tappets which are especially designed to be used in connection with this system, and which consist of the pointed, upwardly disposed ends 50, and the gudgeons 51, which are journaled in suitable supports at the side of the track. The traction cables are connected with the eccentric portions 31, which in turn are attached to the said tappets as above described.

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

1. The combination with main rails and siding, of the switch rails, a housing, an arm pivotally mounted in the housing, a sliding bar connected with the arm, a pivoted switch-throwing lever having one end thereof pivotally connected with the free end of the arm, a connection between the intermediate portion of the switch-throwing lever and the

switch rails, a locking member engaging the arm for locking the switch in open position, track devices operatively connected with the locking member for releasing the latter to effect the closing of the switch, and means for holding the switch closed after it has been so positioned by the switch-operating mechanism.

2. The combination with main rails and siding, of the switch rails, a housing, a standard journaled in the housing, an arm secured to and movable with the standard, a sliding bar operatively connected with the arm, a switch-throwing bar disposed at substantially right angles to the sliding bar and operatively connected with the switch rails, a locking member engaging the arm for locking the switch in open position, track devices operatively connected with the locking member for releasing the latter to effect the closing of the switch, and means for holding the switch closed after it has been so positioned by the switch-operating mechanism.

3. The combination with main rails and siding, of the switch rails, a housing, an arm pivotally mounted in the housing, a sliding bar having a pin and slot connection with the arm, a pivoted switch-throwing lever having one end thereof pivotally connected with the free end of the sliding arm and its opposite end operatively connected with the switch rails, a locking lever adapted to engage the arm for locking the switch in open position, a pivoted lever for releasing the locking member, a tappet operatively connected with the pivoted lever and actuated by a passing train, and means for holding the switch in closed position after it has been so positioned by the switch-operating mechanism.

4. The combination with main rails and siding, of the switch rails, a housing, an arm pivotally mounted in the housing, a sliding bar operatively connected with the arm, a connection between the sliding bar and the switch rails, a locking lever engaging the arm for normally locking the switch in open position, tappets disposed on opposite sides of the switch, a pivoted bar having a flexible connection with the locking lever, a pivoted lever engaging said locking lever, connec-

tions between the tappet and the pivoted bar and the pivoted lever respectively, and means for holding the switch closed after it has been so positioned by the switch-operating mechanism.

5. The combination with main rails and siding, of the switch rails, a housing, an arm pivotally mounted in the housing, a sliding bar having a pin and slot connection with one end thereof, a locking member adapted to engage the arm for normally holding the switch in open position, a lever pivotally mounted near the main rail and pivotally connected with one end of the sliding bar, a bridle bar pivotally connected with the intermediate portion of the said lever, tappets disposed on opposite sides of the switch, a connection between the tappets and the locking member for actuating the latter to close the switch, and means for holding the switch closed after it has been so positioned by the switch-operating mechanism.

6. The combination with main rails and siding, of the switch rails, a housing, an arm pivotally mounted in the housing, a bar slidably mounted in the housing, and having a pin and slot connection with the arm, a switch-throwing lever pivotally mounted near the track and pivotally connected with the sliding bar, there being an elongated slot formed in the switch-throwing lever and switch rails, a locking lever adapted to engage the arm, a bar pivotally mounted on the housing and having a flexible connection with the locking lever, a trip lever bearing against the locking lever, track devices disposed on opposite sides of the switch, connections between the track devices and the trip lever and pivoted bar, respectively, and means for holding the switch in closed position after it has been so positioned by the switch-operating mechanism.

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

FRANCIS M. HALL.

Witnesses:

W. H. GRAY,
F. W. DUNCAN.