

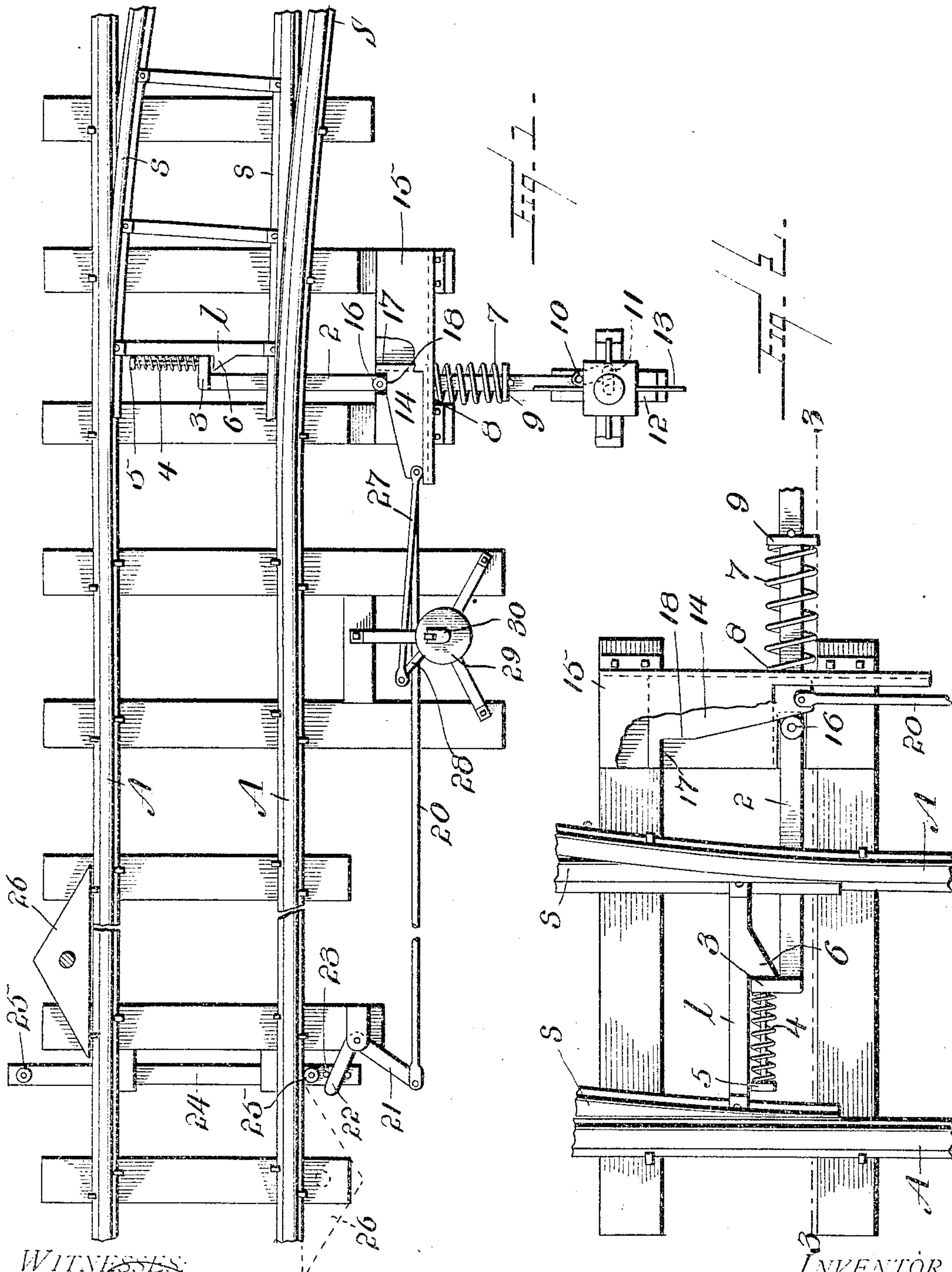
No. 778,782.

PATENTED DEC. 27, 1904.

R. I. HILL.
AUTOMATIC RAILWAY SWITCH.

APPLICATION FILED MAR. 3, 1904.

2 SHEETS—SHEET 1.



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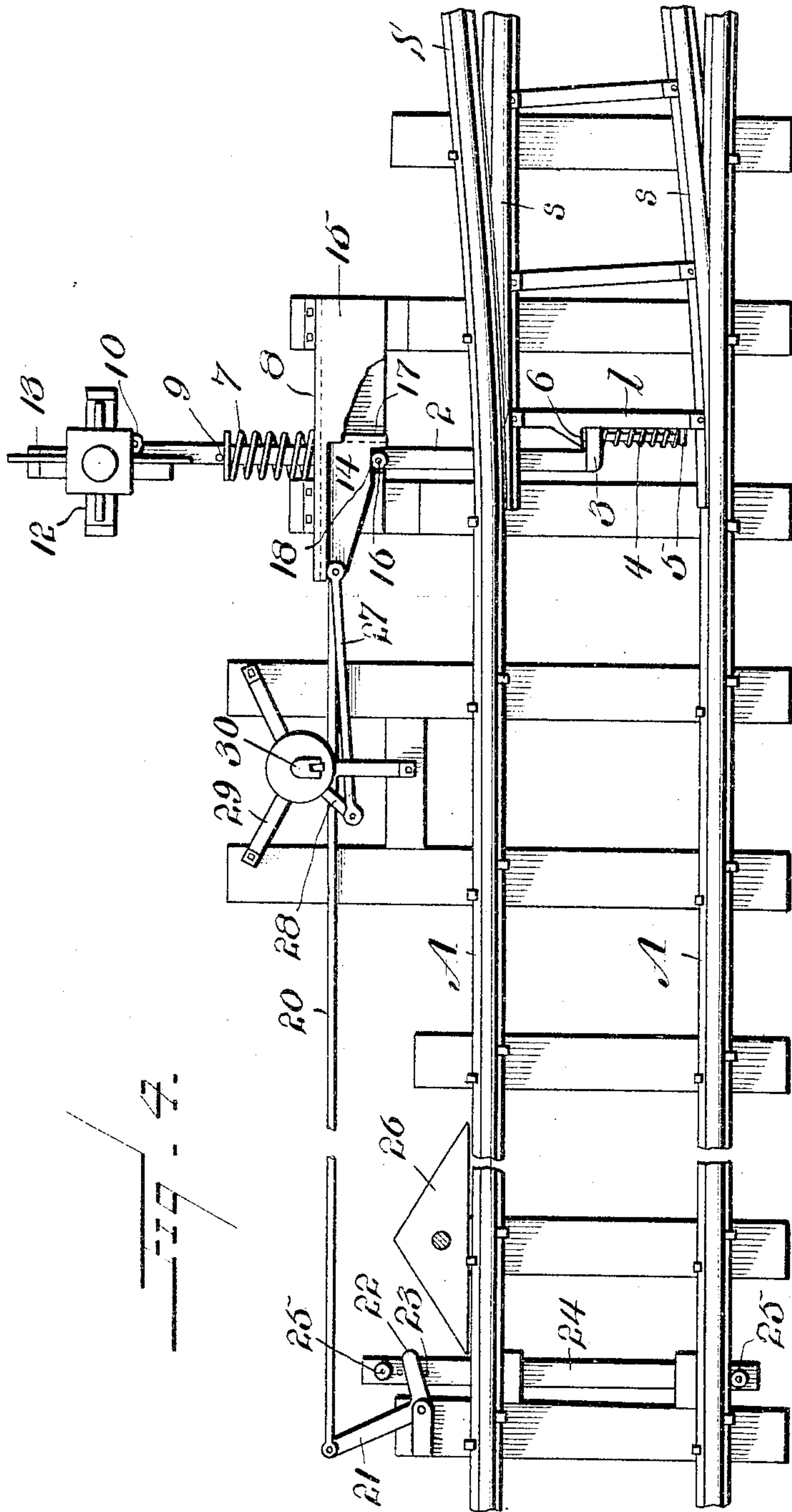
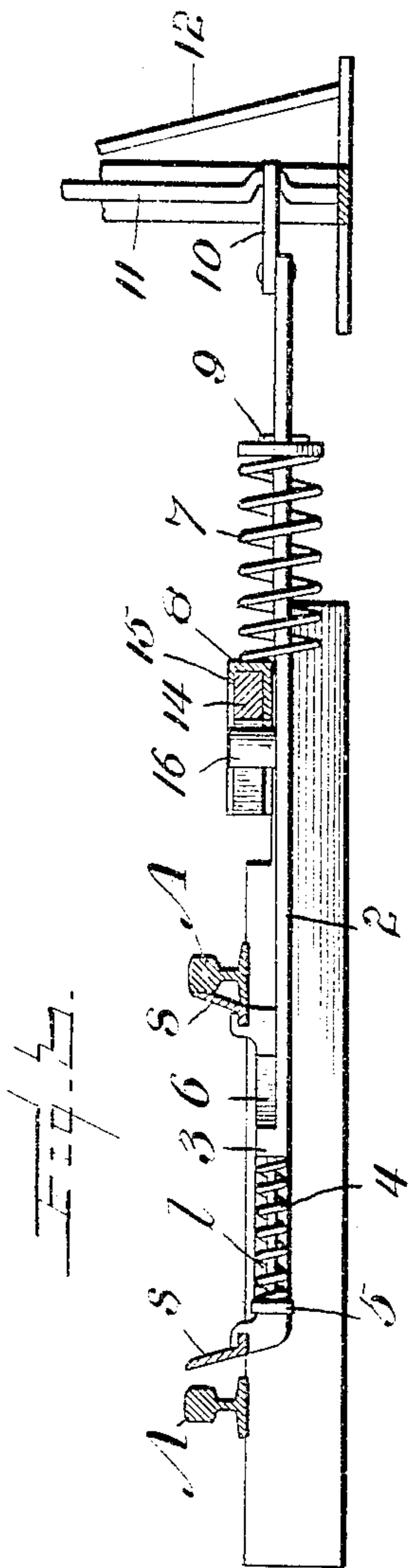
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WITNESSES:

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UNITED STATES PATENT OFFICE.

RAYMOND I. HILL, OF ELYRIA, OHIO, ASSIGNOR OF ONE-HALF TO
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AUTOMATIC RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 778,782, dated December 27, 1904.

Application filed March 3, 1904. Serial No. 196,291.

To all whom it may concern:

Be it known that I, RAYMOND I. HILL, a citizen of the United States, residing at Elyria, in the county of Lorain and State of Ohio, have
5 invented certain new and useful Improvements in Automatic Railway-Switches, of which the following is a specification.

This invention relates to an improved automatic railway-switch designed to be operated from the locomotive or car to effect the
10 opening and closing of the switch, while at the same time embodying means for actuating a signal to indicate the position of the switch.

In the attainment of the above object the invention contemplates a simple and reliable form of switch-operating mechanism so constructed and arranged as to provide for the positive opening and closing of the switch
15 through the instrumentality of actuating means carried by the engine or car, while at the same time permitting the switch-rails to freely yield to permit a train passing back through the switch when wedged or locked in
20 its open or closed position and at the same time not interfere with the switch, automatically resuming its open or closed position after the wheels have passed the points of the movable switch-rails.

A further object of the invention is to provide a switch-operating mechanism which not only is operable directly from the locomotive or train, but which also may be controlled directly by hand from a suitable type of switch-
25 stand.

With these and many other objects in view, which will more readily appear as the nature of the invention is better understood, the same consists in the novel construction, combination, and arrangement of parts, which will be
30 hereinafter more fully described, illustrated, and claimed.

The essential features of the invention involved in the novel switch-operating or switch-throwing mechanism providing for the objects
35 above indicated are necessarily susceptible to modification without departing from the scope of the invention; but a preferred embodiment

thereof is shown in the accompanying drawings, in which—

Figure 1 is a plan view of an automatic switch embodying the present invention, the view including a section of main track and siding, showing the switch locked or set in its open position. Fig. 2 is an enlarged detail
40 view of those parts of the mechanism directly associated with the movable switch-rails. Fig. 3 is a transverse sectional view on the line 3 3 of Fig. 2. Fig. 4 is a plan view showing a modified arrangement wherein the same switch
45 opening and closing operation is effected through the same instrumentalities on the locomotive or train with a left-hand switch, assuming the switch shown in Fig. 1 to be a right-hand switch.

Like reference-numerals designate corresponding parts in the several figures of the drawings.

The switch-operating mechanism contemplated by the present invention is designed to be associated with the prevailing track and switch construction. So for illustrative purposes there is shown in the drawings a section of the main track embodying the main track-rails A A and a section of an ordinary siding S,
50 associated with the rails A A and including as a part thereof the ordinary transversely-movable switch-rails s, whose points have a movement to and from the main rails A A in the usual manner to provide for respectively opening and closing the switch, according as the train is to pass into the siding or straight along the main track past the switch.

The movable switch-rails s are rigidly coupled together in any approved manner, but
55 preferably through the medium of a transverse coupling-bar 1, suitably fastened at its ends to the rails s, contiguous to their points, and in the present invention affording the means of connection between the switch-rails
60 and the setting means therefor.

A distinctive feature of the present invention resides in the employment of a yielding connector between the switch-setting means and the switch-rails, whereby the latter will
65 yield sufficiently to permit the train to run

back through the switch when wedged in its open position. This yielding connection is preferably effected through the medium of a spring arrangement. A practical embodiment of this spring arrangement is shown in the drawings and consists in associating with the coupling-bar for the movable switch-rails a transversely-disposed longitudinally-reciprocating shift-bar 2, extending outside of the plane of the rails and provided at its inner end with a laterally-deflected or equivalent head member 3, bearing against one end of an auxiliary connector-spring 4, the other end of which spring has a fixed bearing against a support 5, carried by the switch coupling-bar 1. The support 5 may be in the form of a guiding pin or rod, and at the side of the head member 3 opposite its bearing against the spring the said coupling-bar is provided with an abutment or shoulder 6, against which the head member 3 is pulled under the influence of the switch-closing spring 7.

The switch-closing spring 7 has a fixed point of attachment at one end, as at 8, while the other end is suitably connected, as at 9, with the reciprocating shift-bar 2, so that the spring will normally exert its tension in the direction of closing the switch. In order that the condition of the switch may be readily perceived, the reciprocating shift-bar 2 has at the outer end thereof a direct link connection 10 with the lower crank end of a signal turn-post 11, mounted in a stand 12 at one side of the track and carrying at its upper end an ordinary type of switch-signal 13. This signal, as well as its operating mechanism, may be of any approved type, with which the reciprocating shift-bar 2 may have a direct connection, so that the signal will be positively actuated by the switch as it is opened or closed.

Another important feature of the invention resides in the means for setting the switch in its open condition. This essentially resides in the employment of a reciprocating setting-wedge 14. The setting-wedge 14 is arranged to operate in a stationary guideway 15, mounted in a fixed position at one side of the track and serving to house the wedge, as well as guide the same in a fixed plane to insure the positive action thereof against a bearing projection or stud 16, carried by the reciprocating shift-bar 2. The inclined edge of the wedge 14 slides against the bearing projection, and at one end the said wedge is formed with an offstanding stop-shoulder 17 adjacent to a straight portion 18 of the wedge. This straight portion 18 rides onto the bearing projection 16 and serves to positively lock the shift-bar 2 against movement when the wedge is drawn to a set position, while the stop-shoulder 17 arrests movement of the wedge when it reaches an extreme position.

The reciprocating setting-wedge 14 has suitably connected to one end thereof an adjust-

ing-rod 20 with eyelet-supports, the other end of which rod is connected to one arm of the bell-crank operating-lever 21, pivotally mounted at its angle upon a fixed support, and having its other arm, as at 22, engaged between the holding-pins 23 upon each side thereof and carried by a transversely-reciprocating controlling-bar 24, extending across and beneath the track. This controlling-bar 24 is provided at the opposite sides of the track with upstanding roller or equivalent tappets 25, adapted to be engaged by the wedge-shaped or equivalent actuating-shoes 26, designed to be thrown to an interfering position from the locomotive or car through the medium of any suitable instrumentalities such as commonly employed for this purpose.

To permit the switch-operating mechanism to be thrown by hand, the setting-wedge or the adjusting-rod 20 therefor has connected thereto at a suitable point a switch-stand rod 27, which rod is also connected with the crank or equivalent 28 at the lower end of the switch-stand turn-post 29, constituting a part of the switch-stand device. The switch-stand turn-post 29 is mounted in any suitable manner in the conventional form of switch-stand and preferably carries an operating-handle 30, designed to be folded upward and locked directly against the turn-post, so as to prevent the latter being operated by hand except when the handle is unlocked, while at the same time not interfering with the automatic operation of the mechanism from the actuating means carried by the train.

From the foregoing it will be seen that by reason of the opposite wedge-shaped actuating-shoes 26, carried by the train, according to which of these shoes is lowered to an interfering position, the switch may be opened or closed directly from the train. In the case of a left-hand switch, such as shown in Fig. 4 of the drawings, it is simply necessary to reverse the position of the bell-crank 21 from that shown in Fig. 1 to secure the exact operation through the same arrangement of actuators or shoes carried by the train.

From the foregoing it is thought that the construction, operation, and many advantages of the hereinafter-described switch-operating mechanism will be readily apparent without further description, and it will be understood that various changes in the form, proportion, and minor details of construction may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages thereof.

Having thus described the invention, what is claimed, and desired to be secured by Letters Patent, is—

1. In an automatic switch, the combination with the switch-rails, of a switch-operating mechanism comprising a shift-bar for the rails, a train-actuated setting-wedge for throwing the bar, and an auxiliary connector-spring in-

terposed between the setting device and the switch-rails and arranged to provide for an independent play of the switch-rails in one direction.

5 2. In an automatic switch, the combination with the switch-rails, of a switch-operating mechanism comprising a coupling-bar for the rails carrying an auxiliary connector-spring, a reciprocating shift-bar having a head mem-
10 ber cooperating with the coupling-bar and engaging said spring, said shift-bar being further provided with a bearing projection, a switch-closing spring connected with the shift-bar, a reciprocating setting-wedge operating
15 against the bearing projection and having a straight portion and a stop, and train-actuated controlling means operatively related to the wedge.

20 3. In an automatic switch, the combination with the switch-rails, of the switch-operating mechanism comprising a reciprocating shift-bar connected with the rails and having a bearing projection, a switch-closing spring connected with said bar, a signal-stand opera-

tively related to said shift-bar, a reciprocating setting-wedge cooperating with the bearing projection, a hand-operated switch-stand operatively related to the wedge, a train-actuated transversely-reciprocating controlling-bar, and an operating-lever engaged with said
30 bar and having a rod connection with said wedge.

4. In a railway-switch, the combination with the switch-rails, of a switch-operating mechanism comprising a shift-bar for the rails, a
35 suitably-actuated wedge for throwing the bar, and an auxiliary connector-spring interposed between the setting device and the switch-rails and arranged to provide for an independent play of the switch-rails in one di-
40 rection.

In testimony whereof I affix my signature in presence of two witnesses.

RAYMOND I. HILL.

Witnesses:

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HELEN I. KANE.