

No. 776,353.

PATENTED NOV. 29, 1904.

E. H. SAUNDERS.
AUTOMATIC SWITCH.

APPLICATION FILED JULY 8, 1904.

NO MODEL.

Fig 1.

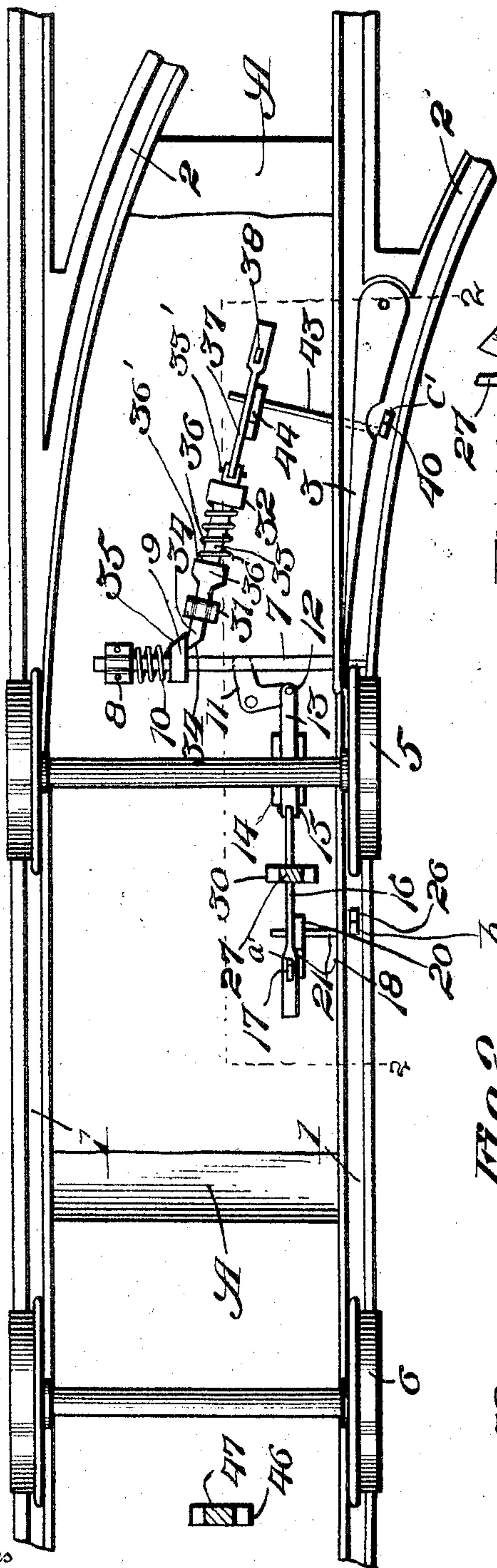


Fig 2.

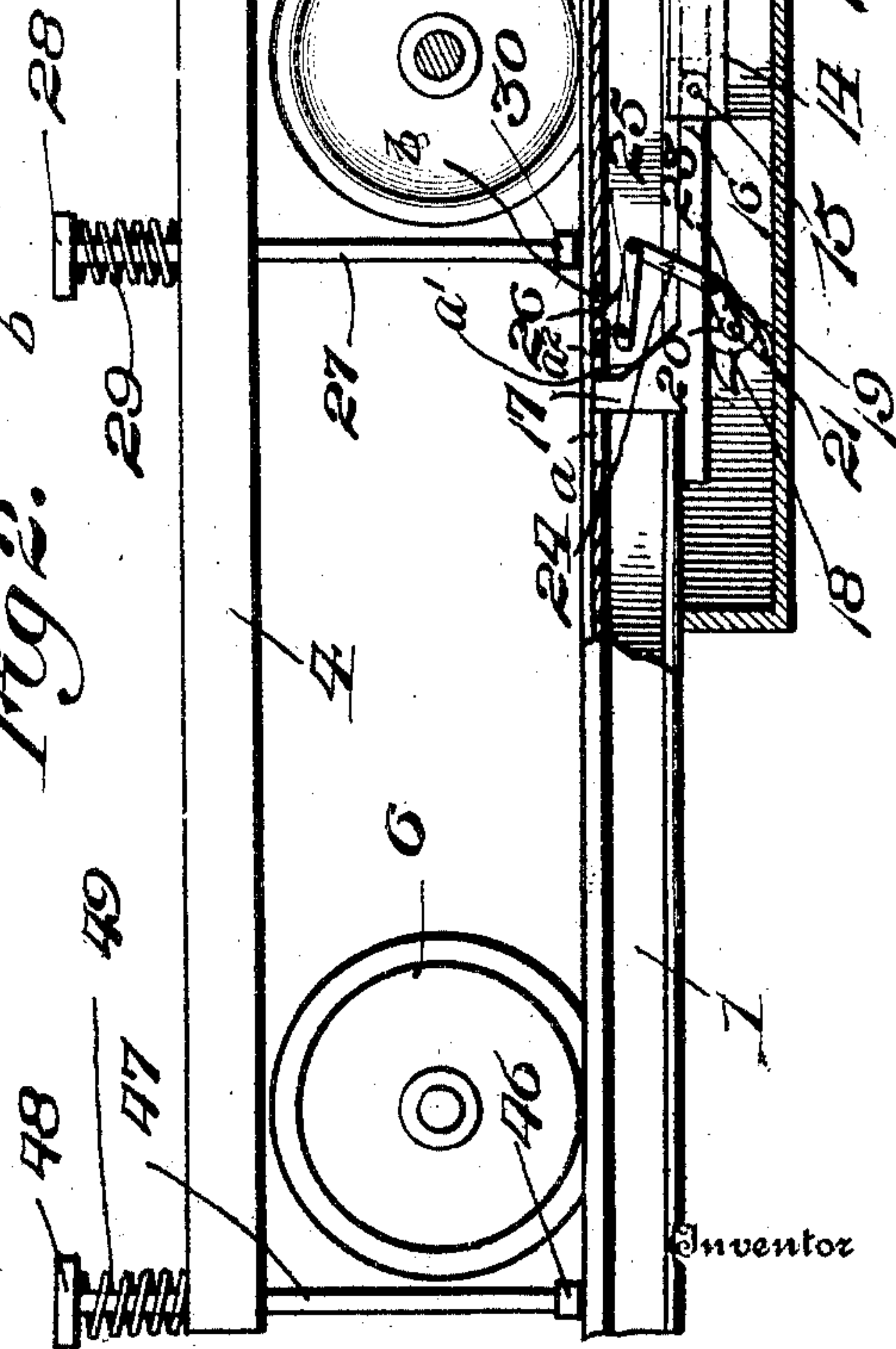
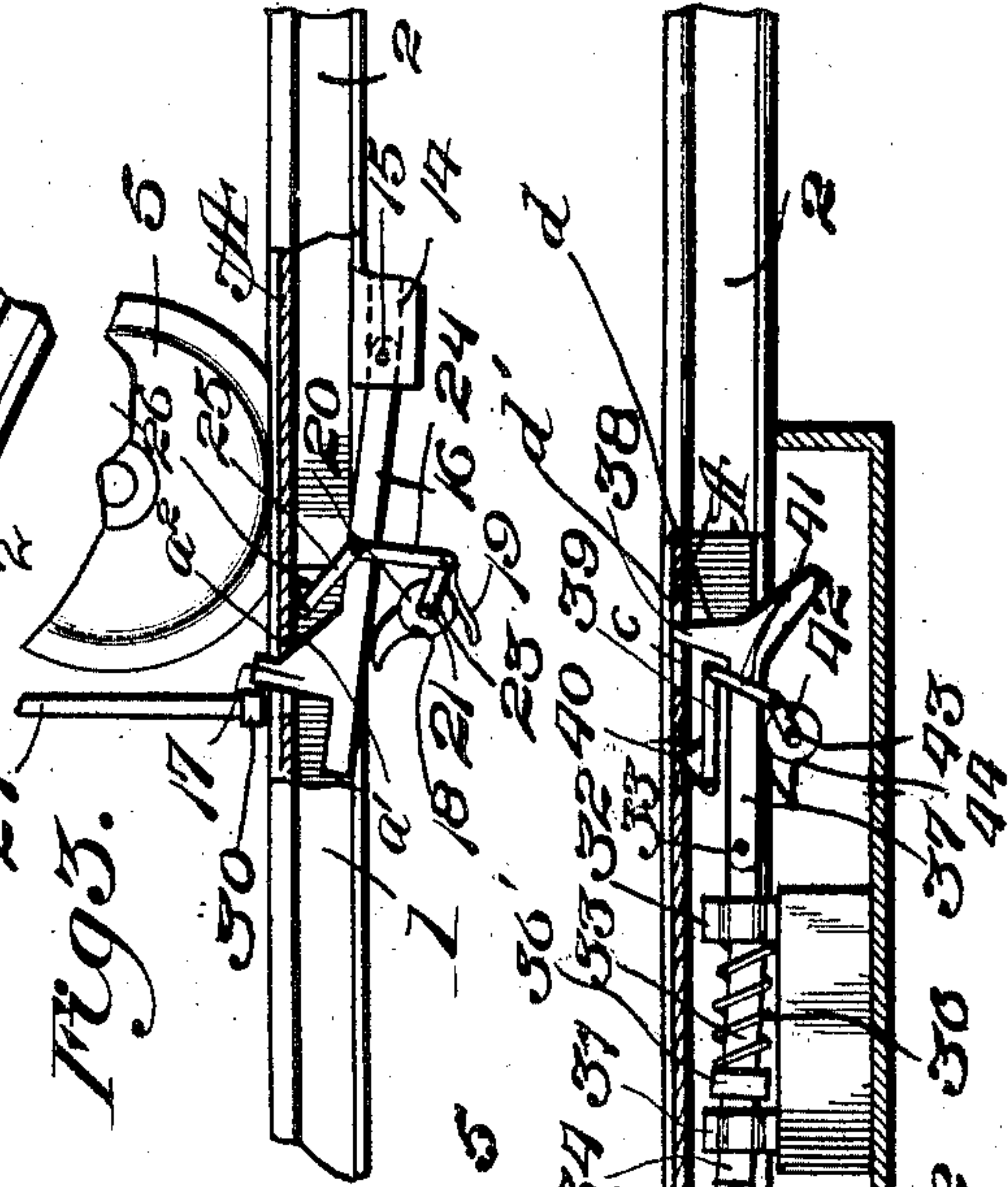


Fig 3.



Witnesses

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AUTOMATIC SWITCH.

SPECIFICATION forming part of Letters Patent No. 776,353, dated November 29, 1904.

Application filed July 8, 1904. Serial No. 215,798. (No model.)

To all whom it may concern:

Be it known that I, EDWIN H. SAUNDERS, a citizen of the United States, residing at Proctorville, in the county of Lawrence and State of Ohio, have invented new and useful Improvements in Automatic Switches, of which the following is a specification.

My invention relates to automatic switches for street and other railways, and particularly to switch mechanism of that kind adapted to be preliminarily set for operation by the wheel of a car and then to be operated or not, as desired, by means under control of the motorman of the car, so as to allow the car to continue on the straight track or pass off into a siding or branch track.

The object of the invention is to provide switch mechanism of this type which is simple of construction, efficient and reliable in use, and susceptible of installation at relatively low cost.

In the drawings hereto annexed and forming part of this specification, Figure 1 is a top plan view of a section of a trackway equipped with my improved switch mechanism, showing the same set for operation and indicating the relative positions of the front and rear wheels of a car and the controlling devices thereon to throw and retreat the switch-point. Fig. 2 is a sectional view of the irregular line 2 2, Fig. 1. Fig. 3 is a detail view showing the thrust-bar of the switch-throwing devices set for operation.

Referring now more particularly to the drawings, 1 designates the main-line rails; 2, the siding or branch-track rails; 3, the swinging switch-point; 4, the floor or platform of a car, and 5 and 6, respectively, the front and rear wheels of the car. To the ties, between the track-rails, is attached a cover-plate A, which shields and protects the switch throwing and locking devices hereinafter described. The free end of the switch-point 3 is connected to one end of a rod or bar 7, slidable transversely of the rails 1 in a guide or bearing 8, which rod or bar is provided with a head or collar 9 and is normally retained in one position by a coiled spring 10, encompassing the same between the bearing 8 and collar 9 and acting on the latter to normally

hold the switch-point 3 away from the contiguous main-line rail, thus allowing the cars to run continuously along the main line. The rod or bar is operative in the reverse direction by a bell-crank lever 11, one arm of which is suitably connected thereto, and the other arm thereof connected (see Fig. 2) by a pivot-pin or bolt 12 to one end of an operating-bar 13.

The bar 13 is mounted to slide longitudinally below the rail 1, immediately adjoining the switch, in a guideway 14, and is pivotally attached at its opposite end, as shown at 15, to one end of a thrust-bar 16, the opposite or free end of which is provided with an upwardly-projecting lug or contact-piece 17, adapted to project upward through a slot *a* in the plate A and to be engaged, as hereinafter described, by an operative device on the car whereby motion may be imparted to the bars 16 and 13 to operate the bell-crank lever 11, as shown. The lug 17 has a beveled or inclined portion *a'* to engage a stop *a''*, formed by one of the end walls of the slot *a*. The bar 16 is adapted to be raised on its pivot 15 by means of a setting device comprising a cam 18, engaging the under side of said bar 16 below the lug 17, said cam being normally held in the position shown in Fig. 2 by a spring 19. Said cam 18 is carried by a head or disk 20, rigidly attached to a rock-shaft 21, to which is attached a crank-arm 23. A link 24 connects this crank-arm 23 with a setting-lever 25, which lever 25 is provided with a contact-piece 26, which is preferably V-shaped or pyramidal to form sloping sides adapted to be readily depressed and cleared by a passing car-wheel. This contact-piece 26 projects upward through and is movable vertically in an opening *b* in plate A.

On the car is an operating device, which in the form shown consists of a vertically-sliding rod 27, provided at its upper end with a head 28 to enable it to be depressed against the tension of a spring 29, which holds it normally raised. The lower end of this rod carries a trip device or knocker 30, adapted to engage the lug or contact-piece 17.

The operation of the parts thus far described is as follows: As the car approaches the switch

one of the wheels 5 first depresses and passes over the lever 25, which raises and projects the lug 17, which, if the knocker 30 has been lowered by the depression of the rod 27 by the
 5 motorman, will be engaged by said knocker and forced forwardly, thus sliding the bars 16 and 13 and swinging the bell-crank lever 11, whereby the rod 7 will be operated against the resistance of the spring 10 and throw the
 10 switch-point to allow the car to run onto the siding or branch-track rails 2. When the bar 16 reaches the limit of its forward movement, the beveled portion a' engages the stop a^2 , thus causing said bar to tilt down on
 15 its pivot 15 and retract the lug 17 and by pressure on the cam 18 to also retract the contact-piece 26. If the motorman has not depressed the rod 27, the action of the wheel 5 will simply depress the lever 25 and rock
 20 the cam 18, which parts will be returned to their normal position by the spring 19. In order to lock the switch-point when thrown and restore the same to normal position after passage of the wheels of the car, the follow-
 25 ing mechanism is provided: Slidably mounted in guides 31 and 32 is a latch-bar 33, which is provided at one end with a beveled locking-lip 34 to coact with a similar lip 35 on
 30 the collar or head 9 of the rod or bar 7. A coiled spring 36 surrounds the bar 33 between a shoulder 36' thereon and the guide 32 and serves to normally hold the bar with its lip 34 located in the path of movement of the
 35 lip 35. The opposite end of the bar 33 is pivotally connected, as at 33', to a retracting-bar 37, having a lug or projection 38, which is adapted to project through and slide in a slot c in the plate A. As shown, this lug or pro-
 40 jection 38 is formed with a beveled portion d , adapted to engage a stop d' , formed by one of the end walls of the slot c . A depressible lever 39, having a contact-piece 40 movable vertically in an opening c' in side rail 2, is
 45 connected by a link 41 with a crank-arm 42 on a rock-shaft 43, carrying a cam 44, which serves when said lever 39 is depressed to raise the free end of the bar 37 and project the lug 38. The lug 38 when thus projected is adapted to be engaged by a knocker 46 on the lower
 50 end of a vertically-sliding rod 47, mounted on the car 4 and, like the rod 27, having a depressing-head 48 and a supporting-spring 49.

When the rod 7 is actuated by the bell-crank lever 11 in the manner previously de-
 55 scribed to swing the switch-point 3 to allow a car to pass from the main track 1 to the track 2, the beveled lip 35 of rod 7 engages the lip 34 of the bar 33 and forces the same rearwardly until the lip 35 passes lip 34, when
 60 spring 36 forces the lip 34 behind the lip 35, and thereby locks the bar 7 from movement, by which means the switch-point 3 is held fixed in thrown position. When the car passes onto track 2, the wheel 5 on the proper side
 65 engages contact-piece 40 and depresses lever

39, thus operating cam 44 and raising the lug 38 of bar 37. The knocker 46 then engages the said lug 38, slides the bars 37 and 33, and thereby withdraws locking-lip 34 from out of
 70 engagement with lip 35, thus causing the stop d' to engage beveled portion d and force the lug 38 downward. This action releases the rod 7 and forces the parts of the locking mechanism back to their normal positions. The
 75 switch-point and switch-throwing mechanism previously described are simultaneously restored to their normal positions by the springs 10 and 19, as will be readily understood.

The purpose of providing the means for retracting the lugs 17 and 18 at the limit of the
 80 forward movements of the bars 16 and 37—namely, the beveled portions a' d and stops a^2 d' —is to bring them immediately after operation beneath the cover-plate A, thus protecting them from possible injury. 85

The operating devices may of course be arranged to operate switches on either side of the track with equal facility, and, if desired, the switch-rod 7 may be extended across the track and attached to another switch-point in
 90 the event of the use of a double-point switch.

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

1. In a switch mechanism of the character described, the combination with a switch ele-
 95 ment, of an operating member pivotally and slidably mounted, connections between said operating member and switch element, a setting device adapted to be operated by the wheel of a car to swing and project said op-
 100 erating member in position to be operated, a car, and means upon the car for engaging and sliding said operating member when so projected to communicate motion to said connections, substantially as described. 105

2. In a switch mechanism of the character described, the combination with a switch ele-
 110 ment, of an operating member pivotally and slidably mounted, connections between said operating member and switch element, a setting device adapted to be operated by the wheel of a car to swing and project said op-
 115 erating member in position to be operated, a latch device for locking the switch-point when swung to open position, a retracting member, a wheel-operated device for projecting the same, a car, and means upon the car for suc-
 cessively actuating said operating and engag-
 ing members, substantially as described.

3. In a switch mechanism of the character
 120 described, the combination with a switch-point of a normally unprojected operating device, connections between said operating device and the switch-point, a setting device adapted to project said operating device, said setting de-
 125 vice adapted to be actuated by the wheel of a car, and means adapted to be carried by a car for actuating the projected operating device, substantially as described.

4. In a switch mechanism of the character 130

described, a switch element an operating device therefor having a movement in a vertical plane to project and retract it and a movement in a horizontal plane to project and retract the switch element, means for actuating said switch element from said operating device, and means for successively moving the operating device in the directions aforesaid to set, project, and retract the same, substantially as described.

5. In a switch mechanism of the character described, a sliding bar, an operating member adapted to slide therewith and pivoted thereto, a switch element, connections between sliding bar and switch element and means for swinging the operating member to project it for operation and for sliding it to impart motion to said sliding bar, substantially as described.

6. In a switch mechanism of the character described, a switch element, means for operating the same including a member slidably and pivotally mounted, a cam for swinging said member to project it for operation, a de-

vice adapted to be depressed by the wheel of a car for operating said cam, and means for sliding the operating member when projected by the cam, substantially as described.

7. In a switch mechanism of the character described, the combination with a switch-point, of a normally unprojected operating device, connections between said operating device and the switch-point, a setting device adapted to project said operating device, said setting device being adapted to be actuated by the wheel of a car, means adapted to be carried by a car for actuating the projected operating device, means for locking the switch-point in set position, means for unlocking said switch-point, and means for moving said switch-point back to normal position.

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

EDWIN H. SAUNDERS.

Witnesses:

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