

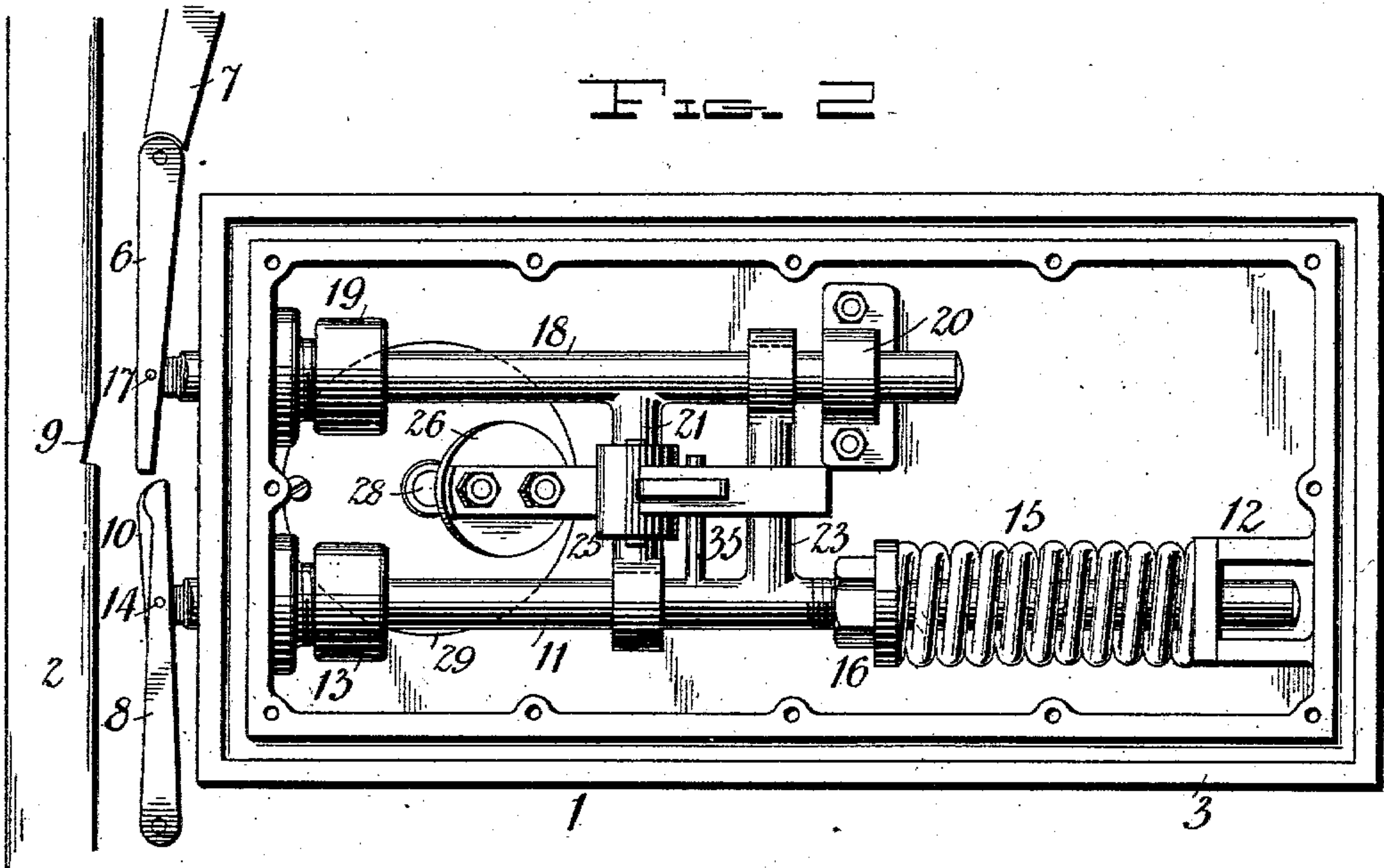
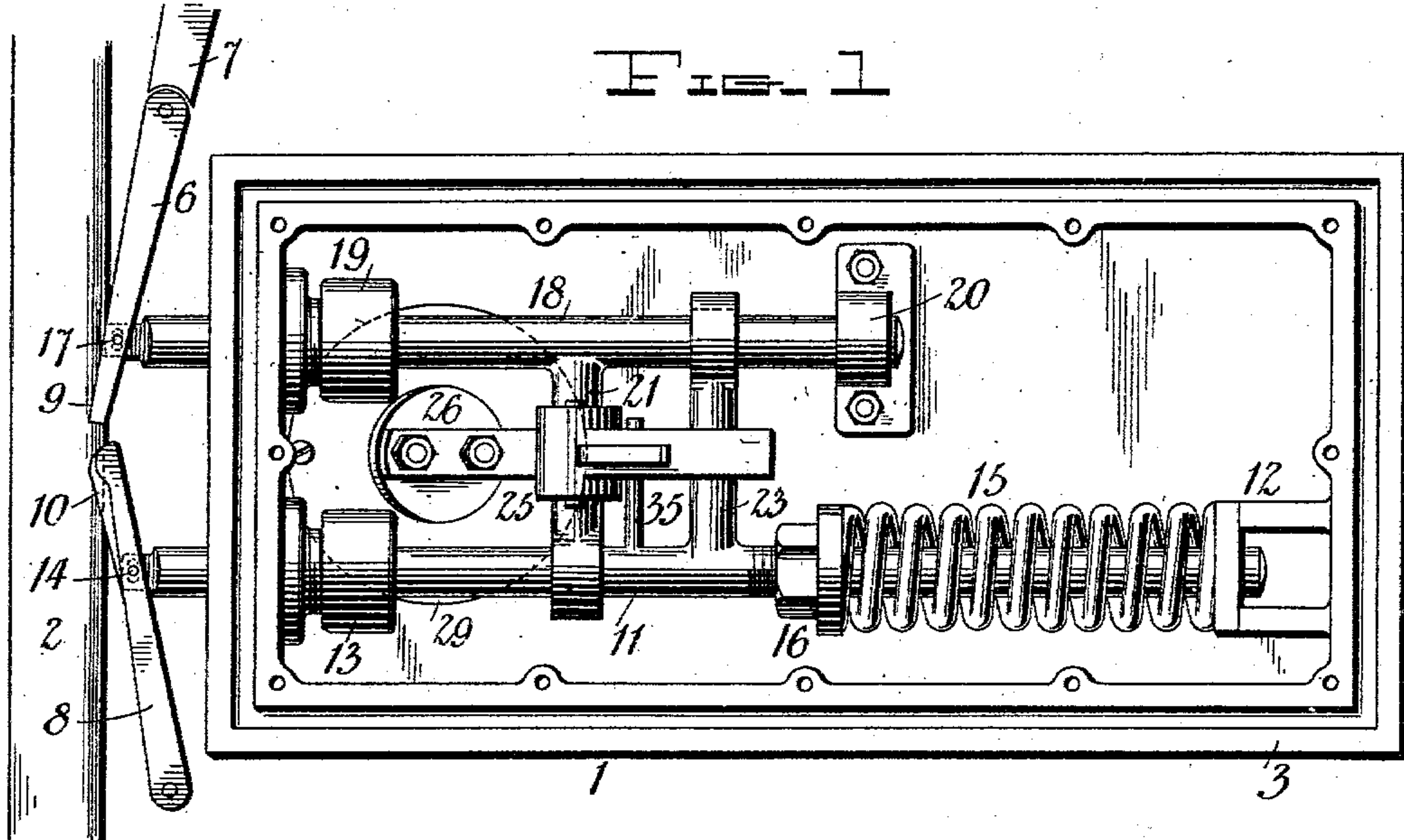
No. 721,000.

PATENTED FEB. 17, 1903.

W. J. BELL.  
STREET RAILWAY SWITCH.  
APPLICATION FILED JULY 25, 1902.

NO MODEL.

2 SHEETS—SHEET 1.



Inventor

Walter J. Bell

Witnesses

J. H. Harris

W. J. Norton

By J. L. Brown

his Attorney

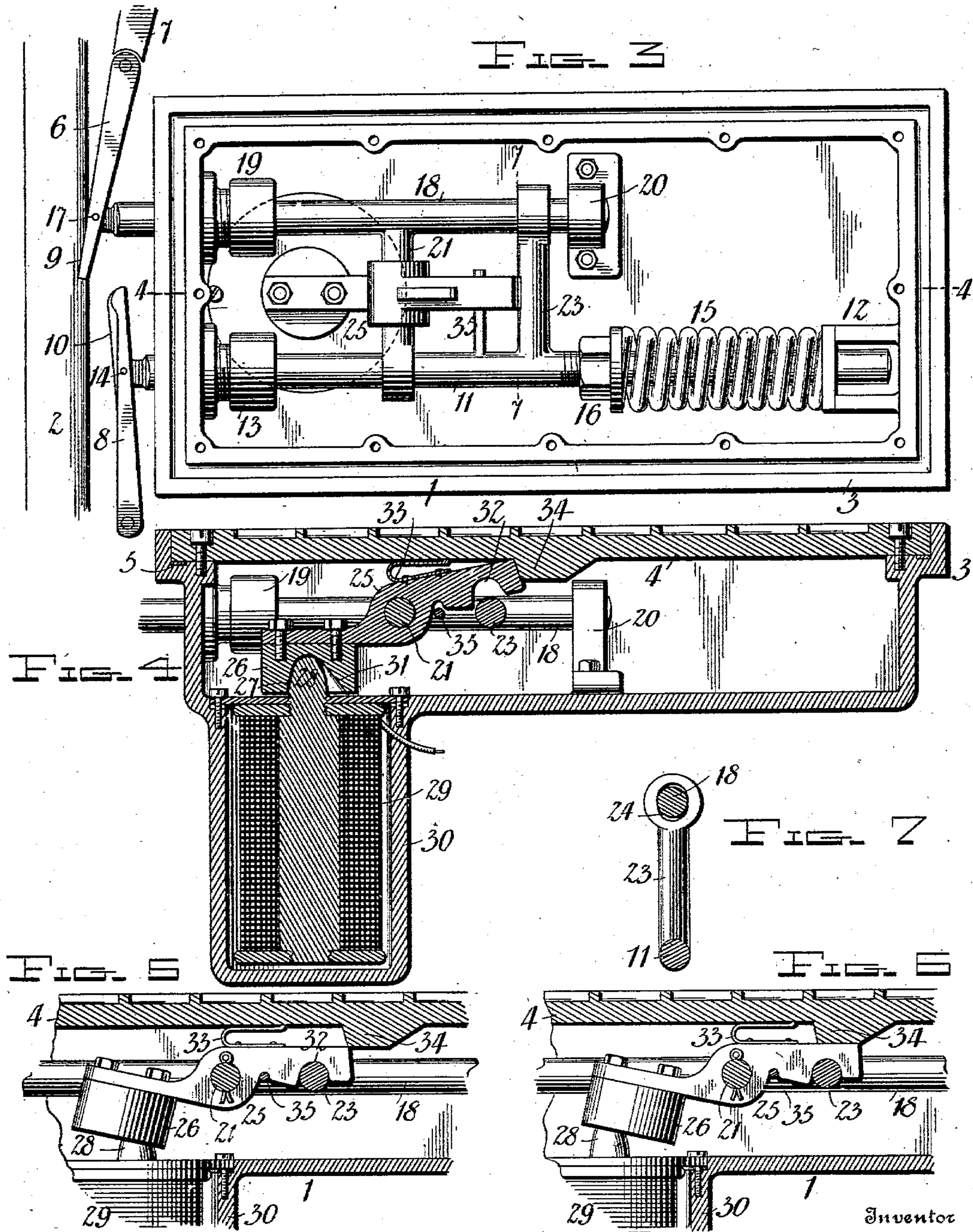
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*W. J. Bell*  
*W. J. Norton*

Inventor  
*Walter J. Bell*

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his Attorney



# UNITED STATES PATENT OFFICE.

WALTER J. BELL, OF LOS ANGELES, CALIFORNIA, ASSIGNOR OF ONE-HALF  
TO LEON F. MOSS, OF LOS ANGELES, CALIFORNIA.

## STREET-RAILWAY SWITCH.

SPECIFICATION forming part of Letters Patent No. 721,000, dated February 17, 1903.

Application filed July 25, 1902. Serial No. 116,987. (No model.)

*To all whom it may concern:*

Be it known that I, WALTER J. BELL, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented certain new and useful Improvements in Street - Railway Switches, of which the following is a specification, reference being had therein to the accompanying drawings.

My present invention, which relates to electric-railway switches, contemplates a simple and durable construction of switching mechanism in which the switch-tongue is normally positioned to close the main track and open the side track, but is by means of a switch-throwing rail operated by the car moved to open the main track unless the parts are set to cause the car to take the side track.

Briefly, the switch-tongue and switch-throwing rail are normally coupled together to move in unison, the uncoupling being effected by electrical means controlled from the car when the latter is to be switched from the main track.

The details of construction of my improved switching mechanism, together with the operation of the parts and the advantages derived from the improvements, will be found fully set forth in the following description, in connection with which attention is called to the accompanying drawings, illustrating the invention in its preferred form.

In the drawings, Figure 1 is a plan view of a switching mechanism embodying my invention. Fig. 2 is a similar view showing the parts in position while the car is traversing the main track. Fig. 3 is a similar view showing the parts in position for switching the car. Fig. 4 is a vertical sectional view on line 4 4 of Fig. 3. Figs. 5 and 6 are detail sectional views showing certain positions of the coupling device and armature. Fig. 7 is a detail view taken on line 7 7 of Fig. 4.

Referring to the drawings by numerals, 1 designates a casing located near to the main rail 2 and at the switch. The casing has around its top an offset or flange 3, and 4 is a cover for the casing, which is secured there-

to in a manner to render the casing watertight, a packing 5 being interposed for this purpose between the casing and cover.

6 is the switch-tongue, pivoted at the side-track rail 7, and 8 is the switch-throwing rail, pivoted at the main rail 2. The switch-tongue in its normal position contacts with the main rail and preferably seats at its free end in a recess 9 in the main rail. The switch-throwing rail is provided with a lip 10, which overlaps the main rail, as shown in Fig. 1, whereby the extent of movement of said rail and the tongue is approximately the same. The switch-throwing rail normally contacts with the main rail.

11 denotes a rod slidably supported at one end in a bracket 12 in the casing, its other end projecting through an opening in the opposite end wall of the casing, at which is a stuffing-box 13. The rod is pivotally connected by a pin 14 to the switch-throwing rail, and a spring 15, coiled around the rod and interposed between the bracket 12 and a set-nut 16 on the rod, serves to press the switch-throwing rail normally against the main rail. The set-nut regulates the tension of the spring.

Pivoted to the switch-tongue by means of a pin 17 is a rod 18, slidable in an opening in the end wall of the casing, at which is a stuffing-box 19. The inner end of the rod 18 is supported and guided by a bracket or lug 20. The rod 18 has an arm 21 extending transversely therefrom and provided with an opening 22 receiving the rod 11, and the latter has a similar arm 23, through an opening 24 in which the rod 18 passes, the openings 22 24 being preferably elongated, as shown in Fig. 7, whereby the rods are free to slide with the minimum of friction.

Pivotally supported on the arm 21 between positioning-keys is a lever 25, to one arm of which is secured an armature 26, having in its under side a recess 27, receiving the extended end 28 of the pole-piece of a magnet 29, secured within an extension 30 of the casing. The armature-recess 27 has an inclined wall 31; otherwise it conforms in shape to that of the pole-piece end 28. The other arm of the lever 25 has in its under side a recess



32, normally engaging the arm 23 of rod 11. A spring 33, secured at one end to the lever and pressing at its other end against the under side of the cover 4, operates to elevate the armature and depress the opposite lever-arm, as shown in Fig. 5, whereby the switch-tongue and switch-throwing rail are through the medium of their rods normally coupled together to move in unison. Unless the car is to be switched onto the side or branch track rails 7 the movement of the rail 8 through the engagement thereof by the wheel-flange operates to move also the switch-tongue and open the main track, and to render the movement of the rail and tongue positive the locking end of the lever is caused to pass under a lug 34 on the under side of the cover, as illustrated in Fig. 6, which shows the position of the parts at the end of the outward movement of the tongue and rail.

The magnet is connected in a circuit in which is also a controller or controllers manipulated, preferably, by the operator on the car.

It will be understood that while the drawings illustrate a construction designed for switching a car to the right a similar but oppositely-disposed mechanism may be employed for switching to the left and the car will be equipped with controllers for setting the proper switching mechanism. As a car to be switched approaches the rail 8 the operator closes the circuit, thereby energizing the magnet and attracting the armature, the result being the disengaging of the locking-arm of the lever and the uncoupling of the rods 11 and 18 and the switch-throwing rail and switch-tongue. As the car passes the switch-throwing rail its wheel-flanges successively engage and move the rail 8 and rod 11 without disturbing the rod 18 and switch-tongue, and said tongue being in contact with the main rail the car enters the side track. The rod 11 carries an arm 35, which acts to support the locking end of the lever during the movement of the rod 11. If the circuit through the magnet is interrupted or the current weakened, the lever is maintained in unlocking position by said arm 35 until the parts are restored to normal position.

Obviously while the rods 11 and 18 are coupled together the spring 15 operates to restore the normal positions of both the switch-tongue and switch-throwing rail.

I claim as my invention—

1. The combination of a switch-tongue and switch-throwing rail normally in contact with the main rail, mechanism normally coupling the tongue and rail to compel their simultaneous movement, and electrically-controlled means for uncoupling the tongue and rail

whereby movement of the rail alone is accomplished.

2. The combination of a switch-tongue and switch-throwing rail normally coupled together to move simultaneously, and electrically-controlled means for uncoupling the tongue and rail to effect the movement of the rail independent of the tongue.

3. The combination of a switch-tongue, a rod extending therefrom, a switch-throwing rail, a rod extending from the rail, a device normally coupling the rods together to effect simultaneous movement of the rail and tongue, and electrically-controlled means for moving the device to uncouple said rods.

4. The combination of a switch-tongue, a rod extending therefrom, a switch-throwing rail, a spring-pressed rod extending from the rail, cross-arms slidably connecting the rods, a lever pivoted on one arm and having a locking end normally engaging the other arm, and an armature at the other end of the lever arranged to be attracted by an electromagnet.

5. The combination of a switch-tongue, a rod extending therefrom, a switch-throwing rail, a spring-pressed rod extending from the rail, cross-arms slidably connecting the rods, a spring-pressed lever pivoted on one arm and having a hooked end adapted to engage the other arm, an armature at the other end of the lever arranged to be attracted by an electromagnet, and a support for the lever in its unlocking position.

6. The combination of a switch-tongue, a rod extending therefrom, a switch-throwing rail, a spring-pressed rod extending from the rail, cross-arms loosely connecting the rods to permit independent movement thereof, a spring-pressed lever pivoted on one of the arms and adapted to hook over the other arm to couple the rods together, means for maintaining the locking position of the lever during the movement of the coupled rods, an armature at the other end of the lever arranged to be attracted by an electromagnet to move the lever and uncouple the rods, and an arm carried by one of the aforesaid arms for supporting the lever in its uncoupling position.

7. In a switching mechanism, a switch-tongue normally seated in a recess in the main rail, and a switch-throwing rail adapted in its movement to throw the tongue, said rail having a lip overlapping the main rail to an extent equal to the depth of the main-rail recess.

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

WALTER J. BELL.

Witnesses:

E. L. KENNEY,  
HENRIETTA L. SHEPSTON.