

No. 790,939.

PATENTED MAY 30, 1905.

J. C. WALDO & J. J. FORSTER.
SWITCH OPERATING MECHANISM.

APPLICATION FILED JAN. 7, 1905.

2 SHEETS—SHEET 1.

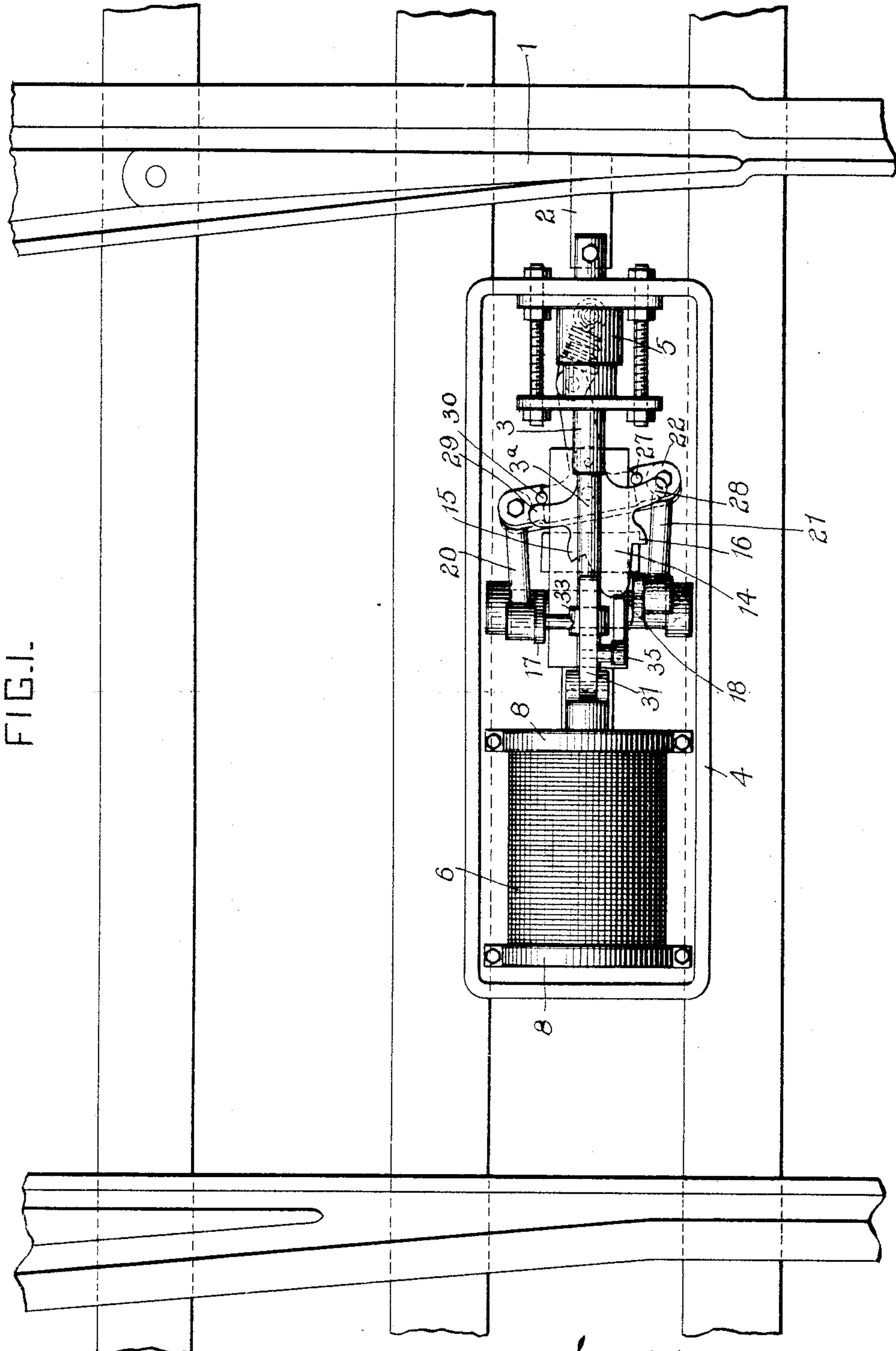


FIG. 1.

WITNESSES:
Herbert Bradley.
Fred Kirchner

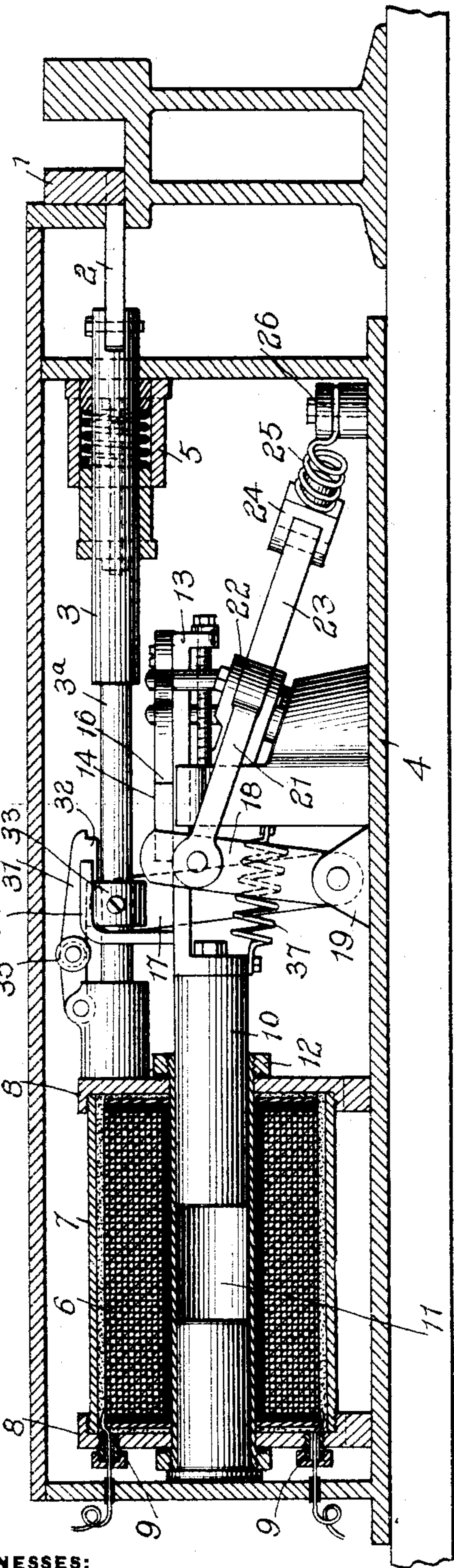
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2 SHEETS—SHEET 2.

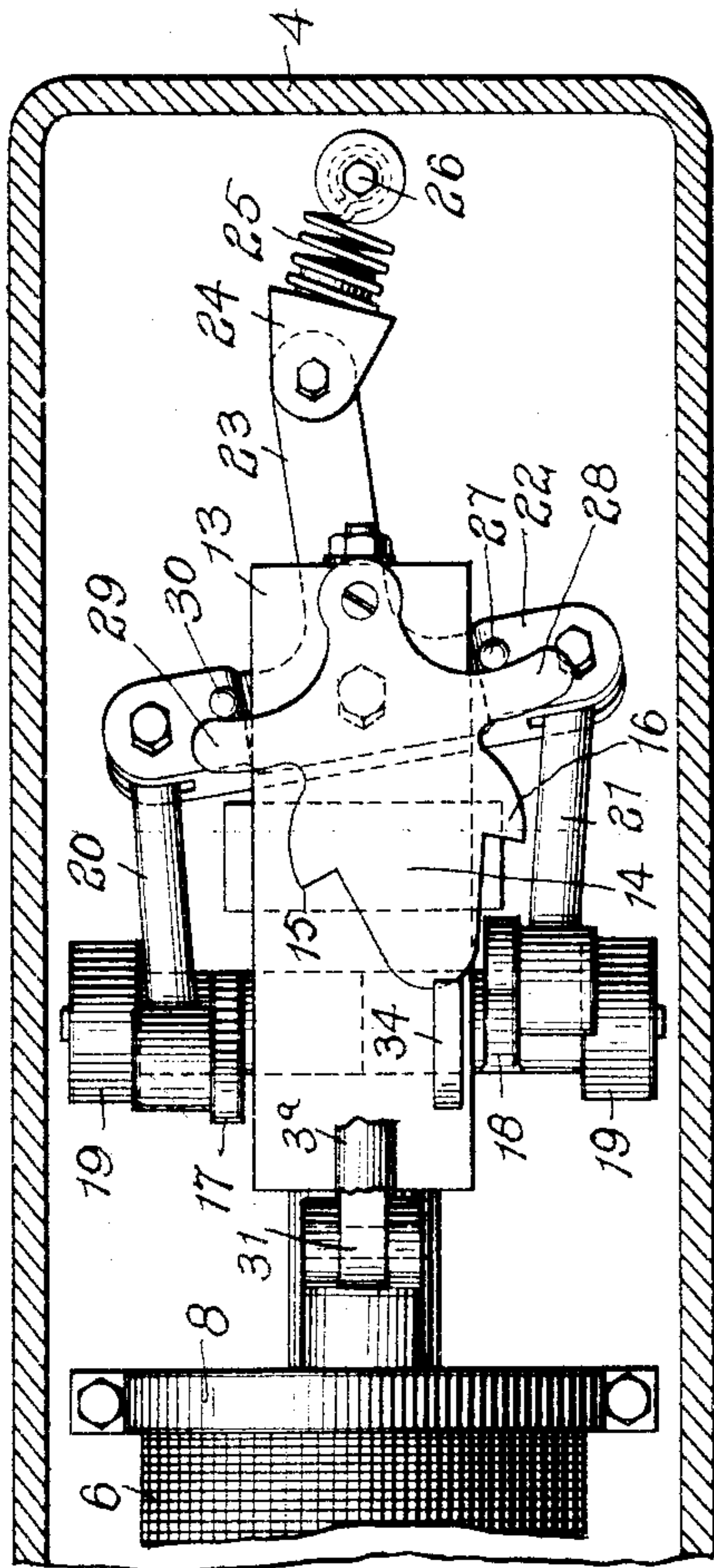
FIG. 2.



WITNESSES:

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FIG. 3.



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UNITED STATES PATENT OFFICE.

JAMES C. WALDO, OF SHARPSBURG, AND JOHN J. FORSTER, OF AVALON,
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SWITCH-OPERATING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 790,939, dated May 30, 1905.

Application filed January 7, 1905. Serial No. 240,061.

To all whom it may concern:

Be it known that we, JAMES C. WALDO, residing at Sharpsburg, and JOHN J. FORSTER, residing at Avalon, in the county of Allegheny and State of Pennsylvania, citizens of the United States, have invented or discovered certain new and useful Improvements in Switch-Operating Mechanism, of which improvements the following is a specification.

The invention described herein relates to certain improvements in electrically - controlled switch-operating mechanism, and has for its object a construction and arrangement of parts whereby the reciprocation of the core or armature of an electromagnet will effect a movement of the switch, the movement of the switch in both directions resulting from inward shifting of the armature or core.

It is a further object of the invention to provide for the automatic locking of the movable switch-rail in its two positions.

The invention is hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a top plan view of a portion of the railway-track having a movable switch member and mechanism for operating the same. Fig. 2 is a sectional elevation of the switch-operating mechanism, and Fig. 3 is a large plan view of a portion of the mechanism.

In the practice of our invention the switch-tongue or movable member 1 is connected by a link 2 to a movable bar or rod 3, such bar or rod passing into the box 4, containing the switch-operating mechanism, through stuffing-box 5. The electrical magnet employed for operating the switch is preferably made in the form of a solenoid 6, inclosed within a case or shell consisting of a body portion 7, on which the heads 8 screw. After the coil has been placed within the shell, insulating material, such as molten paraffin, is poured into the shell through one of the openings formed in the head 8 for the reception of the insulating-tube 9, through which passes one of the terminals of the coil. The core 10 of the solenoid moves back and forth in a brass sleeve or tube 11, extending through the heads

8 and forming a tight joint therewith through the medium of the packing-rings 12. The core 10 is connected to a sliding plate 13, on which is mounted a pawl 14, provided with shoulders 15 and 16, adapted to engage respectively and alternately with arms 17 and 18, pivotally mounted in bearings 19 on the bottom of the box 4, as clearly shown in Fig. 2. The arms 17 and 18 are connected by links 20 and 21 to opposite ends of the lever 22, which has an arm 23 extending rearwardly and pivotally connected to a swinging head 24. This head is pressed toward the lever by a pivotally-mounted spring 25, so that when the arm 23 passes beyond a line passing through the pin 26, which serves as a bearing for the spring and the pivot-points of the head 25 and lever 22, the spring will serve to force the arm and lever in one or the other direction dependent on its preliminary movement. One of the arms, as 17, is connected as shown to the sliding switch-rod 3.

As the sliding plate 13 is pulled to the left the shoulder 16 will strike against the arm 18, and through such arm shift the lever 22 to a position at an angle to that shown in Fig. 3. In this position the pin 27 of the lever 22 will be shifted forward, so that when the sliding plate moves back to the right a finger 28 on the pawl 14 will strike against the pin, thereby shifting the pawl to such a position that the shoulder 15 will lie in the plane of the arm 17, so that on the next movement of the slide to the left the shoulder 15 will strike against the arm 17, shifting said arm and the lever 22 to the position shown in Fig. 3. As the slide moves back again to the right the finger 29 on the pawl will strike against the pin 30 on the lever, shifting the pawl to the position shown in Fig. 3.

In order to provide a lock for the switch-rail and its operating mechanism in both positions, a dog 31 is pivotally connected to a stationary part of the machine in such position that the projection 32 thereon will lie in the path of movement of the shoulder or collar 33 on the extension 3^a on the rod 3. An arm 34 is secured to the slide 13 in such position that when the slide moves to the left

it will strike against a portion of the dog 31, as the roller 35, lifting the dog and projection 32 out of the path of movement of the collar 33, thereby permitting the sliding rod 3 to move to the right. As this arm passes from under the roller the dog will drop into the rear of the collar 33, preventing any reverse movement of the movable tongue 1 without a corresponding movement of the switch-operating mechanism.

As shown in Fig. 2, the return movement of the core to the right, or the movement during which the switch-rail is not moved, is effected by a spring 37, as shown in Fig. 2.

We claim herein as our invention—

1. A switch mechanism having in combination a movable part or member, two pivotally-mounted arms connected to such part or member, a single-acting motor, a slide movable by said motor, a dog or pawl mounted on the slide and adapted to alternately engage said arms, and means operative on the movement of said arms to shift the pawl or dog, substantially as set forth.

2. A switch mechanism having in combination a movable part or member, two movable arms, a connection from said arms to the movable member, a lever connected to the arms, a single-acting motor, a slide movable by the

motor, a dog or pawl mounted on the slide and adapted to alternately engage the arms and means operated by the lever for shifting the pawl, substantially as set forth.

3. A switch mechanism having in combination a movable part or member, a single-acting motor, means interposed between the movable part and motor for imparting alternately opposite movements to the part or member and a lock for holding the movable part or member in both positions and means operative on the preliminary movement of the motor to shift the lock, substantially as set forth.

4. A switch mechanism having in combination a switch-tongue, two movable arms connected to the switch-tongue, a motor, a slide movable by the motor and adapted to be alternately connected to the arms, a lock for holding the tongue in both positions and means for shifting the lock, operative on the preliminary movement of the slide, substantially as set forth.

In testimony whereof we have hereunto set our hands.

JAMES C. WALDO.
JOHN J. FORSTER.

Witnesses:

CHARLES BARNETT,
FRED KIRCHNER.