

No. 607,893.

Patented July 26, 1898.

J. H. SPANGLER.

AUTOMATIC SWITCH OPERATING MACHINE.

(Application filed Sept. 25, 1897.)

(No Model.)

2 Sheets—Sheet 1

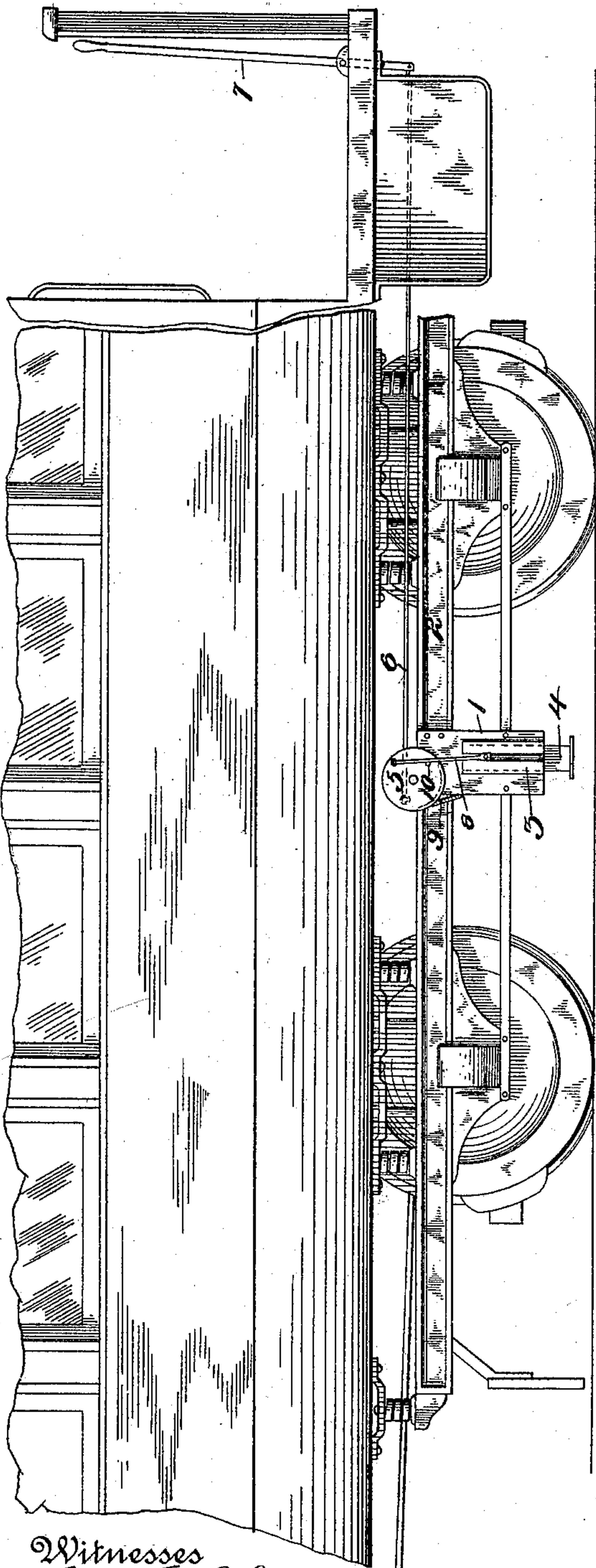


FIG. 1.

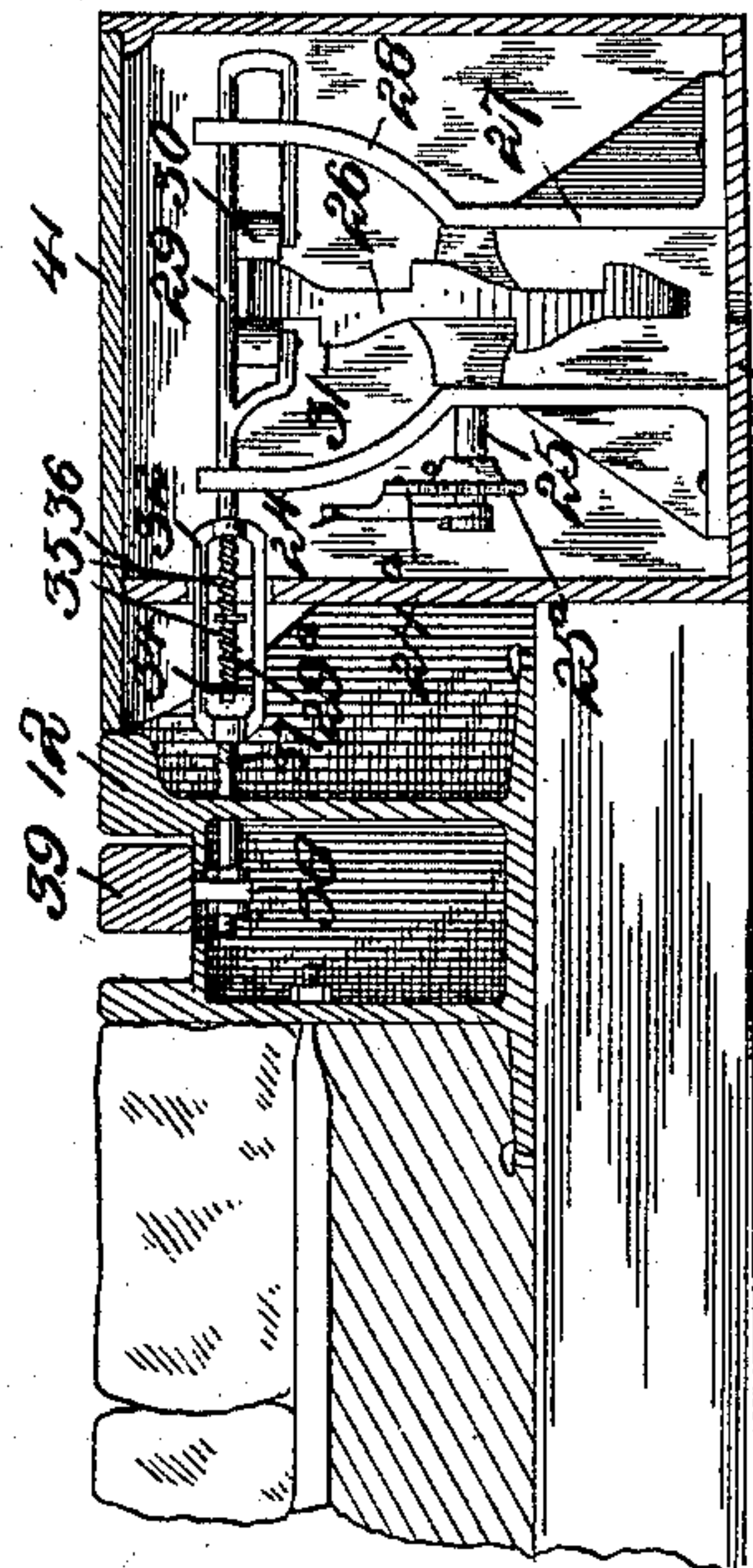


FIG. 3.

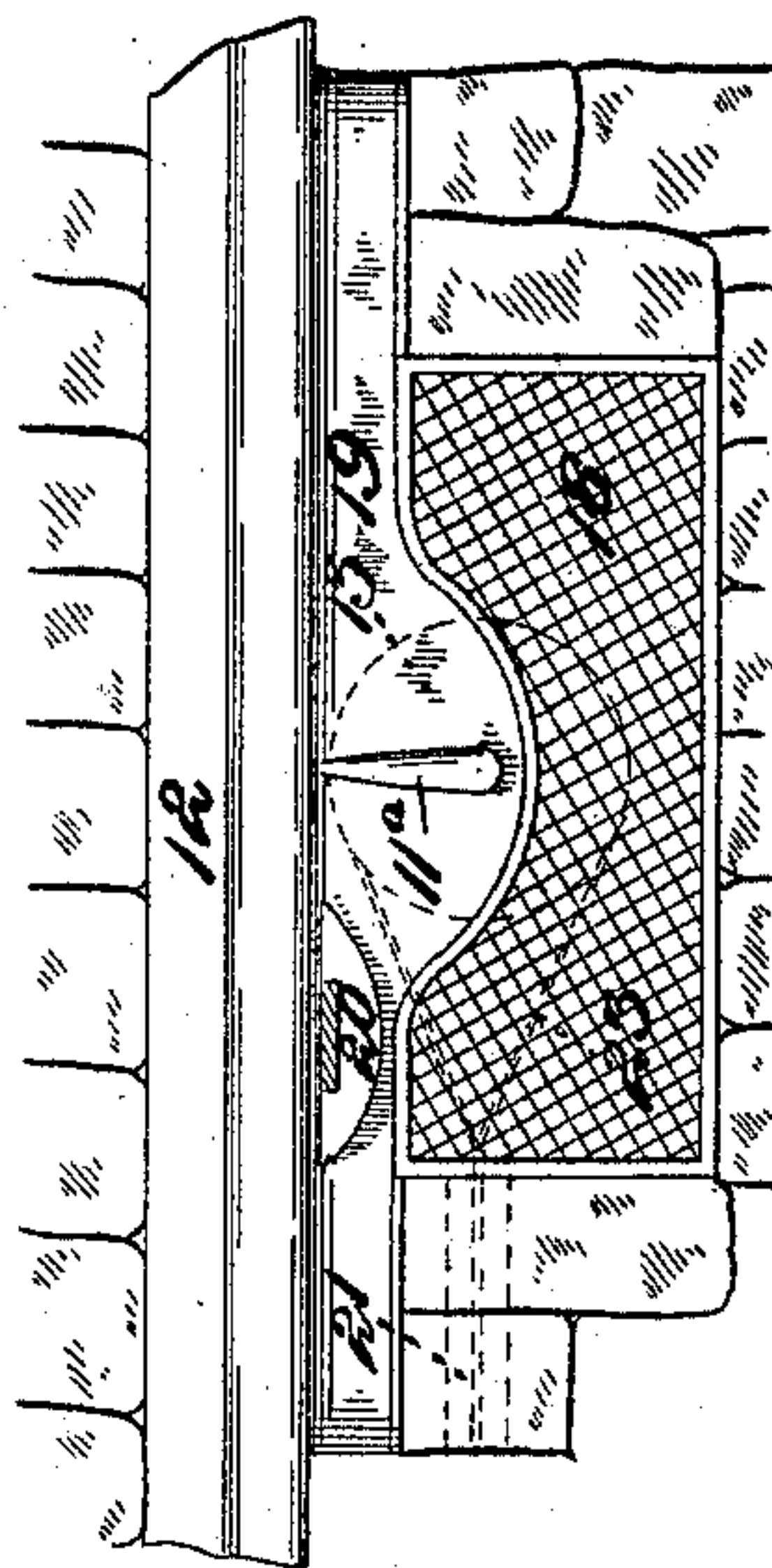


FIG. 2.

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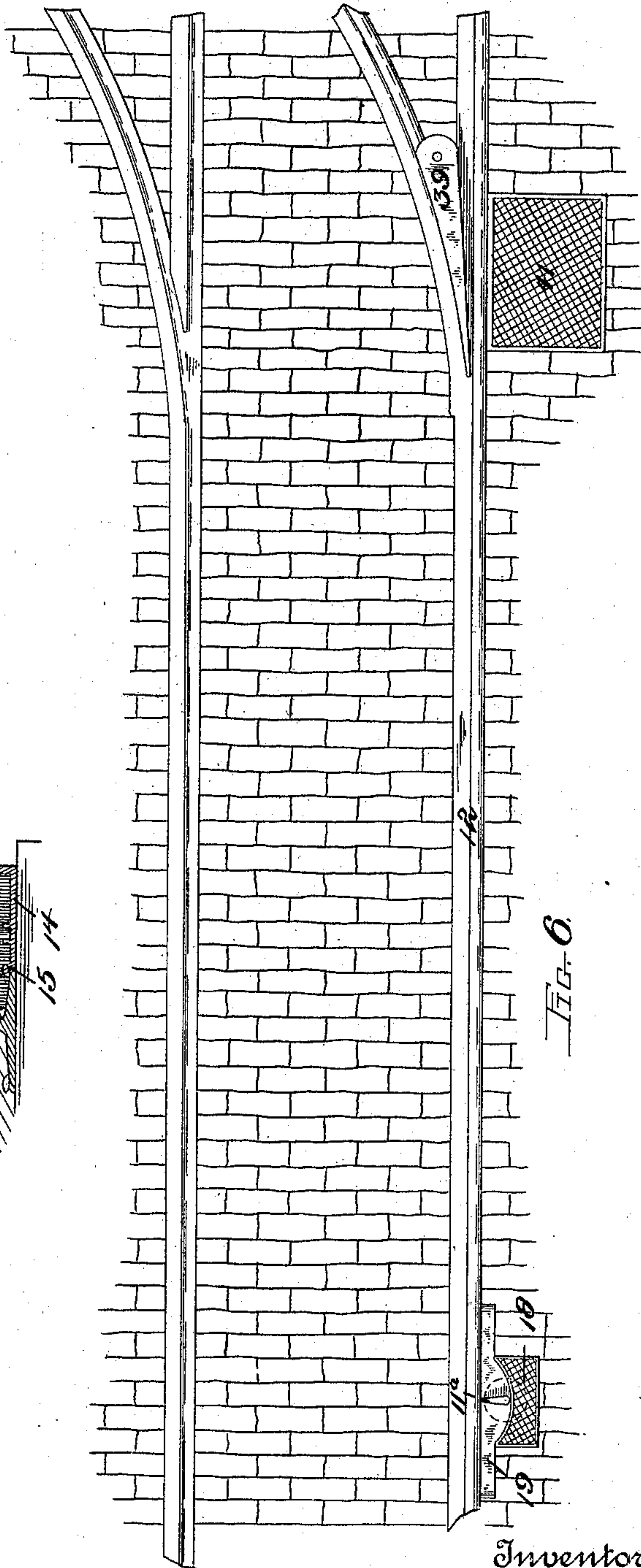
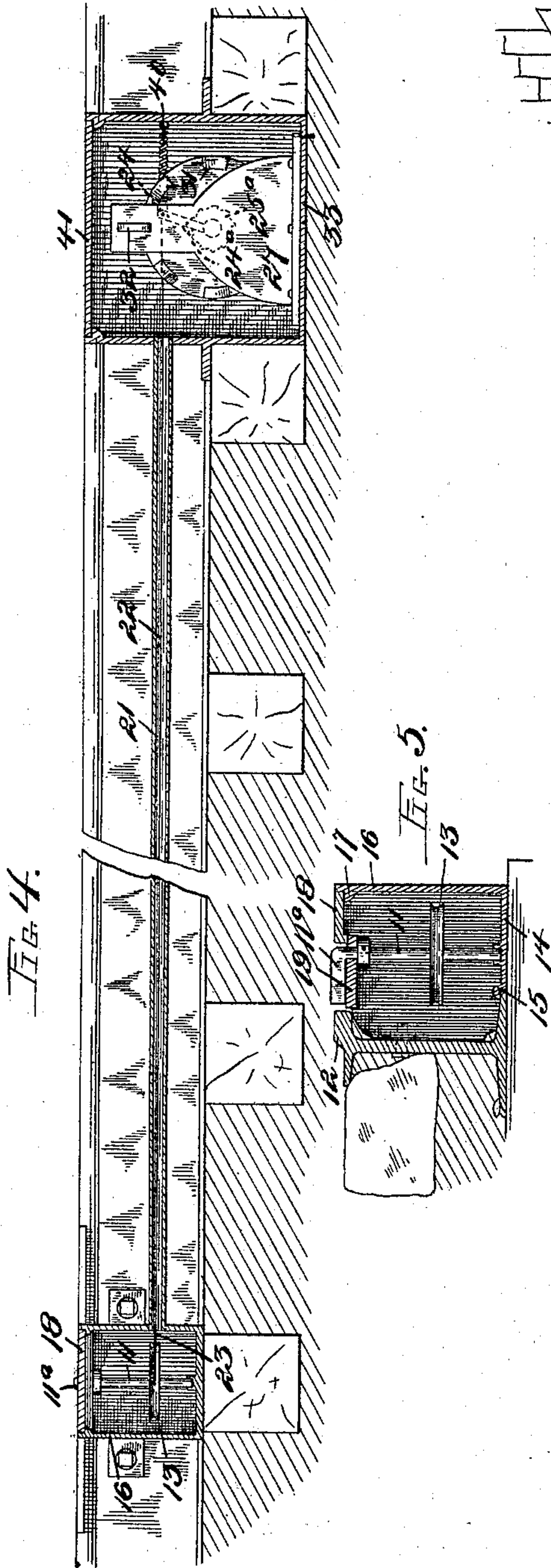
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UNITED STATES PATENT OFFICE.

JOHN H. SPANGLER, OF PITTSBURG, PENNSYLVANIA.

AUTOMATIC SWITCH-OPERATING MACHINE.

SPECIFICATION forming part of Letters Patent No. 607,893, dated July 26, 1898.

Application filed September 25, 1897. Serial No. 653,002. (No model.)

To all whom it may concern:

Be it known that I, JOHN H. SPANGLER, a citizen of the United States of America, residing at Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Automatic Switch-Operating Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in automatic switches, and has for its object to provide novel and effective means for operating the switch from the car.

The invention is particularly designed for use on street-railways, though the same may be made to conform to steam-railways as well, if desired.

The leading feature of my improved switch consists in attaching to the truck of the car a sliding bar to be operated by the motor-man or conductor, so as to bring the same into engagement with the switch-tongue at the desired time and automatically move the switch-tongue, so as to pass the car onto the desired track.

The invention also aims to provide means for retaining the switch in the position so as to prevent the tongue returning to its former position until the car has passed safely over the switch.

A still further object of the invention is to provide means for again placing the mechanism in position for operating the switch and in the novel construction whereby the mechanism is prevented from becoming broken or injured in case the switch has become clogged in such a manner as to prevent its operation.

Still further objects of my invention reside in the simplicity of construction, strength, durability, effectiveness of operation, and comparative small cost of manufacture.

With the above and other objects in view the invention finally consists in the novel construction, combination, and arrangement of parts to be hereinafter more specifically described, and particularly pointed out in the claims.

In describing the invention in detail reference is had to the accompanying drawings,

forming a part of this specification, and wherein like letters and figures of reference indicate similar parts throughout the several views, in which—

Figure 1 is a side view of a car-truck and a portion of the car-body, showing the operating device in position on the truck. Fig. 2 is a top plan view of a portion of the track, showing the trip-pin to be engaged by the operating device. Fig. 3 is a sectional view of the casing and switch-rails, showing mechanism for operating the switch-tongue. Fig. 4 is a longitudinal sectional view. Fig. 5 is a cross-sectional view of the casing inclosing the trip-pin. Fig. 6 is a top plan view of a portion of the track, showing appearance of same when my improved switch is employed.

In order to give a full detailed description of the invention, I will divide the same into two parts—namely, A the mechanism attached to the truck for operating the trip-pin, and B the mechanism located beneath the ground and connected to the switch-tongue for operating the same.

I will now describe the mechanism A, which consists of a plate 1, rigidly attached to the beams 2 of the truck or in any desired position and carrying a slotted closing or hood 3, forming a guide for the operating-bar 4, adapted to slide therein. Mounted upon this plate 1, at the upper end thereof, is a wheel or disk 5, to which is eccentrically connected the one end of the operating-rod 6, the other end of which is attached to the lower end of the operating-lever 7, which passes upward at a suitable point on the car-platform. Also attached to the wheel or disk 5, in the same manner to the rod 6, but on the opposite side of the wheel and at the opposite side from the concentric mounting of the same, is a rod 8, the lower end of which is attached to the sliding bar 4, so that when the wheel is turned by means of the operating-rod and lever toward the front of the car the rod 8 will force the bar 4 downward into engagement with the tripping-pin. In order to automatically return the tripping-bar 4 to its elevated position, I attach to the wheel 5 and plate 1 a stiff spring 9, so that when the pressure on the operating-lever is released this spring will automatically return the bar to its elevated

position, the limit to its movement being controlled by a pin 10, secured in the wheel engaging the rod 8.

To refer now to the switch-operating mechanism heretofore referred to as B, 11 represents the trip-pin, adapted to be engaged by the trip-bar 4. This trip-pin is journaled within a casing formed of an angle-shaped piece of material placed at the side of the main rail 12, and together with the same forms the box for inclosing the trip-pin and the pulley 13, mounted upon the same. The bed-plate or portion 14 of this angle-shaped piece is formed with a curved flange 15, which engages the one flange of the main rail, and the upright or side portion 16 is provided near its upper edge with a shoulder 17, which forms a seat for the covering 18, which rests thereon, and upon the covering-plate 19, through which the trip-pin passes and which is supported at its ends beyond the covering-plates 18. The upper end or that portion of the trip-pin protruding above the casing is bent at right angles to the upright portion, forming a projection 11^a, extending into close proximity to the main rail, so that the same may be readily engaged by the tripping-bar 4, the plate 19 having a cut-away portion 20, so as to guide the tripping-bar into engagement with the portion 11^a of the tripping-pin. This casing is located at a point some distance from the switch-tongue, and leading from this casing to a casing located opposite the switch-tongue is a pipe or conduit 21, through which passes the connecting-rod 22, preferably composed of copper or other non-corrodible material. Attached to opposite sides of the outer periphery of the pulley 13 is a chain 23, to which the one end of this connecting-rod is attached, while the other end of the same is attached to a lever 24, mounted upon the axle 25, which carries the locking-wheel 26. This axle 25 is journaled in standards 27, having upwardly-extending brackets 28. These brackets 28 receive the yoke 29, carrying pulleys or rollers 30, adapted to engage the lugs 31, provided on each side of the wheel 26, thus preventing the backward movement of this wheel after the switch has been operated. The rod 29^a, from which the yoke is formed, extends beyond the bracket at the side adjoining the track and enters the buckle 32, passing through the inner wall of the casing 33, which incloses the mechanism. The outer end of this rod is secured within the buckle to a cross-piece 34 and has arranged thereon between the one end of the buckle and the said cross-piece coil-springs 35 and 36, which serve to permit the operation of the rod and yoke in case of the switch having become clogged, so as to prevent the operation of the switch-tongue. To the opposite end of the buckle is attached a rod 37, which passes through the main rail and is attached to a lug 38, carried on the underneath side of the switch-tongue 39. Mounted upon the axle 25 is a ratchet-wheel 25^a, adapted to be engaged by

a pawl 24^a, carried by the lever 24, this lever being returned to its normal position after being operated by means of a spring 40, attached thereto and to the wall of the casing 33. This casing is provided with a suitable top plate or cover 41, which, together with the covering of the casing of the trip-pin, may be corrugated or roughened to prevent horses or vehicles from slipping on the same.

Operation: Assuming now that all parts have been secured in their respective positions, as heretofore described, and it is desired to operate the switch-tongue, so as to pass the car from the side to the straight track, the operator pulls on the lever 7, causing the same, through its connection with the rod 6, to operate the wheel or disk 5 and force the tripping-bar 4 downward, so that the same will engage the projection 11^a of the trip-pin 11, giving the same one quarter-turn, and thus causing the pulley 13 to operate the rod 22 through its chain connection therewith. This in turn causes the rod 22 to operate the lever 24 and move the wheel 26, so as to force one of the projections or lugs on this wheel between the rollers and operate the yoke 29 and rod 37 to move the switch-tongue. The wheel 26 is prevented moving backward by the lugs 31, engaging upon the rollers 30.

I desire to call attention to the fact that this construction of a switch may be employed in connection with the ordinary switch-rail usually employed, no change in the construction of same being required, and also that the peculiar construction and arrangement of the trip-pin prevents liability of the same being operated by vehicles and the like which may accidentally engage the same. It will also be noted that various changes may be made throughout the details of construction without departing from the general spirit of my invention.

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

1. An automatic switch consisting of a trip-pin journaled in a casing at the side of the main rail, a pulley mounted upon said pin, a casing mounted at the side of the track opposite the switch-tongue, a locking-wheel secured to a shaft journaled in supports within said casing, a ratchet-wheel secured to one end of said shaft, a pawl engaging said ratchet-wheel, a spring for returning said pawl in its normal position, connections between said pawl and pulley, a yoke mounted in said supports and engaging the locking-wheel, connections between said yoke and switch-tongue and means carried by the car for operating the switch, substantially as shown and described.

2. In an automatic switch, the combination with the switch-tongue, a rod connected to said switch-tongue, a casing arranged opposite the switch-tongue, a locking-wheel mounted upon a shaft journaled in supports in said casing, a pawl-and-ratchet mechanism for operating

said locking-wheel, a trip-pin, a pulley mounted on said trip-pin connections between said trip-pin and the pawl, means carried by the car whereby said trip is operated to operate the switch-tongue, substantially as shown and described.

3. A switch-operating mechanism consisting of a locking-wheel, pawl-and-ratchet mechanism for operating said locking-wheel, intermediate connections between said locking-wheel and the switch-tongue, a trip-pin, a pulley mounted upon said trip-pin, connections between said pulley and pawl-and-

ratchet mechanism, and means carried by the car whereby the trip-pin is operated to operate the switch-tongue and means whereby said locking-wheel may be operated without operating the switch-tongue, substantially as shown and described.

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

JOHN H. SPANGLER.

Witnesses:

JOHN NOLAND,

THOS. M. BOYD, Jr.