No. 812,077. PATENTED FEB. 6, 1906.

H. H. NICHOLS.

SWITCH LOCKING DEVICE.

APPLICATION FILED NOV. 11, 1905.

3 SHEETS—SHEET 1.

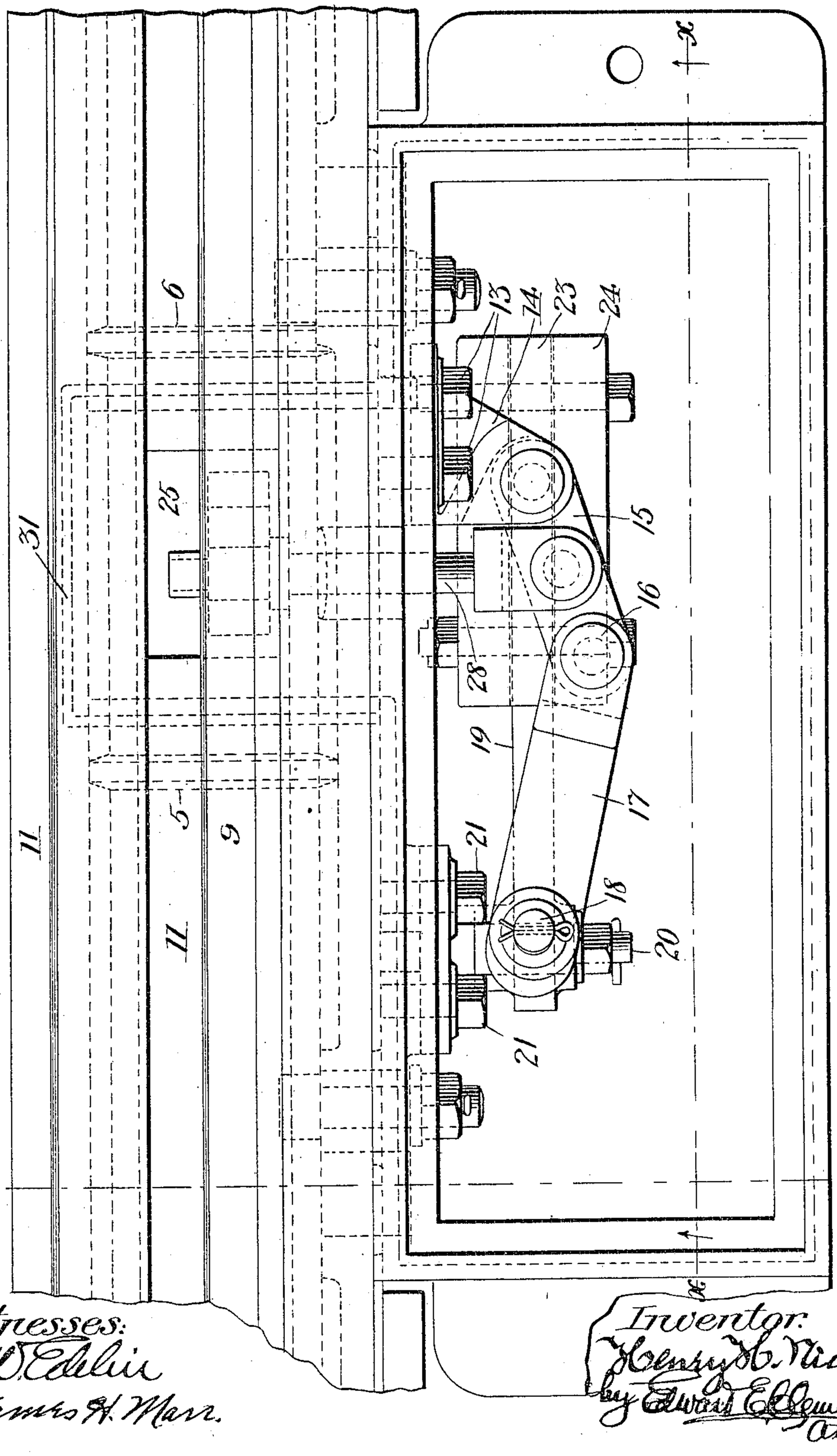

Fig. 1.

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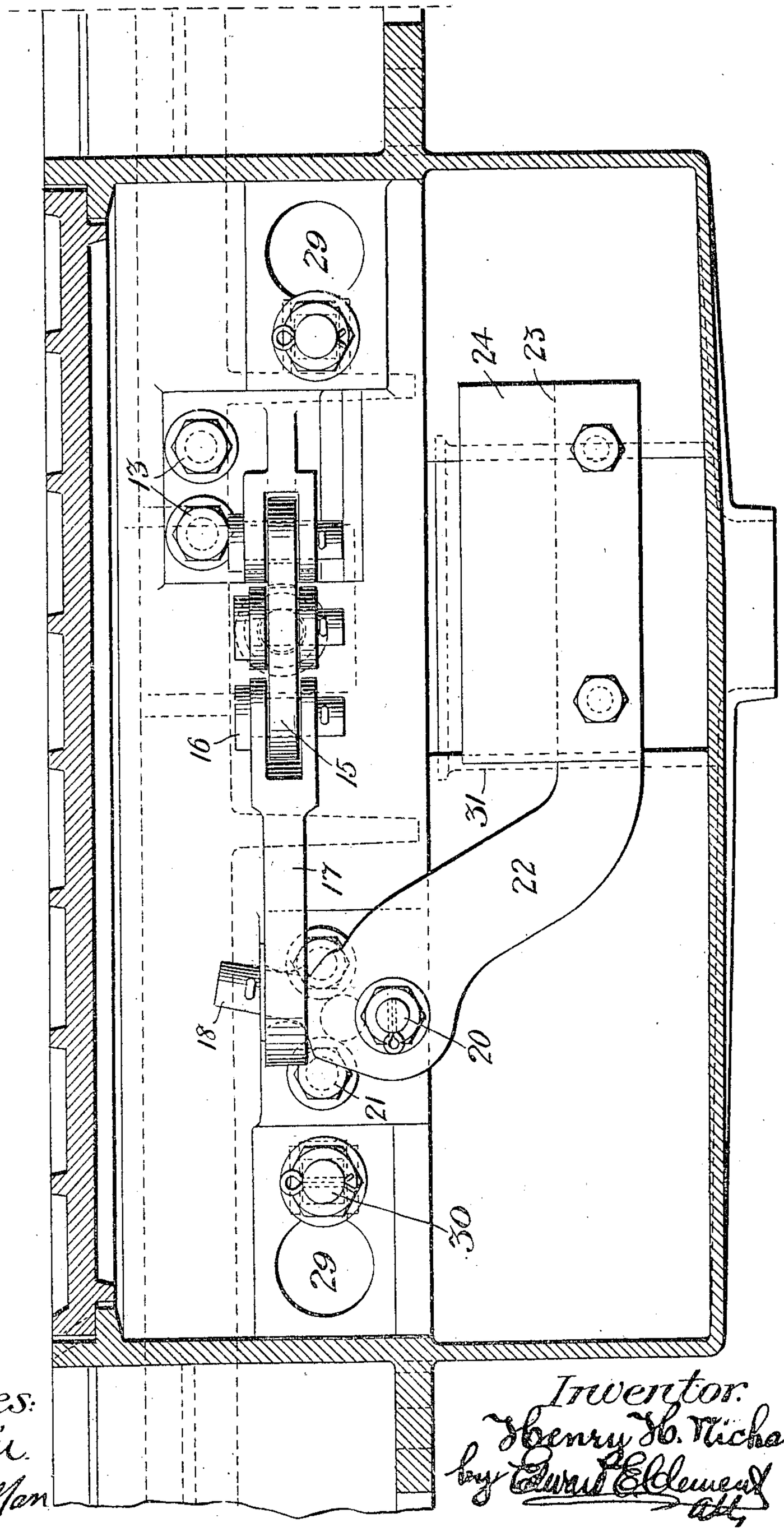
3 SHEETS—SHEET 2.

Fig. 2.



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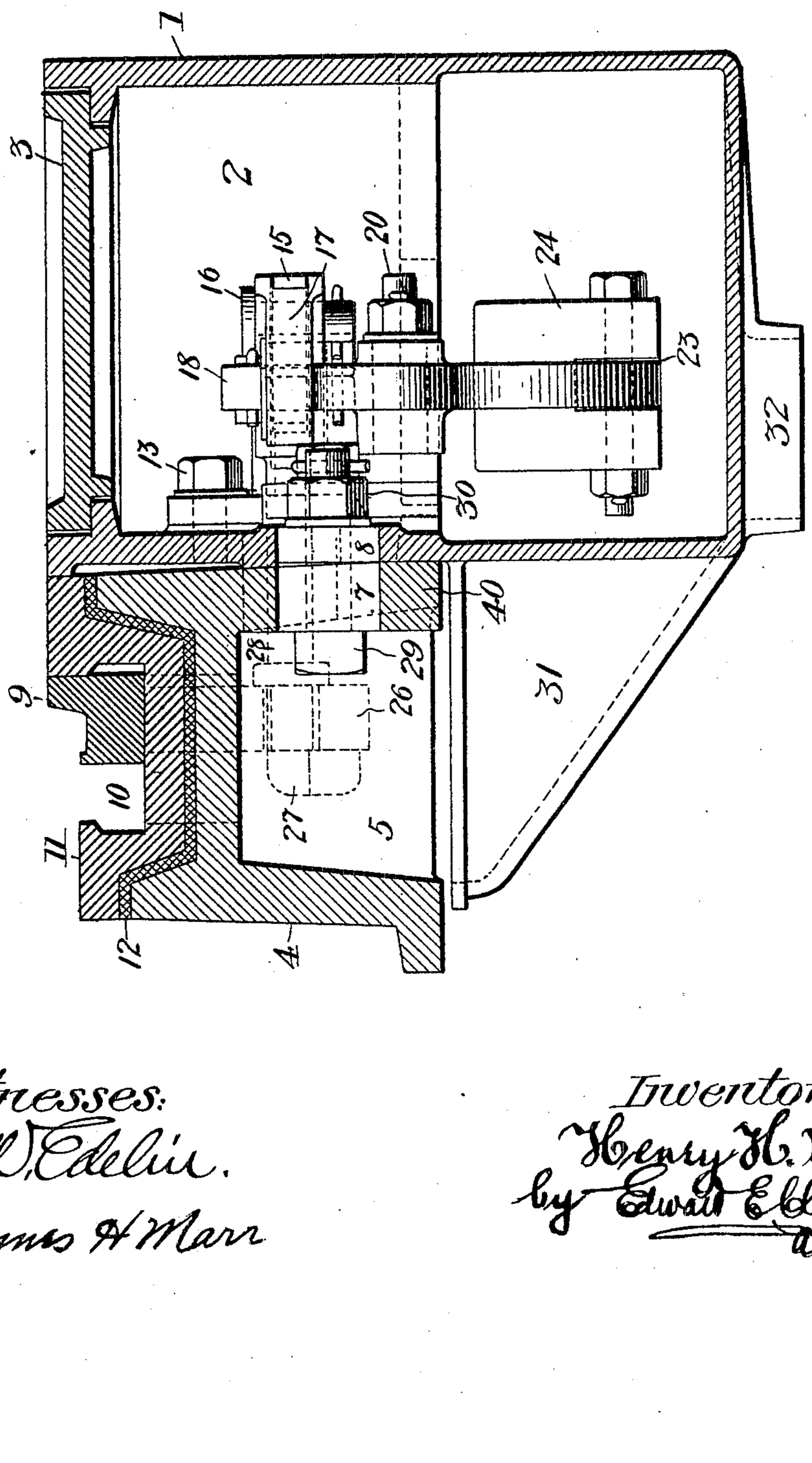
3 SHEETS—SHEET 3.

Fig. 3.



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UNITED STATES PATENT OFFICE.

HENRY H. NICHOLS, OF PHILADELPHIA, PENNSYLVANIA.

SWITCH-LOCKING DEVICE.

No. 812,077. Specification of Letters Patent. Patented Feb. 6, 1906.

Application filed November 11, 1905. Serial No. 286,881.

To all whom it may concern:

Be it known that I, HENRY H. NICHOLS, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in a Switch-Locking Device, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to railway-switch mechanism, and particularly to the type of switches employed in city traction systems. Such switches require to be positively set, the tongues being not only subject to excessive wear, but being liable to damage the treads of the wheels if not properly set. A number of mechanisms have heretofore been designed for the purpose of securing positive movement of switch-tongues between their extreme positions, as shown, for instance, in Letters Patent granted to Henry B. Nichols, as follows: Nos. 795,157, 795,158, and 795,159 of July 18, 1905, and No. 750,996 of February 2, 1904.

My invention constitutes an improvement on the foregoing devices and others, and has for its object the production of a switch-lock which, with its casing, may be readily applied to existing switches, which may be put into or removed from its working position without taking up or damaging the road-bed, and which will be not only simple in its operating parts, but readily accessible for inspection and repairs.

A corollary object is to render the connection of the operating parts and the connections between the casing and the rail structure simple and readily detachable.

Stated in its broadest terms, my invention comprises a rectangular iron box provided with keyhole-slots registering with similar slots in the rail-bed or girder to permit the introduction of securing-bolts; a toggle-lever pivoted at one end on a post inside the casing and at the other end on the short upstanding arm of a heavy bell-crank lever, whose long horizontal arm carries a weight bolted to it, and a link connection forked and straddling one end of the toggle-lever at its outer end and provided with a flange or web at its other end to engage through a keyhole-slot with a drop stud or projection on the switch-tongue.

A supplemental feature of my invention consists in means for draining the casing and the switch bed-plate, so that water will not collect therein.

It will sufficiently appear from the detailed description hereinafter that the construction thus briefly stated attains my objects in a suitable manner.

It will be understood and I am fully aware that divers and sundry changes may be made in proportions and adjustment of parts, &c.; but all such changes which do not alter the essential features of the invention are fully contemplated by me and are intended to be included in the scope of the appended claims.

My invention is illustrated in the accompanying drawings, in which—

Figure 1 is a top plan view with the cover removed. Fig. 2 is a longitudinal section taken on the line *x x* of Fig. 1. Fig. 3 is a vertical transverse section taken on the line *y y* of Fig. 1.

Referring to the drawings, 1 represents a casing having a hollow body 2, forming a chamber for the operating parts of the switch, and a cover 3, which may be removed to gain access thereto. This casing is carried on the rail-support or switch-piece 4, whose webs 5 and 6 form a compartment connecting through an opening with the interior of the receptacle 2.

9 represents the switch-tongue, which is adapted to play in the cut-out portion 10 of the switch-piece 11.

Rigidly secured to one side of the casing by bolts 13 is a base-plate with a pair of ears 14, adapted to receive the short arm 15 of the toggle-lever 16. The other and longer arm 17 of this lever 16 is provided with an elongated aperture adapted to take over a stud 18 upon the bell-crank lever 19, which is pivoted to a stub-shaft or stud 20, secured by bolts 21 to the casing 1 at the opposite end from that to which the ears 14 are secured. The lever 19 has a depending portion 22, which extends obliquely toward one end of the receptacle and then is provided with a straight portion 23, forming a continuation of the depending portion 22, on which is adjustably bolted a weight 24 sufficient to positively throw the switch after the toggle-joint has passed over center between the two extremities of its movement.

Depending from the switch-tongue 9 through the aperture 25 into the compartment formed by the webs 5 and 6 is an arm or stud 26, having at its lower end a keyhole-slot adapted to receive a keyed end 27 of the operating-shaft 28, which projects through the apertures 7 and 8 into the receptacle 2,

where it is provided with a bifurcated end which straddles and is pivoted to the short arm 15 of the toggle-lever 16. The operating-shaft 28, with its keyed end 27, is turned up-side down and inserted in the keyhole-slot of the depending arm 26, and its position is then reversed and the bifurcated end connected to the toggle-lever, so that the keyed end cannot be removed until the bifurcated end has been disconnected from the toggle-lever.

The casing 1 is provided with keyhole-openings 29, which are adapted to receive bolts 30, secured to the switch-support 4. With this construction the casing and its switch-operating parts may be applied to switches now in use by boring holes through the flange 40 to receive the bolts 30.

Projecting outwardly from the casing 1 underneath the compartment formed by the webs 5 and 6 is a trap 31, having communication with the receptacle 2, so that all drainage from the switch-plate may be carried thereto, the bottom of said casing 1 being depressed from all sides toward an outlet-opening 32, which communicates with the sewer.

The operation of the switch is as follows: When the tongue is moved manually or otherwise, as the case may be, from its one extreme position to the other, the depending stud, through the operating-shaft 26, moves the toggle-lever, and thus raises the weighted end of lever 19 until the lever passes the center between its extreme movements, when the weight 24 will drop, throwing the toggle-lever to the opposite of its initial position, thus carrying the switch-tongue positively to the opposite side of the bed-plate 11. Each time the switch-tongue is moved it is only necessary to carry it half the distance, so that the toggle-lever may pass its center and allow the weight to positively throw the lever, and thus the tongue, to the opposite side from which it started.

As stated, one object is to render the connection between the casing and the switch structure simple and detachable, and this is accomplished by passing bolts 30 through the openings 29 of the keyhole-slots and sliding them along until the restricted part of each keyhole-opening is engaged by its bolt and then tightening the bolts. The bolts used in every part of the structure are provided with cotter-pins to prevent the nuts from falling off.

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

1. In a railway-switch, the combination with a movable switch-tongue, of a stud rigidly connected thereto, a toggle-lever pivoted at one end, a connection between said stud and toggle-lever, and a weighted arm adapted to act upon the free end of said toggle-lever to hold the switch-tongue in its extreme positions.

2. In a railway-switch, the combination with a switch-tongue, and a depending stud connected thereto, a toggle-lever pivoted at one end, a weighted lever having connection between the toggle-lever and the depending stud on the switch-tongue whereby the weighted lever may throw the toggle-lever and the switch-tongue and hold them positively in their extreme positions.

3. A switch comprising a switch-tongue, a drop member thereon, actuating means engaging said member, a toggle-lever pivoted at one end and a bodily-movable element connected to the free end of said toggle-lever, said actuating means being secured to the toggle-lever, whereby the bodily-movable element is adapted to throw the switch-tongue through said means and to hold it in its extreme positions.

4. A switch comprising a switch-tongue, a depending stud thereon, a horizontally-movable device pivoted at one end, a connection between said depending stud and said device, and a vertically-movable weight connected to the free end of said device and adapted to throw the switch-tongue and to hold said switch-tongue in its extreme positions.

5. In a switch, the combination with a switch-tongue, of a depending stud secured thereto, a horizontally-movable toggle-lever pivoted at one end, a vertically-movable weight connected to the toggle-lever at its free end, and a connection between said toggle-lever and the switch-tongue whereby when said switch-tongue is moved the toggle-lever is positively held in its extreme positions.

6. In a switch, the combination with a switch-tongue, of a depending stud secured thereto, a horizontally-movable toggle-lever pivoted at one end, a connection between said toggle-lever and the switch-tongue, a weighted lever pivoted at one end and a stud connection between said weighted lever and said toggle-lever.

7. In a switch, the combination with a support, of a switch-tongue mounted to move thereon, a depending stud on said switch-tongue, a casing, a horizontally-movable toggle-lever pivoted within the casing, a connection between said toggle-lever and said switch-tongue, a vertically-movable weighted lever pivoted at one end, and a pin connection between said weighted lever and said toggle-lever whereby the toggle-lever is thrown to either extreme position when the switch-tongue is moved so as to carry it past the center.

8. In a switch, the combination with a support, of a switch-tongue adapted to move thereon, a depending arm upon the switch, a casing, ears secured to said casing, a toggle-lever pivoted at one end of said ears and provided with a long and short arm pivoted in the center, a connection from said short arm

to the switch-tongue, a vertically-movable lever having a weight at one end, a post secured to the casing on which said weighted lever is pivoted, and a stud integral with said weighted lever, and movably secured to the long arm of the toggle-lever whereby when the toggle-lever is moved past the center by the tongue the weight of the lever is adapted to throw the toggle-lever and thus the switch-tongue, through their connection, to the extreme opposite positions.

9. In a switch, the combination with a switch-tongue base-plate, a switch-tongue mounted thereon, and operating parts for said switch, of a casing removably secured to the base-plate adapted to hold said switch parts, a trap adapted to drain said base-plate, and a slanting bottom to said casing and provided with an aperture to drain the casing.

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

HENRY H. NICHOLS.

Witnesses:
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