

(No Model.)

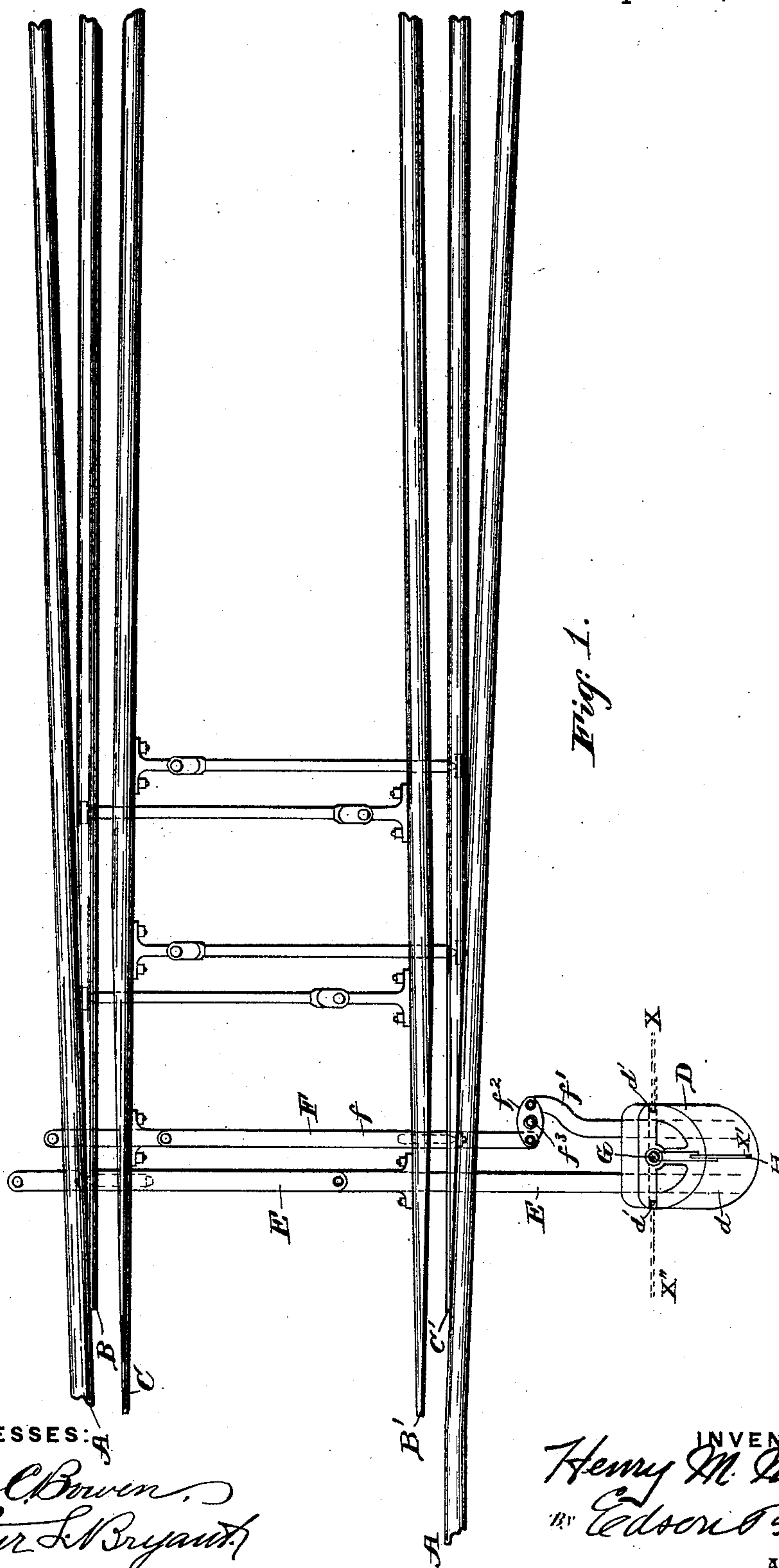
2 Sheets—Sheet 1.

H. M. NORTON.

MECHANISM FOR OPERATING THREE THROW SWITCHES.

No. 410,916.

Patented Sept. 10, 1889.



WITNESSES:

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Arthur L. Bryant.

INVENTOR

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Attorney

(No Model.)

2 Sheets—Sheet 2.

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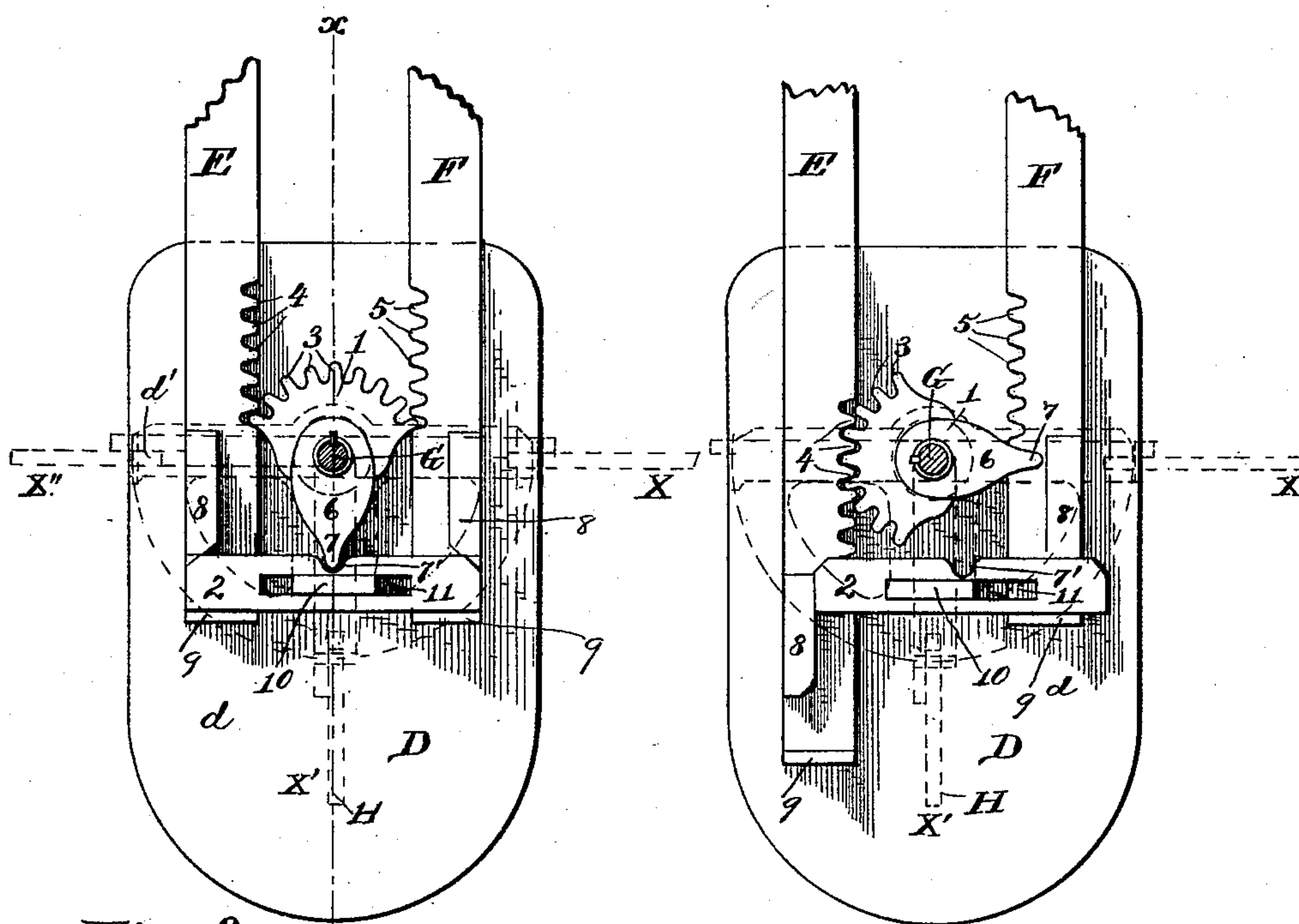


Fig. 2.

Fig. 3.

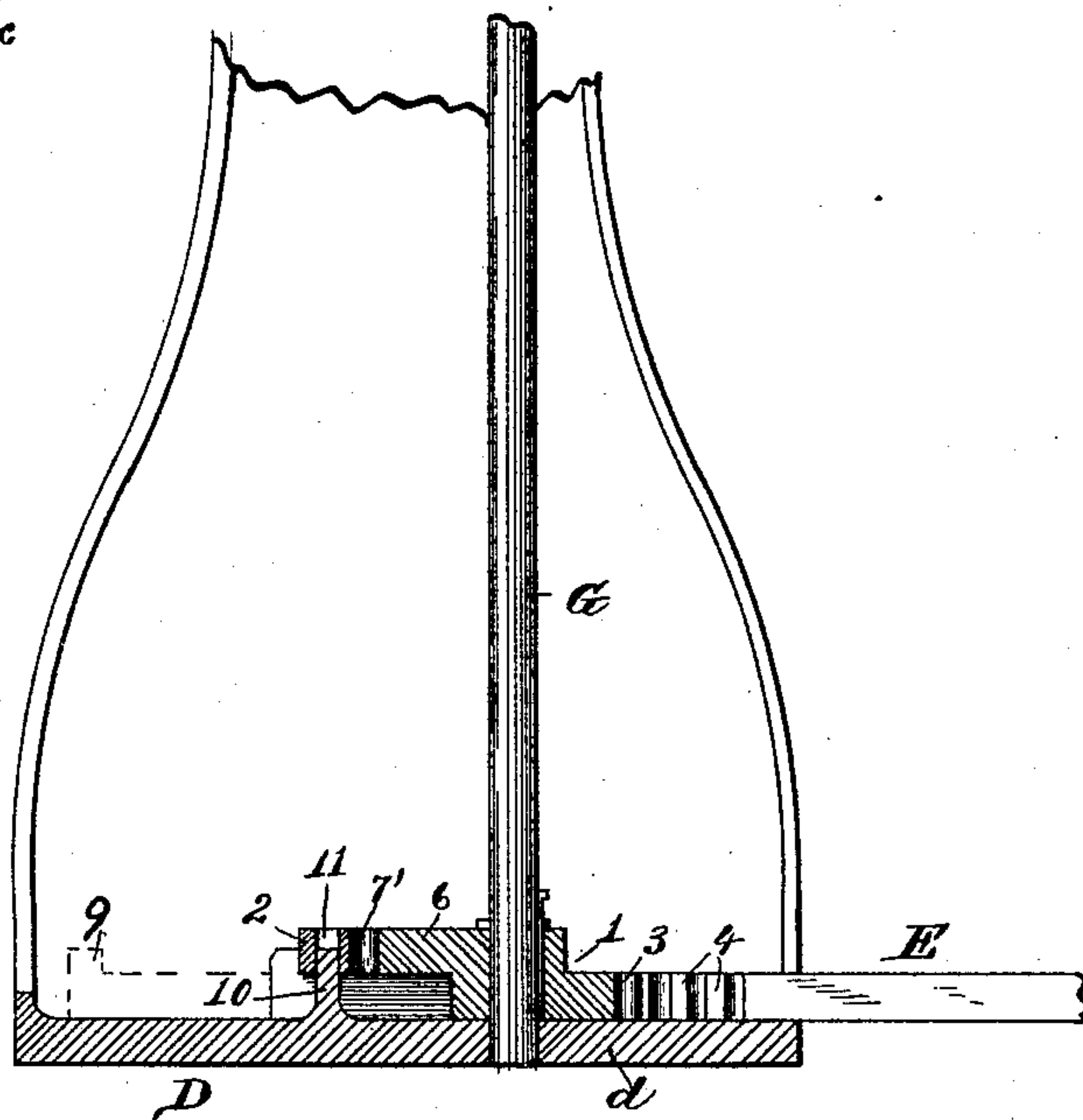


Fig. 4.

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UNITED STATES PATENT OFFICE.

HENRY M. NORTON, OF LOUISVILLE, KENTUCKY, ASSIGNOR OF ONE-HALF
TO EDWARD E. MORRIS, OF SAME PLACE.

MECHANISM FOR OPERATING THREE-THROW SWITCHES.

SPECIFICATION forming part of Letters Patent No. 410,916, dated September 10, 1889.

Application filed May 8, 1889. Serial No. 309,992. (No model.)

To all whom it may concern:

Be it known that I, HENRY M. NORTON, a citizen of the United States, residing at Louisville, in the county of Jefferson and State of Kentucky, have invented certain new and useful Improvements in Mechanism for Operating Three-Throw Switches; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to mechanism for operating railway-switches of that class known to the art as "three-throw switches;" and it has for its object, first, to provide mechanism for throwing at will either one or the other of the two sets of movable rail-points from a single or common switch stand or lever, and, secondly, to provide an automatic locking device which is actuated by the device for moving the rail-points, and is so constructed and arranged as to lock one set of rail-points against movement or displacement when the position of the other set of rail-points is adjusted or changed with relation to the main track.

With these ends in view my invention consists of a revoluble casting which is arranged between a pair of endwise-movable rods that are separately connected to the two sets of rail-points, and said casting has a series of gear-teeth or a single tooth, which are adapted to engage, according to the position of said casting, either one or the other of said rods, and thus move the rod and the set of rail-points to which it is connected, whereby either set of rail-points can be independently moved by simply turning the revoluble casting without affecting the other set of rail-points of a three-throw switch.

My invention further consists in the combination of the endwise-movable rods, each having a fixed stop, an endwise-movable locking-slide normally arranged in rear of the fixed stops on the rods, and the revoluble casting having a projection, arm, or stud which engages with the locking-slide, and is adapted to be reciprocated by the casting in a line at right angles to the plane of movement of said switch-rods, whereby one end of

the locking-slide is withdrawn by the casting from the path of the fixed stop on one of the switch-rods when said rod is moved rearward by the casting to adjust the set of rail-points connected thereto, said locking-slide serving to prevent the other switch-rod from moving, and thus prevent displacement of the other set of rail-points.

My invention further consists of the peculiar construction and arrangement of parts, as well as their combination, as will be hereinafter fully described and claimed.

To enable others to more fully understand my invention, I will now proceed to describe my preferred embodiment thereof in connection with the accompanying drawings, in which—

Figure 1 is a plan view showing a portion of a three-throw switch and my improvement applied thereto. Fig. 2 is a plan view, partly in section, of my improved mechanism for operating the rail-points. Fig. 3 is a similar view showing the position of the parts when one of the switch-rods has been moved rearward to change the position of one set of rail-points with relation to the main track. Fig. 4 is a detail vertical sectional view on the line $x x$ of Fig. 2.

Like numerals and letters of reference denote corresponding parts in all the figures of the drawings.

A A' designate the rails of the main track, and B B' and C C' the two sets of movable rail-points, each set of movable rail-points being suitably connected together to adapt them for simultaneous movement, and all of said rails being arranged and adapted for service as a three-throw switch, in the manner well understood by those skilled in the art to which this invention relates.

At one side of the track and switch is arranged a signal-stand D, and to this stand lead two endwise-movable switch-rods E F, one of which E is connected to the set of rail-points B B' and the other F to the other set of rail-points C C'. The rod F is made in two sections or parts $f f'$, which are connected together by means of a short lever f^2 , fulcrumed at f^3 .

All of these parts are constructed and ar-

ranged in the well-known manner, and no novelty thereon is claimed as my invention, which resides in the mechanism for independently operating either set of movable rail-points at will from the single common switch-stand and for automatically locking one set of rail-points while the other set is being adjusted, and as long as they remain in position which disturbs the main track or breaks the alignment thereof.

I will now proceed to describe the preferred embodiment of my invention, which consists of a revoluble casting 1 and a reciprocating locking-slide 2.

The casting 1 is arranged between the endwise-movable rods E F, near the outer ends thereof, and it is shaped or curved on one side or edge into a segment or arc of a circle, which is provided with a series of teeth 3, which are adapted to mesh, according to the direction in which the casting is turned or the position it occupies, with a series of gear-teeth 4 or 5, respectively, on the inner opposing edges of the switch-rods E F, whereby each rod is adapted to be moved longitudinally when the segmental edge of the revoluble casting gears therewith, as will be readily understood. The revoluble casting 1 is further provided on a plane above the segmental gear face or edge 3 thereof with an eccentric or radial arm 6, which is adapted to engage and actuate a locking device, for a purpose to be hereinafter described. This casting is journaled in a base *d* of the switch signal-stand D, and is also fixed or keyed to the lower extremity of the vertical shaft G, which extends centrally through the stand D, and has an operating-lever II secured thereto at such a point at the upper end of the switch-stand that it is adapted to fit in notches *d'* in the stand to lock the lever in either of its several positions against displacement.

The endwise movable or reciprocating locking-slide 2 is arranged in a horizontal position in rear of the revoluble casting, and in its front edge, near its middle, said slide has a notch or recess 7' formed therein to receive the extremity of the radial arm 7 for moving the slide at right angles to the line or path of the switch-rods, and simultaneously with the movement of said casting and either of the switch-rods. It is obvious, however, that the single notch and arm may be replaced by a gear-segment on the casting and a series of gear-teeth on the slide for operating the latter at right angles to and simultaneously with the switch-rod, and I would therefore have it understood that I do not restrict myself to the particular mechanism herein shown and described for operating the locking-slide from the revoluble casting.

Each switch-rod is further provided at its rear end with two fixed stops 8 9, which are spaced apart a distance equal to the width of the locking-slide, which rests on the upper side of the switch-rods, and when the switch

is set for main line, as indicated in Fig. 1, the ends of the locking-slide fit between the stops 8 9 on both switch-rods to hold the rods against movement. (See Fig. 2.) The locking-slide is limited to endwise movement and guided in its reciprocating movements by means of a longitudinal guide 10, which is fixed on or cast with the base *d* of the switch signal-stand, and fits in a longitudinal slot 11 in the slide, the slot being of such length as to permit the slide to move the required distance in either direction.

This being the construction of my invention, the operation thereof is as follows: When the switch is set for main line, as indicated in Fig. 1, the revoluble casting lies between the switch-rods and the locking-slide fits between the fixed stops on the switch-rods and holds both of the rods from endwise movement in either direction. When it is desired to adjust the set of rail-points B B' so that one of the side tracks aligns with the main track, the lever II is turned to the position X. (Indicated by dotted lines in Figs. 1 and 2.) This movement of the lever turns the shaft G and the revoluble casting, so that the latter gears with the switch-rod E and draws the latter rearwardly to properly adjust the rail-points B B', and simultaneously with the rotation of the casting its radial arm moves the locking-slide away from the rod E a sufficient distance to allow the stop 8 thereon to slide past the end of said locking-slide, whereby the switch-rod E is operated without interference from the locking-slide, while at the same time the slide is adjusted to lock the other switch-rod F against movement and prevent displacement of the rail-points C C'. The locking-slide is moved a distance just sufficient to enable the stop 8 to clear the end of the slide, and said slide bears against the stop 8 to prevent lateral play of the reciprocating switch-rod, whereby all the parts are securely held in their several positions.

To restore the main line, the lever II is returned to its normal position (indicated at X' in Figs. 1 and 2) to operate the parts in the reverse manner to that just described, and into the positions shown in Figs. 1 and 2. To adjust the other set of rail-points C C', the lever II is moved in the reverse direction to the position X'', which turns the revoluble casting to engage the rod F and move it rearward to properly adjust the rail-points C C'. The locking-slide is withdrawn by the casting 1 out of the path of the stop 8 on the rod F simultaneously with its rearward movement, to permit it to slide without interference from the locking-slide, and at the same time hold the other rod E from movement, the operation of the parts being exactly similar when the lever is turned in either direction.

It will be observed from the foregoing description, taken in connection with the drawings, that I have provided simple and effective mechanism for operating either of two

sets of rail-points of a three-throw switch without interfering with each other from a single or common switch-stand, and that the set of rail-points which remain at rest are securely locked or held in place against accidental displacement.

I would have it understood that I do not restrict myself to the particular form and arrangement of the switch-stand and the rods E F herein shown and described in connection with my invention; nor do I confine myself to the details of construction and form and proportion of parts shown and described as an embodiment of my invention, as I am aware that changes therein can be made without departing from the spirit or sacrificing the advantages of my invention.

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

1. The combination, with the movable rail-points, of the switch-rods connected to said points and having the teeth on their opposing edges and a revoluble casting located between said rods and adapted to reciprocate either rod, according to the direction in which said casting is turned, substantially as and for the purpose described.

2. The combination, with a reciprocating switch-rod, of a revoluble casting for moving said rod endwise and a locking device arranged to be operated by the casting to normally engage the switch-rod and to release the same when the rod is moved, substantially as and for the purpose described.

3. The combination, with a pair of reciprocating switch-rods, of a locking device normally engaging with said rods to lock them against movement and a revoluble casting adapted to move one of said rods and at the same time disengage said locking device from said rod without releasing the locking device from the other rod, substantially as and for the purpose described.

4. The combination, with a pair of reciprocating switch-rods, of a revoluble casting for moving either of said rods and a locking device arranged to travel in a line transversely across the path of said switch-rods and adapted to be operated by said casting to lock one rod against movement when the other rod is actuated by said casting, substantially as and for the purpose described.

5. The combination of the reciprocating switch-rods, a revoluble casting for moving either of said rods at will, and a locking-slide connected with said casting and limited to movement at right angles to the line of movement of said rods, said slide being normally engaged with the rods and adapted to be withdrawn from engagement with one rod when it is moved without releasing the other rod, substantially as and for the purpose described.

6. The combination of the reciprocating switch-rods having the fixed stops, a revoluble casting adapted to operate either of said rods and having a projection or arm, and a locking-slide movably fitted at one side of the stops on the rods and having the arm or projection of the casting engaging therewith, substantially as and for the purpose described.

7. The combination of the switch-rods having the fixed stops, a longitudinally-slotted locking-slide fitted between the stops on each rod, a stationary guide fitted in the slot of the slide, and a revoluble casting adapted to engage the locking-slide when it is turned in either direction to operate one or the other of the switch-rods, substantially as and for the purpose described.

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

HENRY M. NORTON.

Witnesses:

H. E. LEWIS,
C. W. WOODS.