

No. 633,101.

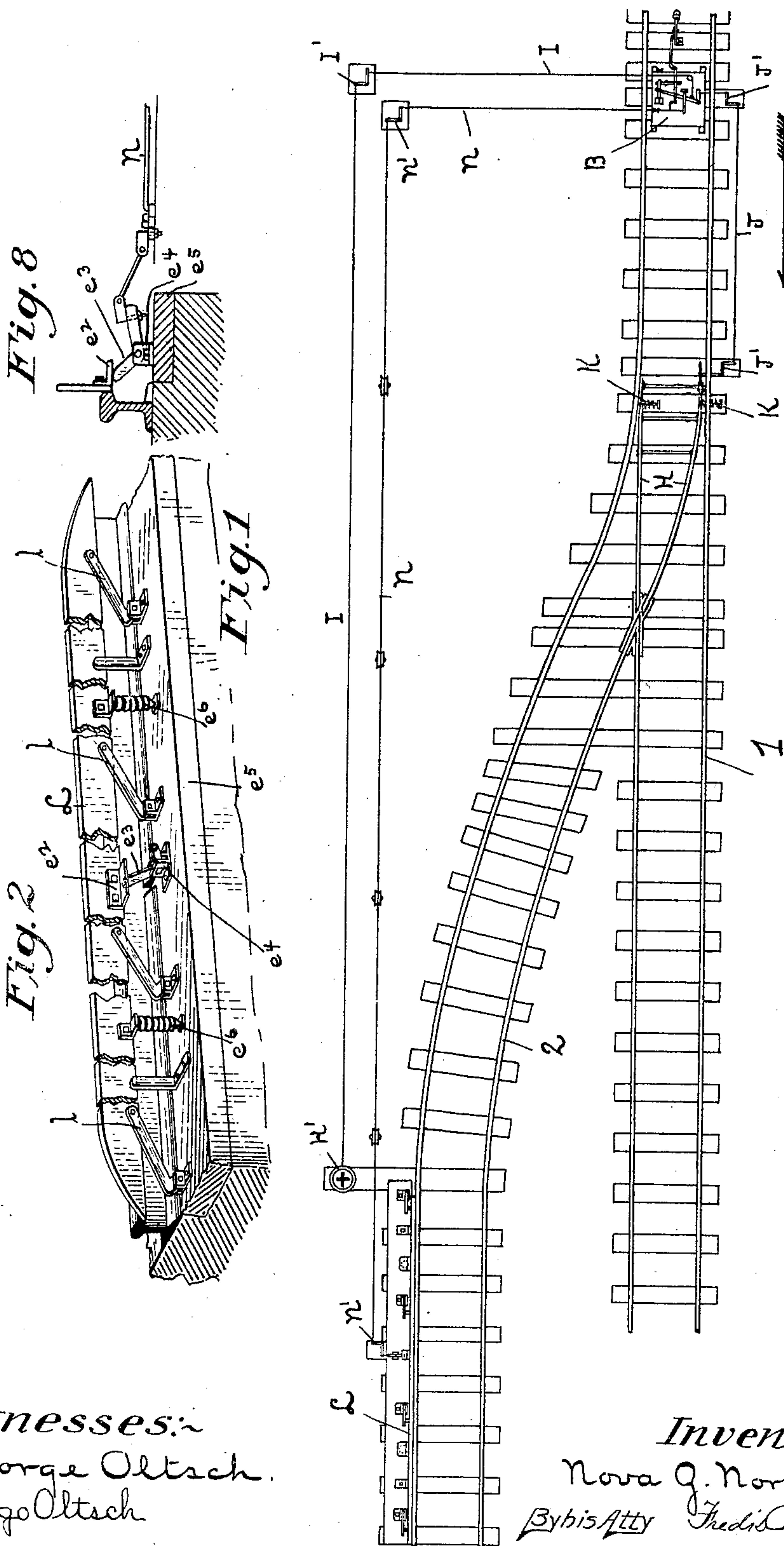
Patented Sept. 12, 1899.

N. Z. NORRINGTON.
RAILWAY SWITCH.

(Application filed Mar. 27, 1899.)

(No Model.)

2 Sheets—Sheet 1.



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2 Sheets—Sheet 2.

Fig. 3

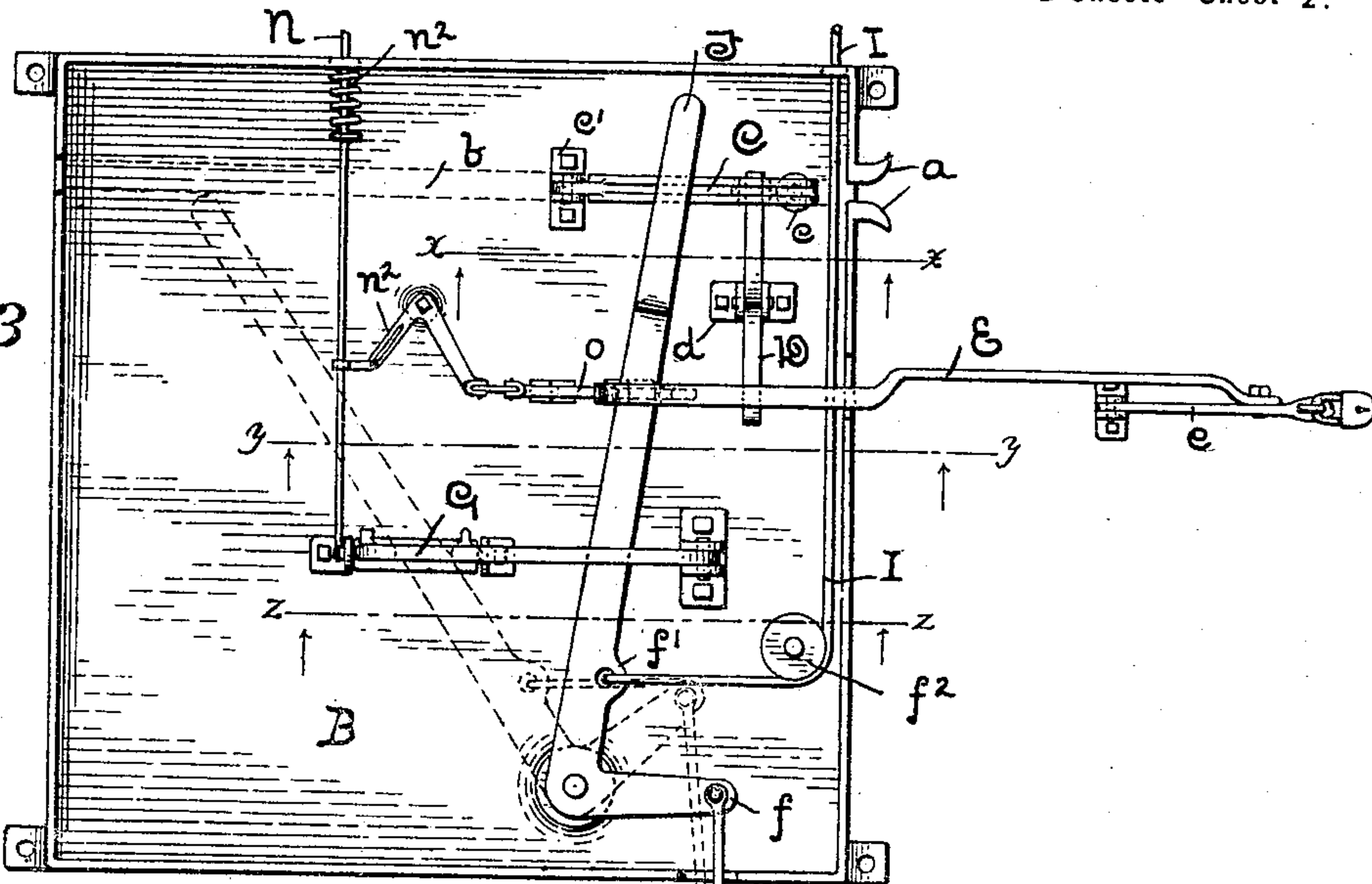


Fig. 4

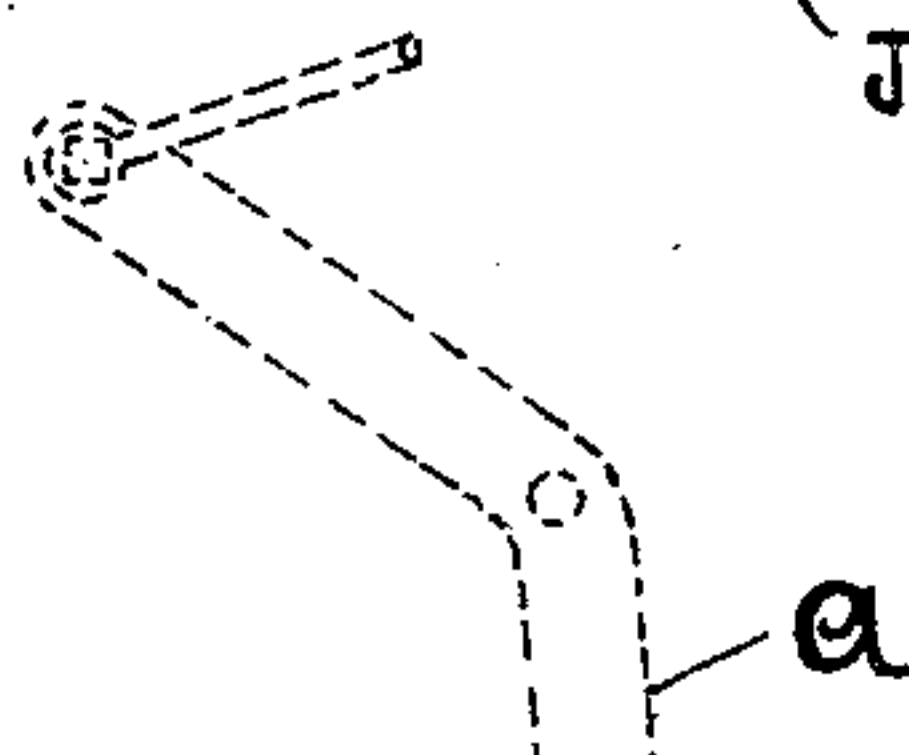


Fig. 7

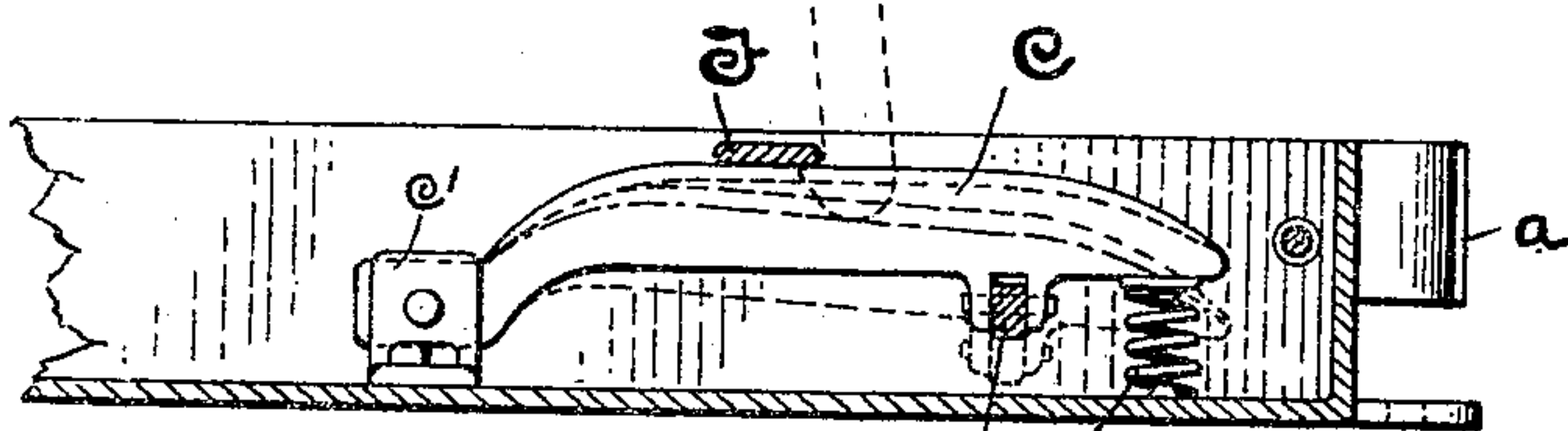
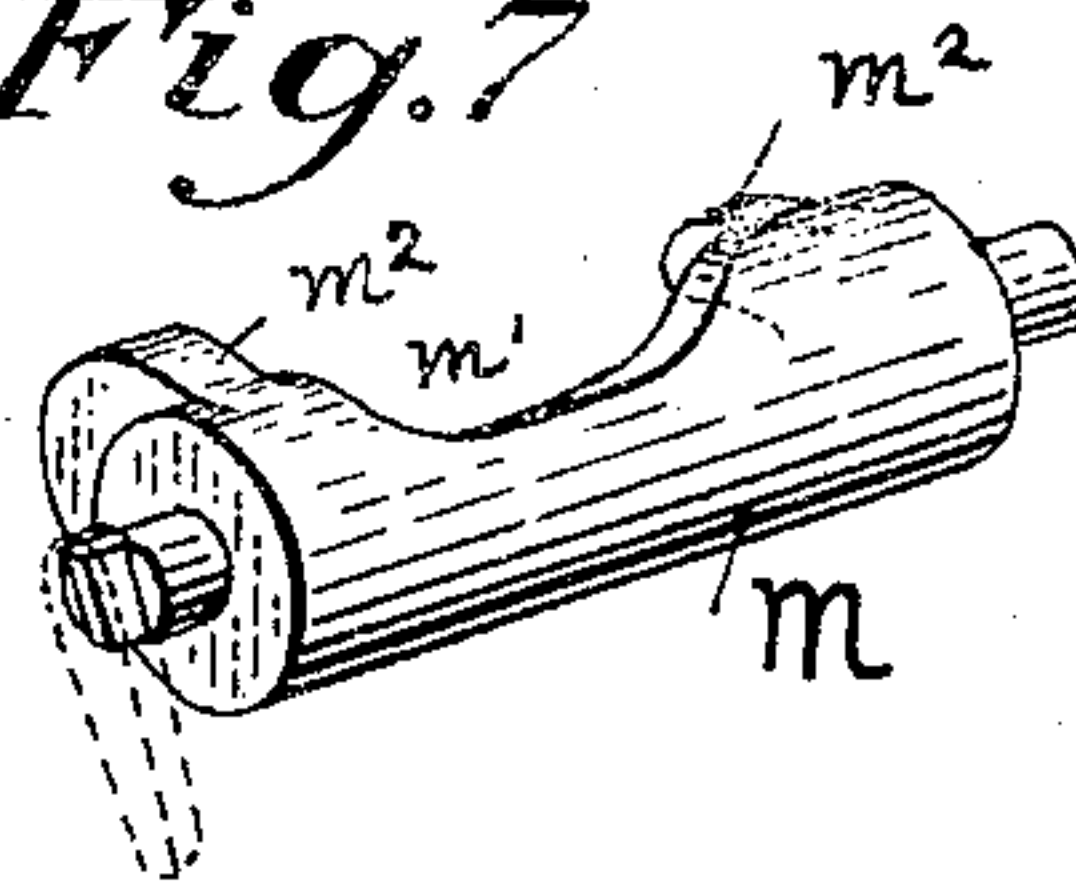


Fig. 5

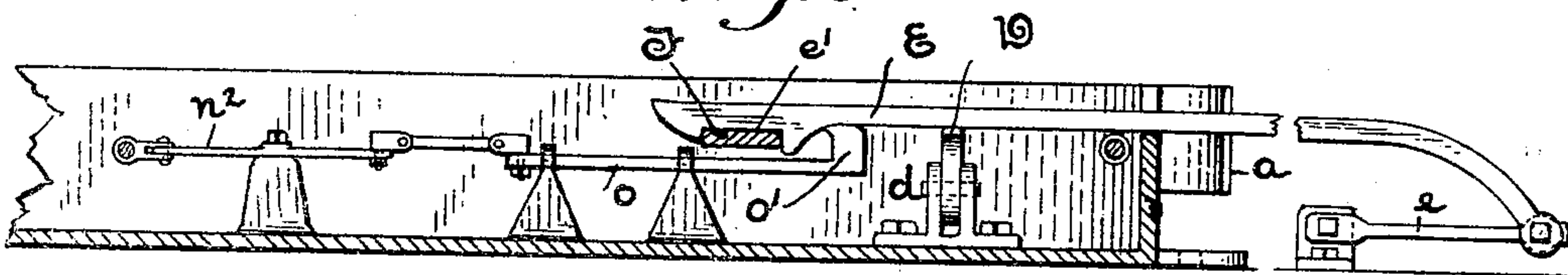
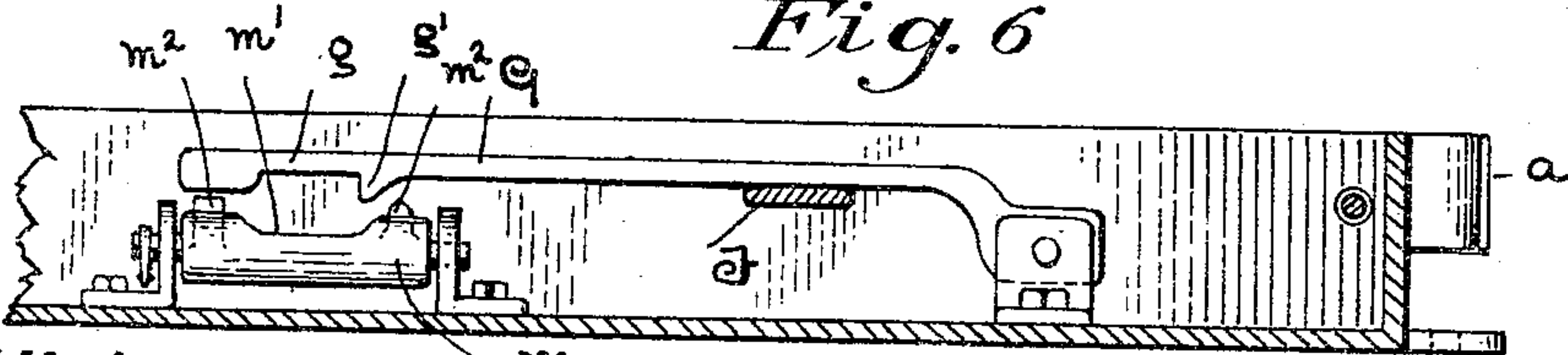


Fig. 6



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UNITED STATES PATENT OFFICE.

NOVA Z. NORRINGTON, OF SOUTH BEND, INDIANA.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 633,101, dated September 12, 1899.

Application filed March 27, 1899. Serial No. 710,615. (No model.)

To all whom it may concern:

Be it known that I, NOVA Z. NORRINGTON, a citizen of the United States, residing at South Bend, in the county of St. Joseph and State of Indiana, have invented certain new and useful Improvements in Railway-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 improvements in railway-switches, and especially to that class of switches which is designed to be operated by means or devices arranged in the cab of a railway-locomotive and under the control of the engineer.

The objects of my improvements are to provide a switch of this character which will be easy of manipulation, certain and reliable in its operation, in which all ordinary contingencies are provided for, which may be operated by the ordinary ground switch-lever, which will not require any change of construction in the rails, switches, or track proper, and in which the principal parts will be under cover and therefore protected from the elements and improper manipulation or meddling. Having these objects in view I have produced a switch which will be hereinafter described in detail and which is illustrated in the accompanying drawings, forming a part of this application, in which—

Figure 1 is a plan view of a main track and a side track with a general view of my appliances for operating the switch. Fig. 2 is a perspective view of a depression-plate. Fig. 3 is a plan view of a switch-throwing mechanism within a casing placed between the rails of the main track, as shown in Fig. 1. Fig. 4 is a longitudinal sectional view on line *xx* of Fig. 3. Fig. 5 is a longitudinal sectional view on line *yy* of Fig. 3. Fig. 6 is a longitudinal sectional view on line *zz* of Fig. 3. Fig. 7 is an enlarged detail view of a cam for releasing the switch-throwing lever, and Fig. 8 is an enlarged detail sectional view of depression-plate and connections.

The construction and arrangement of the main track 1 and the side track 2 and the switch-rails H are as commonly employed. The switch is normally held open from the

main track by springs K, which are secured to the rails and the tie under the rails and arranged in a well-known manner to produce the required result, as shown in Fig. 1.

Between the rails of the main track a short distance in advance of the switch is horizontally placed a rectangular box or casing B, which is firmly bolted to the ties. In the sides of this casing are openings suitable for parts to be described, and extending longitudinally through the top or upper side of the casing is a slot *b*, as shown in dotted lines in Fig. 3, for a purpose which will appear. At the entrance to the slot *b* there extend from the side of the casing two flaring lips or lugs *a*, the space therebetween corresponding to the width of the slot with which it exactly registers.

Suitably arranged and pivoted under the locomotive-cab and connected with rods and levers convenient for use by the engineer is a lever A, (shown by dotted lines, Fig. 4,) the lower end of which is rounded and made in hook form. Said lever is so formed, arranged, and connected that its lower end may be raised or lowered as required, and any means suitable for effecting such functions may be employed. When the engineer desires to throw the switch so as to close and permit his train to run onto the siding, he depresses the lower hooked end of the lever A, which as the train advances in the direction indicated by the arrow, which in this connection we will designate as "up the track," passes between the lugs *a* into the casing B through the slot *b*, and thereupon sets in operation mechanism, the construction, arrangement, and functions of which I will now describe.

Within the casing B, directly under the slot *b* and positioned near the down-track side of said casing, is a horizontally-disposed lever C, pivoted to a block or plate *c'*, secured to the bottom of the casing. This lever is formed with its upper side curved upwardly from its front to its rear end, and said side is longitudinally channeled, as shown by dotted lines, Fig. 4. The front end of the lever is supported by a spiral spring *c*, the lower end of which rests on the bottom of the casing, as clearly shown in Fig. 4. Secured to suitable lugs on the under side of the lever C is a second lever D, which is placed at right angles

to the lever C and is pivoted to a fulcrum-plate d , secured to the bottom of the casing. Resting on the free end of the lever D is a bar E, one end of which is connected with a switch-throwing rod e , connected with a ground switch-stand, which may be used for operating the switch manually. The under side of the bar E, near its rear end, is provided with an elongated notch e' , and the extreme end of said bar is in the shape of a hook, as fully shown in Fig. 5. When the switch is in its normal position, the notch e' fits over a lever F, which is the main operating-lever, and is pivoted in the casing at a point opposite the lever C and extends across the casing, having its free end over the lever C and in the path of the traveling lever A. The lever F has at its pivot end a crank-arm f , the outer end of which is connected with the switch H by means of the rod J and cranks J' J', as shown in Fig. 1. Resting on the lever F at a point about midway between its pivot and the rod E is a locking-lever G, one end of which is pivoted to a suitable plate secured to the bottom of the casing and the opposite or free end of which is provided with a notch g and a lug g' . The notch g is directly over a depression m' in a cam-faced roller M, which has suitable bearings in uprights bolted to the bottom of the casing. On each side of the depression m' lugs m^2 are formed on the face of the roller M, for a purpose to be explained.

To indicate to the engineer in his cab that the switch has been thrown by the lever A, I provide a mechanism as follows: Near the pivoted end of the lever is an extension f' , which is perforated to receive one end of a wire or rod I, which passes over a roller f^2 , mounted on the casing, is connected with an angle-iron I', and extends to the switch-stand H', which is adapted to turn and display a red or a white light or suitable semaphore-arms. It will be apparent that when the lever F is thrown by the lever A to the position indicated by dotted lines in Fig. 3 the rod or wire I will be drawn forward and thus operate the angle-irons and the revolving switch-stand H' in a well-known manner. When the lever F is released by the train leaving the siding, the springs K will return the switch to its normal position and necessarily carry the lever F back to its initial position by the action of the rods J, angle-irons J', and arm f .

Before the lever F can return to its initial position it must be released from the locking-lever G, and this is accomplished in the following manner: Near the outside rail of the siding is placed the depression-plate L in a position to be acted on by the face of the car-wheels. This plate is normally held above the top of the rail by springs e^6 , and is supported by links e , which turn in bearings secured to the tie or bed-plate below the plate L, and the ends of the latter are sloping to permit the running on and off of the wheels without jar or shock. Secured to the middle

of the plate L is a bracket e^2 , against the under side of which bears one end of an angle-iron e^3 , which is fulcrumed in a plate e^4 , bolted to the tie or bed-plate e^5 , as shown in Figs. 2 and 8. The opposite end of the angle-iron e^3 is connected with a rod n , which in turn is connected with angle-irons N' N' and passes through the casing B, where its end is connected with the shaft or axle of the cam-roller M. Just inside of the casing B a coil-spring n^2 is secured to the rod n in a manner to draw said rod within the casing. When the train passes onto the siding and depresses the depression-plate L, it causes the end of angle-iron e^3 which comes in contact with bracket e^2 , to be pressed down and its opposite end up, which imparts a longitudinal motion to the rod N and the lever of cam-roller M. As one of the lugs m^2 is directly under the end of the locking-lever G it will raise same and release the lever F, and as this may occur before the entire train has passed onto the siding I provide the second lug to engage the lever G, but which will not hold it after all pressure is taken from the plate L and the springs are permitted to have free action. It will be noted that the lugs m^2 are differently placed on the periphery of the roller so that they act alternately, the second one not releasing the lever G until all pressure has been taken from the plate L.

In order to provide for a train backing from a switch onto the main track, I connect with the rod n , within the casing B, an angle-iron n^2 , which is fulcrumed on a suitable stand secured to the bottom of the casing. The opposite end of the angle-iron has a link connection with a rod o , on the farther end of which is a hook o' , the upperside of which is above the plane of the rod, so that when it comes in contact with the end of the lever E or the lug on the under side of said lever it raises the lever and catches the lever F and draws it forward and permits the flanges of the car-wheels to throw the switch in a well-known manner, so that the train may pass onto the main track. When the entire train has passed the switch, the springs K close the switch and it is ready for the next train.

It will be apparent that every movement of the lever F is communicated to the switch-stand H' by the means described and that thereby the position of the switch is apparent to the engineers at all times.

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

1. A switch-operating mechanism composed of a suitable casing, a switch-throwing lever mounted in said casing and connected with the switch by rods and angle-irons, a lever arranged under said operating-lever and formed to guide a traveling lever secured to a locomotive-cab, said traveling lever and means for operating same, and means for locking the switch-throwing lever in its thrown position, substantially as set forth.

2. A switch-operating mechanism composed of a suitable casing having openings in its sides and top, a switch-throwing lever mounted in said casing and connected with the switch by rods and angle-irons, a lever supporting said switch-throwing lever and having a channel in its upper side, a traveling lever secured to a locomotive-cab and adapted to pass through said channel, means for operating said traveling lever from a cab, and means for locking the switch-throwing lever in its normal and in its thrown positions substantially as set forth.

3. A switch-operating mechanism composed of a suitable casing having openings in its sides and top, a switch-throwing lever mounted in said casing and connected with a switch by rods and angle-irons, a traveling lever secured to a locomotive-cab and adapted to engage and throw the switch-throwing lever, means for operating said traveling lever from a locomotive-cab, and means for locking and unlocking the switch-throwing lever in its thrown and its normal positions.

4. A switch-operating mechanism composed of a suitable casing having openings in its sides and top, a switch-throwing lever mounted in said casing and connected with a switch by rods and angle-irons, a traveling lever secured to a locomotive-cab and adapted to engage and throw the switch-operating lever upon the locomotive moving forward, means for operating said lever from the cab, gravity locking-levers for the switch-lever and means for releasing said levers automatically by the movement of a train of cars or a single car, substantially in the manner set forth.

5. A switch-operating mechanism com-

posed of a suitable casing having openings in its sides and top, a switch-throwing lever mounted in said casing and connected with a switch by rods and angle-irons, a traveling lever secured to a locomotive-cab and adapted to engage and throw the switch-operating lever upon the locomotive moving forward, means for operating said traveling lever from a locomotive-cab, locking-levers for the switch-lever, said locking-levers arranged within the casing, and means for releasing said locking-levers automatically consisting of a depression-plate adapted to be acted on by the car-wheels, and means connecting said depression-plate with said locking-levers whereby said levers may be released from the switch-lever, substantially as set forth.

6. A switch-operating mechanism composed of a suitable casing having openings in its sides and top, a switch-throwing lever mounted in said casing and connected with a switch by rods and angle-irons, a traveling lever secured to a locomotive-cab and adapted to engage and throw the switch-lever, means for operating said traveling lever from a cab, locking-levers for the switch-lever, means for automatically releasing said levers consisting in part of a depression-plate adapted to be acted upon by the car-wheels, and means connected with the switch-lever for indicating the position of the switch, substantially as set forth.

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

NOVA Z. NORRINGTON.

Witnesses:

GEORGE OLTSCH,
MAGGIE OLTSCH.