

No. 616,120.

Patented Dec. 20, 1898.

E. S. LEAYCRAFT.
RAILWAY SWITCH.

(Application filed Feb. 3, 1898.)

(No Model.)

2 Sheets—Sheet 1.

Fig. 1,

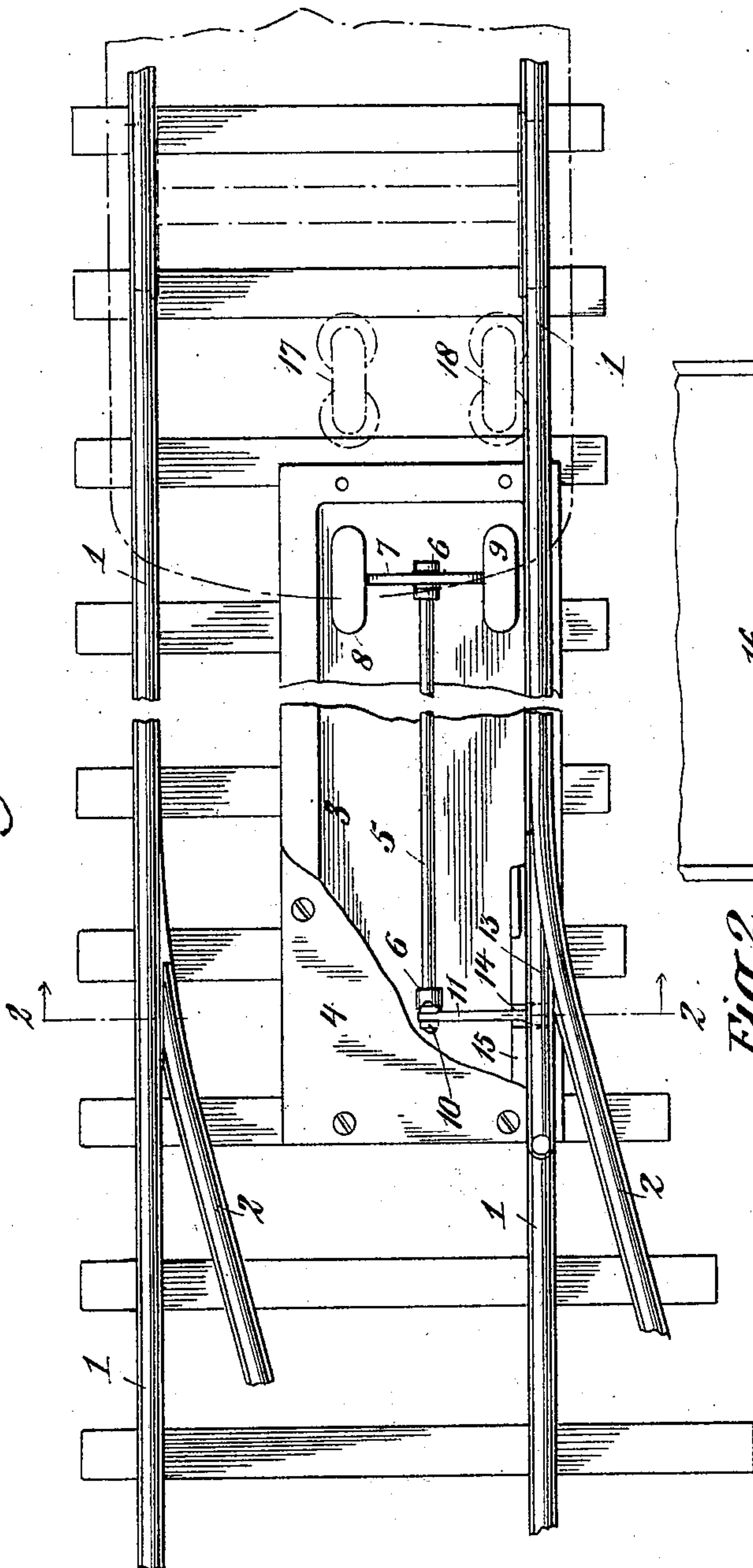
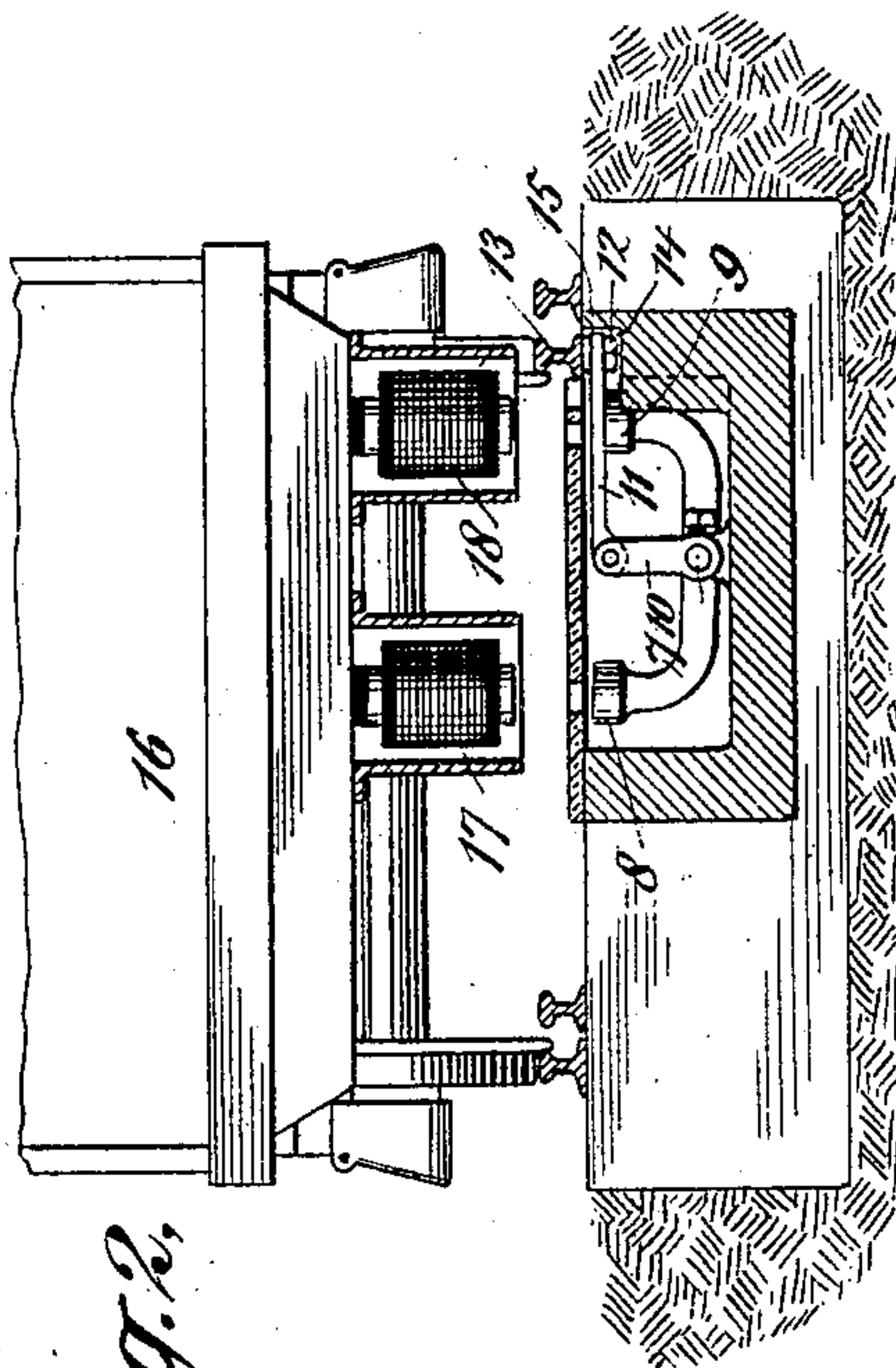


Fig. 2,



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No. 616,120.

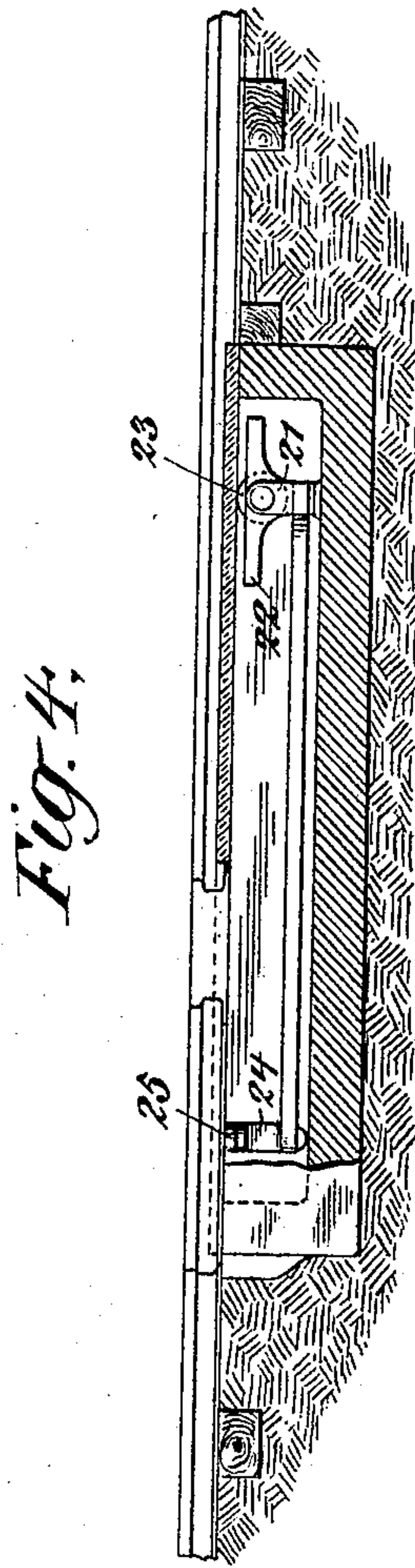
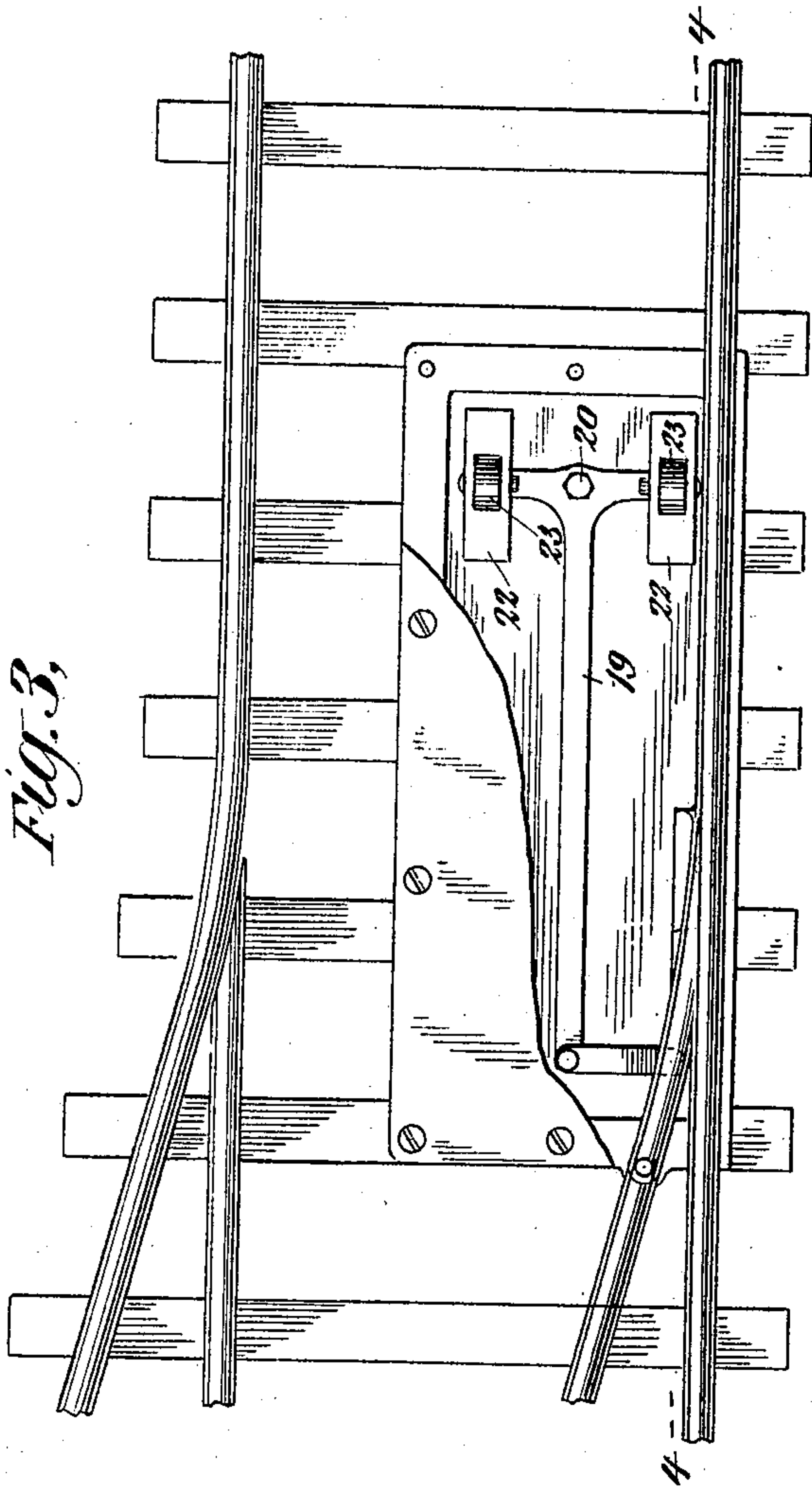
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UNITED STATES PATENT OFFICE.

EDWIN S. LEAYCRAFT, OF JERSEY CITY, NEW JERSEY.

RAILWAY-SWITCH.

SPECIFICATION forming part of Letters Patent No. 616,120, dated December 20, 1898.

Application filed February 3, 1898. Serial No. 668,955. (No model.)

To all whom it may concern:

Be it known that I, EDWIN S. LEAYCRAFT, a citizen of the United States, residing at Jersey City, in the county of Hudson and State of New Jersey, have invented a new and useful Improvement in Railway-Switches, of which the following is a specification.

The present invention relates to railroad-switches, and while it may be used in connection with any railroad system it is more particularly intended for use in an electric railway, and more especially is designed for street-railways.

The object of the invention is to provide a railroad-switch which may be operated by the motorman or engineer on the car without stopping the same.

Another feature of the invention is that the switch mechanism is located beneath the track-surface or the surface of the street, as the case may be, and forms no obstruction to the ordinary street traffic and cannot be operated except at the will of the motorman or engineer on the car.

In the drawings I have illustrated a construction embodying my invention, in which—

Figure 1 is a plan view, certain parts being broken away. Fig. 2 is a section along line 2 2 of Fig. 1, showing a portion of a car on the track. Fig. 3 is a view similar to Fig. 1, but showing a modified form of the invention. Fig. 4 is a sectional view along line 4 4 of Fig. 3.

Like numerals of reference refer to like parts throughout the several views of the drawings.

Referring to the drawings in detail, 1 designates a main railroad-track, from which branches a second track 2. At the point where the second track branches from the first is located the switch, which is the subject of the present invention. This switch, while it may be varied in its details of construction, consists of a movable switch-tongue and mechanism located beneath the level of the track or street surface for moving the switch, said mechanism being magnetically operated by devices carried on the vehicle moving along the track.

As shown in the drawings, the switch mechanism is located in a casing or box 3, which in the case of a street-railway is located below the street-surface and has its cover or

top plate 4 flush therewith. The cover or top plate is made of any suitable non-magnetic material, such as bronze, and may be provided with apertures 4' over the armatures, if desired, to enhance the action of the operating-magnets.

Referring now particularly to Figs. 1 and 2, there is located inside the switch-box a shaft 5, supported in journals 6. Upon one end of said shaft is secured a rocking arm 7, the extremities of which are bent up toward the top plate. Upon each of the upturned ends of the arm 7 is carried a piece of magnetic material of the desired size, constituting an armature, one of which I have designated by the numeral 8 and the other by the numeral 9. To the opposite end of the shaft 5 is secured an arm 10, to which is connected a link 11, the other end of which is secured in any suitable manner, as by a nut and bolt 12, to the switch-tongue 13, said bolt 12 working in a slot 14, cut in the plate 15, upon which the switch-tongue rests.

Carried by the car or other vehicle moving along the tracks are suitable magnetic devices, which are caused to attract one or the other of the armatures 8 or 9 to operate the switch-tongue in the desired direction. In the drawings I have shown a portion of a car 16, carrying on the under surface thereof electromagnets 17 and 18, one of which, 17, is in line with and comes directly over the piece 8 when the car passes over the switch mechanism, and the other, 18, occupies a similar position relatively to the piece 9. These electromagnets, it will be understood, may be hung or secured to the under surface of the car in any desired manner, so as to be as free as possible from the oscillation of the car, and are to project downwardly a sufficient distance, so that their poles will be close enough to the top plate 4 to attract the corresponding magnetic piece or armature underneath.

Of course the electromagnets may be energized from any suitable source, as by a shunt from the main circuit on which the car is operated in the case of a car operated by electricity, or by an independent source where the car is operated by other means than electricity. It will be understood that the magnets are separately connected to a suitable switch mechanism, so that either one or the

other may be thrown into circuit at the will of the operator.

The operation of the device will now be plainly apparent. As the car approaches a switch the motorman or engineer throws into circuit the desired electromagnet to effect the desired movement of the switch. Assuming the car is approaching the switch, Fig. 1, and it is desired to take the branch 2, the motorman will throw into circuit the magnet 18. When the car comes over the switch mechanism and the magnet is directly over the piece 9, it will attract the same, and through the connections heretofore described will open the switch.

Of course the length of the rod 5 and the location of the pieces or armatures 8 and 9 in advance of the switch-tongue will be such as to insure the operation of the switch-tongue before the car reaches it. Also it will be apparent that the size of the pieces 8 and 9 will be such as to insure the magnets operating them, these being simply matters of mechanical adaptation to the necessities of the traffic with which the switch is intended to be used.

In Figs. 3 and 4 is illustrated a modification in which a T-arm or three-armed lever 19 is pivoted at 20, each end of the short arms of which carries an upstanding arm 21, provided with a strip or piece of magnetic material 22 and a friction-roller 23, bearing upon the under side of the top plate 4. The end of the long arm of the T carries an upwardly-extending arm 24, to which is connected a link 25, the other end of which is secured to the switch-tongue. The operation of this device is similar to that shown in Figs. 1 and 2, except that in this construction the oscillation effecting the movement of the switch-tongue is horizontal instead of vertical.

What is claimed as new is—

1. A railway-switch, consisting of a switch-tongue, an armature operated by a magnetic device carried on a vehicle moving along the railroad-track, an arm carrying said armature and oscillating transversely of the railroad-track, and a mechanical connection between said switch-tongue and armature whereby movements of the latter will be transmitted to the former, substantially as specified.

2. A railway-switch, consisting of a box or casing provided with a top plate flush with the street-surface, a switch-tongue, an armature operated by a magnetic device carried by a vehicle moving along the railroad-track, said armature being located in a box or casing, an arm carrying said armature and oscillating transversely of the railroad-track, and a mechanical connection between said switch-tongue and armature whereby movements of the latter will be transmitted to the former, substantially as specified.

3. A railway-switch, the same consisting of a switch-tongue, two armatures spaced apart transversely of the railroad-track, and an operating connection between said armatures and the switch-tongue whereby said tongue is moved by the armatures when they are operated by a magnetic device carried on a vehicle moving along the railroad-track, substantially as specified.

4. A railway-switch, the same consisting of a switch-tongue, an oscillating part, two armatures carried by said oscillating part and operated by a magnetic device carried on a vehicle moving along the railroad-track, said armatures being spaced apart transversely of the railroad-track, and a connection between said oscillating part and the switch-tongue whereby the switch-tongue is operated, substantially as specified.

5. A railway-switch, the same consisting of a switch-tongue, a horizontally-oscillating part, two armatures carried by said oscillating part and operated by a magnetic device carried on a vehicle moving along the railroad-track, said armatures being spaced apart transversely of the railroad-track, and a connection between said oscillating part and the switch-tongue whereby the switch-tongue is operated, substantially as specified.

6. A railway-switch, the same consisting of a switch-tongue, an oscillating part connected thereto, an armature carried by the oscillating part, a plate located over said armature, a roller carried by the armature and bearing against the top plate, and an electromagnet carried on a vehicle moving along the railroad-track, whereby the switch is operated, substantially as specified.

7. A railway-switch, the same consisting of a switch-tongue, an oscillating part connected to said tongue and provided with two arms, an armature carried on each of said arms, said armatures being spaced apart transversely of the railroad-track, and one or more magnets carried on a vehicle moving along the railroad-track, whereby the switch is operated, substantially as specified.

8. A railway-switch, the same consisting of a switch-tongue, an oscillating part connected to said tongue and provided with two arms, an armature carried on each of said arms, a roller on each of said armatures, and two electromagnets carried on a vehicle moving along the railroad-track, whereby the switch is operated, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

EDWIN S. LEAYCRAFT.

Witnesses:

SEABURY C. MASTICK,
E. G. PRATT.