

No. 612,063.

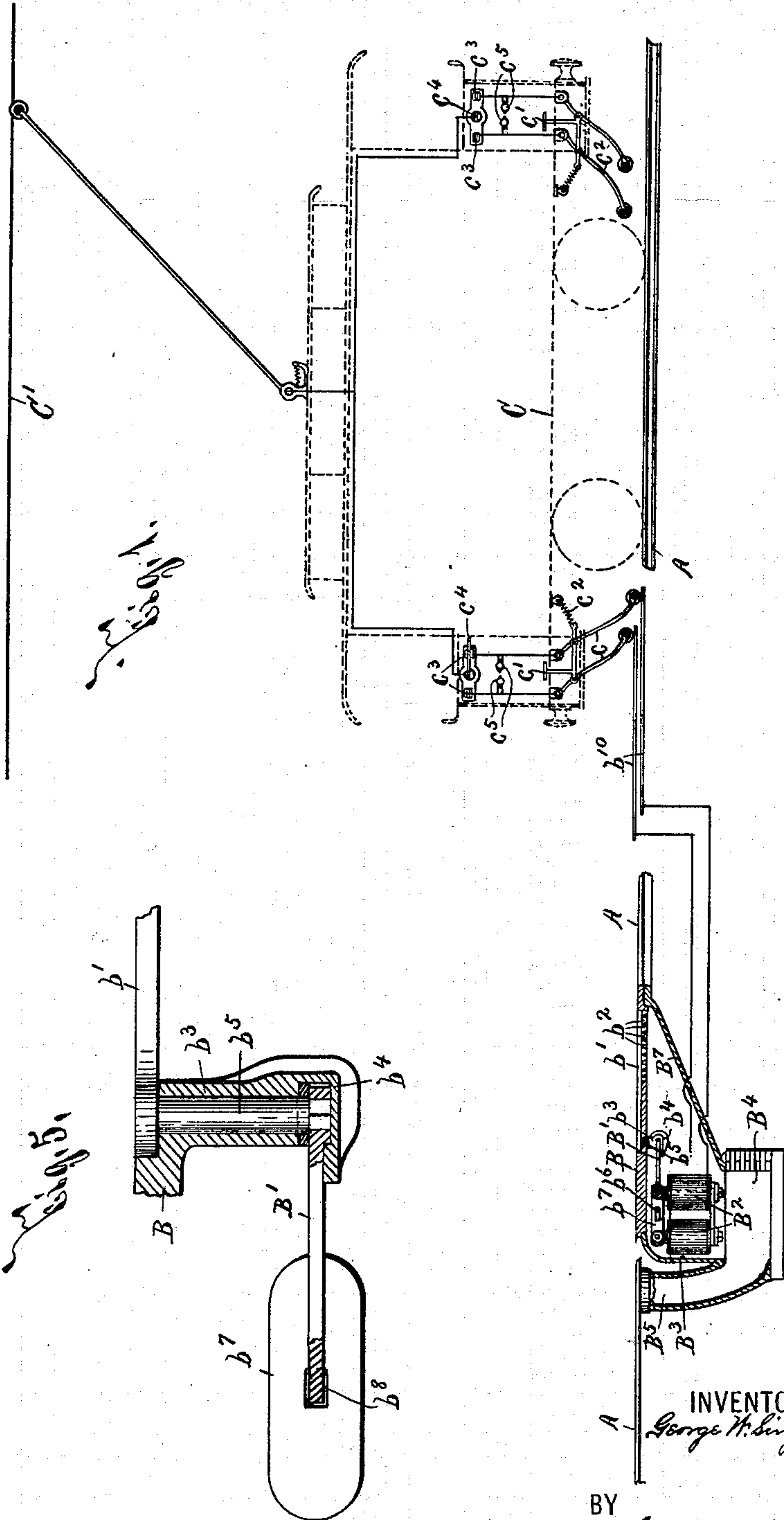
Patented Oct. 11, 1898.

G. W. SINGLETON.
SWITCHING MECHANISM.

(No Model.)

(Application filed Jan. 18, 1897. Renewed Mar. 5, 1898.)

3 Sheets—Sheet 1.



WITNESSES:
H. C. Chase,
J. L. Brewer.

INVENTOR
George W. Singleton
BY
W. H. Parsons
ATTORNEYS.

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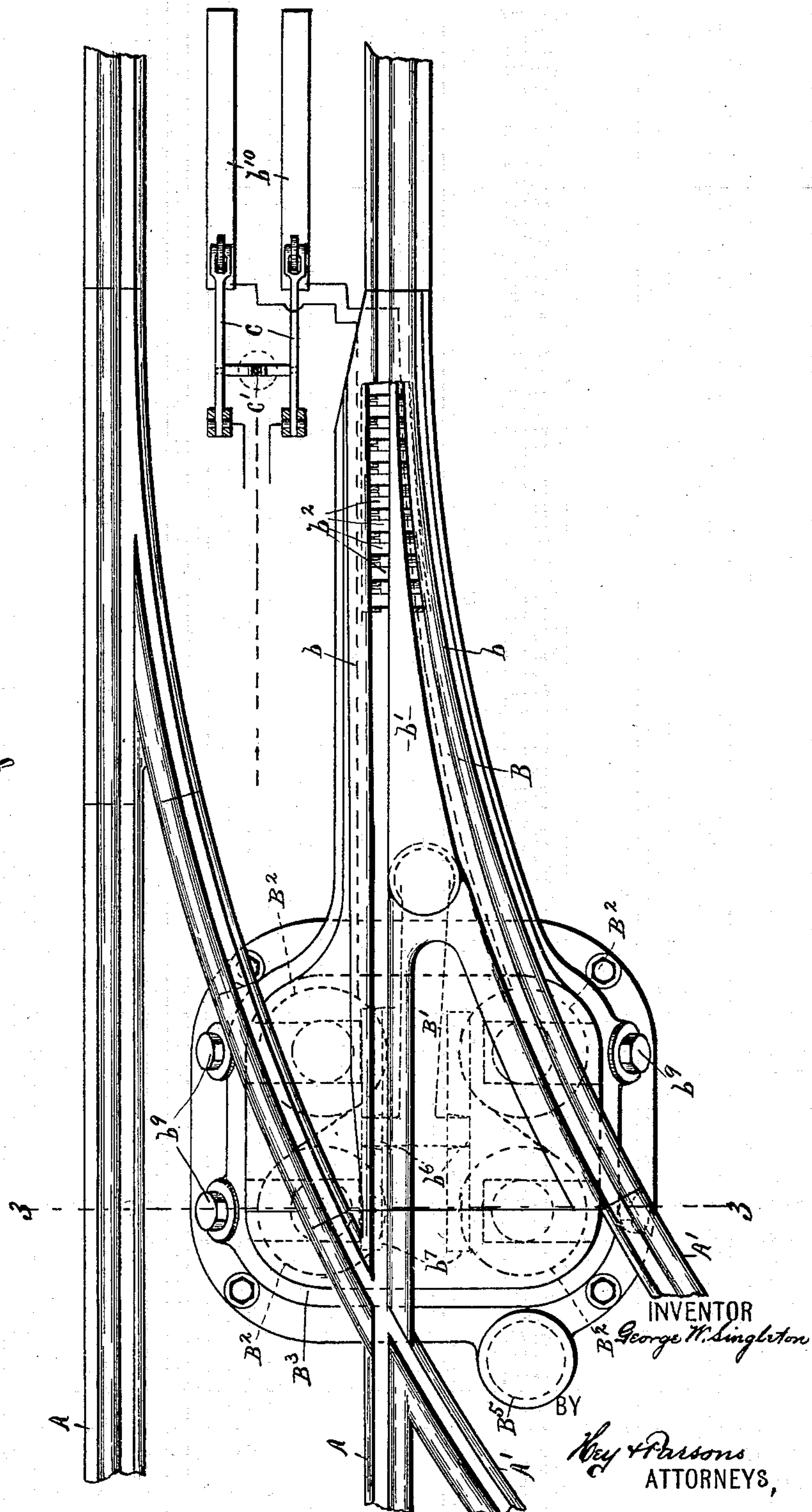
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J. J. Brewer.

INVENTOR

George W. Singleton

Key & Parsons
ATTORNEYS,

No. 612,063.

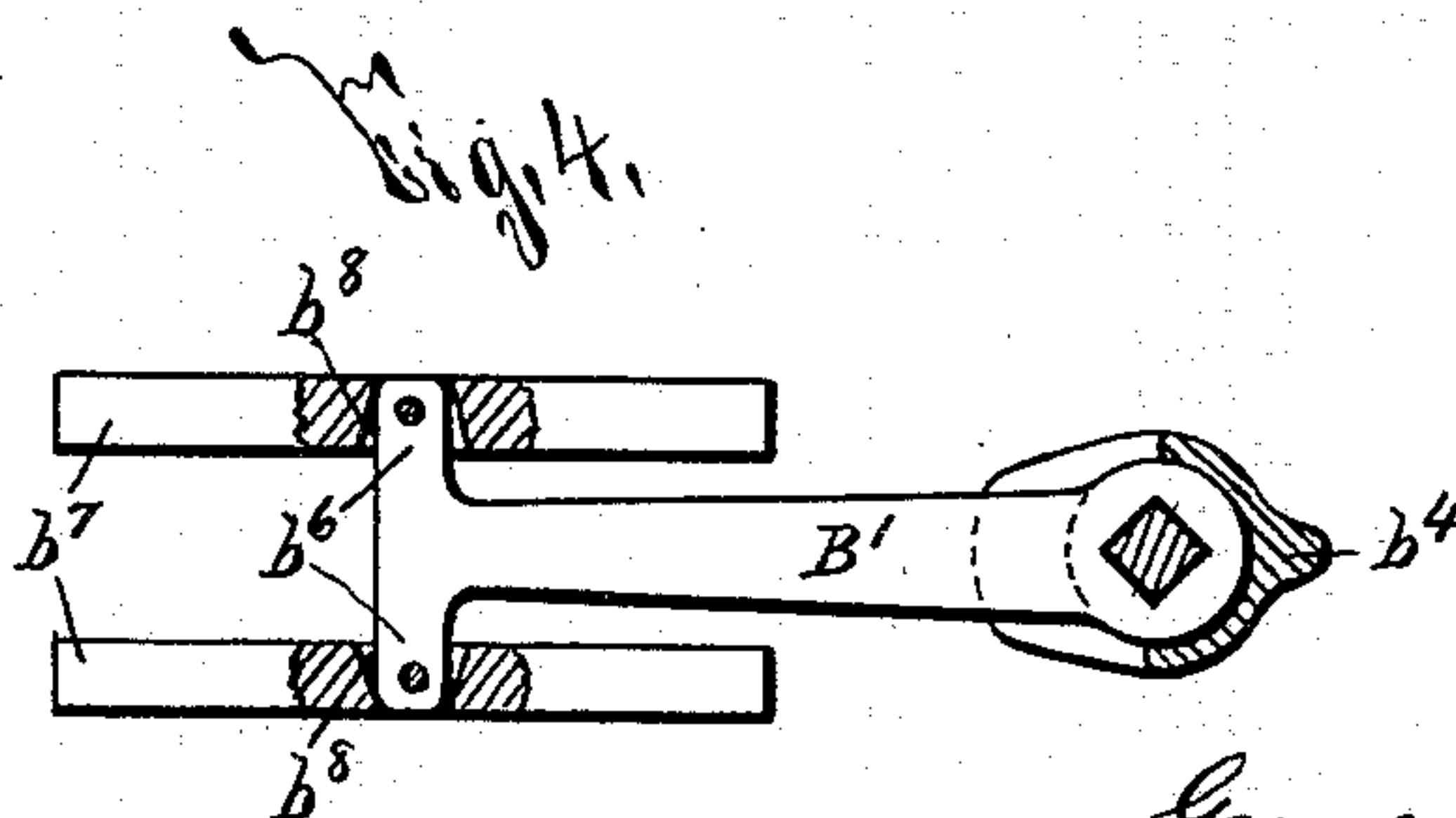
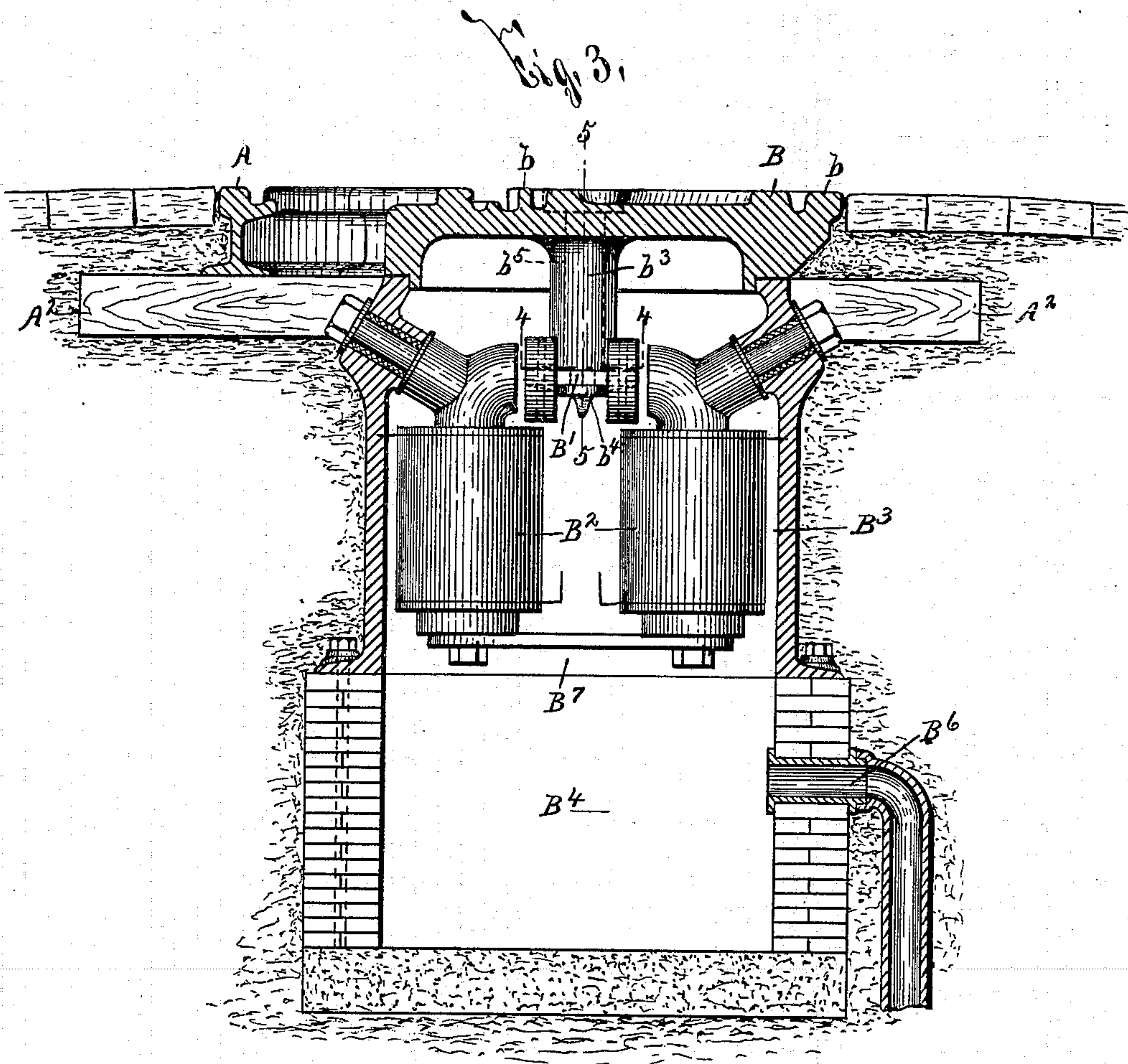
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H. C. Chase,
J. F. Brewer,

INVENTOR
George W. Singleton

BY
Wey & Parsons
ATTORNEYS.

UNITED STATES PATENT OFFICE.

GEORGE W. SINGLETON, OF SYRACUSE, NEW YORK, ASSIGNOR TO PETER J. RAMION, JOHN A. HENESEY, AND MATILDA E. RAMION, OF SAME PLACE.

SWITCHING MECHANISM.

SPECIFICATION forming part of Letters Patent No. 612,063, dated October 11, 1898.

Application filed January 18, 1897. Renewed March 5, 1898. Serial No. 672,778. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. SINGLETON, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and useful Improvements in Switching Mechanism, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to improvements in switching mechanism for railways, and has for its object the production of a simple and efficient device for enabling the motorman or other occupant of a vehicle or car movable along a railway to govern the operation of the switches of the railway; and to this end the invention consists in the general combination, construction, and arrangement of the parts of a switching mechanism, all as hereinafter fully described, and pointed out in the claims.

In describing this invention reference is had to the accompanying drawings, forming a part of this specification, in which like letters indicate corresponding parts in all the views.

Figure 1 is a diagrammatic view of a vehicle or car and a portion of a railway provided with my improved switching mechanism. Fig. 2 is a top plan of a portion of said railway and the terminals secured to the vehicle or car. Fig. 3 is a transverse vertical section taken on line 3 3, Fig. 2. Fig. 4 is a detail section, partly broken away, taken on line 4 4, Fig. 3; and Fig. 5 is a detail section taken on line 5 5, Fig. 3.

A A A' are the rails of main and branch tracks of a railway, B a frog for uniting adjacent rails A A', and C a vehicle or car movable along the railway. The tracks A A' A' may be arranged in any desired manner and are usually supported upon suitable cross-ties A², Fig. 3. The frog B is secured to the adjacent rails A A' by suitable fish-plates (not illustrated) and is provided with separated diverging rails *b b* and a switch-point *b'*, movable between said rails. The body of the frog B is provided at one end with a series of openings *b²*, arranged beneath the free extremity of the switch-point *b'* for receiving dirt or other material accumulating between the adjacent portions of

the rails *b b*. The opposite end of said body is formed with a depending hollow hub *b³* and a depending bracket *b⁴*, having a substantially horizontal lateral extension or arm arranged beneath the lower face of the hub *b³*. This lateral extension supports a rock-arm B' or other electrically-operated means rigidly connected to the switch-point *b'* and is usually formed with a socket in its upper face, in which a depending projection or hub provided upon one end of said rock-arm is removably arranged.

The switch-point *b'* is provided at one end with a depending spindle *b⁵*, journaled in the hollow hub *b³*. The lower end of the spindle *b⁵* preferably projects beneath the lower face of said hub, is formed angular in cross-section, and is removably arranged in an aperture of similar shape provided in one end of the rock-arm B', which is removably mounted on a suitable support, as the lateral extension or arm of the bracket *b⁴*, and remains in position on said lateral extension or arm, even though the switch-point is removed from the frog. The opposite end of the rock-arm B' is provided with oppositely-arranged lateral projections *b⁶ b⁶*, and independently-movable armatures *b⁷ b⁷* are preferably flexibly connected to said projections by suitable upright pivotal pins. The adjacent faces of the armatures *b⁷ b⁷* are usually provided with tapering sockets or apertures *b⁸ b⁸*, which receive the projections *b⁶ b⁶* and permit said armatures to automatically adjust themselves and firmly engage the cores of oppositely-arranged electromagnets B² for attracting said armatures.

The electromagnets B² for attracting the armatures *b⁷ b⁷* are usually supported on opposite sides of the rock-arm B' within a chamber B³, arranged beneath the frog B. Said electromagnets are preferably supported in upright planes, and the upper ends of their cores are provided with upright contact-faces for engaging the armatures *b⁷ b⁷*. The means for supporting the electromagnets B² preferably consists of downwardly-inclined clamping-bolts *b⁹ b⁹*, passed through perforations in the upright walls of the chamber B³ and having corresponding extremities engaged with the upper ends of the cores of the electro-

magnets and their opposite extremities provided with shoulders engaged with the outer faces of said upright walls. The chamber B³ is detachably connected to the lower face of the frog B and is removably supported above a receptacle or catch-basin B⁴, provided with a manhole B⁵ and an overflow-conduit B⁶. Said chamber B³ usually consists of a substantially upright rectangular body and is provided with a chute B⁷, which extends forwardly beneath the openings b² in the frog B and conducts to the receptacle or catch-basin B⁴ the dirt, water, or other material discharged through said openings.

Corresponding ends of the coils of the electromagnets B² are connected to a grounded conductor, as one of the rails A, and their opposite ends are connected to separated electrical conductors or terminals b¹⁰ b¹⁰, which may be supported above the rails A A' A', although they usually consist of bars or strips of metal interposed between the rails A A' of the main track in advance of the frog B. The terminals b¹⁰ are engaged by the lower ends of movable terminals c c, insulated from each other and suitably secured to the vehicle or car C, which may be of any desired construction. The terminals c c are preferably pivoted at their upper ends to the vehicle or car C and are forced into engagement with the terminals b¹⁰ b¹⁰ by suitable manually-operated means, which usually consists of a vertically-reciprocating foot-piece c', pivoted to the terminals c c. A suitable spring c² is connected to the foot-piece c' and the vehicle or car C for normally elevating the foot-piece and retracting the terminals c c from operative position. The upper ends of said terminals c c are electrically connected to separated terminals c³ c³ of an electric switch, which is supported on the vehicle or car C and is provided with a movable switch member c⁴, electrically connected by any suitable means to a grounded electric conductor, as a trolley-wire C'.

The switch member c⁴ is movable into engagement with either of the terminals c³ c³, and when the terminals c c are in operative position the circuit is completed by said switch member between one of the electromagnets and the trolley-wire C', whereupon said electromagnet is energized and rocks the switch-point b' in the desired direction. The terminals c c are usually arranged at the end of the vehicle or car C in close proximity to the motorman, and as it is usually customary to use either end of a vehicle or car as an advance end I have here shown each end of the vehicle or car C as provided with terminals c c, foot-pieces c', springs c², switch-terminals c³ c³, and switch members c⁴ of similar construction. I have also shown each end of the vehicle or car C as provided with suitable signals, as lamps c⁵ c⁵, which are connected in shunt to the conductors leading from the terminals c³, and by their failure to operate or afford the usual illumination inform the mo-

torman whenever the potential of the current flowing through either of said conductors to the corresponding electromagnet is insufficient to energize said electromagnet and effect the desired operation of the switch-point of my improved mechanism.

The operation of my switching mechanism will now be readily understood upon reference to the foregoing description and the accompanying drawings.

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

1. In a switching mechanism for railways, the combination of a track provided with a frog having a movable switch-point, electrically-operated means for actuating the switch-point, a vehicle movable along the track and provided with an electric switch for controlling the operation of the electrically-operated means, connections between the electric switch and the electrically-operated means, and a signal connected in shunt to the circuit between the electric switch and said electrically-operated means for indicating the potential of the electric current for actuating the electrically-operated means, substantially as and for the purpose specified.

2. In a switching mechanism for railways, the combination of a track provided with a frog having a movable switch-point, a pair of electromagnets for moving the switch-point in opposite directions, fixed terminals connected to the electromagnets and extending lengthwise of the track, a vehicle movable along the track, terminals supported by the vehicle and movable into engagement with the fixed terminals, an electric conductor, an electric switch supported by the vehicle and provided with separated terminals and with a movable switch member connected to said electric conductor, electric connections between the terminals supported by the vehicle and the separated terminals of the switch, and electric lamps connected in shunt to said electric connections, substantially as and for the purpose described.

3. In a switching mechanism for railways, the combination of a track provided with a frog having a movable switch-point, a pair of electromagnets for moving the switch-point in opposite directions, fixed terminals connected to the electromagnets and extending lengthwise of the track, a vehicle movable along the track, terminals supported by the vehicle and movable into engagement with the fixed terminals, an electric conductor, an electric switch supported by the vehicle and provided with separated terminals and with a switch member connected to said electric conductor, electrically-operated signals connected, respectively, to the separated terminals of the switch, and electric connections between the terminals supported by the vehicle and the electrically-operated signals, substantially as and for the purpose described.

4. In a switching mechanism for railways,

the combination of a frog having a support and a movable switch-point, arranged above the support and provided with a depending spindle, an arm mounted on said support and removably engaged with the spindle of the switch-point, an armature flexibly supported by the arm, and an electromagnet for actuating the armatures, substantially as and for the purpose specified.

5. In a switching mechanism for railways, the combination of a frog having a movable switch-point provided with a depending spindle, an arm rigidly connected to the spindle, independently-movable armatures arranged on opposite sides of the arm and flexibly connected thereto, and electromagnets for actuating the armatures, substantially as and for the purpose set forth.

6. In a switching mechanism for railways, the combination of a frog having a movable switch-point provided with a depending spindle, an arm rigidly connected to the spindle and provided with oppositely-arranged lateral projections, armatures pivoted to the lateral projections and having their adjacent faces formed with apertures for receiving said projections, and electromagnets for actuating the armatures, substantially as and for the purpose specified.

7. In a switching mechanism for railways, the combination of a track provided with a frog having a support and a movable switch-point arranged above the support and provided with a depending spindle, an arm mounted on said support and removably engaged with the spindle of the switch-point, electromagnets for moving the arm in opposite directions, fixed terminals extending lengthwise of the track and connected to the electromagnets, and a vehicle movable along the track and provided with movable terminals for engaging the fixed terminals, substantially as and for the purpose described.

8. In a switching mechanism for railways, the combination of a track provided with a frog having a movable switch-point provided with a depending spindle, an arm connected to the spindle, independently-movable armatures flexibly connected to the arm, electromagnets for actuating the armatures, fixed terminals extending lengthwise of the track and connected to the electromagnets, and a vehicle movable along the track and provided with movable terminals for engaging the fixed terminals, substantially as and for the purpose specified.

9. In a switching mechanism for railways, the combination of a frog having a movable switch-point provided with a depending spindle, said spindle having its lower end formed angular in cross-section, an arm supported by the frog and having an angular aperture for receiving the lower end of the spindle, an armature flexibly supported by the arm, and an electromagnet for actuating the armature, substantially as and for the purpose set forth.

10. In a switching mechanism for railways, the combination of a track provided with a frog having a support formed with a socket, and having a movable switch-point arranged above the support and provided with a depending spindle, an arm mounted on the support and removably engaged with the spindle of the switch-point, said arm being provided with a projection or hub arranged in the socket of the support, and an electromagnet for actuating the armature, substantially as and for the purpose described.

11. In a switching mechanism for railways, the combination of a frog having a movable switch-point provided with a depending spindle, said frog being formed with a depending hollow hub for receiving said spindle and an arm arranged beneath the hollow hub, a rock-arm mounted upon the former arm and removably engaged with the spindle of the switch-point, an armature connected to the rock-arm, and an electromagnet for actuating the armature, substantially as and for the purpose specified.

12. In a switching mechanism for railways, the combination of a frog having a movable switch-point provided with a depending spindle, said frog being formed with a depending hollow hub for receiving said spindle and an arm arranged beneath the hollow hub, a rock-arm mounted upon the former arm and removably engaged with the spindle of the switch-point, independently-movable armatures flexibly connected to the rock-arm, and electromagnets for actuating the armatures, substantially as and for the purpose set forth.

13. In a switching mechanism for railways, the combination of a frog having a depending hollow hub and a bracket projecting beneath the lower end of the hub, said frog being provided with a movable switch-point formed with a depending spindle projecting through said hollow hub and having its lower end formed angular in cross-section, an arm supported by the bracket and provided with an angular aperture for receiving the lower end of said spindle, and an electromagnet for actuating the arm, substantially as and for the purpose described.

14. In a switching mechanism for railways, the combination of a frog having a movable switch-point, a chamber arranged beneath the frog and detachable therefrom, an arm movable in a substantially horizontal plane for operating the switch-point, said arm being provided with oppositely-arranged armatures, and substantially upright electromagnets supported within the chamber and having their cores provided with substantially upright engaging faces for attracting said armatures, substantially as and for the purpose specified.

15. In a switching mechanism for railways, the combination of a frog having a movable switch-point, a chamber arranged beneath the frog and detachable therefrom, substantially upright electromagnets arranged with-

in the chamber for operating the switch-point,
said electromagnets having the upper end of
their cores formed with substantially upright
engaging faces, and clamping-bolts engaged
5 with the upper ends of said cores and with the
side walls of the chamber, substantially as
and for the purpose specified.

In testimony whereof I have hereunto

signed my name, in the presence of two attest-
ing witnesses, at Syracuse, in the county of 10
Onondaga, in the State of New York, this 14th
day of January, 1897.

GEORGE W. SINGLETON.

Witnesses:

E. A. WEISBURG,
D. LAVINE.