

No. 747,537.

PATENTED DEC. 22, 1903.

G. J. CROSSLAND.
ELECTRICAL SWITCH.

APPLICATION FILED JULY 12, 1902.

NO MODEL.

2 SHEETS—SHEET 1.

Fig. 1.

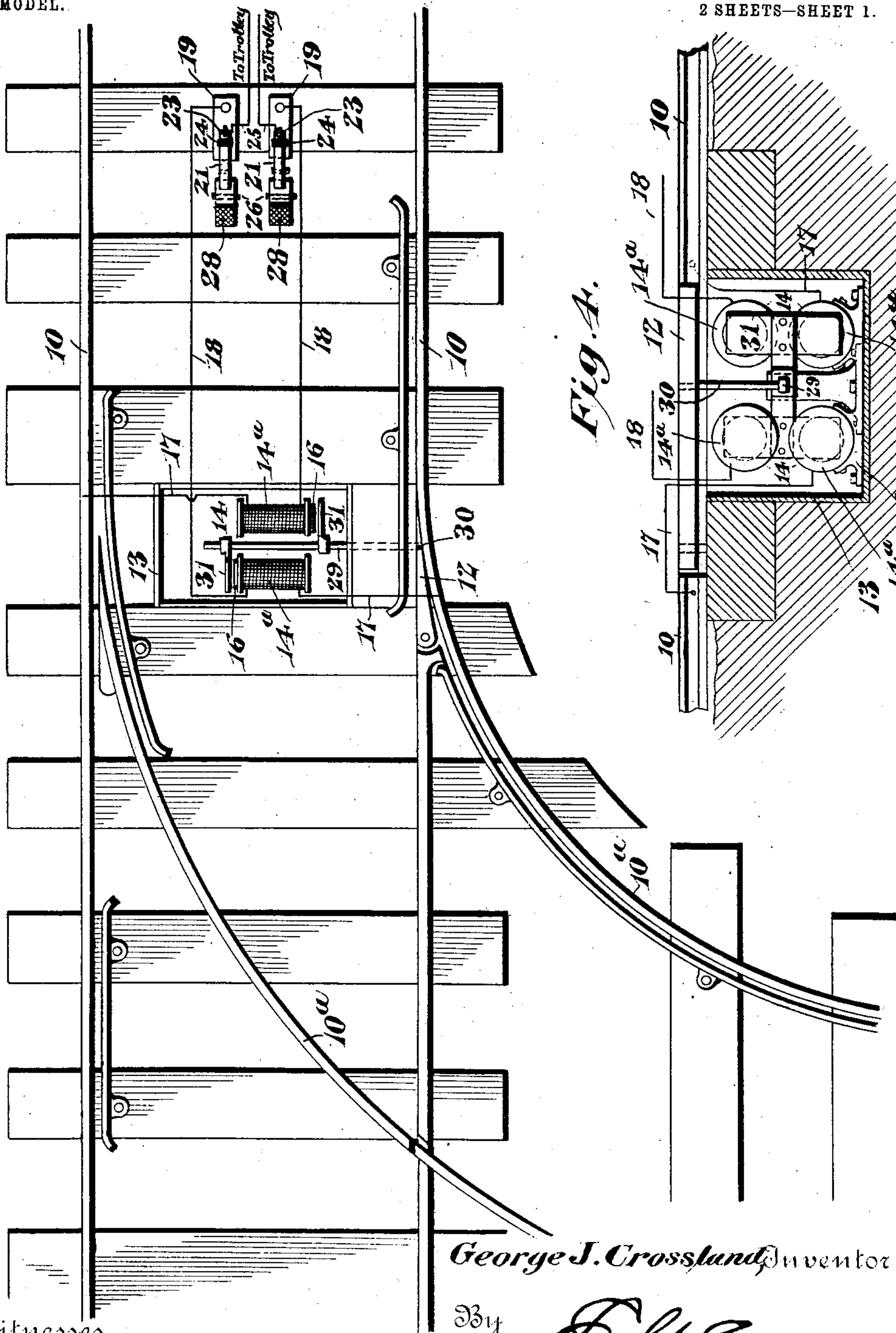
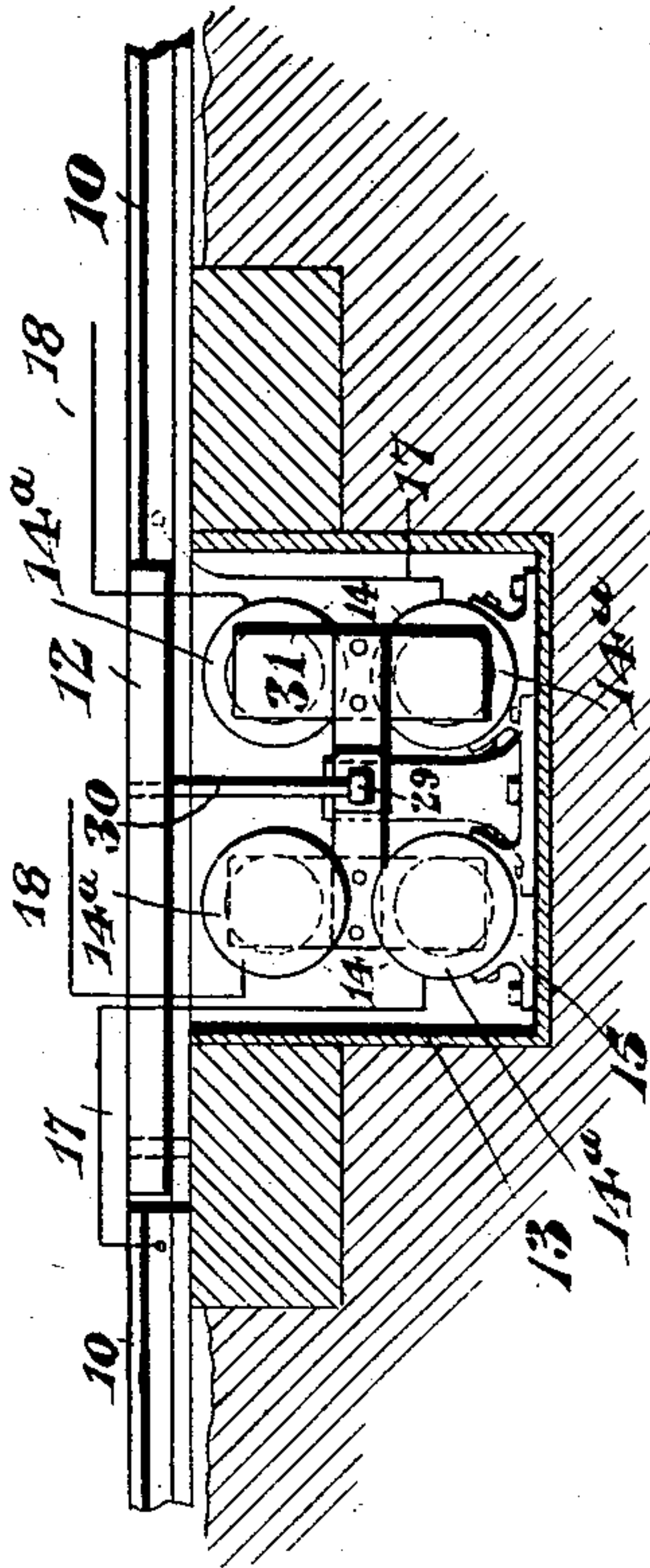


Fig. 4.



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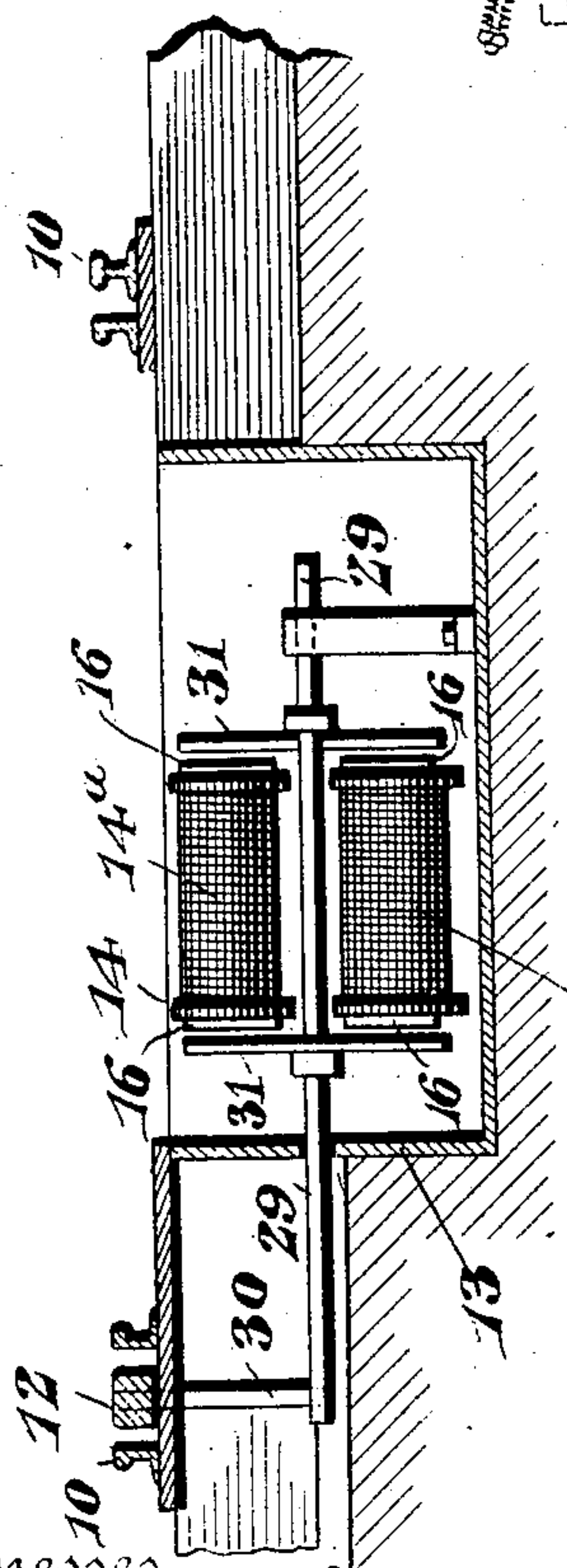
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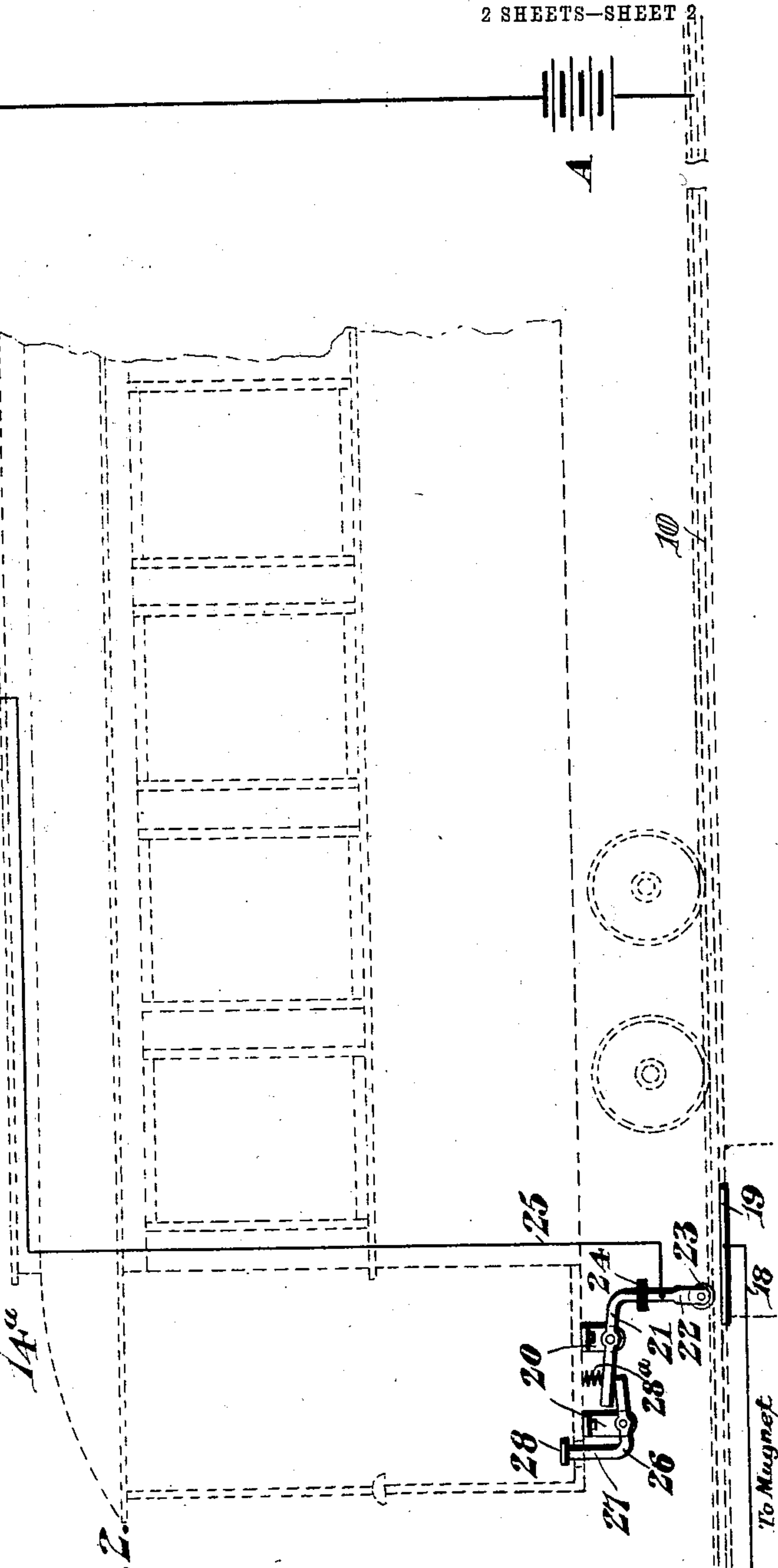
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2 SHEETS—SHEET 2



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UNITED STATES PATENT OFFICE.

GEORGE J. CROSSLAND, OF MOBILE, ALABAMA.

ELECTRICAL SWITCH.

SPECIFICATION forming part of Letters Patent No. 747,537, dated December 22, 1903.

Application filed July 12, 1902. Serial No. 115,363. (No model.)

To all whom it may concern:

Be it known that I, GEORGE J. CROSSLAND, a citizen of the United States, residing at Mobile, in the county of Mobile and State of Alabama, have invented a new and useful Electrical Switch, of which the following is a specification.

The present invention relates to switches, and is particularly intended for use in connection with electrically-operated roads, though it may be employed upon other kinds of railways.

One object of the invention is to provide a plurality of actuating-magnets which are compactly arranged and associated with simple means connected with the switch for operating the same.

Another object is to provide novel and efficacious means mounted upon the car to close the circuits of which the magnets form a part.

The preferred embodiment of the invention is illustrated in the accompanying drawings, wherein—

Figure 1 is a plan view of the switch and operating means therefor, a portion of this means being diagrammatically illustrated. Fig. 2 is a view illustrating one of the circuit-closures and the manner of mounting the same upon a car, the electrical connections being also illustrated diagrammatically. Fig. 3 is a longitudinal sectional view through the actuating mechanism. Fig. 4 is a transverse section.

Similar characters of reference designate corresponding parts in all the figures of the drawings.

In the present embodiment the switch is shown in connection with an electrically-operated road employing an overhead trolley-wire. The tracks are designated by the reference-numeral 10, the trolley-wire by 11, said tracks and wire serving, respectively, as conductors to which the poles of the generator are connected, said generator being illustrated diagrammatically at A in Fig. 2. Branch tracks 10^a are illustrated in Fig. 1, which lead from the main line, and a stub-switch 12, arranged at the junction of the inner rails, controls the directions of the cars passing over the main tracks 10, as will be readily understood. The means for actuating the switch constitutes the subject-matter

of this invention and is constructed and arranged as follows:

A casing 13 is arranged between the tracks 55 contiguous to the switch 12, being preferably fitted between a pair of ties, as shown. Within this casing are fixed a pair of separate oppositely-arranged electromagnets 14, suitably secured to a frame 15, that is fastened within the casing. These electromagnets each comprise a pair of electrically-connected coils 14^a, wound upon suitable cores, the poles 16 of which are arranged at the ends opposite the poles of the other magnet. These 65 magnets are spaced a slight distance apart and arranged side by side. They each have separate connections 17 with the rails, their other terminals 18 being connected to separate contact-plates 19, arranged between the 70 rails some distance from the switch, said contacts being preferably secured to one of the ties, as shown in Fig. 1. As a result it will be seen that each magnet has a separate open circuit, and these circuits are arranged to be 75 completed by independent closers fixed upon the car and operable by the motorman. Their construction is clearly illustrated in Fig. 2, and as both are similar in all respects but one need be described. 80

Spaced brackets 20 are attached to the under side of the front platform, and a lever 21 is pivoted intermediate its ends to one of said brackets, said lever being provided with a downturned terminal 22, the end of which 85 has a roller 23, that coacts with the contact-plate 19 of the corresponding circuit. This downturned terminal is provided with a suitable insulated joint 24, and an electrical connection 25 is made below this joint with the 90 trolley-pole, and consequently with the trolley-wire 11. An actuating-lever 26 is pivoted intermediate its ends to the other bracket, said lever having one end coacting with the adjacent end of the contact-lever, its other 95 end being upturned, as shown at 27, and projecting through the platform, being provided with a suitable foot-piece 28. The contact-lever is normally held elevated by a coiled spring 28^a, interposed between its upper end 100 and the under side of the car-platform. As a result it will be seen that when the motorman depresses one of the actuating-levers the roller 23, located upon the downturned

terminal of the corresponding contact-lever, will be brought into engagement with the contact-plate beneath it, and as a result an electrical circuit will be completed of which
5 one of the magnets forms a part, thereby energizing the same.

Associated with the above-described mechanism are actuating means connected with the switch 12. This means is shown in the
10 form of a rod 29, slidably mounted in the casing between the magnets and projecting beyond the same beneath the switch-piece. Said projecting end is provided with an up-
standing pin 30, that is journaled in the
15 switch contiguous to its free end, as illustrated in Fig. 1. The rod, furthermore, carries oppositely-disposed armatures 31, which are arranged at opposite ends of the magnet and coact with the oppositely-disposed poles
20 thereof.

It is believed that the operation of the switch will be apparent. Should said switch be in the position shown in Fig. 1, it being necessary to switch an approaching car onto
25 the branch line, it is only necessary for the motorman to depress the proper closer, whereupon, when said closer passes over its coacting contact-plate the circuit will be completed, thereby energizing the proper mag-
30 net. As a result the armature coacting with said magnet will be attracted to it, consequently moving the rod and throwing the switch. On the other hand, after the switch is thrown and a main-line car approaches it
35 is only necessary for the motorman to depress the opposite contact, consequently energizing the other magnet and again closing the switch. It will therefore be seen that

extremely simple switching mechanism is provided which will obviate the services of a
40 switchman and avoid the necessity of the motorman or conductor leaving or stopping the car. Furthermore, this mechanism is positive and certain in its action, is very compact in structure, and is out of the way of
45 street traffic.

From the foregoing it is thought that the construction, operation, and many advantages of the herein-described invention will be apparent to those skilled in the art with-
50 out further description, and it will be understood that various changes in the size, shape, proportion, and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages
55 of the invention.

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

The combination with a track provided
60 with a switch, of means for operating the switch, said means including a contact-lever and an operating-lever arranged to be mounted intermediate their ends upon a car, the
end of one lever coacting with the end of the
65 other lever, and a spring arranged against one of said coacting ends and normally holding both levers in inoperative positions.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in
70 the presence of two witnesses.

GEORGE J. CROSSLAND.

Witnesses:

W. H. PADGETT,

CHARLES T. N. WHITESPUNNER.