Nov. 18, 1924. 1,515,587

D. ARCANI

AUTOMATIC SWITCH FOR POINT BLADES

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Fig. 2.

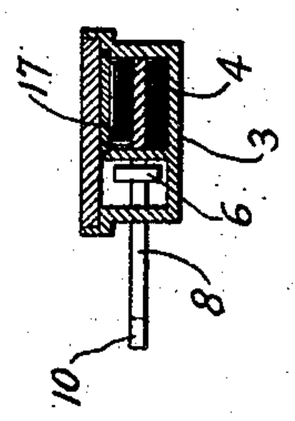


Fig. 1.

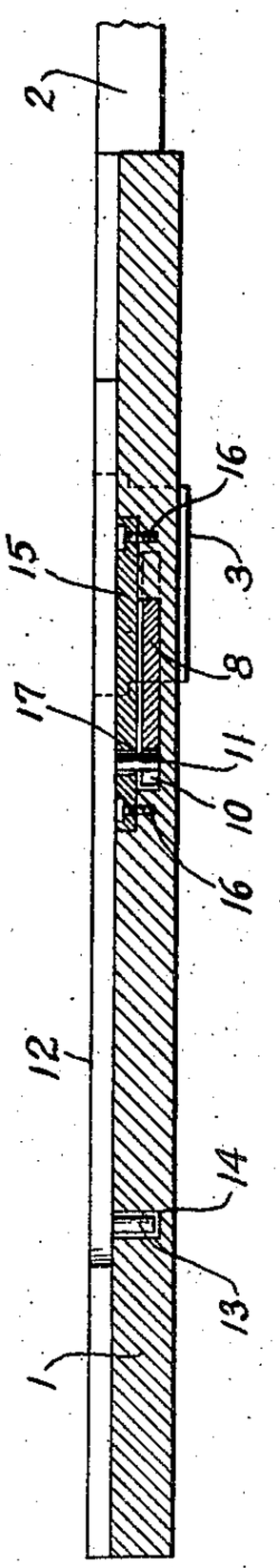
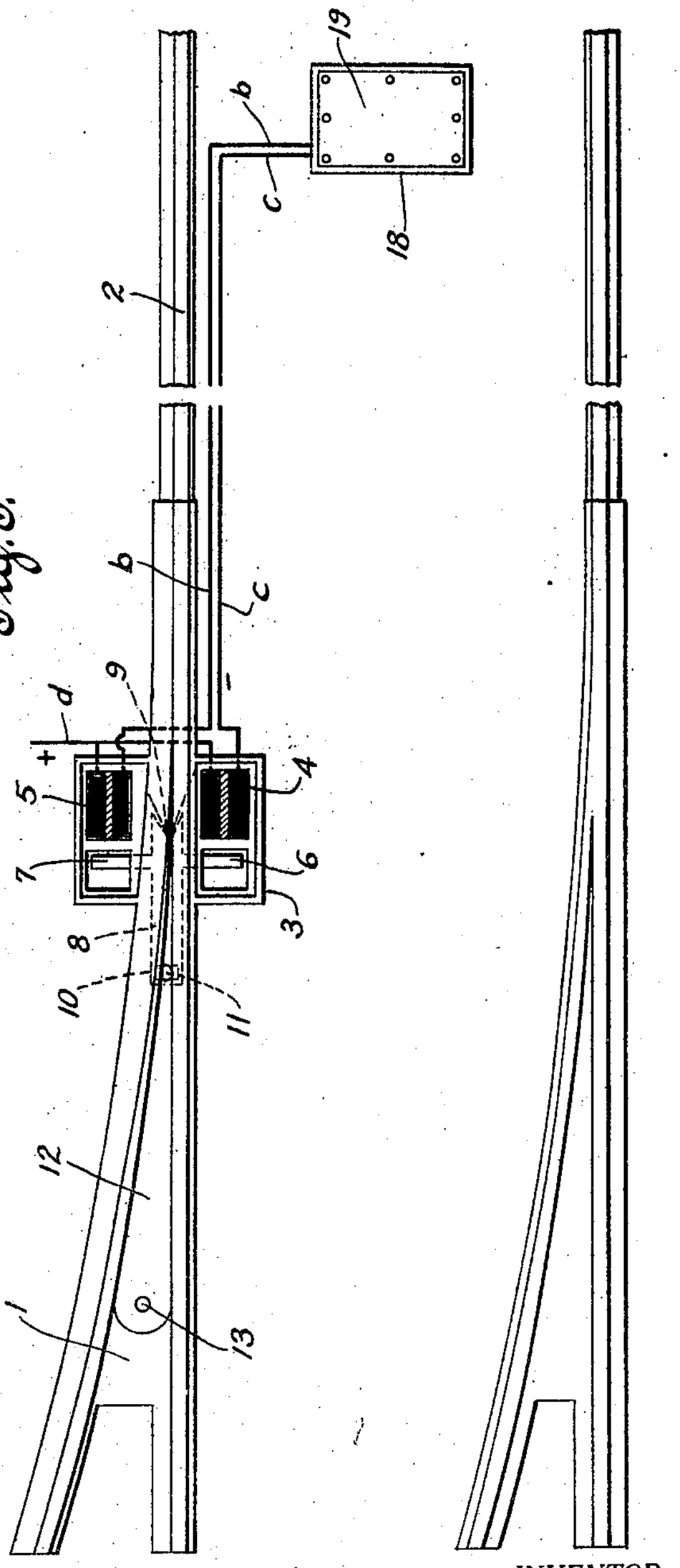


Fig. 3.



INVENTOR

Domingo Arcani

BY

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ATTORNEY

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AUTOMATIC SWITCH FOR POINT BLADES

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Fig. 4.

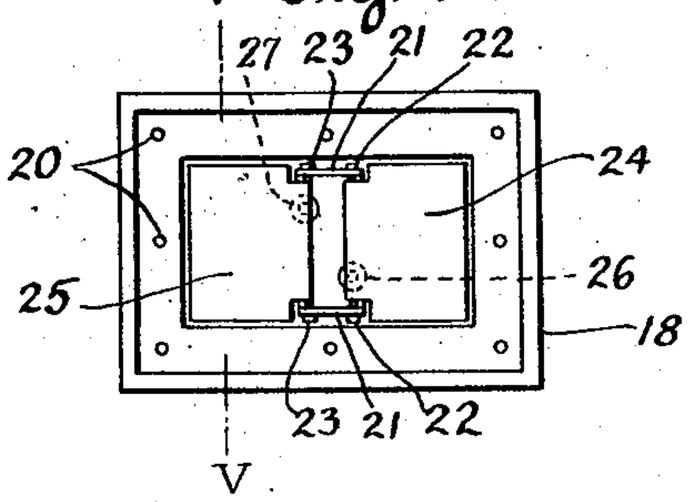

Fig. 5.

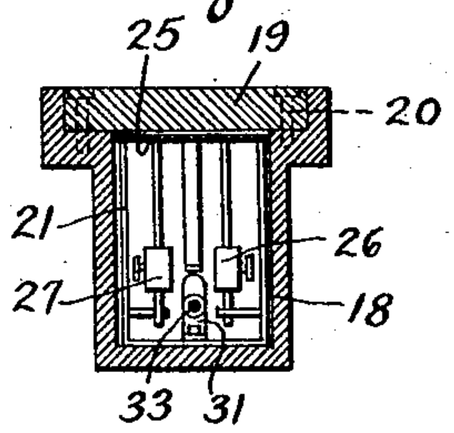

Fig. 6.

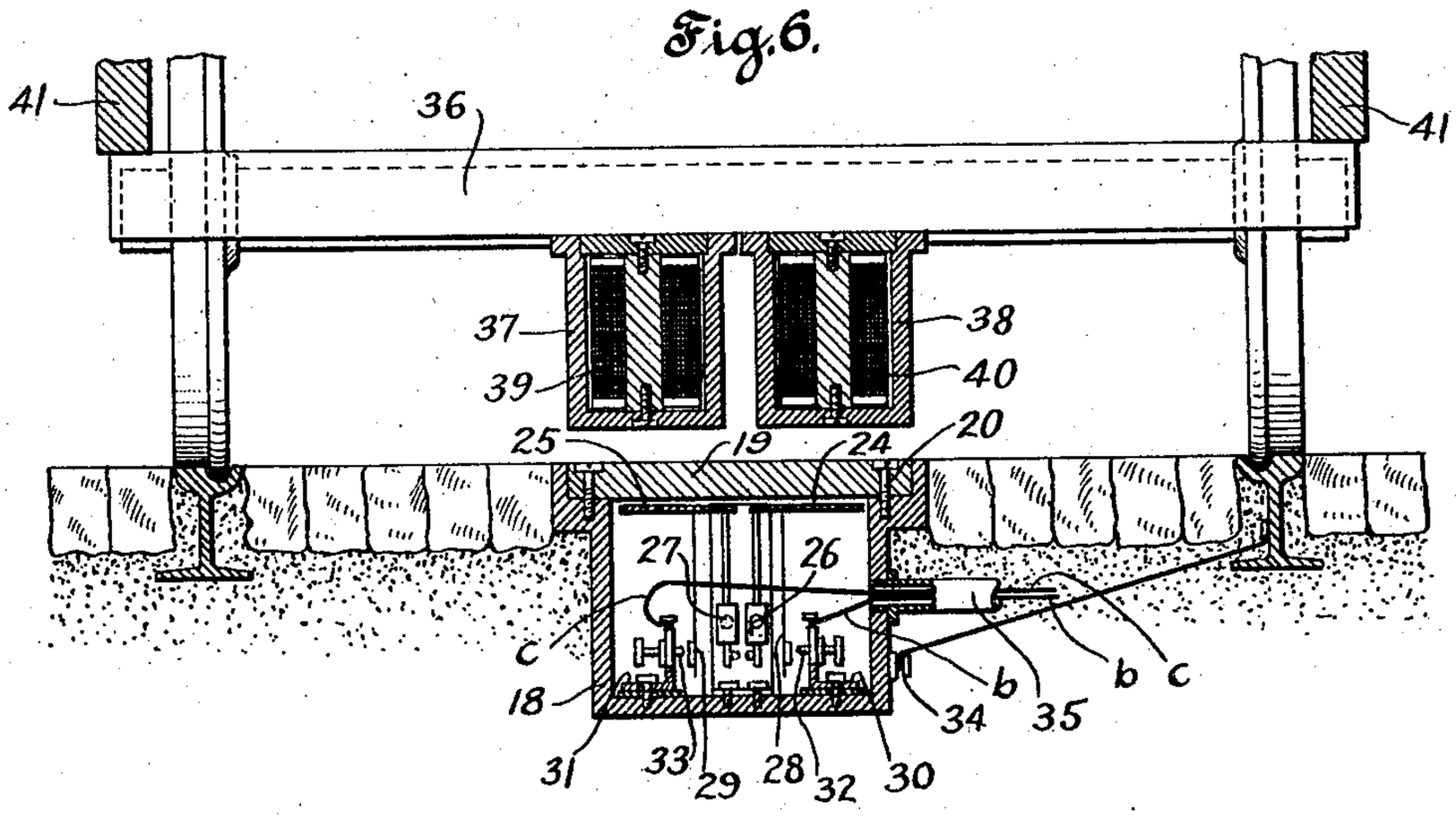

Fig. 7.

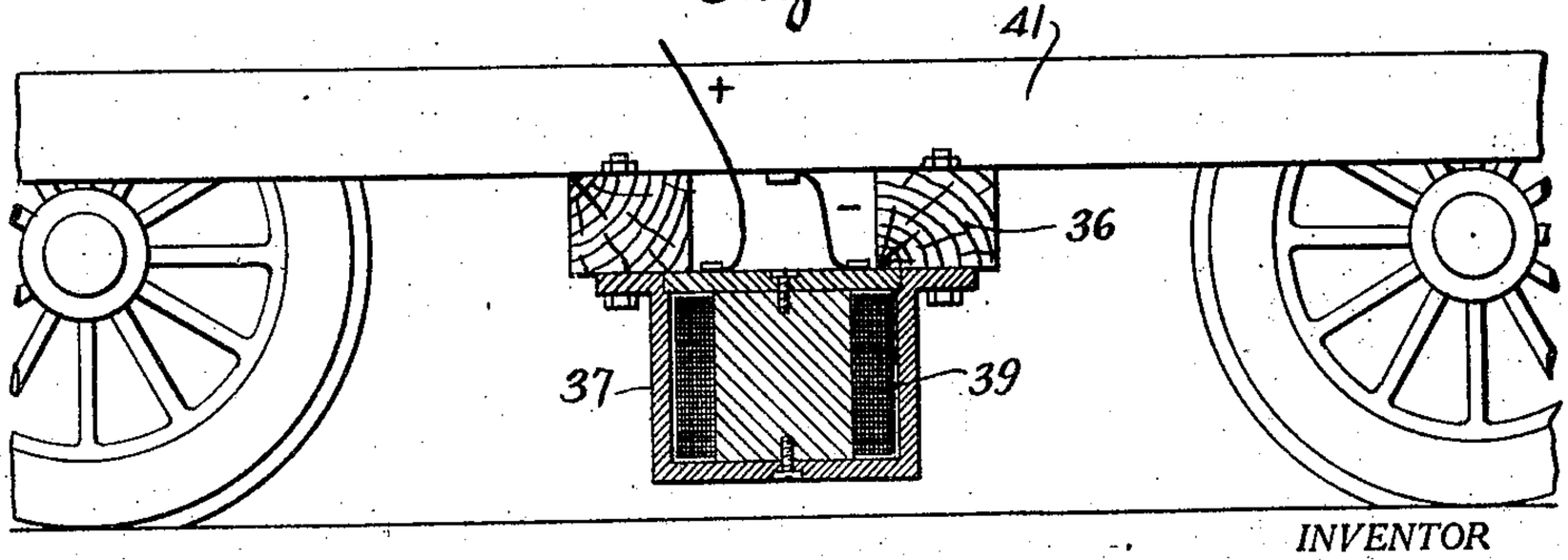

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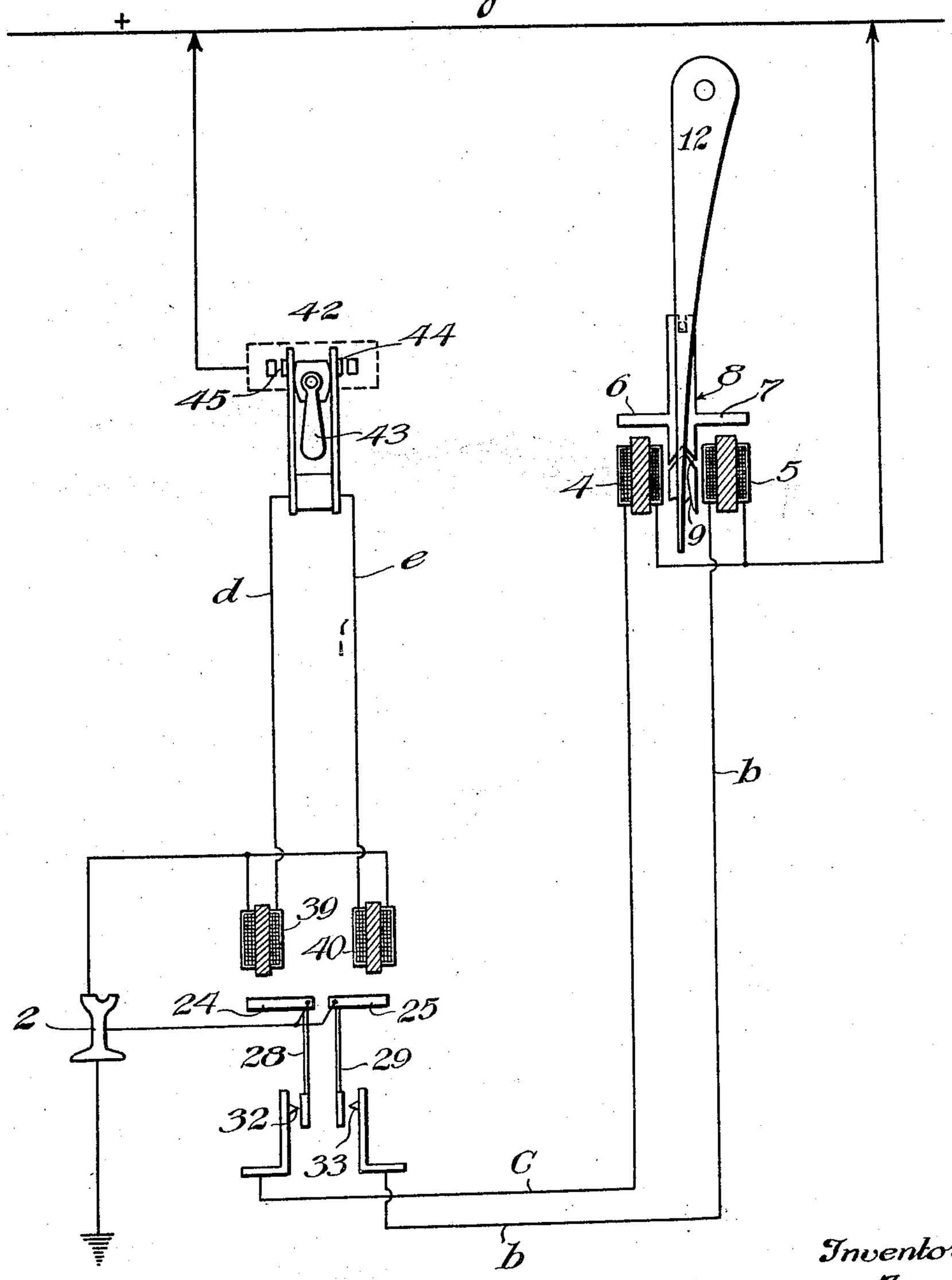
Fig. 8.



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Patented Nov. 18, 1924. 1,515,587

UNITED STATES PATENT OFFICE.

DOMINGO ARCANI, OF LA PLATA, ARGENTINA.

AUTOMATIC SWITCH FOR POINT BLADES.

Application filed July 29, 1922. Serial No. 578,493.

To all whom it may concern:

Be it known that I, DOMINGO ARCANI, a citizen of the Republic of Argentina, residing at 1097 51 Street, La Plata, Republic of Argentina, have invented new and useful Improvements in Automatic Switches for Point Blades, of which the following is a specification.

This invention relates to railway switches, the object of the invention being to provide an improved, electrically-controlled switch-operating mechanism which is comparatively simple in construction and very efficient in operation.

With the foregoing and other objects in view, which will appear as the description proceeds, the invention consists in the novel features of construction and combination of parts, which will be more fully described hereinafter and particularly pointed out in the claims.

In the drawings accompanying and forming part of this specification, Fig. 1 is a longitudinal, sectional view through the switch block;

Fig. 2 is a longitudinal section through the box containing one of the electromagnets for operating the switch blade;

Fig. 3 is a plan view of a section of track including a switch and illustrating the relative location of the shiftable switch blade and its operating magnets, the cover of the magnet-carrying boxes being removed;

Fig. 4 is a top plan view of a switching chamber carrying mechanism for closing the circuit through said magnets, the lid of the chamber being removed;

Fig. 5 is a transverse section taken approximately on the line V—V of Fig. 4;

Fig. 6 is a transverse section of the lower part of a vehicle carrying means for actuating the mechanism illustrated in Fig. 4;

Fig. 7 is a longitudinal section of the lower part of a vehicle taken at right-angles to Fig. 6; and

Fig. 8 is a diagrammatic plan view illustrating the electrical circuits.

Referring to the drawings, 1 designates a switch-block having a portion forming a continuation of the straight rail 2 and a curved portion forming a switch rail, a shiftable switch blade 12 being pivoted at 13 in an opening 14 formed in the block between said rail portions in the usual manner for directing a vehicle. A pair of electromagnets 4 and 5 enclosed in hermetically sealed boxes 3 are supported in the block 1, one at each side thereof, each of said boxes being provided with a removable cover 17 to facilitate cleaning. Below the smaller end of the switch blade 12, the block 1 is cut away to form a recess in which is located a member 8 having a pair of laterally extending arms 6 and 7 forming armatures located in position to be attracted respectively by the electromagnets 4 and 5, said member 8 being covered by a plate 15 which is secured at its opposite ends by means of screws 16 to the block 1. The end of the member 8 nearest the electromagnets is of V-shaped formation, while the corresponding end wall of the recess in the block is wedge-shape, as shown at 9, Fig. 3, and extends into said V-shaped end. The opposite end of the member 8 is provided with a U-shaped recess 10 into which projects a depending pin 11 carried by the shiftable switch blade 12, said pin passing through a slot in the cover plate 15. It will thus be seen that when one of the electromagnets 4, 5 is excited, its corresponding armature 6, 7 will be attracted, whereupon the member 8 will be caused to swing toward one side or the other, its V-shaped end fulcruming on the wedge portion 9, and thus by means of the engagement of the member 8 with the pin 11 the switch blade 12 will be swung on its pivot toward one side or the other, depending on which one of the magnets is energized.

For cooperation with the magnets above described, I have provided what is herein termed a switching chamber, which comprises a metal box 18 (Figs. 3 to 7) located midway between the rails at a suitable distance from the switch, said box being provided with a cover 19 secured thereto by screws 20. Midway of the box 19 a U-shaped member 21 is secured to the bottom of the box, the legs of said member extending upwardly adjacent to the opposite sides of the box and supporting at their upper ends a pair of plates 24 and 25, which are pivoted at 22 and 23 respectively to said legs. The plates are maintained in their horizontal, inoperative position by means of counterweights 26 and 27 respectively, which are slidable on rods depending from the plates and may be secured on said rods by means of thumbscrews, as shown in Figs. 5 and 6, whereby the lever effect of the weights on the plates is readily adjustable. Depending from the plates 24 and 25 are a pair of

spring members 28 and 29, each carrying adjacent to its lower end a contact member adapted to contact respectively with a pair of contact members 32 and 33 carried by brackets 30 and 31 respectively, secured to but insulated from the bottom of the box 18, the plates being so balanced on their pivots that when in their horizontal position the contact members are separated. The contact members 32 and 33 are electrically connected by means of wires *b* and *c* respectively with one pole of each of the electromagnets 5 and 4, hereinbefore described, said wires passing through a tube or conduit 35, the remaining pole of each of said electromagnets being connected by a conductor *a* with a suitable source of energy.

The actuating device comprises a pair of electromagnets 39 and 40, each carried by a metal box 37 and 38 respectively secured to beams 36 carried by the frame 41 of the vehicle. One terminal of each of said magnets is grounded on its box, while the other terminal is connected by a wire *d* and *e* respectively with a manually operated control switch carried on the vehicle, a conventional form of which switch is indicated at 42 in Fig. 8.

The operation of the apparatus is as follows:

Assuming that the vehicle is to follow the straight track and that the switch blade is set so as to direct the vehicle on to the curved track. Before passing over the switch chamber, the operator of the vehicle will pull the control switch handle 43 toward the right in Fig. 8 so as to close the circuit at 44, whereupon current will flow from the generator through the conductor *a*, control switch, wire *e*, magnet 40, and back through the ground rail 2. The magnet 40 being thus excited will attract plate 25, swinging it on its pivot and closing the circuit at 33, whereupon current will flow from the generator through conductor *a*, magnet 5, wire *b*, contacts 33, 29, and back through rail 2. Magnet 5 being thus excited will pull armature 7, thereby causing the member 8 to fulcrum on the wedge-shaped portion 9, while its opposite end swings toward the right in Fig. 8, thus carrying the switch blade 12 into close contact with the curved portion of the switch and leaving the straight track ahead clear. On the other hand, if the switch blade is set so as to direct the vehicle onto the curved track and it is desired to send the vehicle straight ahead, on approaching the switch the operator pulls the control switch toward the left in Fig. 8, thereby to close the circuit at 45, whereupon current will flow through wire *d*, magnet 39 and back through rail 2, thus energizing said magnet and attracting plate 24 and closing the circuit at 32, whereupon current will flow through conductor *a*, magnet 4, wire *c*, contacts 32, 28 and back through rail 2, thereby exciting magnet 4 and attracting armature 6 and swinging member 8 toward the left of Fig. 8, whereby the curved portion of the switch will be left clear for the passage of the vehicle.

While I have illustrated and described my improved apparatus in connection with a single blade switch, it will be obvious to those skilled in the art that the apparatus is equally well-adapted for use in connection with switches having multiple blades, since it would be necessary only to multiply the number of electromagnets to correspond with the increased number of shiftable switch blades to be operated. It will also be obvious that this apparatus is adaptable for use in connection with any vehicle which travels on a track, and that the control mechanism may as readily be arranged for operation from a signal tower as from the vehicle itself. I am aware that these and many other mechanical changes and modifications can be made without departing from the spirit and scope of the invention as set forth in the claims appended hereto.

Having thus described my invention, what I claim is:

1. The combination with a switch block and a shiftable switch blade carried thereby, of a member pivotally connected to said blade and fulcrumed on said block, a pair of armatures carried by said member, electromagnets disposed in position to attract said armatures thereby to move said member in opposite directions, and means for selectively energizing said magnets.

2. The combination with a switch block and a shiftable switch blade carried thereby, of a member pivotally connected to said blade and fulcrumed on said block, said member having a pair of arms extending laterally therefrom at opposite sides thereof, electromagnets, one for each of said arms, disposed in position to attract the arms thereby to rock said member in opposite directions, and means for selectively energizing said magnets.

3. The combination with a switch block and a shiftable switch blade carried thereby, of a member pivotally connected to said blade and fulcrumed on said block, said member having a pair of arms extending laterally therefrom at opposite sides thereof, electromagnets, one for each of said arms, disposed in position to attract the arms thereby to rock said member in opposite directions, and magnetically operated means for selectively energizing said magnets.

In testimony whereof I have signed my name to this specification.

DOMINGO ARCANI.