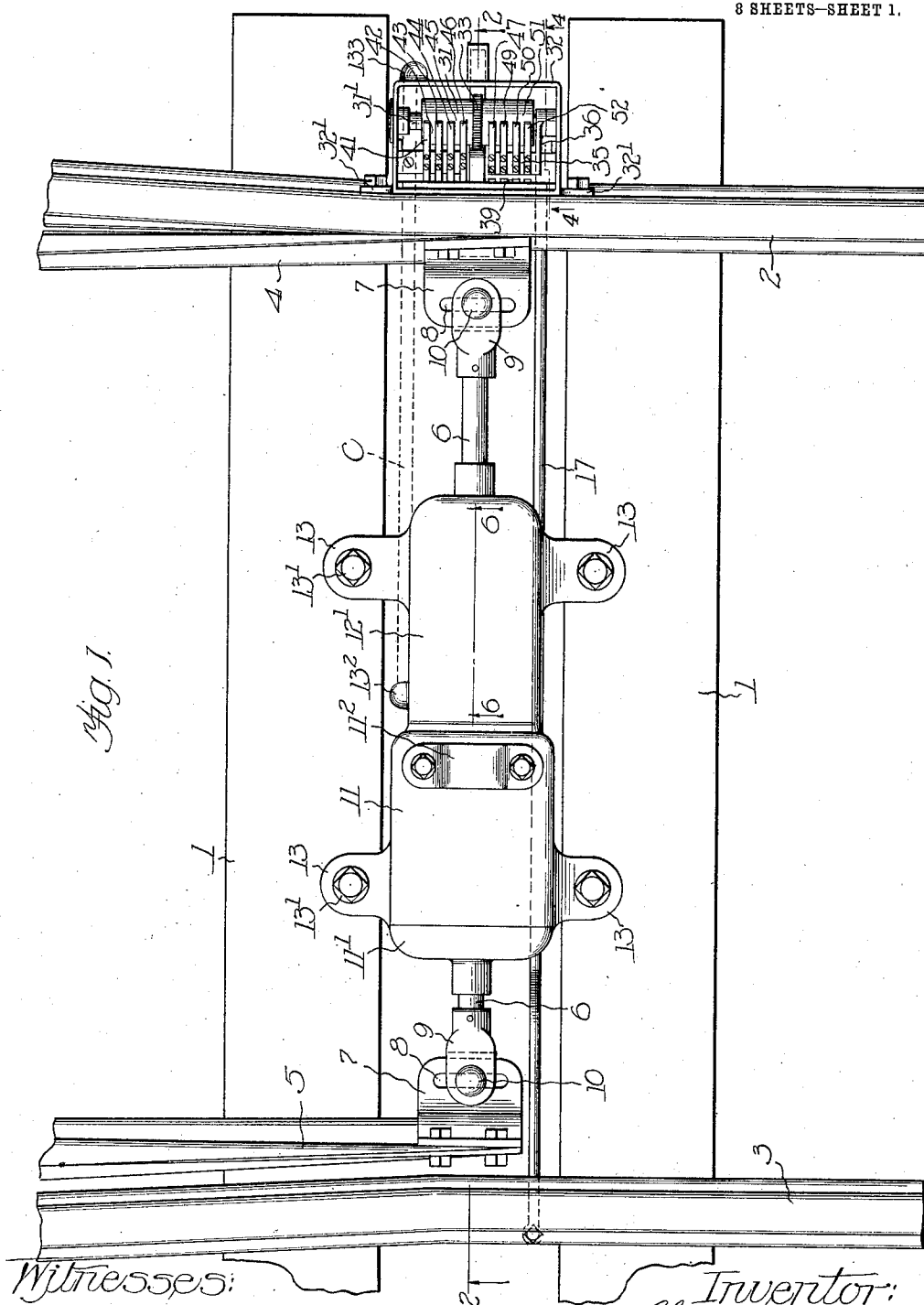


1,057,208.

8 SHEETS—SHEET 1.



Witnesses:

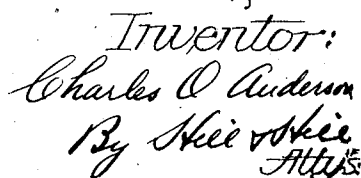
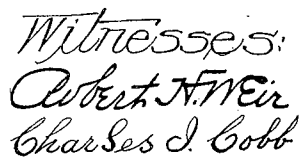
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1,057,208.

8 SHEETS—SHEET 2.

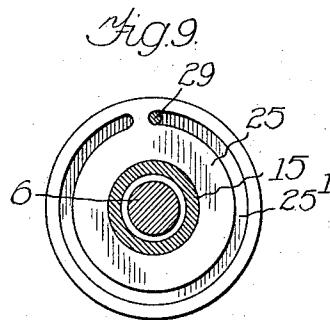
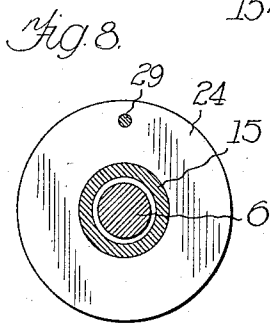
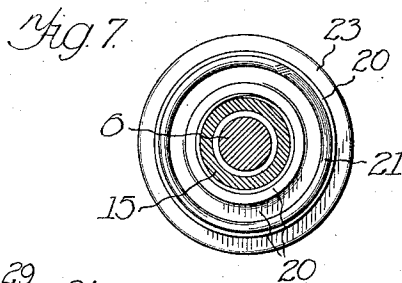
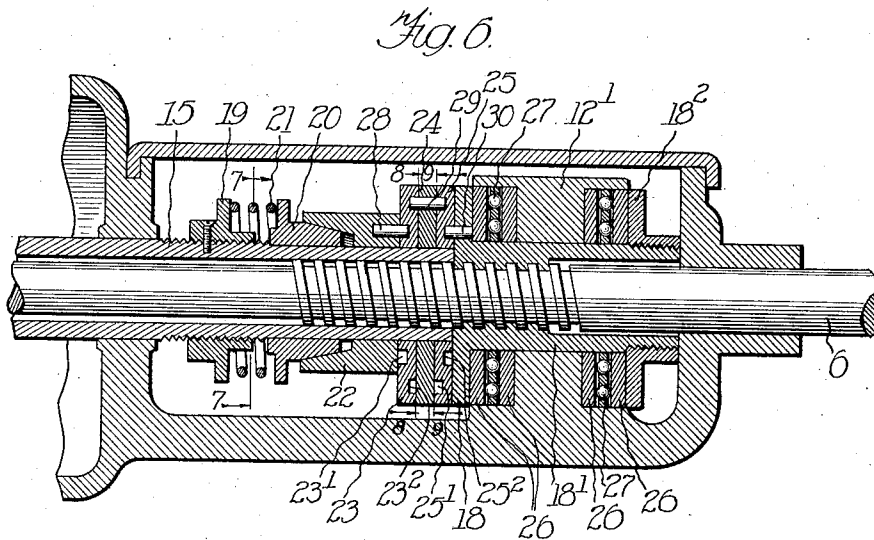


C. O. ANDERSON.
RAILWAY SWITCH OR THE LIKE.
APPLICATION FILED FEB. 28, 1910.

1,057,208.

Patented Mar. 25, 1913.

8 SHEETS—SHEET 3.



Witnesses:
Robert H. McEir
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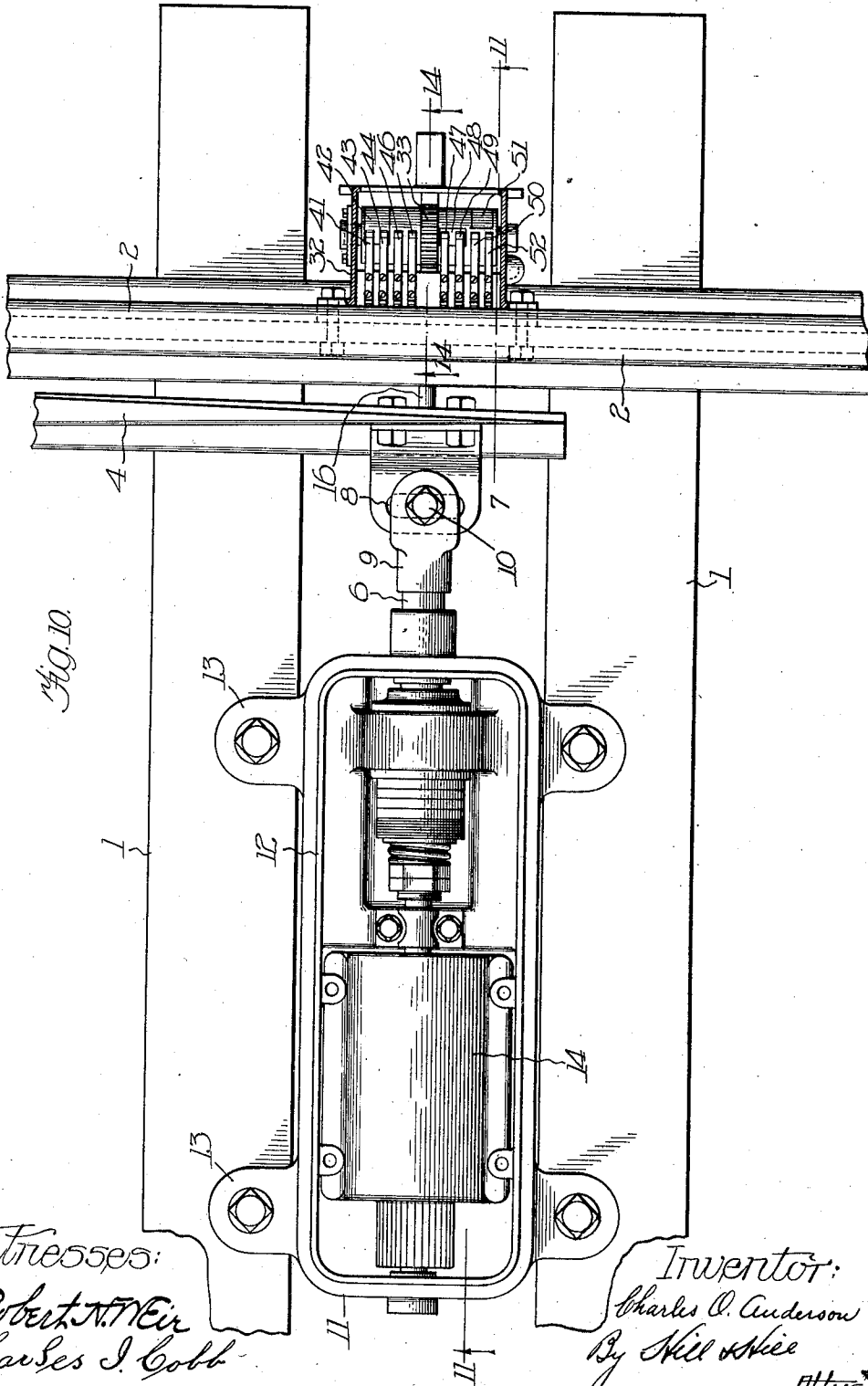
Inventor:
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C. O. ANDERSON.
RAILWAY SWITCH OR THE LIKE.
APPLICATION FILED FEB. 28, 1910.

1,057,208.

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8 SHEETS—SHEET 4.



Witnesses:
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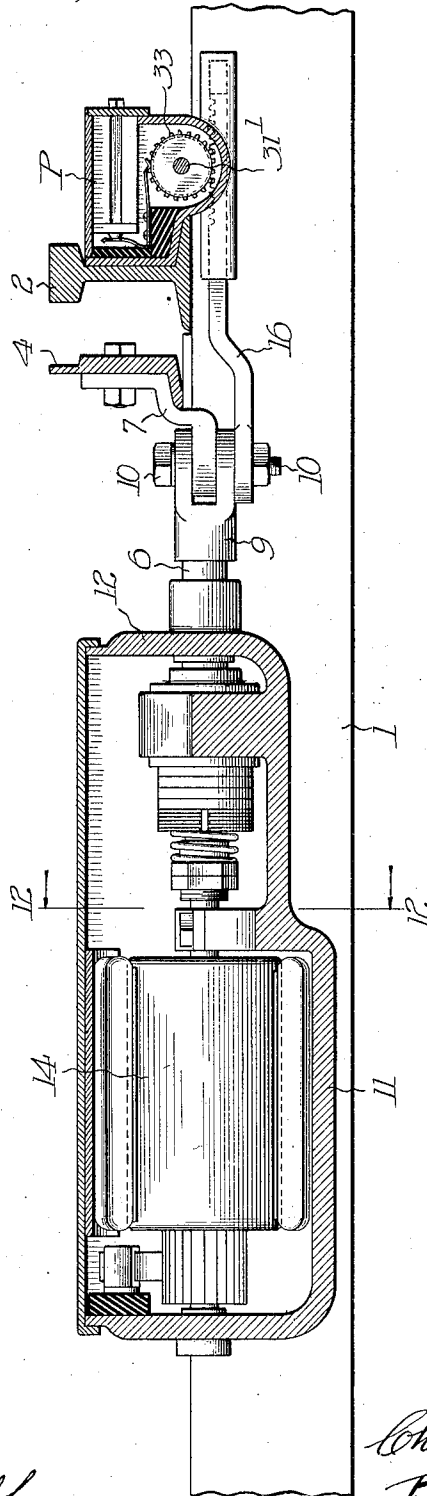
C. O. ANDERSON.
RAILWAY SWITCH OR THE LIKE.
APPLICATION FILED FEB. 28, 1910.

1,057,208.

Patented Mar. 25, 1913.

8 SHEETS—SHEET 5.

Fig. 11.



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C. O. ANDERSON.
RAILWAY SWITCH OR THE LIKE.
APPLICATION FILED FEB. 28, 1910.

1,057,208.

Patented Mar. 25, 1913.

8 SHEETS—SHEET 6.

Fig. 12.

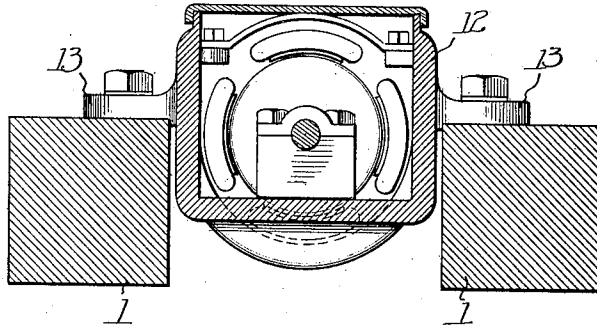


Fig. 13.

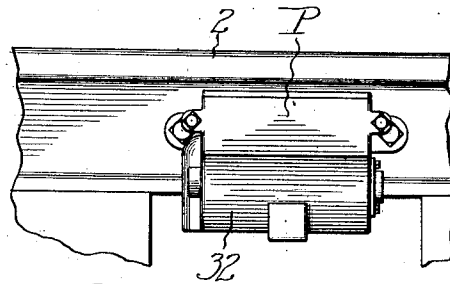


Fig. 14.

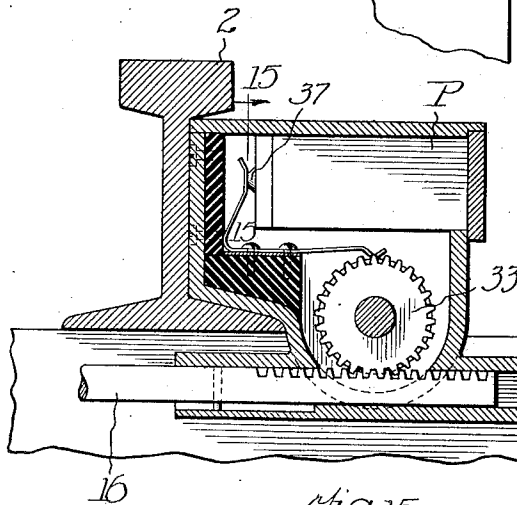
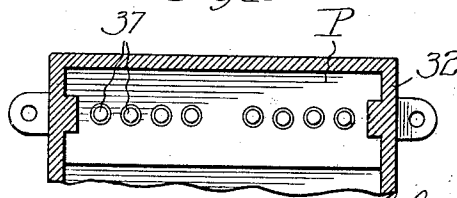


Fig. 15.



Witnesses:
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Charles J. Cobb

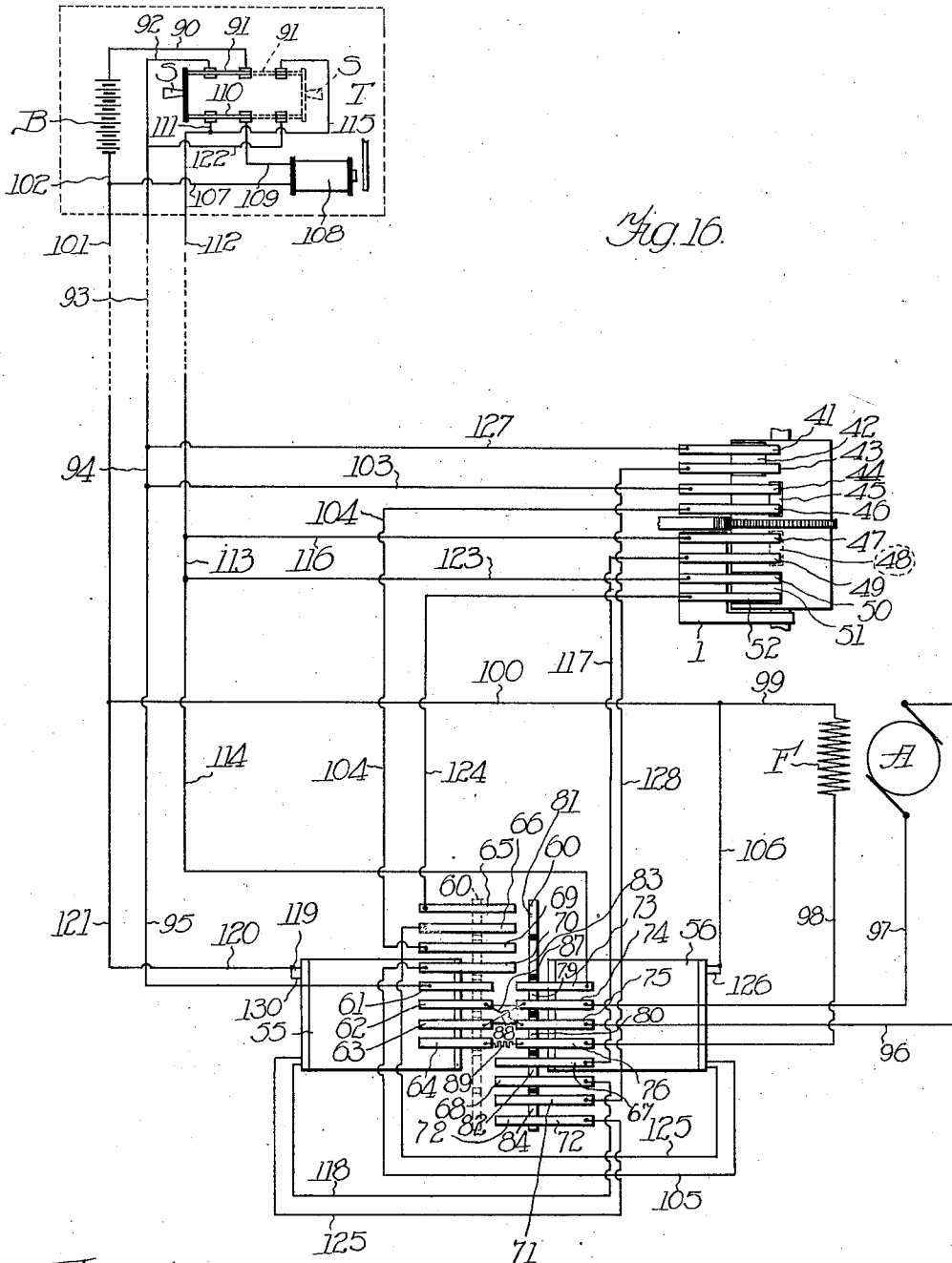
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C. O. ANDERSON.
RAILWAY SWITCH OR THE LIKE.
APPLICATION FILED FEB. 28, 1910.

1,057,208.

Patented Mar. 25, 1913.

8 SHEETS—SHEET 7.



Witnesses:
Robert H. Meir
Charles J. Cobb

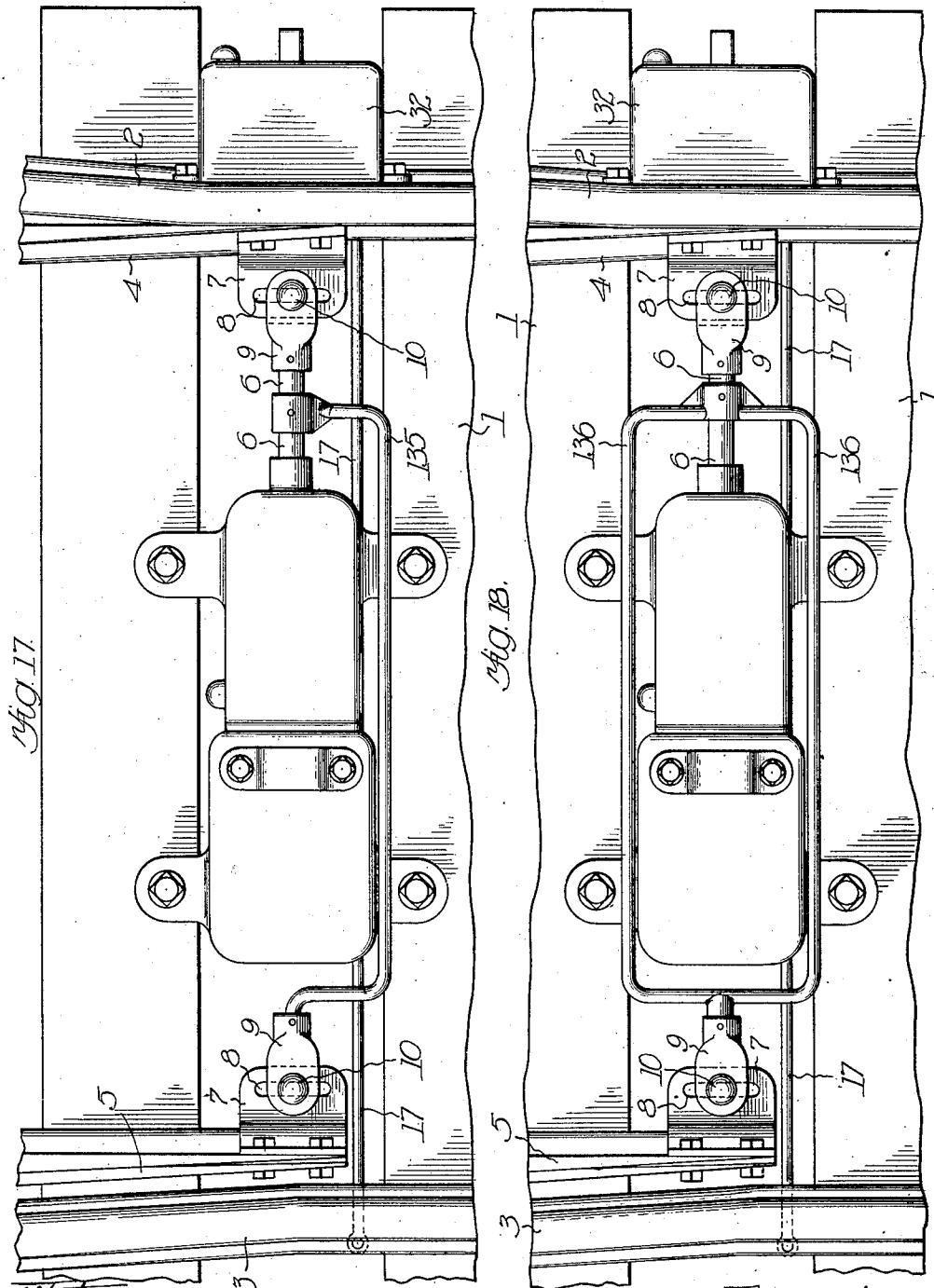
Inventor:
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APPLICATION FILED FEB. 28, 1910.

1,057,208.

Patented Mar. 25, 1913.

8 SHEETS—SHEET 8.



Witnesses:
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Charles J. Cobb

Inventor:
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By McEvoy & Co. Attys.

UNITED STATES PATENT OFFICE.

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RAILWAY-SWITCH OR THE LIKE.

1,057,208.

Specification of Letters Patent.

Patented Mar. 25, 1913.

Application filed February 28, 1910. Serial No. 546,445.

To all whom it may concern:

Be it known that I, CHARLES O. ANDERSON, a citizen of the United States, residing at Omaha, in the county of Douglas and State of Nebraska, have invented certain new and useful Improvements in Railway-Switches or the Like, of which the following is a description.

My invention belongs to that class of devices known as railway switches, derails or the like, and relates more particularly to that class of devices which may be controlled from a desired point and also which are automatically operated under certain conditions.

The present invention is substantially an improvement on my invention shown and described in my pending applications, Serial No. 486,375, filed March 29, 1909, Serial No. 523,078, filed October 16, 1909 and the application of Wilson A. Austin, filed October 14, 1909, Serial No. 522,553, and has among its objects the production of a simple, safe, compact, efficient and satisfactory device of the kind described for use wherever found applicable.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described and more particularly pointed out in the claims.

In the drawings wherein like reference characters indicate like or corresponding parts, Figure 1 is a plan view of a switch showing my device applied thereto, Fig. 2 is a sectional view of the same taken substantially on line 2—2 of Fig. 1, Fig. 3 is a sectional view taken substantially on line 3—3 of Fig. 2, Fig. 4 is a sectional view taken substantially on line 4—4 of Fig. 1, Fig. 5 is a front elevation of a portion of the mechanism shown in Fig. 4, the receptacle broken away, Fig. 6 is an enlarged sectional view taken substantially on line 6—6 of Fig. 1, Fig. 7 is a sectional view taken substantially on line 7—7 of Fig. 6, Fig. 8 is a sectional view taken substantially on line 8—8 of Fig. 6, Fig. 9 is a sectional view taken substantially on line 9—9 of Fig. 6, Fig. 10 is a plan view of a modification of the device as applied to a derail, Fig. 11 is a sectional view of the same taken substantially on line 11—11 of Fig. 10, Fig. 12 is a sectional view taken substantially on line 12—12 of Fig. 11,

Fig. 13 is a view in elevation of the receptacle 32, Fig. 14 is a sectional view taken substantially on line 14—14 of Fig. 10, Fig. 15 is a sectional view taken substantially on line 15—15 of Fig. 14, Fig. 16 is a diagrammatic view of suitable wiring for controlling the operation of the device, Fig. 17 is a view in elevation of a slightly modified construction from that shown in Fig. 1, and Fig. 18 is a view in elevation of another slightly modified construction.

Referring to the drawings, Figs. 1 to 9 inclusive show a construction in which two switch points are employed with the actuating mechanism for the movable rail parts arranged within the fixed rail parts, while Figs. 10 and 11 show a construction in which the actuating mechanism is arranged between the fixed rail parts, only one movable rail part being employed, as for example, in the case of a derail. Referring first to the construction in which two movable rail parts are employed, 2 and 3 represent the fixed rail parts or stock rails, and 4 and 5 the movable rail parts or switch points, the same being connected by a spreader bar 6, which also acts as the throw rod for moving the switch points from one position to the other, suitable mechanism being employed for moving same. The throw rod and spreader bar 6 may be connected to the switch points 4 and 5 in any suitable manner. As shown, it is connected thereto by means of a plate or member 7 secured to the switch points, the plate being provided with a slot 8 therein and the rod with heads 9. The heads 9 and member 7 are connected by means of suitable pins 10 or their equivalent arranged to pass through the slots 8 so that as the throw rod is moved longitudinally the switch points will be shifted therewith, the slots making a transverse movement of the throw rod unnecessary. As shown, the actuating mechanism and means for connecting the same with the throw rod are arranged within a suitable casing or receptacle 11—12, suitable parts 11¹, 11² and 12¹ being provided for closing the same. The motor, armature, commutator, brushes, etc., are indicated by the numerals 14, 14¹ and 14², the construction of the motor being of the usual form, except however, that as shown in these figures, the armature shaft is made hollow and the throw rod 6 extended therethrough.

An equivalent construction is shown in Figs. 17 and 18, as will be more fully explained hereafter.

To operatively connect the throw rod and the armature or driving shaft 15 I use substantially the same arrangement as shown in the application of Wilson Austin, filed January 31, 1910, Serial No. 541,018, which permits the acceleration of the motor in starting and eliminates any shock at the starting or stopping. Referring to the drawing, the throw rod is provided with thread and the same is moved longitudinally by rotating the member 18—18¹ thereabout. The form of connection may be briefly described as follows Members 19, 20 and resilient member 21 and the member 22 form substantially a friction clutch, the member 22 being rotatably mounted on the armature shaft 15. The member 22 is provided with a pin 28 arranged to cooperate with a suitable slotted member 23 which is rotatably secured on the armature shaft, the same being provided with slots 23¹ and 23². A member 24 is also arranged on the shaft 15, the same being provided with a pin 29 arranged to cooperate with the slot 23² and a slot 25¹ in a member 25. The member 25 is provided with a slot or groove 25² in which the pin 30 carried by the member 18 is arranged. It will thus be seen that the member 18 is driven by the shaft 15 by substantially a slot or groove and pin connection, thus permitting a certain movement of the armature shaft before driving the member 18, thus permitting acceleration of the motor. The friction clutch prevents shocks in starting or stopping. The member 18 is prevented from moving longitudinally and the thrust taken up by suitable members 26 and bearings 27 together with a collar 18² and the bearing 12². As is obvious, as the armature shaft 5 is rotated in one direction or the other the member 18 is also rotated in the same direction through the friction clutch and connection mentioned and the throw rod 6 being prevented from rotating it is thereby longitudinally moved in one direction or the other. It is of course understood that any equivalent connection may be employed between the motor shaft and the throw rod.

The motor is preferably controlled from a central controlling point, as for instance, a switch tower, the controlling mechanism shown comprising a drum 31 controlled by the movable switch points and suitable brushes controlled by the normally immovable stock rails. It may be mentioned at this time that while the stock rails are normally immovable, in case of their accidental displacement, as for example by spreading, they effect a change in the controlling mechanism, and in this respect may be said to exert a control over the controlling mechanism.

In order that the operation of the device may be fully understood the controlling mechanism may briefly be described as follows: Referring to Figs. 1, 2, 4 and 8, a drum 31 is suitably supported on a shaft 31¹ or its equivalent, as shown, by the receptacle 32, which receptacle is secured to one of the stock rails, for example, rail 2. The drum 31 is operated by a gear 33 carried thereby and a rack 16¹ on the rod 16 which is suitably connected to the switch points. As shown, the rod 16 is connected to the part 9 of the throw rod 6 by means of one of the bolts 10. As the switch points move the drum is rotated in one direction or the other. Suitable contact members 42, 45, 48 and 51 are provided on the drum and arranged to cooperate with suitable brushes 41, 43, 44, 46, 47, 49, 50 and 52 or their equivalents. Four of the brushes 41, 43, 44 and 46 are controlled by one stock rail, as shown rail 2, and the other four by the opposite stock rail, as shown rail 3. The last mentioned brushes are carried on a supporting member 35 which is carried by the bell crank arm 36 on the shaft 31¹, the opposite end 36¹ of the bell crank being connected to the rod 17 or its equivalent, preferably by means of a slot and pin connection. The opposite end of the rod 17 is secured to one of the stock rails, as shown rail 3. The brushes mentioned are connected to suitable contact points or members 38 and 39, which cooperate with suitable contact members 37 arranged on a pole changer "P," the construction of the pole changer being shown diagrammatically in Fig. 16.

It is unnecessary to go into details of the construction of the pole changer as the same is very clearly shown in my application mentioned. However, it may be mentioned that the form shown comprises solenoids 55 and 56 which control a movable switch member 60 provided with suitable contact members 81, 83, 79, 80, 82 and 84 which are arranged to cooperate with suitable cooperating members 65, 66, 69, 70, 61, 62, 63 and 64, 73, 74, 75, 76, 67, 68, 71 and 72. Figs. 13, 14 and 15 show substantially a similar pole changer as well as controlling mechanism, receptacle, etc.

Figs. 10 to 15 show a modified construction in which there is only one movable rail part or switch point, as in the case of a derail or switch in which only one point is employed. The details of this construction are substantially similar to those in the other construction. In this case it is not necessary to make the armature shaft hollow and the rod 17 shown in Fig. 1 may be omitted. The brushes 47, 49, 50 and 52 being supported similar to the other brushes. In this construction the pole changer P is shown horizontally removable instead of vertically removable and it may be mentioned that the

one movable switch point acts. If the drum and brushes are arranged at the opposite rail to that with which the movable rail point coöperates, then the movable brushes may be employed to produce the desired results.

Having thus described my invention it is obvious that various immaterial modifications may be made in the arrangement, construction and combination of parts herein shown and described without departing from the spirit of my invention, hence I do not wish to be understood as limiting myself to the exact construction, arrangement or combination of parts herein shown and described or uses mentioned.

What I claim as new and desire to secure by Letters Patent is:

1. In a device of the kind described and in combination, fixed and movable rail parts and actuating means for the movable rail part arranged between the fixed rail parts comprising an electric motor arranged with its rotatable armature shaft extending transversely the normally fixed rail parts, a longitudinally movable throw rod arranged substantially parallel with said shaft and operatively connected with said shaft, and with said movable rail part.
2. In a device of the kind described and in combination, fixed and movable rail parts, actuating mechanism arranged between the fixed rail parts for said movable rail parts, comprising a motor, a shaft driven thereby, a throw rod for said movable rail parts operatively connected thereto at points substantially in alinement with said shaft and means for operatively connecting said shaft and throw rod.
3. In a device of the kind described and in combination, fixed and movable rail parts, actuating means for said movable rail part, arranged between the fixed rail parts, said means including a driving shaft, a throw rod extending therethrough and connecting the movable rail parts and means for operatively connecting said shaft and throw rod arranged to permit the acceleration of the shaft before operative engagement with said throw rod.
4. In a device of the kind described and in combination, fixed and movable rail parts, a substantially one part spreader bar, throw rod and lock rod for said movable rail parts and actuating mechanism for said throw rod arranged between the fixed rail parts, comprising an electric motor arranged with its rotatable armature shaft extending transversely the normally fixed rail parts, said throw rod longitudinally movable and arranged substantially parallel with said shaft and operatively connected therewith, and with the movable rail parts.
5. In a device of the kind described and in combination, stock rails and a movable

switch point, actuating mechanism for said switch point, said actuating mechanism arranged between the stock rails and including a shaft arranged substantially transversely to the stock rails, means for rotating said shaft, and means for operatively connecting said shaft and the switch point after a predetermined rotation of the shaft.

6. In a device of the kind described and in combination, stock rails and movable switch points, and actuating mechanism for said switch points, said actuating mechanism arranged between the fixed rail parts and including a rotatable shaft, driving means therefor, and means for operatively connecting said shaft and said switch points after a predetermined rotation of the shaft.

7. In a device of the kind described and in combination, stock rails and movable switch points, actuating means for said switch points, said actuating means arranged between said stock rails and including a motor, a hollow shaft driven thereby, a throw rod connected with said switch points, and means for operatively connecting said hollow shaft and said throw rod after a predetermined rotation of the shaft.

8. In a device of the kind described and in combination, stock rails and movable switch points, actuating means for said switch points, said actuating means arranged between said stock rails and including a motor, a hollow shaft driven thereby, a throw rod connected with said switch points, and means for operatively connecting said hollow shaft and said throw rod, said means including a clutch comprising a plurality of parts and having one part thereof secured to said shaft and another part operatively connected to said throw rod, connecting means between said clutch and throw rod.

9. In a device of the kind described and in combination, stock rails and movable switch points, actuating means for said switch points, said actuating means arranged between said stock rails and including a motor, a hollow shaft driven thereby, a throw rod connected with said switch points, and means for operatively connecting said hollow shaft and said throw rod, said means including a clutch comprising a plurality of parts and having one part thereof secured to said shaft and another part operatively connected to said throw rod, connecting means between said clutch and throw rod, said means including a rotatable nut operatively arranged on said rod.

10. In a device of the kind described and in combination, stock rails, movable switch points arranged to coöperate therewith, actuating mechanism for said switch points, said mechanism including a motor provided with a hollow armature shaft, and arranged

wiring may be substantially the same as in the other form.

Figs. 17 and 18 show a construction in which is embodied parts of each construction shown. In this from the motor and operating mechanism for the throw rod 6 are substantially similar to that shown in Figs. 10 and 11 and an auxiliary throw rod 135 or 136 provided to connect the other movable rail part. In Fig. 17 this comprises a rod 135 offset so as not to interfere with the motor or other mechanism while in Fig. 18 the same is in the form of a yoke, it being understood that any equivalent arrangement may be used for the purpose. The constructions shown in either of these figures permit the use of a motor substantially similar to that shown in Fig. 10. While in these figures the auxiliary throw rods 135 or 136 are shown secured to the throw rod 6, it is of course obvious that the offset bar or yoke might be connected directly to each switch point, giving a solid spreader bar and the throw rod 6 secured thereto in any suitable manner, or a solid spreader bar be employed and the throw rod 6 offset substantially similar to the rod 135 and connected to the spreader bar in any suitable manner. It might be noted that in the construction shown in Fig. 1 the bar 6 is a spreader bar, throw rod and lock rod combined, while in the construction shown in Figs. 10, 17 and 18 it is a combined throw rod and lock rod. The construction shown gives substantially this result and it is therefore considered unnecessary to further illustrate the same.

The operation of the device may be briefly described as follows: Referring to Fig. 16 in which the preferred manner of wiring the device is shown, this figure shows diagrammatically what has been described, the various parts bearing the same reference numerals as the detailed views illustrating the same. The apparatus at the tower T may be of any suitable form, as may also be the indicating apparatus for indicating the condition of the switch points. The reference character "B" indicates a battery, dynamo or equivalent source of electrical power.

Referring to Fig. 16 "T" represents the controlling point and "S" a suitable switch for controlling the switch mechanism. Assuming that the switch points are as shown in Fig. 1, which may be called the reverse position, it is desired to throw them to their normal position or to the left. The points being in the position shown in Fig. 1 brushes 44 and 46 being in contact with contact member 45 and brushes 50 and 52 with contact member 51, the member 60 (of the pole changer) in the position shown by the full lines in Fig. 16 the switch "S" is thrown as indicated by the dotted lines in Fig. 16, a circuit is formed as follows: B,

90, 91, 115, 112, 113, 114, 73, 79, 74, 97, A, 96, 75, 80, 76, 98, F, 99, 100, 101, 102, B. This causes the motor to operate, thereby throwing the switch points to the left or in the opposite position to that shown in Fig. 1. The movement of the switch points rotates the drum 31, so that the contact member 48 is brought up to close a circuit between brushes 47 and 49 and a circuit is formed as follows: B, 90, 91, 115, 112, 116, 47, 48, 49, 117, 67, 82, 68, 118, 55, 119, 120, 121, 101, 102 and B, thereby energizing the solenoid 55 and throwing member 60 back as indicated in the dotted lines in Fig. 16, breaking the circuits mentioned between contact members 73 and 74, 75 and 76, and 67 and 68 so that the motor is stopped. The indicating circuit may be traced as follows: A, 97, 74, 88, 63, 80, 64, 89, 76, 98, F, 99, 100, 101, 107, 108, 109, 110, 122, 93, 94, 95, 61, 79, 62, 87, 75, 96 and armature A, operating the relay 108 or other indicating mechanism the electromotive force being derived from the motor driven by its momentum and acting as a dynamo.

To throw the switch points back to the reverse position as shown, the switch "S" is thrown as indicated by the full lines so that a circuit is formed as follows: B, 90, 91, 92, 93, 94, 95, 61, 79, 62, 87, 75, 96, A, 97, 74, 88, 63, 80, 64, 89, 76, 98, F, 99, 100, 101, 102, B, causing the motor to operate. This throws the switch points back to the opposite side, or as indicated in the drawings. At the end of their travel the drum 31 being rotated in the opposite direction brings up the contact point 45 as shown in the drawings, so that a circuit is formed as follows: B, 90, 91, 92, 93, 94, 103, 44, 45, 46, 104, 69, 83, 70, 105, solenoid 56, 106, 100, 101, 102, B, energizing the solenoid and drawing the switch member 60 to the position indicated by the full lines, thereby breaking the motor circuit between members 61 and 62, and 63 and 64 as well as breaking its own circuit at 69 and 70. The indicating circuit may be traced as follows: A, 96, 75, 80, 76, 98, F, 99, 100, 101, 107, 108, 109, 110, 111, 112, 113, 114, 73, 79, 74, 97 and armature A, the indicating relay 108 giving an indication the electromotive force being supplied from the motor acting as a generator, as heretofore mentioned. The switch points may be reversed at any time and automatically follow the stock rail or are maintained in safe position relative thereto when in either position in the same manner as described in my application heretofore mentioned.

In the case of a derail or one switch point it is of course obvious that it is unnecessary to employ the movable brushes, as the one point will be automatically maintained in position provided the drum and brushes are controlled by the stock rail with which the

between said stock rails with said shaft extending transversely the rails, a threaded throw rod extended through said shaft and secured to said switch points, and means for operatively connecting said shaft and said throw rod, including a rotatable nut arranged on said threaded portion of the said throw rod.

11. In a device of the kind described and in combination, stock rails, movable switch points arranged to cooperate therewith, actuating mechanism for said switch points, said mechanism including a motor provided with a hollow armature shaft, and arranged between said stock rails with said shaft extending transversely the rails, a threaded throw rod extended through said shaft and secured to said switch points, and means for operatively connecting said shaft and said throw rod, including a rotatable nut arranged on said threaded portion of the said throw rod, means for operatively connecting said nut and shaft, including a friction clutch comprising a plurality of parts with one part secured to said shaft and the other part connected with said nut.

12. In a device of the kind described and in combination, stock rails, movable switch points arranged to cooperate therewith, actuating mechanism for said switch points, said mechanism including a motor provided with a hollow armature shaft, and arranged between said stock rails with said shaft extending transversely the rails, a threaded throw rod extended through said shaft and secured to said switch points, and means for operatively connecting said shaft and said throw rod, including a rotatable nut arranged on said threaded portion of the said

throw rod, means for operatively connecting said nut and shaft, including a friction clutch comprising a plurality of parts with one part secured to said shaft and the other part connected with said nut, the connecting means between said last mentioned clutch part and said throw rod arranged to permit the acceleration of the clutch part before operative engagement with said nut.

13. In a device of the kind described and in combination, stock rails and cooperating movable switch points, actuating mechanism for said switch points including an electric motor arranged between said stock rails with its armature shaft extending transversely the stock rails, a non-rotatable longitudinally movable throw rod for said switch points secured thereto and extending parallel with said shaft, and means for operatively connecting said shaft, and said throw rod.

14. In a device of the kind described and in combination, stock rails, a movable switch point cooperating with one of said stock rails, and actuating mechanism for said switch point including a motor arranged between said stock rails with its armature shaft extending transversely said stock rails, a throw rod for said switch point, and means for yieldingly and operatively connecting said shaft and said throw rod.

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

CHAS. O. ANDERSON.

Witnesses:

W. A. AUSTIN,
M. ENGLER.