C. O. ANDERSON.

RAILWAY SWITCH OR THE LIKE.

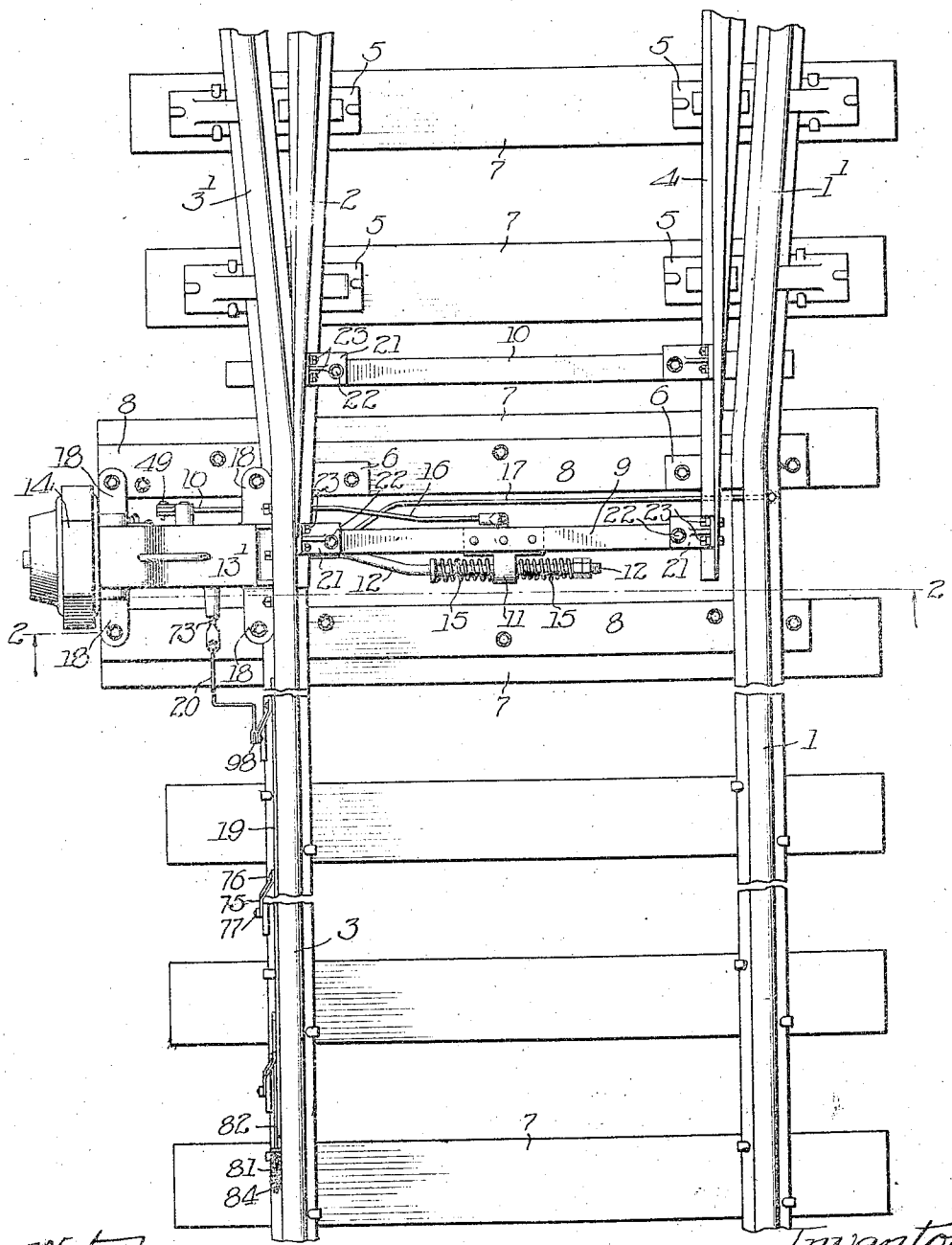
APPLICATION FILED MAR. 29, 1909.

1,128,568.

Patented Feb. 16, 1915.

7 SHEETS—SHEET 1.

Fig. 1.



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7 SHEETS—SHEET 2.

Fig. 2.

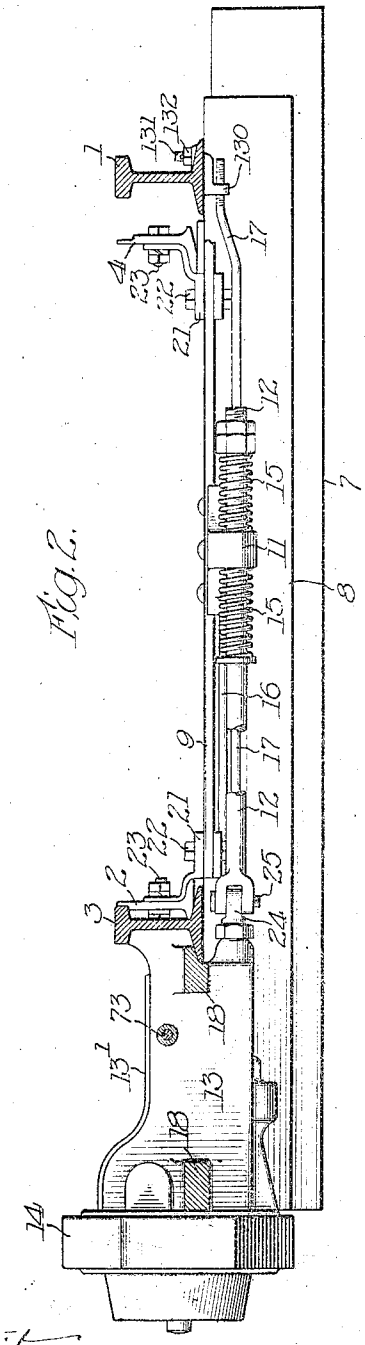
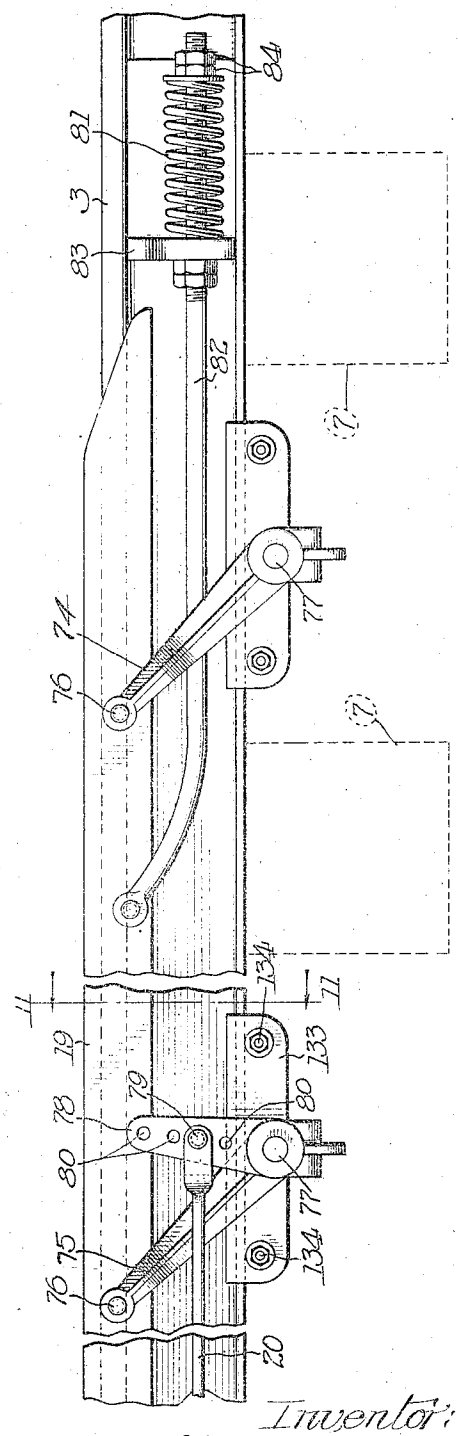


Fig. 3.



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7 SHEETS—SHEET 3.

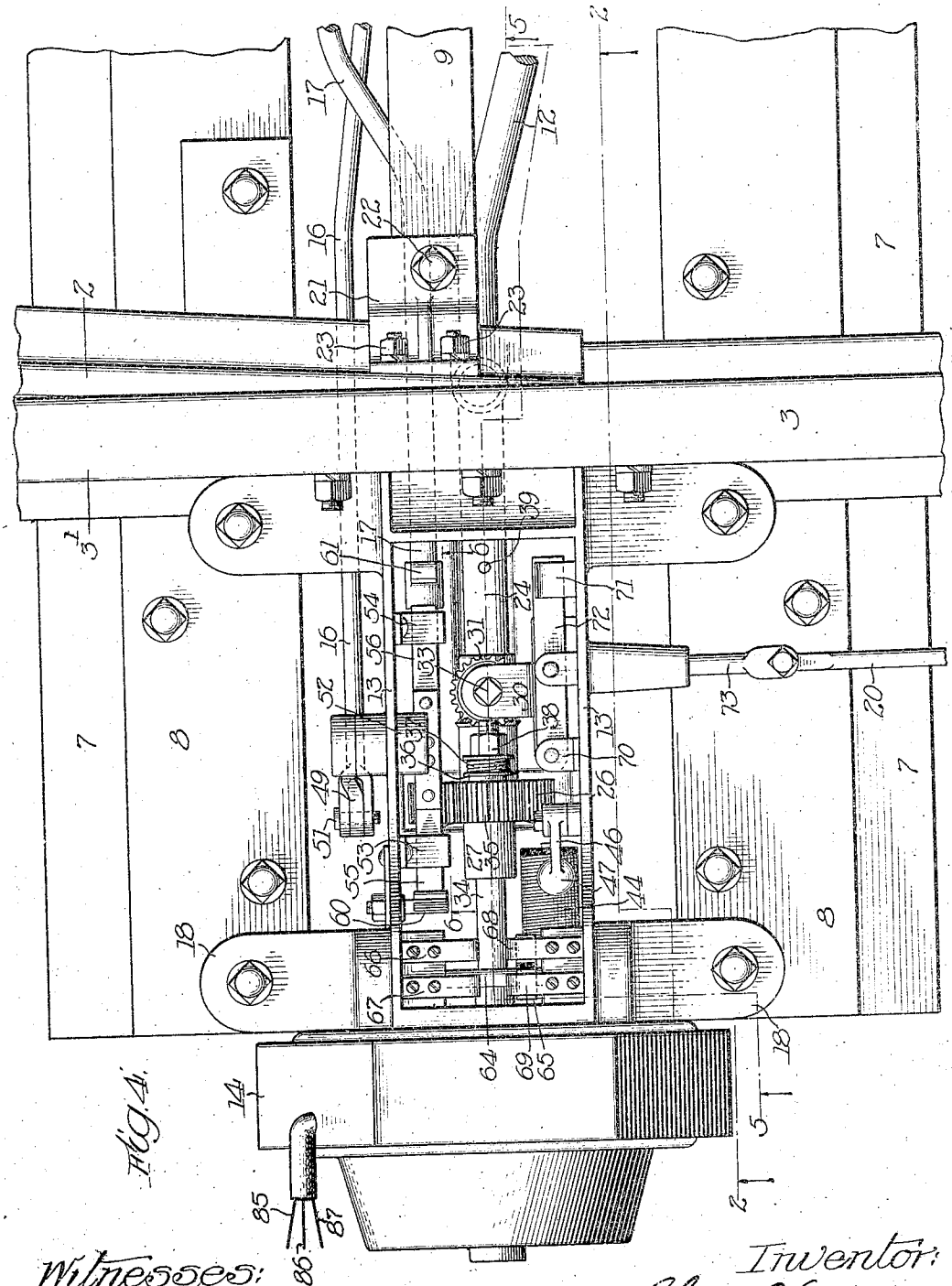


Fig. 4.

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Patented Feb. 16, 1915

7 SHEETS—SHEET 4.

Fig. 5.

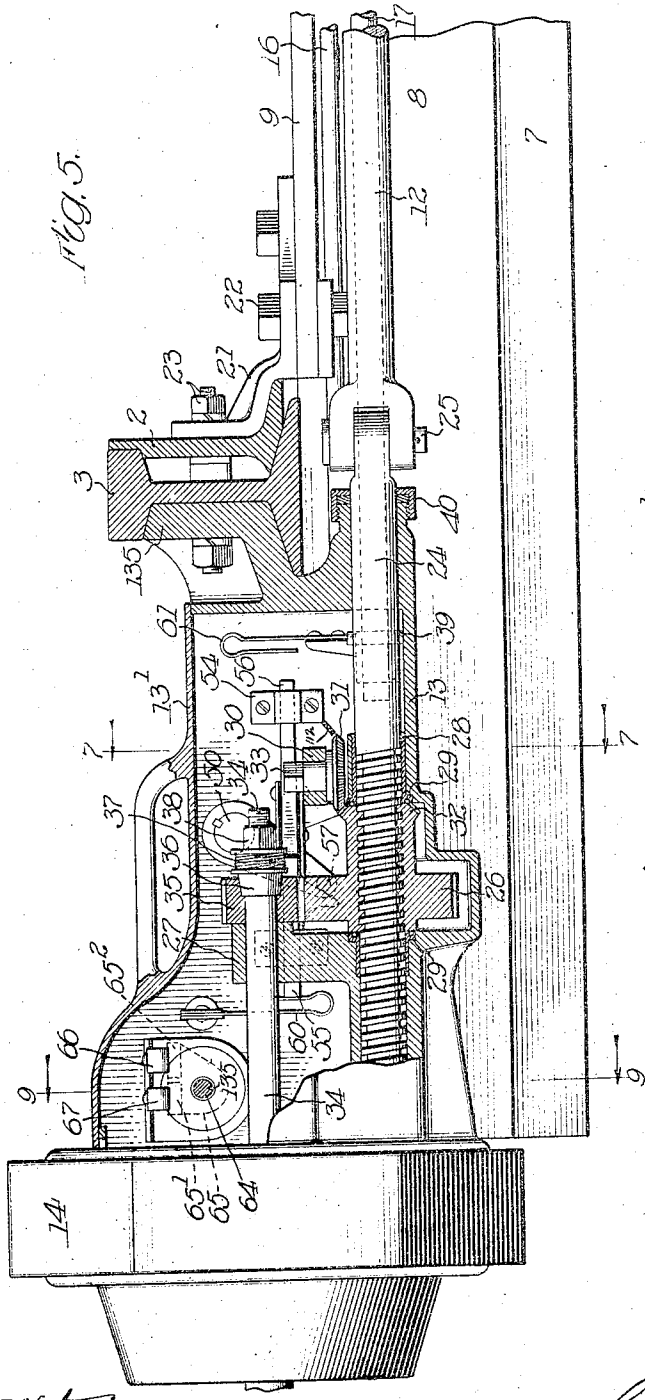
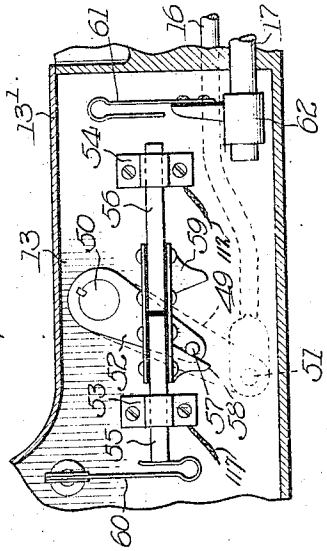


Fig. 6.



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7 SHEETS—SHEET 6.

Fig. 7.

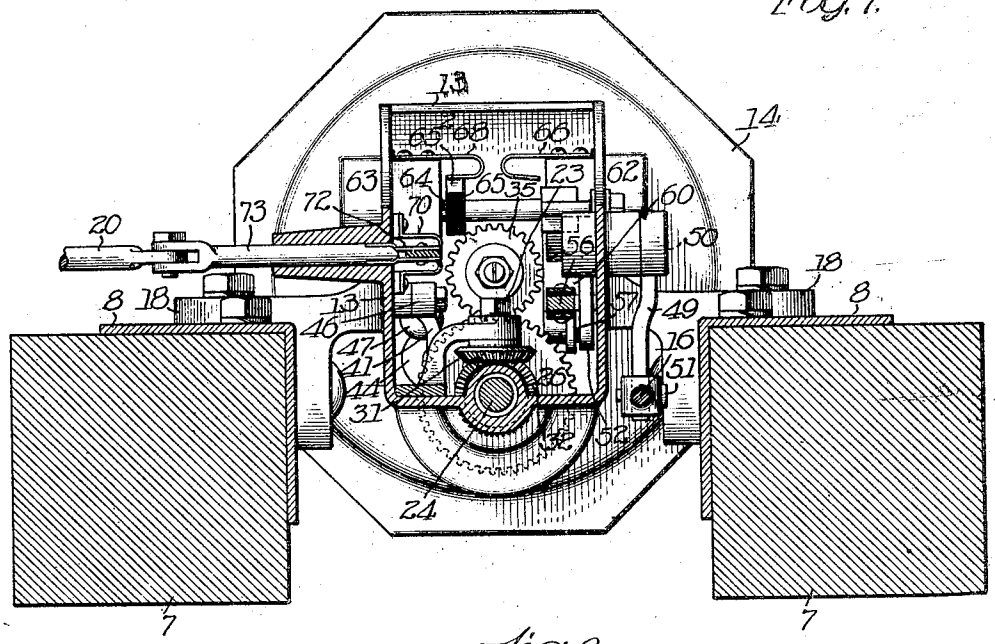
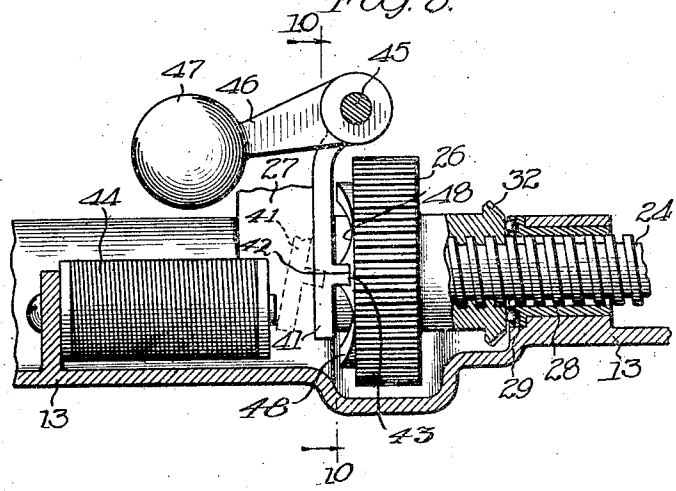


Fig. 8.



Witnesses

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7 SHEETS—SHEET 6.

Fig. 9.

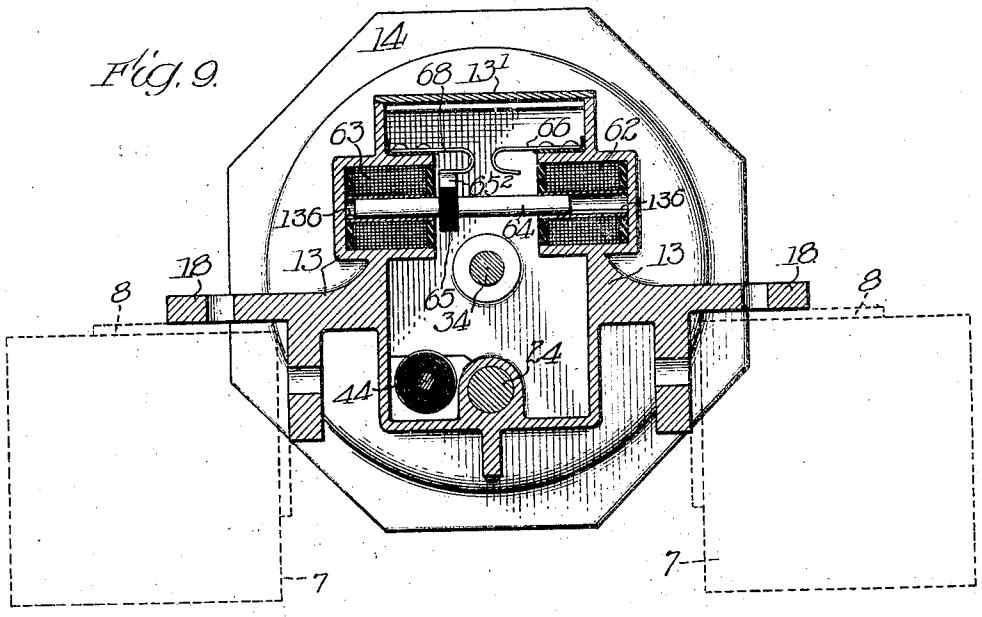


Fig. 10.

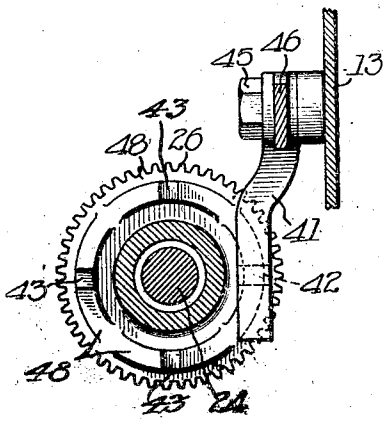
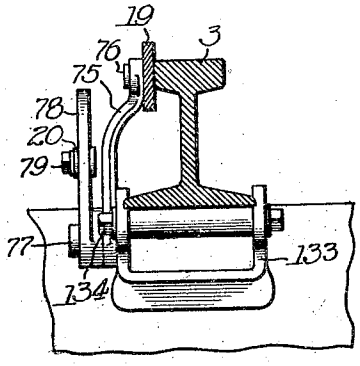


Fig. 11.



Witnesses

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7 SHEETS—SHEET 7.

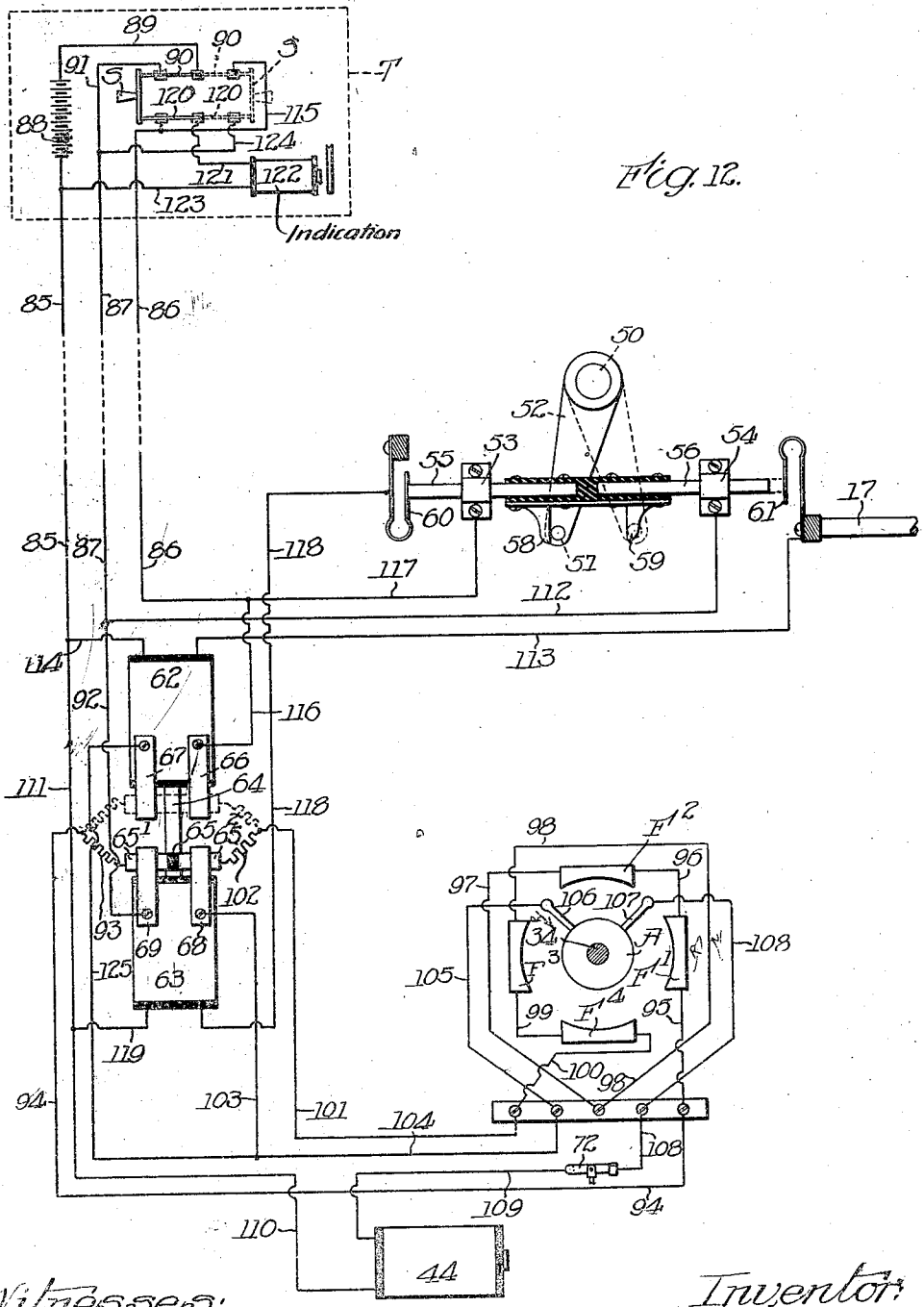


FIG. 12.

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UNITED STATES PATENT OFFICE.

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RAILWAY-SWITCH OR THE LIKE

1,128,568. Specification of Letters Patent. Patented Feb. 16, 1915.

Application filed March 29, 1909. Serial No. 486,375.

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 or the like, and refers particularly to that class of switches adapted to be operated or controlled from a particular or central controlling or operating point, which may be proximate to or at some distance from the switch to be operated.

The preferred construction shown is a self-adjusting electrically operated switch for use wherever applicable.

My invention has among its objects the production of a simple, efficient, safe and satisfactory switch of the kind described for use wherever it may be found applicable, and a switch that may be constructed and installed at a comparatively low cost.

The preferred construction shown may be very readily and satisfactorily installed to replace many of the devices now in use, there being a substantial reduction in the number of parts and size over devices commonly in use thereby being less apt to get out of order as well as being more convenient for installation. In some cases it may be installed to replace other forms, using the same or former controlling system, or the preferred or equivalent controlling system may also replace the old.

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 and operating mechanism, a part of the operating mechanism inclosed, Fig. 2 is a sectional view of the same taken substantially on line 2—2 of Fig. 1, Fig. 3 is a side elevation of a portion of the detector apparatus, Fig. 4 is a top elevation of a portion of the operating mechanism with the casing cover removed, Fig. 5 is a cross sectional view taken substantially on line 5—5 of Fig. 4, Fig. 6 is a sectional view taken substantially on line 6—6 of Fig. 4, Fig. 7 is a sectional view taken substantially on line 7—7 of Fig. 5, Fig. 8 is a side elevation of the auxiliary locking mechanism, Fig. 9 is a sectional view taken substantially on line 9—9 of Fig. 5, Fig. 10 is a partial sectional view taken substantially on line 10—10 of Fig. 8, Fig. 11 is a sectional view taken substantially on line 11—11 of Fig. 3, and Fig. 12 is a diagrammatic view of the preferred form of wiring.

Referring to the drawings the usual form of railroad switch is shown comprising the stock rails 1, 3, 1^1, and 3^1, and the movable switch points or parts 2 and 4, with my invention applied thereto. It may be assumed for convenience in describing the device that when the switch parts or points 2 and 4 are in the positions shown, the switch parts are in normal position so that a train will travel upon the stock rails 1 and 3 on to the stock rail 1^1 and switch part 2, etc. If the switch is opened (or the parts in reverse positions) then the train will pass from the rails 1 and 3 on to the switch part 4 and stock rail 3^1, etc. Suitable ties 7—7, etc., of the usual or any preferred construction or material may be provided and the rails and switch points supported thereon in any suitable way, plates 5—5 or the equivalent being preferably arranged as shown. The switch points 2 and 4 are adapted to be moved from the position shown to the right so that the point 4 rests against the rail 1 and the point 2 away from the rail 3. The points or parts 2 and 4 may be provided with any suitable means for causing them to move together, as shown they are preferably secured together by means of suitable connecting or spreader bars 9 and 10, the same being arranged so as to permit the movement of the parts as above described. The parts are securely retained in the desired relation to each other since the spreader bars are continuous and secured directly to the parts by means of suitable brackets 21 and bolts 22 and 23 or an equivalent arrangement. It should be noted that while two switch points or parts, 2 and 4 respectively, are shown there may be but one movable part, as for example, the switch commonly used for street railways or for derails, etc. It should also be mentioned that the rails and switch parts or points, ties, etc., may be of such design or construction as preferred.

Secured to the bar 9, as shown on the extension 11, is a suitable throw rod or bar 12 operatively connected with suitable mechanism for moving the same. In the preferred construction the throw rod 12 is operatively connected with an electric motor and the operation of the device brought about by driving the motor in one direction or the other to move the parts to normal or reverse position as desired. The spreader bar 9 is also connected by means of a suitable rod 16 or the equivalent to an arm 49 as more fully described hereafter. A rod 17 is preferably secured to the stock rail 1 as shown and to a movable contact member 61 arranged within the casing 13, the purpose and operation of the same being more fully explained hereafter.

In the preferred construction, resilient members 15—15 or the equivalent are provided as shown between the spreader bar 9 and the rod 12 so that the two are substantially yieldingly or resiliently secured together. The springs are of such strength that they will not be compressed to any appreciable extent in throwing the switch points from one position to the other. They not only act as a cushion when the points are thrown from one position to the other, but should a train run through the switch while closed, that is for example, when the switch points are in the position shown should a train from the stock rail 3^1 and the point 4 run through the switch on to the stock rails 1 and 3, the switch points will give way owing to the resilient connection mentioned and the train pass safely through without in any way injuring the switch or the operating mechanism.

The rod 12 is connected or secured to a rod 24, extending within the casing, by means of a pin 25 or the equivalent, so that the same are pivotally secured together and form the throw rod. The rod 24 is suitably supported within the casing 13 and provided with a thread and a gear 26 positioned on the rod. The gear 26 is free to rotate on the rod 24 but is retained from moving longitudinally by the extension 27 of the casing and a shoulder 28, so that rotating or driving the gear in one direction or the other longitudinally moves the rod in one direction or the other, thereby shifting or moving parts 2 and 4 of the switch. As shown ball bearings 29 or the equivalent may be arranged to decrease friction and prevent the gear 26 from binding. Any suitable means may be employed to operate gear 26, the preferred construction comprising a gear or pinion 35 arranged to be driven by shaft 34 which is in turn driven by the motor. As before mentioned the preferred construction is a motor arranged to drive the shaft 34 in either direction, suitable means being employed to control the motor as desired. The gear or pinion 35 is preferably yieldingly secured on the shaft 34, as shown by means of the cone 36 coöperating therewith, and, a resilient member 37 retained by the nut 38, the resilient member tending to normally force the cone into driving contact with the pinion. This construction takes all shock off of the motor when the points have reached the limit of their travel or in the starting of the device, the resilient member and cone permitting a slight slip at this time. If desired, the gear 26 may be provided with the bevel gear face 32 arranged to cooperate with the bevel gear 31 or the equivalent so that the switch may be thrown by hand by means of a suitable wrench (not shown) engaging the squared head 33 or the equivalent. It should be particularly noted that this construction comprising the rod and gear rotatable on the same as described, prevents rebounding of the switch points inasmuch as the arrangement of the gear and threaded rod substantially forms the lock in itself. This arrangement and the resilient members 15 together form a very satisfactory resilient or yielding lock for the switch points. Auxiliary locking means may be employed however, if desired, as is more fully explained hereafter. The movement of the rod 24 may be limited by means of a pin 39 or the equivalent as more fully explained in the operation of the device. The casing 13, and removable top 13^1 for the same, surrounding the mechanism protects it from the weather, keeping out both moisture and dirt. If desired, a suitable amount of oil, preferably non-freezing oil, or the equivalent may be placed in the casing submerging the parts. As shown suitable packing 40 may be provided if desired to prevent the leakage of the oil from within the casing.

As before mentioned the gear 26 is preferably driven by means of an electric motor or the equivalent for the purpose, the direction of rotation of the gear being controlled by controlling the motor, preferably by changing its polarity. Referring particularly to Figs. 4, 6 and 7 in which the same is most clearly shown the arm 49 (to which is secured rod 16) is secured to a suitable shaft 50 which extends to the interior of the casing and provided with an arm 52. Arm 52 is provided with a pin or extension 57 arranged to coöperate with suitable extensions or lugs 58 and 59 of a circuit breaker or switch comprising the bars 55 and 56, which are suitably insulated from each other, and contact points and guides 53, 54, 60 and 61. The contact 60 may be substantially rigidly secured to the casing 13, being insulated therefrom, so that the same is practically maintained in position relative to the stock rail 3. Contact point 61 is preferably secured to the rod 17 and controlled

by the movement or spreading of the stock rail 1. As is obvious, movement of the movable switch parts or points 2 and 4 will control the bars 55 and 56 closing a circuit at one of the contacts 60 or 61 as the case may be and as more fully explained in the operation of the device. The movement of stock rail 1 relative to rail 3 will control the position of the contact point 61 relative to the contact point 60.

Referring particularly to Figs. 4, 5, 7 and 9, in which the same is most clearly shown, a plurality of coils 62 and 63 or their equivalent are arranged within the casing 13 or in any other suitable place and control a movable switch member 65 of any preferred construction which coöperates with the contact points 66, 67, 68, and 69. Movable member 65 may be of any suitable construction the same preferably comprising parts 65^1 and 65^2 insulated from each other, the same being controlled by the energizing of one or the other of the coils 62 or 63 as the case may be, which are controlled by the switch operated by rod 16. This is very clearly explained in the operation of the device.

As before mentioned the control rod 24 and the gear 26 practically form a lock for the movable switch parts 2 and 4, but if desired suitable means may be employed to additionally lock the same. Referring particularly to Figs. 4, 8 and 10, a locking member 41 controlled by a suitable coil 44, is provided with a lug or extension 42 adapted to coöperate with the notches 43 on the face of the gear thereby locking the same. As shown the member 41 is pivotally secured at 45 and provided with an arm 46 having a weight 47, the weight and arm tending to normally maintain the arm in the position shown in Fig. 8. When the power is turned on to operate the motor, the coil 44 is energized and the arm 41 drawn away from the gear 26 thereby releasing the same. If desired, the gear may be formed or recessed as at 48 so that the rotation of the gear when unlocked will tend to normally throw or kick the lock out of operative position.

Referring to Figs. 1, 3 and 11, I also preferably provide what may be termed a detector bar 19 which is arranged to control the operation of the motor, the construction being such that when a train is within a certain distance covered by the detector bar it will be impossible to open or close the switch by operating the motor. As shown the detector bar comprises a bar 19 supported along the side of the rail by suitable arms 74, 75, etc., the same being pivotally secured to brackets and the bar at points 77 and 76 respectively. An arm 78 is secured to the arm 75 forming substantially a bell crank 75, 78. A resilient member 81 coöperating with bracket 83 carried by the rail 3 and the rod 82 secured to the bar 19 and provided with a nut 84, tends to normally retain the bar in the position shown in the drawings. The arm 78 is pivotally secured at the point 79 to a rod 20 or the equivalent which through rod 73 controls a switch bar 72 which normally connects contact points 70 and 71 arranged in the controlling circuit of the motor. When the bar is depressed the switch bar 72 which is pivotally secured to the contact 70 is forced from the contact point 71 thereby breaking the control circuit.

It is believed that the preferred manner of wiring the device is clearly shown in Fig. 12, and that a description of the operation of the same will be sufficient in view of the diagram, the wiring being omitted from the other figures in order to avoid any confusion in the drawings. It should be stated that the apparatus at the tower T, or controlling point, may be of any suitable form a double throw switch being shown for opening and closing the several circuits, the preferred construction comprising an arrangement in which only one controlling circuit may be closed at the same time. The power to operate the motor may be derived from a battery 88, or any equivalent or suitable source energy. As shown in Fig. 12 the indicating apparatus at the tower T or central controlling place is represented diagrammatically by the coil 122, it being understood that the particular apparatus used may be such as preferred or found suitable for the purpose. Referring then to the diagrammatic view of the wiring and electrical connections as shown in Fig. 12, the three wires or conductors run from the point at which it is desired to control the switch or device, as for example, from the tower T. For the purpose of more clearly describing the apparatus I shall indicate the conductors as follows: 85 as the main common, 86 as the normal control and 87 as the reverse control.

Assuming that the switch points are as shown in Fig. 1, that is, in the normal position, and it is desired to throw them out of the normal position into a reverse position. The points being in the position shown the switch bar member 55 is in contact with the contact point 60 and the contact member 65 in the position shown contacting with the points 68 and 69. Assume that the main switch S at the tower is thrown as shown in Fig. 12 thereby closing what may be termed the reverse controlling or operating circuit which includes conductor 87 and conductor 85 which last mentioned conductor is common to both circuits. Starting from the battery or dynamo 88, the circuit may then be traced as follows: 89, switch bar 90, 91, 87, 92, contact 69, switch 65^1, 93, 94, 95, F^1, 96, F^2, 97, 98, F^3, 99, F^4, (F^1, F^2, and F^4

representing the fields) 100, 101, 102, 65^2, 68, 103, 104, 105, 106, armature A, 107, 108, switch 72, 109, coil 44, 110, 111, 85 and back to the battery or dynamo 88, thus operating the motor so as to rotate shaft 34 and drive the gear 26 so that the switch points are thrown to their reverse position. As the motor drives the gears and operates the throw rod controlling the switch points, the rod 16 controlling the switch bars 55 and 56 draws the same into the position indicated by the dotted lines so that the bar 56 contacts with the contact member 61 when the switch points have reached their limit of travel forming a circuit as follows: starting from the source of energy, 88, 89, 90, 91, 87, 112, 54, 56, 61, 113, coil 62, 114, and 85 back to 88, so that the coil 62 is energized, thereby drawing the movable switch member 65 into the position indicated by the dotted lines in Fig. 12. This breaks the main or operating circuit controlling the motor when the contact is broken at the contact points 68 and 69. As is obvious when the contact is broken the motor stops. Contact 61 being controlled by the rod 17 which is in turn secured to the stock rail 1, indicates the condition of the stock rails, the switch being self-adjusting inasmuch as the movable switch points must reach the stock rail before contact is made with the contact point 61. If the switch points are not in the safe position there will be no contact at the point mentioned. The few turns which the motor makes after the power is turned off or the operating circuit broken, generates a small current which is used to give an indication at the tower, the indicating circuit shown being as follows: assuming it to start from the armature A, we have 106, 105, 104, 67, 65^1, 93, 94, 95, F^1, 96, F^2, 97, 98, F^3, 99, F^4, 100, 101, 102, 65^2, 66, 116, 86, 120, 121, through the coil 122, 123, 85, 111, 110, coil 44, 109, switch 72, 108, 107 and to the armature A, thus utilizing the main common and normal control of conductors forming the circuit and giving the signal that the switch has been fully moved.

In case the stock rail has spread beyond the danger point, the pin 39 in the rod 24 will prevent the movable switch parts from traveling up to the stock rail or beyond a point that is unsafe. In this case the pin 39 will contact with the casing and limit the movement of the rod, pinion 35 slipping on the shaft 34. The switch points not moving up to the stock rail the bar 56 will not contact with the contact point 61 and consequently there will be no indication at the tower that the switch points are against the stock rails or moved to the limit of their travel thereby showing or indicating that the switch is in an unsafe condition.

To throw the switch points back to the normal position as shown in the drawings it being understood that the parts are in the positions as last mentioned the switch S is thrown as indicated in the dotted lines in Fig. 12 so that the several circuits are as follows: the normal controlling circuit and 88, 89, 90, 115, 86, 116, 66, 65^2, 102, 101, 100, F^4, 99, F^3, 98, 97, F^2, 96, F^1, 95, 94, 93, 65^1, 67, 125, 104, 105, 106, armature A, 107, 108, switch 72, 109, coil 44, 110, 111, 85, and 88, thus operating the motor but driving the pinion in a reverse direction so that the switch points are thrown back as shown in the figures. When the switch points reach their limit of travel the circuit is again automatically broken, the bar 55 contacting with the contact point 60 so a circuit is formed as follows: 88, 89, 90, 115, 86, 117, 53, 55, 60, 118, 63, 119, 111, 85, and 88 and the coil 62 is energized drawing the movable switch part 65 away from the contact point 66 and 67 thereby breaking the circuit and stopping the motor. The indicating circuit may be traced as follows: armature A, 106, 105, 104, 103, 68, 65^2, 102, 101, 100, F^4, 99, F^3, 98, 97, F^2, 96, F^1, 95, 94, 93, 65^1, 69, 92, 87, 124, 120, 121, 122, 123, 85, 111, 110, coil 44, 109, switch 72, 108, 107, and armature A, thereby giving a signal at the tower and indicating the condition of the switch.

It is of course understood that a train entering upon the detector bar would break the circuit at 72 so that the switch could not be thrown in either direction thus preventing the switch from being thrown while a train is passing.

It should be noted that while an electric motor is shown arranged to drive or operate the throw rod, the same might be replaced by equivalent means arranged to operate the gear 26 or the equivalent. In the case of the substitution of equivalent driving means for the motor it is obvious that the controlling circuits or the equivalent controlled by the movable and fixed switch parts may be arranged to control the driving mechanism. The same is likewise true of the main operating circuits of the device.

To mention a few of the advantages of the applicant's device it should be noted that the device is substantially controlled by the movable parts and stock rails; that the spreading of the stock rails beyond the danger point is indicated; that it is impossible to get a proper indication at the tower unless the switch points are in proper position; that the switch points cannot rebound; that the throw rod in itself forms substantially a locking rod; that the adjustment of the switch is not affected by the running of the steel in warm weather or the creeping of the switch points due to traffic; that the detector bar is not raised by the switch mechanism but is normally held in operative position, breaking the circuit when depressed by a

train, and that no special length or style of ties are required. Numerous other advantages and improvements are apparent from the description and drawings of the device.

Having thus described my invention it is obvious that various immaterial modifications may be made in the construction, arrangement, combination of parts, and wiring of the device without departing from the spirit of my invention, hence I do not wish to be understood as limiting myself in any way to the exact arrangement, construction, wiring, or combination of parts, advantages or uses shown, described or 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, a normally fixed rail part, a movable switch part, a throw rod therefor, means for actuating said rod, electrically operated controlling mechanism for said actuating means and means connected with said movable switch part and fixed rail part for controlling said mechanism.

2. In a device of the kind described and in combination, stock rails, a movable switch point coöperating with one of said stock rails, a throw rod therefor connected thereto, and actuating means for said throw rod including controlling mechanism therefor connected with said point and its cooperating stock rail.

3. The combination with movable rail portions and normally immovable rail portions, of an electrical switch having a movable element connected with the movable rail portions and normally immovable elements connected with the normally immovable rail portions, whereby variations in the relative positions of the normally immovable rail portions will similarly effect the relation of the normally immovable elements of the electrical switch.

4. In a device of the kind described and in combination, stock rails, a switch point for each rail, a throw rod connected to said switch points, means for actuating said rod, including a motor operatively connected therewith, operating circuits for said motor and means for alternately closing the same as desired, and means connected with the stock rails and switch points for automatically opening the closed operating circuit when the switch points reach the desired stock rail comprising a circuit breaker having normally immovable elements connected with said stock rails and a movable element connected with said switch point.

5. In a device of the kind described and in combination, stock rails, coöperating switch points therefor, a throw rod for said points substantially directly connected thereto, means for operating said rod comprising a motor with the shaft thereof in alinement with and operatively connected to said rod, operating circuits for said motor, means for alternately closing said circuits as desired, and means for automatically opening the closed operating circuit when the switch points reach the stock rails comprising an electrically operated circuit breaker and means connected with the switch points and stock rails for controlling said circuit breaker.

6. In a device of the kind described and in combination, a pair of normally fixed stock rails, a pair of movable switch points arranged between said stock rails, a throw rod connected to said switch points, actuating means for said throw rod operatively connected therewith, controlling means for said actuating means, said controlling means having a normally immovable element for each stock rail, and a movable element for the switch points, and means for connecting the same with the stock rails and points respectively and maintaining the same in a fixed relation therewith.

7. In a device of the kind described and in combination, stock rails, a movable switch point for each stock rail, a throw rod secured to said switch points, a rotatable shaft operatively connected to said rod, a driving motor for said shaft, operating circuits for said motor, means for alternately closing said circuits as desired, alternately closed indicating circuits and means connected with the switch points and stock rails and operated thereby for automatically opening the closed operating circuit and closing the open indicating circuit.

8. In a device of the kind described and in combination, stock rails, a movable switch point for each stock rail, a throw rod secured to said switch points, a rotatable shaft operatively connected to said rod, a driving motor for said shaft, operating circuits for said motor, means for alternately closing said circuits as desired, alternately closed indicating circuits including said motor and means connected with the switch points and stock rails and operated thereby for automatically opening the closed operating circuit and closing the open indicating circuit with the motor included therein, whereby said indicating circuits are energized by said motor transformed by its momentum into a generator.

9. In a railway switch of the kind described and in combination, stock rails, a movable switch part, a throw rod therefor, and means for actuating said throw rod comprising a motor, an operating circuit therefor, an auxiliary controlling circuit for said operating circuit, a circuit controller for said auxiliary circuit, said controller provided with normally immovable elements connected with said stock rails.

10. In a railway switch of the kind described and in combination, stock rails a

movable switch part, a throw rod therefor, a shaft operatively connected to and arranged to coöperate with said rod, and means for driving said shaft, said driving means comprising a motor, an operating circuit therefor, an auxiliary controlling circuit for said operating circuit and a controlling switch for said auxiliary circuit provided with normally immovable elements connected with said stock rails and movable elements connected with said movable switch part.

11. In an electrically controlled railway switch actuating mechanism, the combination with switch mechanism having movable rail portions and normally immovable rail portions, of reversible actuating means connected with the movable rail portions, means controlling the reversing of the said actuating means, said controlling means comprising an electrical switch having a movable element actuated by the movable rail portions and elements connected with the normally immovable rail portions whereby variation in the relative position of the normally immovable rail portions will cause a corresponding variation in the limits of movement of the movable rail portions.

12. In a railway switch mechanism of the class described, the combination with movable rail portions and normally immovable rail portions, of actuating mechanism connected with the movable rail portions, and controlling means for determining the limits of movement of the said actuating mechanism in each direction, said controlling means having elements connected with the normally immovable rail portions whereby variation in the relative position of said rail portions will effect a corresponding variation in the limits of movement of the actuating mechanism.

13. In a railway switch of the class described, the combination with movable rail portions and normally immovable rail portions of a controlling device having a movable element actuated by the movable rail portions, and normally immovable elements connected with the normally immovable rail portions, so that variations in the relative position of the normally immovable rail portions will cause a similar variation in the relative position of the normally immovable elements of the controlling device.

14. The combination with a railway switch mechanism having movable rail portions, actuating means therefor, and normally immovable rail portions, of a pole changing switch, controlling means for automatically reversing said pole changing switch, said controlling means including movable elements connected with and actuated by the movable rail portions and normally immovable elements connected with the normally immovable rail portions so that variation in the relative position of said rail portions will cause a similar variation in the relation of the normally immovable elements of the controlling device.

15. In a railway switch of the kind described and in combination, a fixed switch part, a movable switch part, a throw rod therefor connected therewith, and means for moving said rod, said means comprising a gear rotatably arranged thereon and driving means for said gear, comprising a motor operatively connected therewith, a normal operating circuit and a reverse operating circuit for said motor, a main switch common to said circuits and arranged to close either of said circuits as desired, a circuit breaker common to both circuits and means for operating said circuit breaker to open the closed circuit, comprising a plurality of circuit breaker controlling circuits, and means connected with said movable and fixed switch parts for controlling said last mentioned circuit.

16. In a device of the kind described and in combination, a pair of normally fixed stock rails, a pair of movable switch points arranged between said rails, a throw rod connected to said switch points, actuating means for said throw rod operatively connected therewith, and means connected with both of said stock rails and the switch points, and operated by the movement of either for controlling said actuating mechanism.

17. In a device of the kind described and in combination, a pair of normally fixed stock rails, a pair of movable switch points positioned between the stock rails and arranged to coöperate therewith, a throw rod connected to said switch points, actuating mechanism for said throw rod operatively connected therewith, and means for controlling said actuating mechanism including means adjustably connected with both stock rails and the switch points, and operated by the movement of either.

18. In a device of the kind described and in combination, normally fixed switch parts comprising a plurality of stock rails and a movable switch part coöperating therewith, a throw rod for said movable part, combined operating and locking means for said throw rod including means connected with said stock rails and movable switch parts.

19. In a device of the kind described and in combination, normally fixed stock rails and movable switch parts, a throw rod for said movable parts, operating mechanism for said throw rod, and indicating mechanism coöperating with said operating mechanism, whereby the operations of the movable switch part are indicated, and including the mechanism connected with both stock rails.

20. In a device of the kind described and

in combination, stock rails, movable switch points coöperating with said stock rails, means including mechanism connected with said stock rails for operating said switch points, and means for indicating the position of the points comprising indicating mechanism including said mechanism connected with said switch points and said operating means therefor.

21. In a device of the kind described and in combination, stock rails, a switch point for each rail, a spreader bar connecting said points, a throw rod operatively connected with said bar, actuating means for said throw rod and indicating means, said actuating means and indicating means including common mechanism connected with said stock rails.

22. In a railway switch mechanism, the combination with movable rail portions and stock rails, of means arranged to actuate the movable rail portions in each direction a distance greater than the normal distance of the movable rail portion from the stock rails, and means controlling said actuating means, said controlling means having limiting elements connected with each stock rail so that variation in the relative position of the stock rails will cause a similar variation in the relation of said limiting elements.

23. In a railway switch mechanism, the combination with switch points and stock rails, of means for actuating the switch points to engage them with the stock rails, said actuating means being arranged to move the switch points any part of a distance greater than the normal distance of the switch points from the stock rails, and means connected with the stock rails and controlling the actuating means whereby variation in the normal relative positions of the stock rails will cause a corresponding variation in the positions to which the switch points will be moved by the actuating mechanism.

24. In a railway switch mechanism, the combination with switch points, stock rails normally held in fixed relation to each other, and means connecting the switch points so that the same move synchronously, of means for actuating the switch points to engage them with the stock rails, said actuating means being adapted to move the switch points a distance greater than the normal distance of the switch points from the stock rails, and means connected with the stock rails and controlling the actuating means whereby variation in the relative positions of the stock rails will cause a corresponding variation in the positions to which the switch points are moved by the actuating mechanism.

25. A railway switch of the kind described, comprising stock rails, a movable switch part arranged to coöperate therewith, actuating means, a throw rod operatively connecting said movable switch part and said actuating means and limited in its movement by said stock rails, and means adjustably connected with the stock rails and the movable switch part, and operated by the movement of either for controlling said actuating means.

26. In a railway switch mechanism, the combination with switch points and stock rails, of means for actuating the points to engage them with the stock rails, said actuating means being arranged to normally move the switch points any part of a predetermined distance greater than the normal distance of the switch points from the stock rails, and means connecting with the stock rails and switch points for controlling said actuating means.

27. In a device of the kind described and in combination, normally fixed stock rails and movable switch points, operating mechanism for said points, and means coöperating with the points for indicating the position thereof comprising suitably indicating mechanism including elements connected with both stock rails.

28. In a device of the kind described and in combination, normally fixed stock rails and movable switch points, operating and indicating mechanism, and controlling means therefor common to both of said mechanism and connected to the stock rails and switch points.

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

CHARLES O. ANDERSON.

Witnesses:
M. ENGLER,
A. A. MCCLURE.