F. H. KAISER.

SWITCH FOR RAILWAYS.

APPLICATION FILED OCT. 2, 1907.

925,343.

Patented June 15, 1909.

5 SHEETS—SHEET 1.

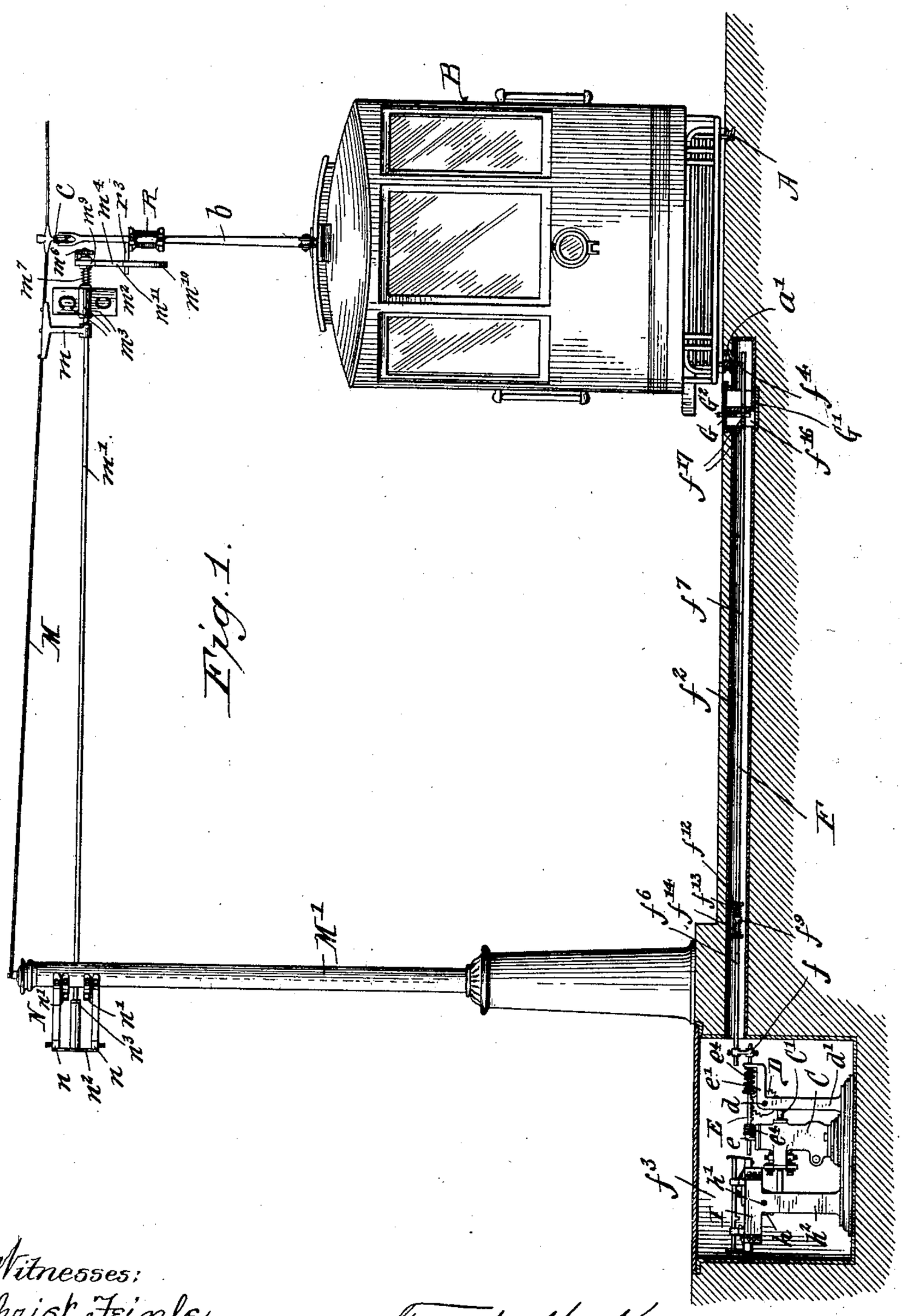

Fig. 1.

Witnesses:
Christ Feinle.
Harry D. Rapp

Frank H. Kaiser, Inventor.
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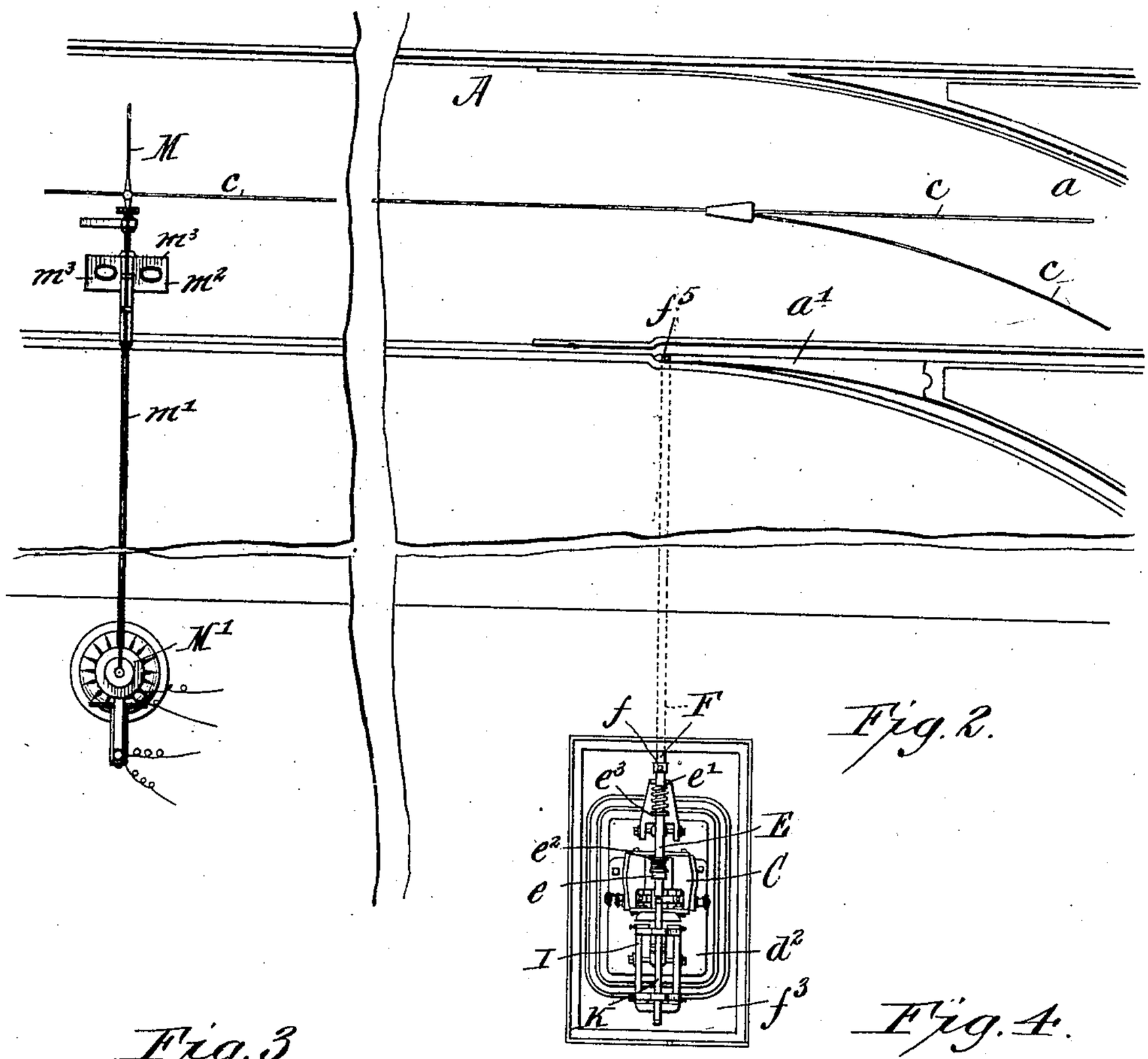

Fig. 2.

Fig. 3

Fig. 4.

Fig. 5.

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Fig. 6.

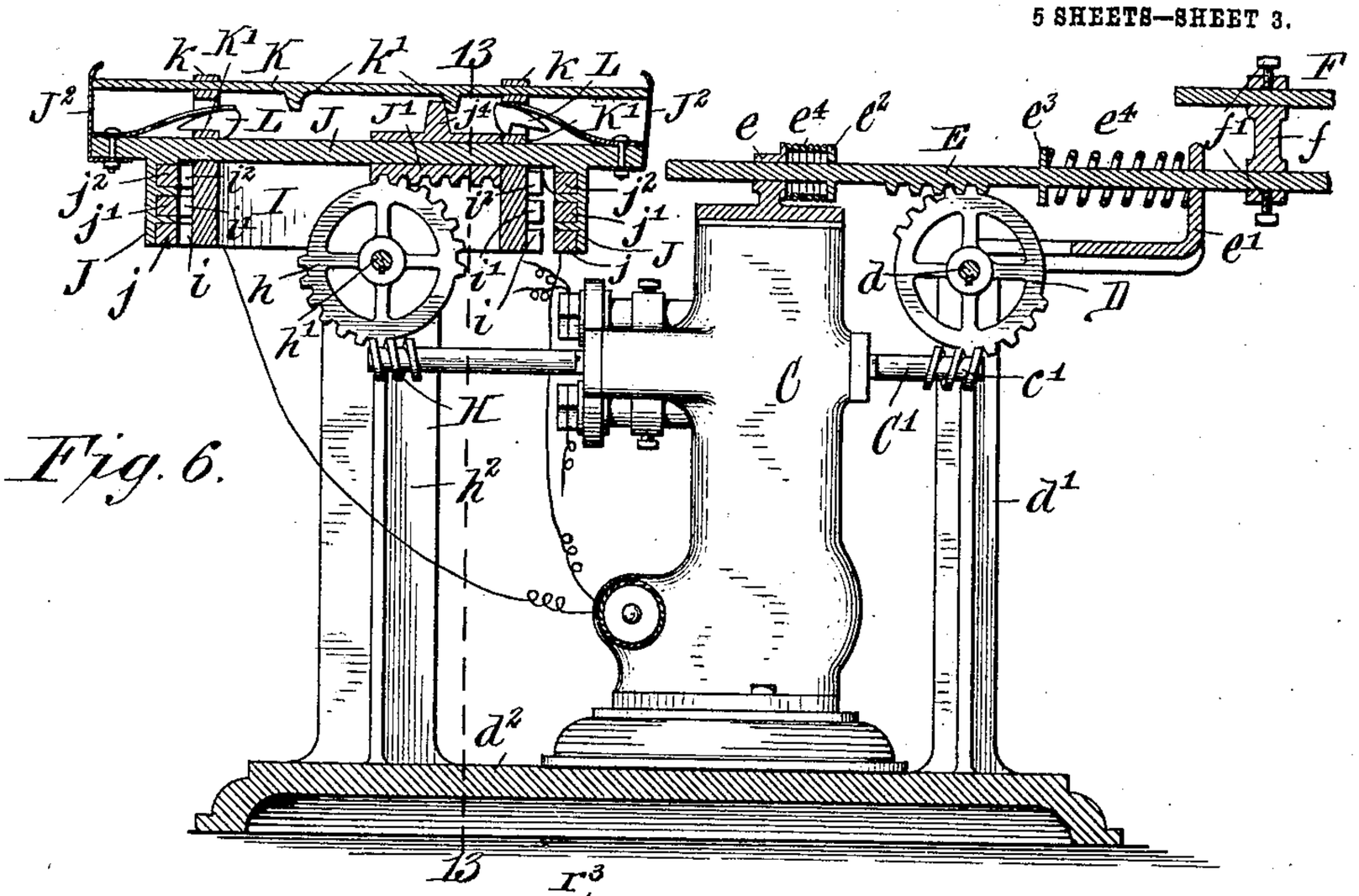


Fig. 9.

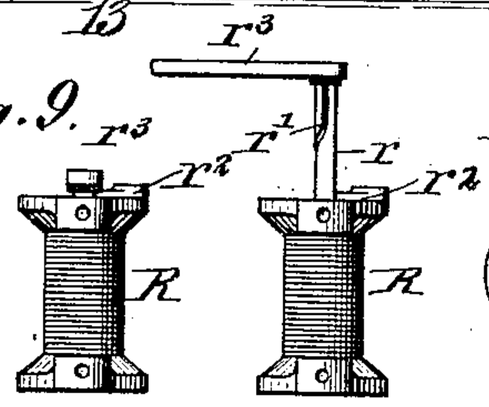


Fig. 11.

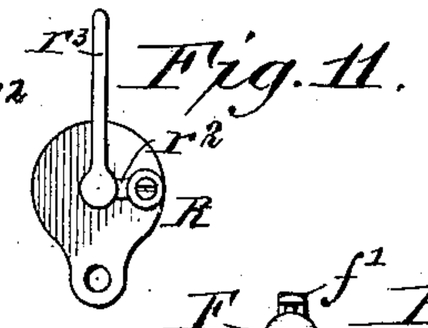


Fig. 10.

Fig. 7.

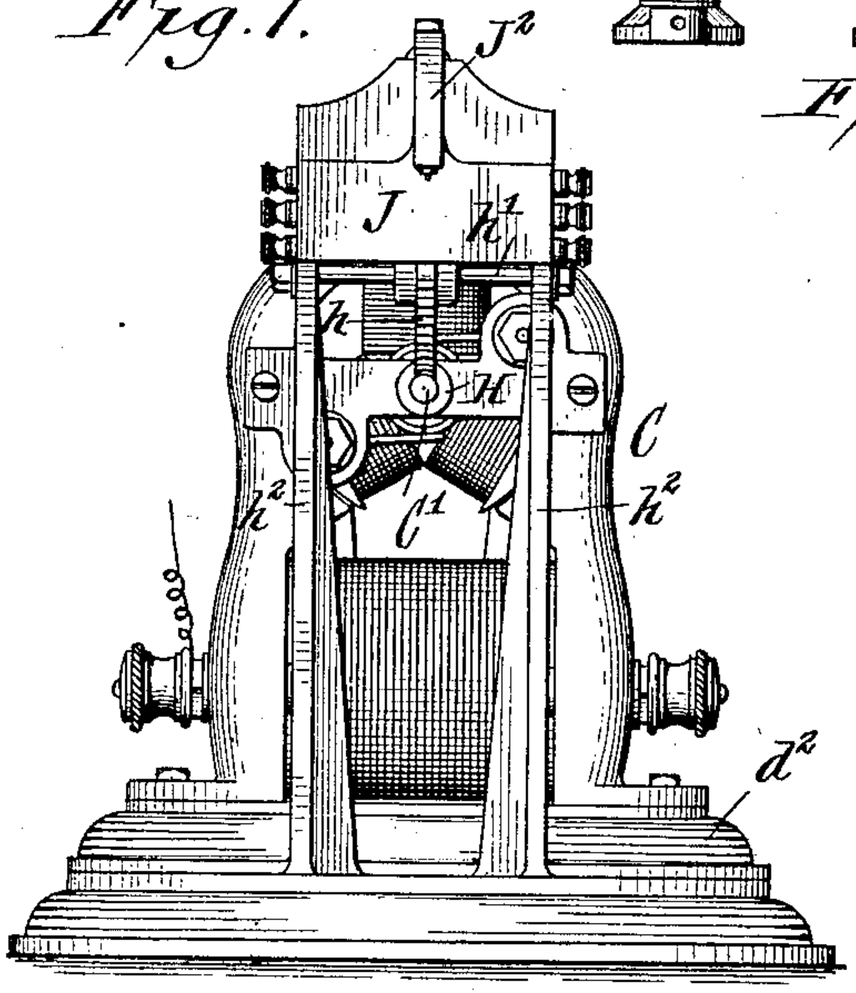
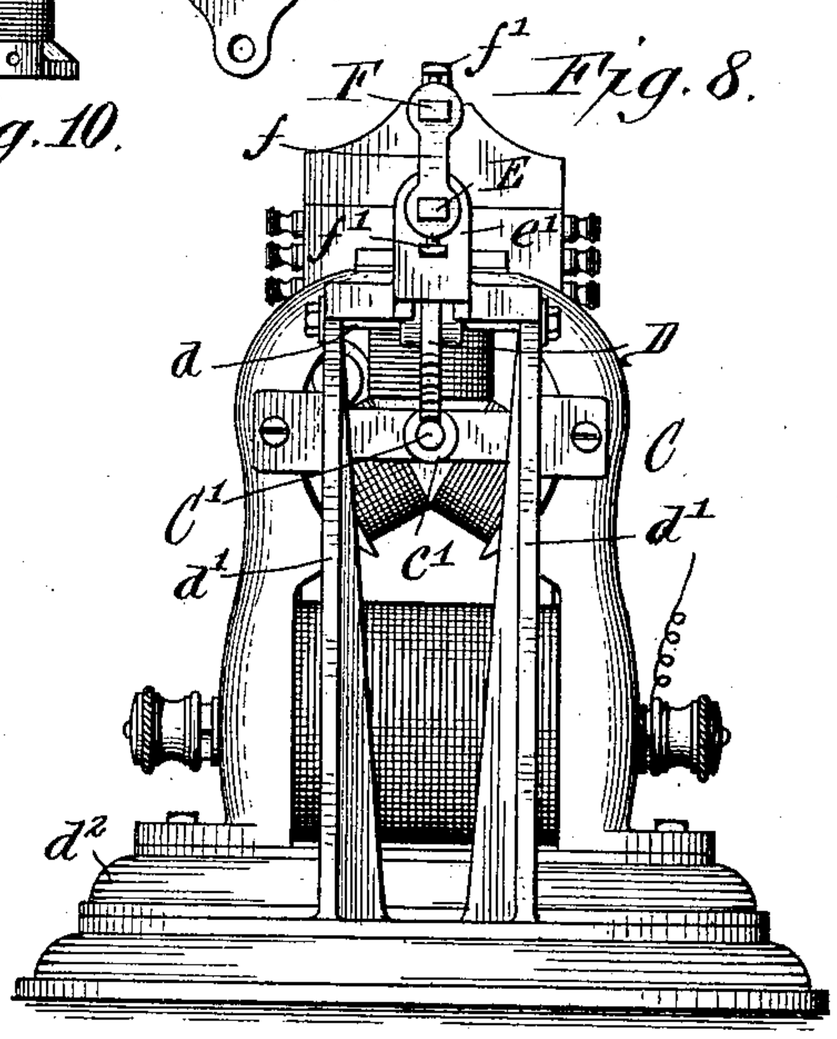


Fig. 8.



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5 SHEETS—SHEET 4.

Fig. 12.

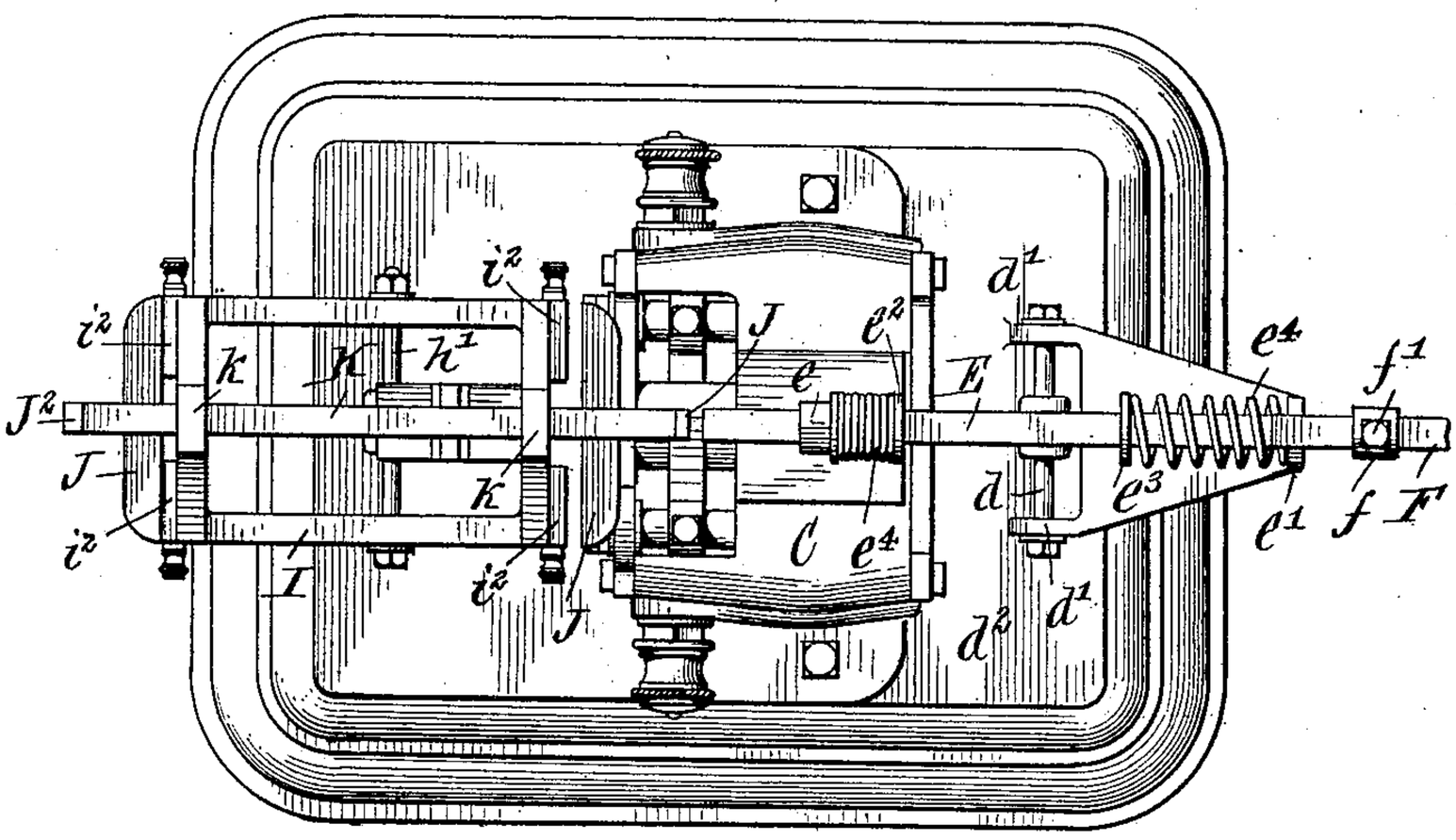


Fig. 14.

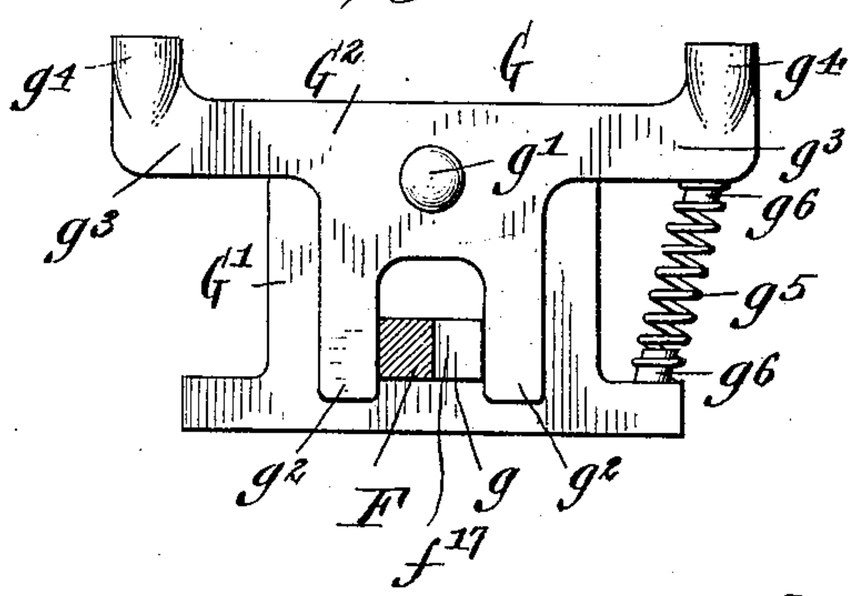


Fig. 13.

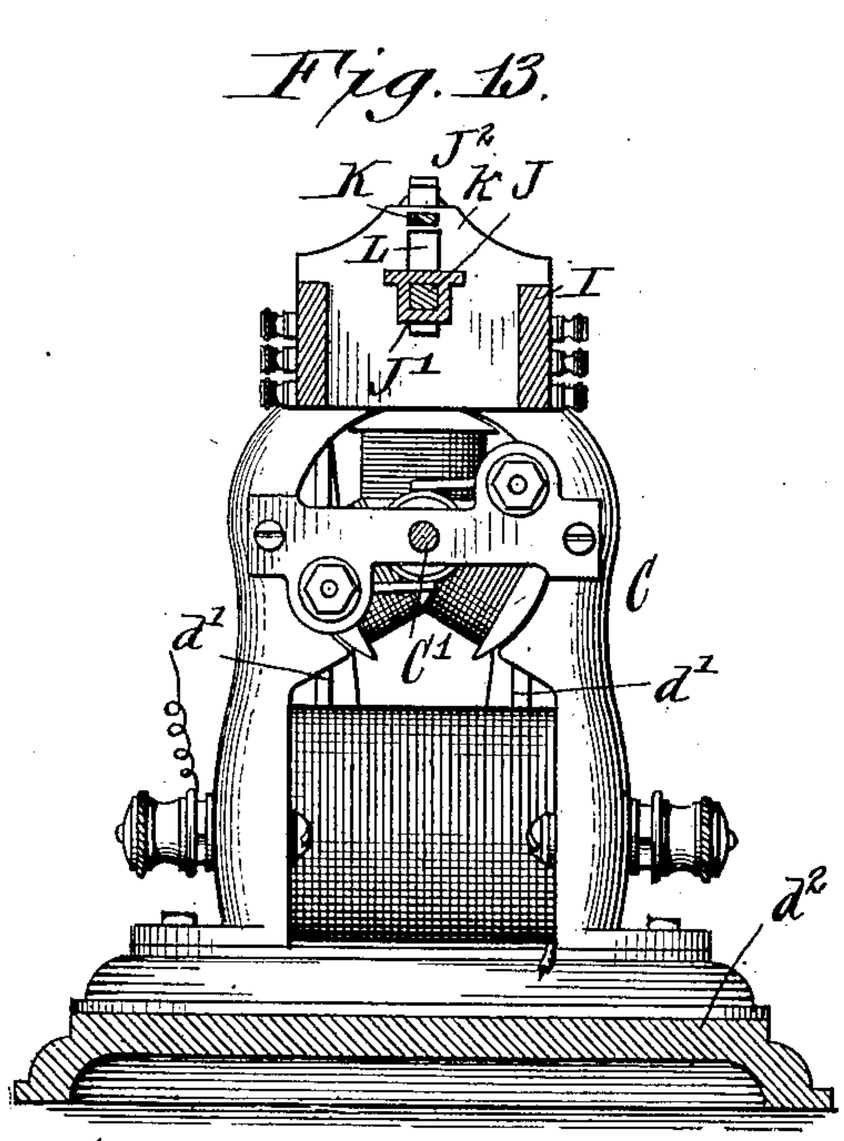
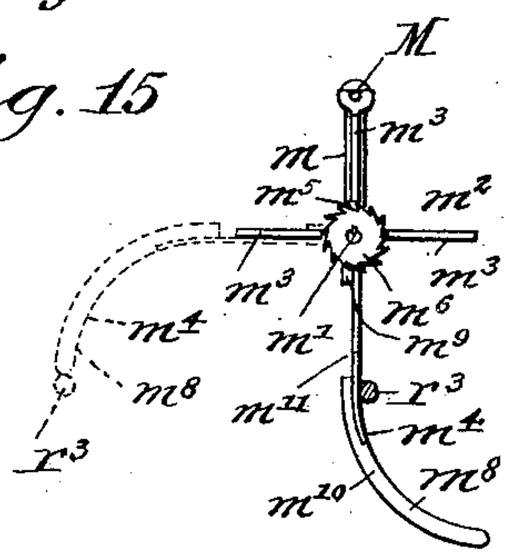


Fig. 15



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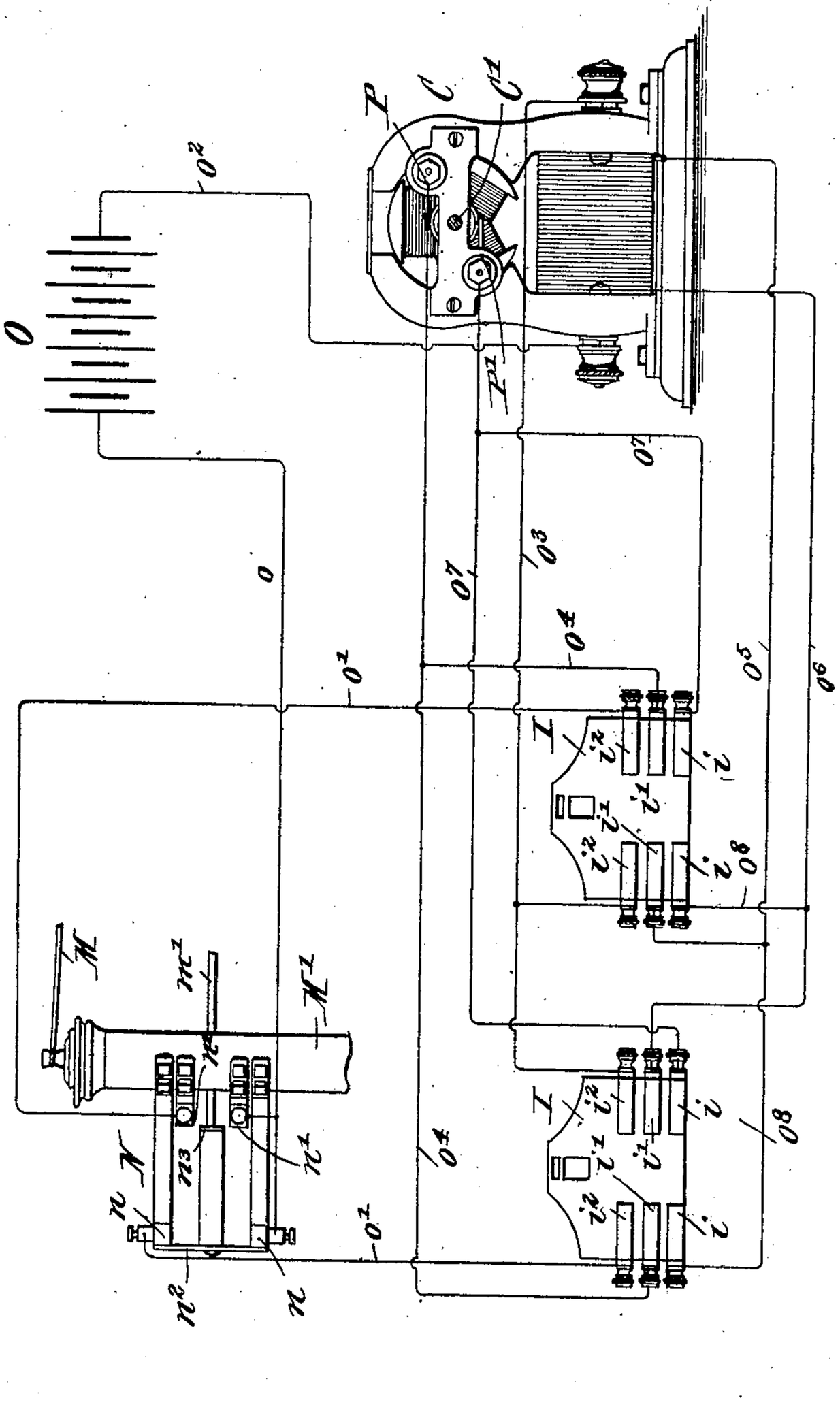
5 SHEETS—SHEET 5.

Fig. 16.



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UNITED STATES PATENT OFFICE.

FRANK H. KAISER, OF BUFFALO, NEW YORK.

SWITCH FOR RAILWAYS.

No. 925,343. Specification of Letters Patent. Patented June 15, 1909.

Application filed October 2, 1907. Serial No. 395,558.

To all whom it may concern:

Be it known that I, FRANK H. KAISER, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented certain new and useful Improvements in Switches for Railways, of which the following is a specification.

My invention relates to switches for railways; its primary object being to provide a simple and positive switch which can be conveniently operated by the motorman of a car without leaving the platform.

A further object of my invention is to provide a switch for electrically-operated railways in which the actuating-mechanism is controlled from the current whereby the car is propelled.

My invention consists in the construction, arrangement and combination of devices and parts to be hereinafter described and particularly pointed out in the subjoined claims.

In the drawings,—Figure 1 is a sectional elevation showing my improved invention embodied in an overhead trolley system. Fig. 2 is a plan view of the same. Fig. 3 is a perspective view of the primary contacts arranged at the upper end of a trolley-pole. Fig. 4 is a detached perspective view of the actuating-trip and the indicator. Fig. 5 is a sectional plan view of the cushioning-device on the switch operating-rod. Fig. 6 is a sectional elevation of the switch operating-mechanism comprising a motor, switches controlling the same, and the mechanism for actuating the switch operating-rod. Figs. 7 and 8 are end elevations of the switch-operating-mechanism viewed from opposite ends. Figs. 9 and 10 are side elevations of the solenoid showing the core thereof in different positions. Fig. 11 is a plan view of the solenoid. Fig. 12 is a plan view of the switch operating-mechanism. Fig. 13 is a transverse section taken on line 13—13, Fig. 6. Fig. 14 is an elevation of the locking-device for locking the switch-point in either open or closed position; the switch operating-rod being shown in section. Fig. 15 is a side elevation of the trip-device and the indicator. Fig. 16 is a diagrammatic view showing the several electrically-connected elements and the manner of connecting the circuit wires thereto.

Referring to the drawings in detail, like letters of reference refer to like parts in the several figures.

The letter A represents a railway-track having a side track or branch a, and a switch-point a^1 to be actuated for directing the car, designated B, onto the branch-road or in a straight course, as may be desired.

C designates an electric-motor which receives its power from the overhead trolley-wire c with which the trolley-pole b contacts. Said motor has a shaft C^1 which is provided with a worm c^1 adapted to engage the segment-gear D. Said segment-gear is secured to a shaft d arranged at a right-angle to the motor-shaft and supported on standards d^1 rising from the base d^2 on which the motor is supported. Two series of teeth are arranged on said segment-gear at diametrically opposite points, one series being engaged by the worm c^1 on the motor-shaft and the other series engaging a series of teeth on a slide-rod E guided for movement in a bracket e surmounting the motor, and in a guide-arm e^1 projecting from the standards d^1. Rod E is provided with two collars e^2, e^3, and surrounding said rod are two coil-springs e^4, one of which bears with opposite ends against collar e^2 and the bracket e, and the other bears with opposite ends against collar e^3 and arm e^1 on the standard d^1.

F designates the switch operating-rod which is connected to the slide-rod E by a connector f having openings through which the adjacent ends of rods E and F are passed; said rods being secured in the connector by means of bolts f^1. Rod F extends through a conduit f^2 which extends from the pit f^3 in which the motor is located, to a point beneath the switch-point of the track; said rod having a pin f^4 at its outer end which is inserted in an opening f^5 in the switch-point. I preferably arrange said pin so that it may be detached from the switch-point in order that the latter may be actuated by hand when desired. The operating-rod is formed in two sections f^6, f^7, which are yieldingly connected; section f^6 having two arms f^8 connected by a boss f^9, and it also has a central bore f^{10}, as best shown in Fig. 5. Section f^7 has its inner end reduced, as at f^{11}, and provided with a collar f^{12}, between which and the boss f^9 at the end of section f^6, a coil-spring f^{13} is interposed. A collar f^{14} is secured to the reduced end f^{11} of section f^7 and a coil-spring f^{15} is interposed between said last-mentioned collar and the boss f^9. In this manner undue thrust or tensile strain on the operating-rod is taken

up by the springs; and on account of the reduced end f^{11} of section f^7 being guided in boss f^9 and in the bore f^{10} of section f^6, binding of the parts is prevented at this point.

The conduit f^2 is enlarged, as at f^{16}, to accommodate a lock-device G comprising a standard G^1 having an opening g through which the operating-rod F passes; said standard being secured to the bottom of the conduit.

G^2 designates a trip which is pivoted, as at g^1, to the standard G^1; it having two depending arms g^2 which straddle the switch operating-rod F and two laterally extending arms g^3 terminating in upwardly directed lugs g^4 that extend through openings in the enlarged portion of the conduit. Between one of said arms g^3 and the bottom of the standard G^1 a coil-spring g^5 is interposed which serves to hold said trip in its normal position; said coil-spring encircling studs g^6 on said arm and standard whereby it is held against displacement.

The operating-rod F has two notches f^{17} adapted to be engaged by one of the depending arms g^2 of the trip when it is desired to lock the switch-point in either open or closed position. This may be necessary when for any reason the operating-mechanism fails to work. When the switch G^2 is in normal position, the depending-arms g^2 thereof lie on opposite sides of the operating-rod so that said rod is free to move when actuated by the motor, but when the switch-point is to be actuated by hand, the end of the trip G^2 against which the spring g^5 bears is to be depressed so that the arm g^2 at the right in Fig. 14, will enter either of the two notches in the operating-bar, depending on whether the switch-point is to be held in open or closed position.

Owing to the yielding connection between the two sections of the switch-operating-rod, it will not be absolutely necessary in order to actuate the switch-point by hand to remove the pin f^5 from said point, and when it is desired to lock the switch-point in either open or closed position, by means of the lock-device G, the pin connection between the switch operating-rod must be maintained, but when simply actuating said switch-point without locking the same, the removal of the pin is not necessary. Since the springs are at the point where the two sections of the operating-rod are connected, they tend to hold said switch-point in its open or closed position, depending on the position the segment-gear D would be in when the motor stops. The motor-shaft also has a worm-gear H thereon which meshes with a segment-gear h secured to a shaft h^1, journaled on standards h^2 rising from the base d^2 on which the motor is supported. Supported on the standards h^2 is a switch-frame I having two series of contacts i, i^1, i^2, at each end which are adapted to be engaged by a series of contacts j, j^1, j^2, secured to each end of switch-bar J slidable on the switch-frame I. The segment-gear h has two series of teeth at diametrically opposite points, one series engaging the worm H on the motor-shaft and the other series engaging a gear-rack J^1 slidable on the switch-bar J. Secured to the ends of said switch-bar, are spring-stops J^2 which are adapted to be engaged by a shifting-bar K located above the switch-bar J and guided in supports k mounted on the switch-frame I. Said shifting-bar has two depending lugs k^1 adapted to be engaged by a lug j^4 movable between the lugs k^1 and projecting upward from the gear-rack J^1.

K^1 designates two cross-bars which serve to hold the switch-bar in proper position and which are adapted to be engaged by spring-pressed pawls L secured to opposite ends of the switch-bar.

On rotation of the motor-shaft in one direction, the segment-gear h is rotated and causes the gear-rack J^1 to move along the switch-bar until it engages one of the lugs k^1 on the shifting-bar K; said bar being thereupon actuated to forcibly deflect one of the spring-stops J^2 until said stop is deflected sufficiently to overcome the resistance of the switch-bar. After the spring-stop is placed into action the gear-rack J^1 engages the spring-pressed pawl L and elevates the same to cause disengagement thereof from the cross-bar K^1. When said pawl is disengaged, the shifting-bar is free to move, causing the contacts j, j^1, j^2 at one end of said bar to move away from the contacts i, i^1, i^2, and cause the contacts j, j^1, j^2 at the opposite end of the bar to be moved into contact with the contacts at the corresponding end of the switch-frame.

The feed-wire c is suspended from the cross-wires M secured to poles M^1, and suspended from one of the cross-wires in close proximity to the feed-wire is a hanger m in which is journaled one end of a shaft m^1 having its other end journaled in bearings in the pole M^1. Secured to said shaft is an indicator m^2 having four wings m^3 bearing indicating-characters whereby the motorman of a car can determine whether the switch-point is open or closed.

m^4 designates a trip-arm loosely mounted on shaft m^1, and it has a spring-arm m^5 projecting laterally therefrom which engages the teeth of a rachet-wheel m^6 secured to said shaft. Surrounding said shaft between the indicator m^2 and the trip-arm m^4 is a coil-spring m^7 having one end secured to the hub of said indicator, and its other end to the trip-arm; said spring acting to retain said arm in its normal position. The outer end of the trip-arm is curved, as at m^8, for a purpose to be hereinafter described,

and the arm m^4 is preferably formed in two sections m^9, m^{10} connected by a flexible strip m^{11}.

On the pole M^1 is arranged a primary switch-device N having two pair of contacts n, n^1 adapted to be engaged by two switch-arms n^2, n^3 secured to the adjacent end of the shaft m^1; said switch-arms n^2, n^3 being arranged at right-angles, so that when one is in electrical contact with its coöperating contacts, the other is out of contact.

Electrical energy may be taken from the feed-wire C or from any other source, and in the diagrammatic view shown in Fig. 16, the source of electrical energy is shown as a battery designated O; a circuit-wire o connecting one pole of the battery or other source of energy with one of the contacts n and n^1 of the primary-switch; the other contacts n, n^1 of said switch being connected with one of the contacts i^2 at each end of the switch-frame I by circuit-wires o^1. A circuit-wire o^2 leads from the other pole of the battery to the negative-terminal of the motor, and from the positive-terminal of the motor, a circuit-wire o^3 is led to the other contacts i^2 at each end of the switch-frame. From one of the contacts i^1 at each end of the switch-frame, a circuit-wire o^4 is led to one of the commutators P of the motor, and from the other of said contacts i^1 at each end of the switch-frame, circuit-wires o^5, o^6 are led to opposite ends of the field-magnet on said motor. From one of the contacts i at each end of the switch-frame I, circuit-wires o^7 are led to the other commutator designated P^1 of the motor, and from the other contacts i at each end of the frame, the circuit-wires o^8, o^9 connect with the wires o^5 and o^6, respectively. By means of such connection of the several parts, the motor is energized and rotates in one direction when the switch-arm n^2 engages its coöperating contacts, and when the switch-arm n^3 engages its coöperating contacts, the motor rotates in an opposite direction. On rotation of the motor the segment-gear h actuates the gear-rack J^1 which is moved lengthwise on the switch-bar J, causing the lugs J^4 on said gear-rack to engage the lugs k^1 on the shifting-rod K; and said gear-rack also engages one of the lock-pawls L to permit the switch-bar to be moved by the shifting-bar. This action breaks the contact between the switch-bar and one end of the switch-frame and establishes the contact at the opposite end of said frame, breaking the electrical connection and stopping the motor.

When the indicating-shaft m^1 is rotated to move the switch-arm n^2 out of engagement with its coöperating contacts and bring the switch-arm n^3 in engagement with its coöperating contacts, the motor is rotated in an opposite direction, causing the gear-rack J^1 to reverse its movement, whereupon it engages the other lock-pawl L and the shifting-bar K so as to break the connection previously established between the switch-bar and the switch-frame and make connection at the opposite end. The motor then ceases to rotate and electrical connection is established for rotation of the motor in reverse direction when the switch-arm of the primary switch then out of contact, is brought in engagement with its coöperating contacts. Upon rotation of the motor, the segment-gear D is actuated and its direction of motion is governed by that of the motor. When said segment-gear is actuated, it shifts the rod E and causes the switch-point of the track to be moved into open or closed position. The springs e^4 serve to assure positive mesh between the teeth of the rod E and the segment-gear.

Secured to the trolley-pole of the car is a solenoid R which may have electrical connection with a switch within convenient reach of the motorman and may be energized by any electric source; said solenoid having a core r provided with a spiral-groove r^1 into which enters a guide-pin r^2 secured to the top of the solenoid. When said bar is moved out, it is caused to rotate and it has a trip-arm r^3 which is moved into the path of the trip-arm m^4 on the shaft m^1. When arm r^3 engages the trip-arm m^4, the latter is moved from the position shown in full lines Fig. 15, to that shown in dotted lines, during which action the spring-arm m^5 engages the teeth of the ratchet-wheel m^6 and rotates the shaft m^1 one-quarter of a revolution, thus actuating the primary switch, whereupon the motor is caused to rotate. When the motorman breaks the connection, the bar r assumes its normal position with the arm r^3 in line with the direction of travel. In Fig. 1 the indicator shows that the switch-rail is closed and a car to be propelled over the track at this point in a straight line may proceed without actuating the device; but when a car whose line of travel is over the branch or side road at this point approaches the switch-rail, the motorman must cause the trip on the trolley-pole to be actuated so that it will swing the arm r^3 thereof in the path of the trip-arm m^4 and rotate the shaft m^1 so as to break the electrical connection then established on the primary-switch and make connection between the broken contacts thereof, whereupon the motor will be rotated in the proper direction to open the switch-point and allow the car to turn onto the branch or side track. When the arm r^3 clears the trip-arm m^4, the spring m^7 acts to return arm m^4 to its normal position. Owing to the arm r^3 moving in a straight line it would be impossible to move the trip-arm m^4 sufficient to cause the shaft m^1 to make a quarter revolution, and for this purpose the lower end of

the trip-arm is curved so that the straight portion of the arm is moved from a vertical position into a horizontal position before the trip r^3 is free of the extremity of arm m^4.

When the primary switch N is in the position shown in Fig. 16, the switch-arm n^2 is in electrical contact with its coöperating contacts n and the indicator m^2 is closed. When these parts are in such position, the switch-bar J is in a positon that its contacts j, j^1, and j^2 at one end thereof bear against the set of contacts i, i^1 and i^2, shown to the right in Fig. 16. Said contacts i, i^1 and i^2 are in the circuit in which the switch-arm n^3 of the primary switch N is included, and as said switch-arm is out of contact with its coöperating contacts n^1, the circuit is broken.

If the motor-man of a car approaching the switch point desires to proceed in a straight course, he is informed by the indicator m^2 that the rail-switch is closed and he therefore proceeds without actuating the primary switch. If, however, he wishes to take the branch road, he manipulates the solenoid R and causes the trip-arm r^3 thereof to actuate the primary-switch, whereupon the switch-arm n^2 is moved away from its coöperating contacts n and the switch-arm n^3 is moved into engagement with the contacts n^1, and as the latter are in the same circuit as the contacts j, j^1 and j^2 and the contacts i, i^1 and i^2, then in engagement, an electric current is established. When the various parts are in the position last described, the circuit is as follows, see Fig. 16:—From the battery or other source of electrical energy, which is designated O, the current flows through wire o to the lower contact n^1 of the primary switch N, through switch-arm n^3 to upper contact n^1, from the latter to the upper contacts i^2 of one set of contacts (shown at the right in Fig. 16) on the switch frame I connected by the coöperating contact j^2 on the switch-bar J, from said contacts through wire o^3 to one of the terminals of the field-coil, through said coil and wire o^5 to contacts i^1 (also at the right in said figure) which are connected by the coöperating contact j^1 on said switch-bar, thence through wire o^4 to the commutator of the motor C, as shown, and from said commutator through wire o^7 to the lower contacts i of said set of contacts connected by the coöperating contact j on the switch-rod, and finally from said contacts i through wire o^6, wire o^8, the frame of motor, and wire o^2 to the battery, or from said contacts i directly to the battery. The circuit thus established causes actuation of the motor in one direction, whereupon the switch-point is opened and the car passes onto the branch road. From the preceding description, however, it will be understood that the motor, in addition to actuating the switch-point also causes the switch bar J to be actuated, thus moving the contacts j, j^1 and j^2 on said switch-bar then in contact with their coöperating contacts i, i^1 and i^2 out of engagement and bringing the contacts j, j^1, j^2 which were out of engagement with their coöperating contacts i, i^1 and i^2, into engagement with the latter. This breaks the circuit causes the motor to stop and places the circuit-wires in readiness for establishing an electric-circuit when the switch-arm n^3 of the primary-switch N is brought into engagement with its coöperating contacts n^1.

The actuation of the primary-switch to bring the switch-arm n^3 into engagement with the contacts n^1 does not take place until a car approaching the rail-switch, now open, is to be driven in a straight course instead of onto the branch track, and in that event, the motor-man manipulates the solenoid R and causes the trip-arm r^3 thereof to again actuate the primary-switch. This causes rotation of the shaft m^1, whereupon the switch-arm n^2 is moved out of engagement with its coöperating contacts n and the switch-arm n^3 is moved into engagement with its coöperating contacts n^1. When the primary switch is thus actuated, the motor C is rotated in a reverse direction to cause the switch-point a^1 to close. When the parts are thus positioned, the circuit is as follows,—from the battery O or other source of electrical energy, the current flows through wire o to the lower contact n of the primary-switch N, through the switch arm n^2 to the upper contact n, from the latter through wire o^1 to the upper contacts i^2 of the set of contacts shown at the left in Fig. 16, which contacts are connected by the coöperating contact j^2 on the switch-bar J, from said contacts i^2 through wire o^3 to one of the terminals of the field-coil, through the latter and wire o^5 to contacts i (also at the left in said figure) which are connected by the coöperating contact j on said switch-bar, thence through wire o^7 to the commutator of the motor, as shown, and from said commutator through wire o^4 to the contacts i^1 of said set of contacts connected by the coöperating contact j^1 on the switch-rod, and finally from said contacts i^1 through wire o^6, the frame of the motor and wire o^2 to the battery, or from said contacts i^1 directly to the battery.

The rotation of the motor in an opposite direction causes the proper actuation of the switch-point a^1 and also actuates the switch-rod J to break the circuit when said switch-point is moved.

It is apparent from the foregoing, that after the actuation of the switch-point a^1 from one position to another, the motor is in readiness for rotation in a direction op-

posite that in which it was last rotated and that the mere actuation of the primary-switch N will establish the electric circuit.

I might also state that the motor herein shown is what is known as a series wound motor and the current must be passed through the commutator thereof in reverse directions to obtain opposite rotation of the motor-shaft, and while the contacts i, i^1, i^2 and j, j^1 and j^2 control the direction in which the current is passed through the commutator, they may, at least in part, be dispensed with, or rearranged when another type of motor is used.

This invention is susceptible to changes in construction of the various parts and in minor details of arrangement without departing from the spirit thereof or sacrificing any of its advantages.

Having thus described my invention what I claim, is—

1. In an electric-railway, the combination with a track having a switch-point, of a motor having a shaft provided with a worm, a gear-rack, a gear between said gear-rack and the worm of said motor-shaft, and a rod connecting said gear-rack with the switch-point.

2. In an electric-railway, the combination with a track having a switch-point, of a reversible motor having a shaft provided with a worm, a slidable gear-rack, a segment-gear between said worm and said gear-rack, and a rod connecting said segment-gear with said switch-point, said rod being formed in two sections yieldingly connected.

3. In an electric railway, the combination with a track having a switch-point, of a reversible motor having a shaft provided with a worm, a slidable gear-rack, a segment-gear between said worm and said gear-rack and a rod connecting said segment-gear with said switch-point, said rod being formed in two sections yieldingly connected, one section having two arms connected by a hollow boss and the other section having a reduced portion passing through said boss, and springs surrounding said reduced portion and bearing against opposite sides of said boss and against collars formed on said last-mentioned section.

4. In an electric-railway, the combination with a track having a switch-point, of a motor, means for governing said motor, a rod operatively connected at one end with said motor and its other end with said switch-point, and a lock-device comprising a trip adapted to engage said rod so as to hold said switch-point in open or closed position.

5. In an electric-railway, the combination with a track having a switch-point, of a motor, means for governing said motor, a rod operatively connected at one end with said motor and its other end with said switch-point, a lock-device comprising a trip normally permitting free action of said rod and adapted to engage the same for locking it and its connecting switch-point in either of its two positions, and a spring acting to hold said trip in its normal position.

6. In an electric-railway, the combination with a track having a switch-point, of a motor, means for governing said motor, a rod operatively connected at one end with said motor and at its other end with said switch-point, said rod having a notch formed therein, and a lock-device comprising a trip having two depending arms straddling said rod and adapted to be moved to engage the notch in said rod.

7. In an electric-railway, the combination with a track having a switch-point, of a motor, operative connection between said motor and said switch-point, an indicator, a switch operatively connected with said indicator, a source of electrical energy, and electrical connections whereby said motor is caused to rotate.

8. In an electric-railway, the combination with a track having a switch-point, of a motor, operative connection between said motor and said switch-point, a revoluble indicator, a shaft on which said indicator is secured, a switch having a contact-member secured to said shaft, a source of electrical energy, and electrical connections whereby said motor is caused to rotate.

9. In an electric-railway, the combination with a track having a switch-point, of a reversible motor, operative connection between said motor and said switch-point, a revoluble indicator, a shaft on which said indicator is secured, a switch-device comprising two sets of contacts and two contact-arms coöperating therewith, said contact-arms being secured to said shaft and arranged at right-angles to each other, a source of electrical energy, and electrical adjuncts to cause said motor to rotate in opposite directions when said contact-arms are brought into contact with their coöperating contacts.

10. In an electric-railway, the combination with a car having a trolley-pole and a track having a switch-point, of a motor, operative connection between said motor and said switch-point, a source of electrical energy, a switch-device, an indicator connected with said switch-device, electrical connection to cause said motor to rotate on actuation of said switch-device, and a trip secured to the trolley-pole of the car to engage said indicator.

11. In an electric-railway, the combination with a car having a trolley-pole and a track having a switch-point, of a motor, operative connections between said motor and said switch-point, an indicator, a shaft to which said indicator is secured, a trip-device loosely mounted on said shaft, a spring surrounding said shaft and having its ends

secured to said indicator and said trip-device, a spring-arm projecting from said trip-device, a ratchet-wheel secured to said shaft and adapted to be engaged by said spring-arm, a trip secured to the trolley-pole of the car and adapted to engage said trip-device, a switch comprising a fixed contact and a movable contact secured to said shaft, a source of electrical energy, and electrical connections to cause said motor to rotate when said switch-device is actuated.

12. In an electric-railway, the combination with a car and a track having a switch-point, of a motor, operative connections between said motor and said switch-point, a source of electrical energy, a switch-device independent of the car, connections to cause said motor to rotate on actuation of said switch-device, a trip-device independent of the car and operatively connected with said switch-device, and means on the car for actuating said trip-device.

13. In an electric-railway, the combination with a car and a track having a switch-point, of a motor operatively connected with said switch-point, a switch-device, a shaft to which the movable member of said switch-device is secured, a curved trip-arm on said shaft, and an arm on the car adapted to engage said trip-arm.

14. In an electric-railway, the combination with a car and a track having a switch-point, of a motor operatively connected with said switch-point, a switch-device, a shaft to which the movable member of said switch-device is secured, a curved trip-arm on the shaft comprising two members connected by a flexible intermediate portion, and an arm on the car adapted to engage said trip-arm.

15. In an electric-railway, the combination with a track having a switch-point, of a reversible motor operatively connected with said switch-point, a switch-device having two sets of contacts, and two contact-arms so arranged that when one of said contact-arms is in engagement with its coöperating contacts the other contact-arm is out of engagement with its coöperating contacts, a shaft to which said contact-arms are secured, an indicator on said shaft comprising radial wings, means to rotate said shaft, a source of electrical energy, and electrical connections whereby said motor is rotated in opposite directions.

In testimony whereof, I have affixed my signature in the presence of two subscribing witnesses.

FRANK H. KAISER.

Witnesses:
ELLA C. PLUECKHAHN,
EMIL NEUHART.