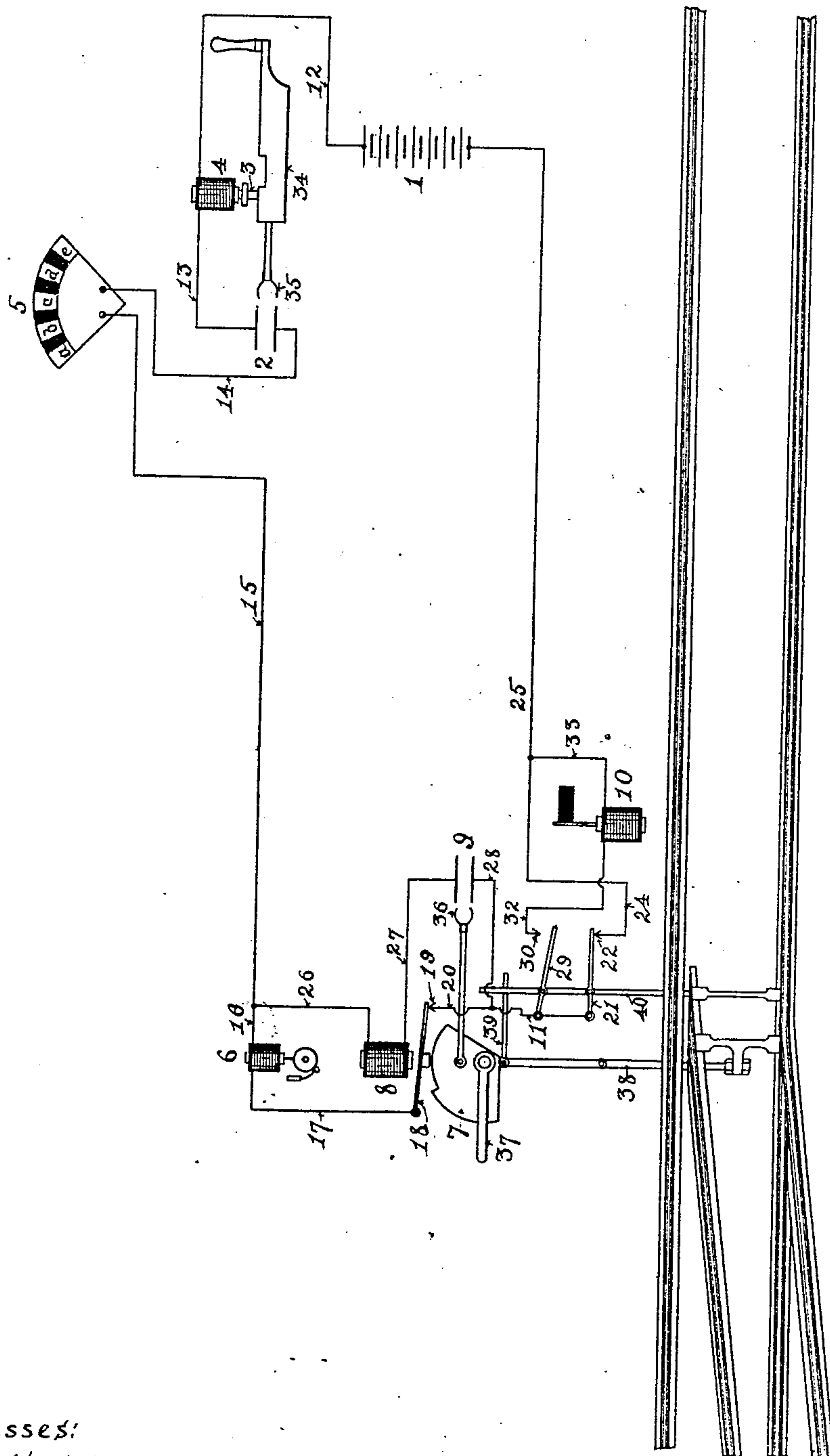


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W. W. SALMON & F. L. DODGSON.
RAILWAY SWITCHING AND SIGNALING APPARATUS.

APPLICATION FILED JAN. 6, 1906.



Witnesses:

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UNITED STATES PATENT OFFICE.

WILMER W. SALMON AND FRANK L. DODGSON, OF BUFFALO, NEW YORK,
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RAILWAY SWITCHING AND SIGNALING APPARATUS.

No. 832,166.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed January 6, 1906. Serial No. 294,925.

To all whom it may concern:

Be it known that we, WILMER W. SALMON and FRANK L. DODGSON, citizens of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented a new and useful Improvement in Railway Switching and Signaling Apparatus, of which the following is a specification.

Our invention relates to railway switching and signaling apparatus, and more particularly to electrical control at the tower of an outlying switch and signal.

The object of our invention is to effect the full control of an outlying switch and signal by the employment of a single circuit—that is to say, to accomplish the several functions heretofore accomplished by a plurality of circuits by a single circuit and at the same time to control the movement of the controller in the tower.

Referring to the diagrammatic drawing herewith, we have shown at the right the tower apparatus and at the left the apparatus adjacent to the switch and signal.

1 is a source of electric energy.

2 is the contact on the controller which is closed when the controller is moved.

3 is the lock on the controller, and 4 is a magnet in the main circuit governing said lock.

5 is an electric indicator.

6 is an electric bell or other form of annunciator.

7 is the switch-lock. 8 is a magnet governing the same.

9 is a contact made at the beginning of the stroke of the switch-lock lever.

10 is a signal or switch indicator, and 11 represents the contacts in the switch-box.

34 is the controller having a notch capable of being engaged by the lock 3, and 35 represents brushes capable of bridging the contacts 2.

36 represents brushes capable of bridging the contacts 9 and are moved by the rotation of the switch-lock 7.

37 is the handle by which the rail-switch is moved.

38 is the rail-switch rod, and 39 is a locking-bolt which locks the locking-rod 40. It will be understood that the rod 38 and the bolt 39 are reciprocated by movement of the

lever 37 and that the rod 40 is reciprocated by the rail-switch.

First movement.—The towerman wishing to have the said switch moved moves his controller to reverse. This establishes the following circuit from battery 1: wire 12, magnet 4, wire 13, contact 2, wire 14, indicator 5, wires 15 16, magnet of bell 6, wire 17, armature 18, contact 19, wires 20 11, arm 21, contact 22, and wires 24 25, back to battery. This will cause ringing of the bell 6 and energize the magnet 4 to lift the latch 3, and it also causes a certain movement on the indicator 5; but we shall explain the operation of the indicator in connection with the several movements after describing the several movements themselves.

Second movement.—The switchman now begins the movement of the switch-lever which immediately closes the contact 9. Current then flows from battery 1 through wire 12, magnet 4, wire 13, contact 2, wire 14, indicator 5, wires 15 and 26, magnet 8 of the switch-lock, wire 27, contact 9, wires 28 11, arm 21, contact 22, and wires 24 and 25, back to battery. This energizes the magnet 8 and unlocks the switch-lock 7 and also breaks the bell-circuit by lifting the armature 18 away from contact 19 and the magnet 4 remains energized.

Third movement.—The switchman now throws the switch and by so doing the switch-box connections are changed, moving the arm 21 away from the contact 22 and closing the arm 29 with the contact 30. This establishes the following circuits from battery 1: wire 12, magnet 4, wire 13, contact 2, wire 14, indicator 5, wires 15 26, magnet 8, wire 27, contact 9, wires 28 11, arm 29, contact 30, wire 32, indicator-magnet 10, and wires 33 and 25, back to battery. This sets the signal or indicator; but since the current passes in series through the magnets 8 and 10 the magnet 4 is not sufficiently energized to hold its armature and the controller is locked until the switch is put back to normal.

Fourth movement.—When the rail-switch is put back to normal, the circuit described in the second movement is reestablished and this so energizes the magnet 4 that the latch 3 is raised, and the towerman puts his controller back to normal.

The operation of the indicator 5 is as follows: It is essentially a current-meter, and the battery 1 having a definite power the pointer will take the following positions corresponding to the different movements: (a) switch on center, or no current flowing; (b) switch reversed and switch-indicator at "clear;" (c) switch unlocked, but not moved; (d) switch locked in normal position; (e) something out of order. This indicator is a common device and is claimed only in combination and needs no further description than to note the fact that with a constant amount of energy the performance of each function will show the expenditure of a certain amount of energy, and that thus the towerman will at any time know what function is being performed or know of failure of performance.

It will be evident to one skilled in the art that we may omit the lock-magnet 4, or that we may omit either the annunciator 6 or the indicator 10, or that we may combine the annunciator 6 and the indicator 10 in a single device without departing from the spirit and purpose of our invention.

Having thus described our invention, what we claim is—

1. In combination with a rail-switch a lock for said switch, a controller, a signal, an indicator, a source of energy, and a single circuit between the said rail-switch and the tower for actuating said lock and said signal from said tower and for indicating in said tower from said switch, the operation of said lock and said signal.

2. In combination with a rail-switch a lock for said switch, a controller, an audible signal, a visual signal, an indicator, a source of energy and a single circuit between said rail-switch and the tower for actuating said lock and said signals from said tower, and for indicating in said tower from said switch the operation of said lock and said signals.

3. In combination with a rail-switch, a lock for said switch, a controller, a lock for said controller, a signal, an indicator, a source of energy, a single circuit between rail-switch and tower for actuating said signal and said lock from said tower and for indicating in said tower from said switch the operation of said lock and said signal and for actuating from said switch the said lock on the controller.

4. In combination with a rail-switch a lock for said switch, a controller, a lock for said controller, an audible signal, a visual signal, an indicator, a source of energy, and a single circuit between rail-switch and the tower for actuating said signals and said lock

from said tower and for indicating in said tower from said switch the operation of said lock and said signals, and for actuating from said switch said lock for said controller.

5. In combination with a railway-switch, a lock for said switch, a controller, a lock on said controller, a single circuit between tower and switch, and electromagnetic means for permitting the unlocking of the rail-switch lock when said controller has been reversed, and for preventing the return of said controller to normal after said switch has been unlocked and until it has been returned to its normal position.

6. In combination with a railway-switch, a lock for said switch, a controller, a lock on said controller, a single circuit between tower and switch, and electromagnetic means for permitting the unlocking of the rail-switch lock when said controller has been reversed, and for preventing the return of said controller to normal after said switch has been unlocked and until it has been returned to its normal position, and an indicator in said circuit capable of indicating the several movements of the apparatus by measurement of the current employed.

7. In combination with a rail-switch and a source of electric energy of fixed power, a lock for said rail-switch, a controller, a lock for said controller, an annunciator, a signal, a single circuit between said controller and said rail-switch apparatus, and magnets governing said annunciator, controller-lock, switch-lock and signal, and electric switches all so arranged that said controller will be released only when the signal-magnet is deenergized.

8. In combination with a rail-switch and a source of electric energy of fixed power, a lock for said rail-switch, a controller, a lock for said controller, an electric indicator of the meter type, an annunciator, a signal, a single circuit between said controller and said rail-switch apparatus, and magnets governing said annunciator, controller-lock, switch-lock and signal, the windings of said magnets being so proportioned relatively to each other that said indicator will record each particular movement as it is being performed.

In testimony whereof we have hereunto set our hands in the presence of two witnesses.

WILMER W. SALMON.
FRANK L. DODGSON.

Witnesses:

ISAAC R. NOBLE,
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