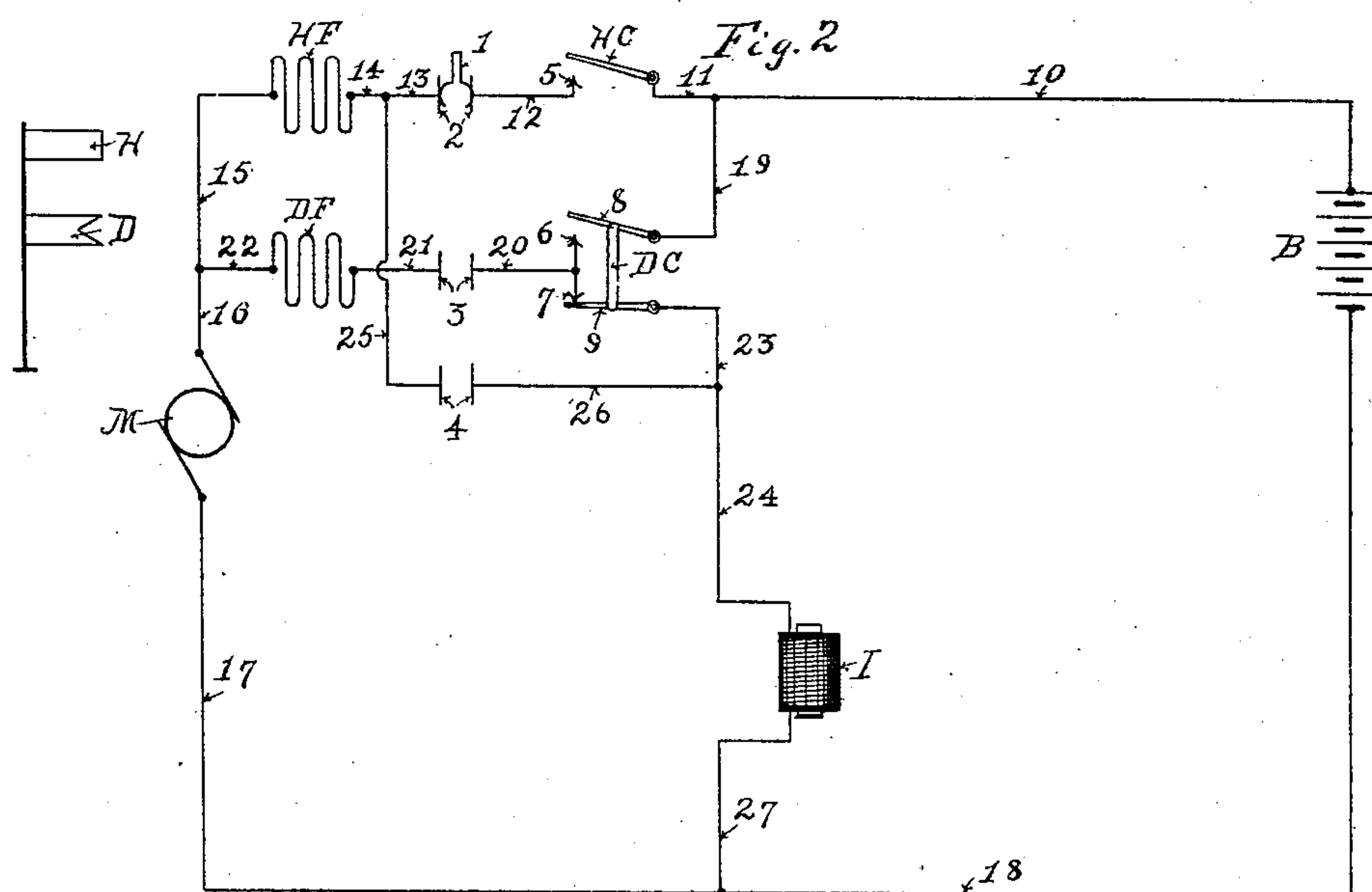
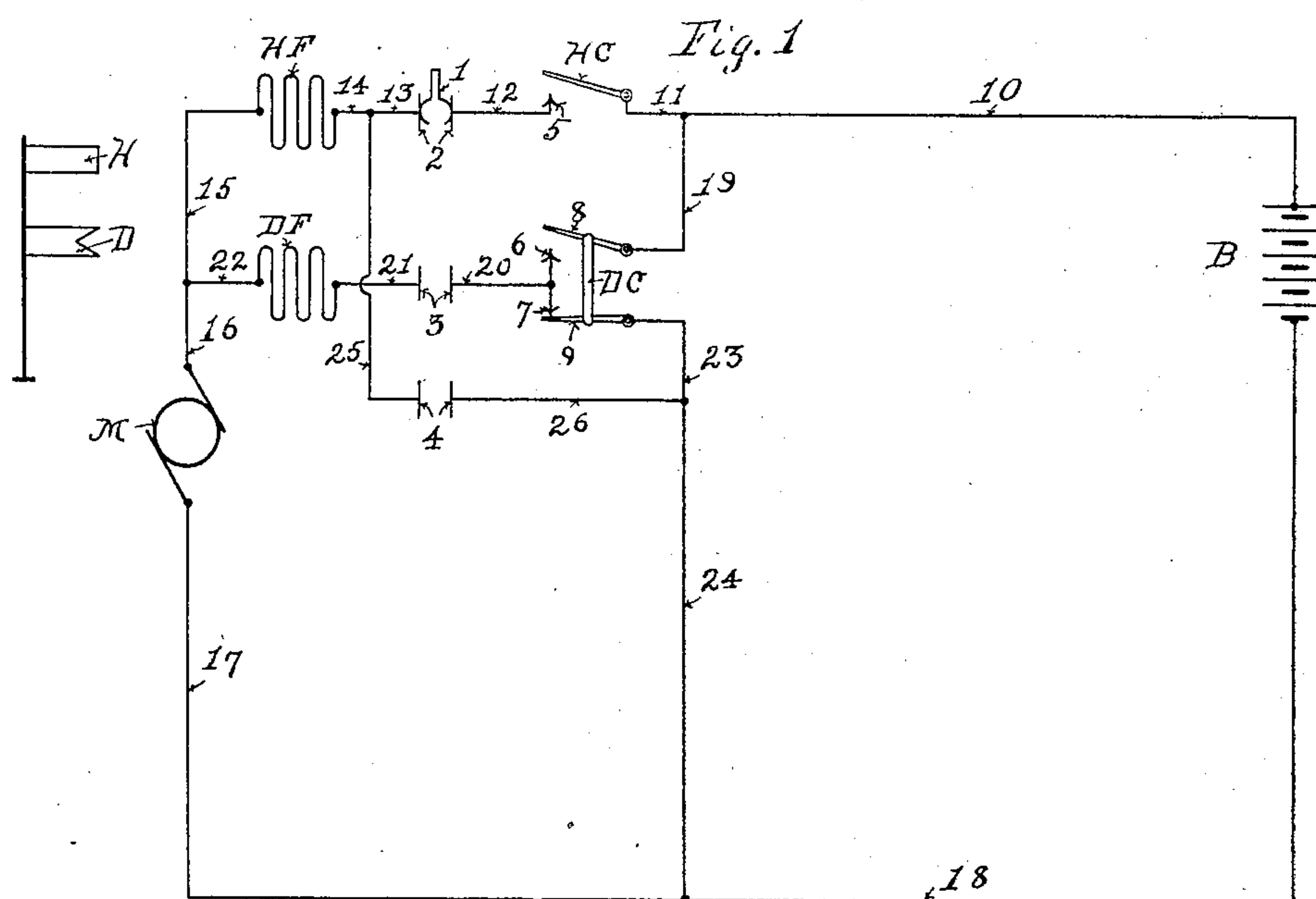


No. 832,194.

PATENTED OCT. 2, 1906.

W. K. HOWE.
RAILWAY SIGNALING APPARATUS.

APPLICATION FILED MAY 17, 1906.



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RAILWAY SIGNALING APPARATUS.

No. 832,194.

Specification of Letters Patent.

Patented Oct. 2, 1906.

Application filed May 17, 1906. Serial No. 317,276.

To all whom it may concern:

Be it known that I, WINTHROP K. HOWE, a citizen of the United States, residing at Buffalo, in the county of Erie and State of New York, have invented new and useful Improvements in Railway Signaling Apparatus, of which the following is a specification.

My invention relates to railway signaling apparatus, and particularly to apparatus in which the motive power is electric energy.

The object of my invention is to provide means for the operation of two signals—as, for example, a home signal and a distant signal—the one by the rotation of the motor in one direction and the other by rotation of the motor in the opposite direction, and in so doing to cushion the movement of the signals as they go to the proceed position and also, if desired, to give indication of movement of the signals to the proceed position.

I attain the objects of my invention by means of the apparatus and circuits shown in the drawings herewith and herein described, in which—

Figure 1 is a diagrammatic view of my invention, and Fig. 2 is a similar view showing the indicating means.

Like characters of reference indicate corresponding parts.

Referring first to Fig. 1, I will indicate the main elements or apparatus employed and then describe the operation. I have shown my invention as applied to control a home and a distant signal. H is the home signal, D the distant signal, and M is a motor having two field-windings HF and DF. The purposes of these field-windings will be fully understood from a description of the operation. It is sufficient to state now that the winding HF is the one which is energized by the battery to move the home signal to the proceed position, and DF is the winding energized by the battery to move the distant signal to the proceed position. The mechanism employed connecting the motor with the signals is such that when the motor is energized to rotate in one direction it will cause movement of one signal to the proceed position and when reverse energized will clear the other signal. Such mechanism is well known and is shown, for example, in my pending application, Serial No. 289,258, filed November 27, 1905. It will be understood that the signals go to the stop position by

gravity and that when moved to the proceed position are held there by any desirable means—such, for example, as the ordinary slot mechanism. 1 is a brush capable of putting the contacts 2, 3, or 4 in electrical connection. This brush is moved mechanically by the signals—that is to say, when the signals are at the stop position it bridges the contact 2 and the contacts 3 and 4 are open. When the home signal has been moved to the proceed position, said brush 1 is moved to bridge the contacts 3 and contacts 2 and 4 are open, and when both signals have been moved to the clear position the brush 1 is moved to bridge the contacts 4 and contacts 2 and 3 are open. HC is the controller for the battery-circuit of the home signal. DC is the controller for the battery-circuit of the distant signal and also the cushion-circuit of the home signal—that is to say, in one position this controller closes the battery-circuit of the distant signal through the arm 8 and contact 6 and at the same time opens the cushion-circuit of the home signal by separation of the arm 9 and the contact 7, and vice versa. B is a source of electric energy.

I will now describe the operation. As shown, both signals are in the stop position and the mechanism in the corresponding positions. Assume now it is desired to move the home signal to the proceed position. The operator moves the controller HC into electrical connection with contact 5. This closes the battery B, with the motor M and the field-winding HF, so that current flows from battery B through wires 10 11, controller HC, contact 5, wire 12, contacts 2 and brush 1, wires 13 14, field-winding HF, wires 15 16, armature of motor M, and wires 17 and 18 back to battery. This energizes the motor to move in the direction to move H to the proceed-position. As the home signal H reaches the proceed position the mechanism connected therewith moves the brush 1 out of electrical connection with the contacts 2 and into electrical connection with the contacts 3. This cuts off the battery and establishes a circuit as follows: armature of motor M, wires 17 24 23, arm 9, contact 7, wire 20, contacts 3 and brush 1, wire 21, field-winding DF and wires 22 and 16 back to motor-armature. Placed thus in a closed circuit including the field DF, the motor encounters the load of current generation, which acts as

a brake upon the motor and rapidly overcomes its momentum, but progressively as the magnetic field is built up, thus avoiding shock and cushioning the movement of the signal. Assume now it is desired to move the distant signal to the proceed position. The operator moves the controller DC to close the arm 8 with the contact 6 and to separate the arm 9 and the contact 7. The battery-circuit of winding HF having been previously opened (by the movement of brush 1 from contacts 2 to 3) and the cushion-circuit of the home signal now being opened by the movement of the arm 9, the battery-circuit of the distant signal only is closed. Current then flows from battery B through wires 10 19, arm 8, contact 6, wire 20, brush 1 and contacts 3, wire 21, winding DF, wires 22 16, armature of motor M, and wires 17 and 18 back to battery. This energizes the motor to rotate in the direction to move the distant signal to the proceed position—that is, rotation in the opposite direction from that employed to clear the home signal. As the distant signal reaches the proceed position the mechanism for actuating the brush 1 moves it out of electrical connection with the contacts 3 and puts it into electrical connection with the contacts 4. This opens the battery-circuit and establishes a cushion-circuit including the motor-armature and field-windings HF as follows: from motor-armature through wires 17 24 26, brush 1 and contacts 4, wires 25 14, field-windings HF and wires 15 16, back to armature of motor M. This loads the motor as above described in connection with the home-signal movement and cushions the final movement or stroke of the mechanism. When the signals go to the stop position by gravity, the brush 1 is moved to bridge the contacts 2 and the apparatus is ready for another movement.

Referring now to Fig. 2, it will be seen that the apparatus and circuits are identical with those shown in Fig. 1, with the single exception that I cut into the wire 24 of Fig. 1 an indicating device I, connecting it with the wire 17 by a wire 27. No further description of this part of my invention is necessary in addition to that already given, except to state that whenever either of the cushion-circuits is energized as a signal goes to the proceed position the indicator I will be energized, thus giving indication of the fact that a signal has reached such position.

It will thus be seen that by my novel arrangement of circuits in connection with a double-wound motor and mechanism for moving two signals, the one by motor rotation in one direction and the other by motor rotation in reverse direction, I am enabled to cushion the movement of the signals by employing the resistance of one motor-winding following the energization of the other motor-

winding to produce movement, and vice versa, without the employment of other apparatus, and incidental to the accomplishment of these ends I am also enabled to secure indication of movement to proceed position by placing an indicating device in a common wire of the cushion-circuits.

Having thus described my invention, I claim—

1. In combination with two signals, a motor having two field-windings, a source of electric energy, operating-circuits, cushioning-circuits, mechanism for moving said signals, one by rotation of said motor in one direction and the other in the other direction, controllers and means for putting said motor in a cushion-circuit including a field-winding after each movement.

2. In combination with a source of electric energy, operating-circuits, a motor having two field-windings, and mechanism for moving said signals, one by rotation of the motor in one direction and the other in the other, means for cushioning the movements of both signals comprising cushion-circuits, means for closing one of said cushion-circuits through one of said field-windings after one signal is moved to the proceed position by the energization of the other field-winding, and means for closing the other of said cushion-circuits through the other of said field-windings after the other signal has been moved.

3. In combination with two signals, a motor having two field-windings, a source of electric energy, operating-circuits, cushioning-circuits, mechanism for moving said signals, one by rotation of said motor in one direction and the other in the other direction, controllers, means for putting said motor in a cushion-circuit including a field-winding after each movement, and an indicating device in a common wire of the cushion-circuits.

4. In combination with a home signal and a distant signal, a source of electric energy, a motor having a home-signal field-winding and a distant-signal field-winding, mechanism for moving said signals, controllers, operating-circuits, cushioning-circuits, and means for opening the home-signal operating-circuit and closing the home-signal cushion-circuit through the distant-signal field-winding just as the home signal goes to the proceed position, and means for opening the distant-signal operating-circuit and closing the distant-signal cushion-circuit through the home-signal field-winding just as the distant signal goes to the proceed position.

5. In combination with a home signal and a distant signal, a source of electric energy, a motor having a home-signal field-winding and a distant-signal field-winding, mechanism for moving said signals, controllers, operating-circuits, cushion-circuits, means for opening the home-signal operating-circuit

and closing the home-signal cushion-circuit through the distant-signal field-winding just as the home signal goes to the proceed position, and means for operating the distant-signal operating-circuit and closing the distant-signal cushion-circuit through the home-signal field-winding just as the distant signal goes to the proceed position, and an indicat-

ing device in a common wire of the cushion-circuits to indicate such movements.

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In testimony whereof I have hereunto set my hand in the presence of two witnesses.

WINTHROP K. HOWE.

Witnesses:

F. L. DODGWEN,
ISAAC R. NOBLE.