

(No Model.)

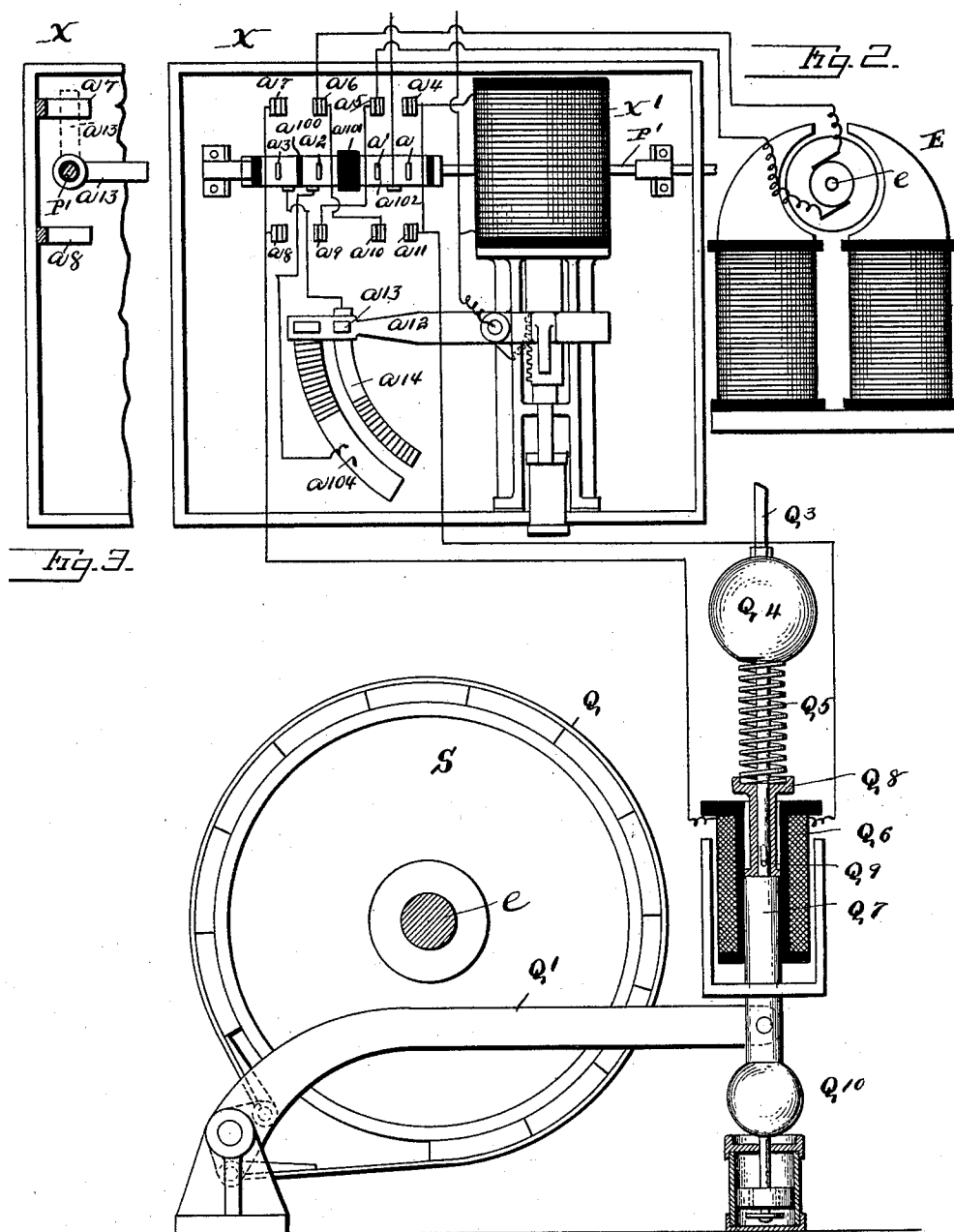
2 Sheets—Sheet 2.

F. E. HERDMAN.

BRAKE MECHANISM FOR ELECTRIC ELEVATORS.

No. 568,569.

Patented Sept. 29, 1896.



Witnesses.

Jesse B. Heller,  
Minnie F. Ellis.

Inventor.

Frank E. Herdman  
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# UNITED STATES PATENT OFFICE.

FRANK E. HERDMAN, OF WINNETKA, ILLINOIS.

## BRAKE MECHANISM FOR ELECTRIC ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 568,569, dated September 29, 1896.

Application filed October 5, 1895. Serial No. 564,734. (No model.)

*To all whom it may concern:*

Be it known that I, FRANK E. HERDMAN, a citizen of the United States, residing at Winnetka, county of Cook, and State of Illinois, have invented a new and useful Improvement in Brake Mechanism for Electric Elevators, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, which form a part of this specification.

This invention is especially adapted for use with electric motors used to operate elevating apparatus.

The purpose or object of this invention is to provide brake-operating mechanism so that the brake shall not be removed until sufficient power is on the machine to enable it to move the load in the direction required, or at least to prevent the load overcoming the motor and slipping back.

I will first describe my invention as illustrated in the drawings, and then particularly point out the invention in the claims.

In the drawings, Figure 1 is an end view. Fig. 2 is an electrical diagram. Fig. 3 is a vertical section through the switch-box.

E is an electric motor; *e*, its shaft. On this shaft is the brake-wheel S, having the brake-band Q and brake-lever Q'. This brake-lever Q' is pivotally attached to the core Q<sup>7</sup> of the solenoid-magnet Q<sup>6</sup>. This solenoid-magnet is in shunt with the main circuit of the source of current supply to the motor, and the current to said magnet is controlled by the motor-switch, which in turn is controlled by the operating-shaft P'. To particularize more fully as to the circuit connections in relation to this magnet Q<sup>6</sup>, X is the snap-switch, composed of the brushes *a* *a'* *a*<sup>2</sup> *a*<sup>3</sup>, the brushes *a*<sup>2</sup> and *a*<sup>3</sup> being insulated from each other by insulation *a*<sup>101</sup> and the brushes *a* and *a'* being in electrical connection with each other by conductive portion *a*<sup>102</sup> of hub of switch, but the two pairs of brushes being insulated from each other by the insulation *a*<sup>100</sup>.

Dependent upon which direction the snap-switch is turned the brush *a* makes contact with contacts *a*<sup>4</sup> or *a*<sup>11</sup>, brush *a'* with contacts *a*<sup>5</sup> or *a*<sup>10</sup>, brush *a*<sup>2</sup> with contacts *a*<sup>8</sup> or *a*<sup>9</sup>, and brush *a*<sup>3</sup> with contacts *a*<sup>7</sup> or *a*<sup>8</sup>, the con-

tacts *a*<sup>5</sup> and *a*<sup>9</sup> being connected with each other, and so are contacts *a*<sup>6</sup> and *a*<sup>10</sup> and contacts *a* and *a*<sup>8</sup> and *a*<sup>4</sup> and *a*<sup>11</sup>. The conductive portion *a*<sup>102</sup> is in electrical connection with one pole of current supply.

The contacts *a*<sup>4</sup> and *a*<sup>11</sup> are in electrical connection with the solenoid X'. The solenoid X' is also in direct electrical connection with the wire leading from the other pole of current supply. The contacts *a*<sup>4</sup> and *a*<sup>11</sup>, by means of a wire, are in direct electrical connection with the solenoid Q<sup>6</sup>. The return-wire from the solenoid Q<sup>6</sup> passes to and is connected with the contacts *a*<sup>8</sup> and *a*<sup>7</sup>. A wire runs from the brush *a*<sup>3</sup> to the field resistance *a*<sup>14</sup>, from thence through the resistance-arm *a*<sup>12</sup> to the other source of current supply, (the field connections not being shown in this drawing.) From the contact *a*<sup>5</sup> a wire runs to the armature. From the armature a wire leads to contact *a*<sup>6</sup>. From brush *a*<sup>2</sup> a wire leads to the armature-resistance plate *a*<sup>104</sup>.

When the switch is thrown either to the right or to the left, the brushes make contact with one or the other of said contacts. The only difference in the series of contacts which the brushes make contact with is causing the current to pass in opposite direction to the armature. Supposing the connection to be made with the upper set of contacts in the drawing—to wit, *a*<sup>4</sup>, *a*<sup>5</sup>, *a*<sup>6</sup>, and *a*<sup>7</sup>—the current, as far as the armature is concerned, passes from the brush *a'* to the contact *a*<sup>5</sup>, from the contact *a*<sup>5</sup> to the armature of the motor, from the armature of the motor back to contact *a*<sup>6</sup>, from thence to the brush *a*<sup>2</sup>, from the brush *a*<sup>2</sup> to the armature-resistance plate *a*<sup>104</sup>, thence from the resistance-arm *a*<sup>12</sup> to the other pole of current supply. At the same time the solenoid X' is energized, and, being connected to the resistance-arm *a*<sup>12</sup>, operates it to move it to cut out resistances in the armature-circuit. At the same time the solenoid Q<sup>6</sup> is energized by means of the brush *a* making contact with the contact *a*<sup>4</sup>, and the return current from the solenoid passes to the contact *a*<sup>7</sup>, from thence to brush *a*<sup>3</sup>, and from thence to the field-resistance plate *a*<sup>14</sup>, and from thence from the resistance-arm *a*<sup>12</sup> back to the other pole of the source of current supply.

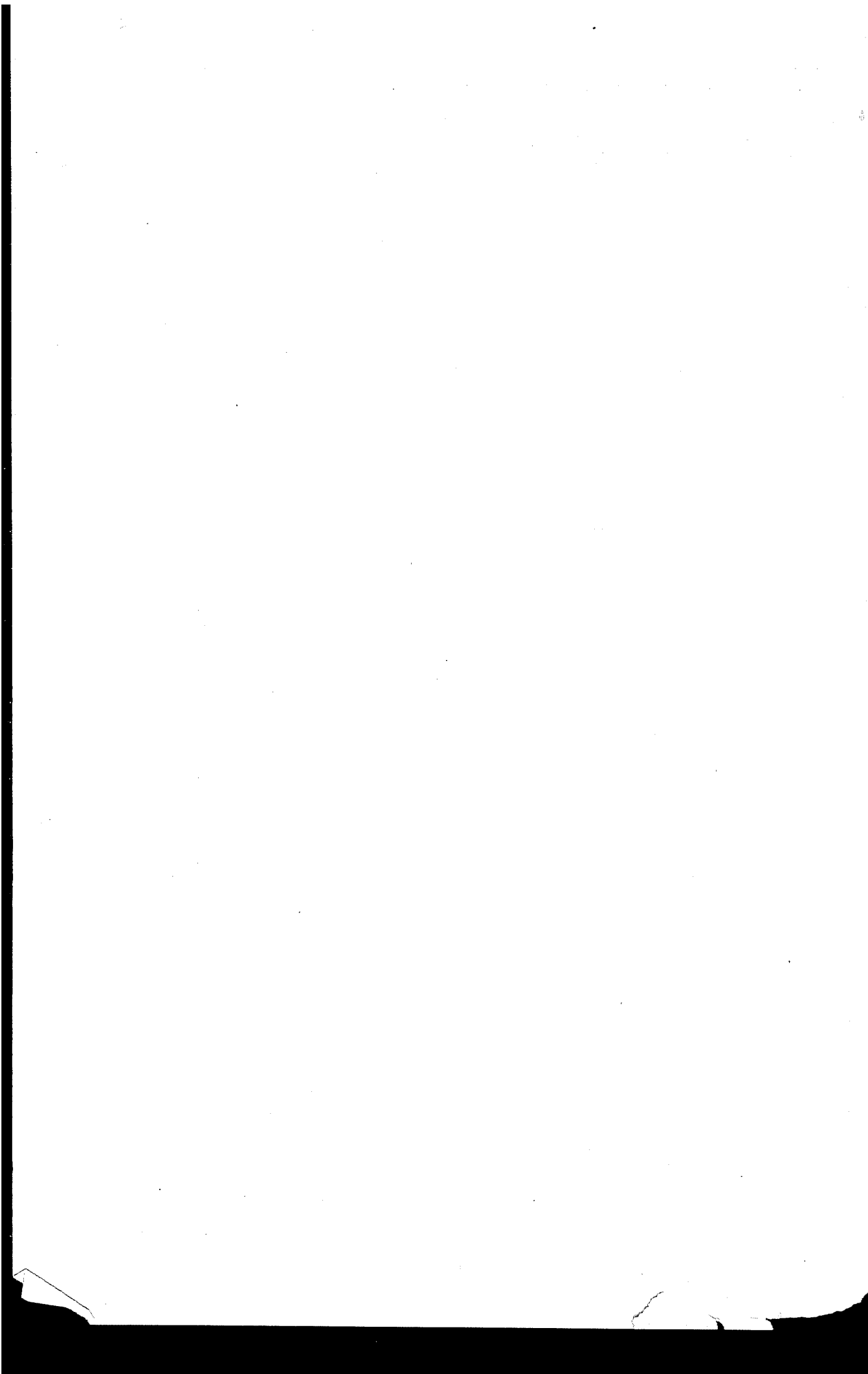
5 trical connections from the source of current supply to said electric device, switch mechanism controlled by the motor-controlling mechanism whereby the electric device is energized, when current is admitted to the motor, the core of said electric device being weighted.

In testimony of which invention I have hereunto set my hand.

FRANK E. HERDMAN.

Witnesses:

C. D. HOYT,  
J. J. O'MEARA.

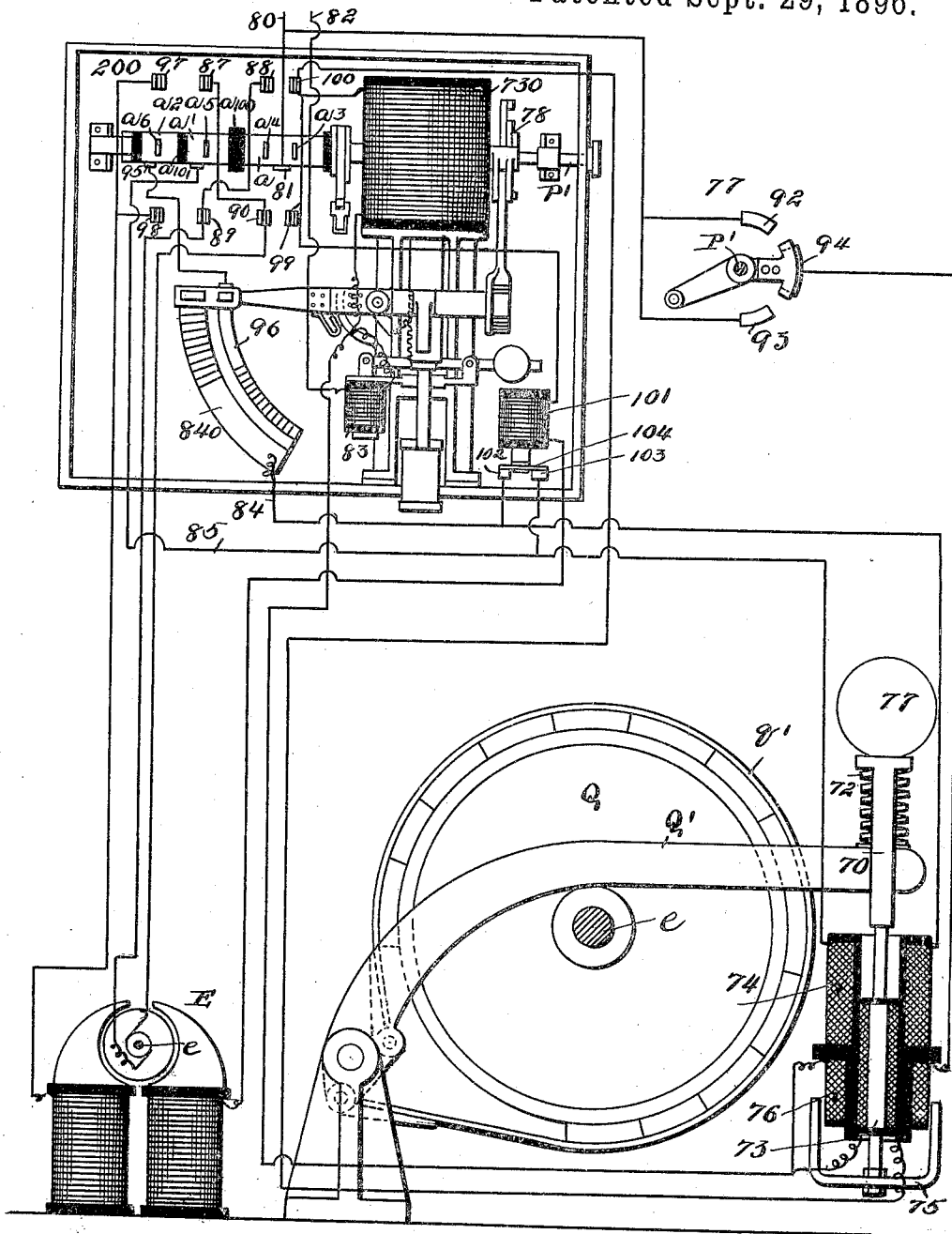


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