

L. A. DE MAYO.
ELECTRIC CONTROLLER.
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999,578.

Patented Aug. 1, 1911.

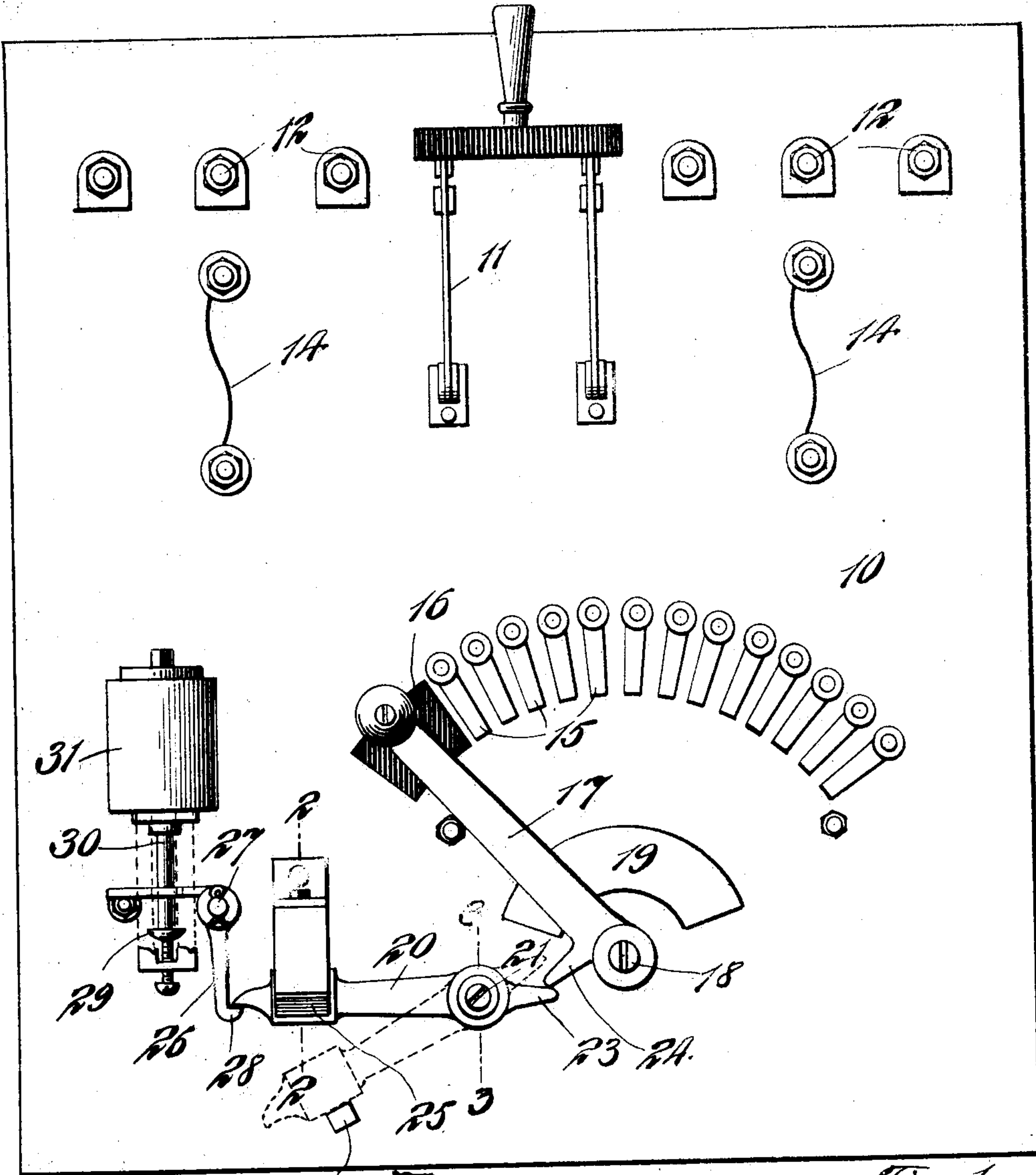


Fig. 1.

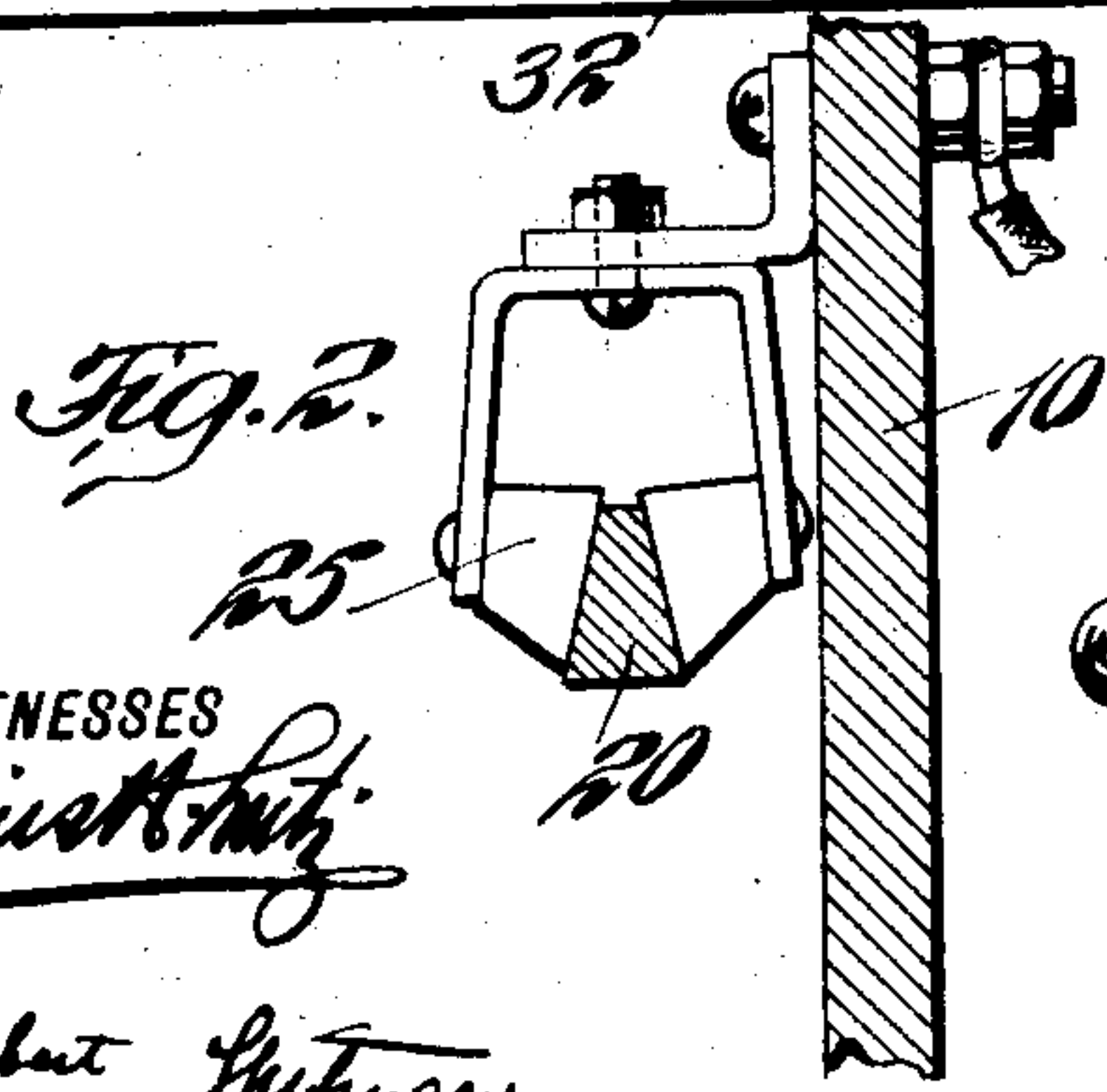


Fig. 2.

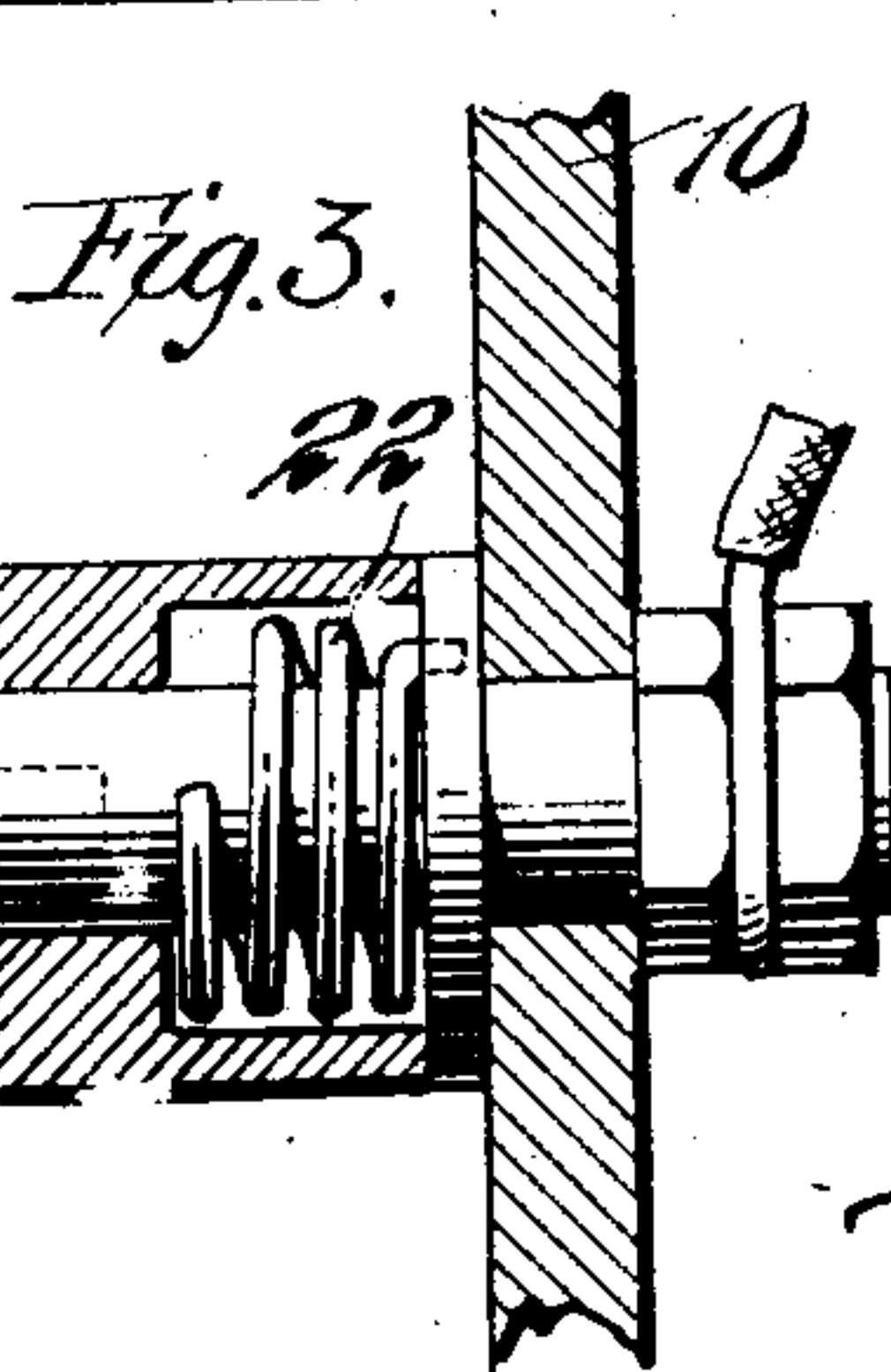


Fig. 3.

WITNESSES
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LOUIS A. DE MAYO, OF NEW YORK, N. Y.

ELECTRIC CONTROLLER.

999,578.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, LOUIS A. DE MAYO, of New York, in the county of New York and State of New York, have invented certain

5 new and useful Improvements in Electric Controllers, of which the following is a full, clear, and exact specification, such as will enable others skilled in the art to which it appertains to make and use the same.

10 The invention is adapted especially as a controller for electric motors, although it may be employed in various electric circuits for the control of various apparatus.

Primarily the object of my invention is to 15 improve the automatic cut-out and to render the same more certain and efficient in operation without increasing its complication or the cost of production.

20 The invention involves various other features and all of them will be fully set forth hereinafter and particularly pointed out in the claims.

Reference is now had to the accompanying drawings which represent, as an ex- 25 ample, the preferred embodiment of my invention.

In these drawings—Figure 1 is a face view of the apparatus; Fig. 2 is an enlarged detail section on the line 2—2 of Fig. 1; 30 and Fig. 3 is a section on the line 3—3 of Fig. 1.

In the drawings, 10 indicates the back board or panel of the apparatus. This is preferably formed of an asbestos compound 35 though it may be of any insulating material.

On the panel 10 is arranged the main switch 11. The panel also carries various suitable connections 12 with the resistance 40 (not shown) and fuses 14. This main switch 11 controls the circuit and is closed when the controller is in operation.

15 indicates the contacts with the resistance which are arranged in an arc and at 45 one end of which is the dead point 16. Over the contacts 15 and dead point 16 is adapted to operate the controller arm 17 which swings around a pivot 18 on the panel 10 and engages an arc shaped contact 19 so 50 that the current passes from said contact through one or more of the resistance units according to the position of the arm 17.

20 indicates the cut-out arm which is mounted on the panel 10 to swing around a 55 center pin 21 and which is provided as shown in Fig. 3 with a spring 22, by means

of which, when the arm is released, it is thrown rapidly downward against a stop 32. At its pivoted end the arm 20 has a toe 23 adapted to be engaged by a toe 24 on the 60 controller arm 17 when said arm reaches the position shown in Fig. 1. By this arrangement should the cut-out arm 20 be in the lower position shown by broken lines in Fig. 1, when the controller arm 17 is thrown to 65 the dead point 16, the toes 23 and 24 engage each other and the arm 20 is automatically returned.

The current passes through the controller arm 20 from its pin 21 to a U-shaped contact 70 25, which is in two parts between which the arm 20 is engaged when raised (see Fig. 2.) The arm 20 is adapted to be held in the raised position shown in Figs. 1 and 2 by means of an elbow-shaped detent 26, pivoted 75 on a stud 27 fastened to the panel. This detent 26 has a hook 28 at one end which engages the free end of the arm 20 and its other arm is adapted to be engaged by a collar 29 on the core 30 of a solenoid magnet 80 31. The magnet 31 is fastened to the panel and is so wired that the current passes through it on its way to the motor or other apparatus in connection with which the controller is employed. The upper side of the 85 end of the arm 20 that engages with the hook 28 is provided with an elongated inclined riding surface, whereby, when the arm 20 is returned to closed position by the controller arm 17, the arm 20 automatically 90 latches by the hook 28, to be reengaged thereby.

In the operation of the apparatus to start the motor, for example, the main switch 11 is closed, the controller arm 17 normally 95 lying in the position shown in Fig. 1. At this time the circuit is still broken. The operator should then swing the controller arm over the contacts 15, closing the circuit and gradually reducing the resistance as the 100 controller arm is moved rightward. Should the current passing to the motor exceed the limit fixed by the solenoid magnet 31, said magnet will become energized and lift its core 30, causing the collar 29 to strike the 105 elbow detent 26 and disengage the hook 28 from the cut-out arm. The spring 22 then asserts itself and the cut-out arm instantly falls to the position shown by broken lines in Fig. 1. The circuit is then broken by the 110 disconnection of the arm 20 from the contact 25 and, of course, the operation of the

motor ceases. The operator then returns the controller arm to the dead point as illustrated in Fig. 1 and, by this operation, the cut-out arm is instantly returned to active position. The apparatus is thus automatically restored to condition permitting a renewal of the operation.

Having thus described my invention, what I claim as new and desire to secure as Letters Patent of the United States is:—

1. In an electric controller the combination of the controller arm adapted to make contact with the resistance contacts and with a dead point, a cut-out arm, a stud on which said arm is mounted, said stud serving as a terminal, a depending U-shaped contact having inflexible legs adapted to make contact with said cut-out arm, means normally tending to hold said arm away from said contact, means for moving the cut-out against gravity to closed position as the controller arm is moved to the dead point, a detent adapted to hold said arm in position after being closed, the end of said arm having an elongated riding surface on which the head of said detent is adapted to ride, an electro-magnet operated by an excess current through the controller arm, a core in said magnet, a collar on said core, said collar

being adapted to move said detent and release said arm when the core is raised by the energization of the magnet.

2. In an electric controller the combination of the controller arm adapted to make contact with the resistance contacts and with a dead point, a cut-out arm, a stud on which said arm is mounted, said stud serving as one terminal, a U-shaped contact having inflexible legs against which said arm is adapted to be forced against gravity, means for forcing said arm into said contact as the controller arm is moved to the dead point, a detent adapted to hold said arm in closed position and an electro-magnet operated by an excess current through the controller arm for releasing said detent, said arm having an elongated riding surface adjacent the end thereof on which the head of said detent is adapted to ride as said arm is being forced into contact position.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

LOUIS A. DE MAYO.

Witnesses:

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