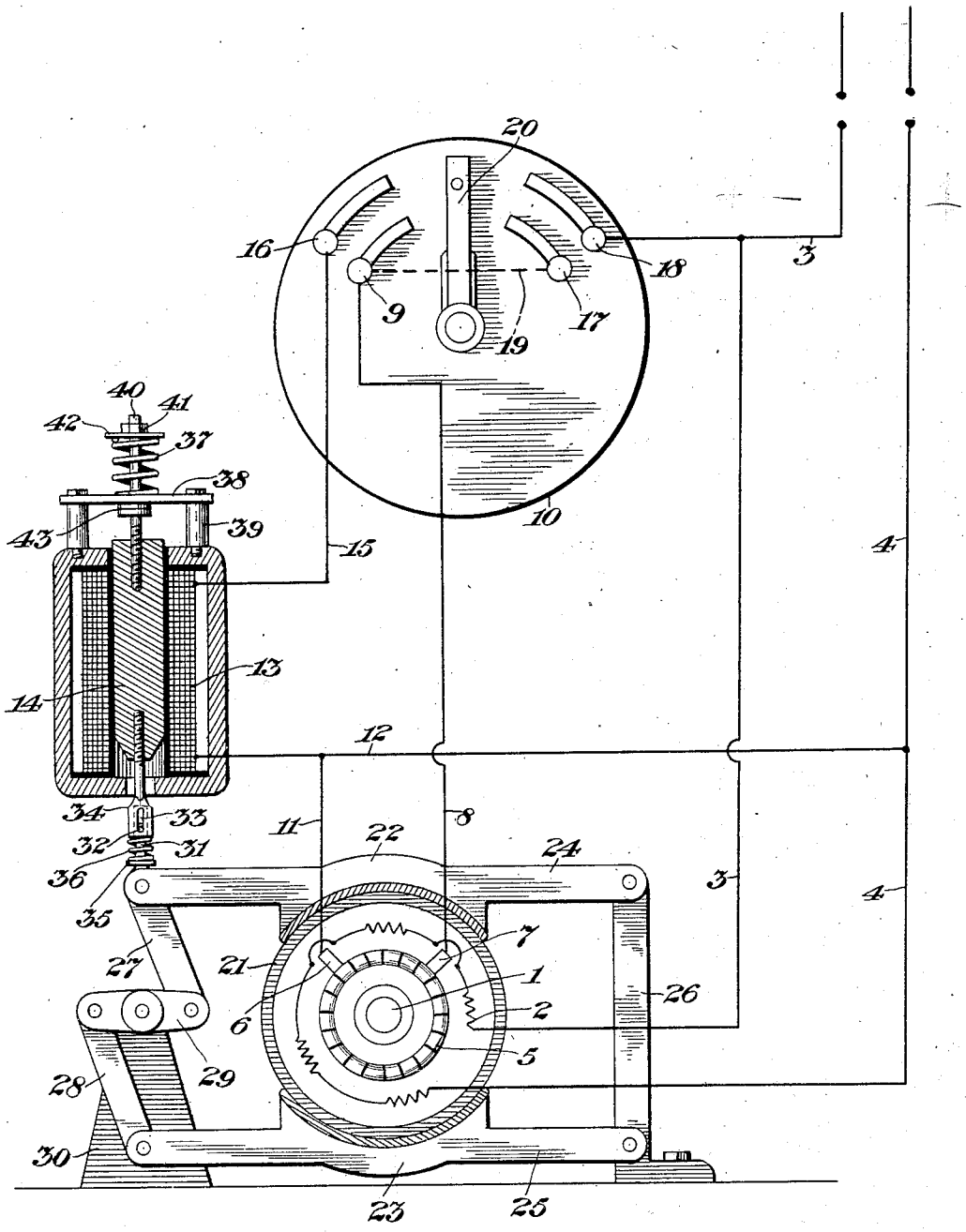
No. 729,640. PATENTED JUNE 2, 1903.

J. P. McCURDY.

BRAKE FOR ELEVATORS.

APPLICATION FILED JUNE 9, 1902.

NO MODEL.



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UNITED STATES PATENT OFFICE.

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BRAKE FOR ELEVATORS.

SPECIFICATION forming part of Letters Patent No. 729,640, dated June 2, 1903.

Application filed June 9, 1902. Serial No. 110,746. (No model.)

To all whom it may concern:

Be it known that I, JOHN P. McCURDY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Brakes for Elevators, of which the following is a full, clear, and exact specification.

This invention relates to brakes for controlling the speed of the electric motors for operating elevators; and it has for its primary object to provide an improved means of utilizing the current induced in the armature-coils of the motor for applying the brake.

With these ends in view the invention consists in certain features of novelty in the construction, combination, and arrangement of parts by which the said objects and certain other objects hereinafter appearing are attained, all as fully described with reference to the accompanying drawing and more particularly pointed out in the claims.

The said drawing is a diagrammatic illustration of my improved brake and the system of wiring.

1 represents the armature-shaft of an electric motor, whose field-coils are shown at 2, and in circuit with main-line conductors 3 4 in the usual or any suitable way.

5 is the commutator, and 6 7 are the commutator-brushes, the latter of which is connected by conductor 8 to contact 9 on switchboard 10, while the brush 6 is connected by conductor 11 to a conductor 12, which leads from main-line conductor 4 to one terminal of an electromagnetic device, preferably a solenoid, whose coil or helix is shown at 13, while its armature or core is shown at 14. The other terminal of the helix 13 is connected by conductor 15 with a contact 16 on switchboard 10. This switchboard is also provided with two additional contacts 17 18, the latter of which is connected by conductor 19 with contact 9, while contact 18 is connected to main-line conductor 3, and between these two sets of contacts on the switchboard is mounted a switch 20, adapted when thrown in one direction to place contacts 9 16 in electrical communication and when thrown in the other direction to electrically connect the other two contacts 17 18.

On the armature-shaft of the electric motor or otherwise operatively connected with the armature is a brake-wheel or pulley 21, and with this engages any suitable brake shoe or shoes, which are mechanically connected with the core or armature 14 of the solenoid. Two brake-shoes are shown at 22 23, mounted on two levers 24 25, respectively, which are pivoted at one end to a standard 26, while their opposite ends are connected, by means of links 27 28, to opposite extremities of a walking-beam lever 29, pivoted on support 30. The upper end of link 27 is connected to a stem 31, which carries a pin 32, running in a slot 33 in the lower end of a connection 34, which is screwed into or otherwise secured to the core 14, and between the lower end of connection 34 and a shoulder 35 on stem 31 is a coil-spring 36, which keeps the pin 31 at the lower end of slot 33. The core 14 is supported at its upper end by means of a spring or cushion 37, which rests upon a cross-bar 38, mounted on supports 39, the core 14 being provided with a stem 40, which passes through cross-bar 38 and carries a nut 41, resting upon washer 42, supported on the upper end of spring 37. The upward movement of the core 14 is limited by a pair of adjusting-nuts 43, threaded on stem 40 just below cross-bar 38.

By the means described it will be seen that when it is desired to throw the field-coils 2 of the motor in circuit with the main-line conductors 3 4 the switch 20 will be thrown into connection with contacts 17 18, whereupon the current will pass via conductor 4 to armature-brush 6 and will return to its source via conductor 8, contact 9, conductor 19, switch 20, and conductor 3; but should it be desired to stop the elevator an opposite throw of the swith 20, placing contacts 9 16 in communication, will lead the current induced in the armature-coils through the solenoid helix 13 via conductors 8 15 11, thereby depressing the core 14 of the selenoid into the helix and applying the brake-shoes 22 23. When the switch 20 is restored to its normal position, as shown in the drawing, for opening the circuit through the helix of the solenoid, the spring 37 will return the core 14 to its normal or elevated position, thereby releasing the

brake-shoes, and this result will also occur before the switch 20 is restored to said usual position if the momentum of the armature decreases sufficiently to reduce the current in the solenoid to an extent permitting the spring 37 to overcome the power of the solenoid; but should this occur the renewed speed of the armature, due to the increased rate of descent, would strengthen the current through the solenoid and again apply the brake with a degree of retarding force proportional to the speed of the armature, and consequently it will be seen the brake, with the described system of circuits, acts as a governor for regulating the descending speed of the car.

The purpose of the spring 36 is to cushion the action of the solenoid-core 14 on the brake-shoes, such spring possessing sufficient rigidity to transmit the pressure of the solenoid to the brake-shoes while absorbing any undue strain.

Having thus described my invention, what I claim as new therein, and desire to secure by Letters Patent, is—

1. In a brake for elevators the combination with an electric motor for operating the elevator, having armature-coils, and an electromagnetic brake operatively connected with the shaft of the motor, of means for applying said brake with the current induced in the armature-coils by the momentum of the armature when the circuit for operating the motor is opened, substantially as set forth.

2. In a brake for elevators the combination with an electric motor for operating the elevator, having armature-coils, and an electromagnectic brake operatively connected with the shaft of the motor, of means for applying the brake with the current induced in the armature-coils by the momentum of the armature when the circuit for operating the motor is opened, and means for automatically releasing said electromagnetic brake when de-energized, substantially as set forth.

3. In a brake for elevators the combination with an electric motor for operating the elevator, having armature-coils, an electromagnetic brake operatively connected with the motor-shaft, and a main-line circuit, of means for closing the main-line circuit through the motor and for closing the armature-circuit through said electromagnetic brake when the main-line circuit is opened and means acting against said brake for releasing it as the speed of the armature decreases, substantially as set forth.

4. In a brake for elevators the combination with the shaft of an electric motor and the armature-coils thereon, of a brake-wheel or pulley connected with said shaft, a brake-shoe adapted to bear against said wheel or pulley, an electromagnetic device for operating said brake-shoe, main-line conductors connected with the field-coils of said motor, two armature-brushes, means for connecting said brushes electrically with the terminals of said electromagnetic device and one of said brushes with one of said main-line conductors alternately, means for connecting the other of said main-line conductors with the other of said brushes and means for operatively connecting said electromagnetic device with said brake-shoe, substantially as set forth.

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