

J. E. THOMPSON AND C. W. JAMESON.
 AUTOMATIC CONTROLLER.
 APPLICATION FILED APR. 7, 1917.

1,306,202.

Patented June 10, 1919.

Fig. 1.

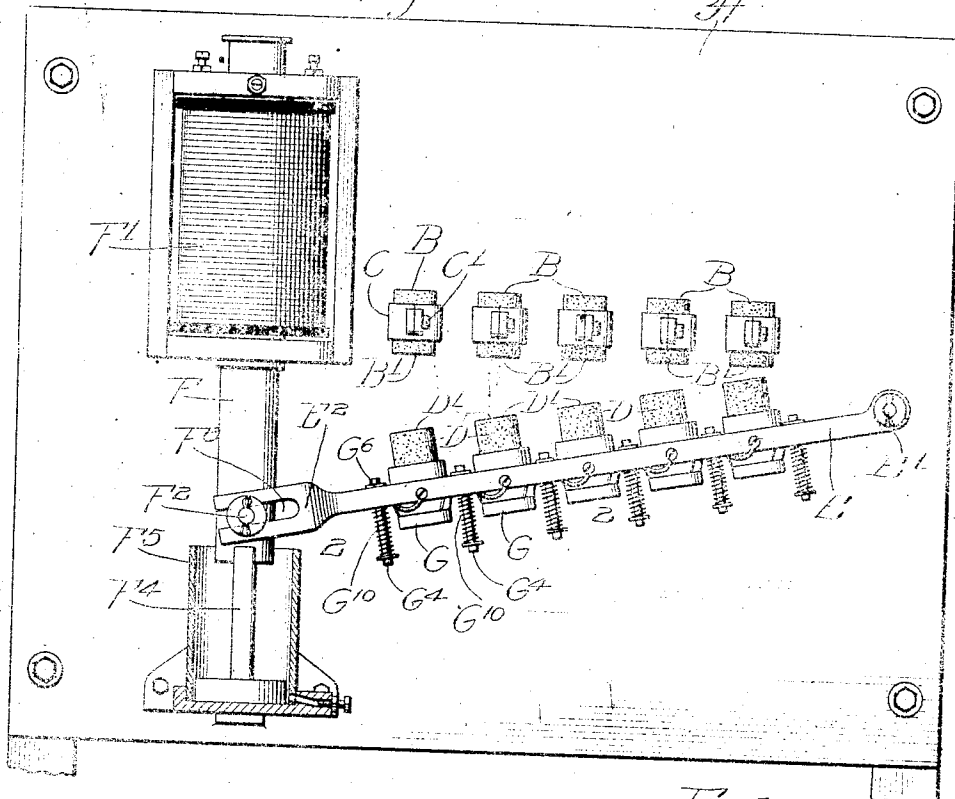


Fig. 2.

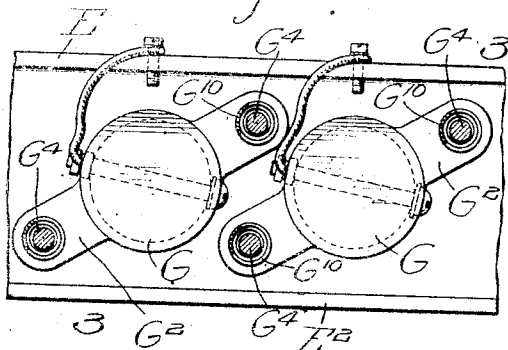


Fig. 3.

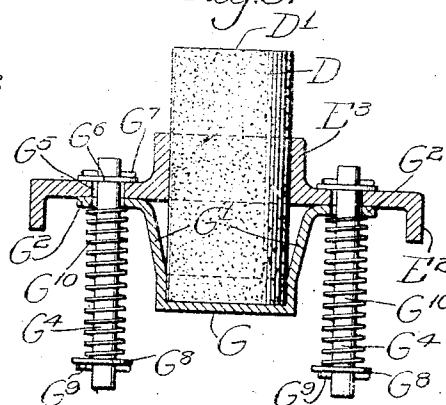
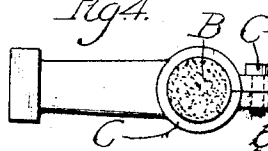


Fig. 4.



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 by Edgar Francis Beaubien, Atty.

UNITED STATES PATENT OFFICE.

JOHN E. THOMPSON AND CLARENCE W. JAMESON, OF CHICAGO, ILLINOIS, ASSIGNORS.
BY MESNE ASSIGNMENTS, TO ATLAS ELECTRIC DEVICES CO., A CORPORATION OF
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AUTOMATIC CONTROLLER.

1,306,202.

Specification of Letters Patent. Patented June 10, 1919.

Application filed April 7, 1917. Serial No. 160,584.

To all whom it may concern:

Be it known that we, JOHN E. THOMPSON and CLARENCE W. JAMESON, citizens of the United States of America, and residents of Chicago, Cook county, Illinois, have invented a certain new and useful improvement in Automatic Controllers, of which the following is a specification.

Our invention relates to improvements in automatic controller switches, more particularly of the type adapted for varying the resistance in the circuits of electric motors.

Our object is to provide an improved switch of this character which will be simple, durable and reliable in construction and effective and efficient in operation.

Other objects of our invention will appear hereinafter.

Our invention consists in the features of novelty exemplified by the construction, combination and arrangements of parts hereinafter described and shown in the accompanying drawing, and more particularly set forth in the appended claim.

Referring to the drawings,—

Figure 1 is a view in front elevation, of a controller switch embodying our invention;

Fig. 2 is an enlarged bottom plan view taken substantially on line 2—2 of Fig. 1, of a portion of the movable switch arm showing several of the yieldable contacts carried thereby;

Fig. 3 is a sectional detail through one of the contacts, this view being taken on line 3—3 of Fig. 2;

Fig. 4 is an enlarged detail in plan, of one of the fixed contacts.

The structure which we have shown in the drawings and which embodies our invention, is designed more particularly for use in connection with the starting or accelerating of electric elevator motors. This switch is arranged to automatically vary the resistance in the circuit which includes the motor, all in the manner which is well known to those skilled in the art. Hence, a description of the circuits in which the switch is intended to be associated, is deemed unnecessary. However, our improved switch is capable of being associated in a circuit such as we have shown and described in our co-pending application, Serial No. 59,144, filed November 1, 1915. The structure which we have shown in the drawings embodies a suitable supporting board or

panel A of suitable insulating material upon which the various parts are mounted in their proper relation. Outstanding from the panel is a plurality of fixed contacts B which are carried in suitable brackets C rigidly mounted upon the panel.

As shown in Figs. 1 and 4, these contacts comprise cylindrical members which are preferably made of carbon or any other suitable material for the purpose. The brackets C are provided with integral split rings at their outer ends, in which the carbon contacts are clamped. The portions of this ring are clamped by means of the screws C' which permits of removal or adjustment of said contacts. The contacts are, in this structure, positioned in a substantially horizontal row and equally spaced apart. The lower or contact faces B¹ of these contacts are flat and are all positioned in substantially the same horizontal plane. Coöperating with these fixed contacts is a plurality of movable contact members D which in this case are similar in construction and material to the contact members B. The contact members D have similar flat contact faces or ends D¹ which are preferably positioned in substantially the same plane, but this plane is disposed at an angle to the plane which the contact faces B¹ occupy, so that the contacts D may be successively brought into and out of engagement with the fixed contacts B. The contact members D are all carried in a swinging arm or bar E which is pivoted at one end E¹ upon the supporting panel A at such an angle to the plane of contacts B that when swung about its pivot the bar or arm carries the contacts D into successive engagement with the fixed contacts B. Hence this movable arm normally occupies a position at such an angle that it will normally maintain the plane of the contact faces D¹ at the proper angle with respect to the plane of the contact faces B¹. The other end E² of the arm E is forked to embrace the core extension F of an actuating solenoid F¹. It is connected to this extension by means of a pivot bolt F² which extends through the extension F and operates in slots F³ in the forks of said movable arm E. This construction permits of a relative movement between the arm E and the extension as the solenoid operates to swing the arm E about its pivot. The operating solenoid F¹ may be of any suitable

construction used in switches of this character, and it may be energized in the usual manner to cause it to swing the arm E about its pivot. The lower end of the core extension carries a piston F⁴ which operates within a cylinder F⁵ mounted upon the panel, which construction constitutes a suitable dash-pot for regulating the pull of the solenoid. The pivoted arm E is preferably formed as a flat strip or plate having downwardly depending flanges or ribs E² at its edges for strength, thus enabling a comparatively light arm to be used for this purpose. The contacts D, as hereinbefore mentioned, are cylindrical in form and are positioned to slide freely within suitable openings in the arm E, these openings being surrounded by integral upstanding flanges E³ to provide suitable guide bearings for the contact members. Each of the contact members D is individually supported in a cup-shaped member G carried on the under side of the arm E. Each cup-shaped member G has upstanding extensions G¹, the upper ends G² of which are turned horizontally and provided with openings through which the rods G⁴ pass so that the cup members which support the contacts may slide on the rods G⁴ toward and from the arm E. The guide rods G⁴ are supported in a depending position from the arm E. They pass through holes or openings G⁵ in said arm. At their upper ends these rods have washers G⁶ which are held by cotter pins G⁷. The lower ends of the rods are likewise provided with washers G⁸ and cotter pins G⁹. The cup-shaped members G are yieldingly held in position against the under side of the arm E by means of spiral springs G¹⁰ which surround the rods G⁴ and which are positioned between the extensions G² and the lower washers G⁸. When the contact members D, however, are pressed into engagement with the fixed contact members, the springs G¹⁰ yield and the contacts move downwardly in the bearings E⁴ carrying the cup-shaped members G with them. Each contact is thus yieldingly held in engagement with its corresponding fixed contact. It will be noted that because of the angularity of position of the contacts the corresponding contacts of each series are normally out of alinement. Hence when the contacts D are moved into and out of alinement with contacts B their contact faces move relatively laterally with

a rubbing action which operates to clean the contact surfaces and grind them into perfect contact. It will also be noted the holes in the arm E and in the cup extensions G² through which the rods G⁴ pass are comparatively larger than the rods and that the contacts D are loosely held in the cups G. This construction permits considerable free movement of these parts which prevents the parts from binding and thus insuring their proper operation at all times. Furthermore, the parts are all readily renewable when worn or damaged, and are inexpensive since no machine work is necessary either in the manufacture or assembling of the parts. The entire structure is simple and its repeated operation is reliable and effective. The arm E is intended as a current carrying member and in order to provide a substantial and effective electrical connection between the contacts and the arm the contacts D have flexible cable pigtails G¹² fastened at one end directly to the carbons and at their other ends directly to the arm, both connections being made by suitable screws.

We claim:

The combination of a supporting panel, a plurality of brackets outstanding from the face of the panel, carbon contact blocks mounted in said brackets and arranged with their contact faces in the same plane, a bar pivoted at one end on said supporting panel and normally arranged at an angle to the said contact faces and to move toward said fixed contacts into parallel relation thereto, a plurality of contact bearings in said arm, a plurality of contact blocks movable in said bearings with their contact faces normally arranged in a plane at an angle to the plane of the contact faces of said fixed contacts so that when the bar is swung about its pivot said yielding contacts will successively engage the fixed contacts, and individual spring-pressed supports on the underside of said bar arranged to yield as the contacts are successively brought into contact.

Signed by us at Chicago, Illinois, this 27 day of March, 1917.

JOHN E. THOMPSON.
CLARENCE W. JAMESON.

Witnesses:

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