No. 797,217. PATENTED AUG. 15, 1905.

W. D. POMEROY.

OPERATING MECHANISM FOR CONTROLLERS.

APPLICATION FILED DEC. 8, 1903.

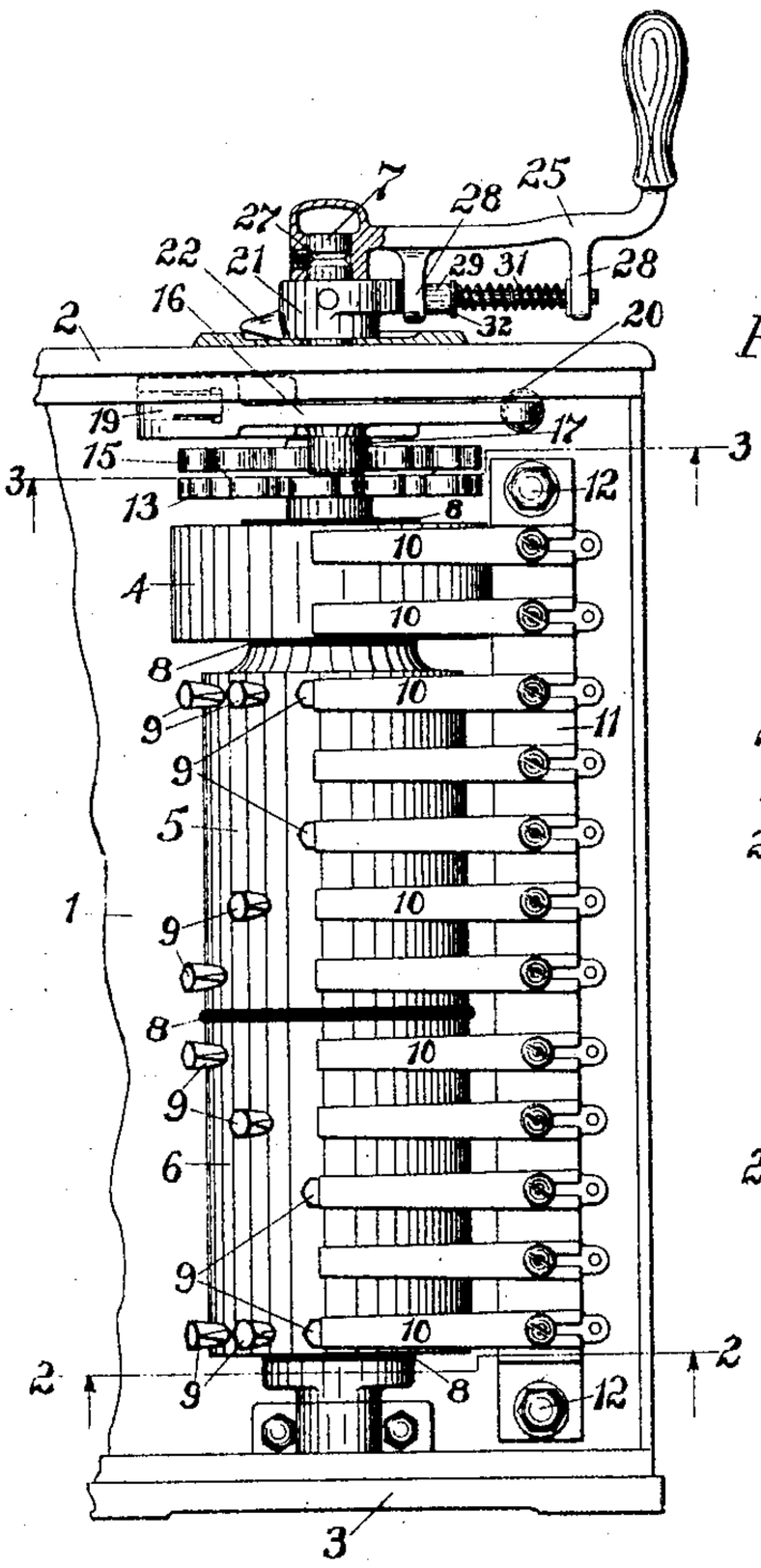

Fig. 1.

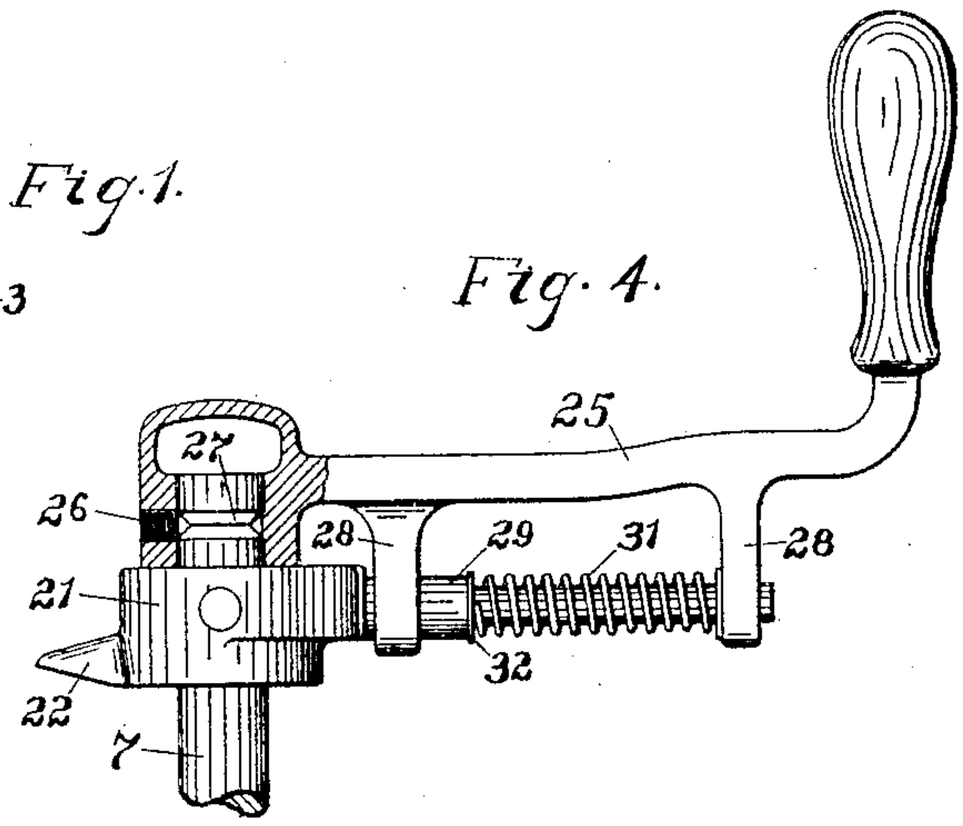

Fig. 4.

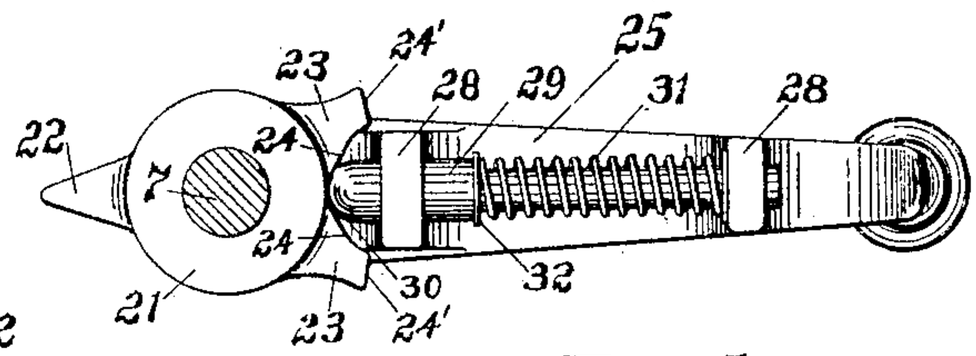

Fig. 5.

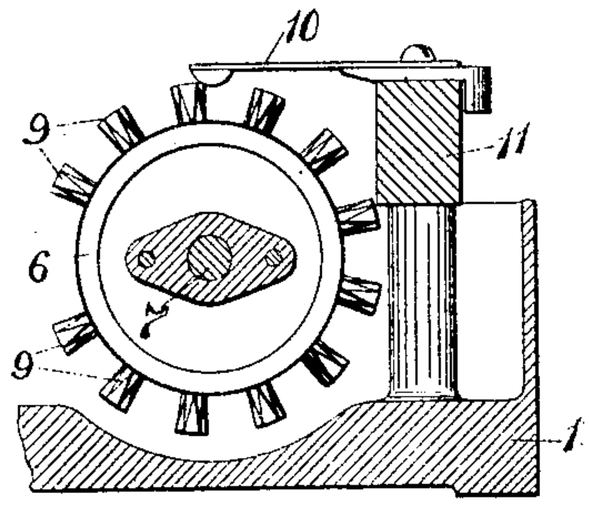

Fig. 2.

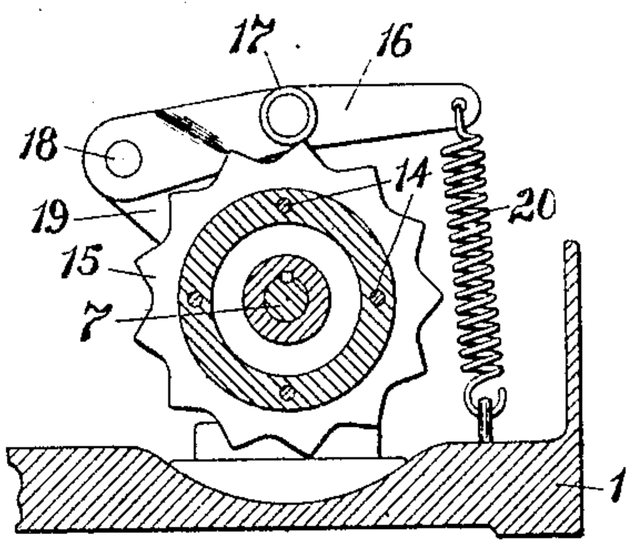

Fig. 3.

Witnesses:

L. K. Sager.

George H. Kerr

Inventor

William D. Pomeroy.

By

C. V. Edwards,

Attorney.

ANDREW. B. GRAHAM CO., PHOTO-LITHOGRAPHERS, WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM D. POMEROY, OF NORWOOD, OHIO, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE BULLOCK ELECTRIC COMPANY, A CORPORATION OF OHIO.

OPERATING MECHANISM FOR CONTROLLERS.

No. 797,217. Specification of Letters Patent. Patented Aug. 15, 1905.

Application filed December 8, 1903. Serial No. 184,276.

To all whom it may concern:

Be it known that I, WILLIAM D. POMEROY, a citizen of the United States, residing at Norwood, in the county of Hamilton and State of Ohio, have invented certain new and useful Improvements in Operating Mechanism for Controllers, of which the following is a full, clear, and exact specification.

My invention relates to controllers or switches for electric motors, and particularly to operating mechanism for the same.

The object of my invention is to provide a quick-break operating mechanism which is simple in construction and reliable in operation and which may be applied to the common types of controlling-switches for motors.

By my invention the operating-handle is first moved against the pressure of a spring and by the throw of the handle the controller-cylinder is suddenly turned and when free from the contact-fingers is quickly turned to the next position by the action of the spring. On account of this rapid movement the sparking at the contacts is greatly reduced and the serious consequences of excessive sparking avoided. The magnetic blow-out, however, may be used in conjunction with my quick-break mechanism and is desirable for large sizes of controllers.

My invention will be understood by reference to the following description and accompanying drawings, which show the preferred form of construction, and the novelty thereof will be more particularly set forth in the appended claims.

Figure 1 is a front view of a portion of a controller with the cover removed. Fig. 2 is a section on line 2 2 of Fig. 1. Fig. 3 is a section on line 3 3 of Fig. 1. Fig. 4 is an enlarged side view of the operating-handle, partly in section; and Fig. 5 is a bottom plan view of the operating-handle.

The frame is indicated at 1 and has integral therewith the top plate 2 and bottom plate 3. The controller-cylinder is made up of drums 4, 5, and 6, carried by shaft 7. The drums are separated from each other and from the shaft by insulation 8. The shaft 7 is journaled in the top and bottom plates 2 3. The drums 5 and 6 are shown as carrying the contacts 9, which engage the fingers 10, mounted on the support 11, secured to the frame by the bolts 12. The drum 4 is of larger diameter than drums 5 and 6, and its surface engages certain of the fingers 10, circuit through the same being interrupted by portions of the cylinder 4 being cut away. A gear 13 is secured to shaft 7 and engages a gear on a second drum, which is not shown, as the same forms no part of my invention. Also the particular arrangement of the drums and fingers and the connections made form no part of my invention, and they may be of any desirable arrangement.

Fixed to shaft 7 and in this instance to gear 13 by screws 14 is the star-wheel 15. A lever 16, carrying a roller 17 on its lower side, is pivoted at 18 to a lug 19, extending from the frame. A spring 20 is secured at one end to the frame and at the other to one end of the lever 16 and tends to draw the roller 17 into the notches of the star-wheel 15.

The shaft 7 extends above the top plate 2, and fixed to the shaft above plate 2 is the collar 21. This is provided with a pointer 22, which indicates the position of the shaft, and also has two lugs 23 with the flat faces 24′ and the inclined sides 24, forming an angle of about one hundred and twenty degrees with each other. A handle 25 is mounted on shaft 7 above collar 21 and is free to turn thereon by reason of the screw 26 loosely engaging the groove 27. The handle is provided with two downwardly-extending lugs 28, in which is mounted the plunger 29, having the rounded end 30. A spiral spring 31 encircles a portion of the plunger 29 and is seated between the outer lug 28 and a shoulder 32 of the plunger.

In the operation of my device when the handle is thrown in one direction the plunger 29 is forced up one of the inclined faces 24 and the spring 31 is compressed. When the plunger reaches the top of the incline 24, the inside face of the inner lug 28 engages one of the flat faces 24′ and the shaft is then carried with the handle and the contacts 9 pass from under the fingers 10. In Figs. 1 and 2 certain of the contacts are shown almost out of engagement with the fingers. When the contacts are disengaged, the drum may move easily with very little friction and the pressure of plunger 29 against the inclined face 24 will cause the drum to quickly pass to the next position. This action is assisted by the spring-pressed lever 16 and star-wheel 15.

While the contacts 9 are passing from under the fingers, the roller 17 rides upon one of the projections of the star-wheel, as shown in Fig. 3, and the movement of the cylinder caused by the spring 31 after the contacts are disengaged is hastened by the roller 17 being pressed into the notches of the star-wheel. I therefore combine with the star-wheel commonly used on controllers an additional spring-pressure mechanism and one which may have much greater effect. Also my invention has the advantage that certain movement of the handle is permitted without turning the contact-cylinder, and when the latter is turned the handle is likely to have a more rapid movement than when first moved, thus tending to give a quicker break. Also when the cylinder is released it will be turned rapidly to the next position, whether or not the handle is held stationary or turned very slowly, and therefore the arcing caused by the cylinder being held in an intermediate position is avoided.

I claim as my invention—

1. The combination with a controlling-switch, of a shaft for turning the same, a member fixed to said shaft, an operating-arm loosely mounted on said shaft and extending radially therefrom, and spring-pressed means carried by said radial arm and engaging said member to actuate the shaft when the arm is turned.

2. The combination with a controlling-switch, of a shaft for turning the same, a member fixed to said shaft, an operating-arm loosely mounted on said shaft, and a spring-pressed plunger carried by said arm and engaging said member to actuate the shaft when the arm is turned.

3. The combination with a controlling-switch, of a shaft for turning the same, a member fixed to said shaft, an operating-arm loosely mounted on said shaft and extending radially therefrom, and a spring-pressed plunger carried by and extending along the length of said arm and engaging said member to actuate the shaft when the arm is turned.

4. The combination with a controlling-switch, of a shaft for turning the same, a member fixed to said shaft having an inclined face, a handle loosely mounted on said shaft, and spring-pressed means carried by said handle and adapted to engage said inclined face when the handle is turned.

5. The combination with a controlling-switch, of a shaft for turning the same, a member fixed to said shaft having two inclined faces, a handle loosely mounted on said shaft, and spring-pressed means carried by said handle and adapted to engage one or the other of said inclined faces when the handle is turned in either direction.

6. The combination with a controlling-switch, of a shaft for turning the same, a member fixed to said shaft having two inclined faces, a handle loosely mounted on said shaft, and a spring-pressed plunger carried by said handle and adapted to engage one or the other of said inclined faces when the handle is turned in either direction.

7. The combination with a controlling-switch, of a shaft for turning the same, a member fixed to said shaft having two inclined faces, a handle loosely mounted on said shaft and having lugs, and a spring-pressed plunger carried by said lugs and adapted to engage one or the other of said inclined faces when the handle is turned in either direction.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM D. POMEROY.

Witnesses:

L. K. SAGER,

SANFORD KLEIN.