

No. 815,578.

PATENTED MAR. 20, 1906.

A. J. BROWN.  
CONTROLLER OPERATING MEANS.

APPLICATION FILED JULY 11, 1904.

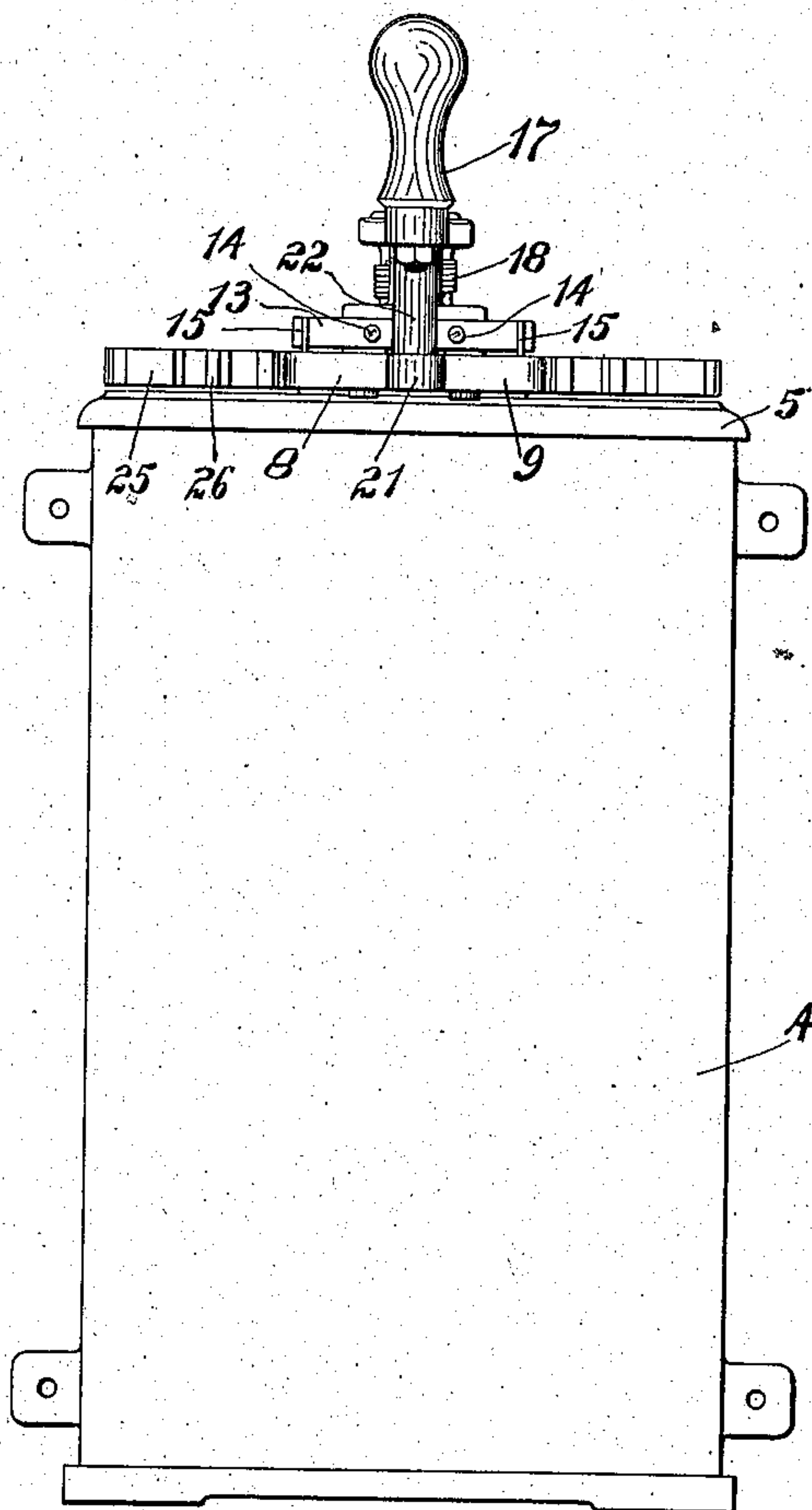


Fig. 1.

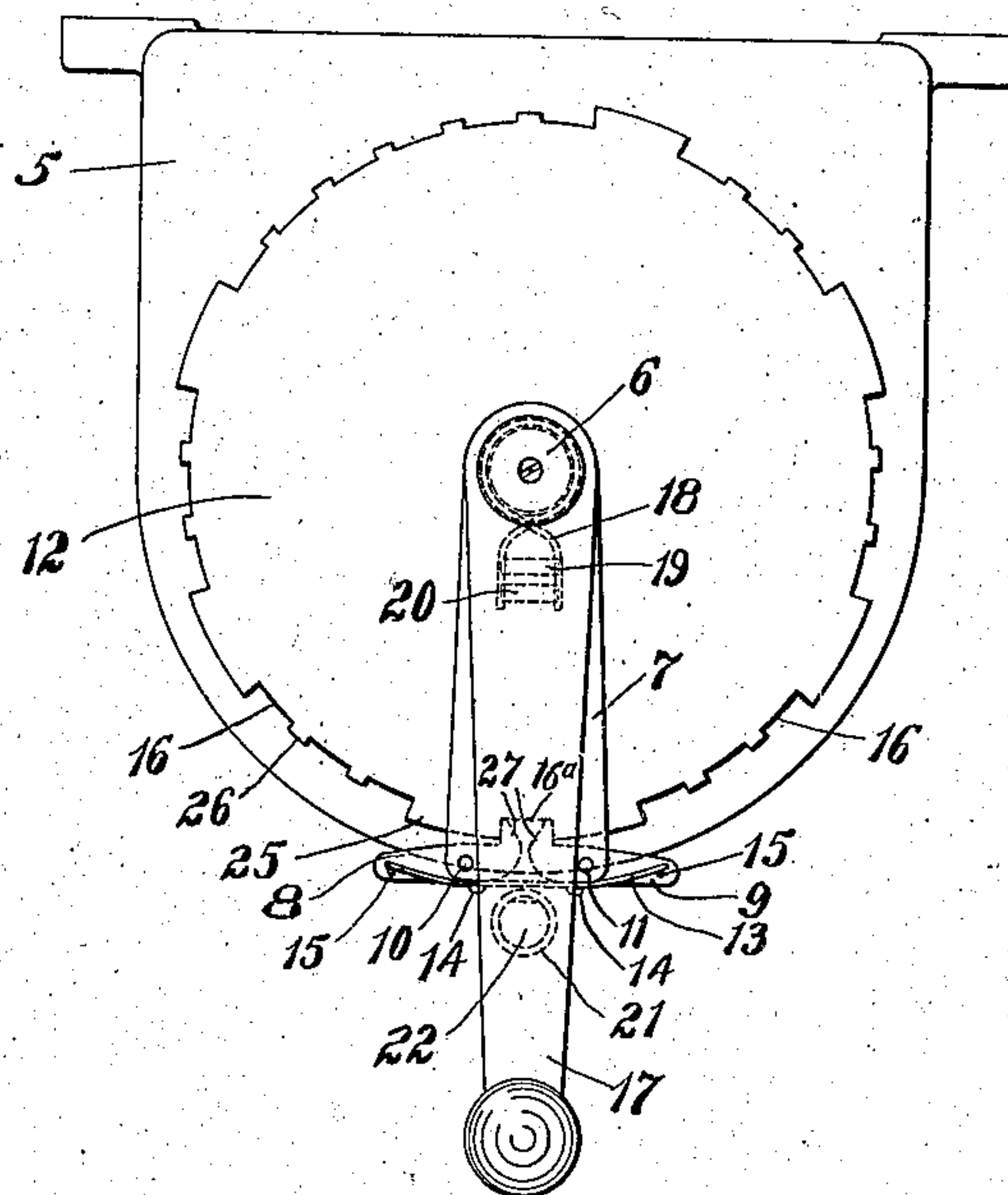


Fig. 2.

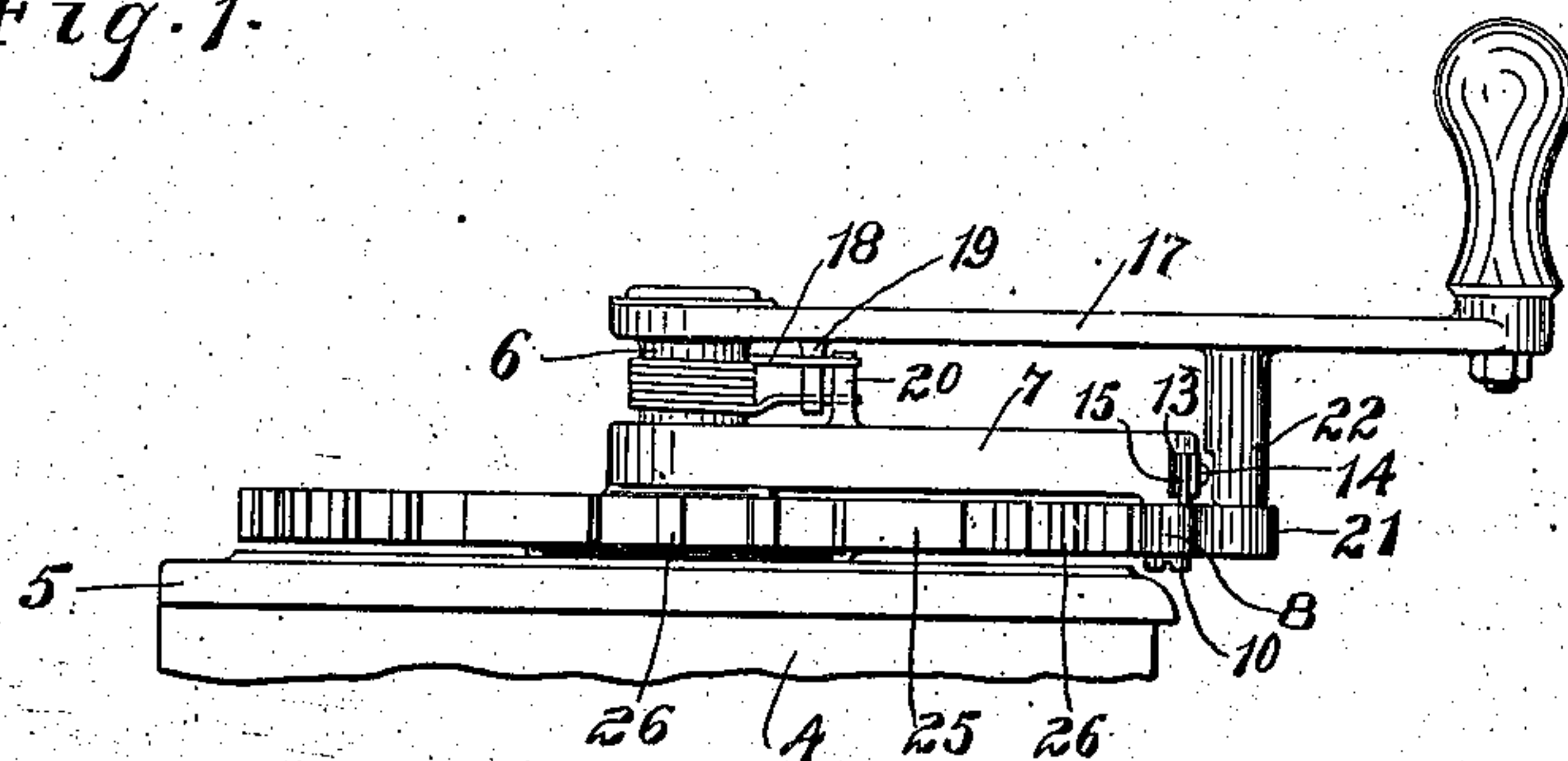


Fig. 3.

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# UNITED STATES PATENT OFFICE.

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## CONTROLLER-OPERATING MEANS.

No. 815,578.

Specification of Letters Patent.

Patented March 20, 1906.

Application filed July 11, 1904. Serial No. 216,023.

*To all whom it may concern:*

Be it known that I, ARTHUR J. BROWN, 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 Controller-Operating Means, of which the following is a full, clear, and exact specification.

My invention relates to means for operating motor-controllers; and its object is to render more positive and accurate the operation of a controller employing quick-break mechanism.

In motor-controllers in which heavy currents are handled, and especially in railway-controllers, it is advisable to have the operating mechanism so constructed that a very rapid movement from one operative position to the next is obtained. This rapid movement provides a quick break between the contacts of the controller, thereby minimizing the necessity for powerful blow-out magnets and other special devices for preventing the formation of arcs, which are very injurious to the operating parts of the controller and are liable to prove dangerous to the motorman or operator.

In carrying out my invention I employ in combination a shaft, preferably the operating-shaft of a controller, a notched plate, pivoted dogs engaging said notched plate to hold the shaft in any desired position, yielding connection between the handle and shaft, and means for tripping said dogs when the handle has been moved into the desired position to permit the shaft to rotate under the action of said yielding connection into a position corresponding to the position into which the handle has been moved.

In the accompanying drawings, which illustrate the preferred embodiment of my invention, Figure 1 is a front elevation of a controller equipped with my improved operating mechanism. Fig. 2 is a plan view, and Fig. 3 is a side view, of said operating mechanism.

Referring now to the drawings, the controller-casing is represented by 4, the cap-plate by 5, and the controller-shaft by 6. Mounted upon the upper end of said shaft 6 and keyed thereto is an arm 7, which carries at its outer end the locking-dogs 8 and 9, pivoted at 10 and 11, respectively. The inner ends of these dogs are maintained in engagement with the periphery of the

notched plate 12 by means of the leaf-spring 13, which is fastened to the arm 7 at 14 and engages the pins 15, carried by the outer ends of dogs 8 and 9. The plate 12 is provided with notches 16, which indicate the operative positions of the controller. The "off" position is indicated by notch 16<sup>a</sup>, the operating mechanism being shown in that position in the figures. The operating-handle 17 is loosely mounted on shaft 6 and is connected thereto by means of the spring 18 or other yielding connection. The ends of spring 18 rest against opposite sides of lugs 19 and 20, formed on the under side of handle 17 and upper side of arm 7, respectively. The spring engages the lugs, as shown clearly in Fig. 3, in such a manner that when the handle is moved in either direction the spring is wound up and tends to rotate the shaft 6. This tendency to rotate is restrained by the locking-dogs, which are released by means of the anti-friction-roller 21, carried by the lug 22, projecting from the under side of handle 17.

As the handle 17 is moved forward, say, in a clockwise direction, the roller 21 engages the outer cam-surface of dog 8, moving the inner end of said dog out of engagement with the notch 16<sup>a</sup> and permitting the arm 7 and shaft to move forward under the action of spring 18 until said dog engages the first notch 16 to the left of notch 16<sup>a</sup>, Fig. 2. A movement of the handle farther in the same direction will operate said dog in the same manner as before and move it into the next notch in advance. The projections between the notches are of different heights, dependent upon the distance the controller-cylinder is to move between positions. The projections 25, Fig. 2, are shown higher than the projections 26—that is, the periphery of the plate at 25 is of greater radius than at 26. The height of these projections is so proportioned that the dog will not leave the notch corresponding to one position until the handle has reached the next position in advance, and the said handle cannot be moved beyond said advance position without first tripping the dog and causing the shaft to move into the position corresponding to the position occupied by the handle. In fact, the shaft is held in a certain position until the handle just reaches the advance position independent of the distance apart of said positions, it being understood that roller 21 moves a



greater distance along the outer cam-surface of the dog before tripping same when the controller positions are spaced far apart than it does when the positions are spaced a short distance apart. Thus there is no danger of the handle being moved so far as to cause the controller to jump several notches at a single movement of the handle. When the handle is moved in the opposite direction, the dog acts in the manner just described to produce a positive quick-break movement from one position to the next. The inner ends of the dogs 8 and 9 are inclined at 27°, so that they will readily slide over the projections 25 and 26 when the controller is moving backward relative to the dog in question.

In the appended claims I aim to cover all modifications of my invention which do not involve a departure from its spirit and scope. Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In combination, a shaft, a notched plate, pivoted dogs engaging said notched plate to hold the shaft in any desired position, an operating-handle, a yielding connection between the handle and shaft, and means for tripping a dog when the handle has been moved into the desired position in either direction to permit the shaft to rotate into a position corresponding to the position of said handle under the influence of said yielding means.

2. In combination, a controller-shaft, an arm fastened to said shaft and carrying pivoted locking-dogs, a notched plate with which said dogs engage, a handle loosely mounted on said shaft, but yieldingly connected therewith, and means for tripping said dogs when the handle reaches the next position in advance to permit the shaft to rotate under the action of said yielding means into said advance position.

3. In combination, a controller-shaft, a notched plate having notches spaced at irregular distances apart, said notches corresponding to certain positions of the controller, a pivoted dog engaging said notched plate to hold the shaft in any desired position, an operating-handle, a spring connecting said handle with the shaft, and means for tripping said dog just as the handle reaches a predetermined advance position independent of the distance apart of the notches corresponding to the controller positions to permit the shaft to move into said advance position.

4. In a controller, a shaft, an operating-handle, a spring connecting said shaft and handle, a pivoted dog engaging notches corresponding to the controller positions, to hold the shaft in a certain position until the handle has been moved into the next advance position independent of the distance apart of said positions, and means for tripping said dog when the handle reaches the advance position to permit the shaft to move into said advance position under the influence of said spring.

5. In combination, a controller-shaft, an operating-handle, a spring connecting said shaft and handle, a notched plate having the height of the projections between notches proportional to the throw of the shaft between operating positions, a pivoted dog engaging said notched plate to hold the shaft in any desired position, and means for tripping said dog just as the handle reaches an advance position to permit the shaft to move into said advance position.

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

ARTHUR J. BROWN.

Witnesses:

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FRED J. KINSEY.