

May 18, 1926.

1,584,748

J. F. TOOMEY

CIRCUIT CONTROLLER

Filed Oct. 10, 1919

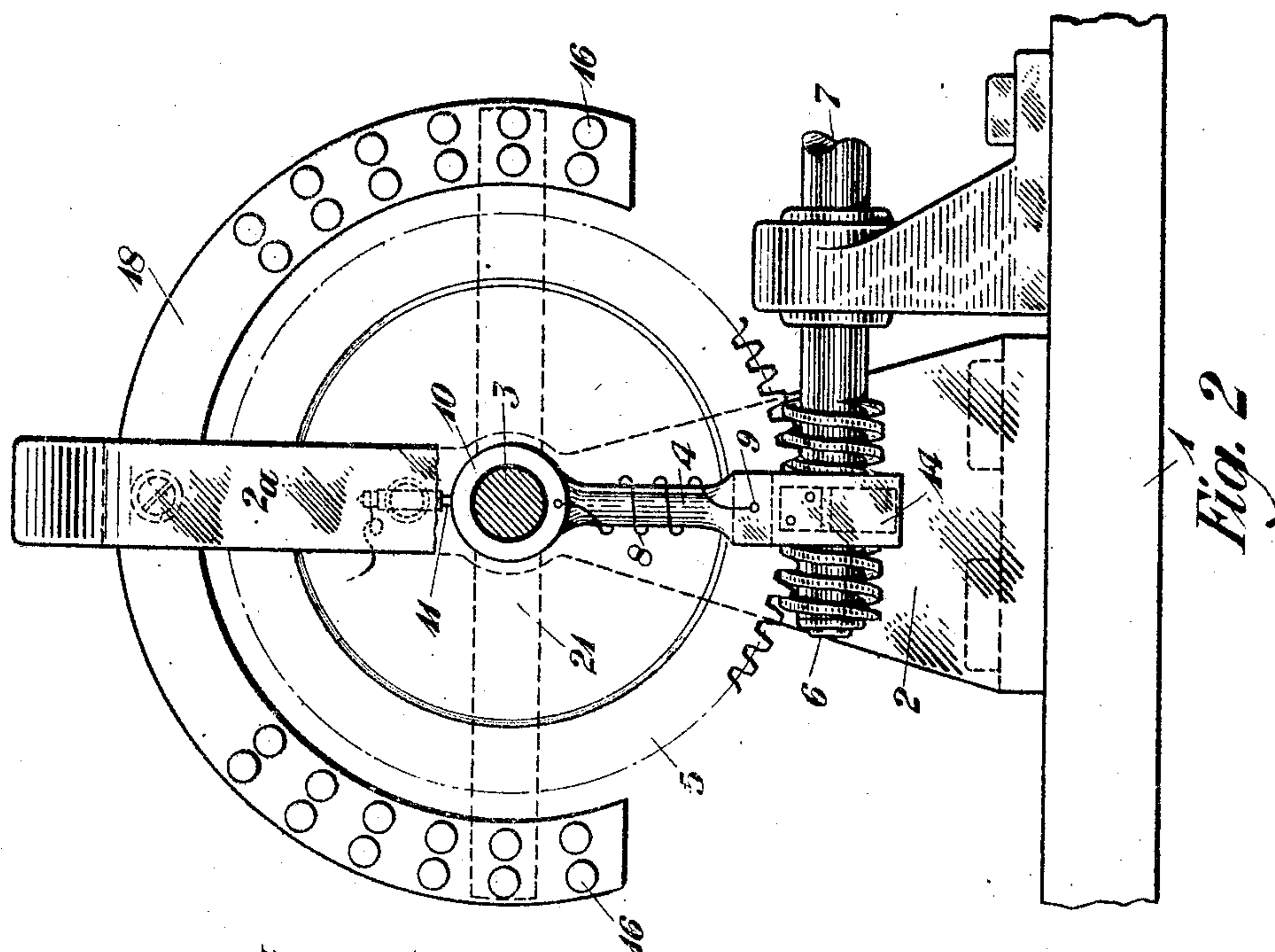


Fig. 2

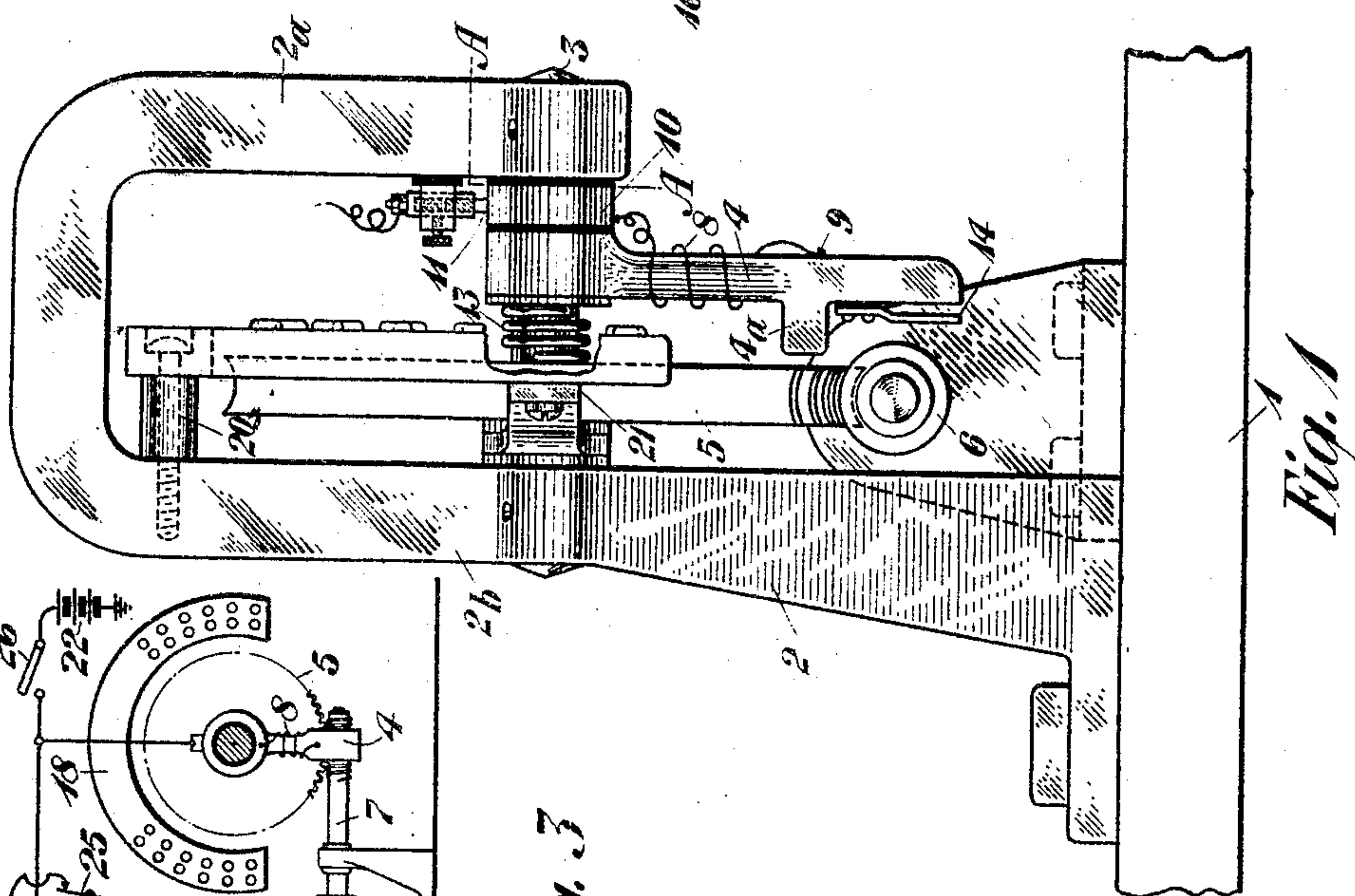


Fig. 1

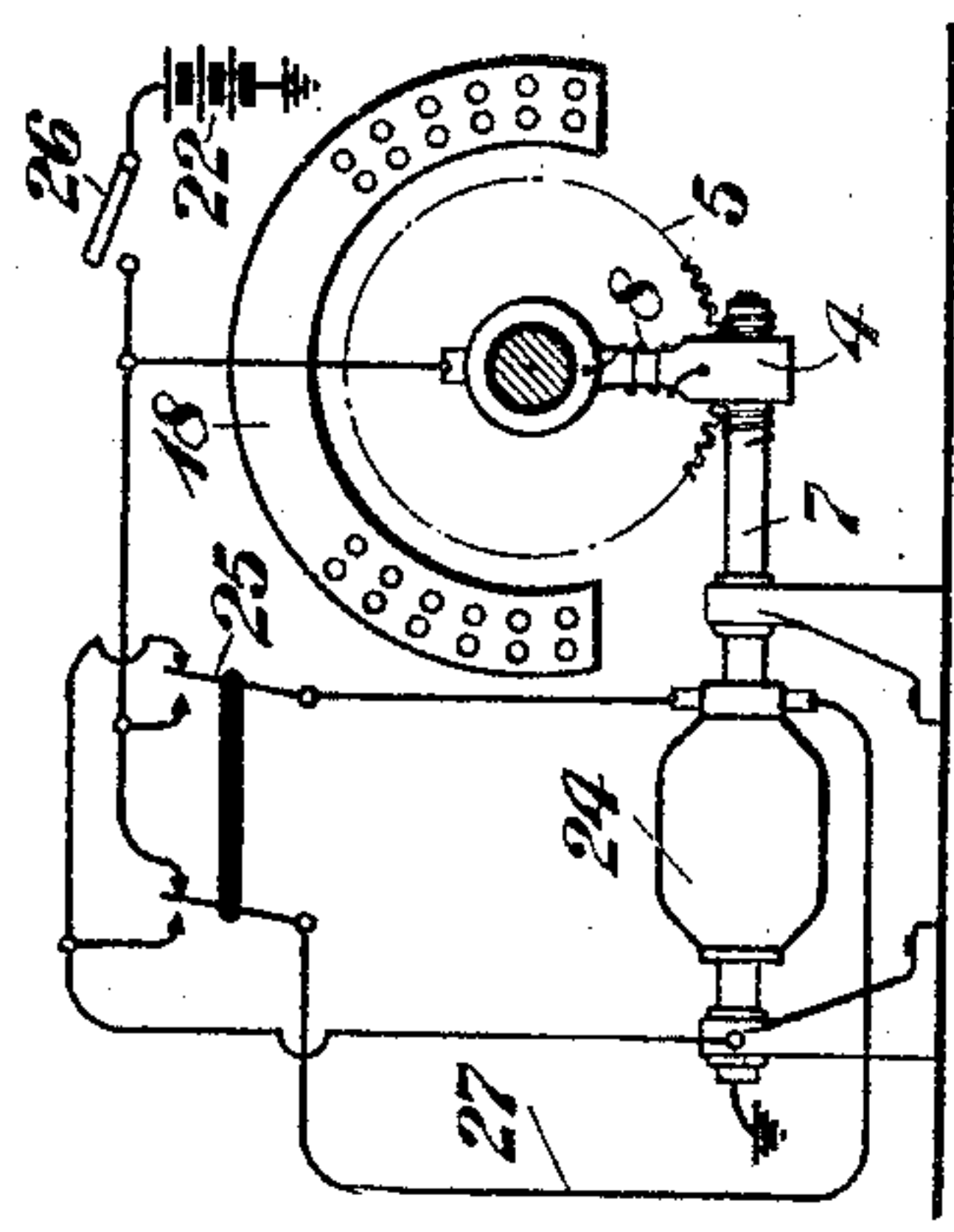


Fig. 3

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CIRCUIT CONTROLLER.

Application filed October 10, 1919. Serial No. 329,801.

My invention relates to circuit controllers, particularly to controllers for operating a series of electrical contacts consecutively in one direction or the other, a definite pre-determined interval of time elapsing before the operation of each contact.

In the preferred form of embodiment of the invention a disc of magnetic material is revolved in one direction or the other by an electric motor, according to the direction of the current controlling the motor. A contact arm is mounted adjacent the magnetic disc and provided with a winding for at times attracting the arm to the disc and thus causing it to rotate in unison therewith. Contact points are provided to be engaged by the contact arm when the same is rotating, and a spring is employed for disengaging the arm from the disc when the electromagnet is deenergized so that the arm is returned by gravity to its normal inoperative position.

A good understanding of the invention may be had by reference to the following drawing, in which Figs. 1 and 2 are views showing side and front elevations, respectively, of one form of embodiment of my invention; Fig. 3 being a diagrammatic view showing one form and arrangement of circuits for controlling the apparatus shown in Figs. 1 and 2.

Similar characters of reference refer to similar parts in each of the several views.

In the drawing numeral 1 designates a base plate on which is mounted a standard 2, the upper portion of which is in the shape of an inverted U, having front and rear members 2^a, and 2^b. Mounted in this frame is a shaft 3, to which is secured a disc 5 of magnetic material having worm wheel teeth in its edge, driven by a worm 6 on the shaft 7 of a motor 24, not shown in Figs. 1 and 2 to avoid unnecessary complication. An arm 4, also of magnetic material, is mounted loosely on shaft 3, this arm being provided with a magnetizing winding 8, one end of which is grounded to the frame of the machine at point 9, and the other end of which is connected to an insulated contact ring 10, cooperating with a brush 11. When winding 8 is energized by current supplied through brush 11, magnetic flux traverses the arm and the disc 5, so that the arm slides on shaft 3 toward the disc until an abutment 4^a on the arm engages the face of

the disk. A spring 13 is placed on shaft 3, between disc 5 and arm 4, to return the arm to its initial position when the winding 8 is deenergized. Adjacent to its extremity, arm 4 is provided with an insulated contact brush 14, which brush is adapted to engage contact points 16 mounted on a semi-circular plate 18 of insulating material, which plate is secured to frame 2, concentrically with shaft 3, by means of a screw and sleeve 20 and by a strap 21.

The operation of the controller may now be readily understood by having reference to Fig. 3 in which is illustrated a battery 22 for supplying current to the armature of motor 24, (the field of which has not been shown) through a reversing switch 25, which thus governs the direction of rotation of the motor. The current for the winding 8 is also supplied from battery 22, a switch 26 being employed to govern the circuit of both the winding and the motor. When switch 26 is closed, arm 4 moves into engagement with disc 5, and motor 24 rotates the disc in a certain direction, say to the left. The contact brush 14 is thus swept over the contact points 16 successively from left to right and operates circuits which may be associated with the contact points in any suitable manner. The speed of rotation of arm 4 is determined by the worm gear ratio, and the speed of the motor, and a definite interval of time elapses between the closure of switch 26 and the operation of any one of the contacts, which interval may be made large or small, as desired, according to the position of the contact points on plate 18. When switch 26 is opened, the motor ceases to rotate and the winding 8 fails to hold the arm against the face of the disc 5, so that the same falls back into the position shown in the drawing. The contacts are not operated as the arm returns because spring 13 forces the arm away from the disc so that the brush does not touch the contact points. When switch 26 is closed with switch 25 reversed, the contacts are operated in the reverse order.

Although in the form of embodiment of the invention shown and described herein only one circuit controlling device is operated by the motor 24, it is readily understood that this has been done by way of example, and the invention is not limited to a single contact arm to be actuated by the one motor.

Various modifications may be made within the scope of the following claims without departing from the spirit and scope of the invention.

5 What I claim is:

1. In combination, a rotating disc of magnetic material, a contact arm of magnetic material mounted concentrically with said disc, an electro-magnetic device for at times
10 attracting said arm to said disc and causing the same to rotate therewith, means normally tending to disengage said arm from said disc, and a contact point operated
15 by said arm.

2. In combination, a disc of magnetic ma-

terial, a two-way motor for rotating said disc, an arm of magnetic material mounted concentrically with said disc, a resilient device for normally urging said arm away
20 from said disc, a winding on said arm movable therewith for at times causing said arm to move into engagement with said disc and rotate therewith, and a plurality of
25 contact points adjacent to said disc and adapted to be operated by said arm.

In testimony whereof, I have signed my name to this specification this 9th day of October 1919.

JOHN F. TOOMEY.