

No. 641,257.

Patented Jan. 16, 1900.

H. P. BALL.
ELECTRICAL CONTROLLING DEVICE.

(Application filed Oct. 24, 1896.)

(No Model.)

Fig. 1

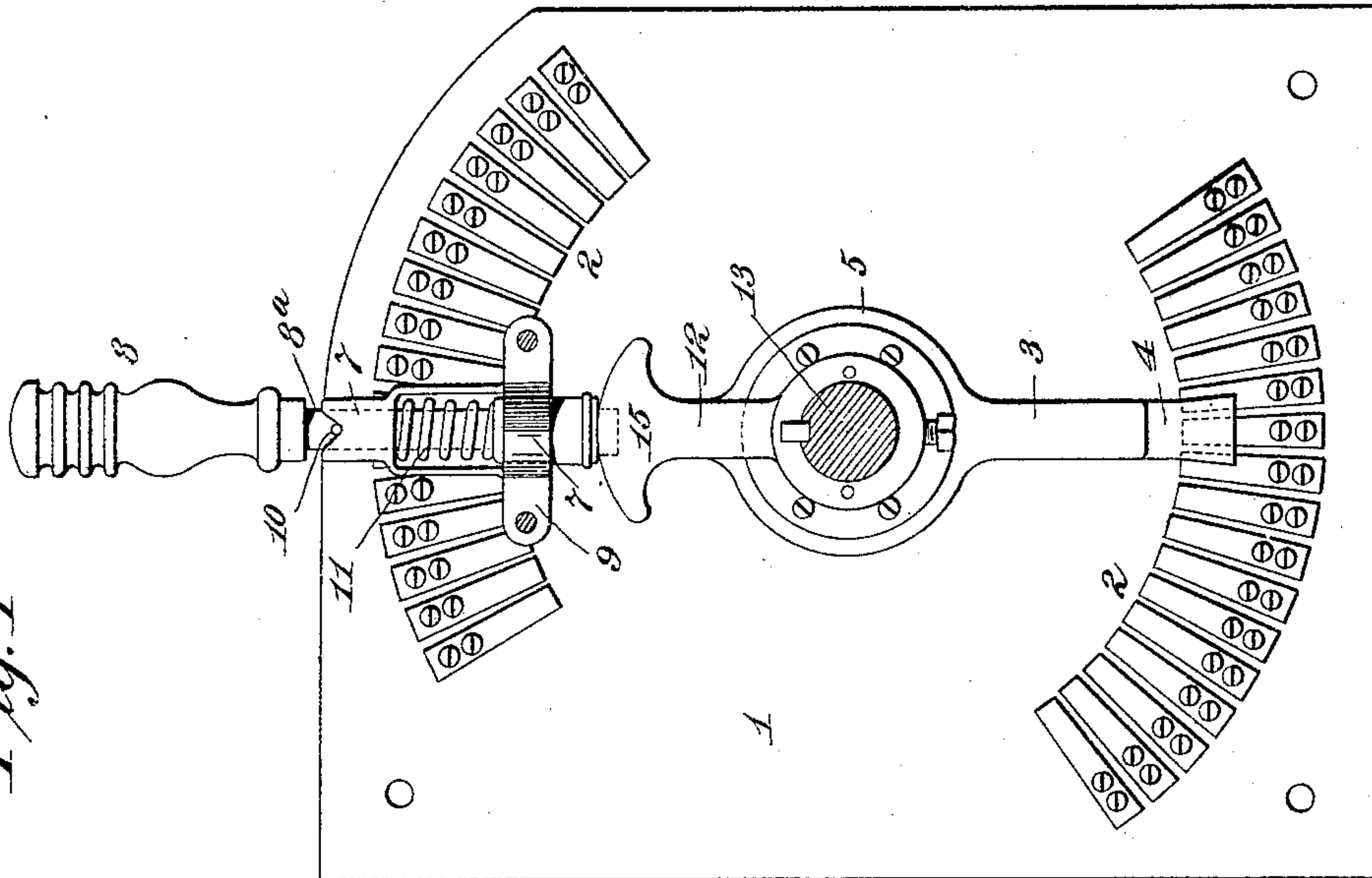
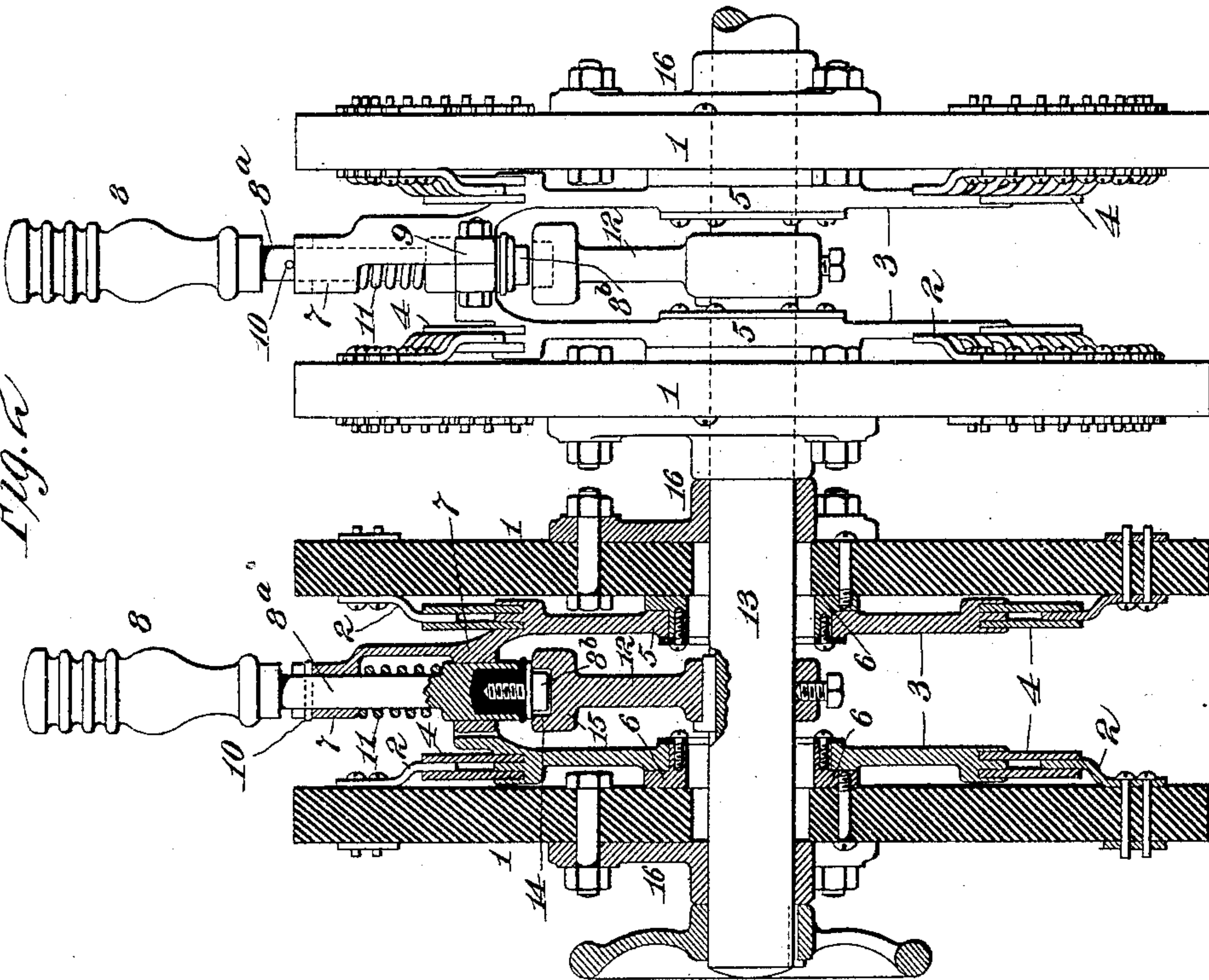


Fig. 2



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UNITED STATES PATENT OFFICE.

HENRY PRICE BALL, OF NEW YORK, N. Y., ASSIGNOR TO THE WARD
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ELECTRICAL CONTROLLING DEVICE.

SPECIFICATION forming part of Letters Patent No. 641,257, dated January 16, 1900.

Application filed October 24, 1896. Serial No. 609,940. (No model.)

To all whom it may concern:

Be it known that I, HENRY PRICE BALL, a citizen of the United States, residing at New York, (Brooklyn,) in the county of Kings, State of New York, have invented a new and useful Electrical Controlling Device, of which the following is a specification.

My invention relates to regulators for regulating independently or simultaneously a series of translating devices—such, for instance, as electric lamps arranged in groups, each group being capable of independent regulation or the entire number of lamps being capable of simultaneous regulation. Such apparatus is particularly adapted to theater lighting where fine illuminating effects are desired—for example, one part of the stage being fully illuminated, while another part is in almost total darkness—or the regulator may be employed to control the lights distributed through the entire theater, including foot-lights and lights located in the wings. It is customary in large installations of this character to employ the three-wire system of distribution, the lamps, as is well understood, being equally distributed between the two sides of the circuit, and my improved regulator is particularly designed for use on such circuits.

In the accompanying drawings, which illustrate my invention, Figure 1 is a vertical cross-section, and Fig. 2 a partial vertical section and partial elevation, showing four switchboards controlled by two levers and particularly designed for a three-wire circuit.

Referring to the drawings, 1 represents the supports for the resistance-contacts, which are made of any suitable material, but preferably an insulating material—such, for instance, as slate. In practice these supports are secured together by rods and may, if desired, be mounted upon a suitable base. Each support carries a series of contact-plates 2, arranged in two arcs, the resistance being mounted either upon these supports or upon separate supports with proper connections between the sections of resistance and the contact-plates. In addition to the contact-plates each support has mounted upon it a

centrally-pivoted switch 3, having a pair of contact-blades 4 at each end, which engage the stationary contacts 2. Each switch is provided with a large annular part 5, which is journaled upon an annular bearing 6, secured to the support 1. One of each pair of contact-arms 3 is provided with an extension forming two bearings 7 for the shank 8^a of an operating-handle 8, which is capable of rotary and longitudinal movement and provided with means for locking it to a common operating-shaft, as hereinafter described. Each pair of switch-arms 3 are secured together by flanges 9, which are bolted together, as shown at the right of Fig. 2. The shank of the operating-handle, which passes through the bearings 7, is provided with a pin 10, which works in a V-shaped slot formed in the upper bearing 7. A spring 11 is provided for holding the pin 10 at the bottom of the slot and for forcing the end of shank 8^a into a cavity 14 in the end of a locking-arm 12, keyed upon the common shaft 13. Each support 1 is provided with a central opening, through which shaft 13 passes, and at each support the shaft is supported by a bearing-plate 16. In order to insulate the shank 8^a and switch-arms 3 from shaft 13, the end of the shank is provided with a stud 8^b, which is insulated from the shank.

When it is desired to operate a pair of switch-arms independently of the other switches, handle 8 is given a quarter-turn, thereby removing pin 10 from the V-shaped groove and causing it to rest upon the top of the bearing. This action removes the stud 8^b from the cavity 14 in the locking-arm, thus leaving the pair of switch-arms free to move independently of the shaft. When it is desired to reengage that pair of switch-arms with the shaft, the handle is again given a quarter-turn in either direction, whereby the shank is caused to move downward through the pressure of spring 11, whereby stud 8^b will reënter the cavity 14, if it is in line with the same, and if not the stud will ride up on the cam-head 15 as either the handle or the locking-arm is swung around and drop into the cavity. Thus it will be seen that with this

arrangement any pair of contact-arms 3' may be operated independently of the others, and if all of the operating-handles are locked to shaft 13 the entire series may be operated by
 5 any one of the operating-handles. Instead of operating the entire series of switches by one of the operating-handles the shaft 13 may be provided with a hand-wheel, as shown at the left of Fig. 2.

10 It will be understood that the details of construction herein described are not limited in their use to regulators for three-wire circuits, since all that is necessary to adapt the regulator for two-wire circuits is to omit the
 15 left-hand switchboard of each pair, when the regulator will be composed only of the switchboards having the movable switch-arms provided with operating-handles.

Having described my invention, so that any
 20 one skilled in the art to which it pertains can make the same, what I claim as my invention, and wish to secure by Letters Patent, is—

1. In apparatus of the character herein described, the combination with a series of stationary and moving contact members, of an operating-handle for each movable contact member, a shaft common to said movable members, a locking device for each movable
 30 switch member whereby said members may be locked to the shaft, and means for disengaging said locking device through the rotation of the handles on their own axes, substantially as set forth.

35 2. In apparatus of the character herein described, the combination with a series of stationary and moving contact members, of an operating-handle for each movable contact member, a shaft common to said movable members, a locking-arm adjacent to each movable switch member and secured to said shaft, said arm having a head provided with a socket, a bearing in each movable switch member for a rotary and longitudinally-movable operating-handle carrying a locking-head adapted to enter the socket of its adjacent locking-arm and whereby the movable switch members are locked to the shaft, and means for disengaging said locking heads and arms by the
 45 rotation of the handles on their own axes, substantially as set forth.

3. In apparatus of the character herein described, the combination with a series of stationary and moving contact members, of an operating-handle for each movable contact member, a shaft common to said movable members, a locking-arm adjacent to each movable switch member and secured to said shaft, said arm having a curved head provided with
 55 a socket, a bearing in each movable switch member, for a rotary and longitudinally-movable operating-handle carrying a locking-head adapted to enter the socket of its adjacent locking-arm and whereby the movable
 60 switch members are locked to the shaft, a

spring on the spindle of each handle for forcing its locking-head automatically into its respective socket as it rides over the curved head, and means for disengaging said locking heads and arms by the rotation of the
 70 handles on their own axes, substantially as set forth.

4. In apparatus of the character herein described, the combination with a series of stationary and moving contact members, of an operating-handle for each movable contact member, a shaft common to said movable members, a locking-arm adjacent to each movable switch member and secured to said shaft, said arm having a head provided with a socket, a bearing in each movable switch member, for a rotary and longitudinally-movable operating-handle carrying a locking-head adapted to enter the socket of its adjacent locking-arm, and whereby the movable switch members are locked to the shaft, cam edges on the bearings for the handles, and pins passing through the spindles of said handles whereby through the rotation of the handles on their own axes said pins will move upward on said
 80 cams and raise the locking-heads from their respective sockets, substantially as set forth.

5. In apparatus of the character herein described, the combination with a series of stationary and moving contact members, of an operating-handle for each movable contact member, a shaft common to said movable members, a locking-arm adjacent to each movable switch member and secured to said shaft, said arm having a curved head provided with
 100 a socket, a bearing in each movable switch member, for a rotary and longitudinally-movable operating-handle carrying a locking-head adapted to enter the socket of its adjacent locking-arm, and whereby the movable
 105 switch members are locked to the shaft, a spring on the spindle of each handle for forcing its locking-head automatically into its respective socket as it rides over the curved head, cam edges on the bearings for the handles, and pins passing through the spindles of said handles whereby through the rotation of the handles on their own axes said pins will move upward on said cams and raise the locking-heads from their respective sockets, substantially as set forth.

6. In a regulator for electric circuits, the combination with a pair of switchboards each provided with a series of stationary contact-plates, of two movable switch-arms, and means
 120 for operating said arms simultaneously.

7. In apparatus of the character herein described, the combination with two or more pairs of switchboards, each provided with a series of stationary contact-plates, of a movable switch member for each board, an operator for each pair of movable switch members, and means for locking said operators together to operate two or more pairs of switches simultaneously.

8. In apparatus of the character herein de-
scribed, the combination with two or more
pairs of switchboards each provided with a
series of stationary contact-plates, of a mov-
5 able switch member for each board, an op-
erator for each pair of movable switch mem-
bers, a shaft passing through said switch-

boards, and means for locking said operators
to said shaft to operate two or more pairs of
switches simultaneously.

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