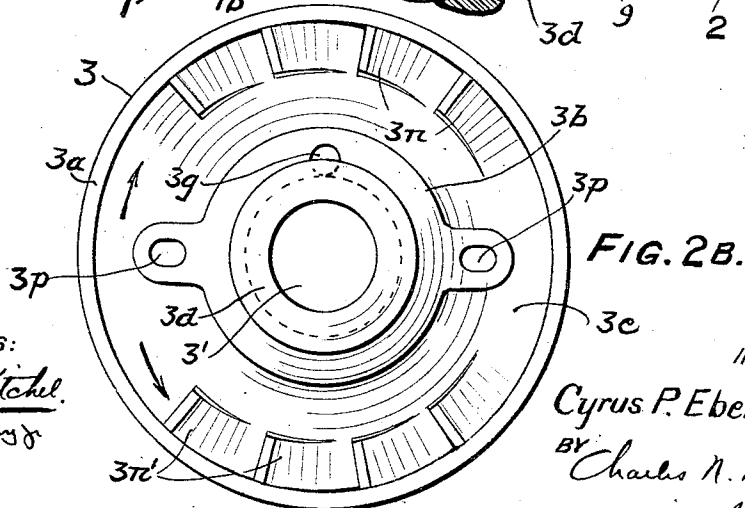
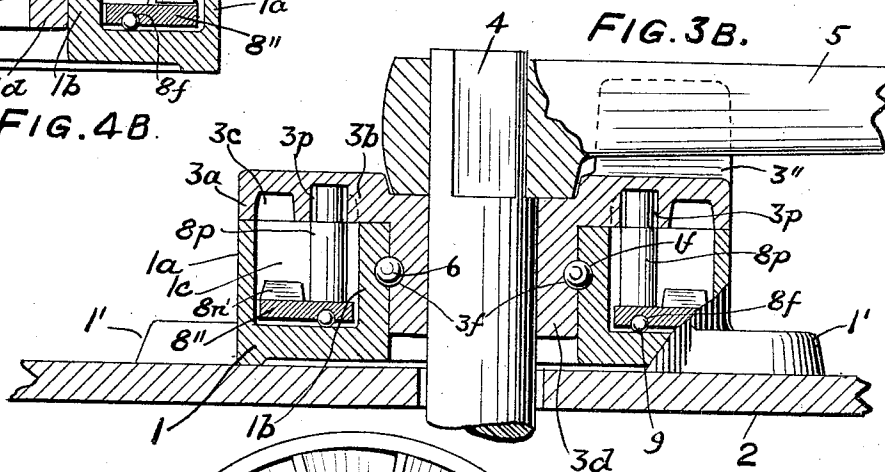
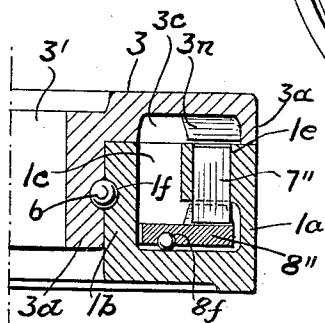
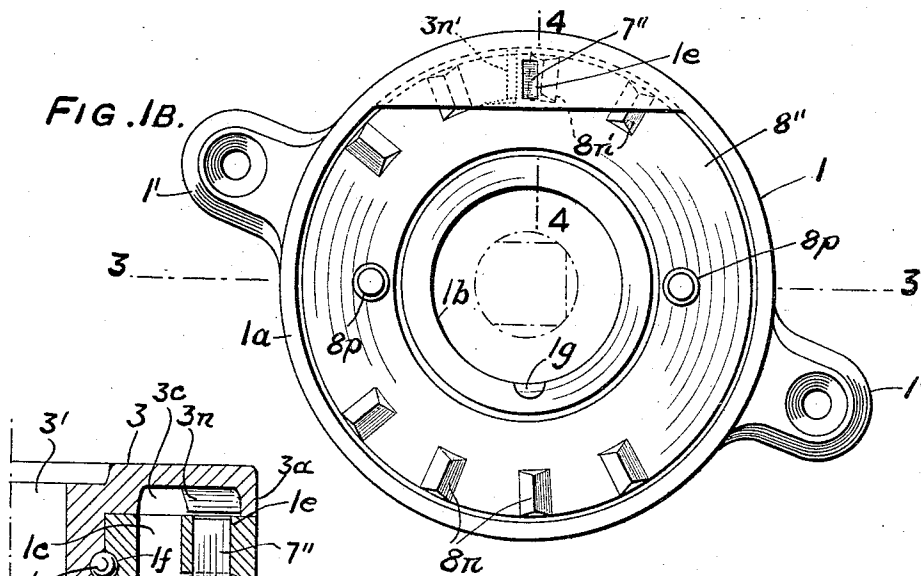


C. P. EBERSOLE.
 CONTROLLER REGULATOR.
 APPLICATION FILED DEC. 30, 1911.

1,061,055.

Patented May 6, 1913.



WITNESSES:
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UNITED STATES PATENT OFFICE.

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CONTROLLER-REGULATOR.

1,061,055.

Specification of Letters Patent.

Patented May 6, 1913.

Application filed December 30, 1911. Serial No. 668,704.

To all whom it may concern:

Be it known that I, CYRUS P. EBERSOLE, a citizen of the United States, residing in the city of Philadelphia, county of Philadelphia, and State of Pennsylvania, have invented certain Improvements in Controller-Regulators, of which the following is a specification.

My invention relates to mechanism for regulating the operations of electric controllers so that current cannot be turned on too rapidly and can be cut off quickly.

The leading object of my improvements is to provide improved means adapted for retarding the admission of current in moving in either direction from the off position while permitting free reverse movement in either direction.

A further object is to secure correct operation under the various conditions of use to which such apparatus is subjected.

The characteristic features and advantages of my improvements are fully disclosed in the following description and the accompanying drawings in illustration thereof.

In the drawings, Figure 1^B is a plan view of the base of a controller regulator comprised in my invention; Fig. 2^B is a bottom plan view of the top or hood; Fig. 3^B is a sectional view taken through the regulator on the line 3—3 of Fig. 1^B; and Fig. 4^B is a sectional view of the same taken on the line 4—4 of Fig. 1^B.

The mechanism, as illustrated in the drawings, comprises the base 1, which is secured on the top 2 of the controller casing, and the hood 3 provided with the central aperture 3' for passing the controller shaft 4 and the lugs 3'' for engaging the handle 5 by which the hood is revolved on the base in unison with the revolution of the shaft. The base has the concentric outer and inner rings 1^a and 1^b forming a channel 1^c, the ring 1^b having therein the race 1^f and the way 1^g. The hood is provided with the concentric outer and inner rings 3^a and 3^b which register with the rings 1^a and 1^b, the channel 3^c concentric with the channel 1^c, and the hub 3^d which fits within the ring 1^b, the hub having therein the race 3^f registering with the race 1^f and the way 3^g adapted to register with the way 1^g. Balls 6, passed through the registering ways 1^g and 3^g, run in the

registering races 1^f and 3^f, whereby an anti-friction bearing is provided and the hood is securely held in position on the base. The hood has in the channel 3^c the two sets of oppositely disposed and downwardly extending stops 3ⁿ and 3^{n'} having the form of ratchet teeth and the diametrically disposed elongated sockets 3^p. The base is provided with the bearing 1^e and a plunger 7'' (having the form of a longitudinally movable bolt as shown) which is adapted to reciprocate vertically in this bearing for the purpose of engaging and disengaging the stops of the hood. A ring 8'' is supported in the channel 1^c by the balls 9 engaged in the race 8^f of the ring, the ring being provided with the posts 8^p which are engaged in the sockets 3^p and with wedge shaped cams 8ⁿ and 8^{n'} adapted for engaging the plunger 7'' which rides upon the ring.

In operation, when the handle 5 is turned in either direction from the "off" position, the hood 3 and ring 8'' being revolved therewith in the direction of one of either the arrows shown in Fig. 2^B, the cams 8ⁿ or 8^{n'} successively engage the plunger 7'' and lift it into the path of the advancing ratchet teeth 3ⁿ or 3^{n'}, the vertical surface of the proximate tooth positively engaging the plunger as the corresponding lifting cam passes from the same, whereby the movement of the controller shaft is checked. Upon relaxing the pressure upon the handle, the plunger drops by gravity from its engagement with the tooth to the ring, to be again lifted by a cam thereof into position for engaging the succeeding tooth and so on, whereby a step by step movement is effected in turning on the current. In turning off the current, the ring cams lift the plunger after the corresponding ratchet teeth of the hood have passed such plunger so that the reversal can be effected without interruption.

Having described my invention, I claim:

1. In a controller regulator, a stationary member, a revoluble member, cams and stops revolved by one of said members, and a longitudinally movable bolt, disposed in a way in the other of said members, said cams being adapted for moving said bolt into position for engaging said stops.

2. In a controller regulator, a base, a bearing fixed thereto, a vertically reciprocating

plunger movable longitudinally in said bearing, a hood, cams, and stops carried by said hood, said cams being operated by said hood to engage said plunger and lift it into the path of said stops.

3. In a controller regulator, a base, a locking device carried thereby, a hood having stops thereon for engagement with said device, a ring carried by said hood, and cams on said ring for lifting said device into engagement with said stops.

4. In a controller regulator, a stationary member, a revoluble member, a reciprocating bolt connected with one of said members, and cams and stops connected with the other of said members, said cams engaging said bolt and moving it into position for engaging said stops.

5. In a controller regulator, a base, a hood revoluble thereon, a reciprocating plunger connected with said base, stops carried by said hood over said plunger and adapted to be engaged thereby, a ring carried by said hood, and cams carried by said ring and adapted for moving said plunger into position for engaging said stops.

6. In a controller regulator, a stationary member, a revoluble member, a plurality of sets of stops carried by one of said members, a locking device for engaging said stops, said locking device being carried by the other of said members, and a plurality of sets of cams carried by one of said members for moving said device into position for engaging said stops whereby said revoluble member is limited to a step by step move-

ment in both directions from the "off" position.

7. In a controller regulator, a base having a bearing, a plunger adapted to reciprocate in said bearing, a revoluble hood having stops movable over said plunger, a ring having cams movable under said plunger, and means whereby said hood revolves said ring.

8. In a controller regulator, a base, a locking device movable relatively thereto, a revoluble hood having stops movable over said base, and a ring provided with cams revolved by said hood under a part of said device whereby the latter is lifted into engagement with said stops.

9. In a controller regulator, a base, a reciprocating plunger connected therewith, a revoluble hood having stops movable over said plunger, and a ring carried by said hood under said plunger, said ring having means for elevating said plunger into position for engaging said stops.

10. In a controller regulator, a base, a reciprocating locking device connected therewith, a ring supported by said base and having means adapted for elevating said device, and a revoluble hood for carrying said ring relatively to said device, said hood having means thereon for engaging said device.

In witness whereof I have hereunto set my name this 16 day of December, 1911, in the presence of the subscribing witnesses.

CYRUS P. EBERSOLE.

Witnesses:

G. W. Cox,

E. F. Cox.