

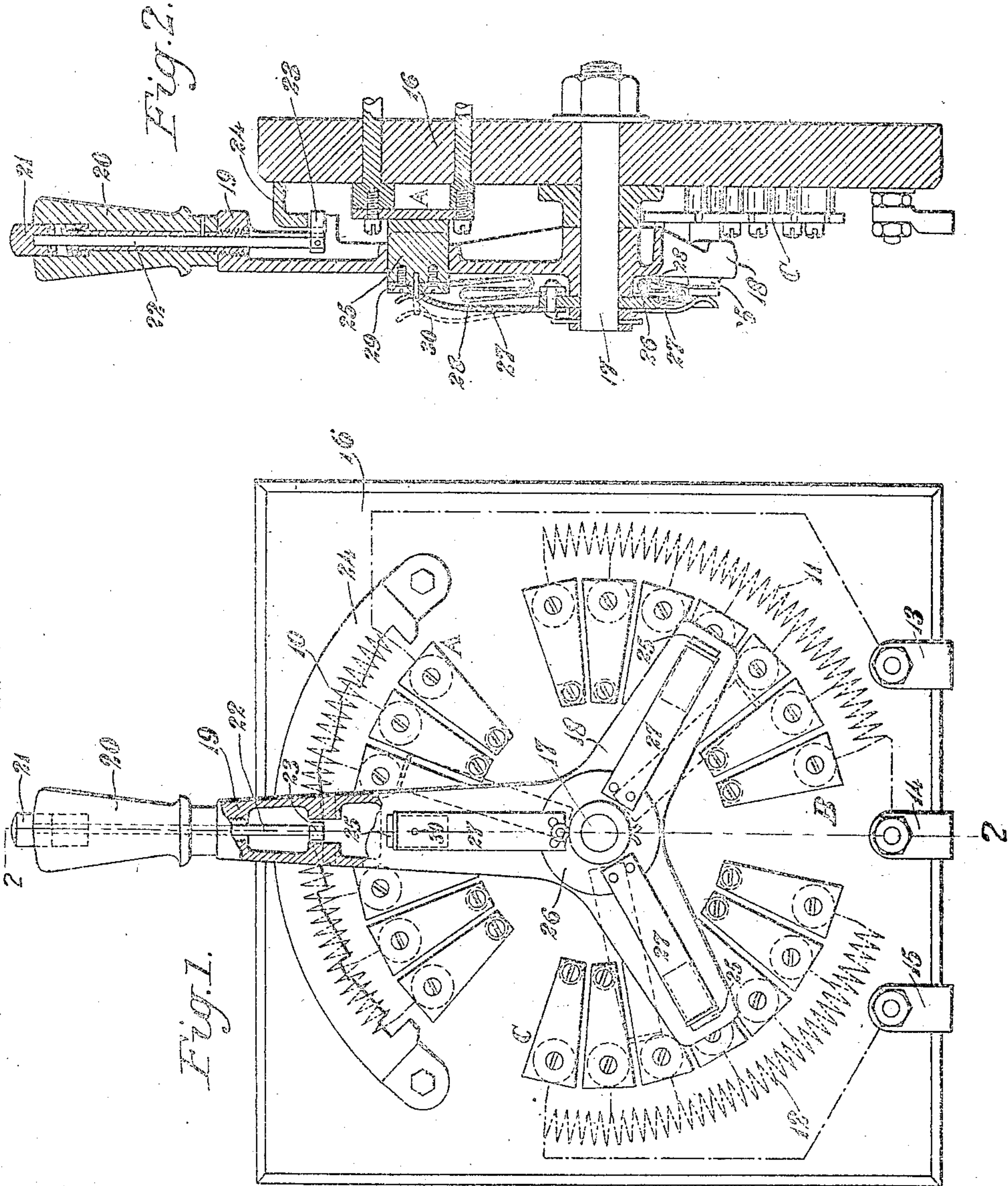
H. W. CHENEY.

CONTROLLER.

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Witnesses

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CONTROLLER.

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To all whom it may concern:

Be it known that I, HERBERT W. CHENEY, 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 Controllers, of which the following is a full, clear, and exact specification.

My invention relates to the construction of rheostats.

In the larger rheostats it is often desirable that the brushes be pressed against the contacts with which they cooperate by means of separate springs and in such cases they are usually connected by flexible metallic conductors or shunts to some metal part of the rheostat.

It is one object of my invention to simplify the construction of these springs and the flexible connections so that the brushes can be more easily inspected, and if necessary replaced, than has heretofore been possible.

A further object of my invention is to provide an improved notching-up device, which is more simple in construction and operation than those hitherto known.

With these objects in view my invention consists in certain novel features which will be apparent from the description and drawings and will be particularly pointed out in the claims.

Figure 1 is a face view of a rheostat embodying my invention; and Fig. 2 is a section on the line 2—2 of Fig. 1.

The arrangement shown is particularly designed for the rotor circuits of three-phase rotor-wound induction motors, though obviously my invention is equally applicable to other forms of rheostats. There are three groups of stationary contacts A, B, and C, for the three phases of the circuit respectively, these three sets of contacts being connected to resistances indicated conventionally at 10, 11, and 12. The rheostat terminals 13, 14 and 15, are connected to the proper contacts of groups A, B, and C, and furnish means for connection to the rotor circuit of the induction motor or other outside circuit to be controlled. The contacts A, B, and C are arranged in a circle on a plate 16, in the center of which circle is fixed a post 17 on which the movable member of the rheostat turns. This movable member consists primarily of a three-armed frame 18, one of the

arms being extended at 19 to receive the handle 20. In the outer end of this handle is a push button 21, which is spring-pressed outwardly and is fixed on the end of the rod or stem 22 which extends through the handle 20. The inner end of such rod carries the latch 23, which cooperates with the notches in the curved notched plate 24. The latter is mounted on the plate 16, and its notches, which are on the inside edge or edge farthest from the handle 20, are so shaped that they permit counter-clockwise movement of the movable member, while they prevent clockwise movement thereof unless the button 21 is depressed.

Mounted in holes in the three arms of the frame 18 are the three brushes 25, which may be of any desired material, such as copper or carbon. A ring 26 is pivotally mounted on the post 17 above the frame 18 and carries three springs 27 and three flexible conductors 28. The outer ends of the latter are clamped between the brushes 25 and plates 29 screwed to the outer ends of the brushes, while the former bear against the outer faces of the plates 29 and press the brushes against the stationary contacts with which they respectively co-act. One of the springs 27 carries a pin 30 which normally fits into a hole in one of the plates 29 and brushes 25, thereby preventing relative rotation between the ring 26 and the frame 18. In case it is desired to inspect the brushes or to replace some or all of them, the spring 27 which carries the pin 30 is raised to lift said pin out of the hole in which it normally fits, thus allowing the ring 26 to be turned to disengage the springs 27 from the plates 29. The flexibility of the shunts 28, which are preferably of copper braid, readily allows this. The brushes 25 can now be lifted out of the holes in the arms of the frame 18 and inspected, and if necessary other brushes can be substituted for them. By again lifting the springs 27 the ring 26 may be turned back to its normal position and the pin 30 dropped into its hole.

Many modifications may be made in the precise arrangement here shown and described and all such which come within the spirit and scope of my invention I aim to cover in the following claims.

What I claim as new is:—

1. In a rheostat, the combination of a plu-

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 5 reality of contacts, a brush-carrying arm movable relatively to said contacts about a pivot fixed in relation thereto, and a spring movable about the same pivot into and out of engagement with the brush.

2. In a rheostat, the combination of a series of contacts, a brush carried by a pivoted arm and movable over said contacts, a ring pivoted on the same axis as said arm and carrying a spring, and a flexible connection connected to said ring and said brush, said ring and the brush-carrying arm being movable relatively to bring the spring carried by the ring into and out of engagement with said brush.

3. In a rheostat, the combination of a series of contacts, a brush movable over said contacts and carried by a pivoted arm, a spring rotatable about the same pivot as the arm and relatively thereto so that it can be brought into and out of engagement with said brush, and means for preventing relative movement of the spring and arm unless the spring is first raised away from the brush.

4. In a rheostat, the combination of a plurality of series of contacts, a corresponding plurality of brushes cooperating with said respective series and carried by a support rotatable relatively to said contacts, and spring fingers pivoted on the same axis as said support and normally engaging the respective brushes to press them against the contacts but movable about the pivot relatively to said support to be disengaged from the brushes.

5. In a rheostat, the combination of a plurality of series of contacts, a corresponding plurality of brushes cooperating with said respective series and carried by a support rotatable relatively to said contacts, and spring fingers pivoted on the same axis as said support and normally engaging the respective brushes to press them against the contacts but movable as a unit about the pivot relatively to said support to be disengaged from the brushes.

6. In a rheostat, the combination of a plurality of series of contacts, a corresponding plurality of brushes cooperating with said respective series and carried by a support

rotatable relatively to said contacts, a spring pivoted on the same axis as said support and normally engaging the respective brushes to press them against the contacts but movable about said pivot relatively to said support to be disengaged from the brushes, and means for normally preventing movement of the springs relatively to said support when the springs are in engagement with said brushes.

7. In a rheostat, the combination of a plurality of series of contacts, a corresponding plurality of brushes cooperating with said respective series and carried by a support rotatable relatively to said contacts, a spring pivoted on the same axis as said support and normally engaging the respective brushes to press them against the contacts but movable as a unit about said pivot relatively to said support to be disengaged from the brushes, and means for normally preventing movement of the springs relatively to said support when the springs are in engagement with said brushes.

8. In a rheostat, the combination of a plurality of series of contacts, a corresponding plurality of brushes cooperating with said respective series and carried by a support rotatable relatively to said contacts, a ring pivoted on the same axis as said support and carrying springs which normally engage the respective brushes to press them against the contacts but movable relatively to said support to disengage the springs and brushes, and flexible conductors carried by said ring and connected to said respective brushes.

9. In a controller, the combination of fixed and movable members, an operating handle fixed on the movable member and substantially in the same plane, a plate fixed relatively to the fixed member and notched on the edge remote from the handle, and a push-button carried by the operating handle and carrying a latch which cooperates with the notches of said notched plate.

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

HERBERT W. CHENEY.

Witnesses:

GEO. B. SCHLEY,
 FRED J. KINSEY.