(No Model.)

2 Sheets—Sheet 1.

J. VAN VLECK.

DYNAMO REGULATOR.

No. 526,879. Patented Oct. 2, 1894.

Fig. 1.

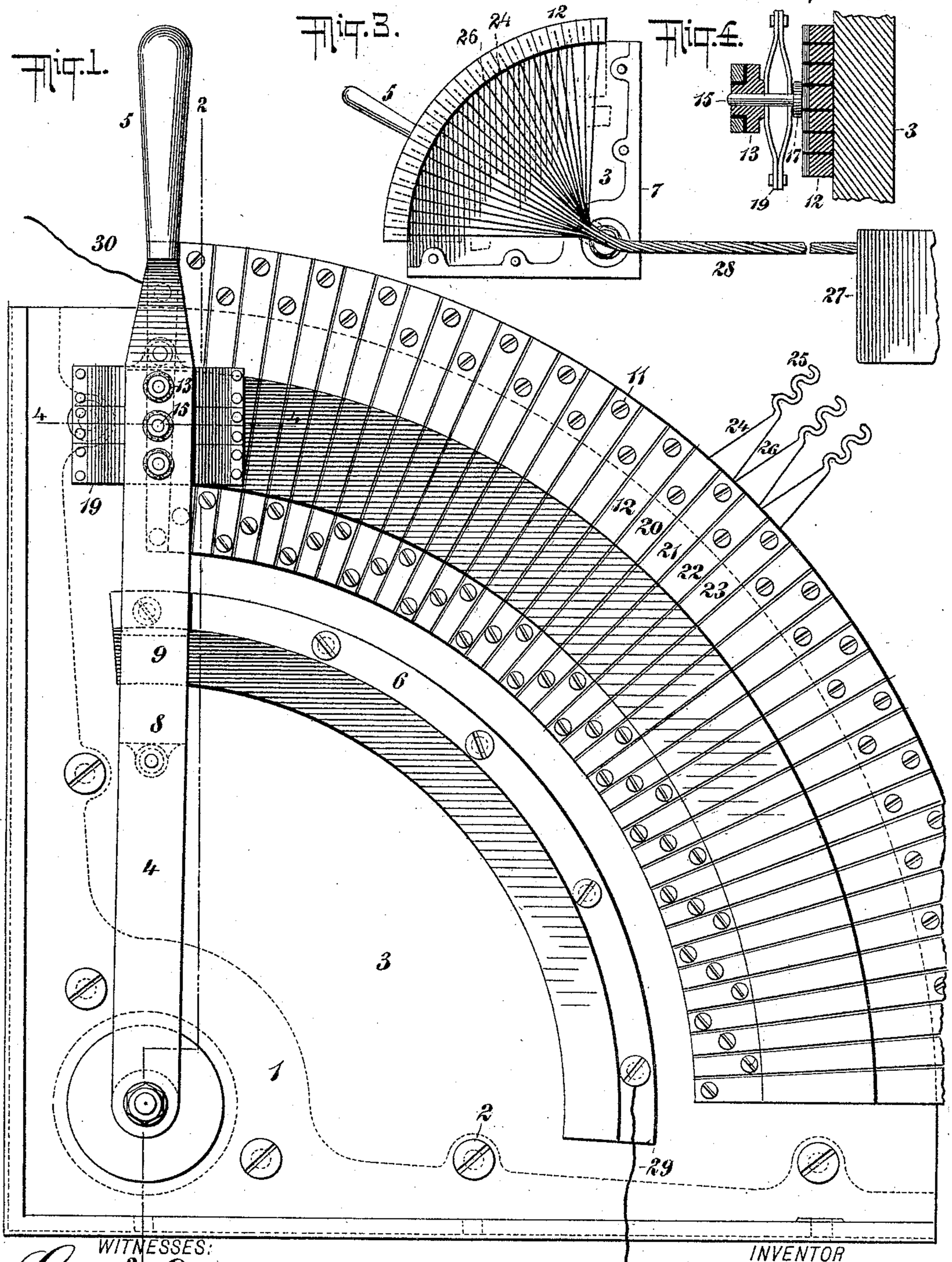

Fig. 3.

Fig. 4.

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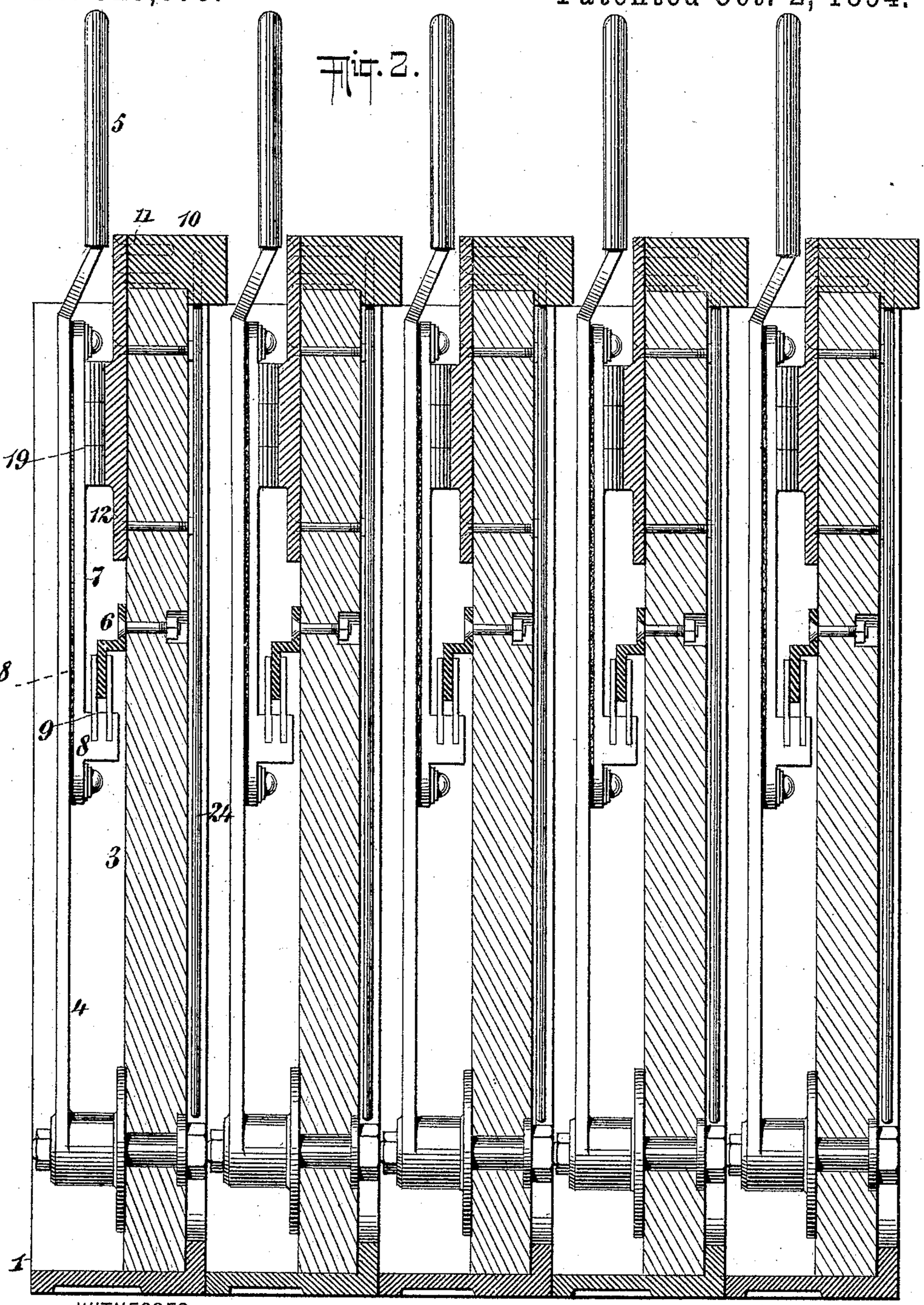
Fig. 2.



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UNITED STATES PATENT OFFICE.

JOHN VAN VLECK, OF NEW YORK, N. Y.

DYNAMO-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 526,879, dated October 2, 1894.

Application filed May 31, 1894. Serial No. 512,966. (No model.)

To all whom it may concern:

Be it known that I, JOHN VAN VLECK, of the city, county, and State of New York, have invented a new and useful Improvement in Dynamo-Regulators, of which the following is a specification.

My invention relates to that class of dynamo regulators which operate by throwing more or less resistance at will into the circuit.

My invention consists, first, in the construction of the regulator as hereinafter more particularly set forth; second, in the arrangement of several regulators to form a multiple regulator occupying relatively small floor-space, and, third, in the arrangement of the resistances in combination with such a regulator at a distance therefrom.

In the accompanying drawings Figure 1 is a side elevation of my apparatus. Fig. 2 is a sectional view on the line 2—2 of Fig. 1. Fig. 3 is a detail view of the rear side of the regulator segment, showing the arrangement of the conductors leading to the resistance coils. Fig. 4 shows the construction of the spring contact device which moves over the contact strips in section on the line 4—4 of Fig. 1.

Similar figures of reference indicate like parts.

The sectional view (Fig. 2) shows five of my dynamo regulators arranged in a bank—or, as I prefer to call it, on the edgewise system as a multiple regulator. It is to be understood that any number of said regulators may thus be put together, and that the construction of each regulator is the same, so that a description of one, in this respect, answers for all.

The main quadrant or support consists of a metal frame, 1, to which is secured, by the screws 2, a plate, 3, of hard rubber or any other suitable insulating material. Pivoted to the frame 1 is the arm 4, which may be turned on its pivots by means of the handle 5. Upon the face of the insulated plate 3 is secured a flanged guide-bar, 6. Upon the rear side of the arm 4 is bolted a metallic plate, 7, provided with an offset, 8, carrying guides, 9, which receive between them the flange of the guide-bar 6. By this means the arm 4 is guided and caused to move always in a definite vertical plane.

Secured to the edge or curved periphery of the plate 3 is a series of metal blocks, 10, each of which is connected, by screws, 11, with the contact strips 12, which appear in the face of the plate 3. These contact strips are also secured to the plate 3 by suitable screws. The several contact strips 12 are insulated one from the other. Between the plate 7 and the arm 4 is a layer, 18, of mica or other insulating material.

The office of the arm 4 is, when moved, to cause a contact plate to move over the surfaces of the contact strips 12 while pressing closely against said surfaces. At three points on the arm 4 are apertures in which are sleeves of insulating material, 13, as shown in Fig. 4. Through these sleeves pass projections on the plate 7. Through these projections pass pins, 15, carrying metal plates, 17, which bear upon the contact plates 12. Between the plate 7 and the plates 17 are double leaf-springs, 19, which force the plates 17 in close contact with the contact strips 12; so that, no matter where the arm 4 may be placed, the plates 17 and the contact strips 12 will always be maintained closely together.

Between the successive contact strips 12 are interposed resistances, as is illustrated symbolically in Fig. 1, wherein 20, 21, 22, 23 represent successive contact strips. A wire, 24, extends from contact strip 20 to a resistance, 25, and said resistance is also connected by wire 26 to the next contact strip 21. In like manner a resistance is interposed between the contact strips, 21 and 22, 22 and 23 and so on. The practical arrangement of this is shown in Fig. 3, which represents the opposite side of the supporting plate 3 from that which is shown in Fig. 1.

The resistances 25 are arranged in any suitable receptacle, such as 27, which is placed in rear of the bank of instruments represented in Fig. 2 and at some convenient distance therefrom. Then all the wires, such as 24 and 26, will be long conductors properly insulated from one another, extending across the back of the support, as shown in Fig. 3, and united into a cable, 28, which goes to the

several resistances in the receptacle 27. The advantage of this arrangement is that I am not obliged to combine the resistances, which are necessarily bulky, in the same structure as the regulating device, as has hitherto been done; and hence, by putting the resistances at a considerable distance from the regulators, I may arrange all of the regulators for a given station in a bank, preferably opposite to the switchboard; so that the attendant has the switchboard of the instruments on one side of him and the bank of dynamo regulators on the other—the latter occupying, as is evident from the drawings, a very small space. This economy of space in stations is of very great importance, especially in large cities, where, on the one hand, the area of distribution is great and the circuits are numerous and complicated, and, on the other, the value of land is so high as to prohibit lateral expansion of station area. In such event, it is therefore necessary to put the greatest number of instruments within the smallest possible area of floor-space, and for this reason especially the separation of the resistances from the regulator results in notable economy; because, as is readily appreciable, the resistance may be located anywhere—as above or below the regulator, if need be—in order to save room.

The operation of the apparatus is as follows: One terminal of the dynamo—represented at 29, Fig. 1—may be connected in any suitable way to the guide-bar 6. The other terminal may likewise be connected in any suitable manner to the upper and last contact strip, as represented at 30. One mode of connecting the resistance conductors is represented in Fig. 2, in which the wire 24 is shown embedded in the block 10. When the parts are in the position represented in Fig. 1, the current will pass, for example, from wire 29 to guide-bar 6, thence to guide plates 9 and bar 7, to pin 15 and contact plate 17 and then out through the last contact plate 12 and wire 30, or vice versa. In that case no resistance is interposed, and the current is of its highest strength. In order to interpose resistance and therefore to reduce the strength of the current as desired, the handle 5 is pulled downward, thus moving the plate 17 over the contact strips 12 and so bringing into circuit one or more of the resistances 25; hence in order to raise the strength of the current, the handle 5 is lifted, and to diminish the strength it is lowered. In practice one regulator would be placed in connection with each dynamo, and a suitable ammeter would be disposed in proximity so as to show the effect of the regulation made in the manner described.

I claim—

1. The combination, in a dynamo regulator, of a support of segmental shape, a series of radial contact strips disposed on one side and extending over the periphery thereof, an arm pivoted on said support and carrying a plate in contact with said strips, resistances located at a distance from said support and conductors connected to said strips on the opposite side of the support to that on which said arm is located, and leading to said resistances, substantially as described.

2. A series of dynamo regulators, each having a support of segmental shape, the said supports having their curved peripheries side by side, a series of contact strips on each support periphery, an arm pivoted to each support and carrying a contact plate over each series of contact strips and a series of resistances connected with each series of contact strips.

3. A series of dynamo regulators, each having a support of segmental shape in substantially plate form, a series of radial contact strips disposed on one side of said plate, an arm pivoted on said support and carrying a plate in contact with said strips, and, connected with said strips and interposed between them, a series of resistances located at a distance from said support: the said supports being disposed side by side in a bank, substantially as described.

4. The combination, in a dynamo regulator, of a vertical plate support in segmental shape, a series of contact strips radially disposed thereon, an arm pivoted on said support and carrying a plate in contact with said strips, resistances interposed between said contact strips and circuit connections substantially as set forth; whereby, when said arm is in its vertical position, no resistance is interposed in circuit and whereby a greater number of resistances is interposed as said arm is moved downwardly, substantially as described.

5. The combination of a series of dynamo regulators, each having a vertical plate support in segmental shape, a series of contact strips disposed on the curved periphery thereof, an arm pivoted on said support and carrying a plate in contact with said strips and provided with an extension or handle extending beyond said curved periphery and resistances interposed between said contact strips, the said contact strips being alike in position and arrangement on curved peripheries of said supports and the said peripheries being side by side; whereby the relative condition of regulation in the circuits respectively including said regulators may be recognized by comparing the relative position of said arm extensions.

6. A multiple dynamo regulator having the combination of a series of vertical segmental partitions, each partition carrying a series of radially disposed contact strips, arms carrying contact plates bearing upon said strips and pivoted between said partitions and provided with protruding handles or extensions, and resistances disposed in circuit between said strips, and located at a distance from said partitions, substantially as described.

7. The combination, in a dynamo regulator, of the segmental support 3, contact strips 12, and pivoted arm 4 provided with a contact device bearing upon said contact strips, a se-

ries of resistances, 25, located at a distance from said support and respectively interposed in circuit between said strips and a series of conductors, as 24 26, forming a cable, 28, connecting said resistances and strips, substantially as described.

8. The combination, in a dynamo regulator, of the support 3, contact strips 12, pivoted arm 4 and guide-bar 6 disposed thereon, and, supported on and insulated from said arm 4, the bar 8 provided with guide-plates 9 engaging with bar 6 and a contact plate, 17, bearing upon said contact strips 12, and resistances interposed in circuit between said contact strips, substantially as described.

9. The combination, in a dynamo regulator, of the segmental support having a metal frame, 1, and plate 3 of non-conducting material, a series of radial contact strips, 12, and guide-bar 6 on said plate 3, arm 4 pivoted on said frame 1, bar 7 insulated from and supported on arm 4, a spring contact plate carried by bar 7 and bearing on strips 12, resistances interposed in circuit between strips 12 and circuit connections, substantially as described.

10. In a dynamo regulator having a support, a series of contact strips thereon, resistances interposed in circuit between said strips and a pivoted arm, a bar, 7, insulated from and carried by said arm, pin 15 loosely received in said bar 7, plate 17 on said pin and spring 19 acting to press said plate 17 against said strips 12, substantially as described.

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Witnesses:
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M. BOSCH.