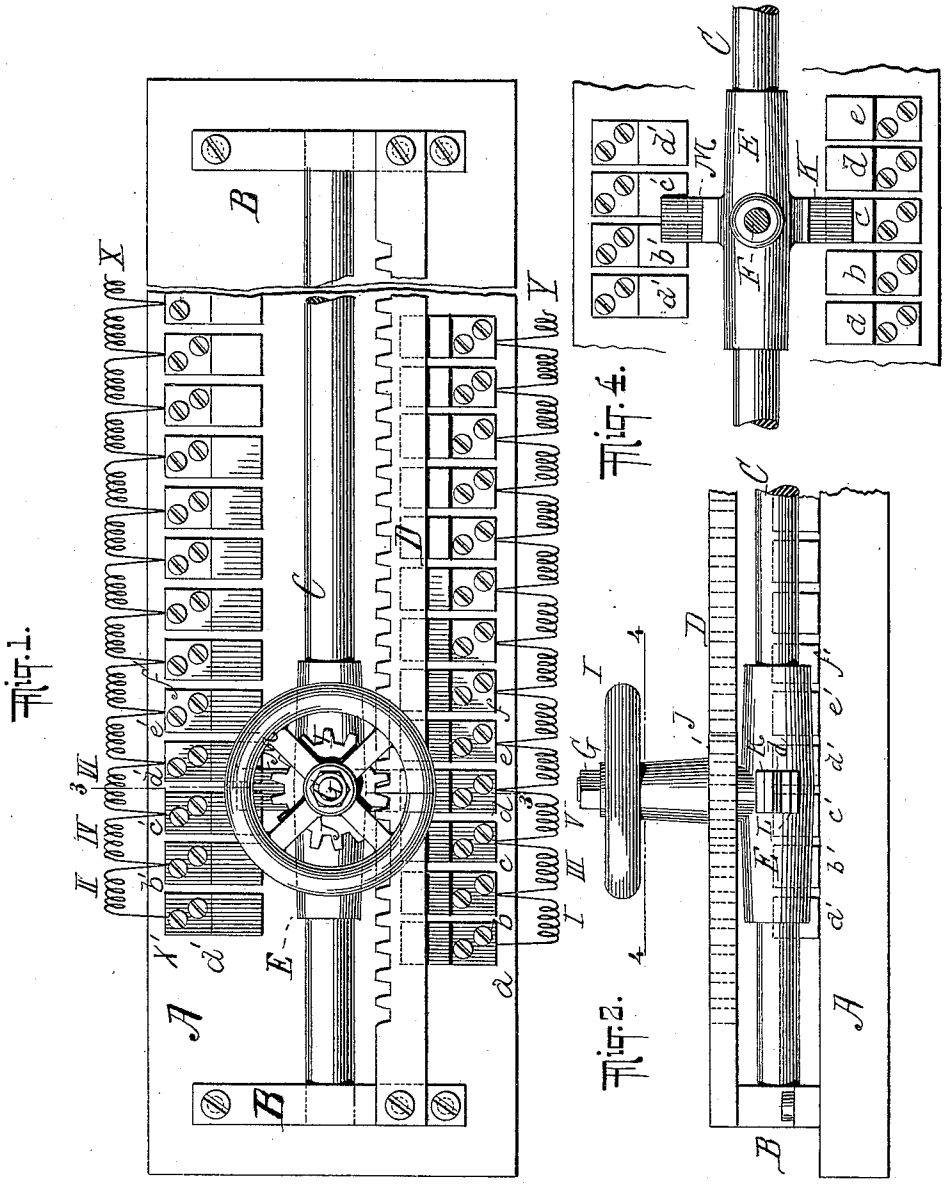
(No Model.)

J. VAN VLECK.

DYNAMO REGULATOR.

No. 530,465. Patented Dec. 4, 1894.



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

DYNAMO-REGULATOR.

SPECIFICATION forming part of Letters Patent No. 530,465, dated December 4, 1894.

Application filed October 8, 1894. Serial No. 525,211. (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.

The invention relates to that class of dynamo regulator by means of which resistances are thrown into the field circuit.

The said invention consists in the construction and arrangement of the apparatus as hereinafter explained and more particularly pointed out in the claims.

In the accompanying drawings, Figure 1 is a plan view of my regulator. Fig. 2 is a side view. Fig. 3 is a cross-section on the line 3 3 of Fig. 1, and Fig. 4 is a horizontal, partial section on the line 4 4 of Fig. 2.

Similar letters of reference indicate like parts.

The base or back board, A, of the apparatus supports two brackets, B, in which is rigidly held the cylindrical guide-bar C. Secured to said brackets and extending parallel to said bar, is a rack, D. Traveling upon bar C is a carrier, E, which supports the fixed shaft, F, Fig. 3. Surrounding the shaft F and secured thereon by the nut G is a sleeve, H, which may be rotated by the hand-wheel, I. Upon the sleeve H is a pinion, J, which engages with the rack D. Hence, when the hand-wheel I is turned, the engagement of pinion J in rack D will cause the carrier E to move along the bar C in one or the other direction as said wheel may be turned.

Supported upon the base A on opposite sides of the bar C are two series of separate metal contact plates, *a*, *b*, *c*, *d*, *e*, *f*, &c., and *a'*, *b'*, *c'*, *d'*, *e'*, *f'*, &c. Alternating with said plates and electrically connected thereto are resistance coils, here indicated diagrammatically at I, II, III, IV, V, VI, VII, &c. Each plate is bent at right angles, as shown in Fig. 3, so that its extremity nearest bar C comes about opposite the middle line of said bar. On each side of the carrier E are pairs of contact plates, K L and M N, the arrangement being such that the inner extremities of the plates *a*, *b*, *c* and *a'*, *b'*, *c'*, &c., are received between said pairs of contact plates, as represented in Fig. 3. Hence, as the carrier E is moved along the bar B, the contact plates K L and M N slide along while maintaining touch with the plates *a*, *b*, *c* and *a'*, *b'*, *c'*, &c. It will be observed, however, that the series of plates *a*, *b*, *c*, &c., on one side of bar C are set opposite the intervals between the plates *a'*, *b'*, *c'* on the other side of said bar; or, in other words, the plates of the two sets are set staggered. The advantage of this construction will appear in explaining the operation of the apparatus.

Referring to Fig. 1, let it be assumed, in the beginning that the plates K L of carrier E coincide with the fixed plate *a*. As the plates K L are of the same width as each of the fixed plates *a*, *b*, *c*, &c., it follows that said plates will, under the conditions stated, rest wholly against plate *a*. On the other side the plates M N will receive between them half of plate *a'*. If then the current passes into the apparatus at say X, it will obviously pass through all the resistance coils II, IV, VI, &c., between plates *a' b' c'*, &c., and thence, by way of plates M N and K L and carrier E to the plates *a*, *b*, *c*, &c., and interposed resistances I, III, V, &c., to the opposite instrument terminal, say at Y. All of the resistances I, II, III, IV, &c., will then be in circuit. Now let the wheel I be rotated so as to move the carrier E along bar B until the contact plates M N coincide with the plate *a'*. Then the contact plates K L will form a bridge between plates *a* and *b*, resting against both plates, and will thus cut out of circuit the resistance coil I. If the hand-wheel I be still further rotated, say until the plates K L rest entirely against plate *b*, then the plates M N will bridge over the plates *a' b'*. In such case the resistance I on one side and the resistance II on the other will both be cut out, and the operation thus continues, the wheel I being turned in one or the other direction to cut out or bring resistances into the circuit, as may be desired for purposes of regulation.

The especial advantage of this construction will be apparent by considering only one set of plates, as *a' b'*, &c., present, and a single pair of moving contacts, as M N, the instrument terminals being supported at X and X'. Then clearly, in order to cut out each resistance in turn, I should be obliged to move the contact plates M N over successive distances equal to the width of plates *a'*, *b'*, *c'*, &c. By employing the second set of fixed

plates, *a*, *b*, *c* and contact plates K L, it is obvious that I need move the contact plates only over one-half the aforesaid distance to produce the same result. Hence I am enabled to render the instrument very much more compact in construction—or, in other words, to largely increase the number of resistances which may be controlled within a given range of movement of the carrier. As this instrument is usually located on the switchboard of electrical plants, where economy of space is always desirable, the advantage of the aforesaid construction is of especial importance.

I claim—

1. The combination, in an electrical regulating apparatus, of two series of contact plates, each series being disposed in a straight line the plates of one series being opposite the intervals of the other, resistances interposed between the successive plates of each series and a contact piece movable over both of said series and constructed to bridge two of said plates of one series while bearing upon one of said plates of the other series, substantially as described.

2. The combination, in an electrical regulating apparatus, of two parallel series of contact plates of uniform width, each series being disposed in a straight line the plates of one series being opposite the intervals of the other, resistances interposed between successive plates of each series and a contact piece equal in width to one of said plates and movable over both of said series, substantially as described.

3. In an electrical regulating apparatus containing two series of fixed contact plates, the plates of one series being opposite the intervals of the other, and resistances interposed between the successive plates of each series, a fixed guide-bar, a carrier thereon, a contact piece on said carrier constructed to bridge two of said fixed plates of one series while bearing upon one of said plates of the other series, a pinion on said carrier and a fixed rack with which said pinion engages; the said parts being constructed and arranged so that, by the revolution of said pinion, said carrier is caused to move along said guide-bar, thereby carrying said contact piece over said fixed contact plates, substantially as described.

4. The combination, in an electrical regulating apparatus, of the series of fixed contact plates *a*, *b*, *c*, &c., and interposed resistances I, III, IV, &c., the series of fixed contact plates *a' b' c'* and interposed resistances II, IV, VI, &c., guide-bar C, carrier E thereon, contact plates K L and M N on said carrier and meeting said fixed plates, rack and pinion on said carrier engaging with said rack.

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