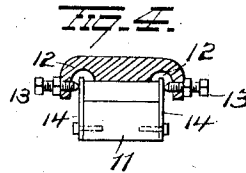
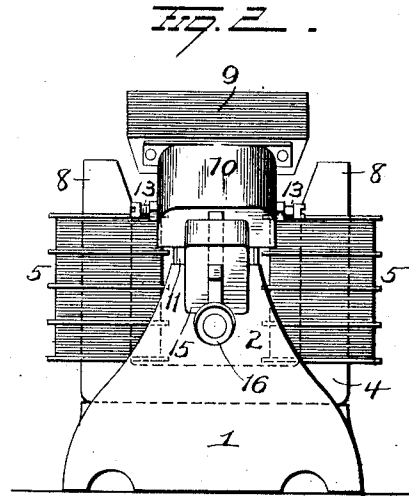
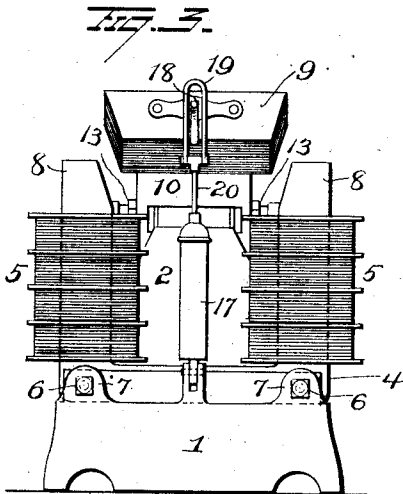
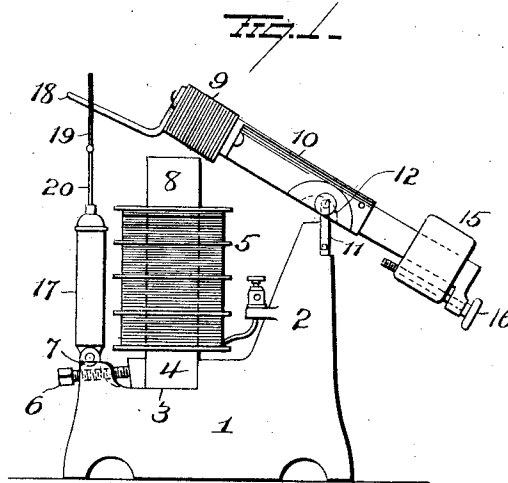


T. E. ADAMS.
ALTERNATING CURRENT REGULATOR.
APPLICATION FILED JAN. 19, 1906.

1,024,963.

Patented Apr. 30, 1912.

2 SHEETS—SHEET 1.



WITNESSES
E. Nottingham
G. J. Downing

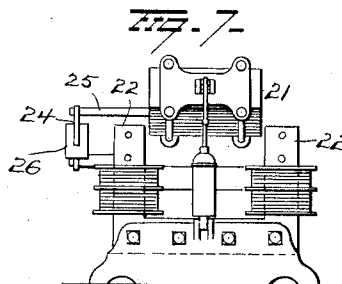
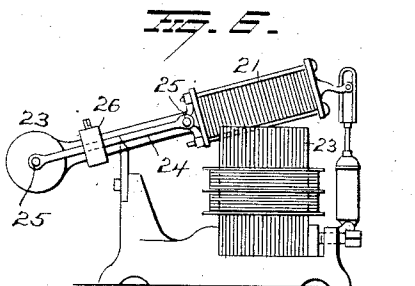
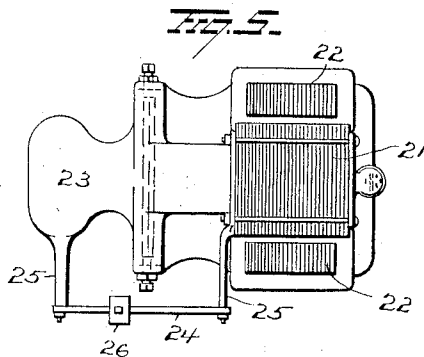
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2 SHEETS—SHEET 2.



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THOMAS EDGAR ADAMS, OF CLEVELAND, OHIO, ASSIGNOR TO THE ADAMS-BAGNALL
ELECTRIC COMPANY, OF CLEVELAND, OHIO.

ALTERNATING-CURRENT REGULATOR.

1,024,963.

Specification of Letters Patent.

Patented Apr. 30, 1912.

Application filed January 19, 1906. Serial No. 296,856.

To all whom it may concern:

Be it known that I, THOMAS E. ADAMS, a resident of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Alternating-Current Regulators; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in electric regulators and more particularly to such as are adapted, by inductive resistance, to effect automatic regulation in alternating current circuits,—one object of the invention being to provide a regulator of the class specified, which will operate effectually to maintain the current constant, under variations of load on the working circuit, and to so construct said regulator as to minimize the weight of the movable member and yet insure accuracy and efficiency of operation.

A further object is to produce an alternating current regulator, comprising an electromagnet having fixed cores, and a movable armature, the poles of said cores and the armature being so constructed as to cause varying choking effects in the helices of the magnet when the armature is moved relatively to the poles of the magnet, and so that said choking effects shall be such as to automatically maintain the current constant during variations on the working circuit.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts as hereinafter set forth and pointed out in the claims.

In the accompanying drawings Figure 1 is a side elevation of a regulator embodying my improvements; Fig. 2 is a rear view of the same; Fig. 3 is a front view; Fig. 4 is a detail view of means for adjusting the armature laterally and Figs. 5, 6, and 7 are views of modified forms of construction of regulator.

1 represents a rigid base or frame, preferably of cast iron, having an integral post or standard 2 at one side. The base or frame 1 is made with a recess 3 in which the horizontal member of a laminated, U-shaped magnet frame 4 is seated, the parallel upright members of said frame having helices 5 thereon and constituting the fixed cores of

said helices. The electromagnet thus formed and mounted, is held rigidly in place by means of clamps 6, the threaded portions of which pass through lugs 7 projecting from the cast iron base 1. The upper ends of the cores of the magnet which project beyond the helices may be beveled on their inner faces and constitute the magnet poles 8, 8, between which the laminated armature 9 is intended to operate. The armature 9 is carried at one end of a lever 10 and the latter is mounted, at a point between its ends, upon a knife-edge plate 11 secured at the upper end of the post or standard 2. In order that the armature may be accurately adjusted so that it will be magnetically balanced between the poles of the magnet, the lever 10 is provided at opposite sides with depending lugs 12 for the reception of adjusting screws 13 which engage blocks 14 secured to the ends of the knife-edge plate 11. For the purpose of counterbalancing the weight of the armature 9 and to prevent magnetic vibrations causing chattering on the knife edge, the lever 10 is provided with a counterpoise weight 15, and means, such as a screw 16, may be provided for adjusting the position of this weight on the lever. The weight 15 serves merely as a counterpoise for the comparatively small mass of iron of which the armature is composed. To regulate the movements of the armature and prevent too sudden movements thereof, an oil pot 17 may be provided. The connection between the plunger of the oil pot and the armature should, however, be such as to permit slight movement of the armature unopposed by the plunger of the oil pot. Therefore, in effecting the connection between the oil pot plunger and the armature, the latter is provided with a finger 18 which has free, but limited play in a yoke 19 attached to the plunger rod 20 of the oil pot.

When the regulator is placed in an alternating current circuit with translating devices, any change in the load on the circuit will correspondingly affect the strength of the magnet, causing a movement of the armature to vary the magnetic resistance between the poles of the magnet by varying the size of the air gap, and in consequence, cause the generation of more or less counter electro-motive-force or inductive resistance in the helices of the magnet to compensate for the changes of the load on the working

circuit. Thus, should one or more translating devices, (such as lamps), be removed from the working circuit, the resulting increase of current in the helices of the magnet will cause a movement of the armature toward the poles of the magnet, reducing the air gap and consequently diminishing the magnetic resistance between the poles of the magnet, and causing the generation of an increased counter electro-motive-force or inductive resistance to compensate for the lamp or lamps removed from the working circuit.

The pole pieces of the magnet, and the armature are so shaped that, during the movements of the armature, the size of the air gap between them shall be so automatically varied as to cause the generation of the required electro-motive force or inductive resistance in the helices of the magnet, to maintain a substantially constant current on the working circuit.

In the form of the invention shown in Figs. 5, 6 and 7 the armature 21 has a shearing action with respect to the pole pieces 22 of the magnet. The counterpoise 23 for the armature is made integral with the armature lever. A laterally disposed bar 24 is connected with the armature lever at respective sides of the fulcrum of the latter, by means of arms 25 projecting from said armature lever. On this bar, a small weight 26 is adjustably mounted to cause the armature lever to be accurately counterpoised.

Having fully described my invention what I claim as new and desire to secure by Letters-Patent, is:—

1. An alternating current regulator comprising stationary cores having exposed poles, stationary coils encircling the cores, in combination with a counterbalanced laminated armature pivotally mounted to be moved toward and away from the stationary poles by varying magnetic attraction and the opposing action of the counterbalance and automatically vary the width of the air gap between the armature and poles and regulate the counter electro-motive-force generated in the magnet coils.

2. An alternating current regulator comprising stationary cores having exposed beveled ends, stationary coils on said cores, in combination with a counterbalanced laminated armature having beveled sides pivotally mounted and adapted to be moved toward and away from the beveled poles by varying magnetic attraction and the opposing action of the counterbalance and thereby vary the air gap between the armature and poles and regulate the counter electro-motive-force generated in the magnet coils.

In testimony whereof, I have signed this specification in the presence of two subscribing witnesses.

THOMAS EDGAR ADAMS.

Witnesses:

HARRY S. JENKINS,
F. W. SINOAM.