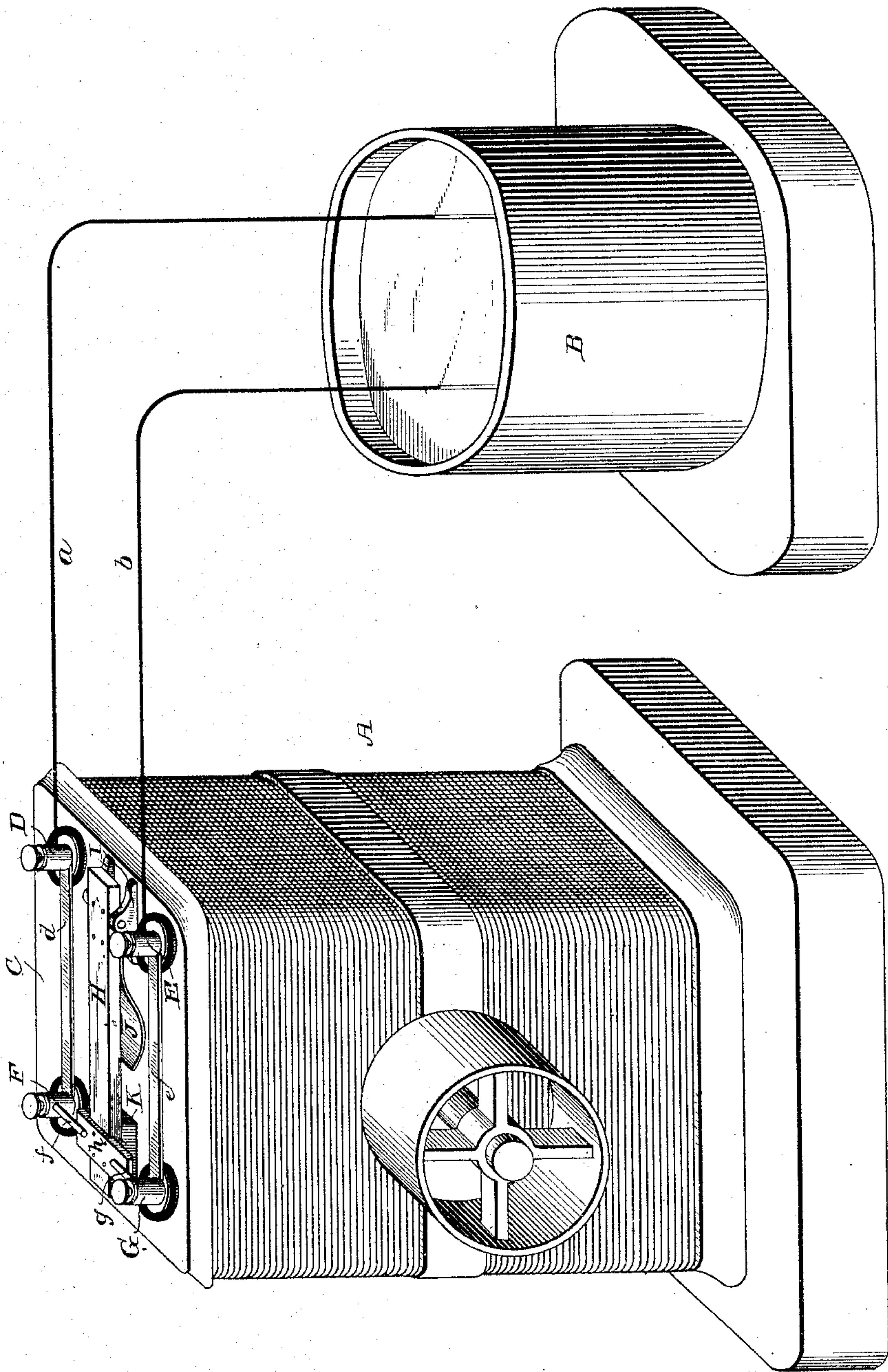


(No Model.)

C. J. VAN DEPOELE.
AUTOMATIC CIRCUIT CONTROLLER FOR ELECTROPLATING MACHINES.

No. 353,334.

Patented Nov. 30, 1886.



Witnesses

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AUTOMATIC CIRCUIT-CONTROLLER FOR ELECTROPLATING-MACHINES.

SPECIFICATION forming part of Letters Patent No. 353,334, dated November 30, 1886.

Application filed March 15, 1886. Serial No. 195,211. (No model.)

To all whom it may concern:

Be it known that I, CHARLES J. VAN DEPOELE, a citizen of the United States, residing at Chicago, in the county of Cook, State of Illinois, have invented certain new and useful Improvements in Automatic Circuit-Closers for Electroplating-Machines, of which the following is a description.

My invention relates to a new and useful improvement in the operating of dynamo-electric generators used for electroplating or electro-deposition of metals, or other purposes.

As is well known, the anodes and cathodes in an electrolytic solution under the action of the current become polarized thereby as the process continues, and under certain conditions become charged to such an extent as to overpower the potential of the generator from which the current flows. As soon as this is the case the current from the electrolytic vat tends to overpower the source, and, finally flowing in opposite direction to the current from the generator, demagnetizes the field-magnets of the latter and magnetizes said field-magnets in opposite direction or sense from what they were at first, or normally, the result being that the current produced by the generator flows in opposite direction through the electrolytic system, so that the anodes become the cathodes, and consequently all the work is spoiled, the deposition of metal being reversed from what it was in the beginning.

The present invention consists in a positive means for preventing such reversal of the main current, so that neither the work in the vats nor the generator needs any watching or attention on this score. The method employed consists in automatically and temporarily placing a conductor of proper resistance across the main conductors going to the electrolytic system, of whatever description it may be.

The following is a detailed description of devices by which the above results are obtained.

The accompanying drawing is a view in perspective of an electroplating-plant embodying my invention.

A represents a dynamo-electric generator of the class above referred to.

B is a vat containing the electrolyte.

C is the outer end of one of the cores of the field-magnet, and will be referred to as the top

of the machine A. It may, however, be any portion of the iron frame-work that is affected by the magnetism of the field-magnet.

D is the positive and E the negative binding-post of the generator, which are arranged on the top C, all well insulated from the frame of the machine, and suitably connected to the coils of the field-magnet and armature.

a b are the main conductors, leading from the main binding-posts to the vat, and to which the anodes and cathodes are connected.

From the main binding-posts D E extend strips or wires d e, which terminate at binding-posts F G, from which extend pins or contact-points f g. A lever, H, of suitable material—for instance, iron—is pivoted in a proper bearing, I, and carries at its outer end a copper contact-plate, h, long enough to connect the pins f g, between which it is located. A spring, J, is secured to the under side of the lever H, and, resting upon the top of C, normally raises the lever H and plate h against the underside of the pins f g, closing the shunt-circuit from the main binding-posts through the strips d e, pins f g, and plate h. The strips or conductors d e are so proportioned that they are of a greater resistance than the electrolytic circuit, and the resistance of said conductors is to be adjusted to suit the case.

To the under side of the free end of the lever H is secured an iron armature, K, which is influenced and controlled by the condition of the magnetism of the field-magnets, and is then drawn down and away from the pins f g and held down upon the top piece, C, whenever and as long as the current in the generator is normal, so that the shunt-circuit is broken whenever the machine is doing effective work and its current traversing the electrolytic circuit and remaining in the same condition—that is to say, the current flowing in the right direction. As soon, however, as the counter electro-motive force or potential of the vats rises to such an extent as to counterbalance the potential of the machine, the magnetism in the field-magnets will decrease until the armature K is released, and on being raised by spring J the plate h closes the shunt or short circuit across the main conductors. The action of the short circuit is, on one side, to destroy the charge of the vats in the cathodes and anodes,

and, on the other hand, to restore the prime magnetic field to its normal condition. This action is instantaneous, for as soon as the short circuit is made the armature is instantly drawn down by the increase of the magnetism in C, and the contact-piece *h* breaking circuit the current flows again through the electrolytic system, as usual. Thus it is seen that the current from the vats has no time to reverse the polarity of the generator, and that the current will consequently always be flowing in the same direction.

The above arrangement can be used in connection with a series machine, when the short-circuiting will increase the magnetism of the field-magnets. The same will be true for a compound machine, while for a shunt machine the short-circuiting will prevent the reversal of polarity by preventing currents of opposite direction flowing through its field-magnets, so that the system is equally well adapted to any class of dynamo-electric generator.

On stopping the generator the short circuit will prevent the counter-current from the vat circulating around the field-magnets, and thus prevent the reversal of the machine. On starting, the electrolytic circuit being closed, the armature will immediately be drawn down and open the shunt-circuit, &c.

I do not wish to confine myself to the construction or arrangement here shown, as the same may be modified in many ways without

departing from the spirit of the invention—as, for instance, instead of the field-magnets, an electro-magnet may be placed in the working-circuit and be made to operate the circuit-controlling devices.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

An automatic circuit-closer for electroplating-machines, consisting of the combination, with working-conductors, of a shunt-circuit extending from the main binding-posts and provided with separated terminals, a pivoted lever provided at its lower side with upward-acting spring, and an iron armature within the field of force of a magnetic portion of the generator, and at its upper side with a metallic plate for bridging the separated terminals, and thereby closing the shunt-circuit, said armature being held away from the shunt-terminals by the normal attraction of the magnetic frame of the generator, and adapted to be released to close the shunt-circuit when the magnetic strength falls below a predetermined point, substantially as shown and described.

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

CHARLES J. VAN DEPOELE.

Witnesses:

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