

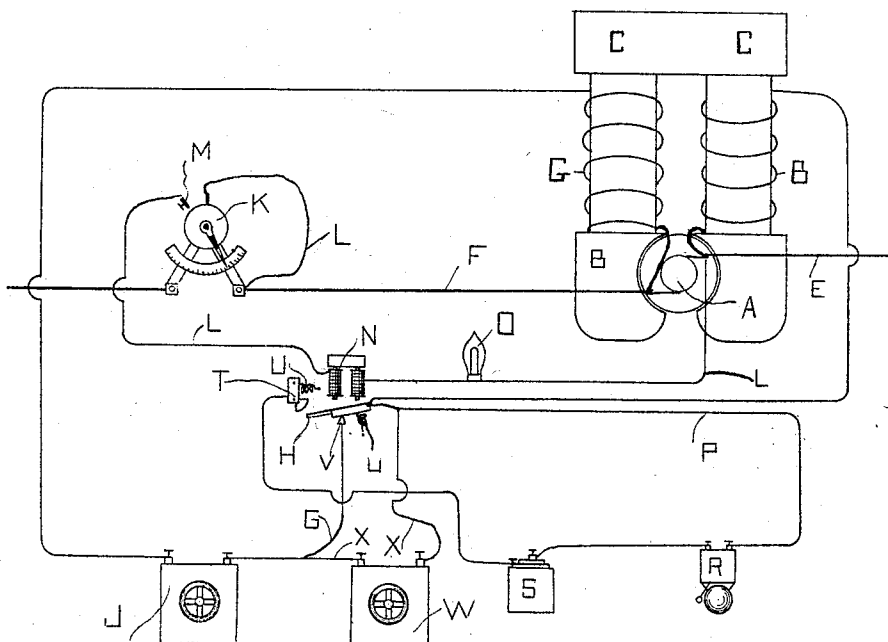
(No Model.)

F. B. BADT.

AUTOMATIC SAFETY DEVICE FOR DYNAMO ELECTRIC MACHINES.

No. 487,816.

Patented Dec. 13, 1892.



WITNESSES

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AUTOMATIC SAFETY DEVICE FOR DYNAMO-ELECTRIC MACHINES.

SPECIFICATION forming part of Letters Patent No. 487,816, dated December 13, 1892.

Application filed February 19, 1892. Serial No. 422,159. (No model.)

To all whom it may concern:

Be it known that I, FRANCIS B. BADT, a subject of the King of Prussia, residing at Chicago, county of Cook, and State of Illinois, have invented a new and useful Improvement in Automatic Safety Devices for Dynamo-Electric Machines, of which the following is a specification.

My invention relates to devices for reducing the current of dynamo-electric machines when such current has passed beyond a given predetermined point. I have illustrated it in the accompanying drawing as applied to a generator and as limiting the current, so as to prevent it rising beyond a certain predetermined degree; but it is apparent that it may be equally applied in other ways in connection with dynamo-electric machines, and also that by throwing out resistances instead of throwing them in it might be applied to prevent the current falling below a given point. It is illustrated in the accompanying drawing, which is a diagrammatic view of the device.

A is the armature; B B, the cores of the field-magnet C C; E F, the main conductors leading out from the armature; G, the field-magnet-coil conductor, which normally includes the armature H and the resistance J. K is an ammeter in series in the circuit E F. L is a local circuit from one brush of the dynamo to the other, including the circuit-closing device M, controlled by the ammeter, the magnet N, which controls the armature H, and the lamp O. P is a local circuit including the bell R, the battery-cell S, the armature M, and the contact-point and catch T. U U are springs tending, respectively, to retract the armature H from its magnet onto the contact-point V and the catch T into its normal position, as shown. W is an extra or controlling rheostat or resistance in the short circuit X, and therefore normally cut out by the circuit G being closed through the armature H. These several parts could, of course, be greatly altered in their various relations—as, for example, the current to energize the magnet N need not, of course, be taken from the machine itself, as this current will flow only so long as the circuit-closer M is closed in any event. The ammeter is shown simply as one means, though any device responsive

to changes in the current may be used to control the circuit-closer M. The lamp O is not indispensable, as any other resistance could be used, or the magnet N could itself be wound, so as to serve such resistance. It is equally obvious that a series of magnets and resistances could be employed, the latter to be successively thrown into the field-magnet circuit of the machine.

The use and operation of my invention are as follows: Assuming a device constructed substantially as shown in the drawing and assuming that it is desired to maintain a current which shall not pass beyond a certain fixed limit—say a thousand amperes, for example—the ampere-meter or other current-responsive device will be adjusted, so that it will close or operate the circuit-closer M when the current has passed to or beyond such predetermined limit. When this circuit-closer is thus operated and its local circuit closed, whether the same derives its current from the main machine or otherwise, the magnet N will be energized, and this will immediately draw up the armature H. Now previous to this the field-magnet circuit G will have been complete through the armature H and the resistance J; but when the armature H is thus raised by the magnet the contact-point V is disengaged from such armature, and the field-magnet circuit will only be completed through the local circuit X and the extra resistance W. In other words, an extra resistance will be thrown into the field-magnet circuit and the strength of the field will be reduced, and the main current will be correspondingly reduced, thus bringing it below such fixed limit. The armature will be held in this position by the spring-catch and circuit-closer T until disengaged by hand, for the conditions which have caused the current, which ought to be substantially uniform, to thus rise beyond its proper limit will require some time for their readjustment. As soon as this armature H is thus drawn up and its outer end rested upon the spring-catch and circuit-closer T the local circuit P will be closed through the bell R and battery S, and thus an alarm will be given. This alarm-bell might also be operated from the current of the machine. When the conditions have been changed and the device readjusted, the operator will by

hand disengage the armature H from the catch T, and the parts of the dynamo safety device will resume their normal positions.

I claim—

- 5 1. In a dynamo-electric machine, the combination of a device in the main circuit responsive to variations thereof with a circuit-controller and a local circuit adapted to be made or broken by such circuit-controller
10 when the responsive device has moved to a certain limit, a magnet in such local circuit, a field-magnet circuit, and a resistance adapted to be thrown into such field-magnet circuit responsive to the action of said magnet
15 in the local circuit, and a secondary circuit having an alarm therein and adapted also to be closed by the operation of said magnet.

2. The combination of a dynamo-electric machine with a main circuit, a responsive device therein, connections whereby such re-
20 sponsive device closes a local circuit when the main current has reached a predetermined

maximum, a field-magnet circuit for the dynamo, a resistance normally out of such circuit, and a circuit-changer to throw such resistance into circuit, said circuit-changer being in the local circuit controlled by the responsive device. 25

3. The combination of a dynamo-electric machine with a main circuit, a responsive device therein, connections whereby such responsive device closes a local circuit when the main current has reached a predetermined maximum, a field-magnet circuit for the dynamo, a resistance normally out of such circuit, a circuit-changer to throw such resistance into circuit, said circuit-changer being in the local circuit controlled by the responsive device, and a stop or lock to keep such resistance in the field-magnet circuit. 30 35

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Witnesses:

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