A. GOLDSTEIN.

ELECTRICAL CIRCUIT CONTROLLER AND ALARM.

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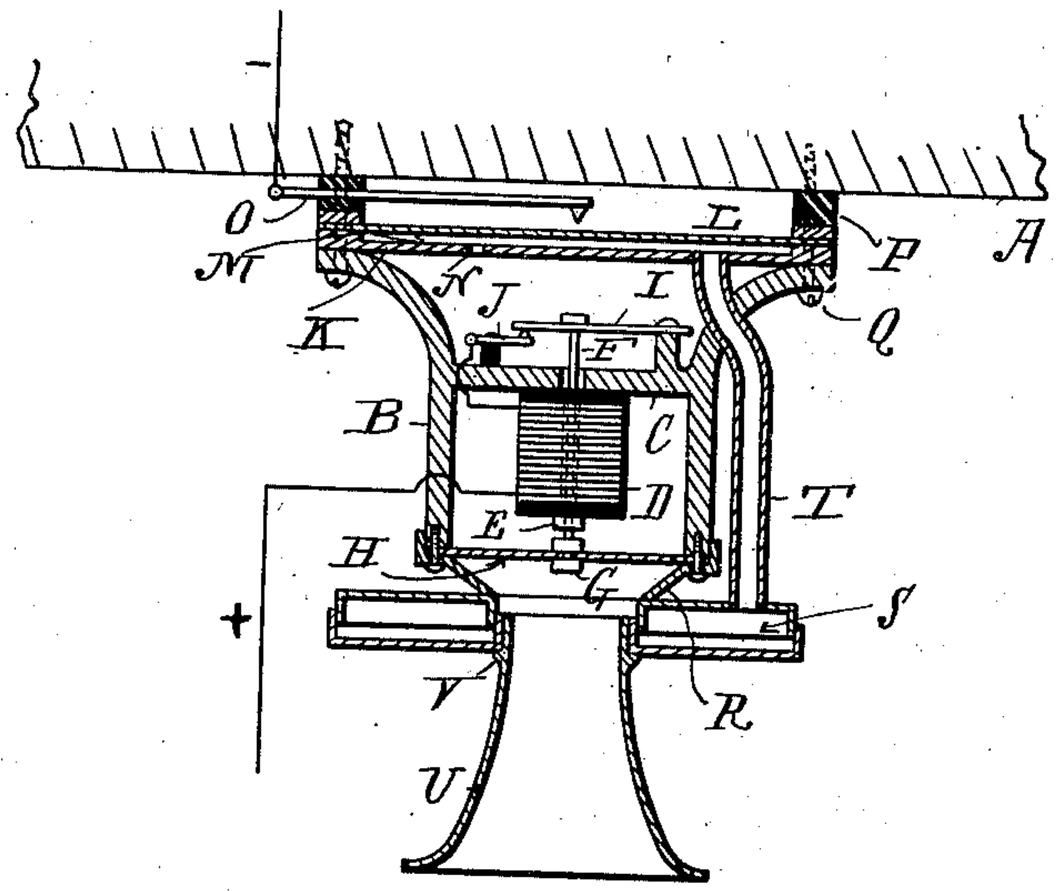
986,707.

Patented Mar. 14, 1911.



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UNITED STATES PATENT OFFICE.

ALBERT GOLDSTEIN, OF NEW YORK, N. Y., ASSIGNOR TO INTERNATIONAL ELECTRIC PROTECTION COMPANY, A CORPORATION OF NEW YORK.

ELECTRICAL-CIRCUIT CONTROLLER AND ALARM.

986,707. Specification of Letters Patent. Patented Mar. 14, 1911.

Application filed August 6, 1910. Serial No. 575,901.

To all whom it may concern:

Be it known that I, ALBERT GOLDSTEIN, a citizen of the United States, residing at New York, in the county of New York and State of New York, have invented a certain new and useful Improvement in Electrical-Circuit Controllers and Alarms, of which the following is a specification.

The invention is an electrical circuit controller and alarm.

It embodies in a single apparatus, means for imposing a frequency on the current on the circuit and for producing an audible alarm signal, which means are controlled by a thermostat. The thermostat preferably comprises a chamber of thin metal, from which, upon an increase of surrounding temperature, an air flow is conveyed to said means to cause the operation thereof.

The object of imposing a frequency upon the current is to permit a suitable responsive device, preferably at a distance, to be actuated, so that the apparatus upon an increase in the surrounding temperature both gives a local alarm and produces the frequency current suitable for the operation of said distant device.

The accompanying drawing is a longitudinal section of the apparatus, which is shown attached to a wall or ceiling A.

B is a hollow cylindrical casing of iron, having a partition C. To the under or outer side of the partition is secured the electromagnet D, having a tubular pole piece E. Through the coil and pole piece passes the brass rod F, which is connected at its lower end to a boss G on a sheet iron diaphragm H secured to the outer open end of the casing. The inner or upper end of rod F extends through the leaf spring I, above which it is headed. Said spring is secured at one end to a lug on the partition C. Mounted on partition C but insulated therefrom is a contact J which bears against the spring I. The inner or upper end of casing B is closed by a partition K, upon which is mounted a diaphragm L made of sheet copper as thin as possible. Between the diaphragm L and the partition K is formed a chamber M. In the partition K is an air vent N. On the outer side of the diaphragm is disposed a contact carried by a leaf spring O which is secured in a ring P of insulating material, which ring rests against the wall or ceiling when the apparatus is secured thereto by means of screws, as shown at Q.

Outside of the diaphragm H and preferably secured to the casing by the screws which attach said diaphragm thereto is a frusto-conical cap R, upon which is mounted the flanged inner half of the annular air chamber S. The outer half of said chamber is flanged to fit upon the inner half. The walls of said chamber are preferably made of sheet copper as thin as practicable. The interior of said chamber is connected to the chamber M by means of a metal tube T, which, as here shown, passes outside of the casing and through the wall thereof and through the partition K. The placing of tube T outside of the casing is not essential, since it may obviously be disposed within the same in any suitable way. A metal horn U having a shoulder V is seated in its smaller end in the circular space inclosed by the annular air chamber S.

The operation is as follows: When the atmosphere surrounding chamber S becomes heated and the air in said chamber expands at a rate in excess of that determined by the size of the vent N, said expanded air flows from said chamber through duct T to the chamber beneath diaphragm L, and raises said diaphragm to meet the contact carried by spring O. Circuit is then established from plus conductor, to coil D, to contact J, spring I, casing B, diaphragm L, contact and spring O, and so to the minus conductor. The magnet, however, in raising diaphragm H, lifts rod F and so permits spring I to rise, thus causing circuit to be intermittently opened and closed between contact J and spring I. A frequency is thus imposed upon the current on the circuit and the diaphragm H is set in rapid vibration, producing an audible alarm which is amplified by the horn U. This alarm continues sounding until the condition of the atmosphere permits the diaphragm L to break circuit with spring O.

It is to be noted that the annular air chamber S is placed on the outer part of the apparatus and is arranged so that air may have access to it on both sides, the device, in this way, being rendered more sensitive to atmospheric temperature changes.

I claim:

1. The combination of an electro-magneti-

cally operated alarm device, including a vibrating sound producing diaphragm, a casing therefor having an opening in front of said diaphragm, an annular chamber having walls of thin heat conducting material surrounding said opening, means actuated by air flow from said chamber for closing circuit to said alarm device, and a duct for conveying said air flow from said chamber to said means.

2. The combination of a casing, a partition dividing said casing into two compartments and provided with an air opening, two diaphragms respectively on opposite sides of said partition, electro-magnetic means in said casing for vibrating one of said diaphragms, a chamber having walls of thin metal supported on said casing and communicating with the space between said partition and said other diaphragm, and a contact in proximity to said last-named diaphragm, the said electro-magnetic means, last-named diaphragm and contact being connected in circuit.

In testimony whereof I have affixed my signature in presence of two witnesses.

ALBERT GOLDSTEIN.

Witnesses:

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