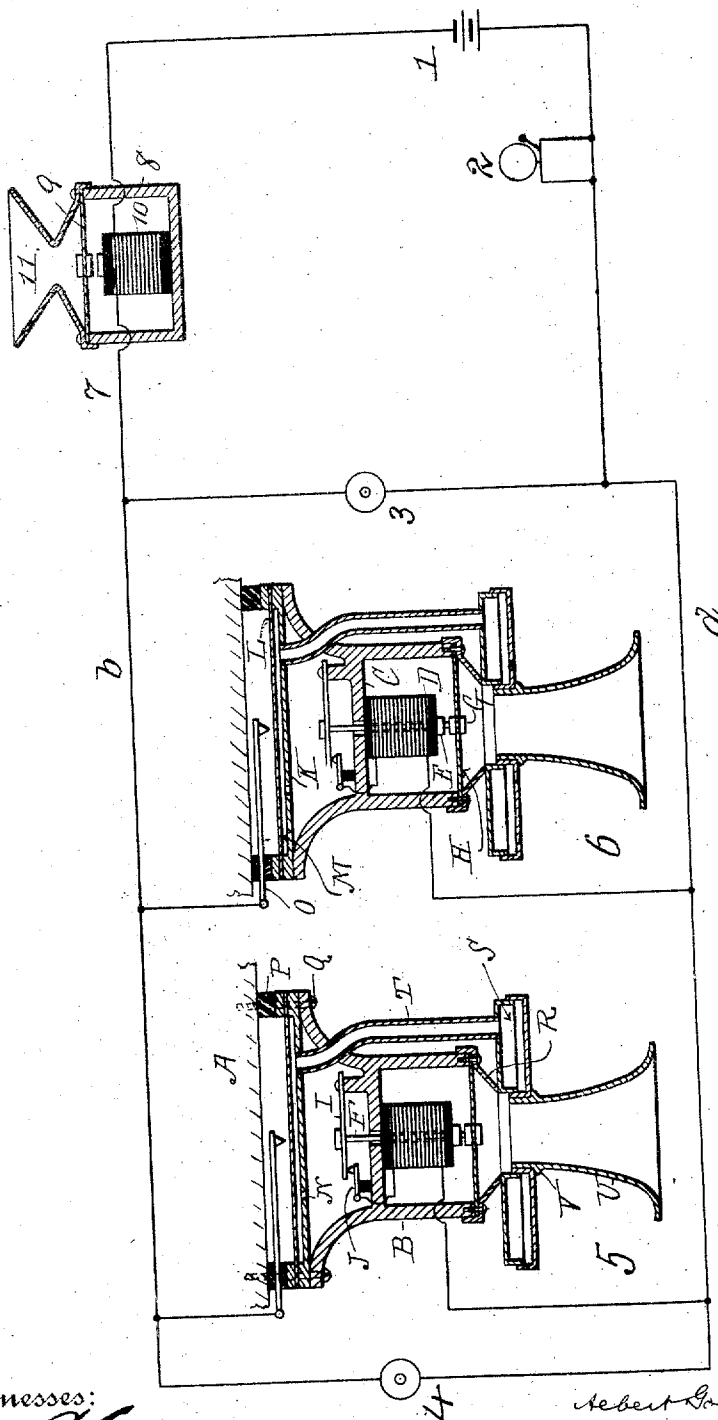


A. GOLDSTEIN.
ELECTROTHERMOSTATIC ALARM SYSTEM.
APPLICATION FILED AUG. 8, 1910.

986,706.

Patented Mar. 14, 1911.



Witnesses:
Allan H. Gooss.
May T. Mc Larry.

Inventor
Robert Goldstein
By his Attorney *Paul Benjamin*

UNITED STATES PATENT OFFICE.

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

ELECTROTHERMOSTATIC ALARM SYSTEM.

986,706.

Specification of Letters Patent.

Patented Mar. 14, 1911.

Application filed August 6, 1910. Serial No. 575,898.

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 Electrothermostatic Alarm Systems, of which the following is a specification.

The invention relates to an electro-thermostatic alarm system, whereby upon a rise in temperature at any station of a number of stations, an audible alarm is sounded both at said station and at a central office.

The invention further consists in the application of said system to an ordinary bell system, whereby both systems derive energy from the same source and utilize the same main conductors.

The accompanying drawing exhibits my system and shows the station alarm apparatus and the central office alarm apparatus respectively in longitudinal cross section.

1 is a central battery or other suitable source of current, in circuit with which is a bell 2 and push buttons 3, 4, located at the several distant stations. Said stations may, for example, be rooms in a hotel, in which case, the bell 2 would be located at the office—the arrangement being that of the ordinary bell system in common use, to which without change my alarm system is here shown as applied. In each room I provide an electro-thermostatic alarm as 5 and 6. At the central office I provide a receiving alarm 7. The room alarms 5 and 6 are constructed alike, so that a description of one applies to all. The construction of said room alarm (which is fully set out and claimed in another application for Letters Patent, Serial No. 575,901, filed simultaneously herewith and therefore is not herein claimed) is as follows: The device is 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 electro-magnet coil 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 out 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 to 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 at 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, the diaphragm L is raised to meet the contact carried by spring O. Circuit is then established from main circuit wire *a*, to coil D, to contact J, spring I, casing B, diaphragm L, contact and spring O, and so to main circuit wire *b*. The magnet, however, in raising diaphragm H, lifts rod F and so permits spring I to rise, thus causing circuit to be broken between contact J and spring I, with the result that said diaphragm is set in rapid vibration, producing a loud audible alarm which is amplified by the horn U. This alarm continues sounding until the temperature of the atmosphere falls sufficiently to permit the diaphragm L to break circuit with spring O.

The central office alarm 7 comprises a cup-shaped casing 8, closed above by a metal diaphragm 9 and containing an electro-magnet coil 10, connected in the main conductor

5 b. Secured to the casing in front of the diaphragm is a sound amplifying horn 11.

The operation of the whole system is as follows: When any one of the room alarms is set in operation by an increase in temperature, in the manner already described, a frequency is imposed upon the current on the main conductors, so that the attraction of the magnet 10 in casing 8 is intermittently exerted on diaphragm 9, causing the same to vibrate and to produce an audible alarm which is amplified by horn 11. It is therefore to be noted—1. That upon rise of atmospheric temperature at any distant station—as, for example, in any room of a hotel—an audible alarm is sounded both in that room to warn the occupant, and in the central or hotel office to warn the people there on duty. 2. That the current when modified by the room alarms is to be given such a frequency as not to affect the bell 2, which is to be operable only by the uniform battery current. 3. That the operation of the ordinary bell system will not affect the operation of the alarm system, nor the operation of the alarm system that of the bell system, although both have the same source of current and the same main conducting wires.

I claim:

35 1. The combination in circuit of (1) means for simultaneously producing a frequency current and an alarm, and a circuit closer in shunt with said means; and (2) at a distant station, two alarm devices, one of said devices being responsive and the other

40 said devices being responsive to said frequency current.

2. The combination in circuit, and (1) at each of a plurality of sub-stations, of

means for simultaneously producing a frequency current and an alarm, and a circuit 45 closer in shunt with said means; and (2) at a distant station, two alarm devices, one of said devices being responsive to the frequency current from any one of said sub-stations and the other device being ir- 50 sponsive to said frequency current.

3. A fire alarm apparatus comprising the combination in circuit of (1) means for simultaneously producing a certain frequency current and an alarm, and a thermostat con- 55 trolling said means; and (2) at a distant station, an alarm device responsive only to said frequency current.

4. The combination in circuit, and (1) at each of a plurality of sub-stations, of means 60 for simultaneously producing a frequency current and an alarm, a circuit closer in shunt with said means, and a thermostat controlling said means; and (2) at a distant central station, two alarm devices, one 65 of said devices being responsive to the frequency current from any one of said sub-stations and the other device being irresponsive to said frequency current.

5. The combination of a plurality of elec- 70 tro-magnetically operated devices, each producing a frequency current, and an audible alarm signal, and a plurality of circuit closing switches connected in parallel across a main line, and, in series in said line, a bat- 75 tery, an audible alarm producing device responsive to said frequency current, and an audible alarm producing device not responsive to said frequency current.

In testimony whereof I have affixed my 80 signature in presence of two witnesses.

ALBERT GOLDSTEIN.

Witnesses:

GERTRUDE T. PORTER,
MAY T. MCGARRY.