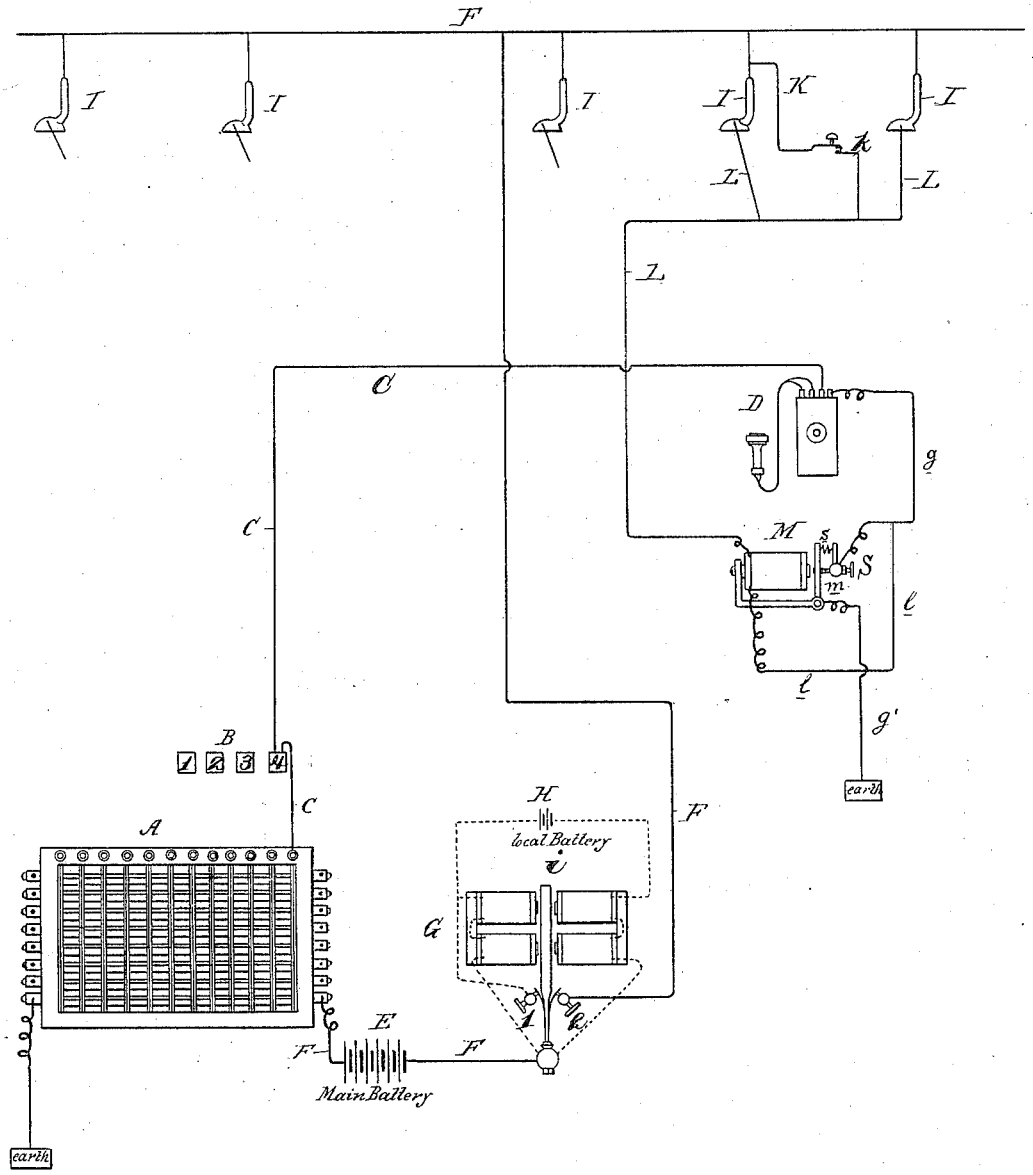
(No Model.)

E. F. PHILLIPS & J. F. LAND.

FIRE ALARM SYSTEM.

No. 302,935. Patented Aug. 5, 1884.



Witnesses:
Sumner Collings
Geo. H. Lothrop

Inventors:
Edgar T. Phillips
James T. Land
by Geo. H. Lothrop
Atty

UNITED STATES PATENT OFFICE.

EDGAR F. PHILLIPS AND JAMES F. LAND, OF DETROIT, MICHIGAN.

FIRE-ALARM SYSTEM.

SPECIFICATION forming part of Letters Patent No. 302,935, dated August 5, 1884.

Application filed January 25, 1884. (No model.)

To all whom it may concern:

Be it known that we, EDGAR F. PHILLIPS and JAMES F. LAND, of Detroit, in the county of Wayne and State of Michigan, have invented a new and useful Improvement in Fire-Alarm Systems, of which the following is a specification.

The object of our invention is to combine with any ordinary telephone system an automatic system of fire-alarms, the fire-alarms being placed at any number of points reached by the telephone system, so that upon the occurrence of a fire at any such point an immediate and automatic notice thereof shall be given at the central station or telephone-exchange. In accomplishing this object we employ the arrangements of circuits and means shown in the drawing, which is mainly diagrammatic, but embodies the invention.

In such drawing, A represents the ordinary switch-board, and B the annunciator, of a telephone-exchange, from which leads the wire C to a subscriber's place, or to as many as may be desired. At the subscriber's place is the ordinary telephone, D, provided with the usual local battery. The telephone and its battery, instead of being grounded directly, are grounded by wire *g*, connected to an insulated binding-post, S, whence, by wire or spring *s*, the circuit is to armature *n* of relay or other magnet M, and then to earth. It is evident, therefore, that if *m* be attracted the talking-circuit C will be interrupted or broken between *m* and *s*. From the central station an extra wire, F, leads to the points or houses desired to be guarded, a main battery, E, being inserted in the circuit of F, which is connected at one terminal to the switch-board A, and thence through the annunciator B, and to telephone-line C, which forms one member of the circuit of E when it is in action. A portion of the circuit of F is formed by the vibrating tongue or armature *i* of the rheotome G, the connection being directly from F to the base or stem of *i*, and thence, by one or both stops 1 or 2, to the desired points. At such points the wire F branches through any number of thermostats, I, at which points, of course, it is broken so long as the temperature is merely at a normal degree. A branch, K, from F may be provided, containing a key, *k*, by which such branch may be closed. From these thermostats branches lead to the conductors L, passing around the relay M, and thence by *e* to *g*, part of the ground or earth of the telephone D, where it unites with the telephone-circuit C. The rheotome G is kept in constant action by a local battery, H, whose circuit is properly connected in a well-known manner through the coils of the rheotome, the vibrating armature *i*, and stops 1 2, so that the armature *i* is kept in constant vibration.

With such arrangements and means the operation is as follows: The supplementary or alarm line F L is normally broken at the thermostats I, and therefore does not affect the telephone-circuit C, which is used for speaking in the ordinary manner. If, however, any thermostat I becomes unduly heated, as by fire, the expansion thereof closes the break in the circuit F L, thus making a closed circuit from battery E through wires F, L, *e*, *g*, and C, telephone D, annunciator B, and switch-board A, the ground-wire *g'* being cut out, as before explained. The vibration of armature *i* of rheotome G makes a humming sound, and this sound is reproduced by the current from battery E in the telephone D and in the electro-magnet on annunciator B, to which wire C is connected, thus giving a fire-alarm at both of said points. The current also drops the subscriber's number on the annunciator, and as soon as the operator in the exchange connects his or her telephone with the subscriber's line thus indicated, the humming of the telephone will be heard so loudly as to show immediately that a fire-alarm had been turned in. By depressing the key *k* in branch K a similar alarm may be sent without the intervention of a thermostat.

What we claim as our invention, and desire to secure by Letters Patent, is—

1. In combination with a telephone system, a line-wire running from a switch-board through a battery and rheotome and connected by tap-wires, in which are one or more thermostats, with the electro-magnet of a relay and the ground-wire of a telephone, said

ground-wire being so connected through the armature of said relay that moving said armature breaks the ground-connection of said telephone, substantially as shown and described.

2. The combination of switch-board A, annunciator B, line-wire C, telephone D, ground-wire *g s g'*, relay M, wires L *l*, thermostat I, line-wire F, rheotome G, and battery E, all constructed, arranged, and operating substantially as shown and described.

3. The combination of switch-board A, annunciator B, line-wire C, telephone D, ground-wire *g s g'*, relay M, wires L *l*, push-button K, line-wire F, rheotome G, and battery E, all constructed, arranged, and operating substantially as shown and described.

EDGAR F. PHILLIPS.
JAMES F. LAND.

Witnesses:
SUMNER COLLINS,
GEO. H. LOTHROP.