

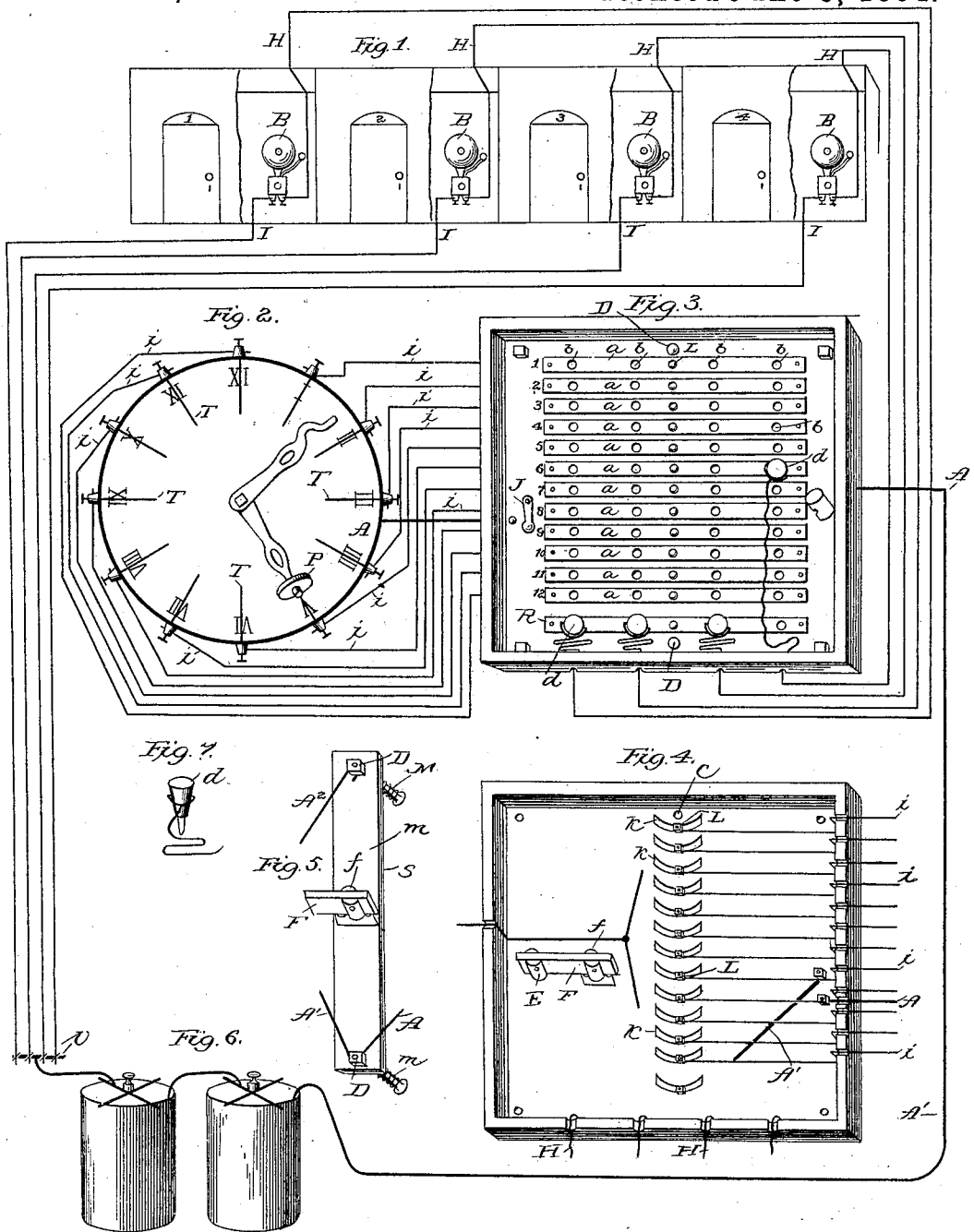
(No Model.)

G. E. & E. R. HOVENDEN.

ELECTRIC FIRE ALARM.

No. 299,546.

Patented June 3, 1884.



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UNITED STATES PATENT OFFICE.

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ELECTRIC FIRE-ALARM.

SPECIFICATION forming part of Letters Patent No. 299,546, dated June 3, 1884.

Application filed July 30, 1883. (No model.)

To all whom it may concern:

Be it known that we, GEORGE E. HOVENDEN and EDWIN R. HOVENDEN, of Grand Rapids, Kent county, State of Michigan, have
5 invented new and useful Improvements in Electric Fire-Alarms and Room-Calls; and we do hereby declare that the following is a full, clear, and exact description of the same.

Our invention relates to call-bells for hotels
10 and like situations. The object of it is to provide automatic mechanism by means of which the occupant of any room may be called at any given hour through the agency of clock mechanism; and, further, to provide means in connection
15 with the same system of electric bells whereby the occupants of all the rooms may be aroused by any person in attendance at the office at any moment.

The invention, consists, first, of the series
20 of electric bells in an electric circuit, which includes also a clock, a hand of which closes the circuit at determined moments of time, in combination with mechanism for closing the circuit to any given bell or bells. It
25 also consists, in connection with the above-described combination, of a mechanism adapted to close the circuit to all rooms at once, and thus sound all the alarms, at the will of the operator.

30 The accompanying drawings show a diagram of the details of devices.

In these drawings, Figure 1 represents a series of rooms with alarm-bells suitably set therein. Fig. 2 represents the face of the
35 clock adapted to close the circuit. Fig. 3 represents the face of the switch-board. Fig. 4 is a back view of the same. Fig. 5 represents the main shunt device, to be used in case of fire. Fig. 6 represents the battery, and
40 Fig. 7 a plug for the switch-board.

The bells in each of the series of rooms in Fig. 1 are marked B, and are in the circuit of the wires H and I. The wires H are held to the switch-board in the manner hereinafter
45 explained, and the wires I run to the coupling devices V, by means of which they are connected to the single wire that runs to one pole of the batteries. The bells are of any suitable or well-known construction, with magnets of

forty or fifty ohms. The wires H are connect- 50
ed, as hereinafter explained, by a series of plugs, such as that shown in Fig. 7 in the switch-board. The wires I lead to the battery, and a circuit is completed by means of the larger wires A A', the latter connected to 55
the other pole of the battery.

We proceed to describe first the means for closing the circuit on the face of the clock: Suppose that the circuit is completed at other points, including a bell or any given number 60
of bells, and is broken only at the clock, it is necessary only to arrange the clock mechanism so that the circuit shall be closed at any given hour, and on the closing of the circuit the bell or bells will be rung. To accomplish 65
this we have inserted points or strips of platinum in the insulated face of the clock, (preferably of hard rubber,) and connected these points or strips to the wires *i*. These strips are shown at T. They are arranged radially 70
and lie in the path of the platinum wheel P, journaled on the end of the hour-hand, so that as the hour-hand moves over the face of the clock it successively makes electric connection with the platinum strips. The strips are 75
shown as placed one at each of the hour-points, this being sufficient to illustrate the invention; but ordinarily the strips will be placed at lesser intervals, so as to indicate quarters of the hour. The increased number 80
of strips are connected in the same manner as those hereinafter described. The hour-hand is in electric connection with a larger wire, A, which connects some suitable point in the back part of the clock directly or indirectly with 85
the battery. The specific mode of connection used by us is hereinafter fully explained: Assuming that any given wire, *i*, (for example, that one connected with the platinum strip at 1 of the clock,) is in connection with the wire 90
H of any given room, when the hour-hand comes around to 1 of the clock the platinum wheel will rest upon the platinum strip, and, closing the connection, will cause the bell of that particular room to sound the alarm. The 95
platinum strip is made very narrow—about one-twentieth of an inch—so that the wheel may remain upon it only long enough to sound

the alarm adapted to awaken the occupant of the room—that is about one and one-half minutes. This is based on the diameter of the clock-dial—about fourteen inches. It will be understood that each platinum strip or point is connected to a wire, *i*. Each wire *i* runs to a bolt on the back side of the switch-board, which bolt passes through the switch-board to the front and holds a brass strip, *a*, which is insulated on the face of the switch-board, but electrically connected by the bolt to its proper platinum strip in the face of the clock, there being twelve platinum strips—one for each of the hours of the dial-face. Twelve brass strips, *a*, are shown on the face of the switch-board; but the number will be increased as the platinum strips are increased in number on the dial-face. The brass strips are marked numerically in order, in correspondence with the strips or points.

In the brass pieces are series of holes *b*, adapted to receive plugs *d*, shown in Fig. 7. The number of these plugs equals the number of bells, one being attached to each of the wires *H* leading from the bells; and when the plug of any given room is inserted in hole *b* of any strip it closes the circuit between the bell of that room and the platinum strip in the clock-face of the hour-number to which that strip is connected, and when the hour-hand rests upon that platinum strip the alarm is sounded in the given room. For example: let the wire *H* from room No. 1 be connected to the clock-face by inserting its plug in a hole in strip No. 1, the alarm in room No. 1 will be known at one o'clock. Only four holes are shown in each strip; but there may be more, if desired, for connecting any required number of rooms to the strip for waking the occupants of these rooms at the same hour. The wire *A* from the clock is connected to the rear end of the bolt on the left-hand side of the switch-board, and this bolt projects through to the front, where it is adapted to be connected with the switch *J*, pivoted on the bolt, to the rear end of which the other part of the wire *A'* is connected, leading to the alarm arrangement hereinafter described, and thence to the wire *A'*, leading to the battery, as shown on the right hand of Fig. 3. This switch *J* is thrown off in day-time, to disconnect the wires when the alarm is not needed. The wires *H* are made flexible at the ends connecting with the switch-board, so that the pins *d*, when not required in the holes *b*, may be placed in holes in the brass strip *R* on the lower part of the switch-board.

The arrangement above described is obviously adapted to awaken the occupant of the room only at a predetermined hour. It is desirable in case of a fire to have also an alarm in all the rooms at once, at any moment, at the will of the attendant; and we have provided an apparatus for this purpose to be used in connection with the above-described apparatus. The devices are shown in Figs. 4 and 5. In Fig. 4, which represents a back of the

switch-board, are shown curved strips, *K*, of elastic conducting material, which are held by nuts on the rear ends of the bolts *L*, and these strips are thus in electric connection with all the brass strips *a*. One of these strips, *L*, is bolted in the same way to the brass strip *R*, and, as the strips *a* and *R* hold all the pins *d* connected to the bells in the rooms, a bar, which touches the strips *K* at the same time may connect them with the battery and put all the bells into the circuit irrespective of the clock mechanism. The apparatus provided for this purpose is shown in Fig. 5. It consists of a wooden strip, *m*, having a metal facing, *S*, which metal face is adapted to bear on all the strips *K*. The bar is held upon the rear of the switch-board by means of bolts *D*, which pass through holes *C*. One of the bolts *D* is connected to the wires *A'*, leading to wire *A'*, which runs directly to the battery. Springs *M* upon the bolt *D* hold the bar with its metal face out of contact with the strips *K*. The bar is provided with a lever, *F*, pivoted upon a stud, *f*, in the rear face of the switch-board. A thumb-piece, *E*, on the free end of the lever extends through to the front of the switch-board, and by pressing back this piece the bar is pressed down upon the strips *K*, and these metal strips *a* and *R* are then brought into electric connection with the main line, and with them all the bells. The thumb-piece may be so arranged that when pressed down it may automatically stay down, and thus the bells are left ringing.

We claim as our invention—

1. In combination, a series of bells in an electric circuit, a clock mechanism having the hand connected to one pole of the battery, and its face connected at suitable points by wires adapted to close the circuit successively by the movement of the hand, and a switch-board in the circuit, with mechanism for connecting the bells of any room or rooms with the wire to any given point on the clock-face, all substantially as described.

2. In combination, the series of bells, wires *I*, and wires *H*, a switch-board having perforated strips adapted to receive the pins *d* of the wires *H*, the wires *i*, connected to strips set in the clock-face, the hand and wheel *P*, and the wires *A* *A'*, all substantially as described.

3. In combination with the bells and with the clock, both in the circuit, and the latter constructed to close the circuit successively on a series of wires, a switch-board having a series of strips, *a*, in electric connection, respectively, with the various points on the dial-face of the clock, and wires *H*, leading from the bells, with flexible ends, and devices adapted to form electrical connection with the strips *a*, substantially as described.

4. In combination with a series of electric bells, a clock having circuit-connections, as described, with the hands, and having points on its face, and a switch-board adapted to connect said bells with the points or strips of

the clock-face, a device, substantially as described, for connecting all the bells directly with the line, or for including the clock in the circuit at the will of the operator, all substantially as set forth.

5 5. In combination, the clock provided with points and electric wires constructed as described, the bells in an electric circuit, the switch-board having strips *a* and *R* connected
10 to the clock-face points or strips, the pins connecting wires *H* to strips of the switch-board,

and the strips *K* and bar having electrical connection and operating devices, whereby the clock may be included in the circuit and the bell sounded thereby or excluded from the circuit, and all the bells may be sounded at once, substantially as described. 15

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Witnesses:

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