



No. 676,346.

Patented June 11, 1901.

H. B. VAUGHAN.  
ELECTRIC CLOCK SIGNAL.

(Application filed Jan. 31, 1901.)

(No Model.)

2 Sheets—Sheet 2.

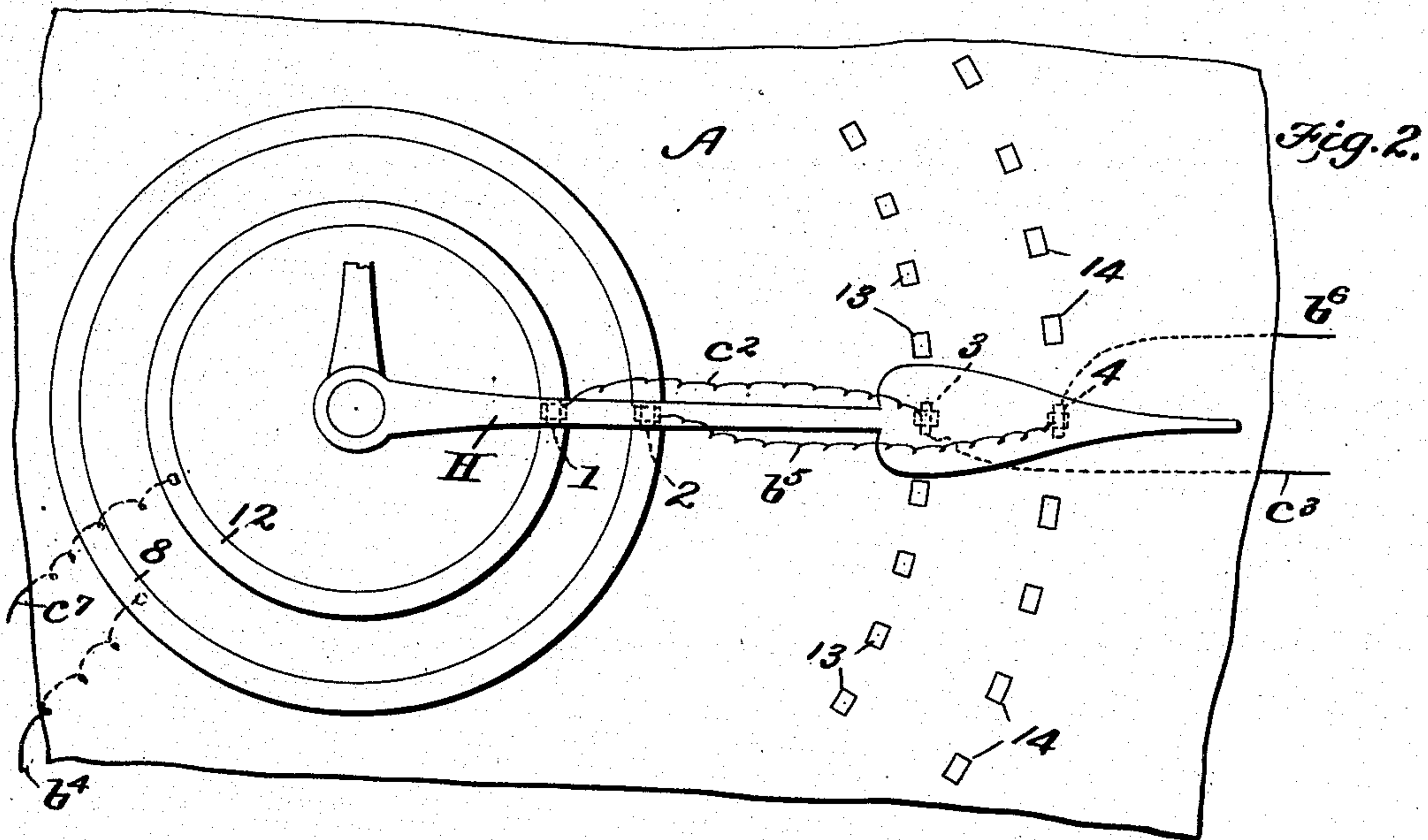


Fig. 3.

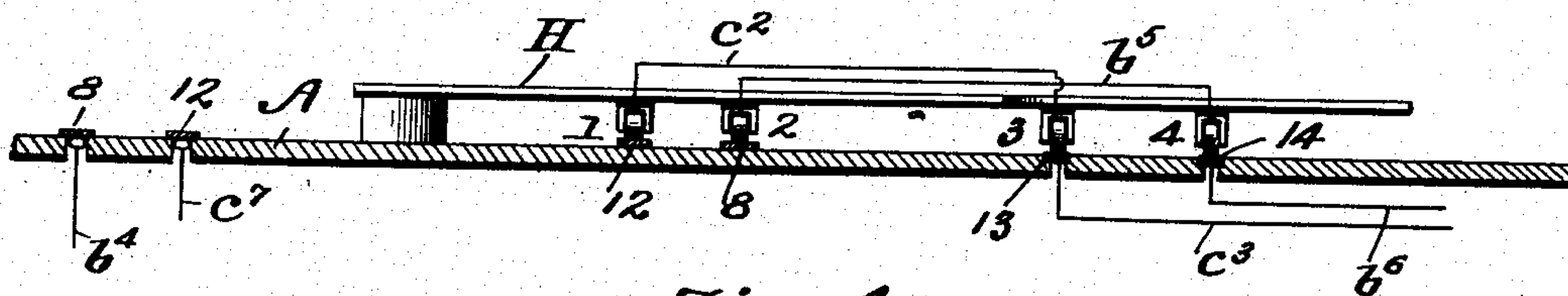
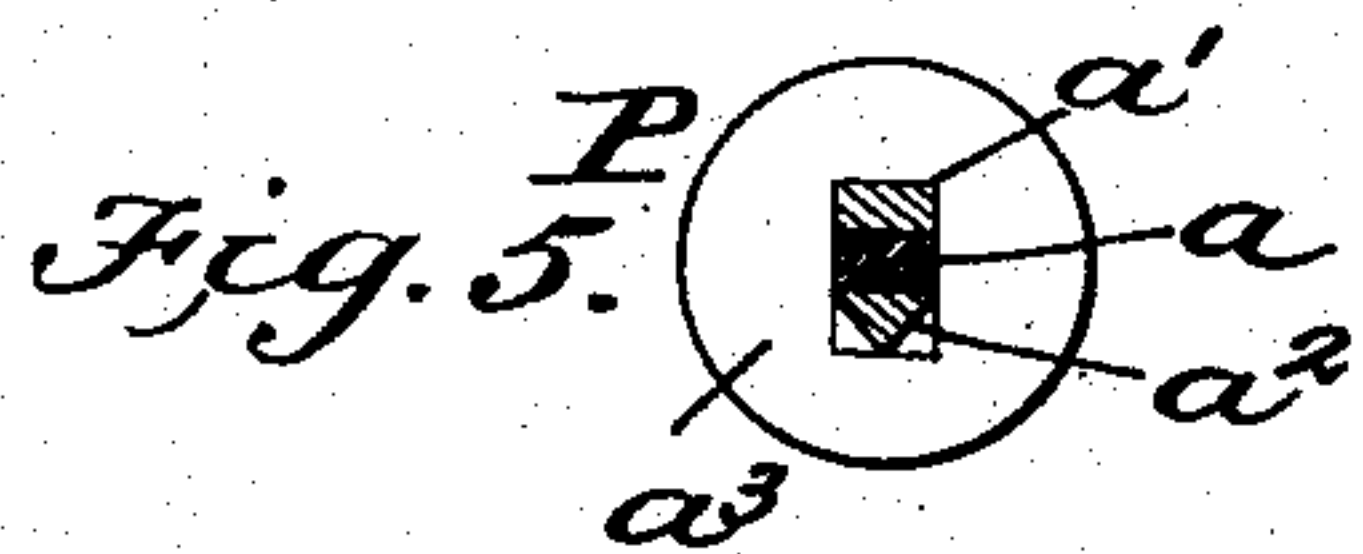
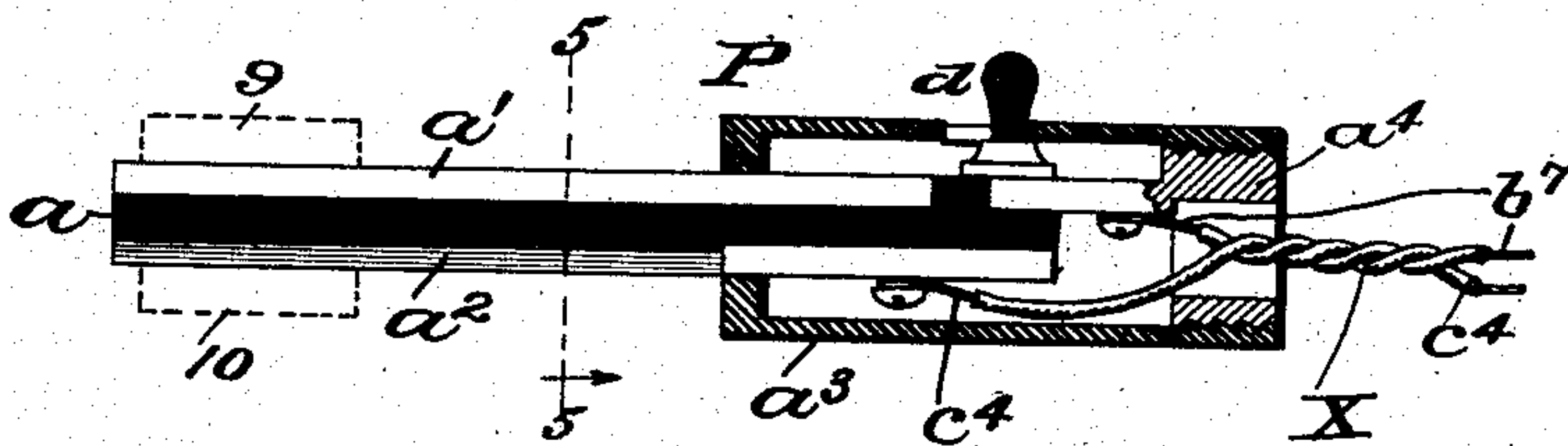


Fig. 4.



WITNESSES:

*M. B. Blouaell.*  
*Edw. W. Byrn.*

INVENTOR

*H. B. Vaughan.*

BY *Munn & Co.*

ATTORNEYS



# UNITED STATES PATENT OFFICE.

HARRY B. VAUGHAN, OF LITTLE ROCK, ARKANSAS.

## ELECTRIC-CLOCK SIGNAL.

SPECIFICATION forming part of Letters Patent No. 676,346, dated June 11, 1901.

Application filed January 31, 1901. Serial No. 45,469. (No model.)

*To all whom it may concern:*

Be it known that I, HARRY B. VAUGHAN, of Little Rock, in the county of Pulaski and State of Arkansas, have invented a new and useful Improvement in Electrical Signal-Clocks, of which the following is a specification.

My invention is in the nature of an electric signal-clock of that form in which the clock-hands are made to touch contact-points on the face of the dial and by closing an electric circuit at any particular point or hour or number of points are made to ring at that hour any particular bell or number of bells.

My invention consists in the peculiar construction and arrangement of such devices whereby any number of guests in a hotel may be automatically called at any particular hour, and whereby all the guests of the hotel may be alarmed in case of fire, and whereby also both an alarm signal or bell is sounded in any one of the rooms, and an electric lamp lighted by one and the same automatic mechanism.

Figure 1 is a face view of a clock-dial, a portion of which is equipped with my devices, also showing diagram of battery, bell, and lamp circuits. Fig. 2 is an enlarged detail face view of the hour-hand and its cooperating contacts. Fig. 3 is a sectional side view of the same. Fig. 4 is an enlarged longitudinal section of one of the plugs, and Fig. 5 is a cross-section of the plug on line 5 5 of Fig. 4.

In the drawings, Fig. 1, A represents a specially-constructed clock-dial which has on its face in the center and surrounding the shaft of the hands two continuous concentric circular metal tracks 8 and 12. Outside of these and concentrically arranged are two other interrupted circular tracks composed of a series of metal contacts 13 and an outer series of metal contacts 14. A contact 13 and a contact 14 on the same radial line are connected, respectively, to the oppositely-facing metal socket-sections 9 and 10, contact 13 being connected by wire  $c^3$  to socket-section 10 and contact 14 being connected by wire  $b^6$  to socket-section 9, to close two different circuits, as hereinafter described, one of which is to ring the bell and the other to light an electric lamp.

On the inner side of the hour-hand H, Figs.

2 and 3, there are mounted on an insulated support four contact-rollers 1 2 3 4, of which 1 and 2 travel on the continuous circular tracks 12 and 8, while 3 and 4 travel on the plates 13 and 14 of the outer interrupted tracks. The roller 1 (see Fig. 3) is electrically connected by wire  $c^2$  to roller 3, so as to place track 12 in electrical contact with plates 13 at intervals, and roller 2 is electrically connected by wire  $b^5$  with roller 4, so as to place track 8 in electrical contact with plates 14 at intervals. The intervals of the occurrence of these pairs of contact-plates 13 14, as shown in Figs. 1 and 2, is at every quarter of an hour advance of the hour-hand, from twelve o'clock at night to six o'clock in the morning; but the interval may be shorter or longer, and the series may be extended throughout the entire circuit of the dial, if desired.

B is a battery, whose function is to ring the bells in the various rooms, as of a hotel, and C is another battery, whose function is to light an electric lamp in each such room at the same time and by the same devices, and whose circuits I will now proceed to describe.

From one side of battery B there proceeds a wire  $b$  to a four-point switch  $b'$ , which when on point  $b^2$  connects through wire  $b^4$  with the circular track 8 for automatic action, and when switch  $b'$  is on point  $b^3$  it connects through wire  $b^{10}$  with a plate on the table for ringing all the bells at once for a general fire-alarm, as hereinafter described. When the switch is at the intermediate position, the circuit is open. From one side of the battery C a wire  $c$  extends to a three-point switch  $c'$ , which when closed connects with wire  $c^7$  and the inner track 12. It will thus be seen that the coupled rollers 2 and 4 of the hour-hand and contacts 8 and 14 of the dial serve to connect one side of the battery B with the socket-section 9 to ring a bell, while rollers 1 and 3 and contacts 12 and 13 connect one side of battery C with the socket-section 10 to light a lamp whenever the hour-hand is in radial alinement with the socket-sections 9 and 10. From this point (the socket-sections 9 10) the two circuits are completed, the one through a bell and the other through a lamp, by means of a movable double contact-plug P, Figs. 1 and 4, fitting between the socket-plates 9 10, and a duplex cord X connecting therewith.



This plug is shown in detail in Fig. 4. It consists of two parallel metal pieces  $a'$  and  $a^2$ , separated by a rubber insulation  $a$  and enclosed at the butt-end by a rubber sleeve  $a^3$ .

5 One of the wires,  $c^4$ , of the duplex cord E is electrically attached to plate  $a^2$ , and the other,  $b^7$ , is electrically connected to the plate  $a'$  through a sliding switch  $d$ . This switch consists of a metal plate having a rubber handle projecting through a slot in the sleeve  $a^3$ , and the plate by such handle is adapted to slide so as to bridge the space between the metal strip  $a'$  and the brass base  $a^4$ , to which the wire  $b^7$  is attached, or be drawn back to break the bell-circuit at this point, if desired.

10 The cross-section of the metal strip  $a^2$  is triangular (see Fig. 5) or curved, while that of the metal strip  $a'$  is square. The socket-section 10, Fig. 1, has also triangular notches, while section 9 has square notches. This plug P is forced in between the socket-sections 9 and 10, with the strip  $a^2$  in contact with socket-section 10 and  $a'$  in contact with the socket-section 9, the shapes of these sockets and the cross-sections of the conducting-strips of the plug being such that the circuits can never become confused, as the plug will not go in wrong. The bell-wire  $b^7$  and the lamp-wire  $c^4$  of the duplex cord are twisted together and extend down through the table and around a weighted pulley  $w$  beneath the table, which pulley hangs in a bight or bend of the cord to take up slack, and the wires of the cord then rise from the table and, its members dividing, the bell-wire  $b^8$  extends to the bell-magnet at D and thence wire  $b^9$  completes the ringing-circuit to the other side of the battery B. The lamp-wire  $c^5$  as it leaves the duplex cord at the table rises to the incandescent lamp E, and thence wire  $c^6$  completes the lighting-circuit to the other side of the lamp-battery C. It will thus be seen that whenever the outer rollers of the hour-hand rest upon any pair of contacts 13 14 two circuits are made, one of which rings a bell at that hour in a room and the other of which lights a lamp in the same room at the same time. The bell-circuit is from battery B, wire  $b$ , switch  $b'$   $b^2$ , wire  $b^4$ , track 8, roller 2, wire  $b^5$ , roller 4, contact 14, wire  $b^6$ , socket-strip 9, metal strip  $a'$  of plug, wire  $b^7$  of duplex cord X, wire  $b^8$ , bell-magnets at D, wire  $b^9$  to the other side of the battery. The lamp-circuit is from one side of battery C, wire  $c$ , switch  $c'$ , wire  $c^7$ , track 12, roller 1 on hour-hand, wire  $c^2$ , roller 3, contact 13, wire  $c^3$ , socket-strip 10, plug-strip  $a^2$ , wire  $c^4$  of duplex cord, wire  $c^5$  to lamp E, and wire  $c^6$  to the other side of the battery C.

60 There are any desired number of plugs P and duplex cords X to correspond with the number of rooms or bells and lamps, and these plugs fit in the plurality of sockets formed by any of the pairs of socket-plates 9 10, so that any room may be set to have its bell rung and lamp lighted at any quarter-hour during the night.

The socket-strips are made long enough to form a number of sockets, which permit the plugs of any number of rooms to be placed between the same socket-strips to be called at the same hour. In this case the current simply divides through the several plugs and cords and goes to the several rooms.

The cords X when not in use drop down through the table T, the weighted pulley  $w$  pulling the cords down and out of the way until the pulleys reach the bottoms of the supporting-hooks  $h$ , which are suspended under the table.

Where each duplex cord connects with the table, the bell-wire  $b^8$  of each cord is arranged to be connected to an insulated metal strip  $s$ , and this strip at  $b^{10}$  is connected to the point  $b^3$  of the switch  $b'$ . When the switch  $b'$  is put on the point  $b^3$ , the full current of the battery is shunted around the clock and goes directly to each and every one of the bells in all the rooms and forms an efficient and simultaneous alarm for the entire hotel in case of fire or other danger. In the instances shown the connection of the strip  $s$  to the bell-wire  $b^8$  is made through the hooks  $h$ , which are respectively connected to the screws that form the terminals of wire  $b^8$ . It must be understood, however, that the strip  $s$  is not in permanent and normal contact with the hooks  $h$ , because if this were so the selective action of the clock (when the plugs P are in the clock) would be defeated—i. e., the currents from the clock would divide through the strip  $s$  and go to all the bells. To avoid this, the strip  $s$  is set a little way off from contact with the hooks  $h$  and is successively or simultaneously brought into contact with the hooks  $h$  by the operator only when return-switch  $b'$  has been placed upon the point  $b^3$ .

It will be understood that my invention may be carried out in part by the use of a single battery-circuit only, as when only one signal is required, and in such case one of the tracks 8 12 is dispensed with, one of the series of plates 13 14 is also dispensed with, one of the two socket-strips 9 10 is dead, and a single contact-plug and a plain or single cord instead of a duplex cord is employed.

In modifying my invention the socket-sections 9 and 10 may be placed in any other position if more convenient and are there properly designated by the dial-markings as to time and wired from the clock.

As my invention has all the switchboard features of a telephone-exchange, it may be used for ringing any-telephone-bell at any hour.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A clock for automatically giving at any desired time, any number of signals at remote points either at the same moment or at different times, comprising a clock-dial with a continuous circular track, and an interrupted circular contact-track, composed of detached



plates arranged in radial alinement with the time-spacing of the dial, a clock-hand with connected contacts for these two tracks and a series of socket-contacts radiating from the clock-dial each radial group being connected electrically to a single plate of the interrupted track, a series of adjustable plug-contacts with cords, and a series of bells or signal instruments connected to each cord, and a battery and circuits substantially as described.

2. A clock for automatically giving at any desired time at remote points two different signals, as an audible and a visible one, comprising a clock-dial with two continuous circular contact-tracks, and two interrupted contact-tracks composed of detached plates arranged in radial alinement with the time-spacings of the dial, a clock-hand with two sets of connected contacts for the two pairs of tracks, a series of radially-extended socket contact-strips, one connected with one of the series of plates of the interrupted tracks, and the other connected with the other series of plates of the other interrupted track, a series of duplex plug-contacts and cords adapted for adjustable and interchangeable insertion in the sockets, an audible and visible signal instrument, and two electric circuits arranged substantially as shown and described.

3. An electric clock comprising a hand with contact-closing devices, a dial with three different contact-surfaces; one being a continuous circular track around the hand-shaft, another being an interrupted circular track composed of detached plates, and the third being a series of groups of socket-contacts arranged radially to the clock-dial, each radial group being connected electrically to a single plate of the interrupted track, a series of adjust-

able plugs with cords, a series of bells or signal instruments connected to each cord, a battery with circuits as described, and a switch and an attached connecting-bar arranged to be brought into contact with all the plug-circuits to all of the bells, whereby a selective signaling by the clock may be given or a general alarm sounded at will substantially as described.

4. The combination with an automatic signal-clock and two electric circuits; of a plurality of plug-sockets arranged radially opposite the time-spacings of the dial, each series of sockets composed of opposite insulated conducting-plates, a series of duplex contact-plugs having two independent cords, and two separate signal instruments connected respectively to the two cords of the plug whereby two signals are given automatically at the same time substantially as described.

5. In an automatic electric signal-clock, a series of radial sockets composed of two insulated metal strips of different socket formation, combined with a series of plugs having conducting-strips of similar conformation to the socket-strips in cross-section, and two independent circuits and signal instruments as described.

6. In an automatic electric signal-clock, a series of radial sockets composed of two insulated metal strips, combined with a series of plugs having separate conducting-strips, one of which has a switch or circuit-breaker in its length, two circuits, and two signal instruments substantially as described.

HARRY B. VAUGHAN.

Witnesses:

ROBERT T. COOK,  
EPHRAIM LONGLEY.