

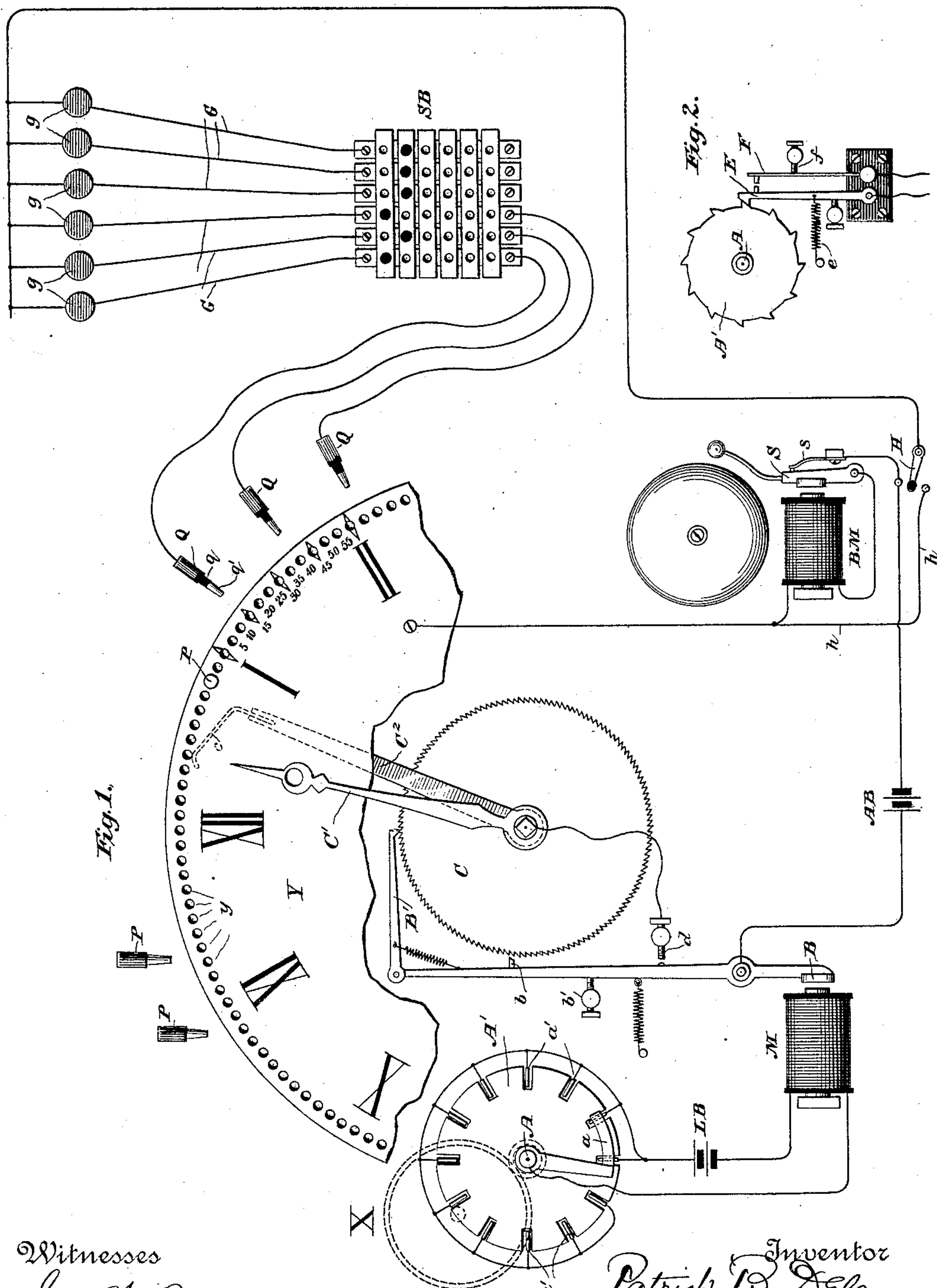
(No Model.)

P. B. DELANY.

# ELECTRICAL SIGNALING APPARATUS.

No. 467,651.

Patented Jan. 26, 1892.



Witnesses

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# UNITED STATES PATENT OFFICE.

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## ELECTRICAL SIGNALING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 467,651, dated January 26, 1892.

Application filed September 19, 1890. Serial No. 366,448. (No model.)

*To all whom it may concern:*

Be it known that I, PATRICK B. DELANY, a citizen of the United States, residing at South Orange, county of Essex, and State of New Jersey, have invented certain new and useful Improvements in Electrical Signaling Apparatus, of which the following is a specification.

The object of my invention is to provide an alarm apparatus specially designed for the use of persons desiring to be reminded of engagements or duties to be attended to during the day or night. The apparatus is also applicable to the operation of call or signaling apparatus placed in dwellings, hotels, or factories.

Any person having at his office my improved apparatus may, on arrival and merely by inserting plugs or pins in a series of holes placed around a time-piece dial, set alarms to remind him of engagements for at least twelve hours, or, indeed, for the whole twenty-four hours if the time-dial be such as to show all twenty-four hours. The various engagements having been plugged upon the dial, the person may proceed with his other duties, discharging his mind of the labor of recalling that at certain times engagements must be kept or particular duties attended to.

Heretofore it has been proposed to make an electric alarm-clock by which a limited number of alarms might be set for operation within one hour. It has also been proposed to cause the actuation of such alarms by the movement of the hour-hand of the clock or an attachment to the hour-shaft, whereby alarms might be arranged for during several hours; but owing to the slow movement of the hour-hand the length of time during which the signal sounds would extend beyond reasonable limits, and to prevent this the contacts upon which the ringing-circuit would be completed would necessarily be impractically small, or the circle of the dial of the clock would have to be made very large, an objection in itself, aside from the fact that it would be beyond the power of an ordinary time-piece to move the contact-finger over the contacts or segments with sufficient friction to insure good contacts. In my invention, however, all these objections are overcome, because the alarms or reminding-calls are controlled entirely by an indicating-hand inter-

mittently actuated step by step to make the circuit of the dial once in twelve or twenty-four hours, according to the arrangement of the dial. Alarms may therefore be arranged for twelve hours ahead at intervals of, say, five minutes, and the duration of each alarm may be reduced to about fifteen seconds, more or less.

The time mechanism in my apparatus controls contact devices which at certain intervals complete an electric circuit containing a battery and a magnet that actuates the indicating-hand step by step. By employing the time mechanism merely to control contacts that intermittently complete the hand-actuating circuit I require at the time-piece proper only a small circle of segmental contacts or a small contact wheel or device that gives comparatively good and heavy contacts without overloading the clock.

Having thus stated the general purpose of the invention and the distinguishing features wherein it differs from other devices intended for a somewhat analogous purpose, I will describe one form in which the invention may be embodied.

Figure 1 is a diagrammatic view showing the organization of the apparatus merely as a local reminder, and also as a call for hotels, factories, &c.; and Fig. 2 is a detailed view showing a modified way of arranging the contact devices controlled by the time-piece.

A is the minute-arbor of a time mechanism X. A radial arm projecting from the arbor carries a trailing-finger *a*, that traverses a series of segmental contacts *a'*, located radially in notches in the periphery of a disk *A'*, from which they are insulated. Twelve contacts *a'* are shown located at intervals, representing five minutes, in the path of the trailer. All of the contacts are connected with one pole of a battery *L B*, and the opposite pole of the battery is connected through the coil of the magnet *M* with the arbor *A*. Each time therefore that the trailer comes upon a contact *a'* the circuit of the magnet *M* is completed and its armature is attracted. The armature-lever is shown as prolonged considerably beyond its pivot, and at its upper end carries a push-pawl *B'*, that works in serrations or teeth of the wheel *C*. The armature-lever also carries a stop-pin *b*, that enters a



serration in the wheel C when the armature is attracted and the pawl B' advanced to move the wheel C forward one tooth.

The dial Y, marked with the hours of the day, is arranged concentrically with reference to the spindle of the wheel C, and a hand on the spindle is advanced around the dial step by step at intervals of five minutes, it being operated twelve times in passing from the mark of one hour to another on the dial. In the construction shown the dial is of metal and has around its periphery apertures  $y$ , located at intervals representing five minutes—that is to say, each time that the hand C' pauses it points at an aperture  $y$ . The spindle C also carries a radial arm C<sup>2</sup> beneath the dial Y, and on the end of this arm is a contact finger or blade  $c$ , so located as in its movements to come in contact with a pin or plug P that may have been inserted in the aperture in the dial to which the minute-hand points.

The alarm or reminder signal circuit is as follows: A B is the alarm or reminder signal battery, one pole of which is connected to the armature-lever B, which when normally drawn back by its spring bears against its post  $b'$ , but which when the armature is attracted makes contact with the adjustable contact-screw  $d$ , that is connected to the spindle of the wheel C, which is insulated from the dial, or the arm C<sup>2</sup> may be insulated from the spindle and electrically connected with the contact-screw  $d$ . The other pole of the battery A B is connected with the back contact-spring  $s$  of the vibrating armature S of a call-bell, the circuit being continued through the armature-lever S, coil of the bell-magnet B M, and thence to the metallic dial.

If a person desires to be reminded of some engagement or duty, a metallic plug P is inserted through that aperture in the dial corresponding to the time when he wishes his attention called to the matter. For instance, in Fig. 1 a metallic plug P is shown as inserted in the dial at a point corresponding to the time "12:50." When the hand C', as it advances step by step, points to this plug, the blade  $c$  will make contact with the pin, and during the time that the trailer  $a$  is passing over the segment  $a'$ , the armature B being attracted, the circuit of the alarm-battery A B will be closed and the call-bell will ring. As soon, however, as the trailer  $a$  passes off of the segment  $a'$  the circuit will be opened and the bell will cease to ring; but, as before remarked, the ringing may have continued for fifteen seconds, or for a sufficient length of time to effect the purpose desired. As seen in Fig. 1, each segment  $a'$  is located nearest that edge of the notch in the disk A' that is toward or nearest the end of the advancing trailer. The purpose of this arrangement is to insure an abrupt and complete interruption of the circuit when the trailer passes off of the segment.

As shown in Fig. 2, instead of employing a trailer and segments the circuit of the battery L B may be closed in the following manner: The disk A', revolving with the spindle, may have on its periphery teeth with beveled edges that strike against a beveled edge on a lever E, normally drawn against its front stop by a spring  $e$ . One terminal of the circuit of the battery L B is run to this lever, while the opposite terminal is connected with a yielding blade or plate spring F, having a contact upon its upper end, against which a projection on the rear of the lever E strikes when the lever is forced outwardly by a tooth on the wheel or disk A'. The spring F is preferably adjustably supported at its back by an adjustable screw  $f$ .

Where the apparatus is employed as a call in hotels and factories, it may also be used at the same time in the manner already described. When used as a general call, the call-bell located at the apparatus may be caused to ring or not, as desired. The arrangement may be as follows: S B is an ordinary plug switch-board, from which wires G G extend to individual calls  $g$  in the various rooms of a building. They all connect with a common return-wire which runs to switch H, which may be thrown up into contact with the wire running from the pole of the battery A B to the spring  $s$  of the call-bell armature-lever, in which event the magnet of the call-bell would be cut out of the circuit, or if the switch is thrown down it connects with a wire  $h$ , from which the circuit runs through the coil of the magnet B M to the battery A B. A conducting-cord terminating in a metallic plug Q is connected with each vertical bar of the switch-board S B. The plug has an insulating-sleeve  $q$  upon it that insulates it from the dial Y. When such a plug is inserted, the blade  $c$  makes contact with the conducting end  $q'$  of the plug, and the circuit is from thence through the cord, switch-board, line G, and individual call of the particular wire to the switch H, and thence either through the coil of the magnet B M or direct to the pole of the battery. The other pole of the battery is connected to the armature-lever B, contact  $d$ , and radial arm C<sup>2</sup>, on which the blade  $c$  is mounted. Of course by suitably plugging the switch-board S B the insertion of one plug Q may be made to actuate the calls in a number of individual circuits. Thus on the top bar of the switch the first and third circuits are shown so connected and on the second bar the second, fourth, fifth, and sixth circuits are connected.

The organization herein diagrammatically shown is a simple and suitable one for practicing my invention; but it may, of course, be varied in many ways by those skilled in the art.

In practically constructing this apparatus the time mechanism X, the magnet M, and parts B, C, and C<sup>2</sup> would be located behind



the dial Y, outside of which only the hand C' would appear. The call-bell would also be located within the casing, while the batteries would preferably be located in the bottom of the casing, the whole apparatus being self-contained and portable. I prefer that the contacts for completing the alarm-circuit should be beneath the dial, and therefore employ the arm C<sup>2</sup>, &c.; but any contact device moving with the hand on its spindle may be employed.

I claim as my invention—

1. The combination, substantially as set forth, with a time mechanism, its minute-arbor, an electric circuit containing a battery and electro-magnet, and contact devices by which said circuit is closed for brief periods at regular intervals during the revolution of the minute-arbor, of an armature actuated by said magnet, a time-indicating hand driven intermittently by the armature, the dial over which the hand traverses, an alarm-circuit having an alarm device therein, contacts by which the alarm-circuit is closed at one point when the armature of the magnet is attracted, one or more contact plugs or pieces adapted to be placed at any desired point on the dial to form part of the alarm-circuit, and a contact moving with the time-indicating hand to complete the alarm-circuit through said contact-pieces, whereby the alarm is caused to

sound during the time the armature-magnet is attracted.

2. The combination of an intermittently-actuated lever, a time-indicating hand propelled thereby, a time-dial over which the hand traverses, a circuit containing an alarm device and contacts that are closed when the lever is advanced to propel the hand one step, one or more contact plugs or pieces adapted to be placed at any desired point on the dial to form part of the alarm-circuit, and a contact moving with the time-indicating hand to complete the alarm-circuit through said contact piece or pieces, substantially as and for the purpose set forth.

3. The combination, substantially as set forth, of the metallic dial having apertures therein, the hand traversing the dial, the plugs Q, having insulating-sleeves that insulate them from the dial when inserted in the apertures therein, the contact moving with the hand and adapted to make contact with said plugs, and the alarm circuit or circuits including the plugs and moving contact.

In testimony whereof I have hereunto subscribed my name.

PATRICK B. DELANY.

Witnesses:

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