

(No Model.)

3 Sheets—Sheet 1.

C. S. YOUNG & G. E. PAINTER.

ELECTRIC ANNUNCIATOR.

No. 380,010.

Patented Mar. 27, 1888.

Fig. 1.

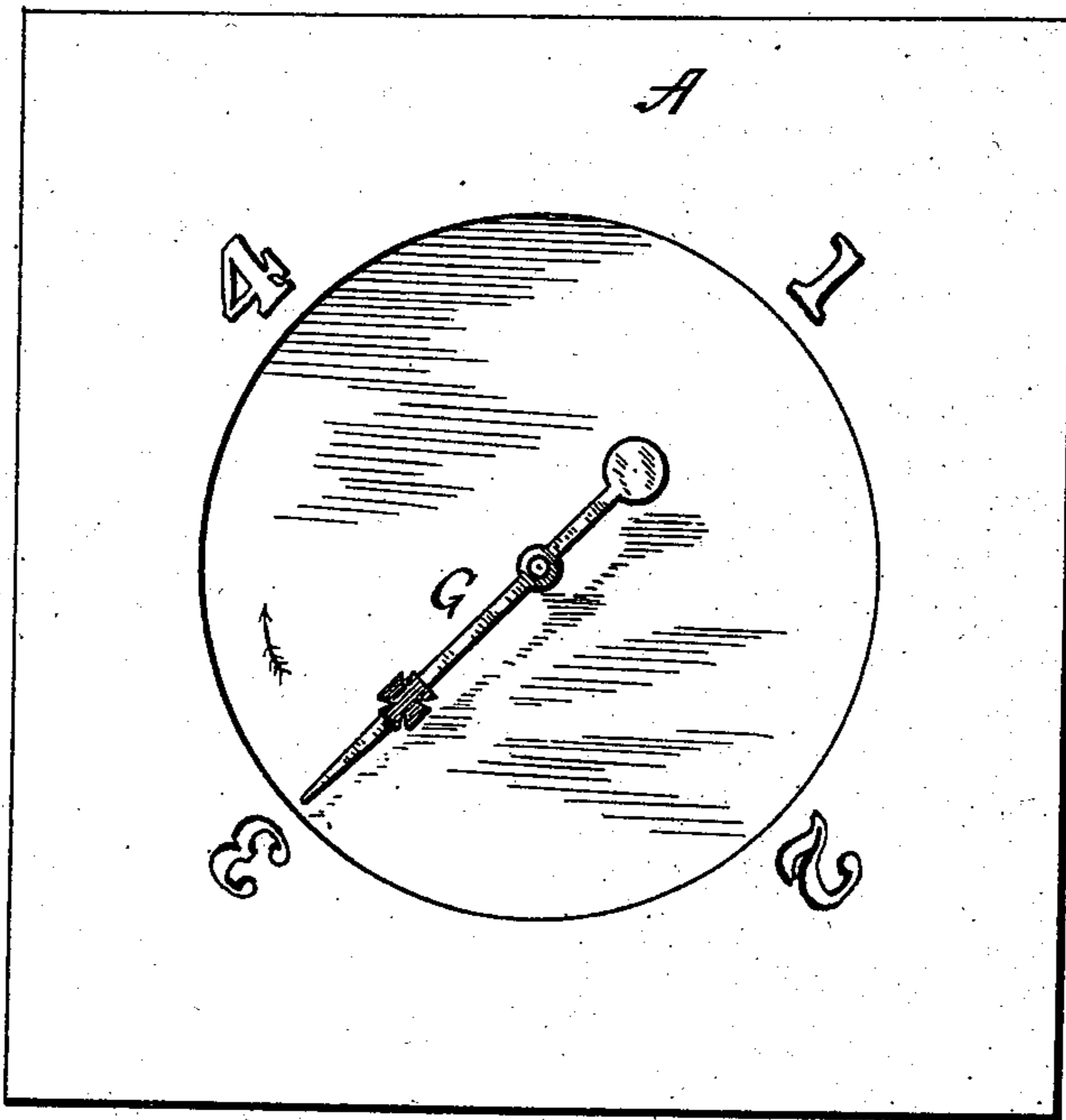
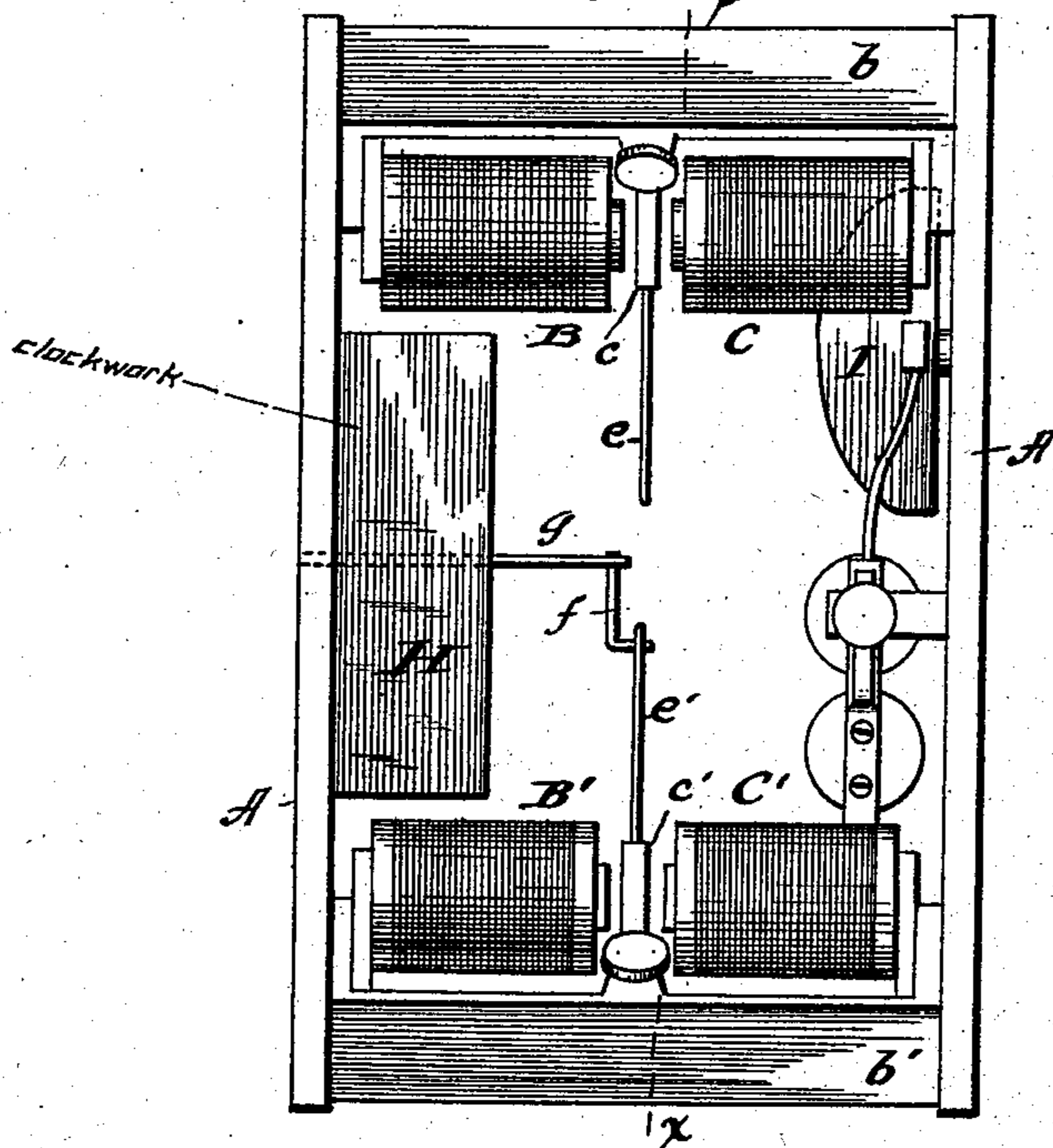


Fig. 2.

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Fig. 3.

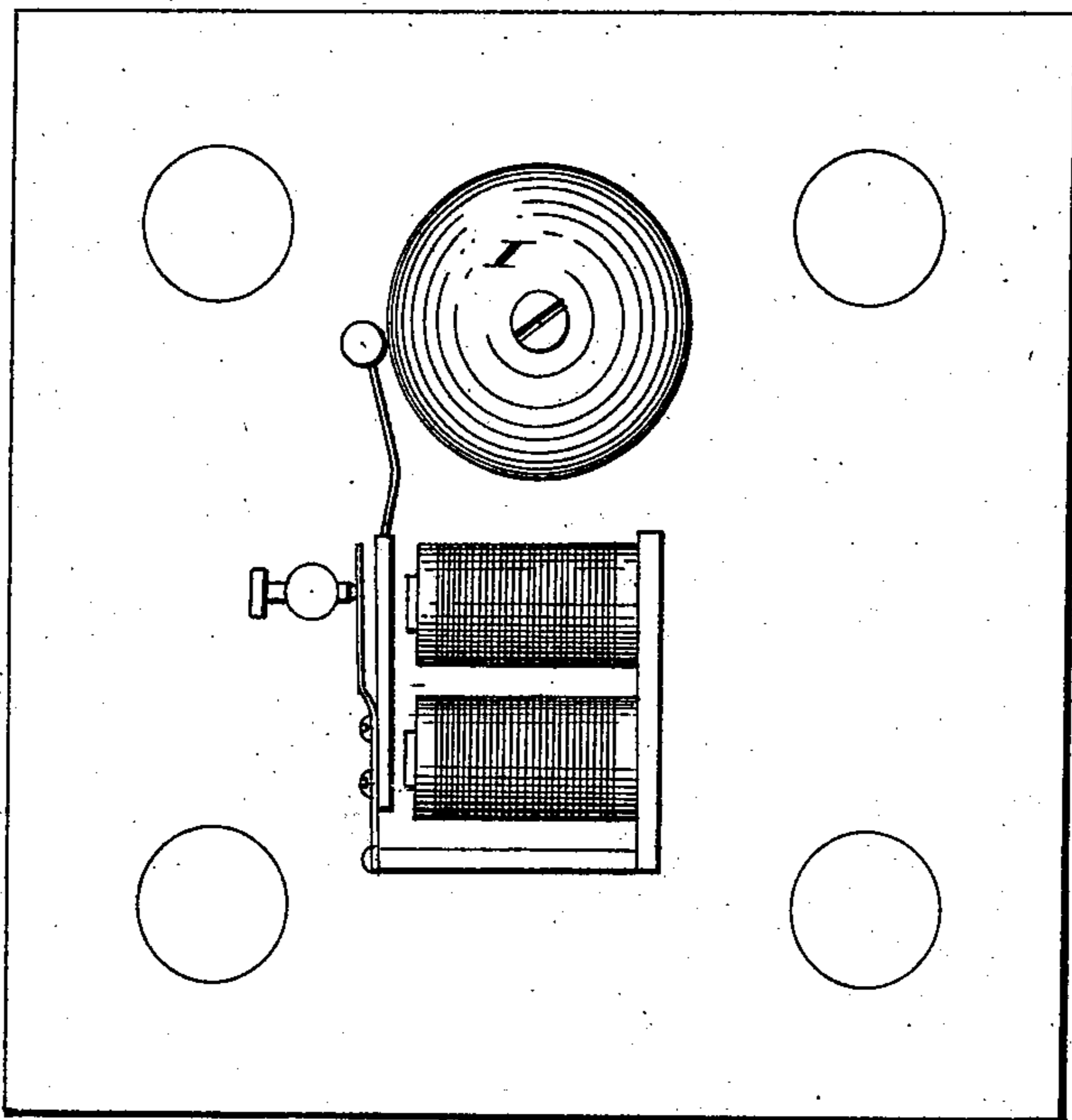
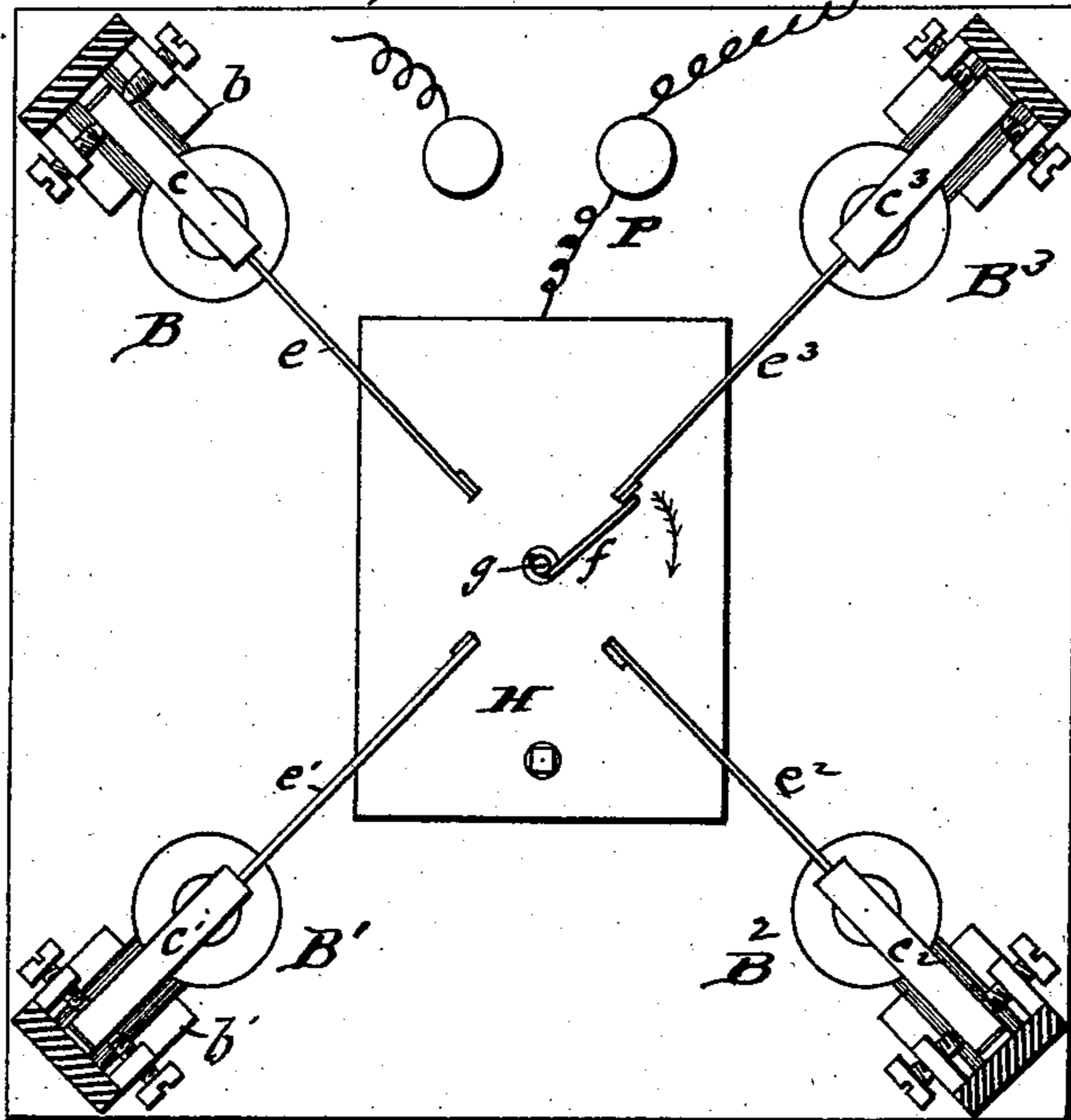


Fig. 4.

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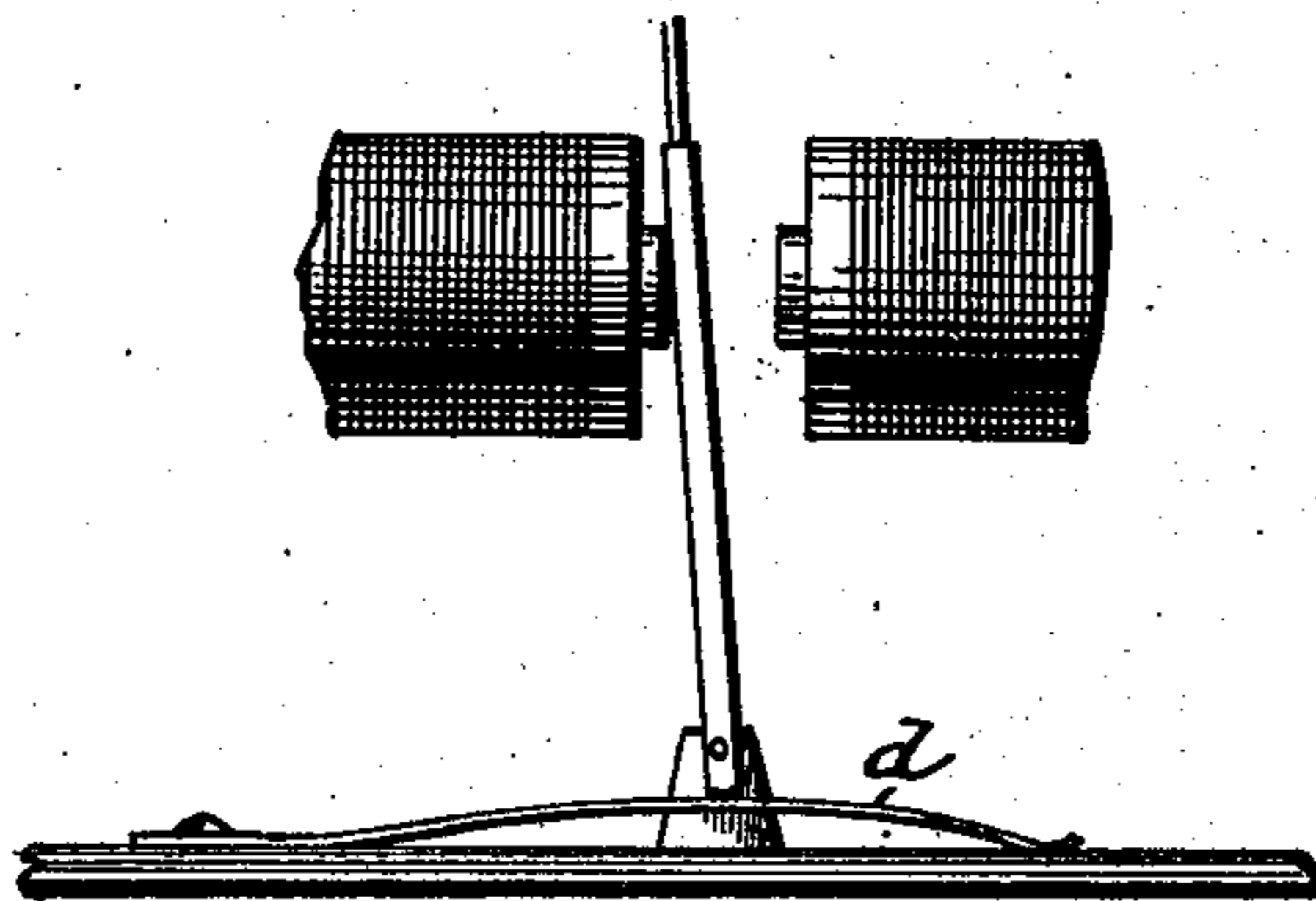
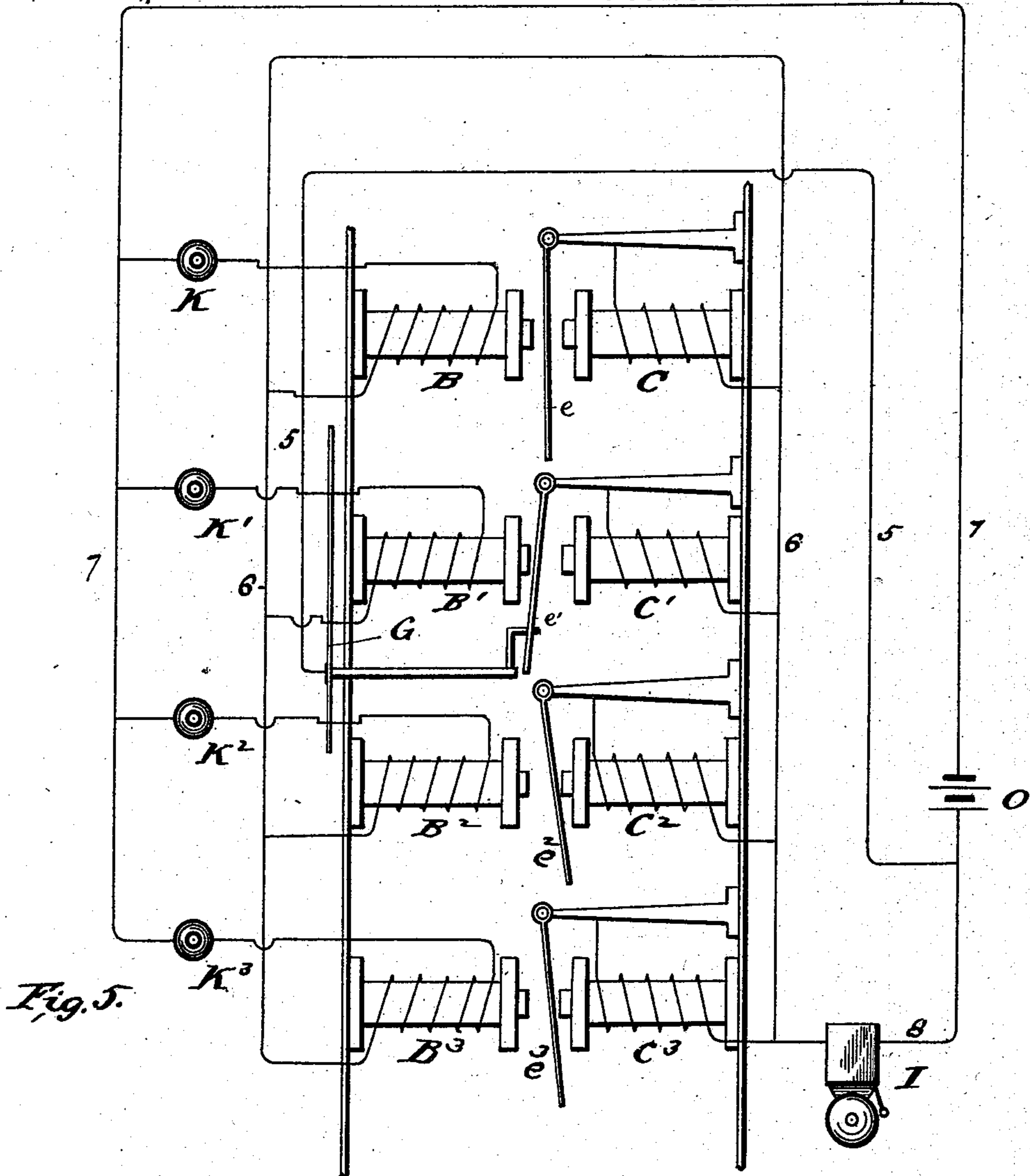
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Fig. 6.

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# UNITED STATES PATENT OFFICE.

CHARLES S. YOUNG AND GWYNNE E. PAINTER, OF BALTIMORE, MARYLAND.

## ELECTRIC ANNUNCIATOR.

SPECIFICATION forming part of Letters Patent No. 380,010, dated March 27, 1888.

Application filed June 3, 1887. Serial No. 240,117. (No model.)

*To all whom it may concern:*

Be it known that we, CHARLES S. YOUNG and GWYNNE E. PAINTER, citizens of the United States, residing in Baltimore, in the State of Maryland, have invented certain new and useful Improvements in Electric Annunciators; and we do hereby declare that the following is a full, clear, and exact description of our invention, such as will enable others skilled in the art to which it appertains to make and use the same.

Our invention relates to improvements in that class of electric annunciators in which a hand is employed to point to a number on a dial-face corresponding to the number of a room or station from which a call is sent. It is especially designed for use in hotels.

In our device the operation of the annunciator is such that whenever a circuit-closer is operated, say, in the room of a hotel the hand is released and carried by clock-work until it is restrained by a detent, which is thrown out of its path by the same operation which accomplishes its release. The detent is so located as to cause the hand to stop at a point where it will indicate the proper number upon the dial. Attention is called to the movement of the hand by a bell, which is rung at the time the circuit is closed. The hand remains in the position to which it has been turned until a call is sent in from some other room, when it is released, and the operation above set forth is repeated. Should a person wish to call a second time before the annunciator had been made use of by any one else, he will, by closing the circuit in the usual manner, cause the bell to ring without moving the hand. Our annunciator has also other functions, which will be fully set forth in the specification. The means by which its various functions are accomplished are illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of our annunciator with one side of the inclosing-case removed. Fig. 2 shows the dial and pointer. Fig. 3 is a vertical central cross-section on line *xx* of Fig. 1, looked at from the rear. Fig. 4 is a similar section looked at from the front, some of the parts being removed, the design being simply to show the annunciator-bell. Fig. 5 is a diagram of the circuits, the magnets, for convenience of illustration, being shown in the same

vertical plane, instead of being arranged around a common center, as they are in practice; and Fig. 6 shows a detail.

Referring to the drawings by letter, A is a case inclosing the main operating parts of our annunciator. This case will usually be made of wood or other insulating material, and when made of metal the operating metallic parts within the case will be insulated from it.

B B' B<sup>2</sup> B<sup>3</sup> are electro-magnets supported in suitable frames or brackets within the case, and C C' C<sup>2</sup> C<sup>3</sup> are corresponding electro-magnets supported in the same series of frames or brackets. The B magnets are supported near the front of the case A, and the C magnets near the rear of the said case. The magnets B and C are supported at opposite ends of the same bracket, *b*, and are provided with a common armature, *c*, which is suitably pivoted in lugs on the bracket. Fig. 6 shows a flat spring, *d*, bearing against the lower end of the armature, so as to hold it in either extreme position, whether against the pole of magnet B or magnet C. The arrangement of the magnets B' and C', B<sup>2</sup> and C<sup>2</sup>, and B<sup>3</sup> and C<sup>3</sup> is the same as that of the magnets B and C, already described.

In the present drawings we have shown only four magnets; but the number is immaterial, as we might employ any convenient number within the capacity of the inclosing-box.

It will be observed that the armatures of the various pairs of magnets (lettered *c c' c<sup>2</sup> c<sup>3</sup>*) all point to a common center and that their levers terminate at substantially equal distances from the said center. Near the end of each armature-lever is a platinum contact-piece, with some one of which a crank-arm, *f*, makes contact when the device is in operation. For easy reference the armature-levers are lettered, respectively, *e e' e<sup>2</sup> e<sup>3</sup>*. The arm *f* is attached to a shaft, *g*, which passes through the front of the case A and carries upon its outer end the hand or pointer G. The hand and the shank of the crank-arm are arranged to point in the same direction. Between the two the shaft *g* passes through a clock-work case, H, which is attached to the inside of the front wall of the case A. The clock-work is provided with a suitable winding-shaft, and when wound it is adapted to operate the shaft *g* in the direction of the arrow. The crank-arm *f*

extends out far enough so that it will be detained by any one of the armature-levers  $e e'$   $e^2 e^3$  whenever its armature is drawn over toward one of the B-magnets; but when the armatures are drawn toward the C magnets the levers are withdrawn from the path of rotation of the crank-arm.

Now the relations of the parts are such that when the lever operated by the magnet B, for example, is acting as a detent for the crank-arm  $f$ , the hand  $G$  will point in the direction of the said magnet. In front of the said magnets, upon the outer face, are placed figures corresponding to the numbers of different hotel-rooms or other stations. For example, in the present instance the numbers 1, 2, 3, and 4 are placed in front of the magnets  $B B' B^2 B^3$ , respectively. It is evident, therefore, that if circuit-closers in the rooms 1, 2, 3, and 4 of a hotel can be so connected up in circuit as to operate, respectively, the magnets  $B B' B^2 B^3$ , then a person in any one of those rooms can throw out the proper detent into the path of the crank-arm, whereby the dial-hand will be made to point to a number corresponding to the number of the room in which the operator is located. In order to make this action of the guest efficacious for calling purposes, it is of course necessary that a bell should be rung to call the attention of attendants in the hotel-office, and it is also necessary that at every operation of the B magnets some means should be provided whereby the armature which has last been operated should be withdrawn from the path of the crank-arm and should therefore release the said arm. These functions are effected by means of the electromagnetic bell I in Figs. 1, 4, and 5, and also by means of the C magnets through the medium of the circuits shown in Fig. 5. Referring more especially now to that figure, it will be seen that the magnets are shown arranged in the same vertical plane instead of being located around a common center. The armatures are drawn by this arrangement out of their proper relation to the crank-arm; but it is of course expected that the said arm will make contact with the nearest armature-lever that is operated by a B magnet as soon as it is released by the one which now detains it.

In Fig. 5,  $K K' K^2 K^3$  represent push-buttons located, say, in the different rooms of a hotel. I is the calling-bell, shown in somewhat different form from that which it has in Figs. 1 and 4. O is a galvanic battery for operating the system. It will be noticed that the crank-arm is represented as resting against the detent-lever  $e'$ . Tracing the circuit, now, from the battery O, it passes by wire 5 to the shaft  $g$  and crank-arm  $f$ . In Fig. 3 the wire 5, it will be observed, passes to a binding-post, P, and from there to the clock-work frame or casing H. In practice this is the way in which the circuit is connected to the shaft  $g$  and the crank-arm. From the latter the circuit passes by way of the armature-lever  $e'$  and the armature  $c'$  to the frame of the

magnets  $B' C'$ , and thence through the magnet  $C'$  to the wire 6, from which it passes back to the battery through the push-buttons  $K K' K^2 K^3$ , or, rather, through any one of them which happens to be closed, and through the particular B magnet which is connected up between the wire 6 and the said push-button. The return-wire beyond the push-buttons is designated by the figure 7. The bell I is included in a shunt or branch, 8, between the wires 7 and 6. Suppose, for example, that the occupant of room 4 presses the push-button  $K^3$ . Then the return-circuit from wire 7 will pass by way of the magnet  $B^3$ , the push-button  $K^3$ , and the wire 8. As a consequence of the closure of the circuit by means of the push-button  $K^3$  two magnets then are operated. The first is the magnet  $C'$ , which consequently withdraws its armature and releases the crank-arm  $f$ , and the second is the magnet  $B^3$ , which draws out its armature into a position where the lever  $e^3$  will stand in the path of the crank-arm and detain it as it comes along. After what has been said above, it will be understood that this action causes the pointer to indicate room 4 upon the dial. Furthermore, the bell I will have been operated to indicate to the ear the fact that a call has been made. If, instead of the occupant of room 4, a guest in room 2 should actuate the push-button K while the hand still pointed to 2 on the dial, the only result would be that the bell would be rung, indicating that the guest had again called—that is, the circuit would pass from the armature of the magnets  $B' C'$  through both the said magnets, and the armature, being equally drawn in opposite directions, would simply remain where it was.

It is apparent that our annunciator is capable of serving the purpose of a hotel-annunciator without any restoration of drops or any return of the hand to an initial point. Wherever the hand may be it can be turned to any other point on the dial by operating the proper push-button. In case two or more persons should actuate different push-buttons at the same instant, the hand would be caught by the magnet-armature which it first came to in its path, and if one of the persons should hold the circuit closed longer than the others his signal would be the one which would be finally indicated on the dial. In any case there would be no failure of the annunciator to respond to the call, and, as a matter of fact, the liability of two persons in a hotel to make their call in exactly the same instant is quite remote.

It will be observed that the hand or pointer is connected directly with one pole of the generator, and that the detents are connected directly with the respective C magnets, and that beyond the said C magnets the circuit goes through any one of the B magnets whose circuit-closer happens to be actuated. The battery is normally on open circuit, and the circuit-closers are arranged in multiple arc between its poles.

The bell I is made of approximately the

same resistance as any one of the C magnets, so that the current will always divide and pass through the bell. For this reason the bell will ring as long as a push-button is held closed, and its ringing will not depend upon the contact between the crank-arm *f* and any one of the armature-levers.

Having now described our invention, what we claim is—

10 1. In an electric annunciator, the combination, with a generator of electricity and a number of circuit-closers arranged in multiple are between the poles thereof, of a hand or pointer forming a part of the return-circuit  
15 on one side, a series of conducting-detents for the said hand or pointer, the said detents being located, respectively, between pairs of electro-magnets, each detent being directly connected with one of its pair of magnets, and  
20 being also connected beyond the said magnet with all the magnets corresponding to the other magnet of the said pair, as and for the purpose set forth.

2. In an electric annunciator, the combination, with a series of magnets adapted to operate a series of detents and connected through different circuit-closers to one pole of an electric generator, of a series of magnets adapted to withdraw the said detents, the said magnets being electrically connected with the detents, and also through a bell to the other pole of the generator, and a hand or pointer likewise joined to the last-named pole and normally resting against one of the said detents, whereby, on the operation of a circuit-closer, the hand will be released by the withdrawal of the detent and another detent will be thrown out into its path, as set forth.

In witness whereof we have hereunto signed our names in the presence of two subscribing witnesses.

CHARLES S. YOUNG.  
GWYNNE E. PAINTER.

Witnesses:

JOHN J. DUNN,  
WM. H. LEONARD.