

(No Model.)

C. M. BARNES.
ELECTRIC ALARM.

No. 344,233.

Patented June 22, 1886.

Fig. 1.

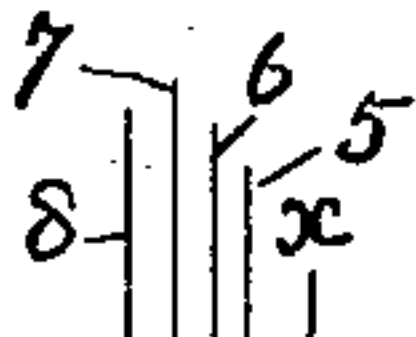


Fig. 4.

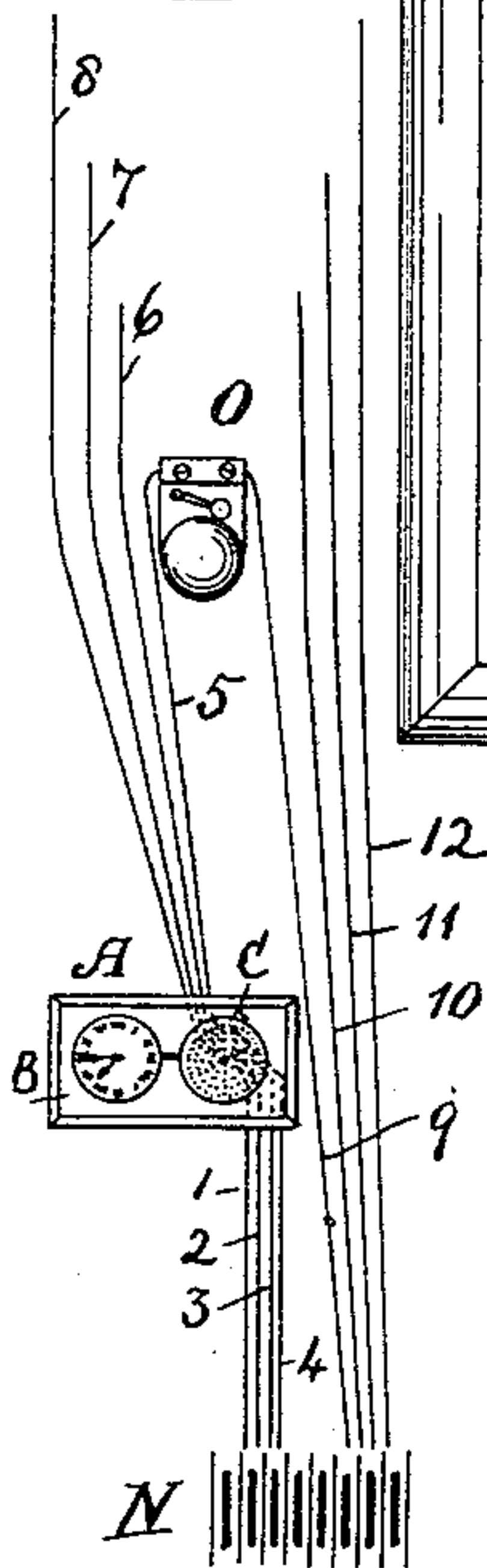


Fig. 2.

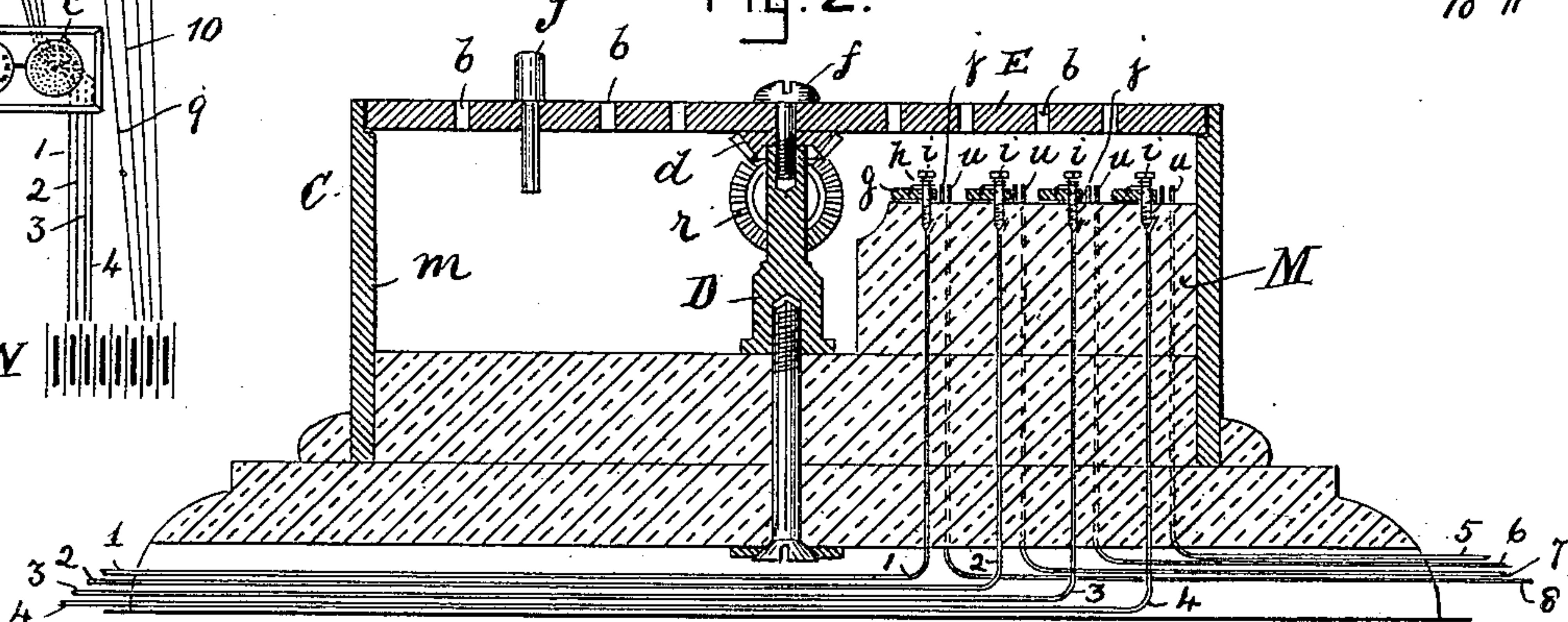
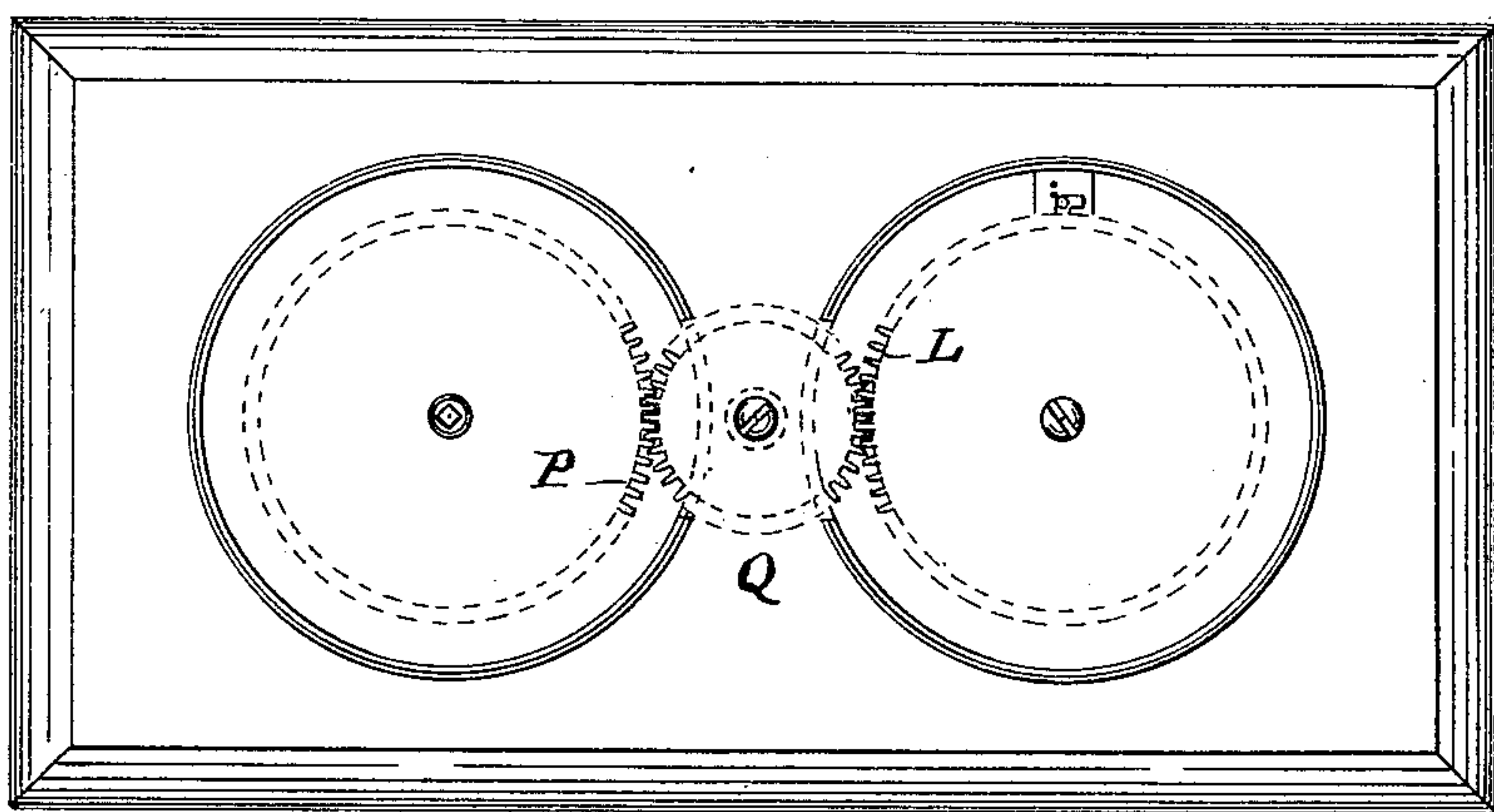


Fig. 3.



Witnesses.

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UNITED STATES PATENT OFFICE.

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ELECTRIC ALARM.

SPECIFICATION forming part of Letters Patent No. 344,233, dated June 22, 1886.

Application filed March 17, 1886. Serial No. 195,520. (No model.)

To all whom it may concern:

Be it known that I, CARLOS M. BARNES, of Enosburg, in the county of Franklin, State of Vermont, have invented a certain new and useful Improvement in Electric Alarms, of which the following is a description sufficiently full, clear, and exact to enable any person skilled in the art or science to which said invention appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a side elevation of the alarm proper, a portion of the dial of the clock and also a portion of the disk of the switch being represented as removed; Fig. 2, an enlarged vertical section of the switch, taken on the line x ; Fig. 3, a diagram showing a modification of the method of connecting the clock mechanism with the switch, and Fig. 4 a diagram showing the arrangement of the conducting-wires, bell, and alarm proper.

Like letters of reference indicate corresponding parts in the different figures of the drawings.

My invention relates more especially to that class of electrical alarms which are employed in hotels, steamboats, &c., for awaking or calling the guests; and it consists in a novel construction and arrangement of the parts, as hereinafter more fully set forth and claimed, the object being to produce a more effective and otherwise desirable device of this character than is now in ordinary use.

The nature and operation of the improvement will be readily understood by all conversant with such matters from the following explanation.

In the drawings, A represents the board or platform on which the principal operative parts of the alarm are mounted, B the clock and C the switch. For convenience of reference the switch-levers, rotating disk, switch-table, and their immediately-connected parts are collectively called the "switch." The clock may consist of any ordinary time-piece—a marine clock in which there is a balance-wheel and hair-spring being preferable—the case p of the clock being attached to the board A. The case m , inclosing the switch mechanism, corresponds, preferably, in diameter and

height with that of the clock, and is also attached to the board A and stands on the same plane with the clock. A standard, D, is disposed at the center of the case m , and mounted on this standard there is a disk, E, adapted to rotate on the pivotal screw f , which passes through a hole in the center of the disk into the top of the standard. Secured firmly to the inner side of the disk at its center there is a small bevel-gear, d , through which the screw f passes. A small bevel-gear, t , is firmly secured to the arbor or staff on which the hour-hand of the clock is disposed, and mounted in a support, l , within the case p of the clock, and in a support, l' , within the case m of the switch, there is a shaft, H, which passes through corresponding holes, v , in the sides of said cases. Disposed on one end of said shaft there is a bevel-pinion, r , which intermeshes with the gear d of the switch, and on the other end a bevel-pinion, z , which intermeshes with the gear t of the clock. The disk E of the switch is provided on its face with twelve rows, k , of figures or numbers, the numbers in each row corresponding with the numbers of the rooms in the building in which the alarm is used. The twelve rows of numbers are arranged radially around the center of the disk E, and corresponding with the twelve hours represented on the dial of the clock. A hole, b , is formed immediately beneath each of the numbers on the disk for receiving a pin, J. There are also a series of holes, a , formed in said disk midway between the rows k , representing the half-hours, and midway between the holes a and each of the rows k there are also a series of holes, y , representing the quarter-hours. For lack of space but one of the holes a and two of the holes y are represented between either two of the rows k , and for like reason but four numbers are placed in each of said rows—viz, 2, 4, 8, and 5. A switch-board, M, is disposed within the case m , said board containing as many switches proper as there are rooms in the building or holes in either of the rows k . An ordinary electrical battery, N, is placed in the cellar, or in any other convenient portion of the house, and leading from said battery to the switch-board M there are a series of conducting-wires, 1 2 3 4,

respectively connected with the screws *i* in said board, the wires corresponding in number with the number of the rooms in the house, and also with the number of holes in either of the rows *k*. A series of wires, 5 6 7 8, also lead from the switch-board to the respective rooms of the house, the ends of said wires protruding through the board near the screws *i*, as shown at *u*. Mounted on each of the screws *i* there is a metallic switch-lever, *g*, provided with a spring, *h*, one end of which spring is secured to the lever and the other to the screw on which the lever is mounted, the springs acting torsionally to keep the levers out of contact with the protruding ends *u* of the wires 5 6 7 8, or to keep the circuits open. A series of wires, 9 10 11 12, lead directly from the battery *N* to the respective rooms of the house without necessarily passing through the alarm proper. An ordinary electric call-bell, *O*, is disposed in each room of the house, or in such of the rooms as may be occupied by lodgers or requires an alarm-bell. In Fig. 4 one of the wires, 5, is represented as leading from the alarm proper to the bell *O*, and one of the return-wires, 9, from said bell to the battery *N*, the wire 4 being adapted to connect with wire 5 in the switch-board *M*, the wires 6, 7, and 8 leading to and the wires 10, 11, and 12 from other bells, (not shown, as it is not deemed essential to represent but one in order to understand the nature and operation of the improvement.) It will be obvious that the wires 4, 5, and 9 are in one circuit, the wires 3, 6, and 10 in another, the wires 2, 7, and 11 in another, and the wires 1, 8, and 12 in another, the number of circuits also corresponding with the number of rooms and with the number of holes in each of the rows *k*.

To illustrate the method of using the improvement: If, for instance, a guest occupying room No. 4 retires at eleven o'clock at night and desires to be called at four o'clock in the morning, the clerk or other person in charge of the alarm will observe that the difference between eleven o'clock p. m. and four o'clock a. m. is five hours, and he will therefore count the rows *k* backward on the disk *E*, beginning at the mark *w*, (which corresponds with "XII" on the dial of the clock,) until he has counted five rows, and will then stick the pin *J* in the hole *b* immediately beneath the figure 4 in said row. The arbor or staff on which the hour-hand of the clock is secured being connected through the shaft *H*, pinions *r z*, and gear *t d* with the disk *E*, and said disk adapted to rotate in the direction of its arrow in unison with said hour-hand, it will be obvious that when the hour-hand has advanced on the dial of the clock five hours, or from XI p. m. to IIII a. m., the disk *E* will have advanced a corresponding distance, or five rows *k*, bringing the pin *J* into contact with the lever *g* of the wire 4, causing said lever to strike the projecting end *u* of wire 5, thereby forming a circuit through the wire 9 and ringing the bell *O*, in a manner which will be readily

obvious without a more explicit description. Suitable stops, *j*, are provided on the switch-board *M*, against which the arms of the levers *g* strike to keep them in proper position. It will be understood of course that the holes *a y* are to be used for the pins *J* when setting the alarm for half or quarter hours, as the case may be.

Instead of connecting the disk *E* with the clock by means of the shaft *H*, a large gear, *L*, may be secured to the inner side of said disk, and a corresponding gear, *P*, to the arbor on which the hour-hand of the clock is mounted, and said gears connected by an intermediate gear, *Q*, disposed between the clock and switch mechanism, if preferred, as shown in Fig. 3.

I do not confine myself to the use of the bell-crank levers *g* for forming the circuits at the switch-board, as any suitable means for that purpose may be employed in connection with the rotating disk *E*, clock *B*, and conducting-wires. There is a switch-lever, *g*, corresponding with each number in either of the rows *k* on the disk *E*, and each of said levers is so arranged that its vertical or lower arm (the lever being made in the shape of a bell-crank) will stand in the path of the pin corresponding therewith when the pin is inserted in the disk, so that when the pin strikes said vertical arm it will swing the lever on its pivotal screw *i* and bring its horizontal arm into contact with the end *u* of the wire in the same circuit, as described. After the pin passes or "escapes" from the vertical arm of the lever, the spring *h* will swing the lever around into its normal position, or out of contact with the end *u* of the wire, thereby breaking the circuit and stopping the ringing of the bell. The levers may be so formed and arranged with respect to the pins that the pins will pass the same or escape therefrom in any given number of seconds, thus regulating the time the bell will continue to ring, as desired.

It will be obvious that more or less numbers and holes may be employed on the disk *E*, as desired or in accordance with the number of rooms which are provided with alarm-bells, and that when but one room is provided with a bell the rows on the disk *E* will each contain but one number and one pin-hole corresponding therewith; but the rows are to be arranged radially around the center of the disk and the same number of rows employed, whether they contain more or less numbers and holes.

Having thus explained my invention, what I claim is—

1. In an alarm of the character described, the combination of the following instrumentalities, to wit: a clock mechanism, a disk actuated by the clock mechanism and adapted to rotate in unison with the hour-hand of the clock, a switch-board, a battery, an alarm-bell, a battery-wire connecting the battery with the switch-board, a bell-wire connecting the switch-board with the alarm-bell, a return-

wire connecting the alarm-bell directly with the battery, a switch-lever adapted to connect said battery-wire and bell-wire, and a pin adapted to pass through a hole in the disk and
5 engage said lever, said disk being provided with numbers and holes arranged radially in rows around its center, the numbers corresponding with the number of the room in which the bell is located and the rows corresponding with the hours on the dial of the
5 clock, substantially as described.

2. In an alarm mechanism of the character described, the rotating disk E, provided with the rows of numbers and holes *k* and pin J,
10 in combination with the gears *d t*, pinions *r z*, shaft H, clock B, lever *g*, wires 4, 5, and 9, bell O, and battery N, substantially as described.

3. In an alarm mechanism of the character described, the lever *g*, provided with the spring *h*, in combination with the screw *i*, 20 wires 4 and 5, pin J, and disk E, substantially as described.

4. In an alarm mechanism of the character described, the combination of the clock B, switch C, battery N, bell O, shaft H, suitable
25 gearing for connecting said shaft with the switch and clock, wires 1 2 3 4, wires 5 6 7 8, and wires 9 10 11 12, substantially as described.

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Witnesses:

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