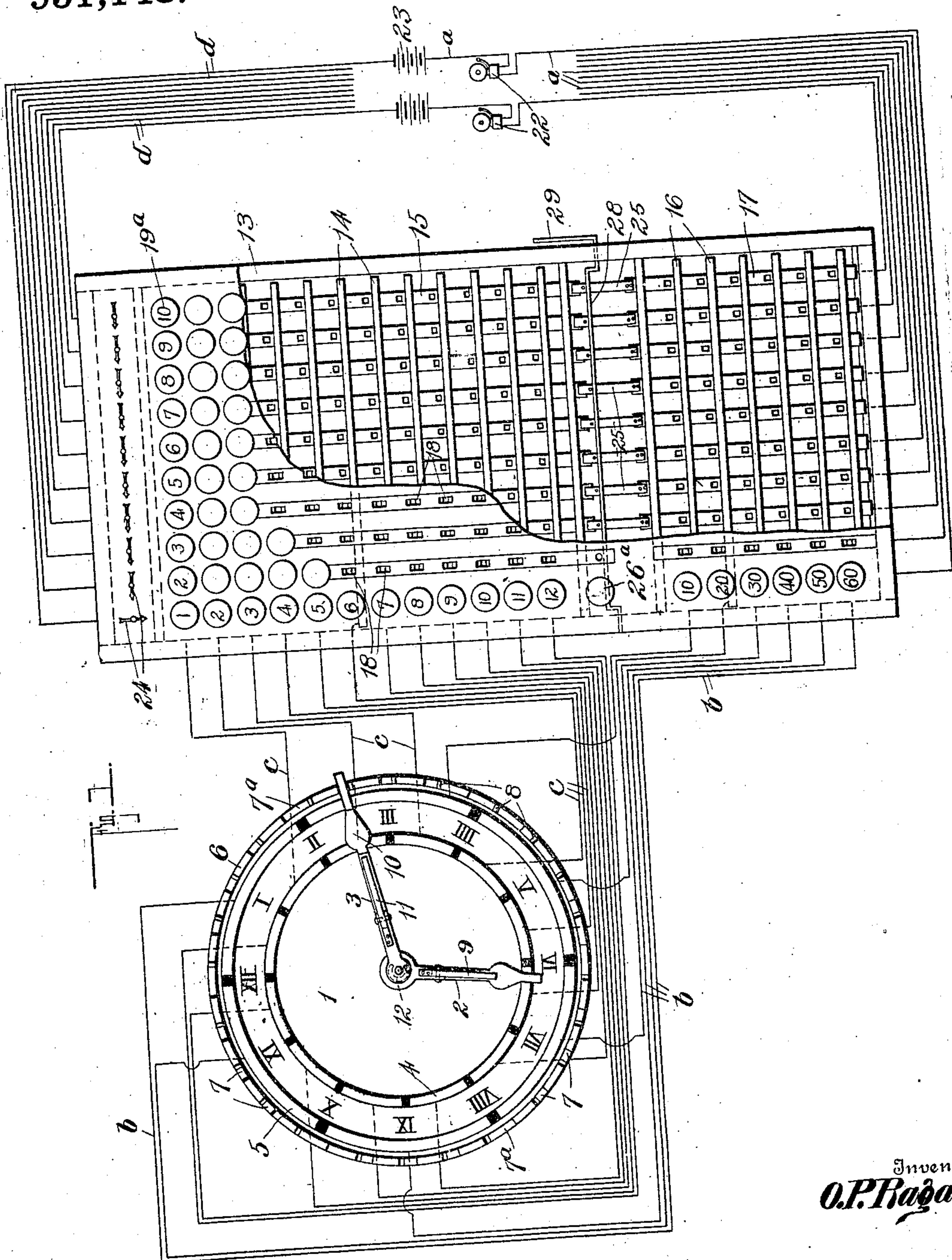


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ELECTRIC CALL CLOCK.
APPLICATION FILED APR. 15, 1909.

Patented Mar. 8, 1910.
2 SHEETS—SHEET 1.

951,148.



Witnesses

Philip H. Burchy
E. B. McBath

By

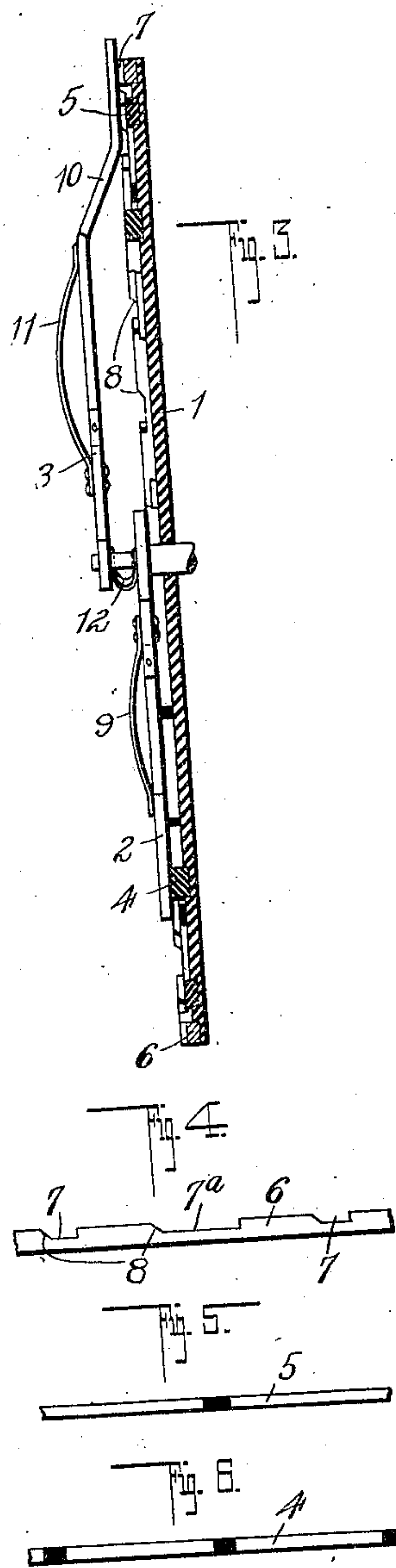
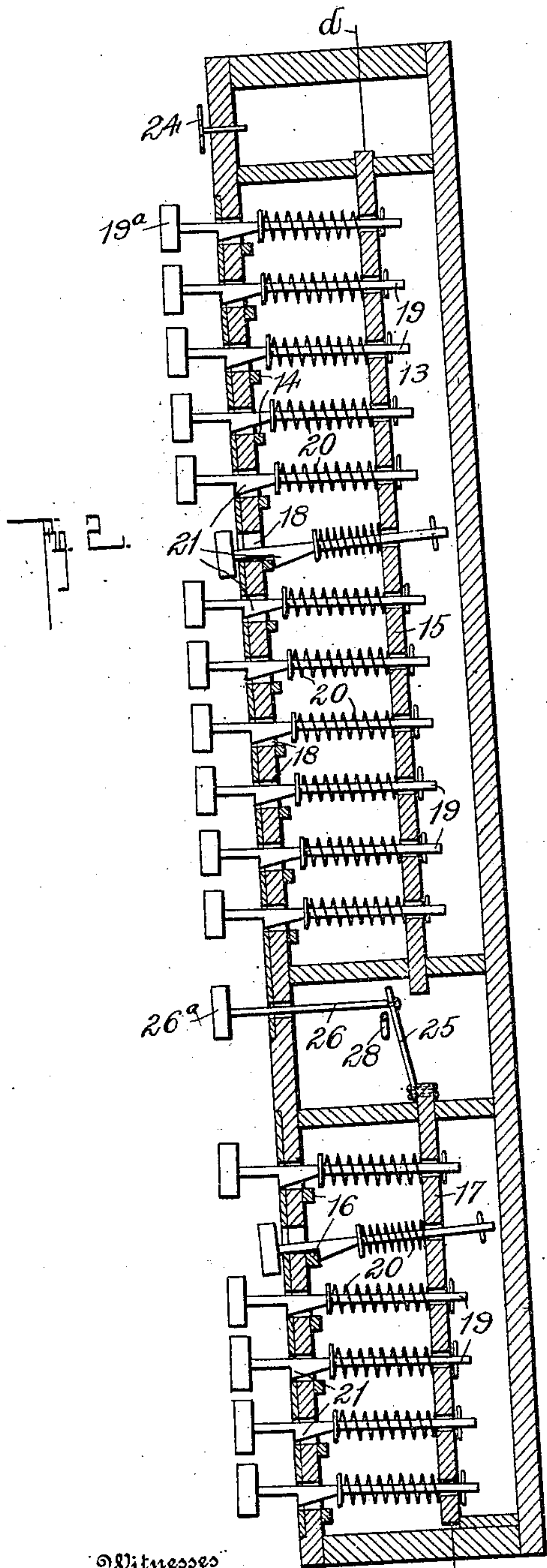
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UNITED STATES PATENT OFFICE.

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ELECTRIC CALL-CLOCK.

951,148.

Specification of Letters Patent.

Patented Mar. 8, 1910.

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To all whom it may concern:

Be it known that I, OWEN P. RAGAN, a citizen of the United States, residing at Ridgeway, in the county of Harrison and State of Missouri, have invented a new and useful Improvement in Electric Call-Clocks, of which the following is a specification.

This invention designed primarily for a call clock for hotel use, may also be used in any place where an electric alarm may be used where the alarm is to be given at some predetermined time. It is designed to ring any one, any number or all of the bells connected with it at any time the operator may desire to set it for.

It consists in a circuit closing clock through which the circuits are automatically closed at the designated time and a switchboard through which the various circuits are connected to the clock in such a manner as to close the circuits at the desired time.

In the accompanying drawings: Figure 1 is a diagrammatic side elevation, parts being removed and the front of a casing being partly broken away. Fig. 2 is a vertical section through the casing. Fig. 3 is a vertical section through the dial plate of a clock. Figs. 4, 5 and 6 are detail side elevations of portions of certain dial rings.

In these drawings 1 represents the face of a clock provided with an hour hand 2 and a minute hand 3. A sectional ring 4 formed of twelve metal segments insulated from each other is carried by the face of the clock, which face is also of a non-conducting material, and the hour hand travels upon the ring 4. Concentric with said ring is a second ring, of larger diameter formed of six insulated sections 5. An outer concentric ring 6 is of greater height than the rings 4 and 5, and is notched or cut away at intervals as shown at 7 and 7^a. The notches at 7^a are of greater length than those at 7, and come opposite meeting end portions of the segments 5, each notch 7^a overlapping end portions of two of the segments 5. The notches are formed with a perpendicular wall at one end, and with an inclined wall at the opposite end, the last mentioned wall being the one approached by the minute hand as it travels clockwise. The ring 6 therefore may be described as a metal ring having a plurality of cams 8 spaced apart, the spaces varying in length.

In the ordinary clock the arbor of the

hour hand may not be truly perpendicular to the clock dial. In a clock in which the contact of the hands with a circle of conducting material was an important part, this might result in lifting the hour hand from the circle during a part of a revolution, thus breaking the circuit, or it might cause excessive friction between the hand and the ring of conducting material. To prevent such action, the hour hand 2 is formed in sections hinged together, and a spring 9 is secured to the inner section and bears upon the outer face of the hinged outer section, thus holding it to the ring 4 at all times and also allowing it to lift should the arbor not be perfectly true and there should be at any point a tendency for the hand to bind. The minute hand is also formed in two sections, but in order to prevent any interference between the two hands the minute hand is spaced a considerable distance from the hour hand and its outer hinged section is angled as shown at 10 in order to carry it in to the outer margin of the dial face. A spring 11 is fixed to the inner portion of the minute hand and bears upon the outer hinged portion. This spring not only serves the same purpose as the spring 10 but also serves an additional purpose inasmuch as the minute hand travels over both the segmental ring 5 and the ring 6. As long as the minute hand is moving along one of the cams 8 it is lifted out of contact with the ring 5, but when one of the notches 7 or 7^a is reached the spring 11 forces the hand into said notch and it then makes contact with the ring, and continues in contact until again lifted by the inclined face of the next cam. This results in giving the minute hand an intermittent contact, and results in intermittent rings. The hands 2 and 3 are electrically connected together by means of a spring 12 which is secured to the hour hand and which is curved upwardly and inwardly and bears upon the under side of the minute hand adjacent the minute hand arbor. This avoids the necessity of using the clock spring or mechanism for the purpose of forming a part of an electric circuit.

In connection with the clock above described, I employ a casing 13 which is divided into upper and lower portions. In the upper portion of the casing twelve metal strips 14 are arranged horizontally upon the inner face of the front of the casing

and arranged vertically in the casing some distance back of and at right angles to the strips 14, are perforated metal bars 15. The number of bars 15 equals the number of rooms to be connected to the clock, the number of strips being equal to the number of hours represented upon the clock face. In the lower portion of the casing are strips 16 similar to the strips 14 and six in number, each strip representing a time interval of ten minutes. Bars 17 corresponding to the bars 15 are also arranged in the lower portion of the casing. Through suitable openings 18 in the front of the casing and through the perforations of the bars work push rods 19 normally pressed outwardly by springs 20, and provided with lugs 21. These rods have a certain amount of vertical play in the openings 18 and the perforations of the bars and when pressed outwardly the lugs engage the strips 14, or 16 according to the location of the rods pushed, as shown in Fig. 2. This establishes through the rods electrical communication between the strips and bars. In the rooms to be connected are located bells 22, and batteries 23 are located at any desired point. The electrical communication between the batteries, bells, casing and clock is by means of conducting wires *a* which lead from the batteries, through the bells, to the bars 17, wires *b* which lead from the strips 16, said strips and wires being six in number, and the six segments forming the ring 5, one wire running to each segment and one strip 17 being therefore electrically connected to one segment. From each of the twelve segments of the ring 4 leads a wire *c*, said wires leading to the strips 14, and being twelve in number, and from the bars 15 lead wires *d* back to the batteries. Each battery and each bell is therefore connected by its own wire through the bars 17, the lower push rods 19, strips 16, wires *b* and ring 5 with the minute hand, through the spring 12 to the hour hand, and thence through the hour hand to the ring 4, wires *c*, strips 14, the upper rods 19, bars 15, and back through the wires *d*, as will be evident from the drawings.

The push rods 19 carry at their outer ends suitable push buttons 19^a, and the upper horizontal row of buttons are given numbers reading from left to right and corresponding to the number of the rooms to which the wires *d* lead. The left hand vertical row of buttons carry numerals in the upper portion of the casing from one to twelve, and the lower push buttons are designated 10, 20, 30, etc., representing minutes after the hour. It will be noted that the left hand upper button is common to both the horizontal and the vertical rows above mentioned. If there-

fore, for example, a guest occupying room 1 is to be called at ten minutes after six, the push button marked with the room numeral 1 and the push button marked with the hour numeral 6, and in the vertical row under the room numeral 1, which is the extreme left hand row, is pushed in. This connects the strip 14 which is connected by one of the wires *c* with the segment in the ring 4 between the dial numerals VI and VII with the upper vertical bar 15 to which the wire *d* leading to the bell in room 1 is connected. The hotel clerk also depresses or pushes in the push button marked 10 in the lower portion of the casing, and in the same vertical row, thus connecting the strip 16 in circuit with the lower vertical bar 17 which is also in the circuit with the bell 22 in room 1, the said strip 16 being connected by one of the wires *b* with the segment in ring 5 extending from the dial numerals II and IV. Therefore when the hour hand 2 reaches the proper segment and the minute hand passes from the first of the ten-minute segments and on to the second one, the hand being at that time in one of the notches 7^a a complete circuit will be established through the battery 23 and the bell 22 in room 1, and the bell will ring until the minute hand passes upon the next cam 8. As soon as it leaves this cam and drops into a notch 7 the circuit will be again completed, and the bell in room 1 will be intermittently rung until the minute hand has traveled off of the said second section, or during an interval of ten minutes, the ringing commencing at ten minutes past six and ending if not otherwise stopped at twenty minutes past. But as one ring may be all that is necessary, I arrange at the top of the casing 13 the usual annunciator hands 24 by means of which the guest may indicate to the clerk that the call has been responded to, and the clerk can then pull out the rods 19, thus breaking the circuit and preventing additional rings. The annunciator mechanism is the one now in common use, being found not only in hotels, but also in almost all elevator systems, and as no claim is made for such mechanism, it has not been shown or described other than as above referred to.

In order to permit the clerk to call a guest at any time independent of the clock mechanism, and without establishing a circuit through the clock, I hinge bridging strips 25 to the bars 17 which strips are operated by push rods 26, one for each room, provided with push buttons 26^a, and by pushing in one of these any of the bars 17 and 15 may be brought into direct electrical connection, thus establishing a complete circuit with any room independent of the clock. I also provide an angled rod 28 which bears upon all of the bridging strips 25 which is operated by a suitable handle 29, and by turn-

ing said handle and rotating the rod 28, each strip 25 is swung into contact with its bar 15, thus closing every circuit and ringing continuously as long as the circuit is closed or the batteries last, all of the bells in all of the rooms with which the device is connected.

What I claim is:

1. A device of the kind described comprising a dial having two concentric sectional rings, hour and minute hands cooperating respectively with said rings, a third ring having cam surfaces thereon engaged by the minute hand, said cam surfaces lifting the said hand intermittently from engagement with its sectional ring, the said minute hand being hinged, a spring holding said hinged hand in engagement with the cam ring and the sectional ring, a plurality of electric circuits including signal devices, each of said circuits being connected to a section of said rings and including the hour and minute hands, said circuits being normally broken, and means for completing said circuits.

2. A device of the kind described comprising a casing divided into upper and lower portions, horizontally arranged strips in each portion, vertically arranged bars in each portion, the bars being spaced from the strips, a clock dial having two sectional concentric rings thereon, an hour hand traveling upon one of said rings, electrical wires connecting each of said ring sections with a strip in the upper portion of the casing, a minute hand traveling upon the other sectional ring, electrical wires connecting said ring with the strips of the lower portion of the casing, a plurality of batteries and signal devices, electrical wires connecting said devices respectively to the upper and lower sets of bars, means for connecting the strips of the upper portion of the casing with the bars of said portion, means for connecting the strips of the lower portion of the casing with the bars of the lower portion, and means for interrupting engagement of the minute hand with its sectional ring, as and for the purpose set forth.

3. A device of the kind described comprising a time dial having three concentric rings placed thereon, one of said rings being formed in twelve sections insulated from each other, an hour hand in engagement with said last mentioned ring, one of the rings being formed in six sections, the remaining ring being notched to form elevated cam portions, said cam portions having an inclined end, a minute hand traveling over the last mentioned ring and riding upon said cam portions, means for depressing said hand into the notches, the hand when so depressed engaging the six-section ring, a spring arranged between the hour

and minute hands, and a plurality of electric circuits including the sections of the said rings, said circuits being normally broken at a point distant from the time dial.

4. In a time clock mechanism, a segmental ring, each of said segments being a part of a separate electric circuit, an outer concentric ring extending beyond the segmental ring, a minute hand having an angled hinged portion traveling upon said outer ring, the outer ring being notched at intervals, an end wall of said notches being inclined, and a spring for depressing the hinged portion of the hand into said notches; said hand when so depressed engaging the segmental ring, the notches being greater in number than the ring segments.

5. In a time clock, a minute hand formed in two sections hinged together, a spring carried by the inner section, and bearing upon the outer section, a ring having cam portions thereon spaced apart, the spring holding the minute hand in engagement with said ring and the hand riding upon and over said cam portions, and a segmental ring, the segments being insulated from each other, and each segment forming a part of an electric circuit, the spaces between the cams occurring opposite adjacent ends of said segments, being of greater length than the other spaces, thereby overlapping meeting end portions of the segments.

6. In a device of the kind described, a minute hand, a segmental ring in position to be engaged by said hand, the ring segments being insulated from each other, each segment forming a part of an electric circuit, and means for successively moving the said minute hand to and away from the said ring during rotation of said hand.

7. In a device of the kind described, a segmental ring, the segments forming parts of electric circuits, a minute hand having a hinged portion, means for bringing said hinged portion toward and into engagement with the ring segments, and means for lifting said hinged portion at fixed intervals from said segmental ring.

8. In a device of the kind described, means for completing an electric circuit at a pre-determined time between the hour and minute hands of a clock, and a ring provided with a series of cam portions spaced apart, said ring being engaged by the minute hand, and the said cam portions lifting the said minute hand, thereby successively causing an otherwise completed circuit to be successively made and broken at fixed intervals, thereby producing an interrupted series of signals during a given duration of time.

9. In a device of the kind described, hour and minute hands, of a clock, the said hands

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having electrical connection with each other, insulated segments over which the hour hand passes, insulated segments over which the minute hand travels, signal devices, electric circuits including said segments and signal devices, and means for interrupting contact between the minute hand and the segments over which it travels during its

passage over any one of said segments, thereby producing an intermittent signal 10 when said circuits are otherwise completed.

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Witnesses:

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