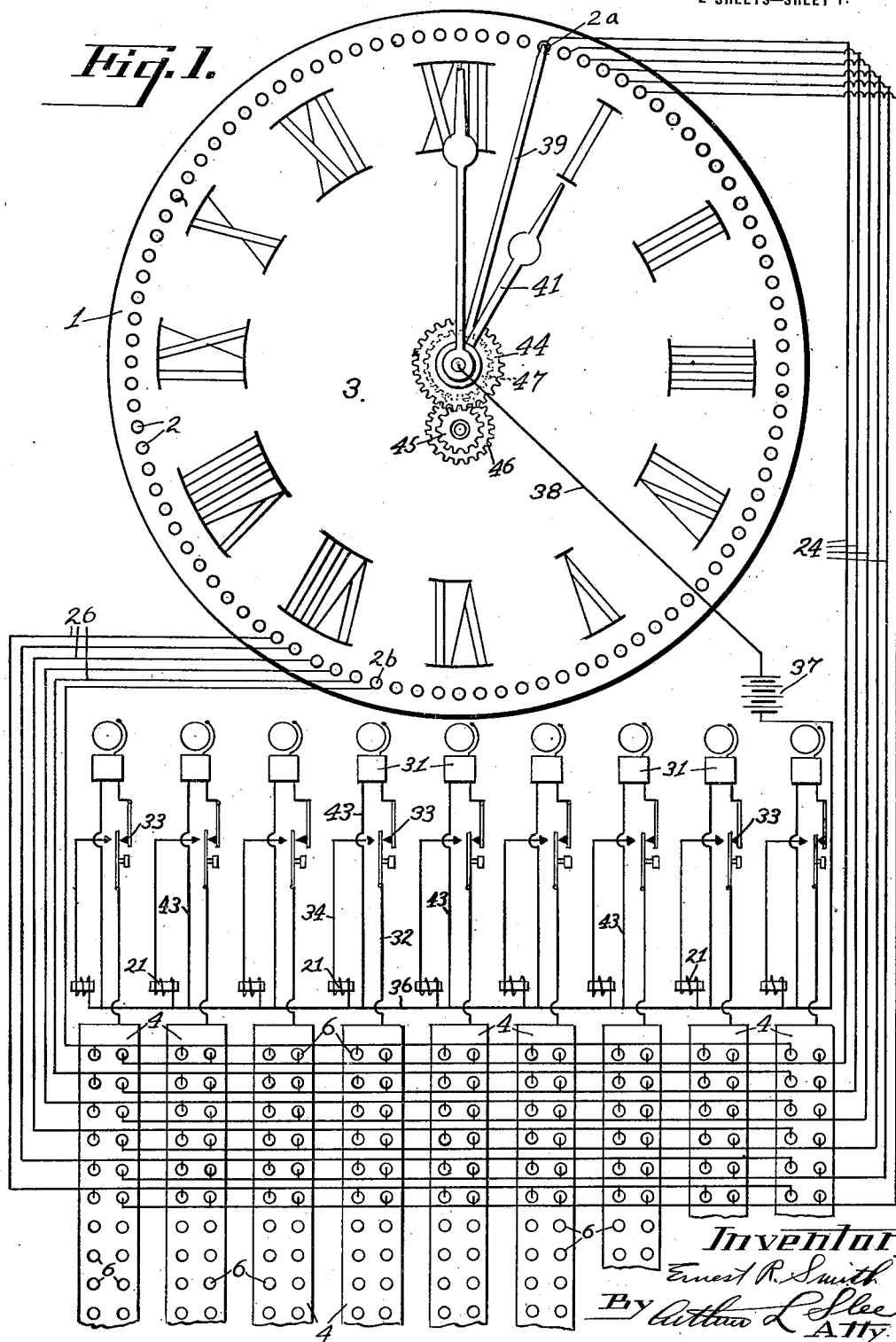


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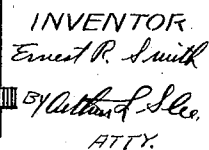
E. R. SMITH.
CALLING DEVICE.
APPLICATION FILED JULY 30, 1920.

Patented Mar. 1, 1921.
2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.



UNITED STATES PATENT OFFICE.

ERNEST R. SMITH, OF SAN FRANCISCO, CALIFORNIA.

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1,370,059.

Specification of Letters Patent.

Patented Mar. 1, 1921.

Application filed July 30, 1920. Serial No. 400,149.

To all whom it may concern:

Be it known that I, ERNEST R. SMITH, a citizen of the United States, residing in the city and county of San Francisco and State of California, have invented new and useful Improvements in Calling Devices, of which the following is a specification.

My invention relates to improvements in calling devices of the type wherein a central operator actuates mechanism for sounding an alarm at a remote point and at a subsequent predetermined period of time, such as calling guests at a hostelry or the like, wherein a plurality of alarms, each arranged at a different point remote from the operator or mechanism, may be connected to any one of a series of time contacts, each contact representing a different period of time throughout regular intervals covering a total period of twenty-four hours, and operates in conjunction with means for connecting said contacts and alarm or alarms with a source of electrical energy whereby said alarm may be sounded at the subsequent predetermined time represented by the contact to which said alarm may be connected.

The primary object of the present invention is to provide a new and improved device for sounding one or more remote alarms at the same or different predetermined and subsequent periods of time.

A further object of the invention is to provide a new and improved device of the character described which shall be adapted to be set at any time to sound one or more alarms at the same or different periods of time subsequent to the time of setting said mechanism.

A still further object of the invention is to provide new and improved means for releasing a setting previously to the sounding of the alarm and to set said sounding for a different subsequent period.

A still further object is to provide simple and improved means arranged adjacent the alarm for disconnecting the same from the operating mechanism therefor, whereby sounding of said alarm may be discontinued.

In other words, to provide for a return signal or a response to the signal or alarm.

A still further object is to provide a means whereby setting of the mechanism for

operation of the alarm will automatically release all other set signals for the same alarm.

A still further object is to provide auxiliary means for releasing all settings for an alarm without making a new setting of time for said alarm.

I accomplish these and other objects by means of the improved device disclosed in the drawings forming a part of the present specification, wherein like characters of reference are used to designate similar parts throughout the said specification and drawings, and in which:

Figure 1 is a broken diagrammatic view of my improved calling device.

Fig. 2 is a top plan view, partly in section, of one of the alarm bars of the device.

Fig. 3 is a broken front elevation of Fig. 2.

Fig. 4 is a broken side elevation of Fig. 3; and

Fig. 5 is a broken detailed view, partly in section disclosing the manner in which the contact hand is geared to the hour hand of the clock work or operating mechanism.

Referring to the drawings the numeral 1 is used to designate in general a clock or other suitable motor having a series of insulated time contacts 2 mounted on the face 3 thereof and arranged in a circle concentric with said face 3.

Each time contact 2 represents a different period of regular intervals of time extending through a period of twenty-four hours. In the present instance, said periods are divided into quarter hours or periods of fifteen minutes each. That is, beginning with a certain contact 2^a, which represents 1 o'clock, a. m. successive contacts represent 1:15 a. m.; 1:30 a. m.; 1:45 a. m.; 2:00 a. m.; 2:15 a. m. and so on until the contact 2^b which represents 1:00 p. m. and successive contacts thereafter represent 1:15 p. m.; 1:30 p. m.; 1:45 p. m.; 2:00 p. m.; 2:15 p. m. and so on until a period of twenty-four hours is represented in periods of fifteen minutes each.

Arranged adjacent the clock 1 or at some convenient and accessible location are a series of vertically disposed bars 4 having a plurality of apertures 6 therein, and one aperture for every time contact 2, said apertures being preferably arranged in parallel

double rows as disclosed in Fig. 3 of the drawings.

Slidably mounted within each aperture 6 is a contact or push rod 5 having an annular shoulder 7, a collar 8 and an annular groove 9 adjacent the inner rounded end 10 of said rods 5.

A spring 11 is interposed between each shoulder 7 and a shoulder 12 within the apertures 6 to normally retain said rods 5 in extended or inoperative positions. A pair of elongated vertically disposed latches or pawls 14 are pivotally mounted upon the rear of each bar 4 and are connected by means of a link 16. The outer edges of the latches 14 are arranged to engage the annular groove 9 of any rod 5 when said rod is pushed inwardly and to retain said rod in contact with a contact spring or jack 17 arranged adjacent each aperture 6 and rod 5. The contact springs 17 may be thermo-static, the purpose of which will hereinafter be more fully described.

The upper end of one of the pawls 14 is provided with a lateral extension 18 having an armature 19 thereon arranged to be attracted by a suitable electromagnet 21 arranged on the top of each bar 4. The same pawl 14 is also provided with a second lateral extension 22 extending through an aperture 23 in the bar 4. This second extension 22 is provided to operate the pawls 14 as an auxiliary means for releasing any or all of the push rods 5 mounted within that bar 4.

As hereinbefore set forth, each of the time contacts 2, 2^a and 2^b, represent a different period of time or regular intervals throughout a total period of twenty-four hours, the contacts, reading clockwise, from the contact 2^a up to contact 2^b representing periods of time in the morning or a. m. and the contacts from 2^b to 2^a representing period of time during the afternoon and evening or p. m. periods.

Similarly one row of rods 5 in each bar represents periods of a. m. time while the other row represents periods of p. m. time.

There is a push rod 5 for each period of time represented or one for each time contact 2 on the clock 1. The period of time of each rod 5 is represented or indicated by suitable numerals 27 indicating the even hours, and numerals 28, of a different type preferably to distinguish from the even hour numerals 27, representing fractions of hours, which numerals 27 and 28 are impressed or otherwise fixed to the bars 4 and between the buttons to which they refer the a. m. or p. m. period of time represented by each particular rod being suitably impressed on the rod itself, as disclosed in Fig. 3 of the drawings.

A series of alarms 31, one for each bar 4, are arranged at different points remote from the bars 4 and clock 1 and each alarm 31 is

connected to its respective bar 4 by means of a suitable wire or electrical conductor 32, each wire 32 having connected therewith and adjacent the alarm 31 a suitable switch 33 having a third wire 34 passing to and around the electro-magnet 21 of that respective bar 4 and thence to a common return wire 36 leading to one side of a source of electrical energy 37. A wire 38 leads from the other side of the source of electrical energy to a contact arm 39 operatively connected, in a manner hereinafter more fully set forth, to the hour hand 41 of the clock 1.

The other side of each alarm 31 is also connected, by means of a wire 43 to the common return wire 36 leading to the source of electrical energy 37.

The a. m. time contacts from 2^a to 2^b, not inclusive, are connected to the spring contacts 17 adjacent the corresponding a. m. push rods 5 by means of suitable wires 24 while the p. m. time contacts from 2^b to 2^a, not inclusive, are connected to the spring contacts 17 adjacent the p. m. rods 5, by wires 26.

The contact arm 39 is operatively connected to rotate at one half the speed or number of revolutions as the hour hand 41 by means of a gear 44 meshing with a pinion 45 connected to a gear 46 in turn meshing with a gear 47 on the shaft or arbor 48 of the hour hand 41.

As the ratio of the gears 44 and 45 is one to two it is evident that the contact arm 39 will travel at one-half the speed of the hour hand 41, and as said hand 41 makes two revolutions during a period of twenty-four hours it is obvious that the contact arm 39 will make only one revolution during the same period and therefore will only make contact once with any one time contact 2 during each revolution.

In operation let us assume that the device is installed, for purposes of illustration, within a hotel or the like, wherein a number of rooms are each provided with one of the alarms 31 and switch 33 arranged adjacent thereto and that the clock 1 and bars 4 are positioned at the central office.

Should a guest at 4 p. m. leave a call to be called at 1:00 a. m. the next morning, the clerk or other operator presses the a. m. rod 5 opposite the numeral 1 on the bar 5 corresponding to the room number of the guest until the edge of the latch 14 engages the annular groove 9 of said rod 5 and thereby retains said rod 5 in contact with the contact spring 17 corresponding to that rod 5.

When the contact arm 39, through operation of the clock 1 and hour hand 41 thereof, contacts with the time contact 2^a on the face 3 of the clock 1, the electrical energy will flow from the source of electrical energy 37 through the wire 38 to the contact arm 39, contact 2^a, wire 24, contact spring 17, rod 5

to the bar 4 and through the wire 32 and switch 33 to the alarm 31, wire 43 to the common return wire 36 and thence back to the source of electrical energy 37, thereby sounding said alarm.

Passage of the current through the contact spring 17, said spring being thermostatic, will cause said spring 17 to recede from contact with the rod 5 and thereby interrupt the current until said contact cools sufficiently to again contact with the rod 5, thereby producing an intermittent sounding of the alarm to attract the attention of the guest.

To simultaneously discontinue ringing or sounding of the alarm, disconnect the rod 5 from contact with the contact spring 17, and provide a return signal indicating that the alarm has been received and noted, the guest may press the button attached to the switch 33 adjacent the alarm 31 and thereby cause the current from the source of electrical energy 37 to flow through the wire 34 instead of through the alarm 31 and thereby energize the magnet 21 to attract the armature 19 on the lateral extension 18 of one of the pawls or latches 17 and thereby disengage said latch from the annular groove 9 of the rod 5 in contact with the contact spring 17.

The releasing of the rod 5 will disconnect the source of electrical energy from the respective alarm only leaving said source connected to other alarms in other rooms where the corresponding rod 5 has been set to contact for that time period until the switch 33 adjacent such alarm is operated by the guest for whom the call has been made.

Or any rod 5 may be released, if wrongly set, by setting the rod 5 on the same bar for the correct time the call is to be made. Or if the call is to be canceled the extension 22 is actuated to release any rod 5 without setting any other rod on the same bar.

It is obvious from the foregoing that I have provided an improved calling device whereby said device may be set to sound an alarm at a remote point and at any predetermined period of time. It is also obvious that all of the alarms may be set to be sounded at the same time, but it is impossible to set any one alarm to operate for every period of time as such operation or procedure would be sure to annoy a guest and would be of no avail.

It is also evident that the guest receiving the call must respond in order to prevent the continued intermittent sounding of the alarm, otherwise the said alarm will continue to sound intermittently as long as the contact arm 39 is in contact with that particular time contact 2.

A suitable spring 50 serves or operates to normally retain engagement of the latches with the rods 5.

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

1. A calling device comprising a series of insulated time contacts, each representing different periods of time of regular intervals extending through a period of twenty-four hours; a series of alarms arranged at different points remote from the time contacts; a series of bars each connected to a different alarm; a series of spring contacts insulated from and mounted upon the bars, corresponding contacts on each bar being connected to one of the time contacts; a source of electrical energy; push rods slidably mounted within each bar, one for each contact thereon and adapted to engage said contact; means for normally preventing engagement of said rods with said contacts; means for engaging and retaining engagement of any rod with its contact when said rod is moved into engagement with said contact; and means for connecting any time contact with the source of electrical energy at the period of time represented by said contact whereby an operating current may flow through said time contact to said alarm; and means arranged adjacent each alarm and adapted to actuate the rod engaging means for that alarm to release its respective rod whereby sounding of said alarm may be discontinued.

2. A calling device comprising a series of insulated time contacts, each representing different periods of time of regular intervals extending through a period of twenty-four hours; a series of alarms arranged at different points remote from the time contacts; a series of bars each connected to a different alarm; a series of spring contacts insulated from and mounted upon the bars, corresponding contacts on each bar being connected to one of the time contacts; a source of electrical energy; push rods slidably mounted within each bar, one for each contact thereon and adapted to engage said contact; means for normally preventing engagement of said rods with said contacts; means for engaging and retaining engagement of any rod with its contact when said rod is moved into engagement with said contact; and means for connecting any time contact with the source of electrical energy at the period of time represented by said contact whereby an operating current may flow through said time contact to said alarm; and auxiliary means for operating the rod engaging and retaining means for releasing any rod engaged thereby.

3. The combination with a calling device of a bar having a series of apertures therein; a push rod slidably mounted within each aperture; a spring contact mounted adjacent each aperture and arranged to be engaged and to contact with the rod therein;

means for normally preventing engagement and contact of said rod with said contact spring; means for retaining contact of said rod with its respective spring when said rod is moved into contact therewith; and means arranged remote from said bar and adapted to actuate the retaining means to release all rods on said bar in contact with said springs.

10 4. The combination with a calling device of a bar having a series of apertures therein; a push rod slidably mounted within each aperture; a spring contact mounted adjacent each aperture and arranged to be engaged and to contact with the rod therein; means for normally preventing engagement and contact of said rod with said contact spring; means for retaining contact of said rod with its respective spring when said rod is moved into contact therewith; and means arranged remote from said bar and adapted to actuate the retaining means to release all rods on said bar in contact with said springs; and auxiliary means operatively connected to the retaining means and arranged adjacent said bar whereby said re-

taining means may be actuated to release all rods in contact with their respective springs.

5. The combination with a calling device 30 of a bar having a series of apertures therein; a push rod slidably mounted within each aperture; a thermo-static spring contact mounted adjacent each aperture and rod therein and arranged to contact with said 35 rod, each spring representing a different period of time and of regular intervals; means for normally preventing engagement of any rod with its respective contact spring; means for retaining engagement and contact of any rod with its respective contact 40 spring when said rod is moved into contact therewith; means for causing an electrical current to flow through said thermo-static contact spring at a period of time represented by said spring and thereby intermittently 45 sound an alarm connected to said bar and arranged at a point remote therefrom.

In witness whereof I hereunto set my signature.

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ERNEST R. SMITH.