

(No Model.)

A. BARRETT & J. ZENTNER.

HOTEL SIGNALING SYSTEM.

No. 390,833.

Patented Oct. 9, 1888.

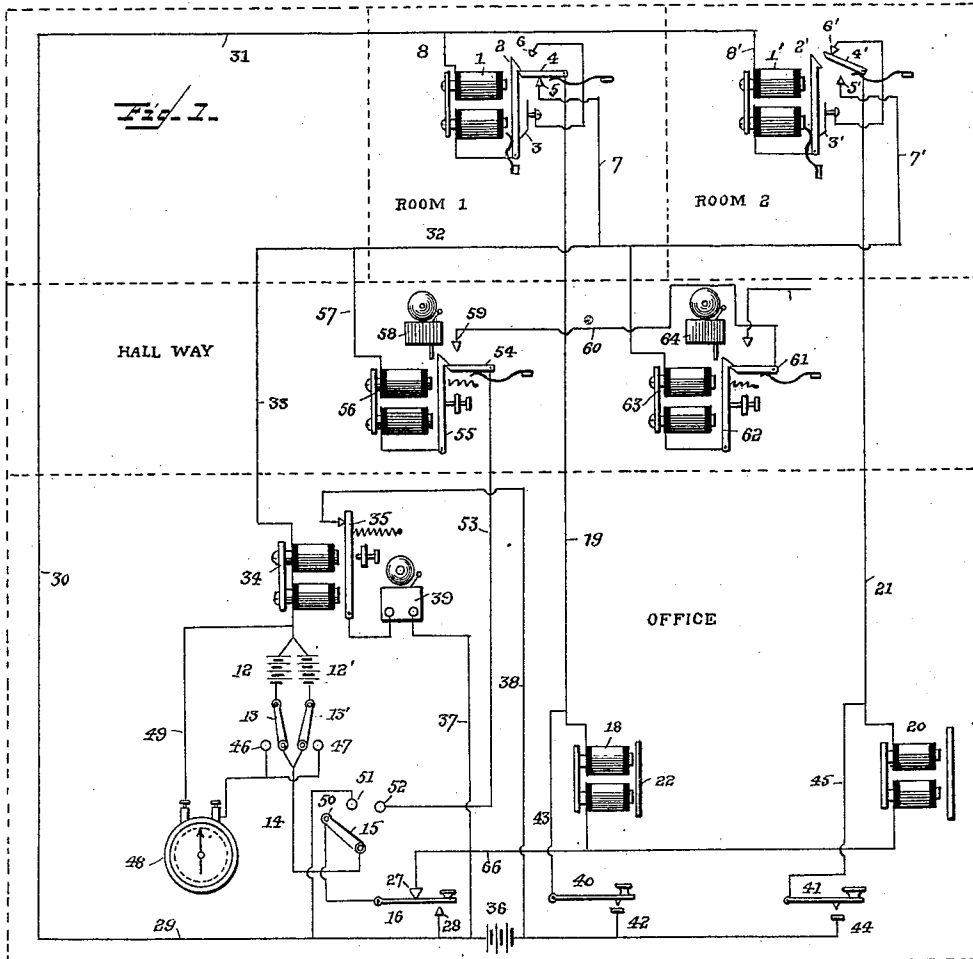


Fig. 2.

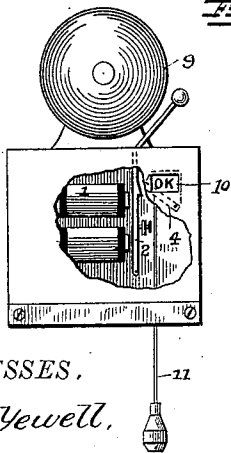


Fig. 3.

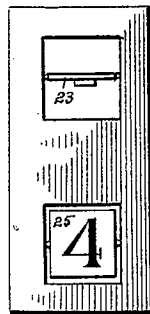


Fig. 4.

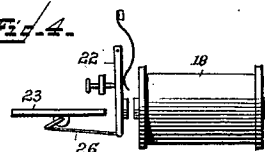
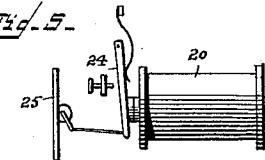


Fig. 5.



WITNESSES.

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HOTEL SIGNALING SYSTEM.

SPECIFICATION forming part of Letters Patent No. 390,833, dated October 9, 1888.

Application filed February 23, 1888. Serial No. 264,968. (No model.)

To all whom it may concern:

Be it known that we, ALBERT BARRETT and JOSEPH ZENTNER, citizens of the United States, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Hotel Signaling and Alarm Systems; and we do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

This invention relates to a hotel signaling and alarm system for establishing communication between the guests' rooms and the office of the hotel and rendering it possible for the clerk to sound a general alarm when danger threatening the guests should require it.

The object of the invention is to establish free communication between the individual rooms and the office, to simplify the apparatus, and to provide against errors in or failure of operation on account of carelessness or defective batteries.

To this end our invention embodies a signaling instrument for a guest's room, which will at any time respond to a call from the central office, may be readily set to transmit a call to the office, and will automatically respond to the clerk's action and indicate that the call has been received.

Our invention also embodies a duplex or split electric generator for supplying the system, and a testing circuit and instrument controlled by the same in such a way that the clerk can always determine whether the generator is in proper working condition without interfering with the service of the signaling system during his tests.

Our invention also embodies a system of circuits and fire-alarm gongs, by which many bells of great power may be controlled by a small electric generator.

Our invention also embodies certain improvements in the system and in details of structure, which will hereinafter be fully described in the specification, and then definitely indicated in the appended claims.

In the accompanying drawings, which illustrate our invention, Figure 1 is a diagram-

matic view of a system embodying our invention, showing the apparatus and its connections in two guests' rooms, two electro-mechanical gongs and their connections in a hallway, and the central-office apparatus. Fig. 2 is an elevation, part being broken away to show the structure, of a guest's signaling apparatus. Fig. 3 is a view in elevation of a central-office indicator. Figs. 4 and 5 show the controlling mechanism for the indicator.

In systems of this character it is desirable that a guest should be able to send his call and then occupy himself with other matters while the call remains unattended to, it not being practicable always for the clerk immediately to respond. It is also advisable to distinguish between a mere responding notification upon the part of the clerk that a call has been received and a signal that the guest is wanted. The apparatus illustrated in Figs. 1 and 2 accomplishes both these ends. One of the instruments is placed in each room with which communication may be desired. It consists of an electro-magnet, 1, provided with an armature, 2, and contact-spring 3, normally resting against a back-stop. The armature has a hooked top adapted to be engaged by a lever, 4. This lever plays between two stops, 5 and 6, and is normally held against the upper one by a suitable spring.

The apparatus is inclosed in a suitable box, as shown in Fig. 2, the armature 2 carrying a bell-hammer, and a bell, 9, being supported in co-operative relation thereto. The box is provided with an opening, 10, Fig. 2, through which is seen a card bearing the letters "O. K." When the lever 4 bears against the upper contact, a cord, 11, carrying a handle or pull, Fig. 2, is attached to the free end of lever 4.

In Fig. 1 the instrument shown in room 1 is shown as calling, while that in room 2 is shown in its normal condition. Each of the magnets 1 1', &c., of these guests' instruments is connected to a common return-circuit, 29 30 31, and an individual branch, 19 43, or 21 45, terminating in a key at the central office. There is a key, 40 41, for each instrument arranged in convenient juxtaposition at the office, so that when the clerk desires to express a want to a guest he operates the corresponding key. There is, besides these, a common key, 16, for all the rooms, which will presently be de-

scribed. The central office is provided with an indicator carrying drops or shutters and means of controlling them, so as to show the number of the calling room, with a switch, 15, adapted to be swept over a series of contacts, 50 51 52, as will presently be described, with two batteries, 12 12' and 36, an annunciating-bell, 39, and circuit, and a testing-instrument, 48, and circuit.

The indicator, Figs. 3, 4, and 5, is provided with as many drops as there are rooms. The drops normally occupy the position of 23. Each drop has a corresponding controlling-magnet, 18 20. The armature 22 is held back by a spring or weight, a rigid link, 26, acting on the drop when the magnet actuates its armature, as shown at 24, Fig. 5.

In the hallways of the hotel, at suitable intervals, are placed a series of electro-mechanical gongs, 58 64. Controlling-magnets 56 63 are provided for these gongs, so that on occasions of common danger all the guests can be aroused by releasing the gongs, which are of such power as to make the alarm effective day or night.

Having now generally described the parts of the system, we will consider the circuit connections which make them operative.

In room 1 the circuit-closing lever 4 is shown latched under the armature. A guest has pulled the cord and a call is being given at central office. The circuit is as follows: contact 5, conductor 7, common return to central 32, relay 34, both branches of battery 12 12', conductor 14, switch 15, contact 50, key 16, back-stop 27 of said key, conductor 66, indicator-magnet 18, individual branch 19, and lever 4. Both magnets 34 and 18 are energized. Armature 35 closes a local circuit, including battery 36, conductors 37 38, and a tap or continuously-ringing bell, 39. The bell therefore announces to the clerk that a guest wants attention. Magnet 18 has operated the indicator-drops, so that the number of the calling room is exposed.

In order to advise the guest that his call is being attended to the clerk depresses key 16. This completes a circuit through conductors 28 29 30 31 8, magnet 1, armature 2, lever 4, contact 5, conductors 7 32 33, magnet 34, battery 12 12', conductor 14, switch 15, contact 50, and key 16. The magnet 1 will thus unhook lever 4, and the latter will be raised by its co-operating spring and display "O. K." before the opening in the box, and contemporaneously ring a single tap on the bell 9. The guest is therefore notified by the tap and card that his call has been received. If he should have left the room meantime, the card is a standing answer to his call; if not, the bell audibly informs him. Let us suppose the clerk wants to communicate with the guest. The guest's instrument will be in the condition shown in room 2. It will be noted that the general key 16 will not now establish communication, because the corresponding circuit is open at contact 5. The clerk will therefore

depress the key 41 corresponding to room 2, and a circuit will be closed by way of conductor 41, battery 36, conductors 29 30 31 8', magnet 1', armature 2', spring 3', contact 6', lever 4', conductors 21 45, and key 41. The guest's magnet will be energized and will act as a rheotome to continuously ring his bell, and will continue ringing as long as the clerk holds down the key or until the guest answers by pulling the cord. It will be noted that a separate battery 36 is used for this circuit. As the clerk will respond to the guests only one at a time, it is unnecessary to have as great battery strength as is necessary for the guests' signaling-circuit because, obviously, two or more guests may be calling at the same time, when the divided current would so reduce a weak current as to create a failure in the annunciating and indicator magnets. Battery 36 serves at once as a local for bell 39 and a signaling agent for the clerk. The latter is always advised that this battery is in working order by the tone of his call. If it should fail to work, such failure will be indicated by the absence of the ring when any drop is displayed. The drops, being controlled by a different battery, are of course independent of battery 36. This disposition obviates a source of great annoyance in annunciator systems. Usually there is no warning of failure to operate. By the arrangement described the notice is automatic. It is possible, however, that the battery 12 12' may fall so low in electro-motive force or become inoperative by a broken cell or evaporation of its excitant that it will be insufficient to operate the relay 34. Under ordinary circumstances the clerk would have no notice of this. A weakening, indeed, could, perhaps, be discerned by a difference in tone of the bell in systems in which the bell is placed directly in the main circuit; but on an entire failure of the batteries the drop and annunciators would both fail to operate and the whole system be rendered inoperative. To obviate this difficulty, we connect the main battery in two equal sections connected in a split circuit, as shown at 12 12'. Each section is provided with a switch, 13 13', normally connecting its section in a circuit open at the guests' rooms, as hereinbefore described. An additional contact for each switch 46 47 is provided, both contacts being electrically connected with a galvanometer or current-indicator, 48, which communicates with one pole of the combined battery by conductor 49. The switches will in practice of course be located at a point convenient of access to the clerk. With this disposition it will be evident that by shifting either switch the clerk can at any time ascertain the condition of the battery. It will be noted, moreover, that with the disposition described while such a test is being made with either section the other section remains coupled in operative relation to the circuit, so that a call would not be lost should one be transmitted by a guest during the time a test is being made.

It will of course be understood that the parts will in practice occupy convenient positions. The galvanometer and switches will be placed in convenient relation, so that the clerk can readily make the observations on manipulating a switch.

Besides the testing switches the central office is provided with another switch, 15, adapted to be swept over a series of contacts, 50 51 52. The contact 50 is in circuit with key 16, as has already been described. Contact 51 is connected with conductor 29, and contact 52 connects with the lever 54 of the first of the series of electro-mechanical gongs. Suppose, now, it were necessary to rouse all the guests, as in case of a fire. The clerk would shift switch 15 to contact 52. In so doing the switch would make a momentary contact at 51, and would cut out any guest's instrument which might be calling at that moment, a circuit would be closed through contact 51, conductors 29 30 31, and the calling-instrument, (say in room 1,) armature-lever 4, stop 5, conductors 7 32 33, magnet 34, battery 12 12', and switch 15. This would unset the guest's instrument, or all of them if more than one were set. This is important, because the full strength of the battery will now be needed to make certain the operation of the gongs. When the switch 15 reaches the alarm-contact 52, therefore, the battery will be disencumbered of any work and will be in condition to throw its entire strength into the gong-releasing magnet. A circuit is then made proceeding from battery 12 12', through magnet 34, conductors 33 57, gong-releasing magnet 56, armature 55, lever 54, conductor 53, switch 15, conductor 14, switches 13 13', and battery.

It will be seen that the first gong gets the whole strength of the battery. The armature 55 is drawn forward and trips the mechanism of the gong in a manner well understood in the art. Almost simultaneously with the release of the gong lever 54 is unlatched, breaking the circuit first traced and contacting with stop 59 and throwing the current through the next gong, releasing magnet by way of conductor 60, lever 61, armature 62, and magnet 63, releasing the second gong of the series, and so on. It will thus be seen that an indefinite number of powerful gongs may be released by a comparatively slight battery-power.

Several very important results flow from an organization such as described. By providing a single key or circuit-closer to answer all calls said key can be placed at the point most convenient for the clerk, while the other individual keys, which collectively occupy considerable room, will be disposed where there is sufficient room. By the circuit-connections described the indicator-drops are automatically restored simultaneously with the transmission of an answer to a call. This obviates the necessity of going to the annunciator to reset the drop, a feature of the annunciators

at present in use which is often productive of annoyance to a guest in sending a second call when by negligence of the clerk or bell-boy his drop has not been reset. The single answering-key also prevents mistakes in the clerk's answer, as it is only in cases of importance when the guest is actually wanted that the individual keys need be operated. As such an exigency would be one of higher importance than a mere answer that a call is noted, the clerk will of course not be so likely to operate the wrong key. Another important incident of the system is the actual difference in the audible signals given when the different calls are transmitted.

The clerk's answer is a single tap on the guest's bell. The clerk's call to the guest is a continuous ringing of the guest's bell. The alarm is a powerful bell of different tone. This latter is important in this, that a guest will feel no uneasiness in hearing another guest's bell, and will instantaneously recognize an alarm when given.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In an electric signaling system, the combination of a central office, a series of outlying stations, a common connection between the central and all of the stations, a normally-open and a normally-closed branch at each station, individual circuit-closers at central office corresponding to each normally-closed branch, a circuit-closer at each station adapted to close either branch but normally impelled to the branch corresponding to its individual circuit-closer, a detent for holding the station circuit-closer on the abnormal branch, an electro-magnet for releasing the detent, said electro-magnet being permanently in circuit with the aforesaid common connection, and a general circuit-closer at the central office adapted to connect the normally-open branch with the aforesaid common connection, as and for the purpose set forth.

2. In an electric signaling system containing a central office and a series of outlying rooms or stations, the combination of a common connection between the central and all of the stations, normally-open branches at central office to each station, individual circuit-closers in said branches at central office for signaling the respective stations, a normally-open and a normally-closed branch at each station, a circuit-closer at each station adapted to close either branch, a signaling electro-magnet in circuit in either position of the circuit-closer, a lock for holding the circuit-closer on the normally-open branch, a general circuit-closer at central office adapted to connect the normally-open branch with the aforesaid common connection, and electric connections for releasing the lock at any station when the general circuit-closer is operated.

3. In an electric signaling system, the combination of a central office and outlying stations, a common connection between central

and all of the stations, a normally-open and a normally-closed branch between each station and central office, individual circuit-closers at central office corresponding to the normally-closed branch, a rheotomic bell at each station in circuit with its normally-closed branch, a normally-open connection through the magnet of said bell between the normally-open branch and the common connection, and a general circuit-closer at central office adapted to connect the normally open branch to the common connection, whereby a single tap may be produced at a station when in abnormal condition and a continuous ring when in normal condition.

4. In a hotel signaling and alarm system, the combination of a main circuit containing signal transmitting and receiving instruments, a branch circuit, a manual switch in said circuit, an alarm-gong controlled by said branch, an electro-magnet in said branch, a switch actuated by said electro-magnet for cutting out the first gong, and a normally-open branch controlling a second gong adapted to be closed by said switch.

5. In a combined signaling and alarm system, the combination of a central office and outlying stations, a common connection between central and all of the stations, branches

to the central normally open at the stations, a circuit-closer at each station for closing its branch, receiving-instruments at central, an alarm-circuit, a battery, a switch connected to said battery to connect to the signaling-circuit or the alarm-circuit, an electro-magnet at each station for controlling its circuit-closer, and a branch circuit connecting said magnet with a contact in the path of the travel of the switch between the signaling and alarm circuits, whereby a single battery may be used for both systems and its entire strength thrown into the alarm system when necessary.

6. The combination of an electric circuit, a split battery in said circuit, a local normally-open branch circuit, a current-indicator in said branch, and switches in the main circuit for throwing either section of battery into the branch circuit, whereby the strength of either section may be tested and current still be maintained on the main line.

In testimony whereof we affix our signatures in presence of two witnesses.

ALBERT BARRETT.
JOSEPH ZENTNER.

Witnesses:

F. M. BARBOUR.
NATHANIEL R. FERGUSON, Jr.