

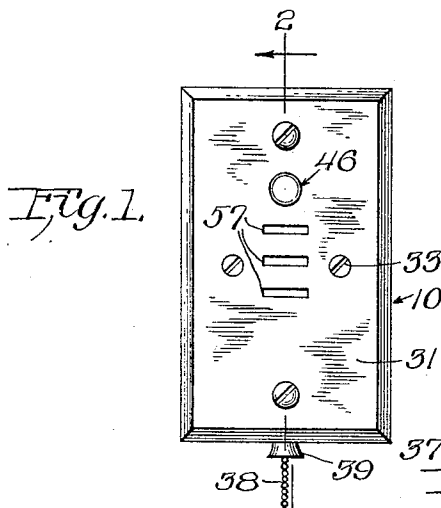
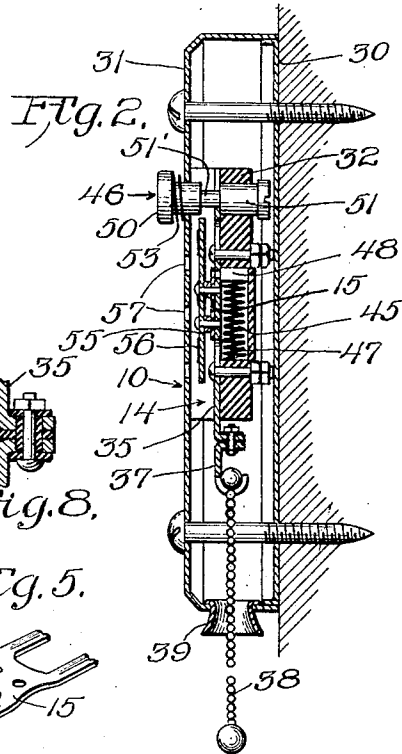
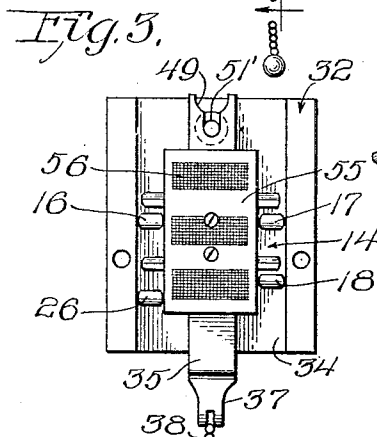
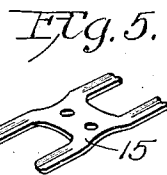
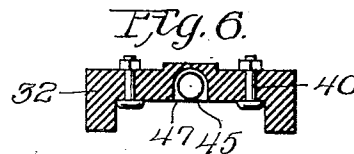
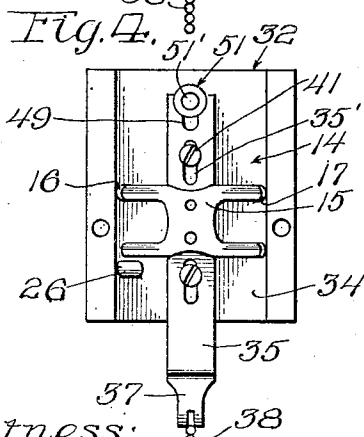
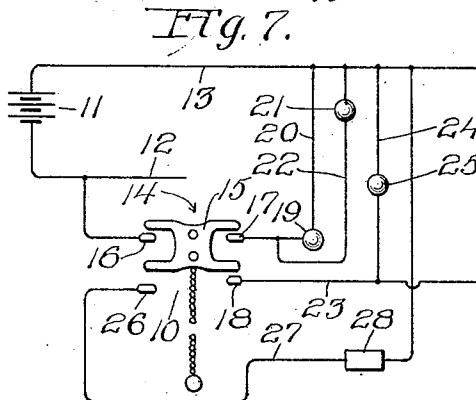
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CALL SWITCH FOR HOSPITAL SIGNAL SYSTEMS

Filed April 14, 1923



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UNITED STATES PATENT OFFICE.

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CALL SWITCH FOR HOSPITAL SIGNAL SYSTEMS.

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My invention relates to signaling devices particularly adapted for hospital-call systems, by which a patient may call for an attendant; and pertains particularly to the signal-initiating or calling device.

In many instances, particularly in the improvement of signal systems already installed in old hospital buildings, it is especially desirable to provide the calling devices in form adapted for placement upon a finished wall, and further to minimize the expense of the installation to the greatest extent consistent with rendering the desired service. Among the objects of my invention, therefore, are to satisfy these requirements with a call-switch or signal-initiating device that is simple, inexpensive, self-contained and adapted for mounting upon a wall or any other convenient support already existing. A further object of my invention is to provide signal-initiating means for uses as above described by which both audible and visual signals may be initiated in novel fashion.

Other and further objects of my invention will become apparent from the following description taken in conjunction with the accompanying drawings, wherein I have illustrated, for purposes of disclosure, only a single embodiment of my invention from the precise details of which (it will be understood) many departures may be made without departing from the spirit of my invention within the scope of the appended claims.

In the drawings Fig. 1 is a front elevation of a call device; Fig. 2 is a central vertical section therethrough taken on line 2—2 of Fig. 1; Fig. 3 is a detail elevation of the switch block and switch slide in assembled relation; Fig. 4 illustrates the same parts with a plate-member removed; Fig. 5 is a perspective detail of the movable contact member; Fig. 6 is a fragmentary cross-section through the insulating base of the switch; Fig. 7 illustrates suitable circuit connections controllable by the switch, and Fig. 8 is an enlarged detail of the insulating joint shown in Fig. 7.

The purpose of the call device generally indicated at 10 may readily be understood from the circuit diagram of Fig. 7. A source of current supply such as battery 11 is connected between mains 12 and 13 of indefinite extent between which mains the signaling devices for respective stations

will be connected, each in the manner indicated in the diagram. Each calling switch mechanism 14 provides a movable switch element 15 for cooperation with fixed contact parts. One main wire, 12, is connected with a contact 16 and when the switch element 15 is moved into connection therewith it will also contact with fixed contact points 17 and 18. Contact 17 may control a door lamp 19 arranged in a connection 20 from said contact to the main wire 13, and also a call-lamp 21 arranged in a parallel connection 22. Either or both of these visual signals may be employed, for indication at the door of the sending station, at some nurse's station such as a diet-kitchen or the like, and of course further parallel connections from this contact to other signal devices may be employed if desired. The contact 18 may be connected through a common wire 23 with like contacts of other signal initiating stations, and this wire 23 may be connected as at 24 through a lamp 25 to the main wire 13, so that the lamp 25 may serve as a pilot common to a plurality of signal initiating stations. Provision of another, auxiliary contact 26 is made in such fashion that movement of the switch element 15 of greater linear extent than is necessary for connection with contacts 17 and 18 must be made in order to energize the contact 26, but the position of said contacts being preferably such that connection with contacts 16, 17 and 18 is not broken when the movable switch element 15 also coacts with contact 26. This contact may have connection by wire 27 through an audible signaling device such as a buzzer 28, with the return-main 13, and of course such audible signaling means may be located as desired, preferably within hearing distance of the transmitting station, so that the patient initiating the signal may be self-assured that the audible signal is given.

In the construction of the call device 10, I preferably provide a back-plate 30 (although this may be omitted) and a box-like cover element 31 to form a complete metallic enclosure for the switch parts, all of which may be carried by the cover element. To the rear face or under side of the cover an insulating base or block 32 is secured as by screws 33, the front face of this block being channeled as at 34 in a vertical direction for reception of the sliding switch part. The slide-bar 35 of the switch has

secured to it the four-pronged contact plate 15, and to the lower end of the slide bar is insulatedly secured a hook 37 to which is conveniently attached the pull-cord 38 extending through the opening 39 of the housing. When the pull-cord is drawn down part-way, three appropriate prongs of the switch plate 15 are brought into connection with respective contacts 16, 17 and 18, and on further depression of this contact plate, to its extreme limit of downward movement, its lower prong is brought into engagement with contact 26 but without losing engagement of the remaining prongs with their respective contacts. I will refer to the several positions of the contact plate as upper or normal position; mid-position and lowest or final position.

The several stationary contacts 16, etc., are appropriately shaped heads integral with stems 40 which project through the back of the insulating block to act as binding posts; and the slide-bar 35 is restricted to a vertical path of movement by engagement of its slot 35' with guiding screws 41 in the insulating base.

A spring 45 is arranged to tend constantly to press the slide bar 35 upward, and when the slide is drawn down to mid-position it is arranged to be latched in such position, against spring return, by a manually-releasable latch 46. The spring 45 is preferably arranged in a recess 47, provided therefor in the insulating base 32, and such spring bears against a boss 48 that projects rearwardly from the slide bar. The upper end of the slide bar is provided with a notch 49 of two diameters, the lower portion of the notch being narrower than the upper or end portion. The latch structure 46 coacting with such notch portion of the slide consists of a push-button 50, preferably of insulating material, carried by a horizontally movable stem 51 of two diameters, said stem working through and guided in an aperture in the insulating base 32. When the button is pressed in, against the tension of the spring 53, it brings the stem portion 51' of smaller diameter into register with the notch 49, so that the slide bar 35 may ascend to its upper or normal position, in so doing locking the push-button 46 in its inner or retracted position, as shown in Fig. 2. As soon as the slide bar is pulled down to mid-position, bringing its notch 49 from the position shown in Fig. 3 to that shown in Fig. 4, latch stem 51 may be spring-projected, so that its stem portion 51 of larger diameter enters the notch portion 49 of larger diameter, as shown in Fig. 4, thereby latching the switch in mid-position, although leaving the switch free for further descent to lowest or final position.

Preferably a plate 55 is mounted on the slide bar, overlying the contact member 15,

and the outer surface of this plate may be divided into transverse areas or bars of different contrasting colors, as by the painting of black bars 56 on the surface of the plate. The cover 31 may be provided with horizontal apertures 57, in appropriate relation to the painted portions of the plate, so that when the movable switch element is in mid-position the painted strips 56 are exposed through the openings 57, while when the switch element is in upper or normal position such painted strips are concealed. It will be apparent that this local mechanical setting of a signal is desirable, in some instances, as an identification of the particular bed in a ward, say, from which the signal is transmitted.

Now it will be apparent that the operation of the device may be as follows: When a patient desiring attention pulls cord 38 part way down, latch 46 springs out to hold the plate in partly depressed or mid-position, in which position the movable contact member 15 makes contact with the several points 16, 17 and 18, causing the door lamp 19, nurse's lamp 21 and pilot lamp 25 to be energized. This condition will continue until an attendant, answering the call, presses in the push-button 50 constituting part of the latch 46, and releasing slide plate to be spring restored to upper or normal position, in which restoration the circuit will be broken. Furthermore, initially, or at any time while the movable switch member is latched in mid-position, the patient may cause an audible signal to be given by the buzzer 28 or other signaling device, by pulling the cord 38 to its limit of depression, thereby depressing the movable contact member 15 the slight additional distance necessary to bring it into contact with the contact point 26 controlling the circuit for such audible signal.

It will be observed that the entire call mechanism is of very small compass, constructed of few and simple parts, and all enclosed in a thin, small housing adapted for ready attachment to a wall or other convenient support.

Also it will be observed that the construction is so simple and inexpensive that it may economically be used even in installations where desirable wiring economy will preclude the employment of all of the contacts, the simplest of connections utilizing merely the contacts 16 and 17 for energization of a single signal device such as the nurse's lamp 21, and, if that lamp be common to more than one signal initiator, the mechanical indication afforded by the exposure of the colored strips 56 through the casing slot 57 being depended on for identification of the signal initiating station.

I claim:

1. Electrical signal-initiating switch-means of the character described, comprising

ing in combination, a shallow casing adapted to be secured to a vertical wall, said casing carrying therein an insulating base, a movable contact-member slidably mounted on said base for vertical movement relative thereto, fixed contact members for inclusion in signaling circuits mounted on said base for coaction with said movable contact member in one position of the latter, a spring acting on said movable contact to elevate it to circuit-opening position, manual means for depressing said movable contact member to circuit-closing position, and mechanical means for latching said movable contact member in circuit-closing position comprising a finger-piece extending through the front of said shallow casing for rearward movement to release the latch.

2. Electrical switch means of the character described, comprising, in combination, a shallow, hollow casing for vertical attachment to a wall or the like, said casing having a bottom opening and a front opening for switch-manipulative means, an insulating base within said casing carrying relatively fixed contact members for inclusion in signaling circuits, a movable contact slidably mounted on said base to coact with certain of said fixed contacts when depressed, a spring acting on said movable contact to elevate it to open-circuit position, a pull-cord connected with said movable contact member and extending through the bottom opening of said casing to facilitate manual depression of said movable contact member to circuit-closing position, and mechanical means for latching said movable contact member in circuit closing position and comprising a finger-piece extending through said front opening of said shallow casing for rearward movement to release the latch.

3. Electrical switch means of the character described comprising, in combination, a supporting plate, an insulating base thereon, switch means on said base comprising a slidable contact member and fixed contact parts for cooperation therewith, said slidable contact member having a latching notch of two dimensions therein, spring means acting on said slidable contact member to move it toward circuit-breaking position, manually operable means for acting on said movable switch part to move it to circuit-closing position, and latching means for automatically latching said movable member in circuit-closing position comprising a spring-pressed stem of two dimensions arranged at right angles to the slidable switch member, working through the insulating base and said latching notch of said switch member, substantially as described.

4. Electrical switch means of the character described comprising, in combination, a shallow casing adapted to be attached to a wall or the like and having a front plate

provided with an opening, an insulating base within said casing having fixed contact parts thereon, a sliding switch-member vertically reciprocable on said base and having a latching notch of two dimensions, a movable contact member carried by said sliding switch member for coaction with said fixed contacts when depressed, a spring acting on said movable switch member to elevate it to circuit-opening position, manual means for depressing said movable switch member to circuit-closing position, and a spring-pressed latching stem of two dimensions arranged at right angles to the slidable switch member, working through the insulating base, and having a finger-piece projecting through the front plate of said casing and adapted to be rearwardly pressed to release the switch.

5. Electrical switch means of the character described comprising, in combination, a front plate, a vertically channeled insulating base secured thereto, a movable contact member slidably mounted on said base, fixed contact members for inclusion in signaling circuits mounted on said base, a spring acting on said movable contact to throw it to open circuit position, manual means for depressing said movable contact member to circuit-closing position, said contact-parts being arranged in the channel of the base and overlain by the supporting plate, and mechanical means for latching said movable contact member in circuit-closing position and comprising a finger-piece extending through said cover plate for rearward movement to release the latch.

6. Electrical switch means of the character described, comprising, in combination, a shallow casing having a front plate, and adapted to be secured in vertical position on a wall, a vertically-channeled insulating base secured to said front plate and having a spring-receptive recess therein extending vertically of said plate, a movable contact member slidably mounted on said insulating base, fixed contact members for inclusion in a signaling circuit mounted on said base, a spring vertically arranged within said recess of said base acting on said movable contact to elevate it to open-circuit position, a pull-cord extending from said movable contact member through a bottom opening of said casing for depressing said movable contact member to circuit-closing position, and mechanical means for latching said movable contact member in circuit-closing position and comprising a finger-piece extending through said cover plate for rearward movement to release the latch.

7. Electrical calling means of the character described comprising, in combination, supporting means, a slidable contact member thereon, fixed contact parts for cooperation therewith when the slidable contact member is moved to mid-position, a further

contact part for cooperation with said slidable contact member when the latter is moved beyond mid-position; spring means tending constantly to press said slidable contact member to open circuit position, manually operable means for moving said slidable contact member toward circuit closing position to or beyond mid-position, latch means arranged for cooperation with said movable contact member when it reaches mid-position, to prevent spring return but permitting movement of said member beyond mid-position to engage said further contact-part, and manual means for releasing said latch.

WILLIAM P. CROCKETT.