

W. M. PERRY & A. E. BOOZER.
 SIGNALING APPARATUS FOR HOSPITALS.
 APPLICATION FILED JUNE 20, 1911.

1,047,560.

Patented Dec. 17, 1912.

2 SHEETS—SHEET 1.

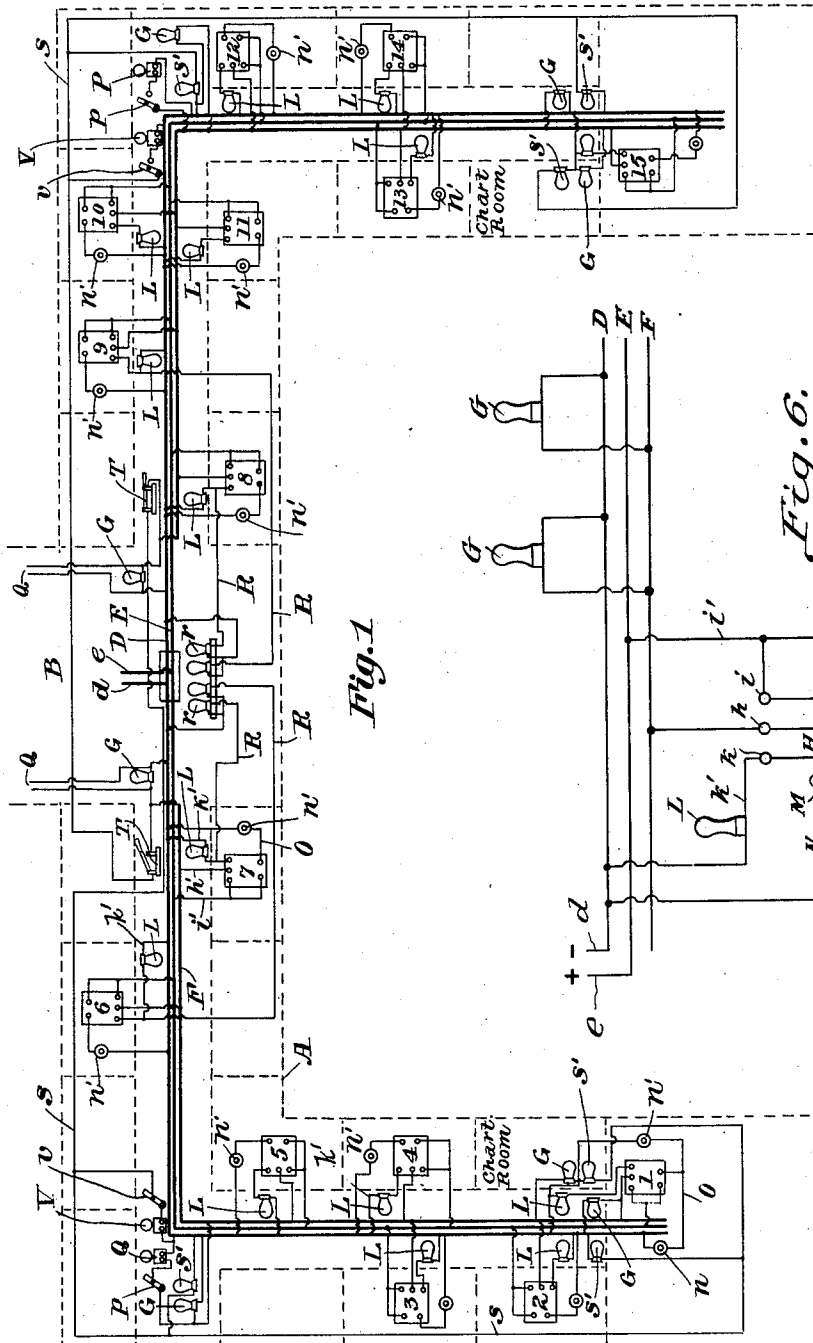


Fig. 1

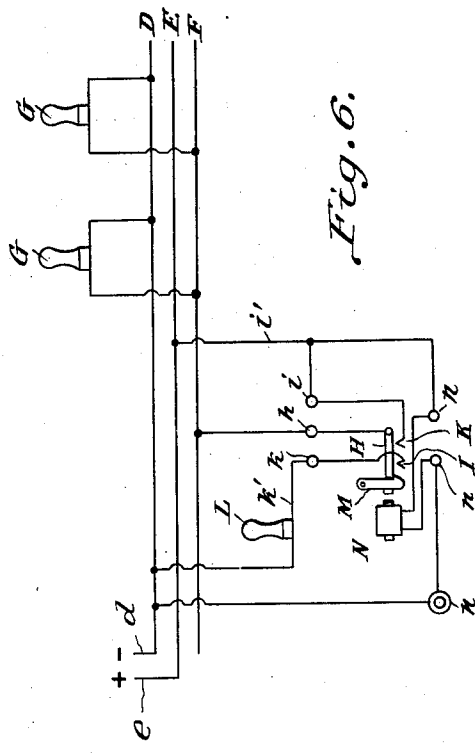


Fig. 6.

Witnesses

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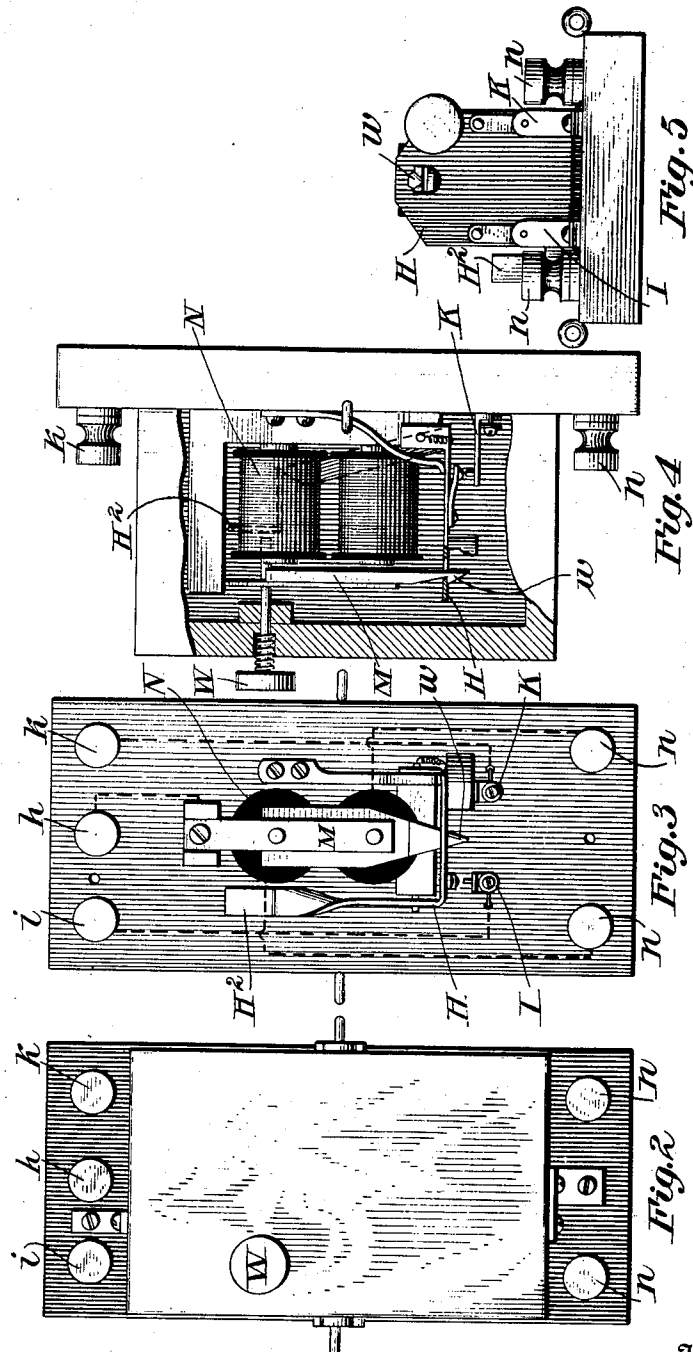
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UNITED STATES PATENT OFFICE.

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SIGNALING APPARATUS FOR HOSPITALS.

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Specification of Letters Patent.

Patented Dec. 17 1912.

Application filed June 20, 1911. Serial No. 634,275.

To all whom it may concern:

Be it known that we, WILLIAM M. PERRY and ALBERT E. BOOZER, both of Columbia, in the county of Richland, State of South Carolina, have invented a certain new and useful Improvement in Signaling Apparatus for Hospitals; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, and to the figures and letters of reference marked thereon.

This invention relates to apparatus for signaling nurses' calls in hospitals and is particularly designed for use where a large number of patients' rooms open into the corridors of the building and the number of nurses or attendants is small in proportion to the number of patients or where the patients' rooms are widely separated and under the care of a single nurse or attendant.

One of the objects of the invention is to provide a means whereby a call by any patient will display a room signal indicating the room where the nurse is needed and simultaneously display a plurality of pilot lights located at various points in the corridor, and, if desired, at the point where the nurse is normally stationed, the arrangement being such that upon the display of room signals from two or more rooms the pilot signals will remain displayed until the room signals of all rooms have been reset thus requiring that the nurse visit each room from which a signal has been sent before the pilot signals can be reset or cut off.

A further object of the invention is to provide a means whereby visual and audible signals may both be made when a nurse is engaged out of sight of the pilot signals as for instance when in attendance on a patient.

A further object is to provide a means whereby two signal systems, as for instance, the systems of the right and left hand corridors of a building may be inter-connected to enable a single nurse to attend all the patients on one floor or to advise the nurses in one corridor that the calls in another corridor exceed the ability of the usual nurse to attend to the same.

Another object of the invention is to provide a means whereby the room calls may be indicated at a central point, and if desired, in connection with pilot signals, either at the central point or in the superintendent's

or head nurse's room, whereby the attention and activity of the nurses in answering calls may be kept under constant observation.

The invention consists in certain novel details of construction and combinations and arrangements of parts all as will be now described and pointed out particularly in the appended claims.

Referring to the accompanying drawings: Figure 1 is a diagrammatic representation of one floor of a hospital building, the rooms and corridors being indicated by dotted lines and signaling circuits and appliances in full lines. Fig. 2 is a front elevation of one of the three point relays or automatic switches located at each room. Fig. 3 is a similar view with the front casing removed. Fig. 4 is a side elevation with parts broken away and in section of the apparatus shown in Fig. 2. Fig. 5 is a bottom plan of the parts shown in Fig. 3. Fig. 6 is a detail diagram on an enlarged scale showing one room equipment with its light and two pilot lights.

Like letters of reference in the several figures indicate the same parts.

In Fig. 1 the dotted lines A indicate the walls and partitions dividing the floor of the building into rooms which, as usual, are located on opposite sides of corridors extending through the building in each direction from a central entrance which may be presumed to be at the point indicated by B. At each patient's room from which a signal or call may be sent there is located a three point relay or switch shown in detail in Figs. 2 to 5, and indicated in Fig. 1 by the numbers 1 to 15, inclusive, and it will be understood that the number of such instruments included in the system is practically unlimited, thus adapting the system for use in large buildings or where there is capacity for caring for a large number of patients each of whom may have an individual call signal.

Extending throughout the building is a major circuit system of electric wiring comprising three line wires, two of which, indicated by the reference letters D and E, are connected with current supply mains *d* and *e* while the third may be termed a split circuit and is indicated by the letter F. The third wire F is conveniently divided, one half extending throughout each corridor or section of the building on opposite sides of the center B. Included in multiple be-

tween the split wire F and one of the mains, as D, is a plurality of pilot signals, such as red incandescent lamps G.

The split wire F is adapted to be connected with the other main E by any one of a number of connections controlled by the room call mechanism and when so connected by any one or more of said connections to display the pilot signals. The latter are so disposed as to be in position to be seen by the nurse or attendant from any point in the corridor. As shown the pilot lights are located at various points in the corridors, in the chart rooms, etc.

The three point relay or switch mechanism before referred to is employed to establish the circuit at the points mentioned and for this purpose it is preferably provided with an armature supported switch arm H, adapted to be connected through a central binding post *h* and wire *h'*, with the split wire F, there being two fixed contacts I and K with which the switch arm engages when released from its supporting armature. The fixed contact I leads by post *i* and wire *i'* to the main E whereby all of the pilot signals will be displayed and the contact K leads by the post *k* and wire *k'* including a room signal, such as the incandescent lamp L, to the main D. Each of the room signals is thus in multiple with the multiple pilot signals and the display of the pilot signals will continue so long as any one of the room signals is displayed and all calls must be answered before the pilot signals are cut off. The said switch arm H is normally supported with its contacts out of engagement with the fixed contacts, by a spring pressed armature M, having a catch *w* at its lower end. The armature is controlled by a relay magnet N energized through a circuit including the binding posts *n* and a push button *n'*. A push button and relay controlled thereby is, of course, provided for each room, although in wards having more than one patient, a single room signal will answer, but each patient should have a push button for sending in a call.

Obviously the current for operating the relay magnet may be derived from any suitable source such as the usual battery equipment, but as a convenient arrangement, a branch of the power circuit may be utilized as indicated in Fig. 1, wherein the wires O bridged between the circuit wires D and E include the push buttons and relay magnets for the several rooms.

Where signal lights are employed it becomes desirable under some circumstances to provide for audible signals and bells may be used to supplement the pilot lights. They may be included in similar branch circuits between the split wire F and main D. Such bells are shown at P and each preferably has its local branch controlled by a hand

switch *p*, whereby the nurse may cut the bell out or, more important, whereby the bell may be cut in when for any reason the nurse is called out of the corridor for an unusual length of time, for instance, to attend in the room of a patient for a longer time than usual.

Where it is desired to provide pilot lights in other rooms, as, for instance, the head nurse's room, branch circuits, such as indicated at Q, may be arranged in multiple with one of the pilot lights, thus providing for a wide extension of the system for observation of the promptness and efficiency of the working force of attendants.

If desired to provide for observation at a central point of individual room calls an annunciator branch R is run from each room in multiple with the branch *k'* and each branch R includes an annunciator signal or light *r* at a central observation board. In Fig. 1 switches 6, 7, 8 and 9 only are provided with annunciator branch circuits.

While, as before stated, the whole floor of the building may be included in one system and all of the pilot signals set when a call is made from any room, it is desirable to divide the system, particularly in large institutions, into sections, say on opposite sides of the central opening B and where this arrangement is adopted, as shown in Fig. 1, circumstances may require, especially in emergencies, that provision be made for notifying nurses who may be anywhere in either section, of a call in the other section. For this purpose an extension pilot light circuit is provided in each section and adapted to be connected by a manually operated switch with the pilot light circuit of the other section. The extension pilot light circuits are indicated by the letter S and in multiple between them and the main D are a series of extension pilot lights S'. Near the center entrance B are manually operated switches T, one for connecting each extension S with the split wire F of the other section of the system. With this arrangement a nurse being called into the other section of the corridor closes the switch T connecting the extension pilot lights of the corridor to which she is called with the pilot circuit of her own corridor and will thus be notified of calls by the patients under her direct charge.

Audible signals such as bells V may be used in lieu of or supplementing the extension pilot lights and the branches including the bells may be controlled by manually operated switches *v*.

In operation when a patient has made a call and the nurse answers the same, the nurse restores the relay switch to normal position by lifting the switch arm as by upward pressure on a button W. In the preferred construction, however, the switch arm H is provided with an upward extension H²

and a spring pressed push button W in the front of the casing is adapted to cooperate therewith for restoring the parts. The latter construction adapts the device for being

mounted in the usual junction boxes or with the push button in a wall plate and the nurse has only to press the wall button to restore the parts to normal position ready for another call.

Having thus described our invention, what we claim is:—

1. A hospital signaling apparatus embodying a plurality of pilot lights, a plurality of extension pilot lights, a plurality of independent individual room lights, an individual room call for each room independent of all other room calls and circuits connecting the pilot lights in multiple with each other, independent normally open circuits connecting each of the room lights in multiple with all the multiple pilot lights, a circuit connecting the extension pilot lights in multiple with each other and in multiple series with the pilot lights, a switch for each room light circuit operated by the room call, and a switch controlling the extension pilot light circuit.

2. A hospital signaling apparatus embodying supply mains, two or more separate series of pilot lights, two or more series of extension pilot lights, two or more series of individual room lights, an individual room call for each room, circuits connecting the pilot lights of each series in multiple with each other, a circuit connecting each of the room lights in multiple with the multiple pilot lights of one series, each room light circuit being established by the call for that room only and circuits connecting each of the extension pilot lights in multiple with the pilot lights of one of the series and separate switches controlling the circuits for the

series of extension pilot lights, whereby a series of pilot lights and a corresponding series of extension pilot lights may be connected for simultaneous action in answer to an individual room call which normally operates the pilot lights and its own room light only.

3. In a hospital signaling apparatus the combination with two supply mains and a third main all extending throughout the building, of a series of pilot lights each pilot light having one terminal connected with the same one of the supply mains and the other terminal connected with the third main, and a series of separate independent room equipments each embodying a room light having one terminal connected with one supply main and the other terminal connected with a normally open switch point, a catch supported switch connected with the third main and adapted to connect the light terminal with the third main, a second normally open switch point with which the said switch makes contact connected with the other supply main, an electromagnet for operating the catch to release said switch, a normally open room call and a circuit connection between the supply mains including said room call and electromagnet whereby the closing of the room call releases the switch to close the room light circuit for that room and also the circuits of the series of pilot lights, and all of said pilot lights will be energized so long as any room switch is in released position.

In testimony whereof, we have hereunto subscribed our names.

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Witnesses:

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