

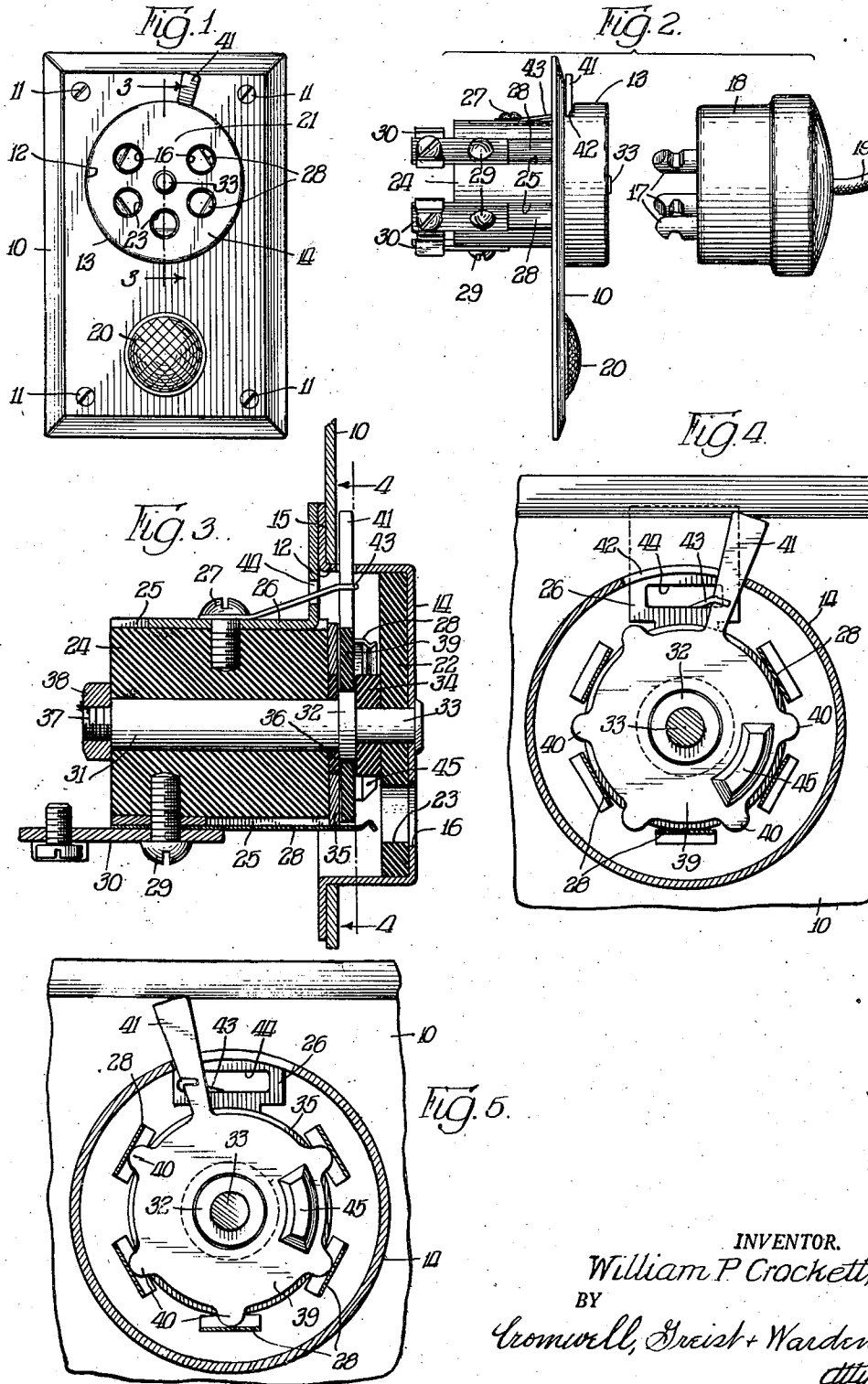
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HOSPITAL PLUG CONNECTION.

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HOSPITAL PLUG CONNECTION

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This invention has to do with hospital plug connections of the type in which the signal or signals controlled by the push button on the cord leading to the patient's bed are automatically actuated in the event the plug is inadvertently pulled from the connection.

The principal object of the invention is to provide an improved hospital plug connection of the type described which is simple in design, inexpensive to manufacture, dependable in operation, and easy to shut off.

Other more specific objects and advantages of the invention will be apparent to those skilled in the art upon a full understanding of the construction and the operation of the new connection.

A preferred embodiment of the invention is presented herein by way of exemplification, but it will of course be appreciated that the invention is susceptible of incorporation in other structurally modified forms coming equally within the scope of the appended claims.

In the accompanying drawing:

Fig. 1 is a face view of a hospital plug connection constructed in accordance with the invention;

Fig. 2 is a side view of the connection, showing the plug used with the same;

Fig. 3 is a vertical section through the connection, taken on the line 3—3 of Fig. 1, showing it with the plug removed and the several signal controlling contacts short circuited;

Fig. 4 is another vertical section through the connection, taken on the line 4—4 of Fig. 3; and

Fig. 5 is a section similar to Fig. 4, showing the connection with the switch in the same manually set to hold the several circuits open.

The hospital plug connection shown in the drawing includes a face plate 10 which is adapted to be attached by screws 11 to the wall of the patient's room. The face plate 10 contains a circular aperture 12 in which a spanner plate 13 is positioned. The spanner plate 13 has a cylindrical portion 14 which projects forwardly through the aperture and a radial flange 15 which is welded or otherwise secured to the back of the face plate about the aperture. The cylindrical portion 14 of the spanner plate is provided in the front of the same with a plurality of openings 16 for the reception of a corresponding number of prong-shaped contacts 17 on a removable plug 18. The plug 18 is attached to one end of a cord 19, and a push button (not shown) is attached to the other end of the cord. When the patient operates the push button several electrical circuits will be simultaneously closed. Where four elec-

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trical circuits are provided for in the connection, one ordinarily lights a signal lamp 20 on the face plate, another lights a lamp over the outside of the door leading into the room, another lights a lamp at the nurses' central station and another sounds an annunciator.

Five openings 16 are employed in this particular connection, to enable four electrical circuits to be handled, but a lesser or greater number might instead be employed, depending on the number of circuits desired. The five openings 16 are arranged in a circle about the front of the cylindrical portion 14, and are spaced apart one-sixth the distance about the circle, leaving a substantial gap at 21 between the two uppermost openings to insure the contacts 17 being inserted in the correct openings. The cylindrical portion 14 contains a disk 22 of insulating material which is provided with a plurality of openings 23 in register with the openings 16. The openings 23 are of slightly smaller size than the openings 16 to prevent the contacts 17 from being short circuited through the cylindrical portion 14 when the plug 18 is in place.

A block 24 of insulating material is positioned behind the disk 22 in rearwardly spaced relation to the same. The block 24 is substantially cylindrical in shape and is provided about its periphery with six longitudinally extending grooves 25. The uppermost one of these grooves forms a seat for one leg of an L-shaped bracket 26. The bracket is secured within the groove by a screw 27, and the upstanding leg of the bracket is welded or otherwise secured to the back of the flange 15 of the spanner plate. The remaining grooves 25 form seats for the reception of five leaf spring contacts 28 which project forwardly from the grooves into positions where they will bear resiliently against the outer sides of the contacts 17 when the plug 18 is in place. The rear ends of the contacts 28 are rigidly held within the grooves 25 by screws 29 which also support connectors 30 for the several electrical circuits. One of the connectors 30 carries the current, while the other connectors lead to the various signalling devices.

The block 24 is supported at its center on a stud 31. The stud 31 is provided in front of the block 24 with an enlarged portion 32 and is provided in front of such enlarged portion with a reduced portion 33, which reduced portion extends through the disk 22 and is riveted or otherwise secured to the center of the cylindrical portion 14 of the spanner plate. A disk 34 of insulating material is fixedly clamped between the enlarged portion 32 of the stud and the disk 22,

and a disk 35 of conducting material having an insert 36 of insulating material is fixedly clamped between the front of the block 24 and the enlarged portion 32. The rear end 37 of the stud is threaded and is engaged by a nut 38 which secures the block 24 in place.

The periphery of the disk 35 extends radially beyond the bottoms of the grooves 25 into a position wherein it will be engaged by the leaf spring contacts 28 when the latter are allowed to spring inwardly upon the withdrawal of the contacts 17 on the plug 18. Such engagement will short circuit the contacts 28, automatically energizing the circuits of the several signalling devices. To prevent this from happening when not desired, or to open the circuits and keep them open after it has happened, a disk 39 of insulating material is rotatably mounted on the enlarged portion 32 of the stud 31, immediately in front of the short circuiting disk 35. The disk 39 is of smaller diameter than the disk 35 but is provided about its periphery with five radially projecting bosses 40 which are adapted to cam the five leaf spring contacts 28 outwardly away from the disk 35 when the disk 39 is turned to bring the bosses 40 opposite the contacts.

The disk 39—which constitutes in effect a switch—is provided with a finger piece 41 which extends upwardly through an arcuate slot 42 in the cylindrical portion 14 of the spanner plate into an exposed and readily accessible position in front of the upper portion of the face plate. The disk 39 is free to turn, and is normally held with the bosses 40 disengaged from the contacts 28 by a small wire spring 43 which is anchored to the screw 27 and extends through a slot 44 in the bracket 26 into engagement with one side of the finger piece 41.

When the disk 39 is moved by the finger piece 41 to cause the bosses 40 to cam the contacts 28 away from the short circuiting disk 35, the yielding resistance offered by the frictional engagement of the contacts 28 with the bosses 40 will hold the disk in that position, but as soon as the plug 18 is replaced the contacts 17 on the plug will cam the contacts 28 farther outwardly, relieving the pressure on the bosses 40 and allowing the disk 39 to return to its inoperative position under the action of the spring 43. Instead of using a spring for this purpose, a small weight 45 can be attached to the front face of the disk 39 to accomplish the same result, or both the spring 43 and the weight 45 can be employed.

It will be understood from the foregoing that all of the circuits leading from the connection will be automatically closed in the event the plug is accidentally pulled from the connection, and that the circuits can be opened again by moving the finger piece 41 into its circuit opening position. When the plug is intentionally pulled, as when the bed is to be moved or the wall of the room to be cleaned, closing of the circuits can be prevented by moving the finger piece into its circuit opening position and holding it momentarily in that position while pulling the plug. After the plug has been pulled the finger piece will be held frictionally in its circuit opening position until the plug is again replaced, after which it will return automatically into its inoperative position.

I claim:

1. In a hospital plug connection for use with a plug having a plurality of contacts, a plurality of socket contacts for engagement with the contacts on the plug, a stationary circuit closing element with which the contacts in the connection

are adapted to move into engagement when disengaged by the contacts on the plug, whereby to automatically close the circuits leading from the connection when the plug is pulled, a movable circuit opening element which when moved manually into one position will force the contacts in the connection away from the circuit closing element, means for moving the circuit opening element into said position, and means controlled by and responsive to re-engagement of the plug and socket contacts for automatically returning the circuit opening element to its original inoperative position.

2. In a hospital plug connection for use with a plug having a plurality of contacts, a plurality of socket contacts for engagement with the contacts on the plug, a stationary circuit closing element with which the contacts in the connection are adapted to move into engagement when disengaged by the contacts on the plug, whereby to automatically close the circuits leading from the connection when the plug is pulled, a movable circuit opening element which when moved manually into one position will force the contacts in the connection away from the circuit closing element, means for moving the circuit opening element into said position, said movable circuit opening element being radially accessible for operation and being movable when the contacts in the connection are engaged by the contacts on the plug, and means controlled by and responsive to re-engagement of the plug and socket contacts for automatically returning the circuit opening element to its original inoperative position.

3. In a hospital plug connection for use with a plug having a plurality of contacts, a plurality of circularly arranged socket contacts for engagement with the contacts on the plug, a stationary circuit closing element with which the contacts in the connection are adapted to move radially into engagement when disengaged by the contacts on the plug, whereby to automatically close the circuits leading from the connection when the plug is pulled, a rotatable circuit opening element which when turned manually in one direction will force the contacts in the connection radially away from the circuit closing element, means for rotating the circuit opening element in said direction, and means controlled by and responsive to re-engagement of the plug and socket contacts for automatically returning the circuit opening element to its original inoperative position.

4. In a hospital plug connection for use with a plug having a plurality of contacts, a plurality of circularly arranged socket contacts for engagement with the contacts on the plug, a stationary circuit closing element with which the contacts in the connection are adapted to move radially into engagement when disengaged by the contacts on the plug, whereby to automatically close the circuits leading from the connection when the plug is pulled, a rotatable circuit opening element which when turned manually in one direction will force the contacts in the connection radially away from the circuit closing element, means for rotating the circuit opening element in said direction, and means controlled by and responsive to re-engagement of the plug and socket contacts for automatically returning the circuit opening element to its original inoperative position, said last mentioned means consisting of a spring which will yield resiliently to permit the circuit opening member to be turned into its operative position.

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