Feb. 24, 1931. V. DURBIN 1,793,846

HOSPITAL PLUG CONNECTION

Filed Jan. 4, 1928

Fig. 1

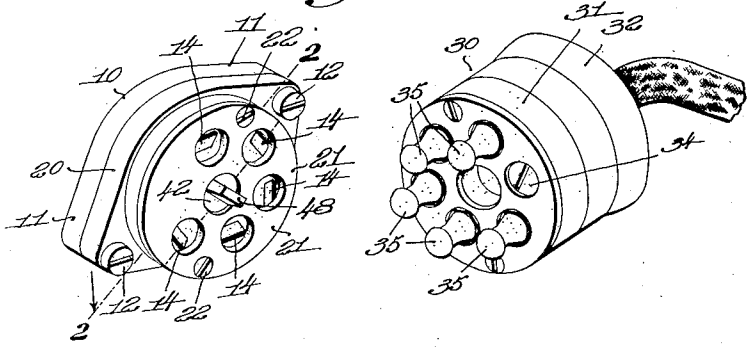


Fig. 2

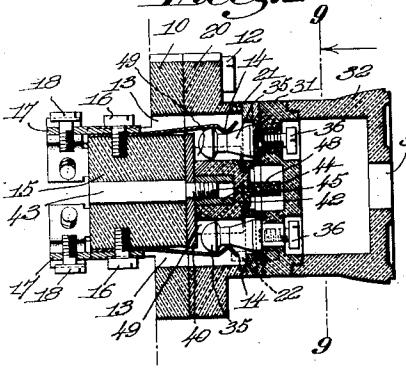


Fig. 3

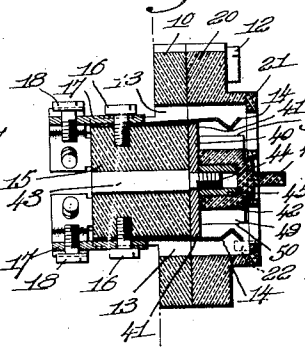


Fig. 4

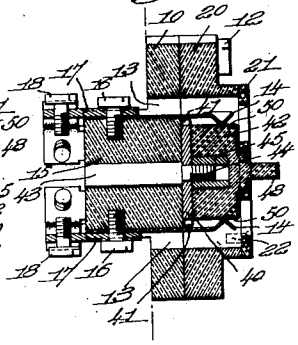


Fig. 5

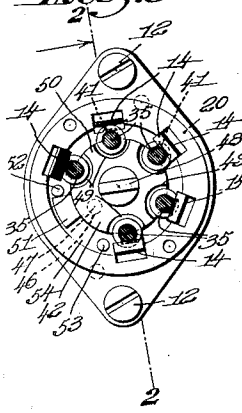


Fig. 6

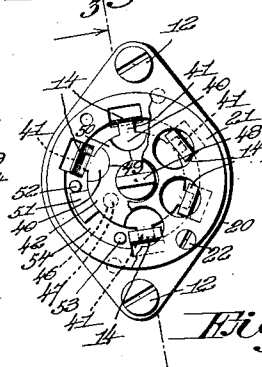


Fig. 7

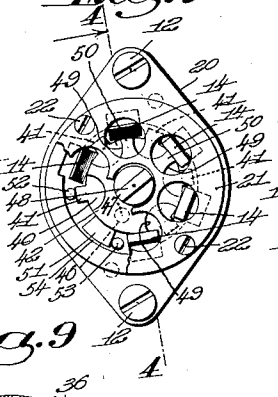


Fig. 8

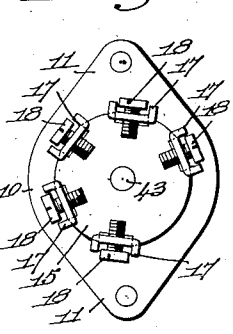
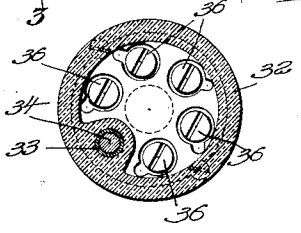


Fig. 9



Witness

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UNITED STATES PATENT OFFICE

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HOSPITAL-PLUG CONNECTION

Application filed January 4, 1928. Serial No. 244,535.

The present invention relates to an improvement in hospital plug connections.

In hospitals the patients are usually provided with some sort of device for calling a nurse. Ordinarily nowadays these nurse calling devices comprise a push button on the end of a cord which is provided with a plug that is received in a wall socket or receptacle so that the patient, by pressing the push button, may cause the nurse to be called. Ordinarily the pushing of the button lights a lamp over the patient's door and lights a lamp at the nurses' desk, activates a buzzer, and causes a signal to be exhibited on an annunciator. Wires running to the push button for causing these signals to be given would be five in number, and all of the various devices would be connected by the pressing of the button. In some instances provision has been made for causing a signal to be given when the plug is disconnected from the wall socket so that if it were accidentally pulled out by the patient, the nurse would immediately be notified. Sometimes, however, when a room is to be cleaned or painted it is desired to remove the push button plug. In such case it has been the practice in some instances to provide a dummy plug for insertion in the wall socket to prevent the continuance of the signals during the disuse of the patient's push button. The use of a dummy plug is objectionable because, being unattached, it is liable to be lost, especially as their use is infrequently required.

According to the present invention the wall socket or receptacle is provided with a switch which, when the plug is removed, may be turned so as to prevent the continuous exhibition of a call from the room or from the patient's bed. To this end the invention consists in the hospital plug connection hereinafter described and particularly defined in the claims.

In the accompanying drawings illustrating the preferred form of the invention, Fig. 1 is a perspective view showing the wall socket or receptacle on one side and the plug for the push button cord on the other side; Fig. 2 is an axial section taken on the line 2—2, Fig. 1, or 2—2, Fig. 5; Fig 3 is an axial section taken on the line 3—3, Fig. 6; Fig. 4 is an axial section taken on the line 4—4, Fig. 7; Fig. 5 is a front elevation of the receptacle base with the front plate of the cover plate removed, the contact plugs being shown in section; Fig. 6 is a front elevation of the receptacle base with a portion of the front plate of the cover plate broken away, and with the plug contacts removed, showing the contact springs in engagement with the short-circuiting switch; Fig. 7 is a front elevation of the receptacle base with the cover plate and front plate in position, a portion of the latter being broken away to show the position of the switch and switch body when in position to open-circuit the signal circuits; Fig. 8 is a rear elevation of the receptacle base showing the terminal lugs; and Fig. 9 is across-section taken on the line 9—9, Fig. 2.

The illustrated embodiment of the invention is described as follows: The receptacle base 10 is provided with two ears 11, 11, to receive the screws 12 by which it is secured in place. It is provided with five holes 13, through which project the contact springs 14 secured to the receptacle body 15 by means of the screws 16, which also secure to the body the terminal lugs 17 to which the system wires are attached by the screws 18. The contact springs 14 are five in number, one for the supply current, and four for the different signal circuits fed from the supply through the push button at the end of the cord.

The receptacle base is provided with a cover plate 20 of the same outline as the receptacle base, and permanently secured in place over the receptacle base by the screws 12 which secure the latter in position on the wall. The front plate 21 of the cover plate is made separate from the cover plate and secured to it by the screws 22. If desired, the cover plate and front plate 21 may be made integral.

The front plate is provided with five holes through which the five plug contacts may be inserted. This front plate, therefore, guides the plug contacts into position to engage the five contact springs 14.

The push button cord plug indicated in a

general way by the reference character 30, comprises a plug base 31 and a plug cap 32. The cap is provided with a bushing 33, screw-threaded to receive a screw 34 by which the plug base and plug cap are secured together. The plug base is provided with five plugs 35 which are rigidly and permanently supported in the base. Five binding screws 36, one for each plug, are provided by which the five wires from the push button cord which enters through the hole 37 in the top of the cap 32 are secured to the five plugs 35. It is apparent, therefore, that the cord plug may be removed from the receptacle base and re-inserted at pleasure. The plugs 35 are each provided with enlarged heads which, when pressed beyond the bends at the ends of the contact springs, are thereby held from free removal.

When the cord plug base is removed from the receptacle base, the five contact springs 14 are permitted to spring inwardly, and they then engage five contact projections on the switch contact disk 40, the projections 41 being normally located each opposite one of the contact springs. This switch contact disk is secured to a switch body 42 by means of the pin 43, having a reduced screw-threaded end 44 which passes through the center of the switch contact disk and screws into the bushing 45, permanently mounted in the switch body 42.

The switch body 42 is provided with a projecting pin which extends from the surface of the switch body through a hole 46 in the switch contact disk 40. When the switch disk is applied to the switch body, the pin 47, projecting from the switch body 42, penetrates the hole 46 in the switch contact disk and unites the switch body and the switch disk so that they are required to turn together.

The switch body is provided with a handle 48, which projects outwardly through the front or face plate 21 of the cover plate 20, and is exposed when the cord plug base is removed so that the person may take hold of this handle and turn the switch disk.

The switch body 42 is provided with a series of five practically semi-circular recesses 49 which receive the plug contacts when the switch disk is in the position shown in Figs. 5 and 6. When, however, the switch is turned from the position shown in these figures to the position shown in Fig. 7, the high or inter-recess portion 50 of the switch body is presented opposite the plug holes in the face plate 21, so that the plugs cannot be inserted with the switch in this position; that is to say, the plug cannot be inserted when the switch is turned to open-circuit the indicating devices connected to the receptacle base.

In order to limit the movements of the switch it is provided with an extended lug 51, which engages either the pin 52 or the pin 53 which are formed on the receptacle base and project outwardly therefrom into a recess 54 in the cover plate 20, and in position to arrest the movement of the switch either in the position shown in Fig. 5 when the switch is operative, or to engage the pin 53 when the switch is inoperative.

Let us assume that the apparatus is in condition for use. When the push button is pressed, it causes current to be supplied to any desired number, up to four in the illustrated embodiment, of indicating circuits. Ordinarily this push button is provided with a locking device so that the circuits remain closed and the indicating devices operative until the nurse goes to the patient's bedside, where she trips the push button and restores it to non-indicating position.

Now, assume that the patient, by some energetic movement, pulls upon the cord so violently as to pull the plug base out of the base receptacle. Thereupon the five contact springs are pressed inwardly and engage the five projections 41 of the switch contact disk, and current is thereby supplied to the four indicating circuits, whereupon the nurse attends the patient, and finding the plug removed, re-inserts the plug and restores it to operative condition.

Now, assume further the condition which occurs when it is desired to paint the room. The push button cord and plug are removed. Thereupon the indicating circuits are energized, but then the switch handle is exposed, and the person removing the plug turns the switch to the left, thereby moving the contact projections 41 of the switch contact disk 40 out from under the several contact springs 14 and causing the switch to assume the position shown in Fig. 7. This movement at the same time presents the inter-recess projections 50 of the switch body opposite the holes in the face plate 21, so that the cord plug base cannot again be inserted until the switch is again turned back to normal position, so that when the receptacle is again put into use, the first thing that is required to be done is to turn the switch from the position shown in Fig. 7 to the position shown in Fig. 6, whereupon the plugs of the cord plug base may be inserted in the receptacle, and the cord restored to operative condition.

It is to be observed that in use this connection operates to cause an alarm to be given whenever the cord plug is pulled from the receptacle, and that the switch by which the signals may be stopped is thereby exposed so that the switch may be turned only after the cord plug base is removed. This construction is preferred to one in which the switch may be operated from the outside, because of its double function of being permitted to be operated only when the cord plug is removed, and preventing the inser-

tion of the cord until it is restored to operative condition.

Having thus described the invention, what is claimed is:

1. A hospital plug connection comprising a receptacle and a cord plug, the receptacle being provided with a plurality of contacts, and the plug being provided with a plurality of plug contacts, and a two-position switch having provision in one position to short-circuit the receptacle contacts when the plug is removed, and in the other position to open-circuit the receptacle contacts and to prevent the re-insertion of the plug.

2. A hospital plug connection comprising a receptacle provided with a plurality of contacts, a cord plug provided with a corresponding plurality of plug contacts, and a hand-operable switch normally covered by the cord plug and inaccessible when the plug contacts are inserted in the receptacle.

3. A hospital plug connection comprising a receptacle having a plurality of spring contacts, a cord plug having a plurality of plug contacts, a switch provided with contact portions adapted to be engaged by the spring contacts when the plug contacts are removed, and with a plurality of inter-contact portions for open-circuiting the spring contacts in the open-circuit position of the switch.

4. A hospital plug connection comprising a receptacle provided with spring contacts, a switch body provided with contact portions located opposite the spring contacts and adapted to be engaged thereby in one position of the switch, and to be dis-engaged therefrom in the second position of the switch, the switch being provided with portions to register with the spring contacts when the contact portions of the switch are removed from engagement with the spring contacts, and a cord plug provided with plug contacts adapted to be inserted in the receptacle when the switch is in closed-circuit position, and to be prevented from being inserted in the receptacle when the switch is in open-circuit position.

5. A hospital plug connection comprising a receptacle and a cord plug each having a plurality of contacts, a short-circuiting disk to be engaged by the receptacle contacts when the plug is removed, a switch which is normally covered by the plug and is exposed when the plug is removed and adapted to move the short-circuiting disk to open position, and means associated with the switch for preventing insertion of the plug into the receptacle when the switch is open.

In testimony whereof I have signed my name to this specification.

VERNON DURBIN.