Oct. 27, 1925. 1,559,312

J. O. CADIEUX

ELECTRIC SIGNAL RECEPTACLE

Filed Sept. 13, 1923 2 Sheets-Sheet 1

Fig. 1.

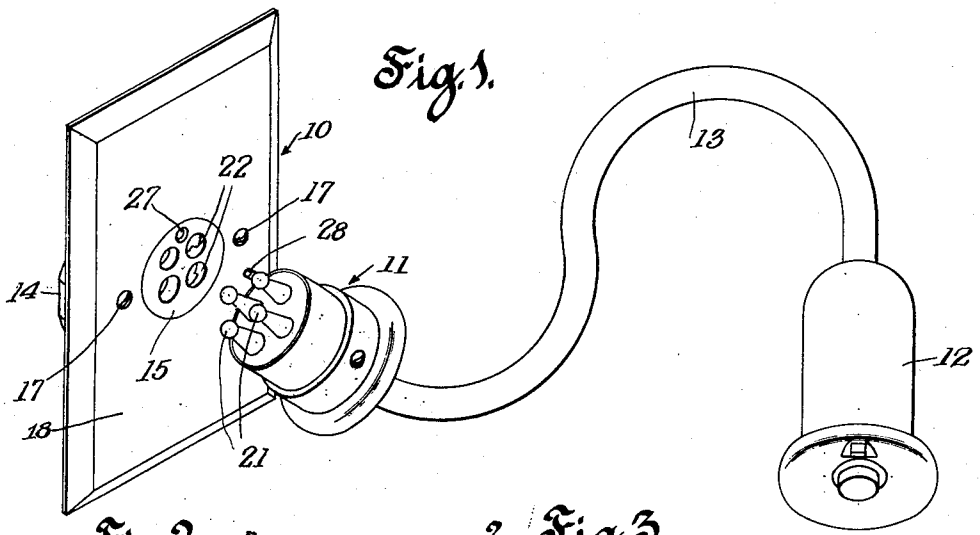


Fig. 2.

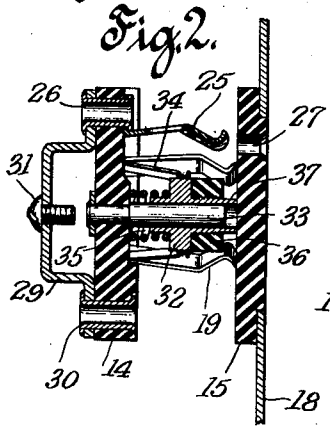


Fig. 3.

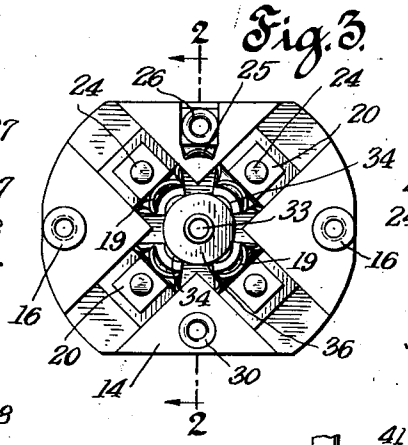


Fig. 5.

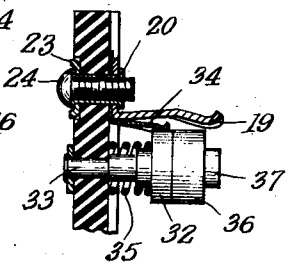


Fig. 6.

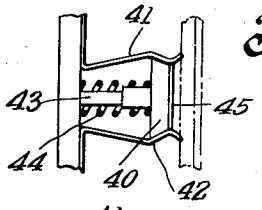


Fig. 4.

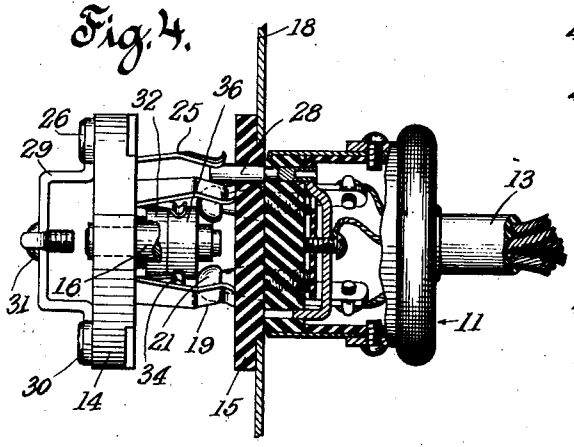
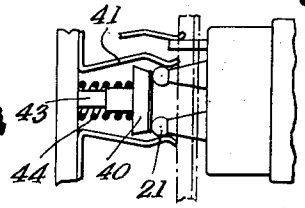


Fig. 7.



INVENTOR

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BY

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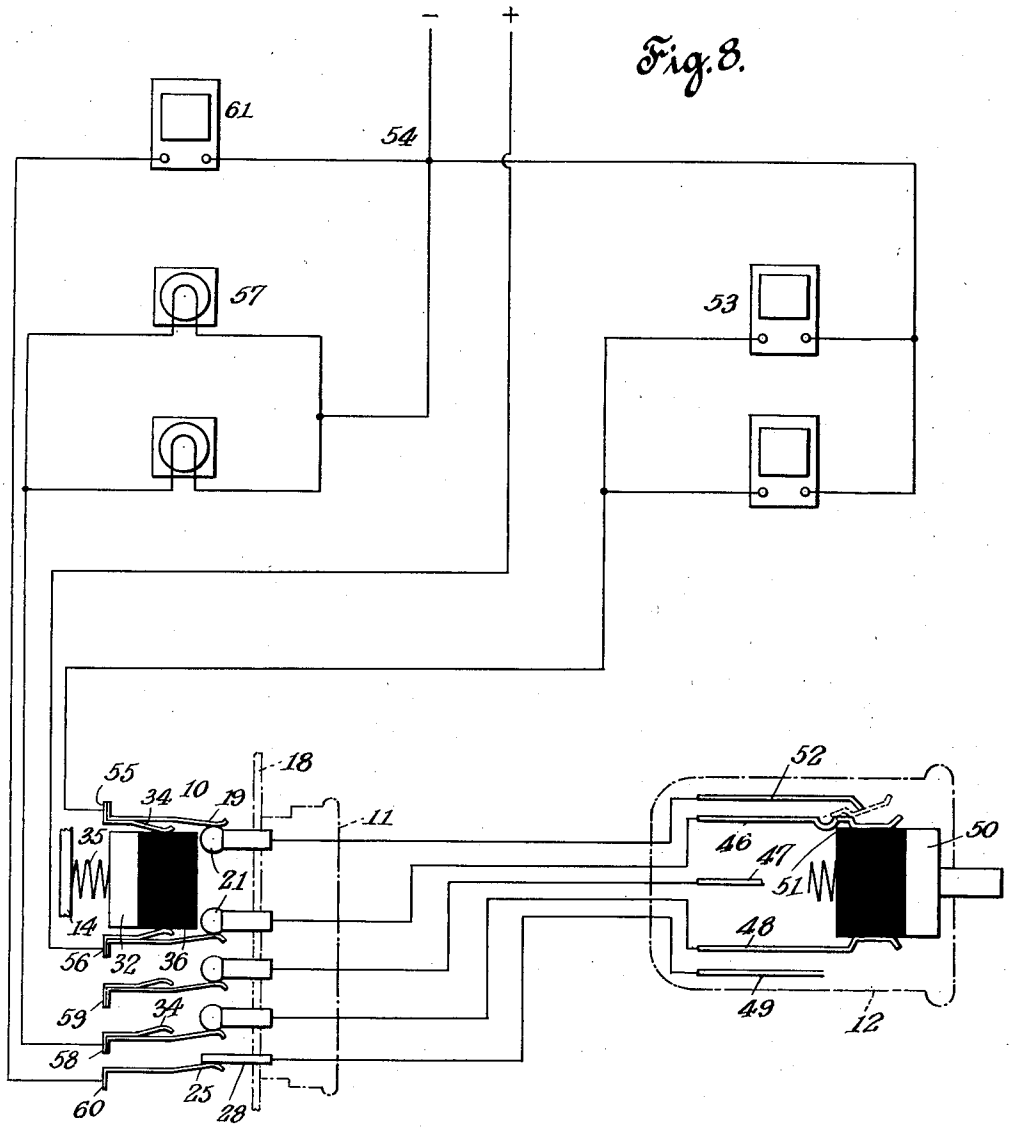
Oct. 27, 1925. 1,559,312

J. O. CADIEUX

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Filed Sept. 13, 1923 2 Sheets-Sheet 2

Fig. 8.



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UNITED STATES PATENT OFFICE.

JOSEPH O. CADIEUX, OF MERIDEN, CONNECTICUT, ASSIGNOR TO THE CONNECTICUT TELEPHONE & ELECTRIC COMPANY, INCORPORATED, OF MERIDEN, CONNECTICUT, A CORPORATION OF CONNECTICUT.

ELECTRIC-SIGNAL RECEPTACLE.

Application filed September 13, 1923. Serial No. 662,414.

To all whom it may concern:

Be it known that I, JOSEPH O. CADIEUX, a citizen of the United States of America, residing at Meriden, county of New Haven, Connecticut, have invented a new and useful Electric-Signal Receptacle, of which the following is a specification.

My invention relates particularly to a construction intended for use in hospital nurse calling systems. It is customary in such systems to install wall receptacles with terminals connected to various annunciator or lamp signal stations and to provide detachable plugs and switch devices to be used for these receptacles. When the patient desires to call the nurse or other attendant the switch is operated. Should the plug however become accidentally detached or removed from the wall receptacle it is obvious that the switch becomes useless unless it is possible for the patient to replace the plug.

The main object of my invention is to automatically indicate in such a case at the various signal stations that attention is required. I accomplish this result by special construction and arrangement of the receptacle.

Fig. 1 is a perspective view showing apparatus embodying the improvements of my invention. The plug, switch and connecting cord being shown detached.

Fig. 2 is an enlarged central sectional view of the receptacle showing the parts in the position which they occupy when the plug is removed, the section being on the plane of the line 2—2 of Fig. 3.

Fig. 3 is an interior view of the receptacle with the face plate removed.

Fig. 4 is a partial sectional view showing the plug in place.

Fig. 5 is a fragmentary sectional view showing the method of supporting one of the receptacle contacts and the sliding contacts.

Fig. 6. is a diagrammatic edge view showing a modification with the contacts in the signalling position.

Fig. 7 is a view of the same construction with the plug in place.

Fig. 8 is a diagrammatic view showing typical circuits controlled by the receptacle embodying my present invention.

The receptacle 10 may be of any suitable exterior design as shown herein for instance, or with a local signal light as shown in my Patent 1,523,371. The plug 11 is connected to a suitable form of switch device 12 by means of a flexible cord or cable 13 containing the various conductors. The switch may be of any suitable construction by which the circuits may be made and broken to set or make the required signals such as are shown in my Patents Nos. 1,523,371 and 1,527,026.

The receptacle proper in the particular form shown has two insulating members 14 and 15 which are held apart by sleeves 16 through which pass connecting screws 17. These screws also serve to support the frame work on the face plate 18. Secured to insulating member 14 are the spring fingers 19 in this case four. Each of these fingers is conveniently secured to the support 14 for instance by means of a hollow rivet 20. The outer end of each spring finger 19 is designed to coact with the bulbous end of the plug contact 21 so that the plug contacts may be inserted through holes 22 and snap into engagement with the ends of the fingers 19 which then serve to hold the plug securely in place as shown in Fig. 4.

To facilitate wiring the device I prefer to provide a washer 23 for each of the finger securing rivets 20. The edges of each washer are turned up as shown in Fig. 5 to coact with the head of the binding screw 24 to grip and hold the end of the conductor (not shown). The screw 24 preferably has a treaded engagement in the tubular rivet 20.

I also preferably provide an additional spring contact 25 which is secured to the base by a rivet 26. This finger 25 is in line with an opening 27 in the face plate and adapted to receive a pin 28 carried by the plug. In the form shown this pin 28 and spring 25 furnish the connections for a fifth line. The pin also serves as a locating device to insure the plug contacts being inserted in their proper relations with the various spring contact fingers 19. To facilitate wiring this additional contact 25 I preferably provide a bridge or bus-bar 29 which is secured in place by the rivets 26 and 30. This bar 29 supports a binding screw 31 by which connection may be directly made to the line or to a local signal

lamp in case such a construction is desired.

In the normal operation of systems of this character the call is made by a patient operating the switch 12 which completes one or more circuits and lights one or more lights, or sounds bells or buzzers, or operates annunciators. According to my invention, I provide means for effecting the various calls automatically in case the plug 11 becomes detached. For this purpose I provide a contact member 32 which is mounted to slide on a pin or spindle 33. In the position shown in Figs. 2 and 5, this contact 32 connects auxiliary spring fingers 34 which are electrically connected with the plug contact receiving fingers 19. The spring 35 tends to press the contact 32 towards the face plate into the position shown in Figs. 2 and 5. On the outer face of the contact 32 is provided an insulating collar 36 which is adapted to be engaged by the ends of the plug contacts 21 when they are inserted through the face plate so that the insertion of the plug automatically forces the sliding contact 32 into the position shown in Fig. 4, at which time the contact fingers 34 rest on the insulating portion 36 of the sliding member thus rendering the fingers 34 electrically inoperative. The contact 32 in this case is provided with an extension sleeve 37 which abuts against the back of the front plate 15 when the parts are in the position shown in Fig. 2. When the plug is withdrawn the spring 35 automatically pushes the contact 32 between the fingers 34 and completes the circuits so as to operate the signals in the same way that they would be operated by the switch 12. The nurse or inspector would then go to the calling station to see what had happened and attend to the patient or re-insert the plug in the receptacle as the occasion might require. In case this particular station is out of commission or intended to be unoccupied, a dummy plug may be inserted so as to hold the switch member 32 in the open circuit position.

In the construction shown in Figs. 6 and 7 a split spring washer or formed spring 40 is mounted to move between the spring contact fingers 41 and 42. This contact member 40 is mounted to slide on a spindle or pin 43 and is pressed outwardly by the spring 44. An insulating washer 45 serves as an abutment for the plug contacts 21 so as to keep the member 40 out of circuit when the plug is inserted as shown in Fig. 7. When the plug is withdrawn the spring 44 pushes the contact 40 between the spring fingers 41 and 42 and establishes a signal circuit.

Fig. 8 shows diagrammatically one form of my present invention as applied to a system employing a hand switch 12 embodying the invention of my Patent No. 1,527,026 and typical signal devices. Such a switch has a number of spring arm contacts, such as 46, 47, 48, and 49, and a plunger having a contact ring 50 adapted to connect them when the plunger is pushed part way in for normal signal action. When the plunger is pushed still further into its inner limit, the flange or shoulder 51 pushes one of the arms 46 out into contact with the stationary contact 52. The signal installation includes one or more signal devices such as buzzer 53 connected between one side of the source of current, (for instance the negative) at 54 and the receptacle terminal 55 which is common to the spring contacts 19 and 34. Another terminal 56 of a pair of receptacle contacts is connected to the opposite (or positive) side of the line. Other signal devices such as lamps 57 are connected between points 54 and the receptacle terminal 58. Other signal devices (not shown) may be connected to terminal 59. Terminal 60 is connected to another signal device 61. When the plug 11 is in place and the switch plunger is pushed in part way so that contact 50 connects 46 and 48, the circuit extends through 46, 21, 56 to +, and from 48 to 58, lamps 57, to —. At the same time a circuit extends through contact 49 to pin 28, 25, and 60 and through signal devices 61 to —.

When the plunger of the switch is pushed further in to its limit the shoulder 51 pushes the tip of 46 against 52 and completes the auxiliary signal circuit through 55 and the buzzer 53 to —.

When the plug 11 with its pins 19, 21, and 28 is pulled out the spring 35 pushes the receptacle plunger out so that the contact ring 32 short circuits the contact fingers 34, 34. This completes the circuit through the buzzer 53 and lamps 57. The replacement of the plug 11 of course pushes back the contact 32 and connects the buzzer and lamp circuits to the switch 12.

I claim:

1. A hospital signal system apparatus comprising a member, a plurality of spring contact fingers carried thereby, and a spring pressed short circuiting contact, said member having perforations in line with said contact fingers and at least a portion of said short circuiting contact.

2. A hospital signal system apparatus comprising a face place having symmetrically arranged perforations and a positioning perforation, spring contacts back of said face plate and in line with said symmetrically arranged perforations, a contact spring-pressed to short circuit said spring contacts and having portions thereof in line with at least one of said symmetrically arranged perforations, and a plug comprising a member to enter the positioning perforation and means to enter said symmetrically arranged perforations to engage said spring contacts

and to move the short-circuiting contact to ineffective position.

3. A hospital signal system apparatus comprising a face plate having perforations, an insulating support secured to said face plate but spaced therefrom, a plurality of spring contact fingers carried by said support and having plug receiving inclined tips in line with said perforations, circuit terminals for said fingers carried by said insulating support, and spring pressed means carried by said support and operable between said fingers by a plug inserted through the perforations in said face plate to automatically short circuit said fingers when said plug is withdrawn.

4. A hospital signal device comprising an insulating face plate having a series of symmetrically disposed perforations and an eccentric perforation, an insulating base plate carried by the rear of said face plate but spaced apart therefrom, spring contact fingers carried by said base plate in line with said symmetrically disposed perforations, a plug member having projecting pins arranged to correspond with and enter said perforations and a manually operable switch connected to said plug member for controlling the circuits through said contact fingers.

5. A hospital signal system apparatus comprising two spaced insulating members, posts connecting the same, a series of spring contact finger elements carried by one member, a short circuiting element movable between said fingers and movable to a non-short circuiting position, the other insulating member having perforations in line with said elements, a plug member having pins adapted to be inserted through said perforations to detachably engage said contact finger elements and at least one of said pins adapted to move said short circuiting element and disconnect it from said finger elements when said pins are inserted in said perforations.

6. A hospital signal device comprising a face plate having a series of perforations, contact fingers mounted on the rear of said face plate and in line with some of said perforations, a spring pressed contact member electrically connecting said fingers and having a portion in line with at least one of said perforations and a plug member having a plurality of projecting pins arranged to enter said perforations, at least one of said pins being adapted to engage said contact member to retract the same automatically from said contact fingers when the pins engage said fingers.

7. An electric signal receptacle comprising a perforated face plate, laterally movable contact members entirely in the rear thereof, a movable contact member in line with at least one of the perforations, and means for moving said movable member between said contacts to connect the same.

8. An electric signal receptacle comprising two insulating members, means for supporting one on the other, spring contacts mounted between the said members, one of said members having plug contact openings, a supporting pin carried by one of said members and a contact member mounted to reciprocate thereon for connecting and disconnecting said spring contacts.

9. In an electric signal receptacle, a main spring contact finger having a recess adapted to receive the bulbous end of a plug contact, an auxiliary contact brush connected therewith, a supporting pin, and a spring pressed contact member slidable on said pin to engage said auxiliary contact brush and adapted to be operated in one direction by said plug contact.

10. A hospital signal device comprising a perforated face plate, a back plate, posts connecting said back plate to said face plate, contact fingers secured to said back plate and having contact surfaces accessible through the perforations in said face plate, a guide pin carried by said back plate and a spring-pressed short circuiting member mounted on said guide pin, said face plate serving as an abutment for said short circuiting member.

11. A hospital signal device comprising a face plate having perforations, a series of spring fingers arranged with contact portions accessible through said face plate, auxiliary spring contacts connected to said spring fingers, a guide pin, a spring-pressed sleeve mounted on said guide pin and having a conducting portion normally connecting said auxiliary contacts and an insulating ring carried by said sleeve having a portion accessible through said face plate for operating the same.

JOSEPH O. CADIEUX.