Oct. 21, 1958 H. HUBBELL ET AL 2,857,486

DEAD FRONT RECEPTACLE

Filed June 22, 1956 3 Sheets-Sheet 1

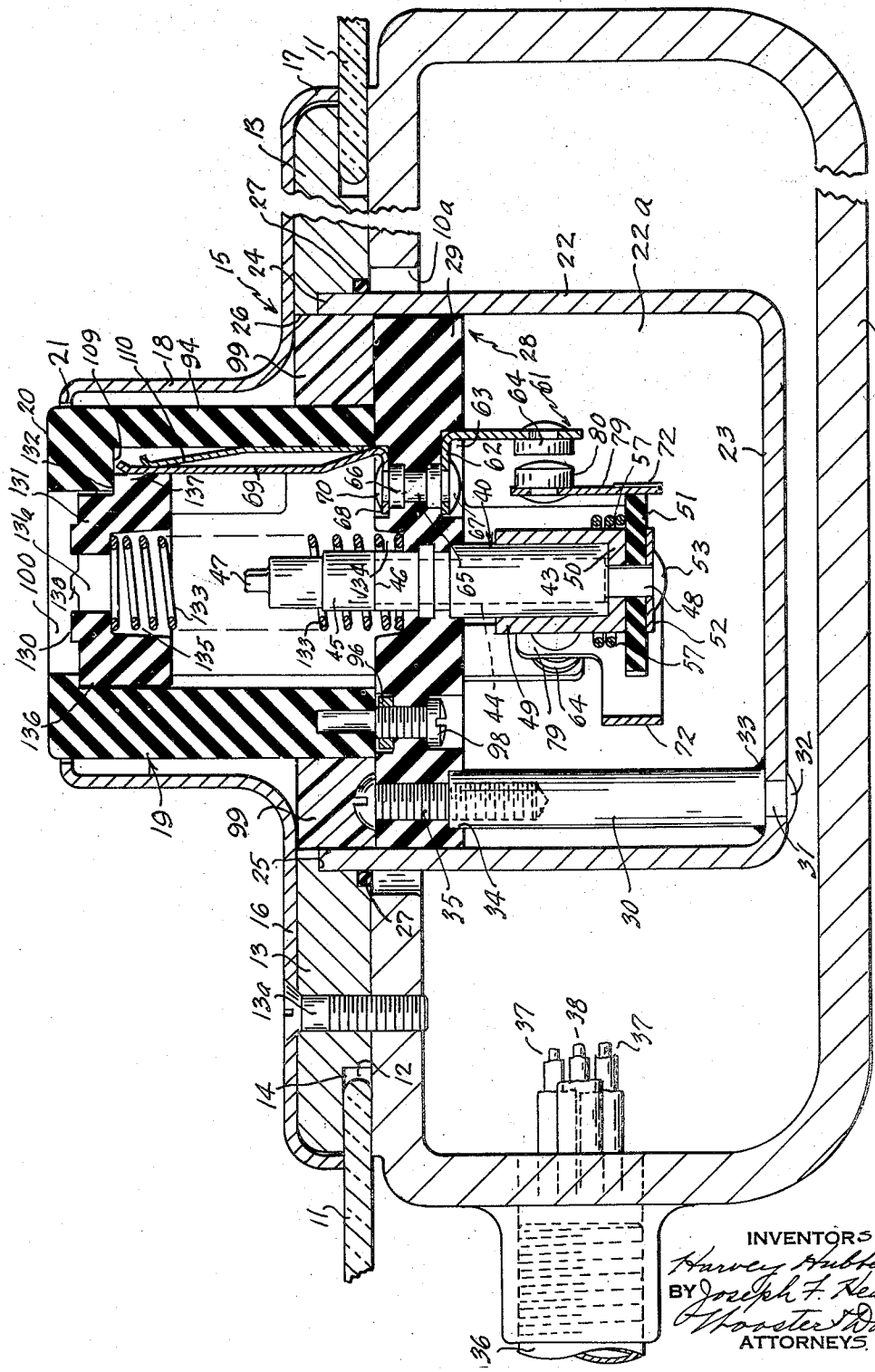


Fig. 1.

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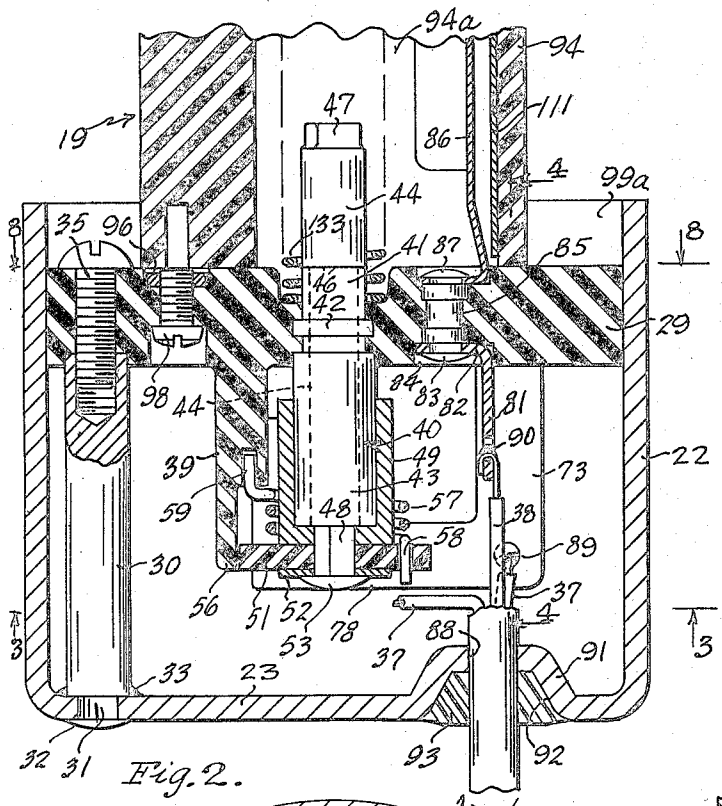


Fig. 2.

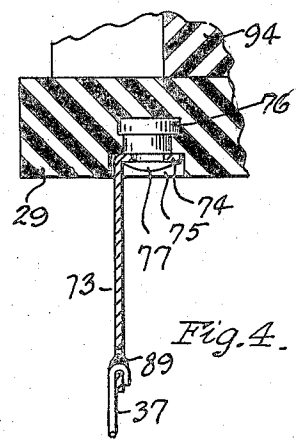


Fig. 4.

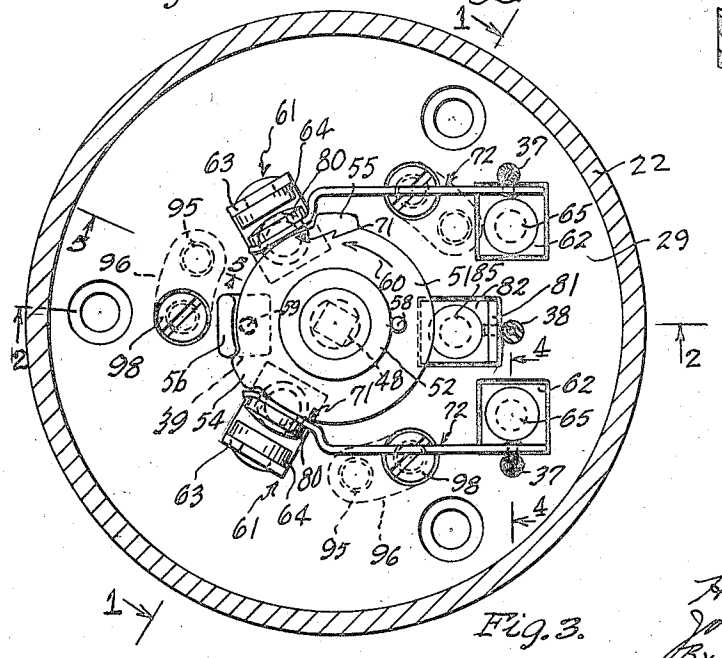


Fig. 3.

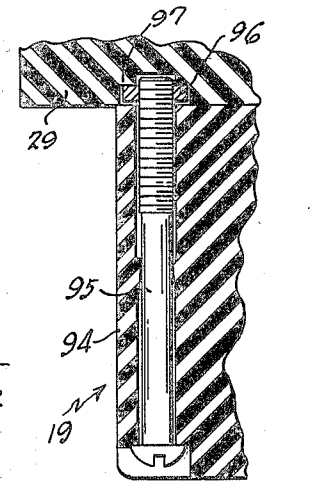


Fig. 5.

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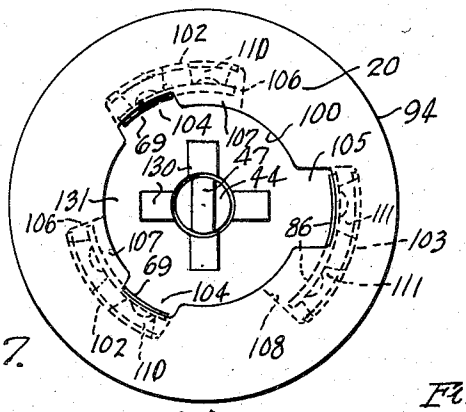


Fig. 7.

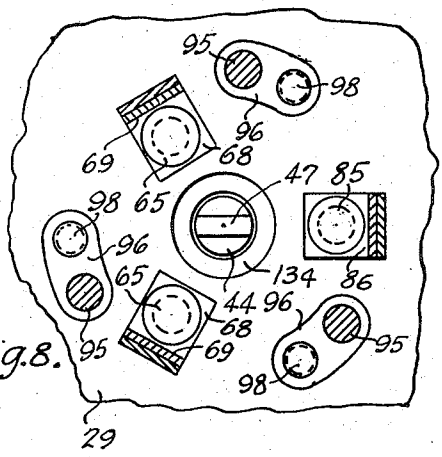


Fig. 8.

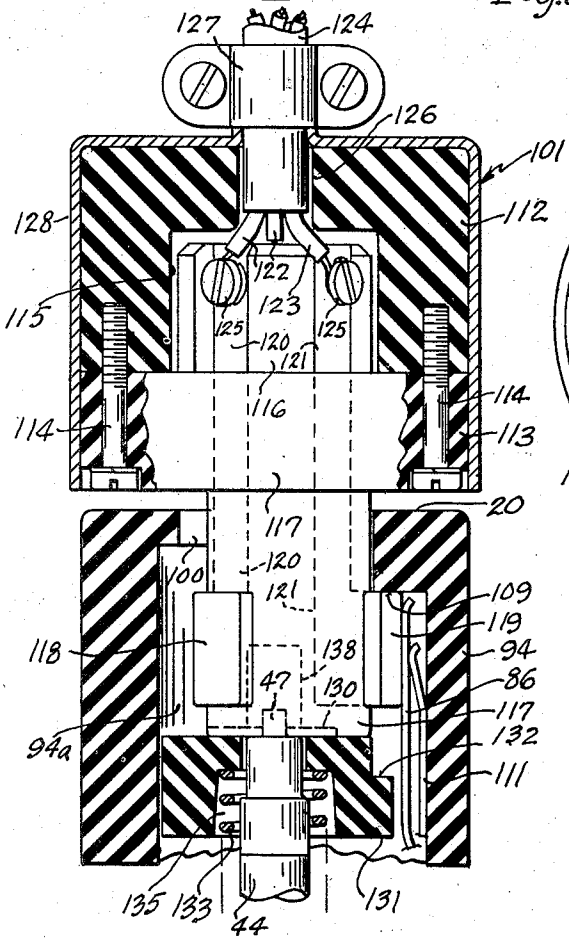


Fig. 6.

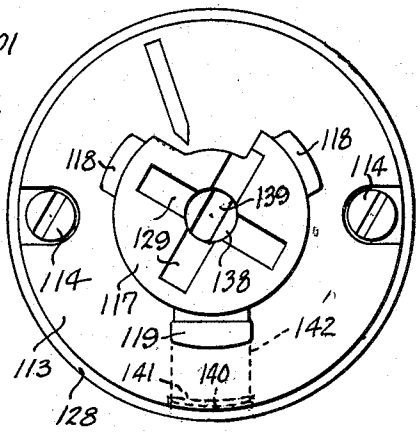


Fig. 9.

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DEAD FRONT RECEPTACLE

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Application June 22, 1956, Serial No. 593,115

15 Claims. (Cl. 200—51.09)

This invention relates to an electric outlet receptacle, particularly to a so-called dead front receptacle for use in locations where there might be danger of explosion from gases or vapors, such, for example, as operating rooms of hospitals, and has for an object to provide a receptacle of this character of a construction which will reduce to a minimum danger of explosion in such locations, and also in which there is no danger of operators being injured by coming in contact with the receptacle.

Another object is to provide a receptacle of this type in which the attachment plug-in cap may be locked in the receptacle after insertion therein by limited relative turning movement of the cap, and in which the circuit to the cap, which is normally open, is closed by this turning movement and opened by reverse movement of the cap in the opposite direction to unlock and permit removal of the cap from the receptacle.

With the foregoing and other objects in view, we have devised the construction illustrated in the accompanying drawings forming a part of this specification. It is, however, to be understood the invention is not limited to the specific details of construction and arrangement shown, but may embody various changes and modifications within the scope of the invention.

In these drawings:

Fig. 1 is a longitudinal section of the receptacle mounted in a wall construction such, for example, as an operating room of a hospital, the section being substantially on the plane of line 1—1 of Fig. 3;

Fig. 2 is a section of a portion of the receptacle taken substantially on line 2—2 of Fig. 3;

Fig. 3 is a transverse section substantially on line 3—3 of Fig. 2;

Fig. 4 is a detail section substantially on line 4—4 of Figs. 2 and 3;

Fig. 5 is a detail section substantially on line 5—5 of Fig. 3;

Fig. 6 is a longitudinal section through the projecting portion of the receptacle and an attachment plug cap inserted therein;

Fig. 7 is an outer end view of the extension on the receptacle;

Fig. 8 is a top plan view of a portion of the inner body member of the receptacle showing the connecting screws for the body members and the contacts in section, the plane of the section being substantially on line 8—8 of Fig. 2, and

Fig. 9 is an end view looking toward the inner end of the attachment plug cap.

A dangerous hazard in use of outlet receptacles and their use with attachment plug caps which may be plugged into and removed from the receptacle in providing electrical connection to various electrically operated devices or attachments, particularly such locations, for example, as operating rooms of hospitals, where there are anaesthetic fumes, or other locations where explosive gases may be involved, is the danger of sparks or arcing

produced in the operation of inserting or removing the plug-in cap causing an explosion, and it is the principal object of this invention to provide a construction in which such danger is entirely removed or at least reduced to a minimum.

Fig. 1 shows a device in a typical wall construction such as that of an operating room in a hospital, and comprises a cast iron wall box 10 mounted in the wall by any suitable means (not shown) behind the front surface or tile finish 11. The opening 12 in the tile at the front side of this box is covered and closed by a bronze casting 13 recessed as indicated at 14 on its inner peripheral surface to overlap the tile at a suitable distance outwardly of the opening, with the inner surface of this casting against the outer wall surface of the box 10, and after installation of the receptacle this casting is covered by a finishing ring 15 of suitable material, such as brass finished with a chromium or other suitable surface. This is a circular plate 16 covering the outer surface of the casting 13 and secured thereto by screws 13a which also secure the casting 13 to the box 10, and the ring 15 is provided with an outer peripheral inwardly extending flange 17 enclosing the outer edge of the casting 13 with its free edge against the outer surface of the tile 11. It has an outwardly extending tubular section 18 enclosing the outwardly extending insulating body member 19 of the receptacle with its outer end 20 exposed and extending a short distance through the opening 21 in the outer end of this extension.

The receptacle includes an inner metal, preferably steel, shell 22 which is preferably a cupped member with a closed inner wall 23 and has its outer free end edge 24 extending through an opening 10a in the front or outer wall of box 10 and seated in an annular recess 25 about the central opening 26 in the casting 13, and it is sealed to this casting by a soldered connection 27 made preferably of a suitable silver solder. In this arrangement, as will be seen from Fig. 1, the shell 22 extends into and is enclosed in the wall box 10.

Mounted in the shell 22 is an insulating body member or support 28 comprising a circular body portion 29 spaced from the inner closed wall 23 by suitable posts or bolts 30 having a reduced lower end 31 forming a shoulder engaging the inner surface of the wall 23 and extending through an opening in this wall and secured therein by riveting over, as indicated at 32. Its connection to the wall may be sealed by suitable solder 33. At its outer end it is seated in a recess 34 in the inner surface of the member 29 and is tapped to receive a securing screw 35 passing through the member 29. This effectively mounts this body member 28 including member 29 within the shell 22.

Mounted on the inner side of the body portion 29 and within the shell 22 are switch contacts for controlling the electric circuit from the building wiring system to an attachment plug cap plugged into the receptacle. In the arrangement shown the device is connected to a three-wire system, one of which is a grounded wire, the wires from the wiring system being led to this device by means of a suitable cable 36 passing through a wall of the box 10 and including the three conductor wires 37 and 38, one of which, as for example 38, may be a grounded wire.

The body member 28 includes an integral extension 39 on the inner side of its outer wall or body portion 29, and extending through and mounted in the portion 29 at one side of extension 39 is an insert sleeve 40. It includes a reduced portion 41 molded in the member 29 and is provided with an anchoring flange 42 so that as it is molded in the member 29 it is permanently and effectively mounted therein. The sleeve 40 includes an inner portion 43 projecting inwardly from the inner

surface of the member 29, and the extension 39 is located laterally of the sleeve 40, as shown in Fig. 2. Mounted within this sleeve 40 is an operating member or shaft 44 having an outer enlarged portion 45 forming a shoulder 46 engaging the outer end of the sleeve 40, and provided with a flattened end 47 or extension to cooperate with the attachment plug cap for operation of this shaft and elements connected therewith, as will later be described. This shaft is provided with a noncircular, such for example, as square, inner end portion 48 on which is mounted a sleeve or cupped member 49 embracing the inner end of the sleeve 40 and having a closed end 50 provided with a similarly shaped opening, in this case square, through which the extension 48 passes, so that the member 49 turns with the shaft. Also mounted on this square extension 48 by means of a similarly shaped opening so that it will turn with the shaft is a cam member 51 of insulating material, and it is secured to the inner end of the member 49 by a suitable washer 52 and riveting over the end 53 of the reduced portion 48.

This cam member 51 has suitably located cam lugs 54 and 55 for operating switch contacts, as will presently be described, and this cam is normally held in the retracted position, as shown in Fig. 3, with the lug 54 against the free end portion 56 of the extension 39 which thus forms a stop to limit reverse movement of the cam and the shaft 44. A coil spring 57 about the sleeve 49 has one end 58 (Fig. 2) extending through an opening in the cam so as to be anchored thereto, and its opposite end 59 seated in a socket in the inner stepped end portion of the extension 39 so as to be anchored thereto. This spring is preloaded so that it tends to return the cam to its retracted or normal position, as shown in Fig. 3, but permits movement of the cam in the opposite direction or counterclockwise as viewed in Fig. 3, and as indicated by the arrow 60.

Stationary switch contacts 61 are mounted on the inner side of the body portion 29 to extend inwardly therefrom into the space enclosed by the shell 22. These contacts comprise a substantially L-shaped strip of metal including an outer foot 62 seated in a recess 63 in the inner wall of the portion 29, as shown in Fig. 1, and carrying at its inner end a suitable contact member 64 which, as it is a make-and-break contact, is made of suitable material to resist burning by arcing. The contact is secured in the member 29 by means of an insert rivet 65 passing through and molded in the member 29, and anchored by means of flanges 66 with its reduced inner end passing through the foot 62 of the contact and riveted over, as indicated at 67, to secure it thereto. The outer ends pass through similar feet 68 in spring receptacle contacts 69 on the outer side of the member 29 and similarly secured by riveting over the ends of the inserts, as indicated at 70.

Cooperating with stationary contacts 61 are movable contacts 71. These contacts comprise flat strips of spring metal 72 of suitable material, such as Phosphor bronze, to form electrical conductors, and they are substantially L-shaped as indicated in Fig. 2, including an inwardly extending portion 73 having a laterally extending foot 74 (Fig. 4) at its outer end seated in a recess 75 in the inner wall of the member 29, and anchored therein by the insert 76 molded in the material 29 and riveted over the foot as indicated at 77. At the inner end of the portion 73 is a laterally extending portion 78 on the free end of which is an angularly and forwardly extending portion 79 carrying a make-and-break contact element 80 similar to the element 64 and located adjacent to and at one side of the contact element 64. It will thus be seen from Fig. 3 that turning movement of the cam 51 counterclockwise or as indicated by the arrow 60 will cause the cam lugs 54 and 55 to cooperate with the inner sides of the extensions 79 and swing them outwardly from the retracted or open position of Fig. 3 to cause the movable contacts 80 to engage the stationary contacts 64 and close the circuit. Movement of the cam in the reverse direction by the spring 57 to the normal or retracted position of Fig. 3 will shift the lugs 54 and 55 laterally to one side of the extensions 79 and permit the resilient action of contacts 71 to shift the members 80 away from the members 64 to break or open the circuit.

Also mounted on the inner side of the member 29 and projecting therefrom into shell 22 is a grounding contact 81 to which the grounding wire 38 may be connected, as shown in Figs. 2 and 3. This contact has a laterally extending foot 82 seated in a recess 83 in the wall 29, and secured thereto by the riveted over end 84 of the insert rivet 85 molded and anchored in the member 29, and at the outer side of the member 29 mounting to this member a spring grounding contact 86 by its riveted over outer end 87. The lead wires 37 and 38 from the cable are passed through openings 88 in the inner end wall 23 of the casing 22, as shown in Fig. 2, and are connected respectively to the contact members 72 and 81 by suitably soldering them thereto, as indicated at 89 and 90. The openings 88 are located in an inwardly offset portion or boss 91 of the wall 23 providing a channel or recess 92 which may receive a sealing material 93 such, for example, as hard wax, to seal the openings and prevent entrance of gases to the space within the shell 22.

Mounted on the outer side of the portion 29 of the inner body member is an outer body member 94 of molded insulating material, and secured to the member 29 by suitable screws 95 (Fig. 5) passing longitudinally through this member and threaded into metal inserts 96 located in recesses 97 in the outer wall surface of the member 29. These are elongated or generally oblong shaped inserts, as indicated in Figs. 3 and 8, and are secured in the recesses by screws 98 passing through the member 29 and threaded into the opposite end portions of the inserts 96 from the screws 95.

The member 94 in the form shown is of circular cross section, and as shown in Fig. 1 projects at its outer end 20 a short distance through the opening 21 in the outer end of the extension 18 of the finishing ring 15. It will be seen from Fig. 1 that this member 94 is of smaller diameter than the member 29 so that there is a space 99*a* between the outer wall of the member 94 and the opening 26 in the casting 13 and the inner side of the outer end of the shell 22, and this space is sealed by a suitable sealing material such, for example, as a hard wax seal 99. As will be seen, the member 94 is a hollow member with a longitudinal passage 94*a* opening at 100 through its outer end wall through which the contacts of an attachment plug cap 101 may be inserted to engage the receptacle contacts 69 and 86 mounted on the outer wall of the member 29 and extending into this passage in the member 94. The side walls of the passage are recessed, as indicated at 102 and 103 to receive the contacts 69 and 86 respectively, and the opening 100 in the end wall 20 includes laterally extending recesses or notches 104 and 105 in alignment with the contacts 69 and 86, as indicated in Fig. 7. The recesses 102 are extended beyond the notches 104, as indicated at 106, so as to provide overhanging portions 107 at the inner sides of the opening 100 at one side of the notches 104. Similarly, the recess 103 is extended as indicated at 108 beyond the notch 105 to provide a similar overhanging portion or shoulder 109 at the inner side of the end wall 20, and the contacts 69 are made of a width to extend into the extensions 106, and the contact 86 is similarly made of sufficient width to extend into the extension 108. These are spring contacts but are preferably backed up by spring members 110 and 111 respectively to hold the contacts 69 and 86 outwardly away from the wall of the recess and to insure these contacts properly engage the contacts of the attachment plug cap to insure good electrical contact therewith.

The attachment plug cap 101 (Fig. 6) comprises two insulating body members 112 and 113 secured together by the screws 114. The member 112 is recessed on its inner side, as indicated at 115, and the member 113 includes two integral projecting portions 116 and 117 projecting respectively from the outer and inner sides of the intermediate portion 113. The extension 116 extends into the recess 115 in the member 112, while the extension 117 projects from the inner side of the portion 113, and is adapted for insertion through the opening 100 in the outer end wall 20 of the receptacle. Mounted on this extension 117 are three attachment plug cap contacts 118 and 119, 119 being a grounded contact, and they are at the inner ends of conductor bars 120 and 121 respectively recessed in and extending longitudinally of the extensions 116 and 117 and through the intermediate portion 113. They are adapted to be connected to the conductor wires 122 and 123 in an insulated cable 124 leading to the electrical attachment it is desired to be operated, the binding post screws for making these connections being shown at 125. The conductor 123 is the grounded conductor, and is therefore connected to the grounded contact 119. This cable extends through an opening 126 in the outer end wall of the cap 101 and may be secured thereto by a suitable clamp or strain relief 127. The member 112 and intermediate portion 113 may be enclosed in a metal protective shell 128. The screws 114 may pass through the portion 113 and be threaded into the member 112, either directly or by molded metal insert (not shown).

The inner end of the extension 117 may be provided with cross channels 129 adapted to receive similarly shaped ribs 130 on the outer end of a closure plug 131 slidable longitudinally in the passage in the receptacle member 94, and provided with an opening 131*a*. This plug, as shown in Fig. 1, is to close the opening 100 in the outer end wall 20 of the receptacle when the attachment cap 101 is removed to help prevent entrance of dirt or other objects into the receptacle when it is not being used. In this position its outer end and a stepped shoulder 132 engage under the overhanging portions 107 and 109 to limit outward movement of the plug 131. It is normally shifted to this position by a coil spring 133 seated at its inner end in a recess 134 in the outer surface of the member 29 embracing the outer end portion of the shaft 44, and seated at its other end in a recess 135 in the inner side of the plug 131. The side edges of plug 131 include lugs or extensions 136 and 137 in the recesses carrying the contacts 69 and 86, to thus prevent turning movement of the plug 131. In the inner end of the extension 117 of the plug-in cap is a metal pin insert 138 having its inner end at the end of the extension 117 provided with a transverse channel or recess 139 (Fig. 9) adapted to receive the flattened extension 47 of the operating member or shaft 44 when the extension 117 of the attachment plug cap carrying the contacts 118 and 119 is inserted in the receptacle. The contact 119 may be grounded on the metal shell 128 by a spring grounding contact 140 mounted in a recess 141 in the side of the member 113 and engaging the inner surface of the shell 128 and connected as indicated at 142 to the conductor bar 121 for the contact 119.

The operation is as follows: As previously indicated, when the attachment plug cap 101 is not in the receptacle, the parts are in the positions indicated in Figs. 1, 2 and 3, with the switch contacts 61 and 71 separated, so that the circuit connections from the building wiring system to the receptacle contacts 69 are broken, and these are, therefore, dead contacts. On insertion of the extension 117 of the cap 101 carrying the cap contacts 118 and 119 through the outer opening 100 of the receptacle, these contacts engage the receptacle contacts 69 and 86 respectively. It will be noted that the grounding contact 119 is of greater width and extends farther laterally from the surface of the extension 117 than the contacts 118. Also the recess 105 (Fig. 7) in the outer end wall 20 of the receptacle is wider and extends outwardly farther than the recesses 104. Therefore, this extension 117 of the cap can be inserted in the receptacle only with the wider grounding contact 119 passing through the recess 105 to engage the grounding contact 86, and the circuit contacts 118 can thus pass only through these recesses 104 to engage the contacts 69 connected to the stationary switch contacts 61. In this operation, the pressure of the end of extension 117 on the closure plug 131 shifts this plug inwardly, as indicated in Fig. 6, and the outer flattened extension 47 on the operating shaft 44 seats in the recess or channel 139 in the inner end of the insert 138 of the cap 101, as indicated in Fig. 6, the member 131 being provided with an opening 131*a* through which the outer end of shaft 44 may extend. At this time the channels 129 in the end of the extension 117 are out of alignment with the ribs 130 on the outer end of the plug 131.

After the extension 117 of the cap is so inserted to its inward position, the cap 101 may be turned clockwise as viewed in Fig. 7 a partial revolution. This will carry the contacts 118 and 119 out of alignment with recesses 104 and 105 and under the overhanging portions or shoulders 107 and 109 and will lock the cap 101 against withdrawal from the receptacle. The contacts 118 and 119 engage the receptacle contacts 69 and 86 when the cap is inserted in the receptacle to make electrical contact therewith, and due to the width of the contacts 69 and 86 this electrical contact is maintained during turning movement of the cap to locking position. At the same time the ribs 130 come into alignment with the channels 129 in the end of the extension 117 and become seated therein, thus forming means to resist turning movement of the plugged-in cap in the reverse direction toward the unlocked position, and thus assist in retaining the plug in this locked position and reducing liability of its being accidentally turned to the unlocked position. As previously indicated, when the extension 117 reaches its inner position the flat extension 47 on the shaft 44 becomes seated in the channel or recess 139 in the inner end of the insert 138 in the extension 117. When the cap 101 is turned clockwise to the locked position it will therefore also turn the shaft 44 and with it the cam 51, which is therefore rotated counterclockwise as viewed in Fig. 3, as indicated by the arrow 60. This causes the lugs 54 and 55 to shift the spring contacts 71 laterally into engagement with the stationary contacts 61, thus closing the electrical connection from the conductors 37 in the building wiring system to receptacle contacts 69, and making these live contacts, and as they are in engagement with the contacts 118 of the plug-in cap 101 they complete the circuit to the conductors 122 leading to the electrical attachment or other device to be operated. Turning of the cap 101 counterclockwise or in the opposite direction to unlock it and permit withdrawal from the receptacle, will turn the shaft 44 in the opposite direction with the cam 51 and permit the contacts 71 to move away from the contacts 61 to open or break this electrical connection, and thus render the receptacle contacts 69 dead contacts before the plug-in cap 101 is removed from the receptacle and before the contacts 118 of this cap are separated from the receptacle contacts 69, thus preventing any arcing on withdrawing of the plug-in cap from the receptacle, which might ignite any surrounding gases and cause an explosion. The only arcing occurs between contact elements 64 and 80 within the casing 22, which is sealed off from the passage 94*a* in the outer receptacle member 94 in which the contacts 69 are located. The only connection between the space 22*a* in the shell 22 and the space 94*a* in the member 94 comprises a long right angle path only of very close tolerances, which will prevent any active flame from ever reaching the outer space in member 94 or the outer surfaces. This thus

provides a safety device against possible ignition of any surronding gases or vapors which might cause an explosion, and also provides a dead front receptacle which cannot cause injury to anyone coming in contact with the receptacle or by insertion of any metal element into the receptacle to engage the contacts **69** when the plug-in cap **101** is removed.

Having thus set forth the nature of our invention, we claim:

1. An electrical receptacle comprising an insulating body including a transverse wall, stationary receptacle contacts at the forward side of said wall adapted for engagement by the contacts of an attachment plug cap inserted in the receptacle, switch contacts mounted at the rear side of said wall including stationary and movable contacts one of which is electrically connected to the receptacle contacts by inserts molded in the wall and providing means securing the receptacle contacts and connected switch contacts to the forward and rear sides of said wall respectively, means for shifting the movable contacts to and from the stationary contacts to make and break a circuit to the receptacle contacts, and a rotatable shaft extending through the wall and including means at its outer end for detachably connecting it to a plug cap whereby it is operable by turning movement of a plug cap inserted in the receptacle to control movement of the movable contacts.

2. An electrical receptacle comprising an insulating body including a transverse wall and a forwardly extending portion at the outer side thereof enclosing a chamber, stationary receptacle contacts in said chamber mounted on the forward side of said wall, the outer end wall of said forwardly extending portion provided with an entrance opening leading to said chamber for insertion of an attachment plug cap having contacts to engage the receptacle contacts, said receptacle including locking means adapted to cooperate with holding means on the cap to lock the cap in the receptacle by limited relative turning movement of the cap after insertion in the receptacle, switch contacts mounted on the rear side of said cross wall including stationary and movable contacts one of which is electrically connected with the receptacle contacts by inserts extending through the wall and providing means securing the receptacle contacts and connected switch contacts respectively to the forward and rear sides of the wall, means for shifting the movable contacts to and from the stationary contacts to make and break a circuit to the receptacle contacts, and said receptacle including a rotatable shaft extending through the transverse wall connected to said contact shifting means and operable by turning movements of the cap to control movements of the movable contacts.

3. A receptacle according to claim 2 in which the receptacle contacts are located to be engaged by the cap contacts as the cap is inserted into the receptacle and are of a width to maintain this contact during turning movements of the cap, and also in which the shifting means for the switch contacts operates to close the switch only when the cap is in the locked position.

4. An electrical receptacle comprising an insulating body including a transverse wall and a forwardly extending portion at the outer side thereof enclosing a chamber, stationary receptacle contacts in said chamber, the outer end wall of said forwardly extending portion provided with an entrance opening leading to said chamber for insertion of an attachment plug cap having contacts to engage the receptacle contacts, said receptacle constructed to permit limited relative turning movements of the cap in the receptacle from and to the position to which it is inserted, switch contacts at the rear side of said transverse wall including stationary and movable contacts one of which is electrically connected with the receptacle contacts by inserts extending through the wall and providing means for mounting the receptacle contacts and connected switch contacts respectively on the forward and rear sides of said wall, means for shifting the movable contacts to and from the stationary contacts to make and break a circuit to the receptacle contacts, a metal shell extending rearwardly from the transverse wall and sealed to said wall providing therewith a sealed chamber enclosing the switch contacts and the means for shifting the movable contacts, and a rotatable shaft extending through the transverse wall connected to the contact shifting means and provided with means operable by turning movements of the cap to control action of the movable contacts.

5. An electrical receptacle comprising an insulating body including a transverse wall and a forwardly extending portion at the outer side thereof enclosing stationary receptacle contacts and provided in its outer end wall with entrance means leading to said contacts for insertion of the contacts of an attachment plug cap to engage the receptacle contacts, said receptacle constructed to permit limited relative turning movements of the cap after insertion in the receptacle, switch contacts at the rear side of the transverse wall including stationary and movable contacts one of which is electrically connected with the receptacle contacts by inserts extending through the wall and providing means mounting the receptacle contacts and connected switch contacts on the forward and rear sides of said wall respectively, an operative shaft extending through the transverse wall, a cam on the shaft at the rear of said wall for shifting the movable contacts by rotation of the shaft, and means on the shaft at the front of said wall adapted for detachable engagement with the inserted cap to operate the cam by the turning movements of the cap.

6. An electrical receptacle according to claim 5 in which there is a metal shell extending rearwardly from the transverse wall sealed at its forward edge to this wall and providing therewith a sealed chamber enclosing the switch contacts and the cam.

7. An electrical receptacle comprising an insulating body including a transverse wall and a forwardly extending portion at the outer side thereof enclosing stationary receptacle contacts and provided in its outer end wall with entrance means leading to said contacts for insertion of the contacts of an attachment plug cap to engage the receptacle contacts, said receptacle constructed to permit limited relative turning movements of the cap after insertion in the receptacle, a metal shell comprising a cupped member including a closed rear wall and open front, means mounting the transverse wall in the forward part of said shell closing said open front and sealing its edges to the shell providing a closed chamber at the rear of said wall, switch means mounted on said transverse wall at the rear thereof in said chamber and electrically connected with said receptacle contacts by inserts extending through the wall and providing means mounting the receptacle contacts and connected switch means on the forward and rear sides of said wall respectively, means normally maintaining the switch means in its open position, a shaft extending through the transverse wall, means on the shaft in said chamber for closing the switch means by turning movement of the shaft, and means on the shaft at the forward side of the transverse wall adapted for detachable connection with the inserted cap to operate the cam by turning movements of the cap.

8. An electrical receptacle comprising an insulating body including a transverse wall, stationary receptacle contacts mounted on its front side and extending forwardly therefrom, said body including a member of insulating material mounted at the front of said transverse wall and enclosing said contacts, said member provided in its forward end wall with entrance means leading to said contacts for insertion of the contacts of an attachment plug cap to engage the receptacle contacts and constructed to permit limited relative turning movements of the inserted cap, switch means mounted on the rear side of the trans-

verse wall and electrically connected with the receptacle contacts by inserts extending through the transverse wall providing means mounting the receptacle contacts and connected switch means on the forward and rear sides of the transverse wall respectively, means normally retaining the switch means in the open position, an operative shaft extending through the transverse wall, a cam on the shaft for operating the switch to closed position, a metal shell extending rearwardly from the transverse wall closed except at its forward end, means sealing its forward end edge to the transverse wall providing therewith a sealed chamber enclosing the switch and cam, and means on the shaft at the forward side of the transverse wall adapted for detachably connecting it with the inserted cap to operate the cam by turning movements of the cap.

9. An electrical receptacle comprising an insulating body including a transverse wall, stationary receptacle contacts mounted on its front side and extending forwardly therefrom, said body including a member of insulating material mounted at the front of said transverse wall and enclosing said contacts, said member provided in its forward end wall with entrance means leading to said contacts for insertion of the contacts of an attachment plug cap to engage the receptacle contacts and provided with means adapted to cooperate with holding means on said cap contacts to lock the cap in the receptacle by limited relative turning movement of the inserted cap, switch means mounted on the rear side of the cross wall and electrically connected with the receptacle contacts by conductors extending through the transverse wall providing means mounting the receptacle contacts and connected switch means on said wall, means normally retaining the switch means in open position, an operative shaft extending through the transverse wall, a cam on the shaft for operating the switch to closed position by turning of the shaft, and means on the shaft at the forward side of the transverse wall adapted for detachable connection with the inserted cap to operate the cam by said turning movement of the cap.

10. A receptacle according to claim 9 in which the receptacle contacts are located to be engaged by the cap contacts as they are inserted in the receptacle and are of a width to maintain this contact during turning movement of the cap, and in which the cam operates the switch only when the cap is in the locked position.

11. An electrical receptacle comprising an insulating body including a transverse wall, stationary receptacle contacts mounted on its front side and extending forwardly therefrom, said body including a member of insulating material mounted at the front of said transverse wall and enclosing said contacts, said member provided in its forward end wall with entrance means leading to said contacts for insertion of the contacts of an attachment plug cap to engage the receptacle contacts and constructed to permit limited relative turning movements of the inserted cap, switch means mounted at the rear side of the transverse wall including contacts mounted on said wall, metal inserts in said wall securing the receptacle and switch contacts to the wall and forming an electrical connection between them, an operative shaft extending through the wall, a cam on the shaft for operating the switch means by turning movement of the shaft, and means on the shaft at the forward side of the transverse wall adapted for detachable operative connection with the inserted cap to operate the cam by turning movement of the cap.

12. In combination a wall having an opening, a closed outlet box mounted in said wall provided with a front wall having an opening in alignment with the wall opening, a cover member secured to the box over said openings and provided with an opening in alignment therewith, a receptacle mounted in said cover member including a metal shell secured to said member and extending into the box, said shell comprising a cupped member with a closed inner end wall and an open front end secured to the cover member, an insulating body including a transverse wall mounted in the forward part of the shell and forming a sealed chamber with the shell at the rear of said wall, receptacle contacts mounted on the front side of said transverse wall and extending forwardly therefrom, an insulating member mounted at the front of the transverse wall enclosing the receptacle contacts and provided in its forward end wall with entrance means leading to said contacts for insertion of the contacts of an attachment plug cap to engage the receptacle contacts and constructed to permit limited relative turning movements of the inserted cap, switch means mounted on the rear side of the transverse wall in the sealed chamber and electrically connected with the receptacle contacts by conductor means extending through said wall, means normally retaining the switch in the open position, an operative shaft extending through the transverse wall, a cam on said shaft for closing the switch by turning movement of the shaft, and means on the shaft at the forward side of the transverse wall adapted for detachable operative connection with the inserted cap to operate the cam by turning movement of the cap.

13. The combination according to claim 12 in which the insulated member at the front of the transverse wall is provided with holding means adapted to cooperate with holding means on the contacts of the attachment plug cap to lock the cap in the receptacle by turning movement of the inserted cap.

14. The combination according to claim 12 in which the insulated member at the front of the transverse wall is provided with holding means adapted to cooperate with holding means on the contacts of the attachment plug cap to lock the cap in the receptacle by turning movement of the inserted cap, the receptacle contacts are located to be engaged by the cap contacts as they are inserted in the receptacle and are of a width to maintain this contact as the cap is turned to and from the locked position, and in which the cam is operative to close the switch only when the cap is in the locked position.

15. In combination, an electrical receptacle comprising an insulating body, spaced stationary receptacle contacts mounted in said body, an attachment plug cap carrying spaced contacts to engage the receptacle contacts by a relative longitudinal movement of the cap and body, interlocking holding means on the body and cap to prevent separation of the cap and body mounted to become effective and ineffective by a relative turning movement between the cap and body while the contacts of the cap and receptacle are continuously in engagement, a switch means normally in the open position and electrically connected with the receptacle contacts to control an electric circuit thereto, means controlling operation of the switch, said receptacle including walls forming a sealed chamber enclosing the switch and its controlling means, and an operative shaft connected to the switch control means provided with means to detachably interlock with the cap to close the switch by turning movement of the cap and operative to close the switch only when the cap is in the locked position.

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