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H. HUBBELL

FOUR-DOOR DUPLEX FLUSH RECEPTACLE

Filed May 15, 1920

Fig. 1

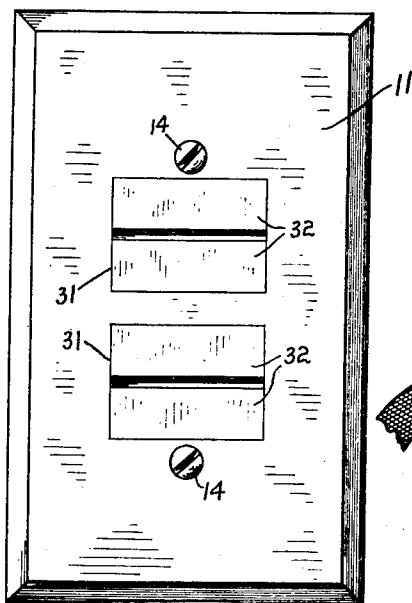


Fig. 2

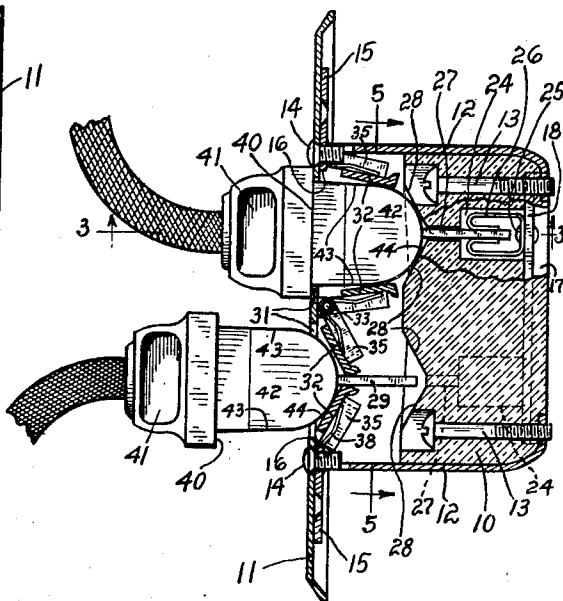


Fig. 4

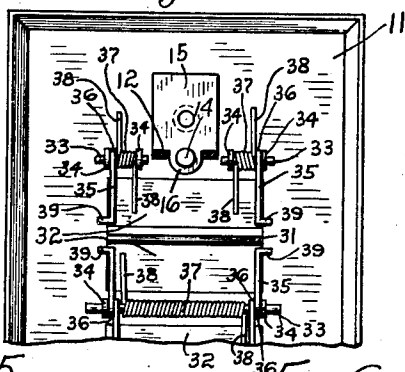


Fig. 3

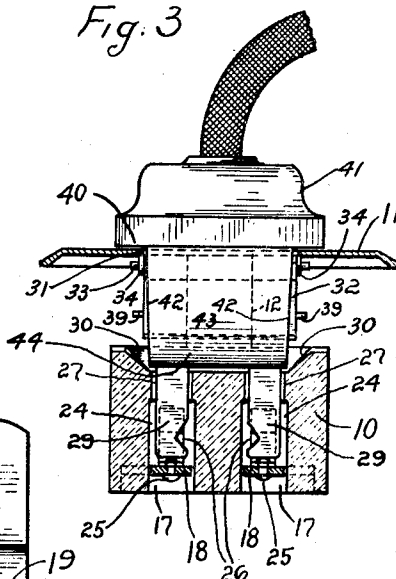


Fig. 5

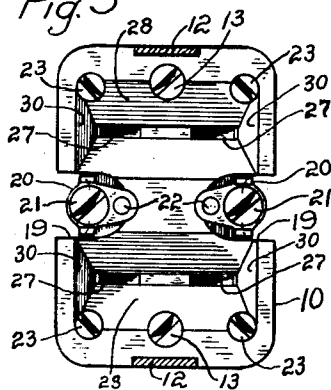
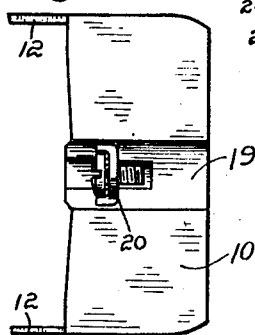


Fig. 6



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FOUR-DOOR DUPLEX FLUSH RECEPTACLE.

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To all whom it may concern:

Be it known that I, HARVEY HUBBELL, a citizen of the United States, residing at Bridgeport, county of Fairfield, State of Connecticut, have invented an Improvement in Four-Door Duplex Flush Receptacles, of which the following is a specification.

This invention relates to electric flush receptacles and plugs therefor, and has for one of its objects to provide a receptacle the face plate of which is equipped with pivoted, spring pressed doors which are adapted to be swung to open position when the plugs are inserted and to automatically return to closed position when the plugs are removed. A further object is to so construct the plugs that they will, when being withdrawn, be thrown by the spring pressed doors to cause the contact blades to be removed from the contacts of the receptacle with a snap, thus insuring a quick break. A still further object is to produce a receptacle the face plate of which is arranged at a proper distance from the receptacle proper and its contacts so as to preclude the possibility of accidental electric connection between the mountings and contacts of the receptacle. Additional objects are to provide covered up and concealed contacts and thus insure protection from shocks, and to so construct the upper face of the receptacle proper that the contact blades of the plugs will be accurately guided into openings leading to the covered up and concealed contacts.

The above and other objects and advantages will be apparent from the full description of the invention now to be made.

In the accompanying drawing forming a part of this specification,

Fig. 1 is a top plan view of the face plate of my improved receptacle.

Fig. 2 a longitudinal, sectional view of the receptacle and face plate, showing an inserted and a partially inserted plug;

Fig. 3 a sectional view as on line 3—3 in Fig. 2, looking in the direction of the arrows, but showing the plug in side elevation;

Fig. 4 a fragmentary, bottom plan view of the face plate;

Fig. 5 a sectional view as on line 5—5 in Fig. 2 with the plugs removed and looking in the direction of the arrows; and

Fig. 6 is a side elevation looking from the right in Fig. 5.

10 denotes the receptacle comprising a body of insulating material and 11 denotes

the face plate thereof. The face plate and receptacle are spaced apart as shown and are held in proper relation with respect to each other by supporting strips 12, which are arranged in depressions in the ends of the receptacle, as more clearly shown in Fig. 5, and are attached to the receptacle by screws 13 and to the face plate by screws 14. The supporting strips are bent outwardly at right angles and their outwardly bent portions 15 rest beneath the face plate. Lugs 16 struck from the strips are provided with threaded perforations to receive screws 14.

The lower face of the receptacle is cut away to provide two longitudinal recesses 17 which are parallel with each other. In each of these recesses is arranged a contact plate 18. Opposite sides of the receptacle are cut away, as indicated at 19, to accommodate the lead wires (not shown), and arranged in cut away portions 19 and near the upper face of the receptacle are binding posts 20 carrying binding screws 21. The binding posts are held to the receptacle and to the contact plates by connecting screws 22 which pass through the mid-lengths of the contact plates, through the receptacle, and engage the binding posts as more clearly shown in Fig. 5. Holding screws 23, which pass downwardly through the receptacle adjacent each of its corners, enter the ends of the contact plates and hold them in the longitudinal recesses and to the lower face of the receptacle. The receptacle is also provided with four contact receiving recesses, indicated by 24, which are arranged at equal distances from the transverse center thereof, and extend upwardly from the longitudinal recesses, two from each longitudinal recess. Carried by the contact plates, as indicated at 25, and arranged in the contact receiving recesses, are folded contacts 26 which are preferably shaped as clearly shown in Fig. 2. Extending upwardly from the center of each contact receiving recess and into the upper face of the receptacle is a transverse slot 27. The upper face of the receptacle is of peculiar configuration, as will be clear from Figs. 2 and 3, it being provided with downwardly inclined walls 28, which extend transversely of the receptacle and are adapted to guide the contact blades, indicated by 29, of the plugs into the transverse slots leading to the concealed contacts. That is, the upper face is transversely cut away to provide a pair of V-shaped recesses, the apex

of each of which is located in a line which coincides with the transverse slots leading to the contacts. The upper face is further provided with downwardly inclined walls 30, as more clearly shown in Fig. 3, which extend longitudinally of the receptacle and assist in guiding the contact blades into the transverse slots as will be readily understood.

The face plate is provided with two rectangular openings 31 which are normally covered by pivoted spring pressed doors 32, there being two doors in each opening. The doors may be hinged to the under side of the face plate as shown. Pins 33 carried by ears 34 extending from the face plate pivotally carry arms 35 which extend from opposite ends of the doors, the points of pivotal connection being indicated 36. It will be noted from an inspection of Figure 2, that the pivots for the doors are on the back or inner side of the face plate and are spaced from the edges of the openings 31 in the plate, so that when these doors are swung inwardly with the insertion of the body of the plug, the doors are wholly removed from the opening and their faces are back at least even with the edge of the opening with a movement of only 90 degrees, thus allowing of the insertion of a plug having an insulating body member of substantially the same size as the opening. By this arrangement the edges of the opening form guides for the body member of the plug and also helps to guide the contact blades thereon to the slots 27 leading to the stationary contacts 26. The doors which are farthest apart are separately hinged, as suggested in Fig. 4, while the doors which are adjacent each other are pivotally carried by the same pin as will be readily understood. Coil springs 37 arranged on the pins and having their ends 38, respectively, bearing against the under sides of the doors and face plate normally hold the doors in the openings to completely cover them. Lugs 39 extending from arms 36 are adapted to rest against the face plate to limit the outward movement of the doors.

The plugs comprising bodies of insulating material are preferably shaped as shown. The cap portion of each, includes a continuous shoulder 40 which is adapted to rest against the face plate when the plug is inserted, and finger grips 41 by which the plug may be manipulated. The ends, denoted by 42, of each body portion are flat and converge slightly toward each other as disclosed in Fig. 3. The sides of each body portion are flat and parallel with each other for a portion of their depth, as indicated at 43, and merge into each other to form a smooth, rounded portion 44 from which the contact blades extend. Each body portion is of a depth which allows rounded portion 44 to rest against the walls of the V-shaped

recess of the receptacle when the plug is fully inserted and the continuous shoulder is resting against the face plate, as will be clear from Fig. 2. The contact blades are adapted to enter the transverse slots and engage the contacts, but are of insufficient length to simultaneously engage the inner edges of the doors and the contacts.

To insert a plug, the contact blades are first positioned over the doors of an opening in the face plate. The plug is then pushed to place as suggested in Fig. 2. It will be apparent that the inclined walls will guide the contact blades into the transverse slots which enter the contact receiving recesses. It will further be apparent that the rounded portion of the plug will cause the spring pressed doors to be swung open from the position of the partially inserted plug to the position of the fully inserted plug in Fig. 2. When the plug is fully inserted, the spring pressed doors bear against the parallel sides of the body portion and thus grip the plug. As the plug is being withdrawn, the spring pressed doors exert pressure against the rounded portion thereof and throw the plug outwardly. The arrangement here is such that the outward thrust is exerted simultaneously with the removal of the contact blades from the contacts of the receptacle. A quick break is thus insured.

While a specific embodiment of my invention has been described, it is obvious that various changes can be made in details of construction and arrangement of parts, without departing from the spirit of the invention and the scope of the appended claims.

What I claim is:

1. In a device of the character described, an oblong body member composed of insulating material having enclosed recesses arranged in pairs transversely of said member, a plurality of spaced contacts mounted in said recesses, said member being provided with spaced passages leading to the respective contacts and adapted to receive plug contact blades, said body being also provided with inclined guiding walls leading to said passages, a substantially rectangular face plate provided with a pair of oblong openings extending transversely of the plate and arranged in alignment with said passages adapted to receive a plug body carrying contact blades, supports extending between the said body and the face plate and arranged to secure them together in spaced relation, and doors for said openings hinged to the face plate and arranged to swing on their pivots into the space between the face plate and the body member, and springs tending to hold the doors in position to close said openings.

2. In a device of the character described,

a rectangular face plate provided with a pair of spaced rectangular plug receiving openings extending transversely thereof, a pair of doors for closing each opening 5 hinged to the face plate to swing backwardly therefrom, two outside the openings and two between the openings, springs tending to hold the doors in position to close the openings, a receptacle secured to the face 10 plate and spaced to the rear thereof to permit the backward movement of the doors, said receptacle comprising an insulating body member having a plurality of enclosed recesses, and two pairs of contacts carried 15 by said member in said recesses, said member being provided with two pairs of spaced passages leading to the contacts, and each pair being in alignment with one of the face plate openings, and adapted to receive 20 contact blades carried by plugs inserted in the face plate openings.

3. In a device of the character described, a receptacle comprising an insulating body member having a pair of laterally spaced 25 longitudinal grooves in its rear side and a pair of longitudinally spaced enclosed recesses extending into the body from each of said grooves, conductors mounted in and extending longitudinally of said grooves, a 30 pair of contacts connected to each conductor and each extending into one of said recesses, said body being provided with spaced passages leading from the front side thereof to said recesses and adapted for the passage 35 of blade contacts, said passages being arranged in pairs spaced longitudinally of the body and the passages of each pair being spaced transversely of the body, a face plate secured to the body in spaced relation and 40 provided with a pair of openings extending transversely thereof each in alignment with a pair of said passages and adapted to receive plugs carrying contact blades, and a pair of spring pressed doors for closing each 45 opening pivoted to swing into the space between the face plate and the receptacle.

4. In a device of the character described, an oblong face plate provided with a pair 50 of spaced openings extending transversely of the plate and adapted to receive plugs carrying contact blades, a pair of

doors for closing each opening, arms carried by the doors adjacent the opposite ends thereof provided with lugs adapted to engage the rear of the face plate to limit their 55 movements in one direction, ears carried by the face plate to which the arms are pivoted, and springs tending to move the doors to closed position.

5. In a device of the character described, 60 an oblong face plate provided with a pair of spaced rectangular openings arranged in parallel relation and extending transversely of the plate, said openings being adapted to receive plugs carrying contact blades, rec- 65 tangular doors for closing said openings provided with transversely extending arms at their opposite ends having laterally projecting lugs adapted to engage the rear of the face plate to limit the movement of the 70 doors, ears secured to the rear of the face plate, a pivot pin extending through said ears and the arms of both doors whereby they are secured to the face plate on a com- 75 mon hinge, the arms of the doors being arranged so that they may overlap so that when the doors are operated they are adapted to swing into close proximity, and a coiled spring on said pin provided with 80 arms tending to hold the doors in closed position.

6. In a device of the character described an oblong face plate provided with a pair of spaced substantially rectangular plug re- 85 ceiving openings extending transversely thereof, a pair of doors for each opening provided with transversely extending arms adjacent their opposite ends, ears secured to the rear of the face plate outside the 90 openings and between the openings, pivot pins extending through the arms and ears to pivotally mount the doors, the two inner doors of the openings being mounted on the same pin with their arms overlapping so 95 that when the doors are opened they are adapted to swing into close proximity, and coiled springs embracing the pins and tending to hold the doors in closed position.

In testimony whereof I affix my signature.

HARVEY HUBBELL.