Dec. 14, 1948. H. HUBBELL 2,455,930

PLUG RECEPTACLE

Filed April 10, 1943

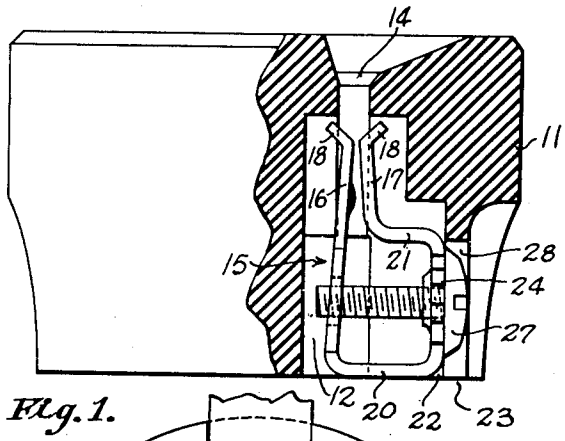


Fig. 1.

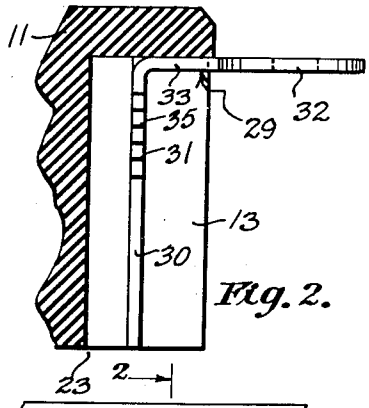


Fig. 2.

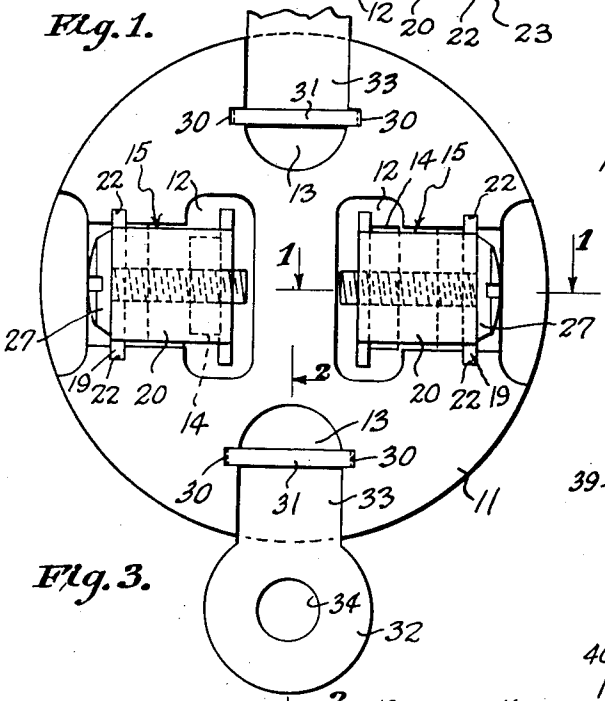


Fig. 3.

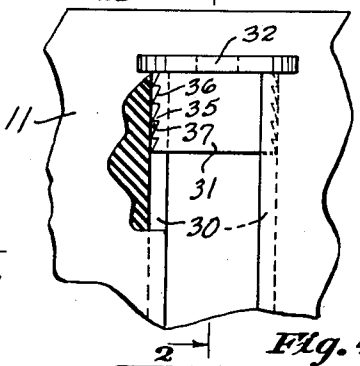


Fig. 4.

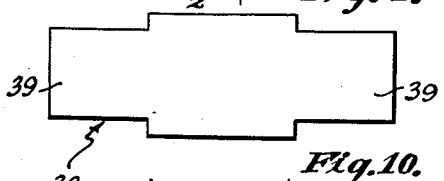


Fig. 10.

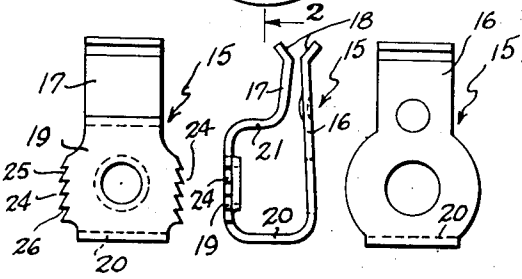


Fig. 6. Fig. 7. Fig. 8.

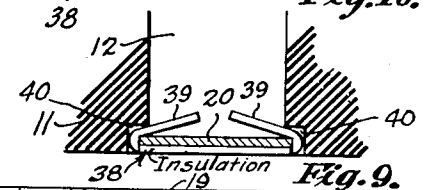


Fig. 9.

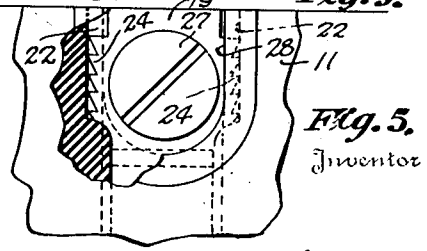


Fig. 5.

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Patented Dec. 14, 1948

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UNITED STATES PATENT OFFICE

2,455,930

PLUG RECEPTACLE

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Application April 10, 1943, Serial No. 482,537

1 Claim. (Cl. 173—338)

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This invention relates to electrical receptacles and has for an object to provide such a receptacle which may be made with an open back so that when the device is used in a floor or any position where foreign matter is likely to fall into the contact blade entrance slots, it may fall through and not be retained to cause a short circuit.

It is also an object to provide an improved construction and means of mounting the receptacle contacts and mounting lugs for the receptacle which will greatly facilitate assembly of the parts but will nevertheless effectively retain them in proper position.

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

In this drawing:

Fig. 1 is a partial side elevation and partial section of the receptacle, the section being taken substantially on the line 1—1 of Fig. 3, but showing the receptacle contact in elevation;

Fig. 2 is a section substantially on line 2—2 of Figs. 3 and 4, but showing the mounting lug in elevation;

Fig. 3 is a rear view of the device looking toward the bottom of Figs. 1 and 2;

Fig. 4 is a partial side elevation and partial section looking from the right of Fig. 3;

Fig. 5 is a partial side elevation and partial section looking from the right of Fig. 1 but showing the parts inverted;

Figs. 6, 7 and 8 are elevational views of the receptacle contact;

Fig. 9 is a detailed section showing how an insulating member for covering the back of the receptacle contact may be used if desired, and

Fig. 10 is a plan view of the insulating member of Fig. 9 before being applied to the receptacle.

This receptacle comprises an insulating body member 11 of suitable molded insulating material, the particular body shown being of a circular shape and provided with a plurality of compartments 12 and 13 opening through the rear wall of the body and extending forwardly or inwardly from this rear wall or surface. The body member is also provided with contact blade entrance slots 14 in its front wall leading to the compartments 12, these slots being shaped for the entrance of the contact blades of attachment plug caps and are usually of rectangular shape to generally correspond with the rectangular blades most commonly used.

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The compartments 12 are shaped to each receive a receptacle contact 15 having spring fingers 16 and 17 arranged at the inner side of the slot 14 to engage the contact blade inserted through this slot, these fingers being arranged side by side so as to receive the contact blade between them. They are normally spaced a distance less than the thickness of the blade and are made of resilient metal so as to yield laterally when the blade is inserted between them and to give good electrical contact. They may be inclined laterally at their upper ends as shown at 18 to facilitate entrance of the contact blade between them. These fingers 16 and 17 are connected respectively to the lower and upper edges of a body portion 19. It is preferred that the contact be made of a single piece of metal of suitable thickness. The blade portions 16 and 17, as shown clearly in Figs. 1 and 7, extend rearwardly or downwardly for a certain distance and then laterally at 20 and 21 respectively toward the body portion 19, which is spaced from the contact portion of the finger 16.

An improved means of mounting the contact in the compartment is provided. For this purpose each of the opposite side walls of the compartment is provided with a groove 22 extending inwardly or forwardly from the rear surface or wall 23 of the body 11 and the side edges of the body portion 19 of the contact are seated in these grooves. At least one of these edges and preferably both of them are provided with means for holding or retaining the receptacle in the compartment. This means is so shaped as to permit ready insertion of the contact in the compartment by sliding it inwardly or forwardly from the rear wall of the insulating body 11 or the open rear entrance to the compartment, and then to grip the material of the body to prevent movement in the opposite direction and thus to retain the contact in the compartment and prevent its being pushed downwardly or rearwardly by the attachment plug contact blades inserted through the slots 14 in the front wall of the body. A satisfactory means of doing this is to provide one or both edges of the body portion 19 with a series of teeth 24, the teeth being formed with inclined upper or inner surfaces 25 and an abrupt lower surface 26 meeting in a relatively sharp edge. This permits the contact to slide readily inwardly in the grooves 22 because the inclined surfaces 25 are forward, but after being inserted the sharp edges at the outer ends of the abrupt surfaces 26 grip or slightly cut into the material of the

insulated body to effectively prevent movement in the opposite direction and thus retain the contact within its compartment. The action of the teeth is such that the greater the force tending to shift the contact rearwardly or out of the compartment the more effective is the gripping effect to hold it.

Mounted in the body portion 10 is means for connecting the usual lead wire (not shown). The means illustrated consists of a binding screw 27 threaded into the portion 19, and there may be a recess 28 opening laterally through the side of the body 11 to permit access to this screw for ready connection of the lead wire.

Similarly mounted in the compartments 13 are metal members forming mounting lugs 29. The opposite side walls of these compartments are also provided with grooves similar to the grooves 22 and indicated at 30 leading inwardly or forwardly from the rear face 23 of the insulating body 11. The lugs 29 include a mounting or body portion 31 and a lug or ear portion 32 connected with the body 31 by a connecting neck 33, the ear 32 and the body 31 being at an angle to each other as shown, so that the ear 32 extends laterally from the side of the insulating body 11 for mounting the receptacle on the mounting ears in a floor or wall outlet box (not shown) and to which it may be secured by the usual screws in the opening 34 in the ear. This lug 29 is mounted in the same way as the contact 15. That is, the opposite edges of the body portion 31 are seated in the grooves 30 and either one, but preferably both, edges are provided with means shaped to permit ready sliding of the member into the compartment from the rear surface of the body 11 and then to grip the material of this body to retain the member in position. As indicated in connection with the contact 15, it is preferred that the edges of the body member 31 be provided with teeth 35 which are the same as the teeth 24 of the contact 15, and have inclined upper surfaces 36 and abrupt lower surfaces 37 meeting in a relatively sharp edge which may grip the material at the bottom of the groove 30. Because of the inclined forward surfaces 36 the element may be readily slid into position from the rear surface of the body 11, and then when in this position, because of the abrupt surface 37 and relatively sharp edge, the teeth will firmly grip the material of the body 11 and effectively hold or retain the mounting member in position. The compartments 13 open through the side wall of the insulating body 11 for passage of the neck or connecting portion 33 of the mounting member.

It will be seen from Figs. 1 and 3 that the rear surface of connecting bar portion 20 of the contact is uncovered or exposed. If it is desired that this be covered with insulating material this may be readily accomplished as shown in Figs. 9 and 10. In this arrangement an insulating member 38 of flexible paper or suitable fiber is provided of sufficient width to cover the rear surface of the bar portion 20 of the contact and then the end flaps or ears 39 are bent upwardly or inwardly over the edges of the bar or connecting portion 20, as shown in Fig. 9, the intermediate or body portion of this insulator thus covering the outer or rear surface of the portion 20 and insulating it from direct contact. To more readily retain the insulator 38 in place

the body member 11 may be provided with recesses 40 at the opposite sides of the entrance to the compartment 12, as shown in Fig. 9, to receive the portions of the insulator bent around the edges of the connecting portion 20 and the inner wall of this recess by engaging the ears or flaps 39, as shown in Fig. 9, will effectively retain the insulating member in position.

It will be understood from the above that this makes a very simple and effective construction involving a minimum of parts which may be readily and quickly assembled by merely sliding the contacts and the mounting lugs into their respective compartments from the rear or lower surface of the insulating body member, and when so inserted are effectively and permanently retained in position without further securing operations; also that as the compartments 12 for the receptacle contacts open through the lower or rear wall of the body member 11, foreign matter such for example as dirt or water entering through the contact blade entrance slots 14 will readily pass through and drop from the receptacle, practically eliminating the possibility of short circuits from such matter.

Having thus set forth the nature of my invention, what I claim is:

An electrical receptacle comprising an insulating body member having compartments therein opening through the rear face of the body and a contact blade slot in its front wall leading to each compartment, grooves in the opposite side walls of each compartment leading forwardly from the rear face of the body, a contact in each compartment comprising a contact finger located to the rear of the slot to engage a contact blade inserted therein, said contact also including a body portion to which the finger is connected, said finger including a connecting bar extending laterally from the rear edge of said body portion at the entrance to the compartment, an insulating strip including an intermediate portion on the outer surface of said bar and end flaps folded over the opposite edges of said bar to the inner side thereof, shoulders on the insulating body against which said flaps engage, and the opposite side edges of the body portion of the contact being seated in said grooves and at least one of said edges being provided with holding means shaped to permit ready sliding of the contact into the compartment and then to grip the material of the insulating body to retain the contact therein and said flaps against said shoulders.

HARVEY HUBBELL.

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