

Jan. 8, 1929.

1,698,449

C. M. PETERSEN

PLUG RECEPTACLE

Filed March 27, 1928

Fig. 1.

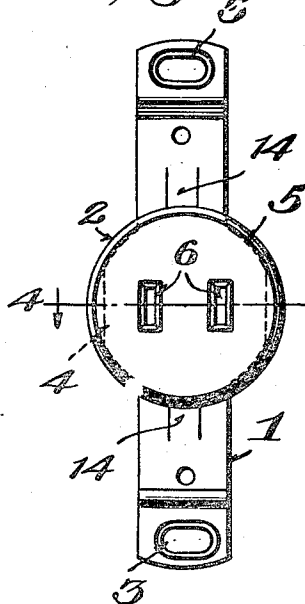


Fig. 2.

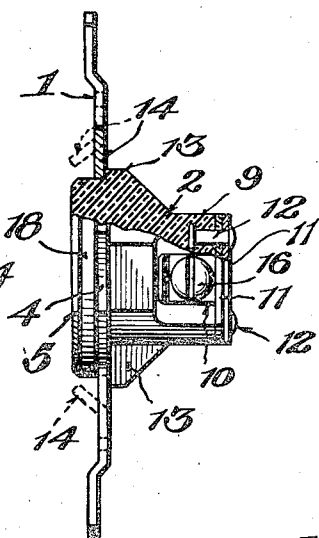


Fig. 3.

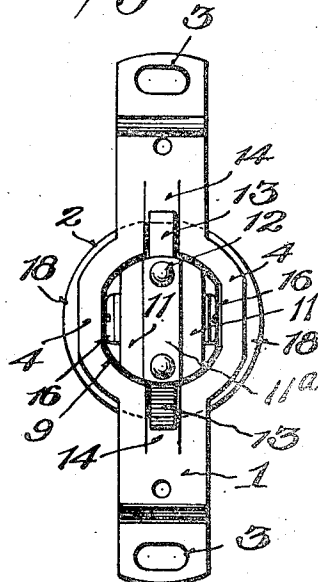


Fig. 5.

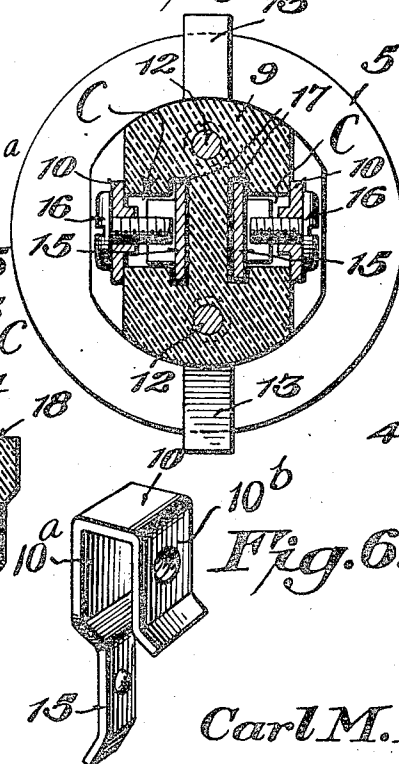


Fig. 4.

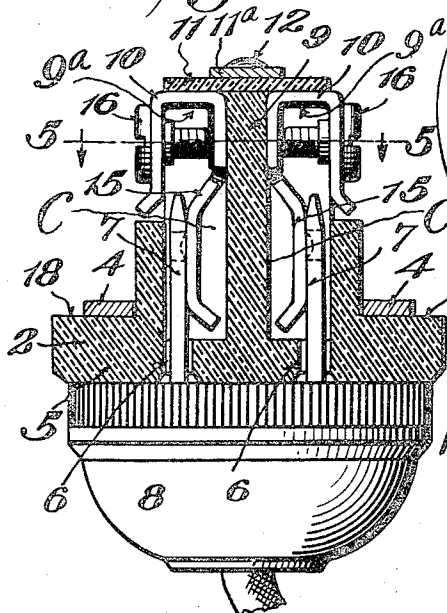


Fig. 7.

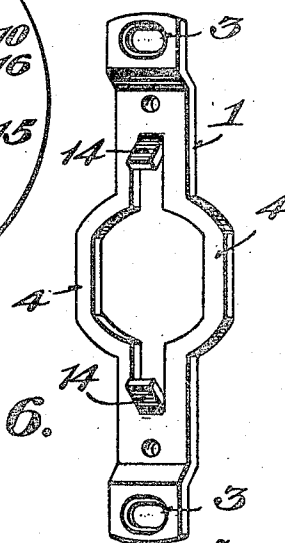
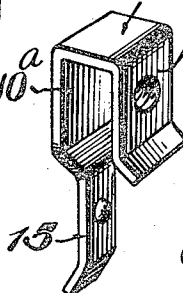


Fig. 6.



Inventor

Carl M. Petersen,

WITNESSES:-

Chas. L. Giesbauer
Emory L. Hoff

By

D. P. W. Chandler

Attorney

UNITED STATES PATENT OFFICE.

CARL M. PETERSEN, OF TRENTON, NEW JERSEY, ASSIGNOR TO CIRCLE F MFG. CO., OF TRENTON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

PLUG RECEPTACLE.

Application filed March 27, 1928. Serial No. 285,153.

This invention relates to electrical connectors, and more particularly to an improvement in receptacles for cord plugs, known to the trade as "flush receptacles".

5 A primary object of the invention is to provide a simple, practical and strong construction which may be readily and economically manufactured and assembled, and which when in use will prove durable and
10 satisfactory in service. Receptacles for receiving plugs are commonly used in walls, baseboards and floors, and because of their more permanent nature must be of a practical strong and durable construction since
15 replacements are not as often made as in the case of sockets or other receptacles. And, furthermore, they are subjected to greater wear and tear than receptacles for receiving lamps or the like, and usually carry
20 currents of large watt power for electrical devices other than lamps, such as vacuum cleaners, washing machines, and the like. Accordingly, the present invention aims to provide a construction which will satisfactorily
25 meet these requirements.

A further object of the invention is to provide a novel means for fastening the insulated receptacle to the supporting strap or carrier which will facilitate the making and
30 assembling of the device, and also, provide a rigid and substantial connection between the receptacle and its support. This feature is essential because the plug is pushed in and out of the receptacle, and unless it is rigid
35 and able to withstand repeated insertions and withdrawals of the plug, the device would of course readily loosen and fail. The particular manner of assembling the receptacle, and the strap eliminates screws or other
40 extra parts and at the same time is desirable in manufacturing.

A further object of the invention is to provide novel means for holding the receptacle terminals in position in the insulating receptacle body.

45 A still further object of the invention is to provide a novel form of receptacle terminal having a yielding portion for engaging with the plug terminals, and also carrying therewith the binding screws for affixing the line wires.

With the above and other objects in view which will more readily appear as the nature of the invention is better understood, the

same consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

A preferred and practical embodiment of the invention is shown in the accompanying
60 drawings, in which:—

Figure 1 is a face view of the receptacle member and strap, by which it is attached to an outlet box.

Figure 2 is a side elevation of the same, partly in section.

Figure 3 is a rear view of the same.

Figure 4 is a sectional view of the receptacle and an elevation of the plug in engagement therewith.

Figure 5 is a cross section on line 5—5 of Fig. 4.

Figure 6 is a detail perspective of one of the spring contact terminals of the receptacle member, on a larger scale, and

75 Figure 7 is a perspective view of the strap or support for the receptacle.

Similar reference characters designate corresponding parts throughout the several figures of the drawings.

According to the embodiment of the invention shown in the drawings, the device consists of a metallic strap or support 1 for supporting and carrying the receptacle proper or socket 2, the latter being of porcelain, hard fibre or other insulating material, and provided with means for cooperating with the strap to facilitate initial assembly and positioning of one part with reference to the other, as well as permitting both parts to be readily and rigidly locked together in a simple and expeditious manner.

Referring further to the metal strap or support 1, it will be observed that the opposite ends thereof are preferably offset toward the face of the device and provided with slots 3 for the reception of screws or other fastenings for connecting the strap to the usual metallic outlet box or the like, not shown. The intermediate portion of the body of the strap 1 is formed with a central opening bounded on opposite sides by the parallel walls 4—4 which provide straight sides at diametrically opposite points of the opening for receiving a corresponding part of the receptacle 2 to prevent twisting or turning of the same in the strap. The body of the strap at the sides of the opening at

right angles to the parallel walls 4—4 is provided with the bendable lugs or tongues 14, which as is shown in Fig. 7 are initially offset from the plane of the body thereby to permit the entrance, from the face of the strap, of the diametrically opposite shoulders 13 on the insulating receptacle 2. After the receptacle 2 has been inserted in the central opening of the strap as shown in Figs. 1 and 2, the bendable lugs 14 will be bent to the plane of the body of the strap as shown in full lines in Fig. 2, and thus constitute means for preventing the disengagement of the body 2 from the strap 1 when the plug is pulled out of the receptacle. It will, of course, be understood that the insulating receptacle 2 is prevented from passing entirely through the central opening of the strap 1 because the rear face of the circular shoulder portion 18 engages the parallel portions 4—4 of the strap as well as the portion of the strap surrounding the opening. Figs. 2 and 3 clearly illustrate the manner in which the insulating receptacle 2 is locked in the strap.

Referring further to the socket member 2 which is of porcelain, hard fibre or other insulating material, it will be observed that the same comprises a circular head portion 5 which presents the shoulders 18 previously referred to at the rear thereof, and is provided with the openings 6 for receiving the jack blades or plug terminals 7 carried by the head 8 of the plug. The body 9 of the receptacle is partially circular and partially straight sided to correspondingly fit the central opening of the strap or support 1. In other words, the cross-sectional shape of the body 9 corresponds to the shape of the opening in the support, and in the arrangement shown is designed to key into the support in such a way that relative rotation of the receptacle and strap are impossible, while at the same time the shoulders 13 of the body which cooperate with the lugs 14 assist in preventing withdrawal of the plug from the strap, in combination with the shoulder 18 as is previously indicated.

As will be observed from Figs. 4 and 5 of the drawings, the insulating body 9 is provided with opposite channels C which communicate with the plug terminal receiving openings at one end thereof and hold in the opposite end thereof the receptacle terminals 10.

The receptacle terminals and the manner of placing and holding the same in position is one of the novel and distinctive features of the invention. That is to say, the receptacle terminals 10 consist of a body portion which is doubled upon itself to provide the opposite side walls 10^a and 10^b, the latter being provided with a threaded opening for receiving the wire binding screw 16 while the wall 10^a is continued as indicated

at 15 to provide a spring contact finger for engaging with a plug terminal blade 7. The upper ends of the channels C are provided with the grooves 17 at opposite sides thereof for receiving the edge portions of the wall 10^a of the terminal. As the grooves 17 open from the end of the body 9, and the fingers 15 are narrower than the walls 10^a of the terminals, it will be apparent that the said terminals may be slid into the grooves from the open ends thereof until the web portions thereof abut against the portions 9^a of the body lying at opposite sides of the channels C. Then, for the purpose of locking the plug terminals 10 in position, the outer sides of the web portions thereof are adapted to be engaged by a strip of insulation 11, see Figs. 2 and 4, which is securely held in place by a metallic strip 11^a riveted or otherwise secured in the insulating body, thereby preventing accidental withdrawal or removal of the receptacle terminals and firmly holding them in place. This arrangement, also, provides convenient exposure of the binding screw 16.

To assemble the socket member and strap, no screws or added parts are needed. The lugs 14 of the strap are initially bent into the position shown in Fig. 7, which permits the shoulders or ears 13 of the socket member to pass through the slots from which said lugs were bent up, until the rear shoulder 18 of the head 5 seats against the front side of the enlarged central portion 4 of the strap. The shoulders 13 and 18 therefore constitute spaced abutments adapted to engage opposite sides of the receptacle carrier or strap 1. The lugs 14 are then bent down into the full line position of Fig. 2, in which they engage the shoulders 13. The strap and socket member are thus rigidly and permanently secured together.

Likewise, after the strap and socket member or receptacle are assembled, the plug terminals 10 may be slid in the grooves 17 and held rigidly in their assembled positions by fastening down the insulation 11 through the medium of the strip 11^a and the rivets 12.

Without further description it is thought that the features and advantages of the invention will be readily apparent to those skilled in the art, and it will of course be understood that changes in the form, proportion and minor details of construction may be resorted to, without departing from the spirit of the invention and scope of the appended claims.

I claim:—

1. In a device of the class described, a receptacle carrying member having an opening and bendable lugs at opposite sides of the opening, and a receptacle provided with spaced abutments one of which is adapted to engage with the face of the carrier and the

other of which is adapted to engage with the bendable lugs when bent into the plane of the carrier.

2. In a device of the class described, a receptacle carrier strap having a central angular opening, bendable lugs initially deflected from the plane of the strap and directed toward the opening, and an insulated plug receiving receptacle having an angular body adapted to fit in said opening and provided with an annular shoulder for abutting with one face of the carrier strap and with spaced shoulders for entering the slots provided by the initially bent up lugs whereby when said lugs are bent down into the plane of the strap, the receptacle is locked in position.

3. In an electrical receptacle of the class described, the combination of a socket member having a circular head, a reduced body portion and a pair of diametrically opposite shoulders on the latter, and a strap adapted to be attached to an outlet box and having an enlarged apertured central portion adapted to be passed over said reduced body portion into engagement with the rear face of said head, said strap having a pair of bent up lugs adapted to be bent down into engagement with said shoulders to lock it to said socket member.

4. A device of the class described including an insulated receptacle having separate substantially T-shaped channels, said channels communicating with openings in the face, receptacle terminal members having body portions fitting in the wide portions of said channels and having blade engaging finger portions lying in the channels and extending toward said openings in the face of the receptacle, and means for holding said terminals in said channels.

5. A device of the class described including an insulated receptacle having separate channels, said channels communicating with openings in one face of the receptacle and having opposite grooves in the edges thereof, terminal members having the sides thereof fitting in said grooves and having reduced extending blade engaging finger portions lying in the channels and toward said openings in the face of the receptacle, means for holding said terminals in said channels, said means comprising an insulated strip engaging both of said terminal members, and

fastening means carried by the body and engaging said strip.

6. In a device of the class described, an insulated receptacle body including a channel communicating at one end with a jack blade receiving opening, and having opposite grooves in the other end thereof, a terminal member comprising a body doubled upon itself to provide opposite wings connected by an intermediate web, one of said wings providing a resilient contact finger and the edges of said wing entering said grooves while the web engages the body at the sides of the channel, and insulating means secured to the body and overlying the web of the terminal to hold the terminal member in place.

7. In an electrical receptacle of the class described, the combination of a socket member comprising a pair of spring contact fingers each having a portion seated in a groove in said member, an insulating strip secured to the latter to retain said fingers, and a pair of diametrically opposite shoulders; and a strap to sustain said member having a pair of lugs adapted to be bent down into engagement with said shoulders to lock it to said socket member.

8. In an electrical receptacle of the class described, a socket member comprising a head and a reduced body portion having grooves parallel to its axis, and a pair of spring contact fingers, the edges of one portion of each of which fit in certain of said grooves, and means to retain said fingers in said body portion.

9. In an electrical receptacle of the class described, a socket member having a circular head portion, a body portion of reduced diameter and a pair of diametrically opposite ears adjacent said head portion, a pair of spring contact fingers seated in said reduced portion, means secured to the rear end of said reduced portion to retain said fingers, and a strap adapted to be passed over said reduced portion and abut the rear face of said head, parts of said strap being constructed and adapted to be bent into position to engage said ears to lock said strap and socket member together.

In testimony whereof I hereunto affix my signature.

CARL M. PETERSEN.