

March 15, 1927.

1,621,364

G. W. GOODRIDGE

ATTACHMENT PLUG AND RECEPTACLE

Filed July 23, 1921

2 Sheets-Sheet 1

Fig. 1.

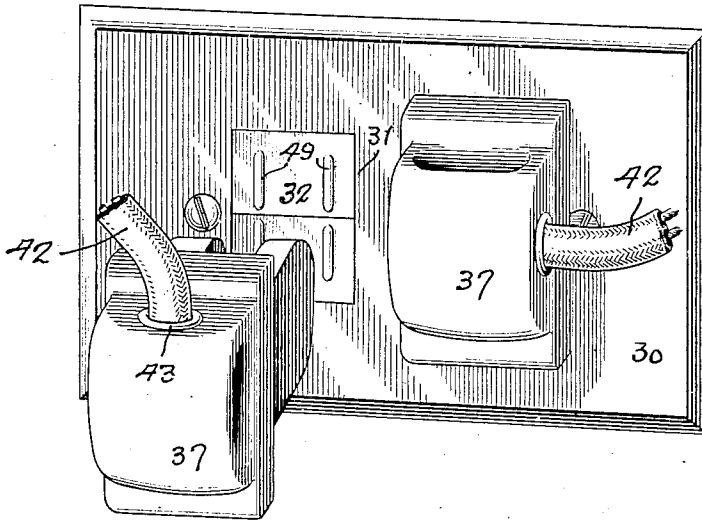


Fig. 2.

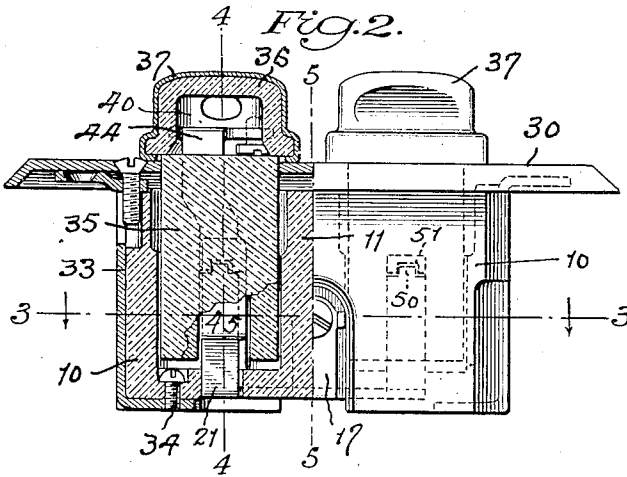
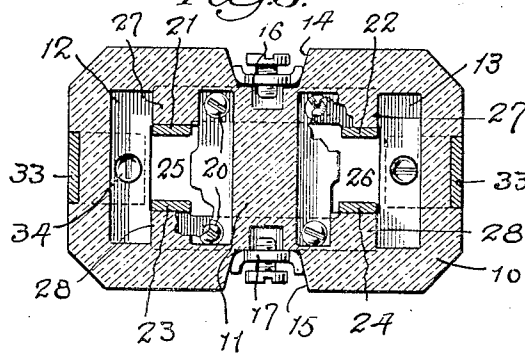


Fig. 3.



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Fig. 4.

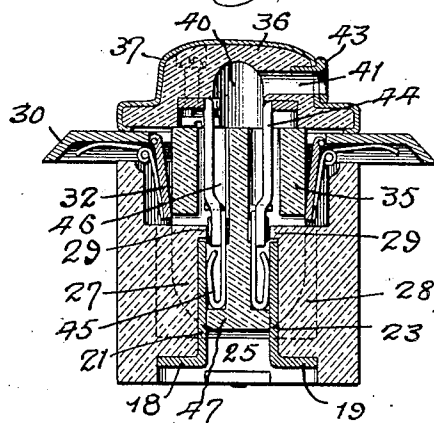


Fig. 5.

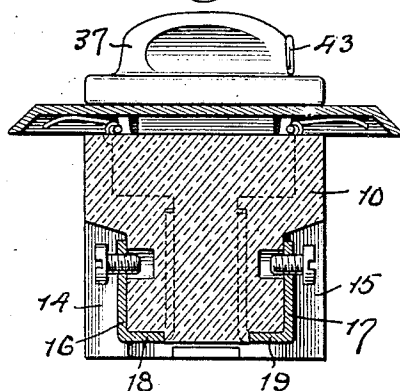


Fig. 6.

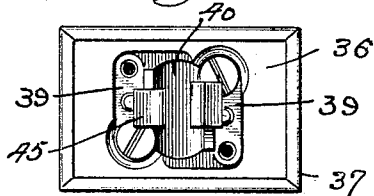
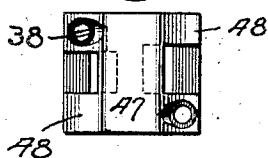


Fig. 7.



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ATTACHMENT PLUG AND RECEPTACLE.

Application filed July 23, 1921. Serial No. 487,138.

My invention relates to an improved attachment plug and receptacle. One of the objects of my invention is to provide a receptacle having its contacts protected against accidental contact therewith by the insertion of the fingers into the receptacle. Another object of my invention is to improve the general construction of the receptacle in certain particulars hereinafter described or shown in the accompanying drawings, and a third object of my invention is to provide a rugged and substantial plug having certain novel features of construction adapting it to cooperate with my improved receptacle. An illustrative embodiment of my invention is shown in the accompanying drawings, in which—

Fig. 1 is a perspective of a duplex receptacle and cooperating plugs in which my invention is embodied in one form;

Fig. 2 is a broken side elevation of the receptacle showing both plugs in inserted position;

Fig. 3 is a section on the line 3—3, Fig. 2, with plugs removed;

Fig. 4 is a section on the line 4—4, Fig. 2;

Fig. 5 is a section on the line 5—5, Fig. 2;

Fig. 6 is an inverted plan of the cap portion of the plug; and

Fig. 7 is a similar view of the body portion of the plug.

My invention is here illustrated in a duplex receptacle, although it will be readily recognized that certain features of construction may be embodied in a single receptacle. As shown, the receptacle comprises a cup-shaped insulating body 10 divided by a transverse barrier 11 into a pair of contact chambers 12 and 13. Channels 14 and 15 extending upward from the bottom on opposite sides of the body of the receptacle, accommodate the wire mains as well as the wire terminals 16 and 17 which are located in the bottoms of the channels. The latter thus form in effect wiring chambers, the sides and top of which effectively house-in the wire ends and prevent straying of wire beards into the plug contact chambers or into contact with the face plate.

The wire terminals are preferably formed as lugs offset from base straps 18 and 19 let into the bottom of the receptacle and secured thereto by any appropriate means, such as screws 20. The opposite ends of

each of the respective straps 18 and 19 underlie the two terminal chambers 12 and 13 and have further offset lugs 21—22 and 23—24, respectively, which enter the respective terminal chambers through bottom openings 25 and 26 in the receptacle body. Projecting into each chamber from opposite sides thereof are supporting ribs 27 and 28 against the vertical faces of which the contacts 21—24 lie. Each of these ribs is provided at its top with an overhanging lip 29 of at least the width of the thickness of the metal of the contact, so that the latter is completely overhung thereby. The lip 29 thus forms a guard which prevents accidental engagement with the contacts, should the fingers be inserted into the receptacle contact chamber.

Overlying the receptacle body is a cover plate 30 apertured at 31 to permit the passage therethrough of a cooperating attachment plug. Each of these apertures is normally closed by a pair of inwardly swinging doors 32 carried by the cover. The height of the ribs 27 and 28 is restricted to afford ample clearance for the doors when the plug is inserted (see Fig. 4).

Supporting yoke pieces 33 of any suitable type may be provided at opposite ends of the receptacle body, those here shown being carried down beneath the bottom of the receptacle and secured in position by holding screws 34.

For use with the receptacle I provide an attachment plug comprising separable body 35 and cap 36 members of insulating material. The cap is preferably provided with a metallic hood 37, which not only mechanically protects the insulating material of the cap but also affords a finish harmonious with that of the face plate 30 of the receptacle. The body and cap members of the plug are detachably connected by means of longitudinally extending screw bolts 38 passing through opposite corners of the body 35 and taking into appropriate taps in the terminal plates 39 mounted on depressed seats in the adjacent face of the cap. Leading to the strain-relief knot chamber 40 within the cap is a lateral wire entry passage 41 which accommodates the plug cable 42. An insulating bushing 43 protects the cable against wear against the edge of the metal hood 37.

The wire terminal plates above mentioned have offset parallel straps 44 to the free ends of which are riveted spring brush contacts 45 to cooperate with the receptacle contacts. The straps 44 are housed in channels 46 in the plug body. Toward the nose of the plug the channels are opened through the sides of the body to accommodate the ribs 27 and 28 of the receptacle, and to permit the brushes 45 of the plug to engage the contacts 21—23 or 22—24 of the receptacle (see Fig. 4), in the inserted position of the plug.

The nose of the plug extends beyond the ends of the brushes 45 and presents at its entering end a solid central portion 47 which is flanked at each side by webs 48. The plug contacts 45 are thus effectively housed in and protected against mechanical injury. The webs 48 also afford rounded bearing members which engage the wearing ribs 49 on each leaf of the doors 32, when the plug is inserted through the face plate.

The receptacle may be readily polarized by making the ribs 27 and 28 of different size and correspondingly varying the width of the channels 46 in the plug, so that the latter can be inserted in only one position. As indicated in Fig. 1 the wire cable may be introduced into the cap from either side or end thereof, or it may be led in through an axial opening in the usual fashion, if desired.

Both the receptacle and the plug comprise insulating elements which are readily molded; the metal parts are readily struck from sheet metal, and comprise as few parts as possible. Their assembly is readily effected, while the structure as a whole is rugged and efficient. It is obvious that a finger carelessly inserted through the door opening in the face plate cannot readily come in contact with the current-carrying contacts of the receptacle, since the latter are protected by the overhang 29 at the upper edge of each rib 27 and 28. The plug body is rugged and amply protects the plug contacts against mechanical injury, while the spring brushes 45 cannot be deformed during their engagement with the receptacle contacts, by reason of the necessity for the exact location of the plug with respect to the ribs 27 and 28 before the plug can be shoved home in the receptacle. The ribs 21—24 form guides which engage the channels 46 in the plug, necessitating exact positioning of the parts.

It will be noted in Fig. 2 that the contacts 21, 22, 23 and 24 have tongues 50 which enter corresponding recesses 51 in the overhanging ledges 29 of the respective ribs 27 and 28, thus affording an overlap joint between these parts which effectively prevents any danger of the contact brushes 45 of the plug entering and catching beneath the

ledges 29 on the withdrawal of the plug. The overhang 29 must be slightly spaced from the free end of the contact, since it is practically impossible to secure porcelains of such exact dimensions that the joint between the contact and overhang may be made flush.

Various modifications in detail, configuration and construction of the parts will readily occur to those dealing with the problem, without departing from what I claim as my invention.

I claim—

1. An attachment plug receptacle comprising an insulating block recessed to afford a plug-receiving chamber with ribs projecting into said chamber at opposite sides thereof, receptacle contacts arranged within said chamber and overhung by the upper portions of said ribs, together with a face plate overlying said insulating body and apertured to permit entrance of a cooperating attachment plug, together with inwardly swinging doors mounted in said face plate and inwardly displaceable into the receptacle chamber above said ribs.

2. An attachment plug receptacle comprising a chambered insulating body having exterior and interior channels formed in the side wall thereof and extending upwardly from the bottom of the receptacle and halting below the upper portion of the body, a conducting strap underlying said side wall and having flanges extending from the opposite margins thereof into said exterior and interior channels, and overhung by the upper portion of the side wall of the receptacle, said flanges being rigid and housed within said channels, binding means for securing a wire to the flange lying in the exterior channel, the flange lying in the interior channel having its side exposed to form a receptacle contact, and means engaging said strap to secure the same and its flanges in position.

3. An attachment plug receptacle, comprising an insulating body having a pair of plug-receiving chambers separated by an insulating barrier, the side walls of said receptacle having an exterior channel opposite the barrier, in combination with a connecting strap underlying the base of the receptacle and having offset from one margin thereof a pair of plug-receiving contacts which enter the respective chambers, together with a wire terminal lug offset from the other margin of said strap and lying in the exterior channel formed in the side wall of the receptacle body.

4. The combination with an apertured face plate for an attachment plug receptacle, of a pair of inwardly swinging doors normally closing the aperture in the face plate, and a pair of ribs arranged on opposite sides of the center line of each door, together

with an attachment plug adapted to enter said aperture in the face plate, and having a solid web at its entering end flanked on each side by a pair of webs extending at right angles thereto and adapted to bear upon said ribs on the doors during the entry of the plug through said aperture in the face plate.

5. In an attachment plug, an insulating plug body, an independent insulating cap, combined wire terminals and plug contacts carried by said cap, said plug being channeled to receive said contacts, means to detachably connect said cap and body portion, said cap having a lateral passage leading to the wire terminals for the entry of a wire cable.

6. In an attachment plug, an insulating plug body, an independent insulating cap, combined wire terminals and plug contacts carried by said cap, said plug being channeled to receive said contacts, means to de-

tachably connect said cap and body portion, said cap having a lateral passage leading to the wire terminals for the entry of the wire cable, together with a metal hood for said cap, said hood being apertured in register with the wire entry passage in the cap, and an insulating bushing lining said entry aperture in the hood to prevent the cable from contacting therewith.

7. An attachment plug receptacle, comprising an insulating body having a plug-receiving chamber, ribs extending into said chamber, rigid receptacle contacts facing said ribs and ledges on said ribs overhanging said contacts to prevent accidental contact therewith by a finger, or the like, inserted in said chamber, said contacts and ledges having a tongue and groove overlap joint, for the purpose specified.

In testimony whereof I have signed my name to this specification.

GILBERT W. GOODRIDGE.