R. B. BENJAMIN.

RECEPTACLE.

APPLICATION FILED APR. 1, 1915.

1,328,224.

Patented Jan. 13, 1920.

2 SHEETS—SHEET 1.

Fig. 1.

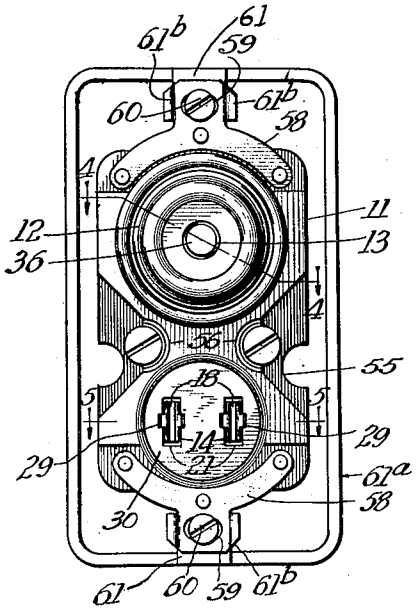


Fig. 2.

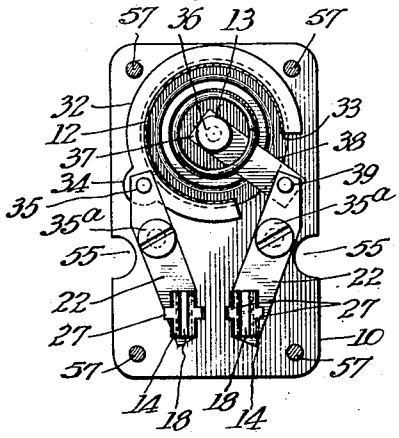


Fig. 3.

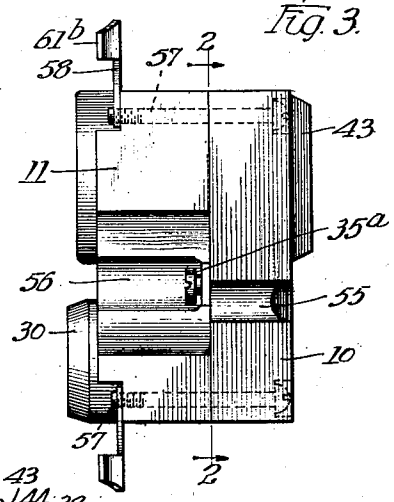
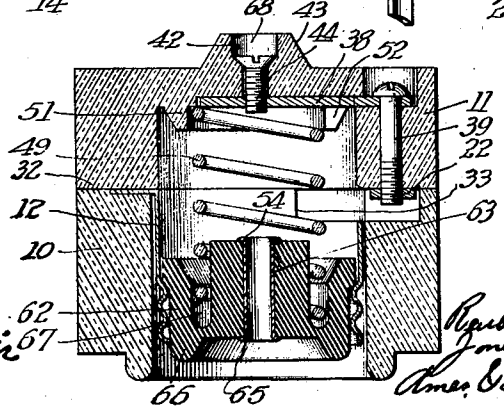


Fig. 7.



Witnesses:

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2 SHEETS—SHEET 2.

Fig. 4

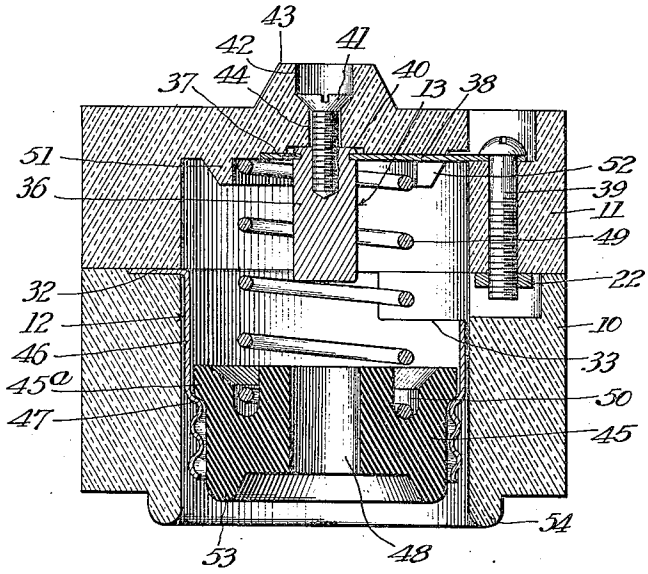


Fig. 5.

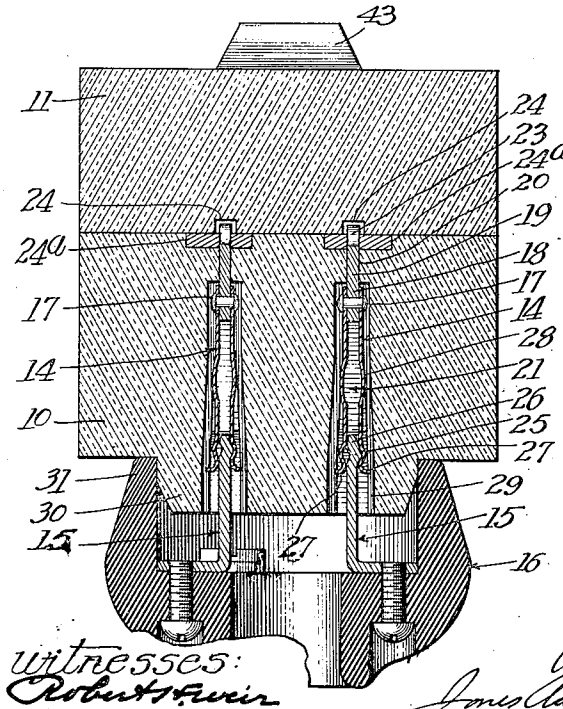
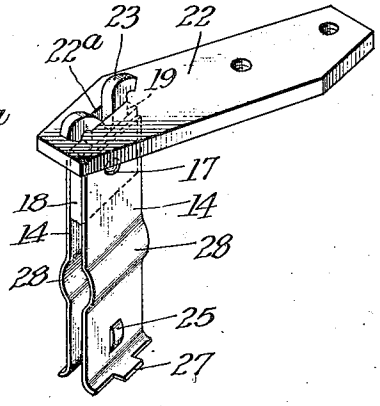


Fig. 6.



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UNITED STATES PATENT OFFICE.

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RECEPTACLE.

1,328,224. Specification of Letters Patent. Patented Jan. 13, 1920.

Application filed April 1, 1915. Serial No. 18,454.

To all whom it may concern:

Be it known that I, REUBEN B. BENJAMIN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented new and useful Improvements in Receptacles, of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawing, forming a part of this specification.

My invention relates to receptacles, and more specifically to a receptacle provided with center and shell contacts for engagement with a screw shell attachment plug, and also provided with spring contacts for engagement with the contacts of the binding terminal carrying member such as the cap of the separable attachment plug.

Among the objects of my invention is to provide a device of this character which shall be simple of construction, is efficient in use and in which the electrical contacts are effectively insulated, and in which provision is made for preventing accidents due to coming in contact with the live parts of the receptacle, and in which provision is made for preventing arcing when the attachment plug is withdrawn from the receptacle.

Further objects will appear from the detailed description to follow, taken in connection with the appended claims.

In the drawings, in which I have shown two embodiments of my invention—

Figure 1 is a face view of my improved receptacle showing the same in position in an outlet box, showing the manner in which it is secured to the box, and showing the relative positions of the shell, center and spring contacts and the binding screws;

Fig. 2 is a section substantially on the line 2—2 of Fig. 3, showing the location of the binding plates with respect to the contacts;

Fig. 3 is a side view of the receptacle showing the manner in which the two parts of the base are held together;

Fig. 4 is a section substantially on the line 4—4 of Fig. 1 showing the manner in which the center and shell contacts are held in place on the base and showing the insulating protector for preventing accidental contact with the live parts;

Fig. 5 is a section on the line 5—5 of Fig. 1 showing the manner in which the spring contacts are secured to the base and showing the manner in which the spring contacts engage the contacts of the cap of a separable attachment plug;

Fig. 6 is a perspective view showing the spring contact secured on the binding plate; and

Fig. 7 is a section showing a modified form of the insulating protector, the section being through the axis of the shell contact.

Referring now to the drawing in detail the receptacle comprises an insulating base formed of two members 10 and 11, for supporting the shell contact 12, the center contact 13 and the spring contacts 14 which engage the contacts 15 of a binding terminal carrying member, such as the cap 16 of a separable attachment plug, as shown in Fig. 5. The spring contacts 14 are secured by means of rivets 17 to a retaining member 18 having a reduced portion 19 extending through an opening 20 in the portion 10 leading from the recess 21 in which the contacts 14 are located. The reduced portion 19 extends outwardly through an opening 22^a in the binding plate 22 and is provided with prongs 23 which are bent over on top of the binding plate 22, as shown in Fig. 6. The portion 11 of the base is provided with recesses 24 to provide clearance for the prongs 23. The binding plates 22 are seated in recesses 24^a in the upper face of the portion 10. Near the lower end of the spring contacts 14 the material is struck up, as shown at 25, to provide a recess for engagement with a corresponding projection 26 on the contact 15 to retain the cap 16 in position. The extreme lower ends of the contacts 14 are provided with outwardly extending lugs 27 to guide the contacts 15 in place between the contacts 14 and to prevent the contact 15 from entering between the contacts 14 and the walls of the recess 21. The middle portions of the spring contacts 14 are bowed outwardly, as shown at 28, so that they bear against the side walls of the recess 21. The side walls of the recess 21 are provided with grooves 29 to provide clearance for the lugs 27 and the rivets 17. The portion 10 has a frusto-conical projection 30 which extends within the upstanding flange 31 on the cap 16 to center the latter.

It will be noted that when the cap 16 is in place, as shown in Fig. 5, the plane of the upper surface of the flange 31 passes through

the tips of the contacts 14 and 15 when the latter are in engaging position so that when the cap is separated by other than a straight line movement the tips of the contacts 15 move substantially directly downward with very little sidewise movement, thus facilitating easy separation of the parts. The threaded shell contact 12 has an outwardly extending flange 32 at its upper edge between the portions 10 and 11 of the base, and is cut away as shown at 33 to prevent electrical contact with the binding plate 22 which is connected with the center contact 13. The flange 32 has an outwardly extending lug 34 for engagement with the screw 35 which connects it electrically with the binding plate 22, as shown in Fig. 2. The binding plates 22 are provided with binding screws 35ª for connecting the leading in wires, as shown in Figs. 2 and 3. The center contact 13 comprises a downwardly extending post 36 of conducting material which is reduced, as shown at 37, where it extends through an opening in the plate 38 which is of conducting material and which connects the center contact 13 with the binding plate 22 through the screw 39, as shown in Fig. 4. The center contact 13 is flanged over above the plate 38 to hold it in position. A screw 41 having its head seated in a recess 42 in the projection 43 of the portion 11 extends downwardly through an opening 44 into threaded engagement with the contact 13 to hold the latter securely on the portion 11. An insulating protecting member 45 is provided with an annular outwardly extending flange 45ª at its upper end which fits slidably within the cylindrical portion 46 of the shell contact 12. The outward movement of the protecting member 45 is limited by engagement of the flange 45ª with an inwardly extending bead 47 on the shell contact 12. The member 45 has a center opening 48 therethrough large enough to receive the center contact 13 when the member 45 is pushed inwardly to receive the plug. The member 45 is normally held in its lower or outward position (Fig. 4) by means of a coil spring 49 one end of which is seated in an annular recess 50 in the member 45, the other end of which is seated within an annular projection 51 on the portion 11. The projection 51 is cut away as at 52 to accommodate the conducting plate 38. The lower end of the member 45 has an annular projection 53 which normally extends beyond the threaded shell 12 to prevent accidental contact with the threaded shell. The portion 10 of the base has an annular projection 54 which extends through the opening in the cover plate of the outlet box. The insulating portion 11 of the base is provided with side recesses 55, Figs. 1, 2 and 3, to accommodate the leading in wires, and the insulating portion 10 is provided with side recesses 56 to permit axis to the binding screws 35ª. The portions 10 and 11 are secured together by means of screws 57 extending therethrough. The retaining clips 58 are also secured to the screws 57 and are provided with slots 59 through which screws 60 extend into engagement with the inwardly extending lugs 61 on the outlet box 61ª, as shown in Fig. 1. The clips 58 have laterally extending wings 61ᵇ for engagement with the cover of the outlet box.

The use and operation of the device of this modification is as follows. If it is desired to insert a screw shell plug into the threaded shell contact 12 the plug is placed in position with its end within the projection 53 of the member 45 and is pushed inwardly forcing the protecting member 45 back into the shell contact 12. The plug is then turned to screw it into the shell contact, the plug forcing the insulating member 45 ahead of it. The plug is screwed in until its center contact engages with the center contact 13 of the receptacle, the center contact 13 entering the opening 48 in the member 45.

When the plug is unscrewed from the shell 12 the spring 49 forces the protector 45 outwardly to the position shown in Fig. 4 to prevent accidental contact with any of the live parts of the receptacle.

It will be noted that when the plug is being unscrewed from the shell 12 the center contact 13 will be located within the recess 48 so that the protecting member 45 will surround the center contact 13 to prevent arcing between the center contact 13 and the other conducting parts, and also prevent arcing between the center contact of the plug and other conducting parts.

The circuit including the shell and center contacts 12 and 13 is from the binding screws 35ª, binding plate 22, screw 39, plate 38, center contact 13 to the shell contact 47, through the screw 35 to the other binding plate 22 and binding screw 35ª. The circuit for the contacts 14 is from the binding screw 35ª through the binding plate 22, retaining member 18 contacts 14 and 15 through the translating device to the other contacts 15 and 14 and retaining member 18, to the other contact plate 22 and binding screw 35ª.

In the modification of Fig. 7 I have shown a different form of protecting device, the insulating portions 10 and 11, the shell contact 12 and the binding plate 22, and the conducting plate 38 being the same as in the first modification. In this modification the insulating protecting member 62 has an eyelet or hollow rivet 63 of conducting material extending axially therethrough and flanged over at 64 and 65 to hold it in place. The member 62 has an annular projection 66 on its lower face which normally extends below the shell contact 12 to prevent accidental contact with the shell, and is provided with an annular recess 67 in its upper

face to receive the lower end of the coil spring 49 which normally holds the member 62 in its outward position, as shown in Fig. 7.

The conducting plate 38 is held firmly in position on the portion 11 by means of a screw 68 seated in the recess 42 of the projection 43. In this modification when the plug is inserted in the shell 12 it pushes the protector 62 ahead of it until the eyelet 63 comes in contact with the conducting plate 38. The circuit in this modification is from one of the binding screws 35^a through the binding plate 22, screw 39, conducting plate 38 and eyelet 63, through the plug and translating device to the shell contact 12 and through the screw 35 to the other binding plate 22 and binding screw 35^a.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In a device of the character described, a receptacle constructed to receive a device, which device has a center contact and a shell contact, said receptacle comprising a shell contact for engaging said first named shell contact and a movable protector which in a first position makes the electrically charged parts difficult of access and in a second position makes said parts accessible, said shell contact being substantially cylindrical and said protector being cylindrical and guided by said shell.

2. In a device of the character described, a receptacle constructed to receive a device, which device has a center contact and a shell contact, said receptacle comprising a shell contact for engaging said first named shell contact and a movable protector which in a first position makes the electrically charged parts difficult of access, and in a second position makes said parts accessible, said shell contact being substantially cylindrical, and said protector being cylindrical and guided by said shell, and a coil spring coaxial with said shell for normally holding said protector in its first position.

3. A receptacle comprising two insulating portions, a center and shell contact, and a pair of spring contacts carried by said portions, a binding plate between said portions, and electrically connected to said center contact, and one of said spring contacts, and a binding screw engaging said binding plate.

4. In a device of the character described, a safety receptacle constructed to receive a device, which device has a center contact and a screw shell contact, said receptacle comprising a screw shell contact for engaging said first named shell contact, a movable protector which in a first position makes the electrically charged parts difficult of access and in a second position makes said parts accessible to the plug contact, and a spring acting on said movable protector to resist the entrance of the device, the threaded engagement between the threaded contacts however preventing the spring from forcing the plug out of the receptacle after it has been screwed into place.

In witness whereof, I have hereunto subscribed my name.

REUBEN B. BENJAMIN.