R. B. BENJAMIN.

ATTACHMENT PLUG.

APPLICATION FILED JUNE 24, 1907.

1,012,970.

Patented Dec. 26, 1911

2 SHEETS-SHEET 1

Fig. 1.

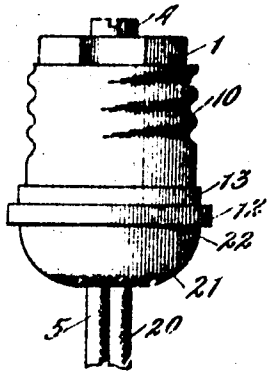


Fig. 2.

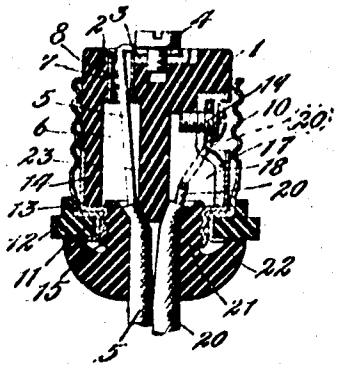


Fig. 3.

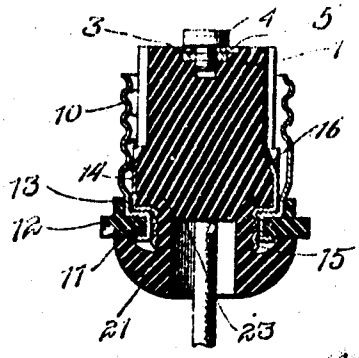


Fig. 4.

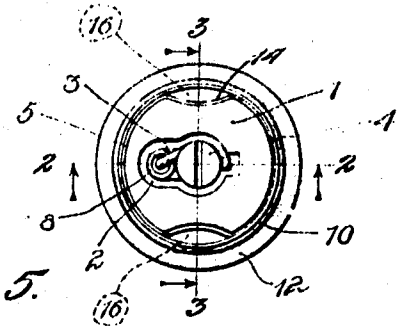
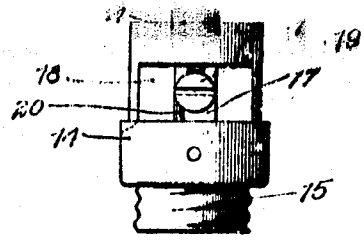


Fig. 5.



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2 SHEETS-SHEET 2

Fig. 6.

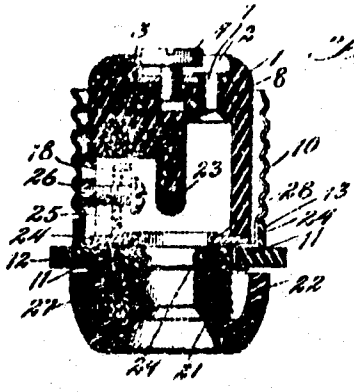


Fig. 8.

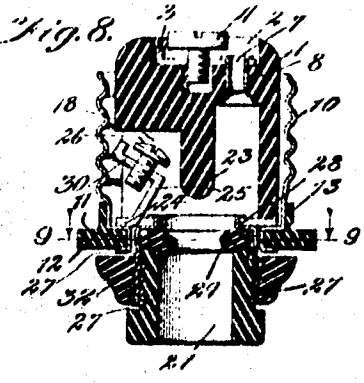


Fig. 7.

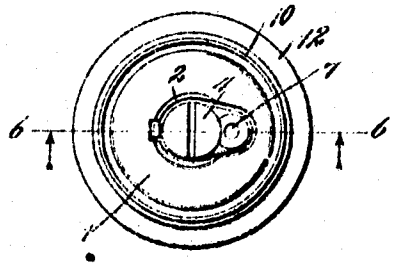


Fig. 9.

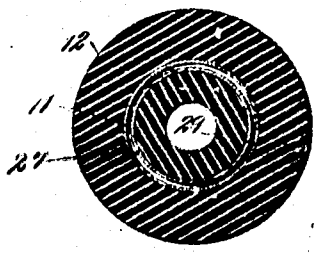


Fig. 10.

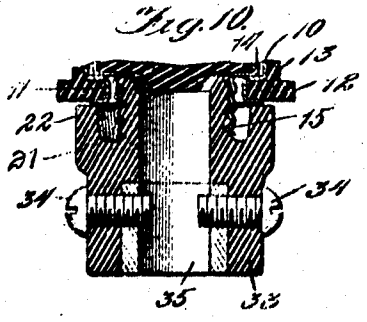
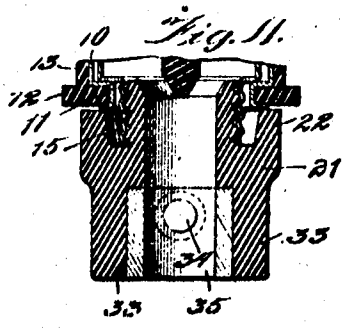


Fig. 11.



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UNITED STATES PATENT OFFICE.

REUBEN B. BENJAMIN, OF CHICAGO, ILLINOIS, ASSIGNOR TO BENJAMIN ELECTRIC MANUFACTURING COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

ATTACHMENT-PLUG.

1,012,970. Specification of Letters Patent. Patented Dec. 26, 1911.

Application filed June 24, 1907. Serial No. 380,518.

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 Attachment-Plugs, 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 improvements in attachment plugs.

One of the objects of my invention is to provide a novel and exceedingly simple form of plug which can readily be inserted in a socket without twisting the connecting wires.

Another object of my invention is to provide an attachment plug, so constructed that ready access may be had to the binding posts to permit connecting the plug to the electric conductors without trouble.

Further objects of my invention will appear more fully hereinafter.

For the purpose of disclosing my invention, I have illustrated in the accompanying drawings certain forms which my invention may take.

In said drawings: Figure 1 is an elevation of one form of my invention; Fig. 2 is a sectional view thereof taken on the line 2—2 of Fig. 4; Fig. 3 is a sectional view taken on the line 3—3 of Fig. 4; Fig. 4 is a plan view of the plug illustrated in Fig. 1; Fig. 5 is an elevation of the insulating base with the threaded sleeve removed; Fig. 6 is a sectional view of another form of my invention; Fig. 7 is a plan view of the structure illustrated in Fig. 6; Fig. 8 is a sectional view of still another form of my invention; Fig. 9 is a sectional view taken on the line 9—9 of Fig. 8; Fig. 10 is a sectional view of a modified form of the insulating bushing; and Fig. 11 is a sectional view of the same structure taken at right angles to the section of Fig. 10.

Refering first to the structure illustrated in Figs. 1 to 5, in this form of my device, I provide a body portion or base 1 which is preferably formed of porcelain or like insulating material. With the device in the position illustrated in the drawings, the top or upper end of the base 1 has secured thereto, in a depression or recess 2, a plate 3 carrying a binding post 4. This binding post, in addition to forming a member to which is connected one of the conducting wires, also preferably forms an exposed center contact for the plug and is adapted, when the plug is inserted in the lamp socket, to engage the center contact of the socket. The conductor 5 extends through a longitudinal opening 6 formed in the base and having a reduced portion or passage 7, which in the embodiment of the invention illustrated is located between the axis of the binding post and the periphery of the base, and the bared end of the conductor is looped over and secured beneath the binding screw 4. A hollow rivet 8 fits in the reduced portion 7 of the opening 6 and is flanged over a shoulder on its under side and over the plate 3 on its upper side to secure said plate in position. The opposite terminal of the plug which is adapted to engage the threaded shell of the socket, comprises a threaded metal conducting sleeve 10 constituting the outer contact which rotatably fits upon the exterior of the base and, in the particular embodiment of the invention illustrated, immediately incloses the said base, and has formed at its bottom a peripheral recess 11, in which fits an insulating ring or hand-hole 12. The ring 12 is provided with an upwardly extending annular shoulder or band 13 which is adapted to engage the sleeve 10 to aid in holding the sleeve in position. The band 13 is located beyond the threaded portion of the sleeve 10, and, as shown in Figs. 6 and 8, is preferably of substantially the same diameter as the threaded portion of the said sleeve, so that it may enter the socket designed to receive the plug, thereby preventing exposure of any portion of the sleeve 10 at the outer end of the socket. The outer contact 10 itself is self-supporting in that it consists merely of a metallic threaded sleeve having a hand-hold and is not itself directly carried or supported by any body portion of insulating material. By reason of this fact and the further fact that all the conducting parts except the sleeve may, in the preferred form, be attached to a unitary base and the conducting cords carried to and connected directly to such base, the device may be reduced to a very simple and compact form. Interposed between the sleeve 10 and the base 1, and surrounding the base, is a metallic conduct-

ing sleeve or ring 14 having a reduced end portion 15 threaded to form a threaded socket which extends through the opening in the insulating ring 12. The upper edges of the sleeve 14 are inturned over shoulders 16 formed on the insulating base 1 to prevent displacement of the said sleeve. The sleeve 10 is adapted to make sliding engagement with the sleeve 14, which constitutes a sliding contact member whereby the same are always in electrical contact with one another. The sleeve 14 is provided with a plate 17 riveted thereto and adapted to fit within a channeled portion 18 of the base. This plate carries a binding post 19 to which the electrical conductor 20 is secured. The threaded sleeve 10 is maintained rotatably in electrical connection with the contact member 14 by means of the base or body portion 1 and a second body portion 21 which are suitably fastened together. In the form shown the body portion 21 consists of an externally threaded bushing of insulating material which is screwed into the threaded socket 15, thereby fastening the two body portions 1 and 21 together, and is provided with an annular flange constituting a cap or a hand-hold 22 which is co-axial with the sleeve and engages the under side of the insulating ring 12, which prevents removal of the sleeve from the base. By this arrangement the two body portions coöperate to maintain the sleeve 10 in electrical connection with the contact member 14, while at the same time the said sleeve may be readily rotated about the base or body portion 1. When the bushing is inserted in position, a portion 23 of the base 1 extends into the center opening of the bushing, through which the conductors pass, and wedges the conductors against the wall of the bushing to prevent the conductors from being pulled loose from the binding posts.

By removing the sleeve 10, access may readily be had to the binding post 19 to connect one of the conductors thereto. Due to the fact that the sleeve 10 is rotatably mounted upon the base, it may be readily screwed into a socket without turning the base, permitting the plug to be inserted in position without twisting the conducting wires, and the ring 12 forms a convenient insulating member by which the sleeve may be rotated.

As shown in the drawings, the sleeve 10 is telescopically disposed with respect to the base and when the bushing 21 is removed the said sleeve may be readily slipped off or on the base. It will also be apparent that the sleeve 10 may be removed from the base without disturbing the connection of the end contact with the base, the removal of the sleeve 10 from the base being entirely independent of the end contact.

When the device is in assembled relation, as shown in Fig. 2, the binding post 19, being at the side of the base 1, is concealed by the sleeve 10, but may be exposed for the purpose of connecting the conductor associated with the sleeve or for other purposes by detaching the bushing 21 from the base and then slipping the sleeve off the base. In the preferred form all of the electrical conducting parts except the sleeve are carried by a unitary base. In the present embodiment of the invention there is a single piece or block of insulating material constituting the base; the bushing 21 and the sleeve 10 may be removed without disconnecting or disturbing any of the conducting parts or terminals.

To insert the plug in a socket, the sleeve 10 is introduced into the open end of the socket and then while the base is held stationary by grasping the hand-hold 22 with one hand the sleeve may be screwed into the socket by turning or rotating the hand-hold 12 thereon with the other hand. A rotation of the threaded sleeve 10 in the opposite direction unscrews the sleeve 10 from engagement with the socket. Thus the sleeve 10 may be rotated independently of the base in either direction to connect the plug with or disconnect it from the socket, thereby avoiding twisting of the cords leading from the attachment plug to the translating device.

In Figs. 6 and 7 I have illustrated another form of my invention. In this form, the base 1, the center contact and binding post 4, the sleeve 10, the insulating ring 12 and the bushing or body portion 21 are constructed and arranged in the same manner as are the like parts illustrated in Figs. 1 to 5. Instead, however, of providing a sleeve 14, I provide the contact member in the form of a metallic ring 24 which is adapted to make a sliding contact with the sleeve 10 at the point where the peripheral recess 11 is formed. The ring 24 has struck up therefrom a lip 25 which carries a binding post 26 for the sleeve 10. A threaded socket 27 similar to the socket 15 is secured to the ring 24 by providing at its upper end a peripheral recess 28 in which the ring 24 is fitted. Interposed between the shoulder formed by the peripheral recess 28 and the end of the insulating bushing or body 21 is a compressible rubber ring 29 which, when the bushing is screwed tight, clamps the conductors and prevents the same from being pulled loose from the binding posts. The rubber ring in connection with the conductors also prevents the base 1 from being withdrawn from the sleeve 10. As the wires are connected to the binding posts on the base and are clamped by the ring 29 in the socket 27 the base cannot be separated from the socket and permit the displacement of

the sleeve 10. In this structure it is necessary to separate the ring 24 from the sleeve 10 in order that access may be obtained to the binding post 26 with a suitable instrument.

In the structure illustrated in Figs. 8 and 9 I have provided the lip 25 with an angular extension 30 which so positions the binding post 26 that the same may be reached with a suitable instrument from the top of the sleeve. In order that the lo. ning of the bushing 21 will not displace the sleeve 10, instead of providing the same with an annular flange to maintain the ring 12 in position I provide an insulating ring 32 which screws upon the exterior of the threaded socket 27.

In Figs. 10 and 11 I have shown a modified form of the bushing 21, adapted for use with armored conductors. In this form I have shown the bushing as provided with an extension 33 having screws 34 passing therethrough and into a metallic lining 35, which screws are adapted to engage the armor of the conductors to prevent the latter from pulling loose from the binding posts of the plug. This form of bushing is particularly adapted for use in connection with conductors which extend through a single conduit as for instance what is known in the art as the Greenfield cord. When the screws are screwed home upon the cord they securely hold the same in position.

While I have described several modifications of my invention, it will be understood that the characteristic features of the invention may be embodied in other forms, and I do not limit myself to the structures which I have illustrated for the purpose of explaining the invention, except as set forth in the appended claims.

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

1. An attachment plug comprising a base having an end contact, a conducting sleeve telescoping the base and immediately inclosing the same and removable independently of the end contact, and a binding-post on the base for the sleeve conductor normally concealed by the sleeve but exposed when the latter is removed.

2. An attachment plug comprising a base having an exposed end contact and a side recess, a threaded conducting sleeve telescoping the base and immediately inclosing the same and removable independently of the end contact, and a binding-post for the sleeve conductor located in the recess and concealed by the sleeve but disclosed when the sleeve is removed.

3. An attachment plug comprising a base having an exposed end contact and a recess in its side, an outer contact consisting of a removable sleeve immediately surrounding and inclosing the base, said sleeve being rotatable independently of the base to connect the plug in position for use, and a binding-post for the sleeve conductor located in the recess and concealed by the sleeve but being disclosed when the said sleeve is removed.

4. An attachment plug comprising a base having a contact at one end and a conducting member, a binding screw at the side of the base for connecting one of the conductors to the said member, a conducting sleeve surrounding the base and in contact with said member and normally concealing the binding screw but permitting access to said screw when the sleeve is removed, and means to maintain the sleeve in position.

5. In an attachment plug, the combination with a body portion carrying an end contact, of an outer contact comprising a threaded sleeve surrounding said body portion and rotatably mounted thereon, a conducting member carried by said body portion having a sliding engagement with said sleeve and carrying a binding post, a socket carried by said conducting member, an insulating bushing secured in said socket, and means adapted, when said bushing is secured in position, to take the strain of the conducting wires from the binding posts.

6. An attachment plug comprising a base having an end contact and a suitably associated binding post, and having a sliding contact member and a binding post associated therewith and accessible from the side, a removable rotatable threaded sleeve in electrical connection with said contact member, and a bushing or body portion for holding said shell in position, whereby said binding post is accessible by removing said sleeve.

7. In an attachment plug, the combination with a body portion, of a center contact thereon having one of the contact wires attached thereto, an outer contact comprising a threaded sleeve surrounding said base and rotatably mounted thereon, a conducting member carried by said body portion having suitable contact with said sleeve and carrying a binding post, a socket carried by said conducting member, an insulating bushing fitting said socket and adapted to maintain said sleeve in position, and an insulating member on said sleeve by which the same may be rotated.

8. An attachment plug comprising a base provided with an exposed end contact, a contact sleeve about the base and removable therefrom independently of the end contact, and a sleeve-retaining member co-axial with the sleeve and separably connected to the base.

9. An attachment plug comprising a base having a contact, a removable contact sleeve about the base, a conducting member on the

base associated with the sleeve, and a removable cap attached to said base to maintain the sleeve on the base, said cap being removable independently of any conducting parts.

10. In an attachment plug, a base of insulating material, a removable, rotatable threaded sleeve associated therewith, a side binding post concealed by and in electrical connection with said sleeve, and an end binding post having a binding screw, coaxial with the base.

11. An attachment plug having an end-contact, an outer contact consisting of a threaded sleeve, and an insulating band about the sleeve beyond the threaded portion thereof, and of substantially the same diameter as the threaded portion of the sleeve.

12. An attachment plug comprising an insulating body portion, an exposed center contact at one end thereof, a conducting ring on the other e thereof, a threaded sleeve in electrical contact with said ring and rotatable therearound, an insulating bushing secured to said ring and formed to prevent the withdrawal of said body portion and ring from said threaded sleeve.

13. An attachment plug comprising a base having a center contact adapted to be electrically connected with one of the leading in conductors, a removable side contact sleeve on the base, said sleeve being adapted to be electrically connected with the other leading in conductor, and a sleeve-retaining member separably connected to the base, said member also serving to grip the leading in conductors between itself and the base.

14. An attachment plug comprising a base having binding-posts, a rotatable contact sleeve removably mounted on the base, and a bushing separately connected to the base to maintain the sleeve on the base and also clamp the conductors leading to the binding-posts between itself and the base.

15. In an attachment plug, the combination of a base having end and side contact conductor terminal binding-posts, said side contact consisting of a threaded sleeve, and a sleeve-retaining conductor-gripping member connected to the base.

16. An attachment plug comprising a base provided with a wedge-shaped portion and having conductor terminal binding-posts, a threaded rotatable contact sleeve on the base, a sliding contact connection between one of the binding-posts and the contact sleeve, and a bushing connected to the base for gripping the conductors leading to the binding-posts between itself and the wedge-shaped portion.

17. An attachment plug comprising a base having an exposed conductor-terminal binding-post at the end thereof, and having a passage through said end between the axis of the binding-post and the periphery of the base to accommodate the conductor passing to the said binding-post, and a thread contact sleeve on the base.

18. An attachment plug comprising base, a conducting sleeve telescoping t base and immediately inclosing the same, binding-post on the base for the sleeve co ductor normally concealed by the sleeve b exposed when the latter is removed, and exposed end contact on the base consisti of a conductor-terminal binding-screw, t base having a passage through its end l cated between the axis of the binding-scre and the periphery of the base for the accor modation of the conductor leading to t said end binding-screw.

19. In an attachment plug, the combin tion with an insulating base having an e posed end contact, of an outer contact co sisting of a threaded sleeve rotatable i dependently of the base and separable ther from independently of the said end contac

20. In an attachment plug, the combin tion with an insulating base having an e posed end contact, of an outer contact co sisting of a threaded sleeve rotatable abou the base and removable therefrom indepen ently of the end contact, and binding pos on the base for the conducting cords asso ciated with the contacts.

21. An attachment plug comprising a one piece insulating base having an exposed en contact, a conducting member on the bas and an outer threaded contact rotatabl about the base and electrically connected t the said member, said one piece base carry ing the line-terminal binding-posts for bot contacts.

22. An attachment plug comprising a one piece insulating base having an exposed en contact carried thereby, a conducting mem ber on the base, and an outer contact elec trically connected to the said conducting member and consisting of a threaded sleev externally disposed with respect to the bas and removable independently of the en contact.

23. An attachment plug comprising an in sulating base having an exposed end con tact, a conducting member on the base, a outer contact electrically connected to the member and consisting of a threaded sleeve rotatable about and telescoping the base and removable therefrom independently of the end contact, and line terminals on the base associated with the conducting member and the end contact.

24. In an attachment plug, an insulating base, a self-supporting, threaded rotatable sleeve of metal removably associated with said base and having a hand-hold attached thereto at the outer end, a binding post at the side of the said base concealed by and in electrical connection with said sleeve, and a binding post at the end of said base associated with an end contact on said base.

25. An attachment plug comprising a rotatable threaded sleeve having a hand-hold, and two body portions one having a hand-hold and the other carrying all of the electrical conducting parts except the said sleeve.

26. An attachment plug comprising an insulating base having an end contact, an outer contact rotatable about the base, a conducting sleeve on the base in circuit with the outer contact and provided with a threaded extension, an insulating bushing engaging the threaded extension to provide means to hold the base when the outer contact is rotated, and means on the base for connecting the end contact and sleeve in circuit.

27. In an attachment plug, a one-piece insulating base carrying all the electrical conducting parts except the outer contact, a threaded sleeve constituting the outer contact in rotatable connection with electrical conducting parts on said base, and suitable means for holding said sleeve in operative position.

28. An attachment plug comprising two body portions, one suitably formed for the passage therethrough of the leading in conductors and the other carrying an end terminal and a contact member and a pair of binding posts respectively in contact therewith, and a threaded sleeve maintained rotatably in electrical connection with said contact member by means of said body portions.

29. The combination with an insulating block and a sleeve surrounding the block and having a thread extending above the block, of an insulating cap having a circular groove, one wall of which is threaded to engage the thread of the said sleeve.

30. An attachment plug comprising a base carrying an end contact and a sliding contact member and a pair of binding posts respectively in electrical connection therewith, a rotatable threaded sleeve in electrical connection with said contact member, and suitable means for maintaining said base and threaded sleeve in operative relation.

In witness whereof, I have hereunto subscribed my name in the presence of two witnesses.

REUBEN B. BENJAMIN.

Witnesses:
A. H. Boettcher,
C. L. Hopkins.