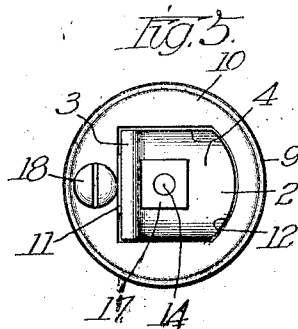
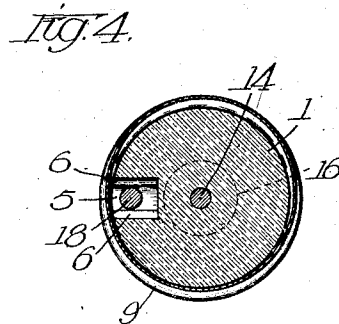
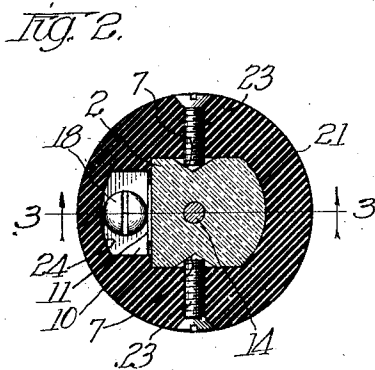
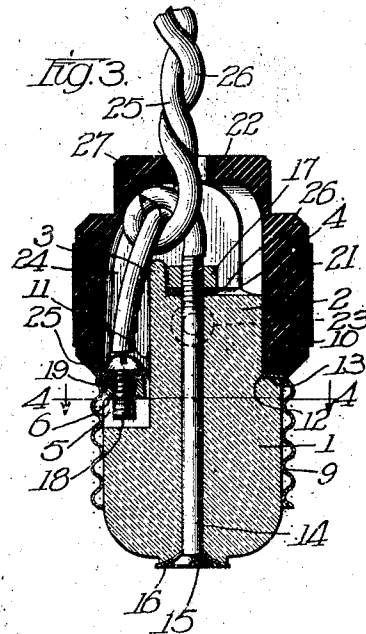
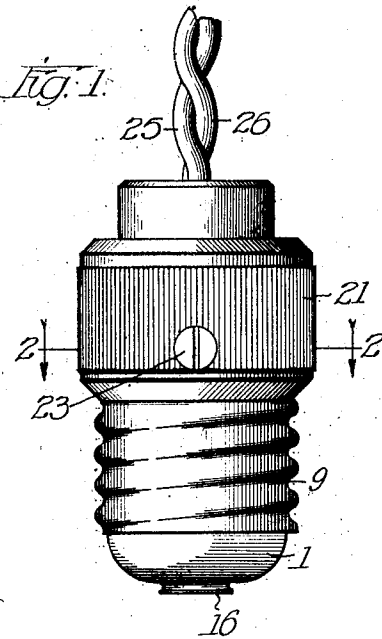


J. C. SMITH.
ATTACHMENT PLUG OR THE LIKE.
APPLICATION FILED MAR. 29, 1911.

1,048,001.

Patented Dec. 24, 1912.

2 SHEETS—SHEET 1.



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2 SHEETS—SHEET 2.

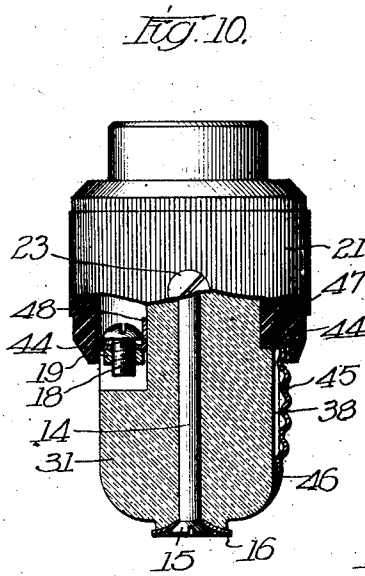
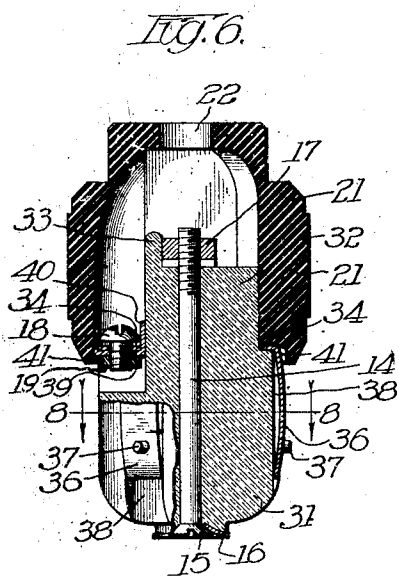


Fig. 7.

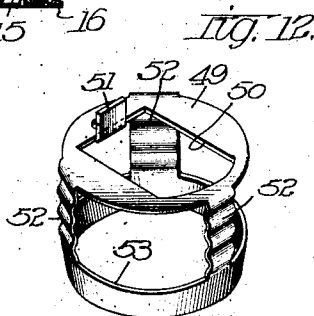
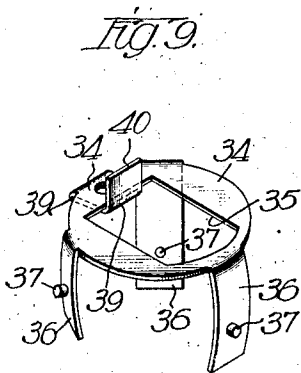
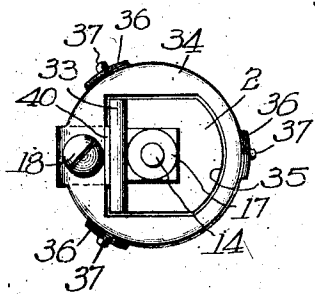


Fig. 8.

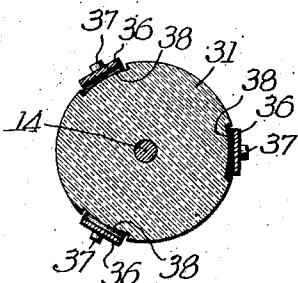
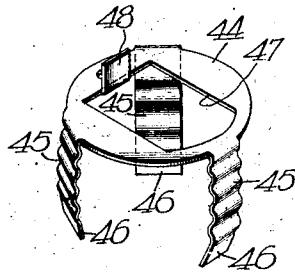


Fig. 11.



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UNITED STATES PATENT OFFICE.

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ATTACHMENT-PLUG OR THE LIKE.

1,048,001.

Specification of Letters Patent.

Patented Dec. 24, 1912.

Application filed March 29, 1911. Serial No. 617,726.

To all whom it may concern:

Be it known that I, JOHN C. SMITH, a citizen of the United States, residing at Oak Park, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Attachment-Plugs or the Like, of which the following is a description.

My invention belongs to that general class of devices known as attachment plugs, and relates particularly to an attachment plug, or attachment, for inserting in a suitable socket or outlet, and electrically connecting electrical conductors.

My invention has among its objects the production of a simple, convenient, durable, efficient and satisfactory plug of the kind described, of a minimum of parts, which may be manufactured at comparatively small cost.

To this end my invention consists in the novel construction, arrangement and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts, Figure 1 is a side elevation of one form of my plug. Fig. 2 is a cross sectional view of the same, taken substantially on line 2, 2 of Fig. 1. Fig. 3 is a longitudinal sectional view of the same, taken substantially on line 3, 3 of Fig. 2. Fig. 4 is a cross sectional view of the same, taken substantially on line 4, 4 of Fig. 3. Fig. 5 is a top elevation of the device with the cap removed. Fig. 6 is a longitudinal sectional view of another form of my device. Fig. 7 is a top elevation of the same with the cap removed. Fig. 8 is a sectional view taken substantially on line 8, 8 of Fig. 6. Fig. 9 is a perspective view of one of the conducting parts of the same. Fig. 10 is a partial sectional view of another form of my device. Fig. 11 is a perspective view of one of the conducting parts, forming part thereof, and Fig. 12 is a perspective view of another slightly modified form of conducting part.

Referring to the drawings, in which several forms of my device are shown, the plug shown in Figs. 1 to 5 comprises a body part 1 of suitable material, preferably insulating material, such as porcelain, hard rubber, composition, or any equivalent

adapted for the purpose. The body part may be made of any shape or form, but is preferably made substantially cylindrical and provided with an extended part 2 at one end formed integral therewith, the extended part being of reduced cross sectional area relative the body, so as to form a shoulder 13 at their juncture. The extended part may be of any desired form in cross section, as shown it is substantially rectangular. The body part is also preferably provided with a recess 5 at one side (see Fig. 4) formed with a plurality of shoulders 6, 6, the purpose of the same being more fully described hereafter. Extending through the body part and its extended part 2 from end to end is a post or conductor 14 of suitable material, having an enlarged end 14 arranged to contact with a suitable contact in the socket, 16 being a washer of suitable material to increase the size of the contact at the end of the body. It will be noted by referring particularly to Fig. 3, that the washer 16 and the body are formed so that the head 15 of the post 14 is substantially countersunk. The opposite end of the conductor 14 is preferably threaded so as to receive a nut 17, or its equivalent, forming a binding post. As most clearly shown in Figs. 3 and 5, the extended part 2 of the body is preferably further extended slightly as at 3 at one side of the end, and recessed or cupped as at 4. Mounted upon the body 1 is a conductor 9, the same being shown in Figs. 1 to 5 in the form of a shell, corrugated or otherwise constructed to form a thread, or its equivalent, so that the plug may be screwed into the well known form of lamp socket, or wall outlet (not shown) or the like. The conductor may be constructed in any equivalent manner to engage the cooperating part, as more fully described hereafter. As shown, the shell 9 is provided with an internally extending flange 10 arranged to seat upon the shoulder at the end of the body 1, the flange being provided with an opening through which the end 2 of the body is extended. The flange 10 is preferably turned up as at 11 so as to form a lip or up-turned lug (see Figs. 2, 3 and 5). Any suitable means may be employed for securing a conductor to the shell 9, a very simple construction comprising a screw 18 extended through the flange 10 proximate the up-turned lug 11, and provided with a

nut 19 thereon. The screw 18 is so positioned on the flange 10 that the nut may be positioned in the recess 5 of the body part upon the shoulders 6, 6 with the screw 18 extending between the shoulders. As is obvious, if the recess is properly proportioned, it will prevent the nut 19 from rotating when the screw is operated, and the screw may be removed, if desired, when the shell is in position, the nut being supported by the shoulders 6, 6. It will be noted by referring to Fig. 2 that the extended body part 2 is irregular in shape, and formed so as to allow plenty of space for the screw 18, and while the flange and shell and body part are prevented from rotating relative to each other by the screw 18 and nut 19 engaging the sides of the recess 5, the irregular shape of the part 2 also prevents rotation of the parts relative to each other. By the word "irregular" I wish to be understood as meaning that the extension on the body part and the opening 12 in the flange are of such shape in cross section that the movement or rotation of the parts relative to each other, as mentioned, cannot take place. It will also be noted that it is not necessary to form a thread on the porcelain body 1 to correspond with the thread of the shell 9. However, the body may be formed in any other desired form suitable for the use to which the plug is designed. The body is provided to be positioned over the integral extension 2 inclosing screw 18, the post 14 and nut 17. As shown, the cap is chambered and arranged to snugly fit the extension 2, except at the top and on the side where the binding post or screw 18 is arranged. On this side it is provided with an offset chamber 24, in which the conductor to the screw 18 is arranged. Any suitable means may be employed to secure the cap 21, which is preferably of insulating material, in position, as shown screws 23 are provided on each side of the cap for this purpose, which extend through the cap and engage the extended part 2 of the body in recesses 7, 7, provided therein. The cap is also provided with an opening 22, through which the conducting wires 25 and 26 may be extended. One of the conducting wires, as shown 26, is secured under the nut 17, thereby electrically connecting the same with the post 14 and with contact 16, while the other contact 25 is arranged in the offset recess 24 and secured to the shell 9 by the screw 18. If desired, a knot 27 may be formed with the conductors so that they cannot be pulled out through the hole or opening 22 and off from their binding posts. It may be noted that the extension 3 on the extended body part 2 not only prevents the nut 17 from moving when in use or when the post 14 is turned by a screw driver, or its equivalent, inserted in the slot so as to

draw the nut down and secure the conductor to the post, but the extended part 3 also prevents the conductor 25 from coming into contact with the nut 17. If the plug or conductors are twisted relative to each other, there is very little likelihood of the two conductors short circuiting, owing to the complete insulation of the several parts and the difference in length of the ends of the conductors from the knot, the two contacts being not only offset laterally relative to each other, but also longitudinally of the plug.

A slightly modified form or construction is shown in Fig. 6, in which 31 represents the body provided with similar extended parts 32 and 33. The cap 21 with the opening 22 and the means for securing the same in position are substantially the same as the cap shown in the figures described. However, in this form of plug, instead of using a corrugated or threaded shell 9, the plate or flange 34 corresponding to the flange 10 is provided with one or more conductors 36, adapted to extend along the side of the body. This plug is shown as adapted for use with the sockets which are extensively used in foreign countries, in which instead of a threaded connection between the plug and socket, the two are connected when in use by what is known as a "bayonet" connection. As most clearly shown in Figs. 6 and 9, the depending conductors 36 are provided with pins 37, which cooperate with suitable slots in the socket (not shown, as the bayonet joint is so common for different forms of connection that it is unnecessary to show a suitable socket for receiving the plug). If desired, the body part may be provided with a groove or slot 38 for each of the conductors 36, and it will be preferably noted by referring to the figures, that I preferably bow or form the conductors so that they are somewhat resilient. This gives a good contact within the socket and firmly secures the plug in place. It is, of course, obvious that the shell 9 shown in Fig. 1, may be made without the thread, and suitable pins similar to pins 37 provided, forming one part of a bayonet connection, but, of course, in this case the resiliency is not obtained as where the conductors 36 are formed as shown. In this construction another slight modification is also shown, in which the nut 19 shown in the previous figures mentioned, is omitted. In this case I preferably make the flange 34 of somewhat heavier material than where the shell 9 is used, and while the nut 19 for the screw 18 may be used, where the material is of sufficient thickness, the screw may directly engage the flange 34. If desired to increase the thickness of the flange, the same may be formed with an extension, which may be turned under or over, as shown under, or flanged

as at 39, and thence turned or bent upwardly as at 40, to form the upturned lug. In this case sufficient thickness of metal is obtained for engagement with the screw.

5 In Figs. 10 and 11 a plug is shown, having a body part substantially similar to that shown in Fig. 6. However, in this case, the plate or flange 44 with the conductors 45 extending therefrom is modified somewhat. Referring particularly to the figures, the 10 conductors 45, of which there may be any number, are provided with a thread substantially similar to the shell shown in Fig. 3, and the conductors 45 in this case are 15 also provided with the bow so that they are resilient, and they may be, if desired, extended substantially straight, as at 46, at their free ends. With this construction the plug takes a firm hold upon its socket and 20 owing to the resiliency of the conductors 45, gives good contact between them and the conductor within the socket.

The construction comprising the flanges and conductors 49, 52 shown in Fig. 12, is 25 applicable on any of the body parts shown in the drawings, and is substantially a combination of the conducting shell and flange shown in Fig. 3, and the conductors and flanges shown in Fig. 6 or 10. Referring to 30 this figure, the flange 49 is provided with conductors 52 extending therefrom, which may be connected at their free ends by the ring 53. In this case the conductors 52 are also preferably bowed or given some resiliency. 35

It will be particularly noted that the body part shown in any figure is capable of receiving any of the conducting parts shown so that the body and cap may be made standard, and any conducting part furnished 40 that may be desired. It is of course obvious that many other advantages may be taken of constructing the conductors as shown in Figs. 6 to 12 respectively, as for 45 example, in a push plug, a socket connection or engagement between the two may be had, depending upon the resiliency of the conductors. However, in most cases it is probably advisable to form the conductors 50 with a thread, or provide the pins 37, or their equivalents for the purpose, so that the plug and socket may be substantially locked together and require more than a pull to separate them.

55 It will be seen that the plug comprises but a few parts, and that it may be easily assembled or disassembled. To assemble, assuming that the post is in the body part and the screw 18 on the shell or flange, the 60 conductors are positioned with the extended body part extending through the opening in the flange, by sliding the shell or flange down toward the contact end, or contact 16 on the body, until it reaches the shoulder in 65 the body. The contacting wires may then

be secured in place and the cap then moved down and locked into position by the screws 23, or their equivalents. Locking the cap in position also locks the conductors carried 70 by the flange at the shoulder, the same being between the cap and body, and the plug is ready for use. It is impossible to remove the shell without removing the cap, and it will be particularly noted that it is impossible 75 to withdraw the plug and leave the shell or the conductors in the socket or outlet. This will be particularly appreciated by any one who has endeavored to remove a plug and found that the shell or conductors had been 80 pulled loose and remain in the socket, or that the shell has dropped off and been lost. The upturned lug 11, affords a better contact at the screw 18 and tends to prevent the conductor from becoming detached. With the 85 preferred forms of the device shown in the drawings, there is small danger of short circuiting, and consequently less danger of injury to apparatus or to the user.

The cheapness or economy in manufacturing owing to the simplicity of the device is 90 obvious, and particularly appeals to all familiar with attachment plugs, there being practically but three parts in addition to the post or conductor 14 and the binding screw 18, viz.: the body 1, the flange and its 95 conductors, as illustrated in any of the forms shown, or their equivalents, and the cap 21.

Having thus described my invention, it is obvious that various immaterial modifications may be made in the same without departing 100 from the spirit of my invention, hence I do not wish to be understood as limiting myself to the exact construction, arrangement or combination of parts herein shown and described, or uses mentioned. 105

What I claim as new and desire to secure by Letters Patent is:—

1. In an attachment plug, the combination of a body part of insulating material having a shoulder thereabout, a plate of suitable 110 conducting material having an opening therethrough, said plate positioned on said body at said shoulder and extended along the body from said shoulder, said body part provided with a part corresponding in con- 115 tour to said plate opening and extended therethrough.

2. In an attachment plug, the combination of a body part of insulating material having an extended part and a shoulder thereabout, 120 a plate of suitable conducting material having an opening therethrough corresponding in contour to said extending body part, said plate positioned on said body at said shoulder with the body part extending there- 125 through and closely fitting therewith, said plate extended along the body from said shoulder, a cap of insulating material and means for securing said cap to the body.

3. In an attachment plug, the combination 130

of a body part of insulating material having a shoulder thereabout, a plate of suitable conducting material having an opening therethrough, said plate positioned on said body at said shoulder with the body part extending therethrough, said plate formed with a plurality of conductors extending therefrom, said conductors connected at their opposite ends, a cap of insulating material, and means for securing said cap in position.

4. In an attachment plug, the combination of a body part having an extension therefrom at one end of reduced cross sectional area forming a shoulder, a conductor having an extended flange with an opening therethrough, said conductor positioned along the side of the body with its flange on said shoulder, said body part extension extending through and closely fitting said flange opening, said conductor provided with means for engaging a suitable cooperating socket, and a conductor arranged at the end of said body part and extending therethrough from end to end.

5. A body of insulating material provided with a shoulder thereabout, a metallic shell arranged about a portion of said body and extending over said shoulder, said body extending through and closely fitting the extended parts of said shell, a removable cap of insulating material, means for securing said cap on the body with the extended part of said shell therebetween, a contact arranged at the end of the body surrounded by said shell and extending to the opposite end of the body, and means for securing conductors to the shell and to said contact.

6. An attachment plug of the kind described including a body part of insulating material, a threaded metallic shell arranged about said body and flanged over one end and provided with an opening through said flange, said body extended through and closely fitting said opening, a cap and means for securing said cap on the body with the extended part of said shell therebetween.

7. An attachment plug including a body of insulating material, a threaded metallic shell arranged about said body, said shell provided with means for engaging a suitable cooperating part flanged over one end of the body and provided with an opening therethrough, said body having an integral part extended through and closely fitting the opening in said flange, a removable cap of insulating material arranged over said extended body end and removably secured thereto with the said shell flange positioned between the body and cap.

8. An attachment plug including a cylindrical body of insulating material, a threaded metallic shell arranged about said body and flanged over one end of the body with an opening therethrough, said body provided with an integral extending part, of

reduced cross sectional area relative the body, extending through the opening in said shell, a post of conducting material extending through said body and its extension, and means for securing a conductor to the end of said post at said extension, means for securing a conductor to the flange on said shell, a chambered cap arranged to be positioned on said extended body part, and means for securing said cap to the extended part of the body.

9. An attachment plug including a cylindrical body of insulating material, a threaded metallic shell arranged about said body and flanged over one end of the body with an opening therethrough, said body provided with an integral extending part, of reduced cross sectional area relative to the body, extending through the opening in said shell, said shell flange having an upturned lug along said extending body part, a post of conducting material extending through said body and its extension, and means for securing a conductor to the end of said post at said extension, means for securing a conductor to the flange on said shell, a chambered cap arranged to be positioned on said extended body part with said flange therebetween, and means for securing said cap to the extended part of the body.

10. In a device of the kind described and in combination, a body part of insulating material having an extended part at one end formed integral therewith, with a shoulder at their juncture, a shell of suitable material arranged on said body part, said shell having an internally turned flange at said shoulder, a conductor extending through the body part from end to end, means for securing the conductors to said shell and to said first mentioned conductor, a cap arranged over said extended end and abutting on said shoulder with said shell flange therebetween, and means for removably securing said cap to said body part extension.

11. In a device of the kind described and in combination, a cylindrical body part of insulating material, having an extended part of reduced cross sectional area at one end formed integral therewith with a shoulder at their juncture, a threaded shell of suitable material arranged on said body part, said shell having an internally turned flange at said shoulder, a post of suitable material extending through the body part from end to end, means for securing conductors to said post and said shell, a chambered cap arranged over said extended body end and abutting against said shoulder with the flange of said shell therebetween, and means at the side of said cap for removably securing the said cap to said body part extension.

12. A plug comprising a shouldered body

part of insulated material, an internally flanged threaded shell of conducting material arranged thereabout with the flange abutting against said shell and provided
5 with an opening therethrough, said body extending through said flange opening and closely fitting therewith, a contact arranged at the opposite end of said body and extending
10 therethrough to said extended part of the body, means for securing conductors to said shell and said contact, a chambered cap of insulating material provided with an opening therethrough at one end arranged
15 on said extended body part, and means for removably securing said cap to the sides of said extended part with said shell flange between the cap and body.

13. A plug comprising a body part of insulating material, a shell of suitable material having an internally extending flange
20 at one end, said shell formed with a thread thereabout and provided with an opening through the flange at said end, said body part provided with an integral extension

therefrom extending through and closely fitting said flange opening, said extension
25 and opening corresponding in contour and irregular in shape whereby the body part and shell are non-rotatable relative to each other.

14. A contact member of suitable material, a cap provided with a chamber therein corresponding substantially in contour
30 with said extension, but provided with an offset chamber at one side and with a chamber above said extension, means for securing
35 said cap in position on the body with said flange therebetween, and means for securing conductors to said shell, and contact within the chambers in said cap.

40 In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

JOHN C. SMITH.

Witnesses:

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CHARLES I. COBB.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents,
Washington, D. C."