May 5, 1931. W. C. TREGONING 1,803,983

PLUG CAP FOR SEPARABLE ATTACHMENT PLUGS

Filed Sept. 13, 1926

Fig. 1.

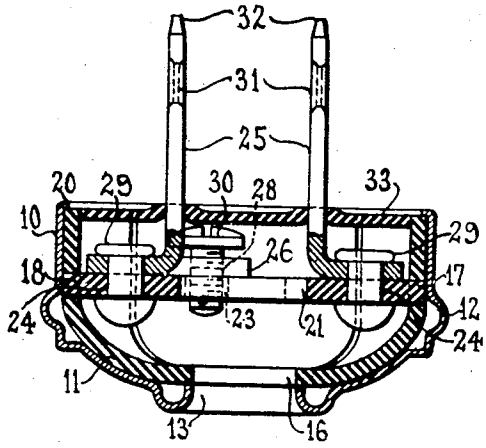


Fig. 2.

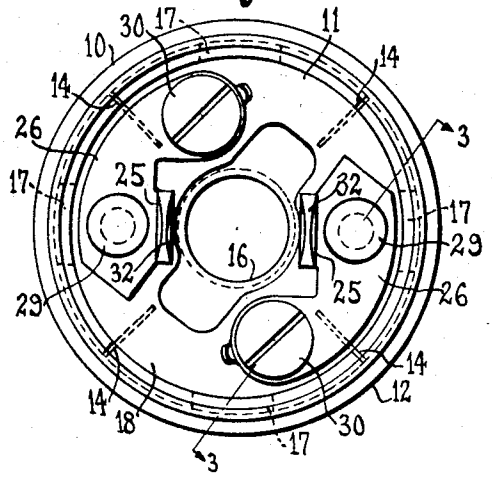


Fig. 3.

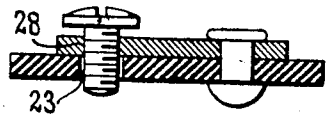


Fig. 4.

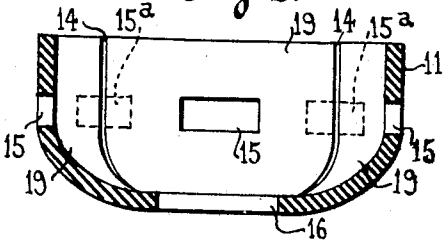


Fig. 7.

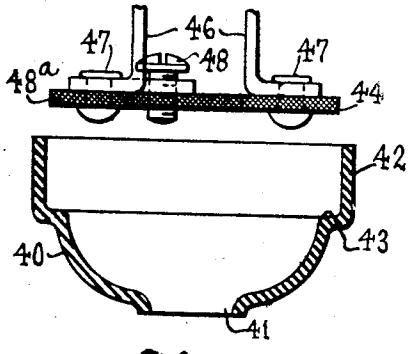


Fig. 5.

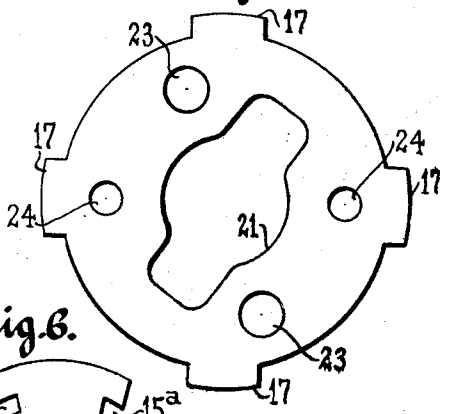


Fig. 8.

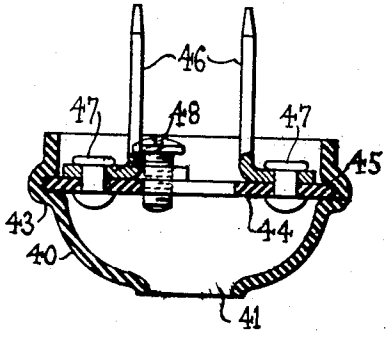
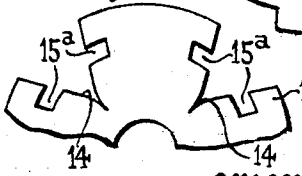


Fig. 6.



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UNITED STATES PATENT OFFICE

WILLIAM C. TREGONING, OF MILWAUKEE, WISCONSIN, ASSIGNOR, BY MESNE ASSIGNMENTS, TO CUTLER-HAMMER, INC., OF MILWAUKEE, WISCONSIN, A CORPORATION OF DELAWARE

PLUG CAP FOR SEPARABLE ATTACHMENT PLUGS

Application filed September 13, 1926. Serial No. 135,096.

This invention relates to improvements in plug caps for separable attachment plugs.

More particularly the invention relates to improvements in plug caps of the character disclosed in the copending application of William C. Stevens, Serial No. 134,698, filed September 10, 1926.

An object of the invention is to provide a cap of the type aforementioned which is of improved and simplified construction.

Another object is to provide such a cap having cooperating parts adapted to facilitate assembly thereof.

Another object is to provide a cap of proper size and strength wherein the amount of material required in the construction thereof is reduced to a minimum.

Other objects and advantages of the invention will hereinafter appear.

In the accompanying drawings I have illustrated certain embodiments of my invention which will now be described, it being understood that various changes in the details of construction of the device may be made without departing from my invention as defined in the appended claims.

In the drawings, Figure 1 is an enlarged vertical sectional view of a plug cap constructed in accordance with my invention;

Fig. 2 is a plan view of the cap shown in Fig. 1, the protective disk being removed for purposes of illustration;

Fig. 3 is a section on the line 3—3 of Fig. 2, illustrating the manner of supporting and securing the plug contacts;

Fig. 4 is a vertical sectional view of the one-piece insulating lining of the cap;

Fig. 5 is a plan view of the contact supporting plate or disk;

Fig. 6 is a fragmentary view of a modified form of disk employed in making the insulating lining shown in Fig. 4;

Fig. 7 is a vertical sectional view of a modified form of cap shell, showing the contact carrying disk prior to assembly therewith; and

Fig. 8 is a similar view, showing the parts in assembled relation.

Referring first to Figs. 1 to 6 of the drawings, the numeral 10 designates a casing or shell of steel or other suitable metal, said shell being adapted to receive a lining 11 of insulating material. Shell 10 is provided with a finger grip in the form of an annular bead or projection 12 to facilitate insertion and removal of the cap contacts from the usual receptacle, not shown. Shell 10 and lining 11 are provided with registering openings 13 and 16, respectively, to permit passage of the cord or conductors, not shown.

Lining 11 is formed from a flat circular disk of fibrous insulating material, preferably such as that sold under the trade-name of "conite". Segments of the disk are cut away and openings 15 and 16 are cut or punched therethrough, prior to molding or pressing said lining to the form best illustrated in Fig. 4 of the drawing. As shown in dotted lines in Fig. 4 and in full lines in Fig. 6, openings 15^a may be substituted for openings 15; said openings 15^a being formed by cutting out or notching the insulating material on opposite sides of the slits 14. Said notches cooperate to form the openings 15^a when the insulating disk is molded or pressed to the form shown in Fig. 4. When formed as thus described, the slits 14 in said lining permit outward bending or spreading of the integral sections 19 to facilitate insertion of a contact supporting disk 18, whereby the lugs or projections 17 of the latter are interlocked with the respective openings 15 or 15^a. After insertion of disk 18 into said lining 11, the latter may be pressed or forced into the shell 10, the outer edge portion of shell 10 being preferably spun or pressed over the outer edge of lining 11, as indicated at 20, to securely hold said parts together.

Disk 18 is preferably formed of canvas-reinforced "bakelite" or other suitable tough but rigid insulating material. As described in the aforementioned Stevens application, said disk is provided with a central opening 21 of suitable size and shape to permit passage and positioning of the conductor terminals with respect to the terminal portions 26 of contacts 25. Each of said terminal portions 26 is secured to disk 18 by means of suitable rivets or eyelets 29 passing through opening 24 in the disk. Said terminal por-

tions are also provided with tapped openings 28 to receive the terminal screws 30, said disk having openings 23 to permit free passage of said screws therethrough; whereas said screws in the normal position thereof tend to prevent lateral movement of portions 26 with respect to the disk. Contacts 25 are also preferably provided with the usual perforations or indentations illustrated at 31 to effect interlocking engagement with the receptacle contacts, not shown. Said contacts are also provided with beveled or knife edge portions 32 to facilitate insertion thereof. An insulating disk 33 may also be provided for the cap, said disk being adapted to protect the interior of the cap from entrance of foreign matter, and to provide a more finished appearance to the article.

The metal shell 10, particularly when formed of steel, is preferably coated, by spraying or otherwise, with a suitable finishing material, such as bronze powder, or a material giving the appearance of "bakelite" or rubber.

The device illustrated in Figs. 7 and 8 comprises essentially a shell 40 formed of insulating material, preferably fibrous; said shell having a conductor opening 41, and being formed initially with an enlarged end portion 42 providing an annular shoulder 43 upon which the contact carrying disk 44 is adapted to seat. Disk 44 is preferably of completely circular contour to provide for engagement at all points in its periphery with the shoulder 43 of portion 42. Obviously, however, said disk may be provided with projections or lugs, such as indicated in Fig. 5, for engagement with shoulder 43. After insertion of disk 44, shell 40 is subjected to a suitable molding or spinning operation to upset the end portion 42, thus providing another annular shoulder 45, whereby the disk is held securely in position. Shell 40 and disk 44 as thus united will ordinarily be held against relative rotary movement, whereas if desired suitable positive interlocking means such as knurling of the periphery or outer edges of disk 44, as indicated at 48a, may be provided for preventing such movement.

The contacts 46 are secured to disk 44 by means of rivets or eyelets 47, whereas the mounting for the terminal screws 48 is preferably like that described in connection with the device of Figs. 1 to 6. The device illustrated in Figs. 7 and 8 provides unusually good protection for the current carrying parts of the cap, and the amount of metal employed is reduced to a minimum. By employing an insulating shell of the character illustrated in these figures the necessity for a metal covering or shell is obviated. It is to be understood, however, that a suitable metal shell or covering may be added if desired. Similarly, an insulating disk like that shown at 33 in Fig. 1 may be employed.

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

1. In an attachment plug cap, the combination with a cup-shaped cap of sheet insulation, of a separately formed contact carrying disk arranged within said cap, said cap and disk having interengaging parts integral therewith to secure them in assembled relation and to secure them against relative rotation.

2. In an attachment plug cap, the combination with a one-piece cup-shaped cap of sheet insulation, of a contact carrying disk formed of sheet insulation, said disk being arranged within said cap to span the cavity therewithin and said cap and disk having interengaging parts integral therewith for securing them in assembled relation and providing an interlock against relative rotation of said cap and disk.

3. In an attachment plug cap, the combination with a cup-shaped cap of sheet insulation, of a contact carrying disk of sheet insulation fitting within said cap, said cap and said disk having interengaging parts integral therewith respectively, certain of said parts securing said disk within said cap and certain of said parts securing said disk against rotation relative to said cap.

4. In an attachment plug cap, the combination with a cup-shaped member formed of an insulating disk having cut-out segments, said member having recesses at spaced points around the inner wall thereof, and a contact carrying disk having projections adapted to enter said recesses to thereby hold said parts against relative movement.

5. In an attachment plug cap, the combination with a cup-shaped member formed of an insulating disk having cut-out segments, said member having recesses at spaced points around the inner wall thereof, a contact carrying disk having projections adapted to enter said recesses to thereby hold said parts against relative movement and a metallic shell adapted to receive said member with a tight fit.

6. In an attachment plug cap, the combination with a cup-shaped member formed of an insulating disk having cut-out segments, said member having recesses at spaced points around the inner wall thereof, a contact carrying disk having projections adapted to enter said recesses to thereby hold said parts against relative movement and a metallic shell adapted to receive said member with a tight fit, said shell having an inturned flange adapted to permanently hold said member therewithin.

7. In an attachment plug cap, the combination with a cup-shaped member of fibrous insulating material, said member having a plurality of slits extending from the edge thereof and having perforations in the side

wall thereof, a disk of laminated fibrous insulating material having projections adapted to fit said perforations, and contacts and terminals rigidly secured to said disk.

8. In an attachment plug cap, the combination with a cup-shaped member of fibrous insulating material, said member having a plurality of slits extending from the edge thereof and having perforations in the side wall thereof, a disk of laminated fibrous insulating material having projections adapted to fit said perforations, contacts and terminals rigidly secured to said disk, a thin metal shell covering said member, and an inturned annular flange on the former adapted to secure the latter in position.

9. In an attachment plug cap, the combination with a cup-shaped member of fibrous insulating material, said member having a plurality of slits extending from the edge thereof and having perforations in the side wall thereof, a disk of laminated fibrous insulating material having projections adapted to fit said perforations, contacts and terminals rigidly secured to said disk, a thin metal shell covering said member, an inturned annular flange on the former adapted to secure the latter in position, and a decorative coating on said shell.

10. In an attachment plug cap, the combination with a one-piece cup-shaped member formed of sheet insulation, of a contact carrying disk of sheet insulation supported by and within said member said disk and said member having integral interengaging parts to prevent relative rotary movement thereof, and a metallic shell formed to receive said insulating member and the parts associated therewith and to restrain said member against withdrawal therefrom.

In witness whereof, I have hereunto subscribed my name.

WILLIAM C. TREGONING.