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R. C. DA COSTA
ELECTRICAL CONNECTER
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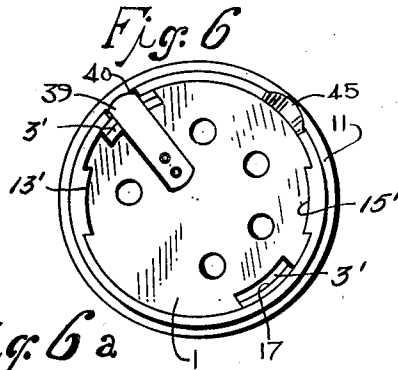
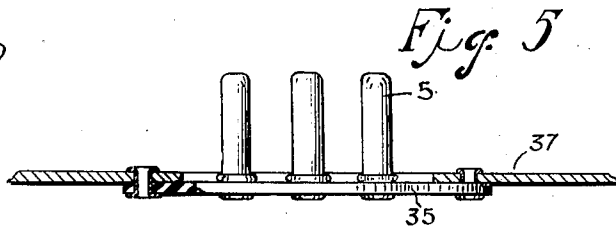
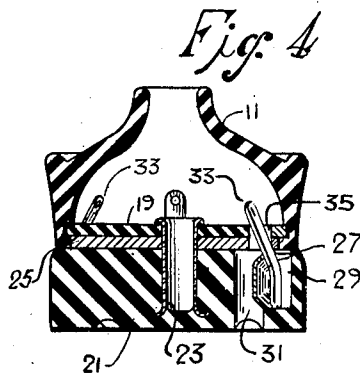
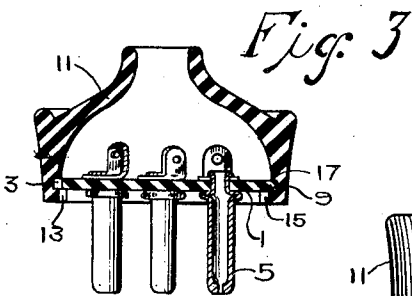
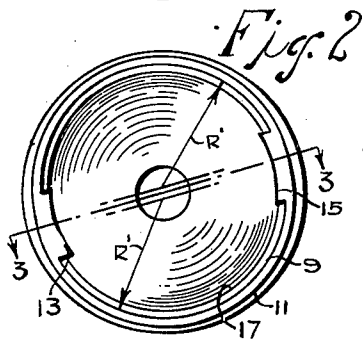
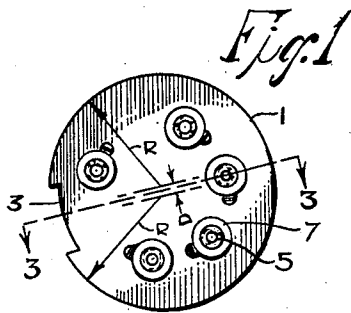
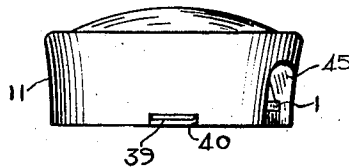


Fig. 6 a



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ELECTRICAL CONNECTER

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Application February 20, 1931, Serial No. 517,210

4 Claims. (Cl. 173—361)

My invention relates to electrical apparatus particularly to an electrical plug and cap adapted especially for use in connection with radio apparatus, and has for its main objects to provide a simplified construction having improved insulating features, and which is quickly and easily assembled.

In accordance with my invention a disc or end closure member is secured to the open end of a hollow housing or cap for enclosing electrical elements. The edge of the disc is made irregular, as with an eccentric or cam-like contour, adapted to cooperate with an irregular and preferably similarly shaped surface at the end of said housing in frictional or wedging relation. Additional cooperative means are provided on the disc and housing to prevent displacement of said disc. Further objects will appear from the following description of my novel device.

The various features are illustrated in detail in the accompanying drawing in which:

Fig. 1 is a bottom view of the electrical plug embodying my invention.

Fig. 2 is a bottom view of the cap for the plug.

Fig. 3 is a side elevation view in section of a cap and socket in assembled relation taken on lines 3—3 in Figs. 1 and 2.

Fig. 4 is a side elevation view in section of a cap and socket in assembled relation forming a female type plug.

Fig. 5 is a side elevation view partly in section of a male type socket adapted to cooperate with the plug of Fig. 4.

Fig. 6 is a bottom view of a modified form of my invention, showing a cap and female plug in assembled relation.

Fig. 6a is a side elevation view of the modification in Fig. 6.

Referring to the plug in Fig. 1 a stamped disc 1 of insulation such as "bakelite" is provided with indentations e. g. one or more peripheral notches 3, the disc being formed eccentrically. For ease of design I have found it convenient for manufacturing reasons to procure this eccentric form by means of off-center arcs as shown by the radii R. The disc is provided with the usual form of prong terminals 5 and soldering lugs 7. In effect the eccentric disc comprises two semi-circular segments spaced apart a slight distance D. The notch is shown situated on the short diameter, represented by 3—3 of the disc altho it may be anywhere on the periphery.

In Fig. 2 a cooperating surface 9 of the housing or cap 11 is shown similarly formed as illustrated by the position of the radii R'. The con-

tour of this inside wall surface 9 of the cap is adapted to engage the peripheral edge of the plug disc 1 and is preferably substantially the same in contour as said disc to give increased frictional surface. Instead of the eccentric formation in the cap, one may make the wall surface 9 circular and provide a slight projection or bulge at any one or more points to cooperate with the eccentric edge of the disc. The cap is provided at its open end with inwardly directed ledges in the form of projections 13 and 15 one of which cooperates with the notch 3 in the disc of Fig. 1. I prefer to construct this cap of molded insulation material for which this construction is particularly adaptable, although I may use metal.

As shown in Fig. 3 the cap fits over the disc covering up the soldering lugs to which a cable is adapted to be connected. One side or edge of the plug disc is inserted into the recess formed by the shoulder 17 and one of the projections 15, and the notch 3 in said disc is caused to slide past the other of said projections 13. The disc is then turned until the cam-like edge contour of the disc binds against the cooperating eccentric or cam-like wall surface 9 of the cap, thereby obtaining a snug fitting and tight assembly due to the frictional engagement effected.

It is within the scope of my invention to make both the disc and wall surface of the cap circular and vary the effective thickness of the disc slightly at selected positions around the periphery in such manner as to cooperate with projections 13 and 15 in binding relation.

In the modification of Fig. 4 an eccentric disc 19 similar in form to that of Fig. 1 is secured to a molded socket structure 21 by means of a rivet 23 or other securing means, a plate 25 being interposed between socket structure and the disc 19 for the purpose of raising the edge of said disc above the top surface of the socket structure. In this case a notch 3 is cut in each side of the disc because the structure usually does not permit sufficient bending of the disc for an assembling of the disc and cap by passing the cap projections 13 and 15 successively through the same recess 3 of the disc. In this modification the socket terminal structure 27 is included in the recessed portion 29 of the molded socket adjacent the receptacle holes 31 substantially as in the manner disclosed and claimed in the application of Hugh H. Eby Serial #304,462 filed September 21, 1928. Tail portion 33 for the purpose of soldering extends upwardly through apertures 35 in the disc 19 and plate 25. This whole assembly can be used either as a socket connector, in

which case it is adapted to receive the plug of Fig. 3, or it may be used as a female type plug adapted to cooperate with the male type socket of Fig. 5. In Fig. 5 the prongs 5 are mounted on a plate of insulation 35 and this assembly is secured to a metal panel 37, as of a radio receiving apparatus.

In Fig. 6, I have provided a tongue member 39 of spring material riveted at its inner end to the plug disc 1 and extending in a radial direction across one of the opposite recesses 3' to a point somewhat radially beyond the circumferential contour of the disc. This tongue member cooperates with means such as a depression 40 in the rim of the cap to insure that the cap and plug will remain in operative relation after assembly. It will be understood that in assembly the disc is slipped axially into place with the recess or recesses 3' registering with and passing the diametrically opposite inward projections 13' and 15' of the cap, the end of the spring 39 overlapping and being outwardly deflected by the edge of the cap. The disc is now turned, causing its circumferential portion to pass under and be axially locked in place by the projections 13' and 15', the end of the tongue riding along the axial end of the cap to spring into a suitable axial recess 40 when the assembly position is reached. While I really prefer to use the eccentric construction of disc and cap to obtain a tight fit it is obvious that in this modification the cooperating surfaces of plug and cap may be made circular, relying entirely upon the tongue member to secure the assembly.

Fig. 6a illustrates more clearly the relation of the end 39, in Fig. 6, of the tongue member and the depression 40 in the rim of the cap. In this figure I have illustrated a form of plug in which the flexible cord comes out thru the side wall 11 of the housing as shown by cut away portion at 45.

While I have shown certain preferred forms of my invention I wish it to be understood that other modifications may be made without avoiding the scope of the appended claims.

Having described my invention what I claim as new is:

1. In an electrical plug, an eccentric disc of insulation material and carrying electrical terminals, a housing cap for said disc having an inside wall surface adapted to be engaged by the peripheral edge of said disc and projections on the housing cap extending over the edge of the disc in one angular position of the disc with re-

spect to the housing cap, the contour of said surface being similar in size and shape to that of said disc, whereby said disc with its contour in registry with that of the cap loosely fits the cap interior and by turning of said disc has its peripheral edge frictionally engaged and held by the cap interior.

2. In an electrical plug a disc of insulation carrying conducting elements including prong terminals on one side and soldering lugs on the opposite side, the disc having an indentation in its peripheral edge, a housing cap of molded insulation material for covering said lugs and having an inwardly directed ledge along a portion of its inner edge, said ledge being adapted to operatively cooperate with said indentation in said disc for the assembly of the cap and disc and to secure said cap and said disc in assembled relation, the interior surface of said cap and the peripheral edge of said disc having cooperating irregular surfaces formed thereon loosely interfitting when the cap and disc angularly register the ledge and indentation and for effecting firm frictional engagement when said disc is turned in said cap.

3. In an electrical plug, an approximately circular disc carrying terminals and having an inward recess along a portion of its periphery, a resilient tongue member generally radial of the disc having an inner end secured to the disc and an outer end outwardly overlapping the disc periphery at the recess, a housing cap for said disc having a groove seat along diametrically opposite portions adapted to carry said disc in assembled relation, the cap having a radially inner contour at its axially outer edge to pass the disc to its seat, being along the said portions adapted to axially pass the disc at the inward recess thereof and to radially overlap the disc periphery at disc portions away from the recess, the said cap having an axial recess to receive the outer end of the tongue at assembly position and adapted to cooperate with said tongue to lock the disc against subsequent rotation.

4. In an electrical device, a hollow housing for enclosing electrical elements, an eccentric disc for closing an open end of said housing, means for preventing axial displacement of said housing and disc when assembled, a resilient tongue member secured to said disc in a radial direction, and a cooperating means on said housing for locking said disc against relative rotation.

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