Dec. 2, 1969 J. J. T. GRUNBAUM 3,482,204

SOCKET PLUG

Filed Dec. 20, 1967

FIG. 1

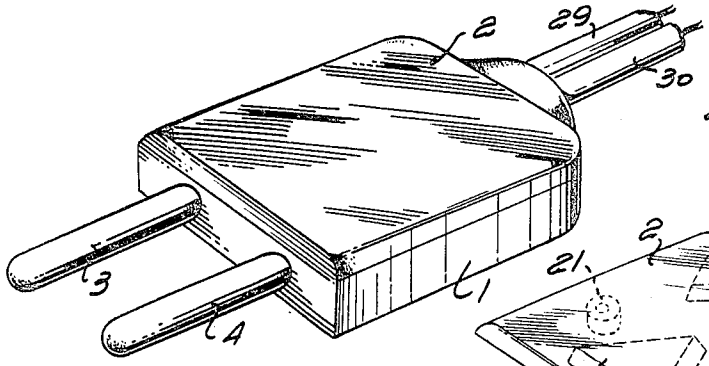


FIG. 2

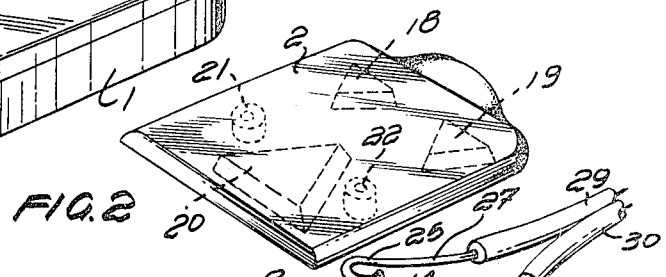


FIG. 3

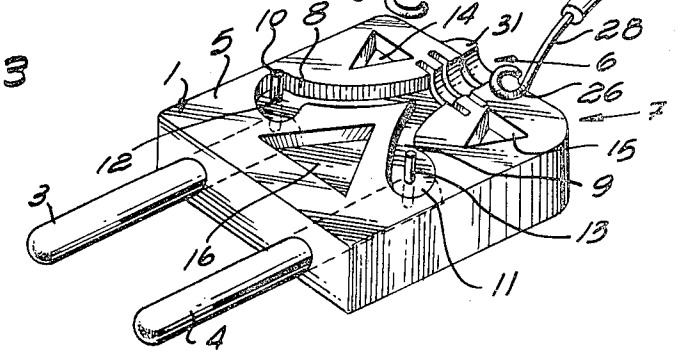


FIG. 6

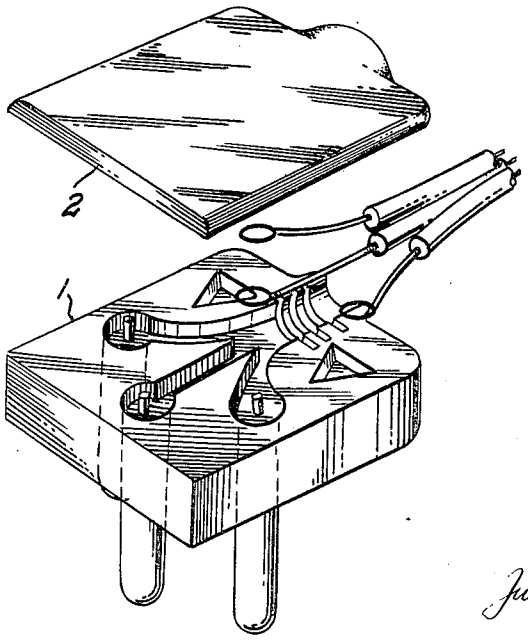


FIG. 5

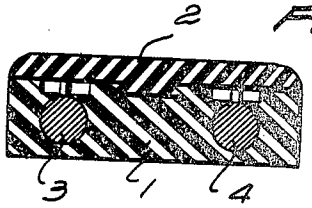
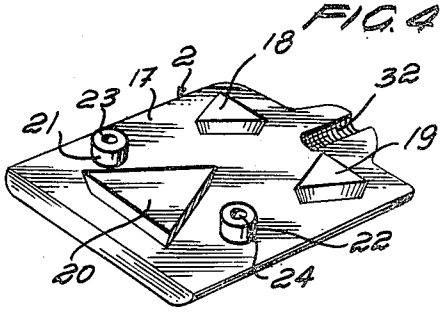


FIG. 4



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SOCKET PLUG

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Int. Cl. H01r 33/04
U.S. Cl. 339—63 4 Claims

ABSTRACT OF THE DISCLOSURE

An electric plug of resilient electrically insulating material comprising a mounting plate member grooved to receive electrical conductors and a cover plate member; the mounting plate member and the cover plate member having integral cooperating means on opposed faces thereof for fastening the two members together in the assembly condition without the aid of separate fastening means.

The improvements of this invention are applied to plugs of the type comprising a body of insulating material to which there are secured at least two metal pins connectable to a cord connecting the plug to an electric appliance.

In accordance with this invention, said insulating body is formed by a pair of cooperating plate members one of which is provided on one of its faces with a groove starting at one of the edges thereof, said groove being branched at a short distance inwardly of said edge so as to form divergent groove portions, each terminating in a respective recess. Upstanding from the bottom of each recess is a metal projection connected to a respective plug pin the rear portion of which is embedded in said one plate member. Both plate members are provided with cooperating means for fastening them together in opposed relationship so as to cover said groove and cause said metal projection to engage respective centrally perforated bodies fixed to the inner face of the other of said plate members.

Another important feature of the improved plug of this invention resides in the fact that the means for fastening together the two plate members comprises projections on one face of one of said plate members and cooperating depressions provided in the inner face of the other of said plate members, each projection being tapered inwardly towards the root thereof, whereas each depression is tapered outwardly from the bottom thereof.

The main object of the present invention is to provide a novel plug wherein the two plate members comprised thereby are fastened together without requiring the use of screws or screw-threaded parts, and wherein the connection between the cord wires and the plug pins is also obtained without the use of screws or the like.

A further object of the invention is to provide a plug wherein the pins are embedded in one of the plate members forming the plug body and, therefore, the plug comprises only two parts which may be fastened together by simply snapping the projections on one of said two parts into the depressions in the other part. To this end, the two plate members are made of elastomeric material.

In order that the invention may be more clearly understood and readily carried into practice, a presently preferred embodiment thereof is illustrated by way of example in the accompanying drawings, wherein:

FIG. 1 is a general perspective view of an electric plug in accordance with the present invention;

FIGS. 2 and 3 are perspective views showing the two parts constituting the plug shown in FIG. 1;

FIG. 4 is a perspective view showing the inner face of one of the plug parts;

FIG. 5 is a cross-sectional view of the plug shown in FIG. 1;

FIG. 6 is an exploded perspective view of a plug in accordance with this invention and comprising three pins.

The same reference characters are used to indicate like or corresponding parts or elements throughout the drawings.

As shown in the drawings, and referring first to FIGS. 1 to 5, the improved plug of this invention comprises a mounting plate **1** and a cover plate **2**, made of insulating material, preferably an elastomer, wherein the metal plug pins **3** and **4** are partly embedded in the mounting plate member **1**.

Said mounting plate member **1** has a flat face **5** having a groove **6** starting from the edge **7** opposite to that from which the plug pins **3** and **4** are projected. At a short distance from said edge **7** said groove **6** is branched as at **8** and **9**, each branch terminating in a recess **10**, **11**, respectively. Upstanding from the bottom of each recess **10**, **11**, is a metal projection **12** and **13**, respectively, which is connected to the inner embedded portion of the respective plug pin **3** and **4**.

The face **5** of the mounting plate member **1** is also formed with depressions **14**, **15** and **16** which are shown as triangular in cross-section but which can be of any other suitable cross-section.

A particular feature of the depressions **14**, **15** and **16** is that they taper upwardly from the respective bottoms thereof.

As shown more clearly in FIG. 4, the inner face **17** of the cover plate member **2** is provided with projections **18**, **19** and **20** shaped to cooperate with the depressions **14**, **15** and **16**, respectively. The projections **18**, **19** and **20** taper towards the roots thereof which are fixed to or integral with the cover plate **2**.

A pair of cylindrical bodies **21** and **22**, positioned to correspond with the metal projections **12** and **13** on the mounting plate member **1**, extend vertically from the face **17** of the cover plate member **2** and are provided with axial holes **23** and **24** respectively.

In order to apply the plug to the end of an electrical cord, it will only be necessary to form small eyes **25–26** at the bare ends **27–28** of the respective wires **29** and **30** (see FIG. 3) and then insert said eyes **25–26** in the respective recesses **10** and **11** so that each will surround a respective metal projection **12**, **13**.

The cord wires **28** and **30** will be located within the groove **6** which, as shown, is provided with ribs **31** intended to retain said cord wires with the aid of similar ribs **32** formed on the plate member **2**. The flat faces **5** and **17** of the plate members **1** and **2** are brought together in opposed relationship, with the projections **18**, **19** and **20** engaging the depressions **15**, **16** and **17**, respectively, and with the axially perforated bodies **21** and **22** engaging the recesses **10** and **11**, respectively. In order to attain this result, it will be necessary to force the projections **18**, **19** and **20** into the respective depressions **15**, **16** and **17**, inasmuch as the mouths of said depressions have a smaller cross-sectional area than the free ends of said projections, as explained above. This is made possible by the resilient nature of the material forming said plate members, and hence a dovetail joint is obtained. Simultaneously with this interconnection of the aforesaid projections and depressions, the metal projections **12** and **13** in the mounting plate member **1** will engage the axial holes **24** and **23** in the bodies **22** and **21**, respectively, on the cover plate member **2**, whereby the end eye portions **25–26** of the cord wires **29** and **30** will remain in electrical contact with the plug pins **3** and **4**. In order to in-

sure a good electrical contact, the bodies **21** and **22** are preferably made of metal.

In the manner as described above by means of a single pressing operation the two single parts constituting the plug will remain firmly fastened to each other.

The embodiment illustrated in FIG. 6 only differs from the plug shown in FIGS. 1 to 5 in the location of the plug pins and in that it comprises a third pin for making a complementary connection, the connection for said third pin taking the place of the depression **16** and projection **20** in the embodiment of FIGS. 1 to 5.

While I have described and shown a presently preferred embodiment of the invention, it will be understood that many changes and/or modifications will occur to those skilled in the art without departing from the scope of the invention as clearly set forth in the appended claims.

What is claimed is:

1. An electric plug, comprising a mounting plate member made of electrically insulating material and a cooperating cover plate member also made of electrically insulating material, a groove being branched at a short distance from said edge into at least two divergent branches, each of said branches terminating in a recess, a metal projection upstanding from the bottom of each of said recesses, at least two plug pins the rear portions of which are embedded in said mounting plate member and each connected to one of said metal projections, at least two axially perforated bodies fixed to one face of said cover plate member and adapted to engage said mounting plate recesses with said axial perforations engaged by said metal upstanding projections, and cooperating fastening means formed on said one face of each of said plate members for fastening together said plate members in face-to-face relationship.

2. An electric plug, comprising a mounting plate member made of resilient electrically insulating material and cooperating cover plate also made of resilient electrically insulating material, a groove in one face of said mounting plate member starting at one edge thereof, said groove being branched at a short distance from said edge into at least two divergent branches, each of said branches terminating in a recess, a metal projection upstanding from the bottom of each of said recesses, at least two plug pins the rear portions of which are embedded in said mounting plate member and each connected to one of said upstanding metal projections, at least two axially perforated bodies fixed to one face of said cover plate member and adapted to engage said upstanding metal projections, and cooperating fastening means comprising resilient projections on one of the faces of one of said plate members and cooperating depressions formed in one face of the other of said plate members, said projections tapering towards the roots thereof and said depressions tapering towards the outer ends thereof, whereby said plate members may be press-fastened together in face-to-face relationship.

3. An electric plug as claimed in claim **2**, wherein said plate members and said fastening means are made of elastomeric material.

4. An electric plug as claimed in claim **2**, wherein said axially perforated bodies are metal bodies.

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KENNETH DOWNEY, Primary Examiner

U.S. Cl. X.R.

339—107, 196