Feb. 3, 1948. C. W. CRUMRINE 2,435,341

ELECTRICAL CORD PLUG

Filed Nov. 27, 1946

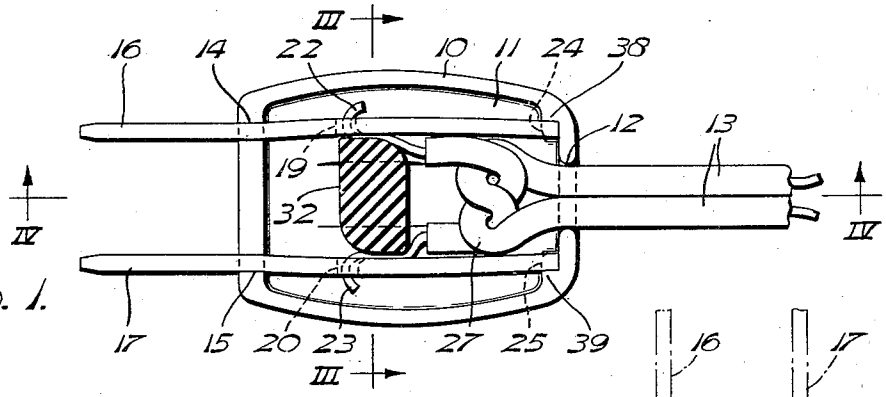


Fig. 1.

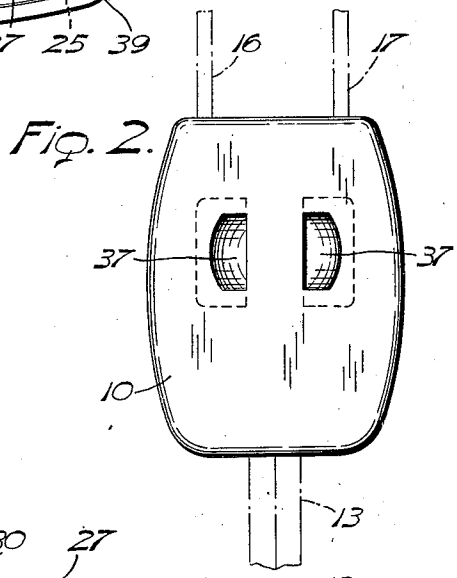


Fig. 2.

Fig. 3.

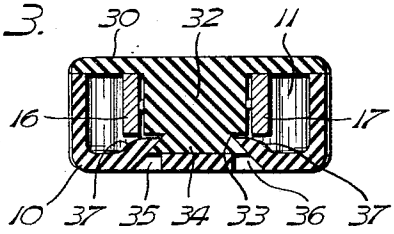


Fig. 4.

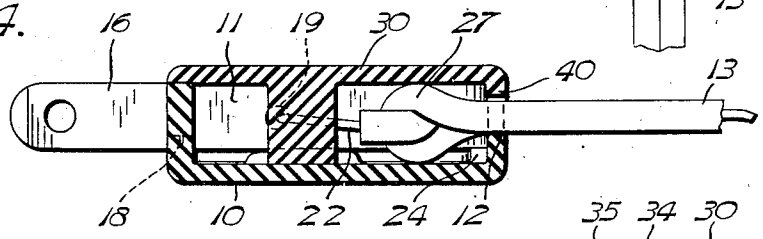
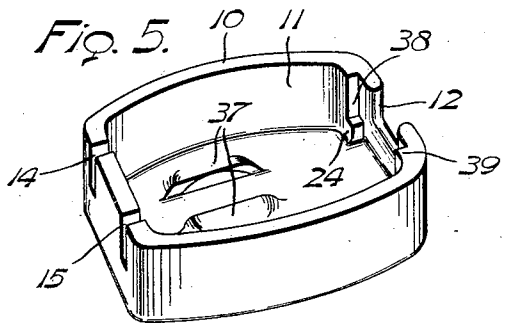


Fig. 5.



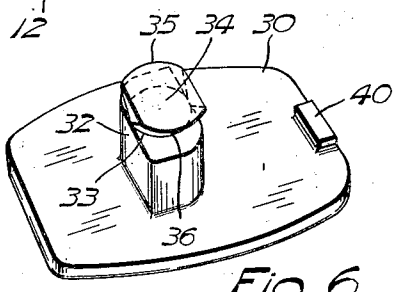


Fig. 6.

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ELECTRICAL CORD PLUG

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7 Claims. (Cl. 173—361)

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This invention relates to electrical connectors and particularly to connectors of the class generally referred to as electrical cord plugs.

Devices of this class in the prior art generally comprise a body element into which a flexible electrical cord enters and wherein the two conductors of the cord are connected by screw means with prongs which project from the body member for insertion in a usual electric outlet of well known form.

According to the present invention a plug is provided wherein complete assembly or disassembly is effected by a single manipulation without the aid of a screw driver or any other tool. Further, the plug of the present invention is characterized by the fact that only four total parts are employed; the body element itself, a cover element, and the pair of metal conducting prongs. In place of the usual terminal screws for securing the copper leads of the electrical cord, the device of the present invention provides cam means which automatically secure both wires of the cord with the same movement which locks the cover to the body of the plug. By the same token, the usual screws used for holding the body parts of an electrical plug are eliminated in the present construction.

A single specific embodiment of the principles of the present invention is illustrated in the accompanying drawing, but it is to be understood that the form there set forth is by way of example only and that the scope of the invention is not limited excepting as defined in the appended claims.

In the drawing:

Fig. 1 is a top plan view of one form of the cord plug of the present invention with a portion of the cover thereof shown in cross-section;

Fig. 2 is a bottom plan view of the cord plug of Fig. 1;

Fig. 3 is a cross-sectional view on the line III—III of Fig. 1, but with the cover element in assembled position thereon;

Fig. 4 is a cross-sectional view on the line IV—IV of Fig. 1, likewise with the cover element assembled thereon;

Fig. 5 is a perspective view of the body element of the device of Figs. 1 through 4; and

Fig. 6 is a perspective view of the cover element therefor.

In the drawing, like characters of reference denote like parts and the numeral 10 designates generally a body element of insulating material having a well portion 11 formed therein. In the illustrated form, body element 10 is generally

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oblong and at one end thereof is provided with a notch 12 to receive the insulated portions of a pair of conventional electric conductor cords 13.

At the side opposite notch 12, body element 10 is provided with a pair of spaced parallel slots 14 and 15 which are proportioned to receive the medial portions of a pair of conducting prong elements 16 and 17. The bottom edges of prongs 17 and 18 are notched to lock over the bottoms of slots 15 and 16 as indicated at 18 in Fig. 4.

The inner ends of prongs 16 and 17 are provided with openings 19 and 20 and in assembling the cord plug being described, copper leads 22 and 23 of the conductors 13 are drawn through the respective openings 19 and 20 of prongs 16 and 17. Thereupon, the prongs are disposed in assembled position in the slots 14 and 15 and ledges 24 and 25 formed in well 11 adjacent to notch 12 support the inner ends of the prongs. The knotting of the conductors 13 indicated at 27 in Figs. 1 and 4 prevents pulling the cord outwardly of body element 10 by abutment against the edges of notch 12.

Following this simple assembly step, the device is ready for final locking which is accomplished by the association therewith of a cover member 30 which is generally flat and preferably of the same contour as the body element 10. Cover element 30 has projecting centrally therefrom a cam portion 32, a reduced circular neck 33 and an oblong terminal enlargement 34, which, in the illustrated instance has arcuate beveled ends 35 and 36. At the bottom of well 11, body member 10 is provided with a pair of facing louvres 37 proportioned and spaced to receive the enlargement 34 therebetween so that cover element may be placed downwardly over the top of body member 10 with enlargement 34 extending lengthwise between louvres 37. A subsequent quarter turn of cover element 30 moves the enlargement to the position illustrated in Fig. 3 and locks the cover element with respect to body member 10 by engagement of the beveled ends 35 and 36 of enlargement 34 beneath the overhanging edges of louvres 37.

The same movement, clockwise as viewed in Fig. 1, causes the cam formation 32, whose contour is best illustrated in Fig. 1, to engage against the adjacent portions of the conductors 22 and 23. Note that the inner ends of prongs 16 and 17 bear laterally against ledges 38 and 39 formed in well 11 of body element 10. The proportions of the parts are such that the prongs 17 and 18 are slightly flexed apart by the cam 32 during closing movement of cover element 30, and the

resilient pressure of this flexure helps to retain the device in resiliently locked condition.

The inner surface of cover element 30 has a marginal lug 40 which makes it necessary for the cover element proper to flex slightly during assembly, until the cover is rotated to final position wherein lug 40 comes into registry with notch 12 and engages therein to lock the assembly.

The body member and cover element of the present invention require little structural strength since they are subject to relatively no local strains, as is true in the case of conventional devices of this class, wherein the body elements are variously threaded and tapped. Also, the locking pressures engendered are inherent in the design of the device and not subject to the discretion or lack of discretion of unskilled persons applying excessive screw driver forces and the like. These considerations permit the employment of a wider range of choice of insulating material in the manufacture of the body member 10 and cover element 30.

What is claimed is:

1. In an electrical cord plug, a body member having a well formed in one surface thereof, a groove in said surface extending between said well and the outer margin of the body member for receiving a two-wire electrical cord, a pair of spaced grooves likewise extending between said well and the outer margin of the body member and a pair of plates of conducting material disposed therein, said plates projecting at their inner ends into said well and at their outer ends outwardly of said body member for engagement with an electrical outlet, each of said plates having an opening therethrough adjacent its inner end whereby the end of one of the wires of said cord may be threaded therethrough, and a cover element adapted to seat against said surface of said body member, interlocking means in the bottom of the well of said body member, and said cover member having means interlockable with said interlocking means by relative turning movement of the body member and the cover element with the cover element against said surface, and said cover element having a cam portion for acting against said plates upon interlocking movement of said parts for clamping the wires thereagainst.

2. In an electrical cord plug, a body member having a well formed in one surface thereof, a groove in said surface extending between said well and the outer margin of the body member for receiving a two-wire electrical cord, a pair of spaced grooves likewise extending between said well and the outer margin of the body member and a pair of plates of conducting material disposed therein, said plates projecting at their inner ends into said well and at their outer ends outwardly of said body member for engagement with an electrical outlet, each of said plates being engageable adjacent its inner end with one of the wires of said cord, and a cover element adapted to seat against said surface of said body member, interlocking means in the bottom of the well of said body member, and said cover member having means interlockable with said interlocking means by relative turning movement of the body member and the cover element with the cover element against said surface, and said cover element having a cam portion for acting against said wires upon interlocking movement of said parts for clamping the wires against the plates.

3. In an electrical cord plug, a body member having a central well formed in one surface thereof, a groove in said surface extending between said well and the outer margin of the body member for receiving a two-wire electrical cord, a pair of spaced grooves likewise extending between said well and the outer margin of the body member and a pair of plates of conducting material disposed therein, said plates projecting at their inner ends into said well and at their outer ends outwardly of said body member for engagement with an electrical outlet, each of said plates having an opening therethrough adjacent its inner end whereby the end of one of the wires of said cord may be threaded therethrough, and a cover element adapted to seat against said surface of said body member, a pair of opposed socket openings in the bottom of central well of said body member, and said cover member having means interlockable in said socket openings by relative turning movement of the body member and the cover element with the cover element against said surface, and said cover element having a cam portion for acting against said plates upon interlocking movement of said parts for clamping the wires thereagainst.

4. In an electrical cord plug, a body member having a central well formed in one surface thereon, a groove in said surface extending between said well and the outer margin of the body member for receiving a two-wire electrical cord, a pair of spaced grooves likewise extending between said well and the outer margin of the body member and a pair of plates of conducting material disposed therein, said plates projecting at their inner ends into said well and at their outer ends outwardly of said body member for engagement with an electrical outlet, each of said plates having an opening therethrough adjacent its inner end whereby the end of one of the wires of said cord may be threaded therethrough, and a cover element adapted to seat against said surface of said body member, interlocking means in the bottom of the central well of said body member, said cover member having means interlockable with said interlocking means by relative turning movement of the body member and the cover element with the cover element against said surface, said cover element having a cam portion for acting against said plates upon interlocking movement of said parts for clamping the wires thereagainst, said cover member having a portion projecting toward the body member and adapted to come into registry with and snap into one of said grooves when the interlocking means and the cam means reach their final assembled positions.

5. In an electrical cord plug, a body member having a central well formed in one surface thereof, a groove in said surface extending between said well and the outer margin of the body member for receiving a two-wire electrical cord, a pair of spaced groves likewise extending between said well and the outer margin of the body member and a pair of plates of conducting material disposed therein, said plates projecting at their inner ends into said well and at their outer ends outwardly of said body member for engagement with an electrical outlet, each of said plates being engageable adjacent its inner end with one of the wires of said cord, and a cover element adapted to seat against said surface of said body member, interlocking means in the bottom of the central well of said body member, said cover member having means interlockable with said interlocking means by relative turning movement of the body member and the cover

element with the cover element against said surface, said cover element having a cam portion for acting against said wires upon interlocking movement of said parts for clamping the wires against the plates, said cover member having a portion projecting toward the body member and adapted to come into registry with and snap into one of said grooves when the interlocking means and the cam means reach their final assembled positions.

6. In an electrical cord plug, a body member having a central well formed in one surface thereof, a groove in said surface extending between said well and the outer margin of the body member for receiving a two-wire electrical cord, a pair of spaced grooves likewise extending between said well and the outer margin of the body member and a pair of plates of conducting material disposed therein, said plates projecting at their inner ends into said well and at their outer ends outwardly of said body member for engagement with an electrical outlet, each of said plates having an opening therethrough adjacent its inner end whereby the end of one of the wires of said cord may be threaded therethrough, and a cover element adapted to seat against said surface of said body member, interlocking means in the bottom of the central well of said body member, and said cover member having means interlockable with said interlocking means by relative turning movement of the body member and the cover element with the cover element against said surface, and said cover element having a cam portion for acting against said plates upon interlocking movement of said parts for clamping the wires thereagainst, said cover member having a portion projecting toward the body member and adapted to come into registry with and snap into said cord receiving groove when the interlocking means and the cam means reach their final assembled positions.

7. In an electrical cord plug, a body member having a central well formed in one surface thereof, a groove in said surface extending between said well and the outer margin of the body member for receiving a two-wire electrical cord, a pair of spaced grooves likewise extending between said well and the outer margin of the body member and a pair of plates of conducting material disposed therein, said plates projecting at their inner ends into said well and at their outer ends outwardly of said body member for engagement with an electrical outlet, each of said plates being engageable adjacent its inner end with one of the wires of said cord, and a cover element adapted to seat against said surface of said body member, interlocking means in the bottom of the central well of said body member, and said cover member having means interlockable with said interlocking means by relative turning movement of the body member and the cover element with the cover element against said surface, and said cover element having a cam portion for acting against said wires upon interlocking movement of said parts for clamping the wires against the plates, said cover member having a portion projecting toward the body member and adapted to come into registry with and snap into one of said grooves to retain the interlocking means and the cam means in final assembled position.

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