

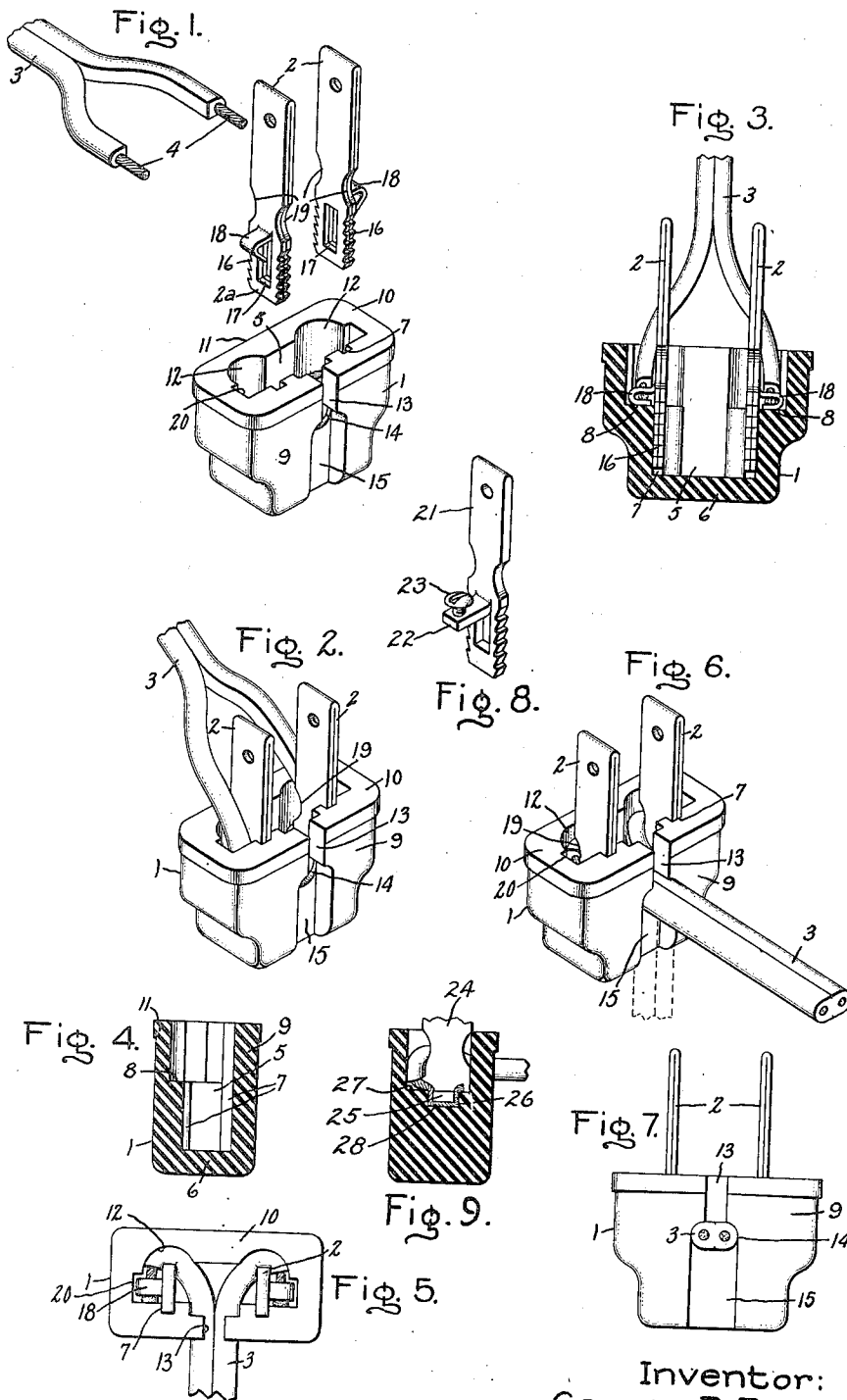
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PLUG CONNECTOR

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PLUG CONNECTOR

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1 Claim. (Cl. 173—361)

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The present invention relates to plug connectors such as are used to connect an electric cord to a convenience outlet or receptacle.

The object of the invention is to provide an improved connector which is simple in structure, comprises a minimum number of parts, and is capable of being manufactured and assembled on a cord at low cost.

A further object of the invention is to provide an improved construction wherein the cord may extend from the connector either parallel to the contact blades or at an angle thereto.

A further object is to provide a construction wherein the wires of the cord are connected firmly to the blades without the use of screws and wherein the cord is held in a manner such as to provide a good strain-relief for the connections.

Other objects and the advantages of the invention will be apparent from the following specification.

For a consideration of what I believe to be novel and my invention, attention is directed to the following specification and to the claim appended thereto.

In the drawing, Fig. 1 is an exploded perspective view of the parts forming my improved plug connector, a cord end with the wires bared being shown adjacent the contact blades; Fig. 2 is a perspective view illustrating a plug connector partially assembled on a cord end; Fig. 3 is a transverse sectional view of the structure as shown in Fig. 2; Fig. 4 is a sectional view of the connector body; Fig. 5 is a plan view of a completely assembled connector attached to a cord end; Fig. 6 is a perspective view of a connector with a cord attached thereto; Fig. 7 is a side view of the connector, and Figs. 8 and 9 are views showing modifications.

My invention is well adapted for use with flat two-conductor cords wherein the two conductors are parallel (one type of such cord being known in the trade as POSJ), and I have elected to illustrate my invention embodied in a structure for use with such cord. It is to be understood, however, that the invention is not limited to use with such cord, it being adapted also for use with other types.

Referring to the drawing, Figs. 1 to 7, 1 indicates the body of the connector, 2 indicates the two contact blades, and 3 indicates an electric cord, the bared ends of the conductors of the cord being indicated at 4.

The body which may be formed from a suitable molding compound is generally rectangular in outline, although it may be of other shape. Its walls define a central recess or cavity 5 which extends substantially to what may be termed the lower end of the connector, the bottom wall being indicated at 6; on each side of the central recess

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a pair of vertically extending grooves 7; and at an intermediate point a pair of ledges or shoulders 8. Grooves 7 are adapted to receive the inner ends 2a of contact blades 2. The grooves 7, in what may be termed for purposes of description, the front wall 9 of the body, extend to the open side 10 of the body. The grooves 7, in what may be termed the rear wall 11 of the body, terminate at the surface of ledges or shoulders 8 (see Fig. 4). The inner side of rear wall 11 is shaped to define depressions or grooves 12 which are opposite the outer ends of the grooves 7 which are in front wall 9. In front wall 9 is a slot 13 which, at its lower end, is enlarged to form a rounded opening 14. Slot 13 and opening 14 form an open ended keyhole slot in the side wall of body 1. Slot 13 is of a width about equal to the narrow width of cord 3. Rounded portion 14 is of a width equal to the wider dimension of cord 3. In wall 9 below opening 14 is a groove 15 of a size to receive a cord 3.

Contact blades 2 are provided on the side edges of their inner ends with serrations or teeth 16 which, when the blades are inserted in grooves 7 bite into the end walls of the grooves to grip the blades and hold them firmly in place. In the inner ends of the contact blades are openings 17. Each contact blade, on what may be termed its outer side, is provided with a clamping eye 18 adapted to clamp the bared end of a conductor. The clamping eyes 18 may be formed from material of the blades. In the present instance, the contact blades are shown as being formed from a strip of suitable metal bent back upon itself and clamping eyes 18 are formed from metal of the outer strip piece, being formed from the material struck out to form openings 17. Thus, the clamping eyes 18 are at the upper ends of the openings 17. In the side edges of blades 2, just above the teeth 16 are curved recesses 19. In the assembled plug, these recesses lie just above the ledges or shoulders 8. In the end walls of body 1, are vertical grooves 20 of a width about equal to the width of eyes 18 and in which the eyes are located.

In assembling the connector on a cord end, the bared conductor ends 4 are threaded into the eyes 18, after which the inner ends of the contact blades are forced down into the grooves 7. This may be done in a suitable fixture, the base 1 being supported in the stationary bed of a fixture, for example, and the contacts 2 being carried by a movable part of the fixture which can be lowered either manually or by suitable power means to force the inner ends of the blades along the grooves 7. As the contact blades are reaching the inner end of their movement, the lower walls of the eyes strike ledges or shoulders 8 and are forced upward to close somewhat the eyes and squeeze the conductor ends between the walls of

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the eyes as shown particularly in Fig. 3. Thus, by the act of inserting the inner ends of the contact blades into position in the body 1, the conductor ends are automatically tightly connected thereto. Assembled thus far, the cord 5 extends in the direction as shown in Figs. 2 and 3, the two wires of the cord being positioned at the outer sides of blades 3. Next, the cord is brought across the face 10 of the base 1 between the blades 2, the two wires of the cord being thus 10 passed around the rear edges of the blades; and they are pulled down into the spaces formed by grooves 12 in body 1 and recesses 19 in blades 2, as shown particularly in Fig. 5. These spaces are of a size such that the wires are tightly wedged 15 therein. The cord is then given a quarter-turn twist so that it may be passed edgewise down through slot 13, and after being passed down through slot 13, it is twisted back again to occupy the rounded recess 14. The cord may extend at 20 an angle, such as at a right angle, to the connector as shown in full lines in Fig. 6, or it may extend in a direction parallel to the blades as indicated in dotted lines in Fig. 6, it then being positioned in groove 15 so it is substantially flush 25 with the outer surface of body 1. Preferably groove 15 is of a width such that the cord fits snugly therein.

Arrangements other than an eye 18 may be used for attaching a conductor end to the blade. In 30 Fig. 8, I have shown an arrangement wherein the contact blade 21 is provided with an ear 22 and a terminal screw 23 for use in attaching a conductor end to the blade, instead of the eye 18. Otherwise, the construction may be that of Figs. 35 1 to 7; and in Fig. 9, an arrangement wherein the contact blade 24 is provided with a projecting ear 25 which fits into a recess 26 in a ledge or shoulder 27 corresponding to ledge or shoulder 8 of Figs 1 to 7, the conductor end 28 being 40 clamped between ear 25 and the walls of recess 26 as clearly shown in Fig. 9.

By my invention, it will be seen that I provide a connector which comprises only a single piece body and two contact blades; a connector 45 which can be quickly and easily assembled on a cord end; a connector wherein a good strain relief is provided for the terminal connections; and a connector wherein the cord may extend either at an angle to the connector or in a line 50 parallel to the contact blades.

What I claim as new and desire to secure by Letters Patent of the United States is:

A plug connector for use with a flat two-conductor cord comprising a body of hard rigid 55 material having a longitudinally extending central recess and an open-ended keyhole slot cen-

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trally disposed in its side wall and communicating with said recess; a pair of transversely opposed, longitudinally extending grooves in the side walls of said recess, one pair of grooves being on each side of said slot; a pair of flat contact blades fixed to the body with one blade in each pair of grooves, said blades having their outer surfaces and their edges which are removed from said slot spaced from the adjacent walls of the recess by an amount not greater than the thickness of a single insulated conductor which is to be secured in said space; and means for attaching bared conductor ends to said blades at the outer sides of the blades, said means including shoulders formed in the body and extending inwardly from both end walls of said recess and reversely bent tongues lanced from said blades extending from the outer sides thereof and adapted to grip said bared conductor ends when said blades are forced into said grooves with said tongues resting on said shoulders; said keyhole slot having an entrance portion of a width not substantially greater than the narrow width of the cord and an enlarged bottom portion of a width substantially equal to the side width of the cord; whereby the said flat two conductor cord, after having its bared conductor ends attached to the blades on the outer sides, may have the separated single insulated conductor ends wedged into the spaces between the blades and the body and may have the joined conductor cord passed between the blades and thence edgewise through the entrance portion of said slot, and there be turned to occupy the enlarged bottom portion thereof.

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