

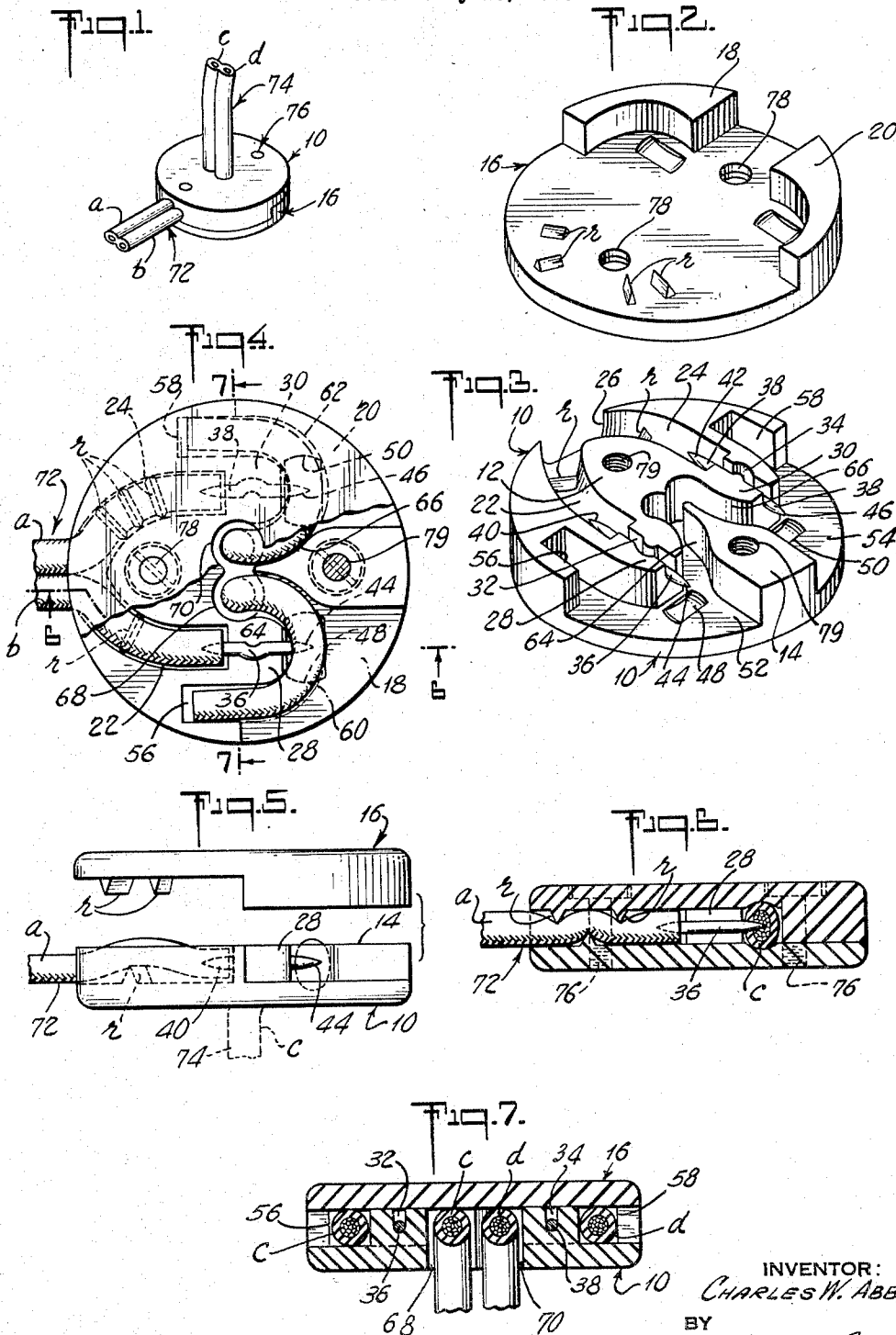
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CONNECTORS FOR LAMP CORDS

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CONNECTORS FOR LAMP CORDS

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5 Claims. (Cl. 339—99)

This invention relates to means for electrically connecting one pair of insulated electrical leads or conductors, or "cords," to another pair, and is directed particularly but not exclusively to means for connecting two conductors of a table or standing lamp, preferably within the lamp fixture, to another pair of conductors by which connection may be made to a source of electrical energy as by plugging into a house lighting circuit.

The conductors with which table and standing lamps are wired and which extend outwardly from within the lamp fixture are subject to a great deal of wear where they enter the base or other part of the lamp. This creates a dangerous situation for it is common knowledge that wearing off of the insulation from these conductors at the point where the conductors enter the lamp, have been responsible for many fires and for many accidents, frequently fatal to small children, which result from contact with the exposed conductors or with parts of the lamp charged by contact with the exposed conductors.

Heretofore there has been no satisfactory means of replacing the worn out portion of conductors, as for example where they enter lamp bases, except by entirely rewiring the lamp. The alternative of cutting away the conductors above the worn portions entering the lamp base, and cutting the insulation from the resulting ends of the conductors in the lamp base, and attempting to splice them to the bared ends of another pair of conductors within the space provided within the lamp base, is both unsatisfactory and dangerous for the space within the lamp base is usually far too small for effecting satisfactory or safe splicing involving soldering of spliced conductors and properly insulating the splices with rubber and friction tapes.

In addition to replacing dangerously worn conductors there are many other reasons and occasions for desiring to connect the conductors with which a lamp or similar article is wired to a separate pair of conductors. Thus it may be desired to replace the exposed portions of a pair of conductors with other conductors of a different color more harmonious with the color scheme of a room, or offering less color contrast and being therefore less noticeable; or with conductors of less or greater length. Whereas heretofore it was necessary to resort to soldered splicing and covering the splice with improvised patching with tape and the like, usually unsightly and often unsafe; or to have the lamp entirely rewired, frequently a difficult job due to the fact that switches or multiple socket connections are often assembled near the middle or the top of the lamp stem or standard. By the device disclosed herein the conductors with which the lamp is wired may be connected to another pair of conductors safely and easily, without baring of conductor ends soldering and taping them and without the use of any tools other than means for turning a small screw such as a small screw driver, a small knife, a nail file, or a coin.

The device disclosed herein provides a suitable, safe and easy to wire device which manufacturers may also usefully incorporate within electrically wired articles, as

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for example in the bases of new lamps thus terminating within the lamp fixture the conductors with which the lamp is wired and making it possible for the seller or purchaser to connect to those conductors other conductors of any desired color and length, to harmonize with the room decoration, and to reach the wall or other current outlets from the position desired for the lamp.

Accordingly it is an object of this invention to overcome deficiencies of the prior art and provide improved means for connecting the pair of conductors with which a lamp, or the like, is wired, to another pair of conductors, which are simple, practical and inexpensive.

Another object of the invention is to provide means by which the worn portions of conductors with which a lamp or the like is wired, may be replaced in a simple and quick operation.

Another object of the invention is to provide connection devices which are small, safe, and may be incorporated within an electrically wired object, as for example in a lamp base and provide a ready means for connecting the conductors with which the device is wired to other conductors.

Other objects of the invention will be in part obvious or in part pointed out hereinafter.

The invention accordingly consists in the features of construction, combinations of elements, arrangements of parts, and in the several steps and relation and order of each of said steps to one or more of the others thereof, all as will be pointed out in the following description, and the scope of the application of which will be indicated in the following claims.

The invention will best be understood if the following description is read in connection with the drawings, in which,

Figure 1 is a perspective view showing a form of connector device in its actual size;

Figure 2 is a perspective view on an enlarged scale of the inside of the lower portion or cover of the device;

Figure 3 is a perspective view on an enlarged scale of the body portion of the connector device;

Figure 4 is a plan view of the body member showing two pairs of conductor ends inserted and engaged therein in operative relation;

Figure 5 is a side elevational view showing in exploded relation the body and cover members covering the device;

Figure 6 is a side sectional view taken on the line 6—6 of Figure 4; and

Figure 7 is a vertical sectional view taken on the line 7—7 of Figure 4.

In Figures 1—7 my invention is shown embodied in a device permitting the conductors with which a lamp or the like is wired to be readily and safely connected to another pair of conductors. By my device this may be accomplished in a very small space, as for example, by connecting an extension cord to a lamp cord within a lamp base including those of very restricted area as in dressing table and boudoir lamps. In this art a pair of conductors are referred to as a cord, and this term is used herein broadly and is inclusive of both duplex cord and twisted pair cord, and the term "lamp cord" is not limited to wire used within lamps.

This embodiment shows a circular device of compact design comprising a body member 10 having portions of different thickness resulting in elevated portions 12 and 14 of its inner surface, and a cover member 16, also having portions of different thickness which are complementary to those of said body member 10, resulting in elevated portions 18 and 20 of the inner surface of said cover member.

In Figure 1 the device is shown in its actual size and in Figures 2—7 it is shown on an enlarged scale.

The body member 10 has in the elevated portion 12

of its inner surface, a pair of channels 22 and 24 which have the common peripheral entrance port 26 and then separate, first curving outwardly from one another and then proceeding in substantially parallel relation, terminating about half way across the body portion. Said channels are therefore discontinuous. The elevated portion 12 of the inner surface of the body member 10 constitutes approximately half of said surface and is a roughly semi-circular area from which narrow arms 28 and 30 project, in spaced parallel relation. The elevated area 14 of the inside surface of body member 10 is located diametrically opposite the space between said arms and extends from the periphery of member 10 radially inwardly part way into the space between said arms. The inner end of portion 14 is slimmed with curves corresponding to the curvature of the inside edges of arms 28 and 30. The channels 22 and 24 extend into the inner end of said arms 28 and 30 respectively, and said arms have slots 32 and 34 extending lengthwise through the remaining unslotted length thereof, in prolongation of said channels, and mounted in said arms, and extending through the said slot 32 and 34, are the conducting pin members 36 and 38. Said pins have the pointed ends 40 and 42 which project axially into the said channels 22 and 24 respectively from their inner ends, and also have the pointed ends 44 and 46 respectively which project from said arms 28 and 30, in a direction opposite to said pointed ends 40 and 42 respectively, and over the depressions 48 and 50 in inner surface of portions 52 and 54 of the body which are of lesser thickness.

Projecting into the elevated portion 12 of the body member 40, on the outside of arms 28 and 30 respectively, are the short channels 56 and 58.

The cover member 16 is provided with portions of different thicknesses complementary to those of body member 10. Portions 18 and 20, which are of greater thickness, cooperate with the inner face of portions 52 and 54 of member 10 to define two channels 60 and 62 within the assembly, curving around the inner ends of said channels 22 and 24 respectively. One of said curved channels comprises, a portion 64 extending between the inside edge of arm 28 and the similarly curved edge portion of elevated area 14, a portion extending around the end of arm 28 from which said pin point 44 projects, between it and the elevated portion 18 of the cover, and over depression 48, and the short channel 56. The other of said channels comprises a portion 66 extending between the inside edge of arm 30 and the similarly curved edge portion of elevated area 14, a portion extending around the end of arm 30 from which the pin point 46 projects, between it and the elevated portion 20 of the cover, and over depression 50, and the short channel 58. Communicating with said curved channels at the inner ends thereof are the passages 68 and 70 extending axially through said member 10 and at right angles to the inner surface of said member 10, their inner ends communicating with the inner ends of said curved channel portions 64 and 66 respectively.

Employing this embodiment of the invention the user separates the ends of the conductors *a* and *b* comprising one lamp cord 72 and places them in channels 22 and 24 in member 10 and pushes them, inwardly from entrance port 26, against the points 40 and 42 of pins 36 and 38 respectively, causing the pin points to penetrate well into the bundles of wires comprising the conductive cores of said conductors and make a good electrical connection with them. He heads the end of the other lamp cord 74 through the passages 68 and 70 from the outside of member 10 to the inside surface. He then separates the ends of the conductors *c* and *d* comprising said cord and places one conductor end in curved channel portion 64 and around the end of arm 28, over depression 48, and places the extreme end of the conductor in short channel 56. In so doing the conductor end is pressed against pin point 44 causing it to pierce through the in-

sulation covering of the conductor and penetrate into and through the bundle of wires comprising the conductor core.

Similarly he places the other of said conductor ends *c* and *d* in curved channel portion 66, and around the end of arm 30, over depression 50, and places the extreme end of the conductor in short channel 58. In so doing the conductor end is pressed against pin point 46 causing it to pierce through the insulation covering of the conductor and penetrate through the bundle of wires comprising the conductor core.

In the channels 22 and 24 respectively, cross ribs *r* are provided and on the inside face of cover member 16 two pair of similar ribs *r* are provided, in staggered relation to the ribs in said channels respectively, whereby the conductor ends inserted in said channels are engaged on opposite surfaces at spaced intervals and pressed into sinuous form when cover 16 is secured on the body portion 10, thereby frictionally engaging said ends in said channels with a grip preventing inadvertent disengagement of the conductor ends of cord 72 from said pin points 40 and 42 respectively.

The successive changes in direction of the conductor ends of cord 74, extending as they do through planes disposed at right angles to one another, and the fact that any pull on these ends is normal to the pin points 44 and 46 respectively by which they are respectively pierced, prevents inadvertent disengagement of the conductor ends from said pin points 44 and 46. The arrangement provides a highly desirable snubbing of the individual conductor ends locking them securely in position and causing the conductors to be drawn down on pin points 44 and 46 and to make a better fit and contact when subjected to a longitudinal pull.

The members 10 and 16 may be secured together, thereby firmly gripping the conductor ends in their respective channels, by screws 76 inserted through holes 78 in member 16 and engaged in the threaded holes 79 in member 10.

The depressions 48 and 50 in the inner surface portions 52 and 54 of member 10 serve to provide space for the circumferential expansion of conductors 74 in the portions thereof pierced and accordingly expanded by the conductive pin points 44 and 46 respectively. Similar concavities may be provided in the channels 22 and 24 to give expansion space for the ends of the conductors of cord 72 after they are pierced by the pin points 40 and 42 respectively.

By the means described above the conductors of cord 72 are effectively connected electrically to the respective conductors 74, in a simple operation requiring no tools other than a coin, knife blade, nail file or the like, to turn screws 74. The device is small, of pleasing appearance, and particularly adapted for interconnecting two wires extending at right angles, as for example, a cord or the like extending vertically through a lamp base and an extension cord extending at right angles to the lamp base.

It will thus be seen that there has been provided by this invention an article in which the various objects hereinabove set forth together with many thoroughly practical advantages are successfully achieved. As various possible embodiments might be made of the mechanical features of the above invention and as the art herein described might be varied in various parts, all without departing from the scope of the invention, it is to be understood that all matter hereinbefore set forth or shown in the accompanying drawing is to be interpreted as illustrative and not in a limiting sense.

What I claim is:

1. A device for electrically connecting two lamp cords which comprises two complementary members and means for securing said members together, one of said members being grooved in its inner surface with a first pair of channels to receive the ends of one of said lamp cords, and having a pair of passages projecting through

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it from its outer face to its inner face and communicating on its inner face respectively with grooves comprising a second pair of channels to receive the ends of another of said lamp cords, and a plurality of conductor pin means bridging the distance between said first and second pairs of channels respectively and each comprising a pointed portion projecting at right angles into one of said second pair of channels and adapted to pierce through the insulation covering of a conductor cord positioned in said channel and into contact with its conductor core, and another pointed portion projecting axially into the inner end of one of the channels comprising said first pair of channels, in alignment with the conductive core of one of the conductor cords comprising one of said lamp cords.

2. A device for making electrical connection within a lamp base or the like between the ends of two pairs of electrical conductors which comprises, a housing having a pair of channels extending inwardly from its periphery and terminating within said housing to receive the ends of a first pair of conductors, and a second pair of channels to receive the ends of a second pair of conductors, the channels of said second pair extending partly around the respective ends of the channels of said first pair, and conductor pins positioned to extend axially into the ends respectively of the conductors comprising said first pair of conductors and substantially diametrically through the side walls respectively of the conductors comprising said second pair of conductors.

3. A device for making electrical connection between the conductors with which an article is wired and another pair of conductors which comprises, a housing having a first pair of channels to receive the ends of a first pair of conductors, and a second pair of channels to receive the ends of a second pair of conductors, the channels of said first pair lying in a single plane and extending from the periphery of the device to points spaced apart within said housing, the channels of said second pair extending respectively partly around the inner ends of the first pair of channels, and conductor pins positioned to extend axially into the ends respectively of conductors within said first pair of channels and through the side walls respectively of conductors within said second pair of channels, the entrance through the housing to said second pair of channels being disposed at an angle of substantially 90° with respect to the entrance to said first pair of channels.

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4. A connector device for electrically connecting two duplex lamp cords which comprises a body member having one surface grooved with two pairs of channels to receive the ends of two pairs of conductor cords, the channels comprising the second pair of channels being substantially U-shaped and extending around the ends respectively of the channels comprising the first pair of channels, a pair of passages extending through said member from a surface opposite to said grooved surface and communicating with said U-shaped channels respectively, and a plurality of conductor pins supported on said body member, each pin extending between one of the channels of said first pair of channels and one of the channels comprising said second pair of channels and being disposed axially with respect to the channel it enters of said first pair of channels and normal with respect to the channel it enters of said second and U-shaped channels, a cover adapted to fit over the grooved surface of said body member, and means for securing said cover on said body member.

5. A device for electrically interconnecting the ends of two duplex lamp cords which comprises, a body having a first pair of cord receiving recesses extending in a single plane from the periphery of said body to points spaced apart therein respectively to receive the ends of the conductors comprising a first duplex lamp cord, a second pair of cord receiving recesses entering said body in a first plane and turning within the body into a plane substantially at right angles to said first plane and extending adjacent the inner ends of said first pair of recesses respectively to points spaced apart within said body to receive the ends of the conductors comprising a second duplex lamp cord, and pin means supported in said body and respectively bridging the space between the inner ends of said first pair of recesses respectively and adjacent portions of said second pair of recesses respectively.

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