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H. J. LYNCH

1,953,966

CONNECTER

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Fig. 1

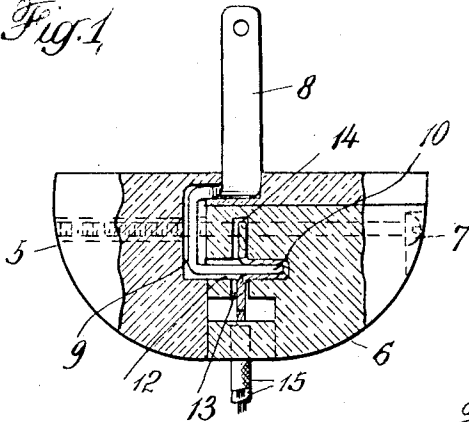


Fig. 2,

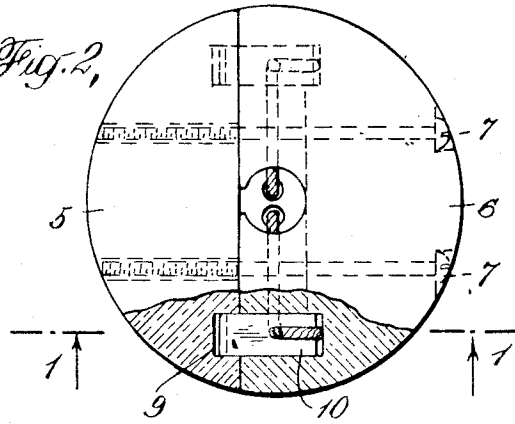


Fig. 3,

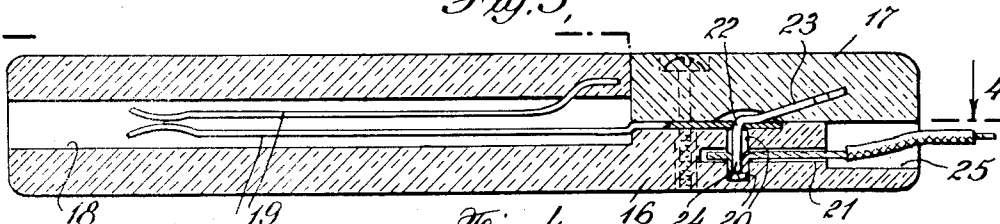


Fig. 4,

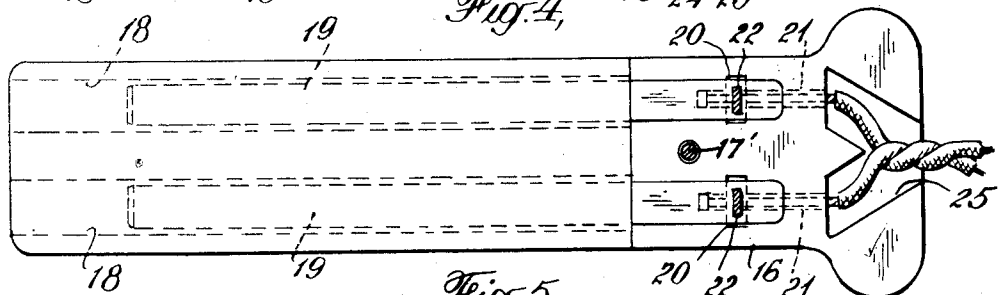


Fig. 5,

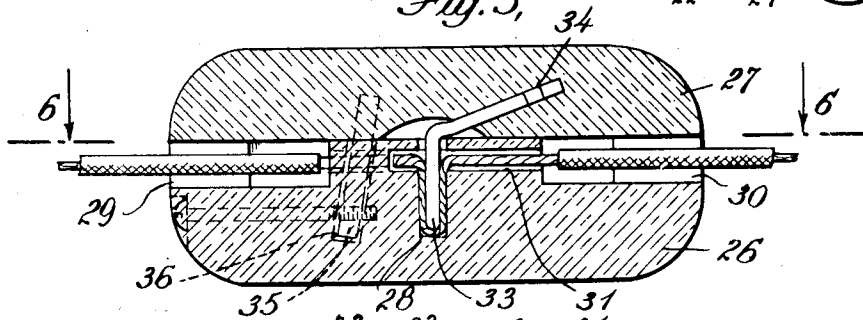
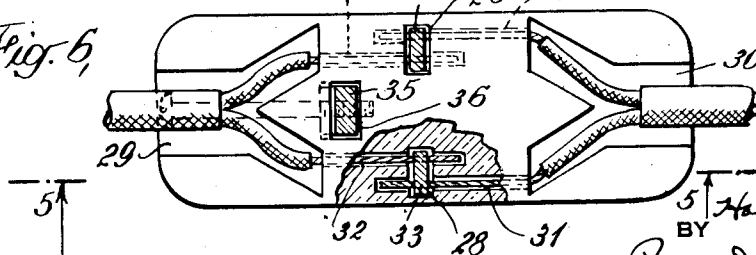


Fig. 6,



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CONNECTER

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8 Claims. (Cl. 173—324)

This invention relates to connectors, and more particularly to improved means for connecting electrical conductors.

In devices heretofore available affording connections between electrical conductors, it has been customary to provide screws or similar means with which the conductors are secured. Often the attachment of the conductors requires some dexterity or skill, and poor connections are frequently due to failure to properly secure the conductors. Short circuits may result from such poor connections, and destructive fires have been traced thereto.

It is the object of the invention to provide a simple and effective means for connecting wires, cables and the like.

A further object of the invention is to provide means for securely binding electrical conductors to afford the maximum conducting efficiency with assurance against failure due to the separation of the conductors.

The invention is applicable, for example, to many of the usual electrical connections, and may be embodied in various forms to facilitate application under different conditions. Among the uses are plugs adapted to co-operate with base-board or other outlets, appliance connectors such as those used with electric irons, percolators and the like, and connectors designed to permit the use of extension cords. Such applications are hereinafter more fully described, but they are merely illustrative of the invention.

In the general application of the invention, I provide a suitable body which in the case of electrical connections should be of insulating material, for example hard rubber or artificial resin, and form therein passages for conductors and for such other parts as are adapted to accomplish the purpose for which the particular device is designed. The body should be provided with a recess and with a co-operating part having means to engage the conductor or conductors which are introduced to the body so as to span the recess. The means on the co-operating part may be of metal or other suitable material, and is preferably resilient so as to force the conductor or conductors into the recess and by bending them afford sufficient grip thereon to prevent withdrawal even by the application of considerable force. Thus the connection is made by simply introducing the conductor or conductors and applying the co-operating part or compression member which may be held by any suitable catch or by a screw to firmly grip the conductor or conductors.

I have illustrated several modifications of the device in the accompanying drawing, in which

Fig. 1 is a sectional view of a plug adapted for use with ordinary outlets, taken on the line 1—1 of Fig. 2;

Fig. 2 is a plan view partly in section of the plug;

Fig. 3 is a longitudinal section through an appliance connector;

Fig. 4 is a section on the line 4—4 of Fig. 3;

Fig. 5 is a section through a connector for electrical conductors, taken on the line 5—5 of Fig. 6; and

Fig. 6 is a section on the line 6—6 of Fig. 5; with parts broken away.

Referring to the drawing (Figs. 1 and 2), the plug may comprise parts 5 and 6 of suitable insulating material shaped in any suitable form, the usual form being a dome. The two parts are adapted to be secured together in any suitable way for example by a screw 7 extending there-through.

In the part 5, I provide two prongs 8 which are adapted to enter co-operating recesses in the outlet (not shown). It will be understood that these prongs co-operate in the outlet with suitable contacts as is usual in such devices. The prongs 8 extend into a recess 9 in the part 5 and are bent to form projecting compression members 10. The compression members, because of their shape, are somewhat resilient, although they may be relatively stiff.

In the other part 6, I provide recesses 12 slightly larger in dimensions than the compression members 10, and I also provide passages 13 and 14 to receive the ends of conductors 15. When the conductors have been inserted and the parts 5 and 6 are brought together, the conductors will be forced into the recesses 12 by the compression members 10 and, being bent thereby, will be held firmly and cannot be withdrawn even by the application of considerable force. It will be understood that in the outlet plug, since there are two prongs 8 there will be two compression members 10 and corresponding recesses 12 to receive the separate conductors which form the ordinary electrical circuit. If the circuit includes more than two conductors, the device can be modified readily to afford connections for the additional conductors.

The connection as described depends upon the clamping action of the compression member which bends the conductor into the recess and locks it firmly. The form of the compression member and of the recess may be varied con-

siderably without departing from the invention, it being necessary merely that the conductor be bent in the recess so as to afford frictional resistance to strains tending to withdraw the conductor. Conductors employed in ordinary house circuits are usually stranded, and consequently the recess need not be very much larger than the compression member. It is not necessary, in any event, to have a relatively close fit, as the bending of the conductor assures sufficient frictional resistance. Obviously the relative proportions of the parts can be varied to permit application to conductors of various types and sizes.

The invention is similarly applicable to appliance connectors such as the device illustrated in Figs. 3 and 4, in which a body of insulating material, comprising parts 16 and 17 of any suitable form adapted to be secured together by a screw 17' or other fastening, is provided with longitudinal openings 18 enclosing spring contacts 19 which are adapted to co-operate with prongs on the appliance (not shown). The spring contacts 19 extend into recesses 20 and passages 21 are provided for the conductors so that the ends thereof may extend over the recesses. The part 17 of the body carries metallic members 22 having one end 23 embedded therein and forming compression members 24 which are adapted to co-operate with the recesses 20 and with the conductors which have been introduced through the passages 21. As in the preceding embodiment of the invention, the ends of the conductors are forced into the recesses 20 and are locked therein by bending and by the pressure exerted by the compression members 24. It will be understood that in the ordinary appliance connector two conductors are employed, and that accordingly the device will be provided with two recesses 20 and corresponding compression members 24, so that the two conductors which are introduced through an opening 25 at one end of the connector may be firmly secured therein, thus establishing electrical connection with the corresponding spring contacts 19.

In Figs. 5 and 6, I have illustrated a device which is intended primarily to afford connections between conductors as for example in the application of extension cords. The device comprises two parts 26 and 27 of suitable insulating material. The part 26 is provided with recesses 28 and openings 29 and 30 at opposite ends to facilitate introduction of the conductors. Passages 31 and 32 are provided for the conductors so that they are carried through the recesses 28.

The part 27 carries compression members 33, the ends 34 of which are embedded in the part 27, the compression members being adapted to co-operate with the recesses 28 and to force the conductors into the recesses, bending them and thereby holding the conductors in assembled relation. The circuits are, therefore, completed through the compression members 33, and the conductors are firmly held. The two parts 26 and 27 may be held in assembled relation by latches 35 supported on the parts 27, which may engage suitable recesses 36 in the part 26. Obviously screws or other fastening means may be employed.

The various forms of the device as herein described are illustrative of convenient applications of the connector. They permit electrical connections to be established in a simple and convenient way and without the difficulty commonly experienced with devices now in use requiring

manipulation of small screws and the connection of conductors to such screws.

While the device is designed primarily for use in establishing electrical connections, it may be employed also in connecting wires or cables for non-electrical uses. In the latter case, the body of the device may be made of metal or other material, as insulation is not required. The device may be used, for example, in connecting fence wires or cables.

Various changes may be made in the proportions, the materials employed and in the general arrangement of the parts, without departing from the invention or sacrificing any of the advantages thereof.

I claim:

1. In a device of the character described, the combination of a body member having a bore extending at least partway therethrough for receiving the end of a wire and a recess crossing said bore between its ends; with a cooperating body member adapted to be clamped to the first body member and a projection on said cooperating body adapted to enter the recess in the first body member and press into the bottom part of the recess a wire in the bore and extending beyond the recess.

2. In a device of the character described, the combination of a body member having a bore extending at least partway therethrough for receiving the end of a wire and a recess crossing said bore between its ends; with a cooperating body member adapted to be clamped to the first body member and a metal projection on said cooperating body adapted to enter the recess in the first body member and press into the bottom part of the recess a wire in the bore and extending beyond the recess, said projection forming an electrical connection to said wire.

3. In a device of the character described the combination of a body member having a bore extending at least partway therethrough for receiving the end of a wire and a recess crossing said bore between its ends; with a cooperating body member adapted to be clamped to the first body member, a projection on said cooperating body member adapted to enter the recess in the first body member and press into the bottom part of the recess a wire in the bore and extending beyond the recess, said projection forming an electrical connection to said wire and an electrical contact member attached to said metal projection.

4. In a device of the character described, the combination of a body member having a pair of substantially parallel bores each extending at least partway therethrough and each receiving the end of a wire and a recess crossing both of said bores between their ends; with a cooperating body member adapted to be clamped to the first body member and a projection on said cooperating member adapted to enter the recess in the first body and press into the bottom part of the recess the wires in the bores extending beyond the recess.

5. In a device of the character described, the combination of a body member of insulating material having a pair of substantially parallel bores each extending at least partway there-through and each adapted to receive the end of a wire, and a recess crossing both of said bores between their ends; with a cooperating body member adapted to be clamped to the first body member and having a metal projection adapted to enter the recess in the first

body and press into the bottom part of the recess, wires which extend into the bores beyond the recess, said projection acting as an electrical connection between the wires.

5 6. A device as described in claim 5 in which the parallel bores enter the body member from opposite directions.

10 7. In a device of the character described, the combination of a body member having a bore extending at least partway therethrough adapted to receive the end of a wire and a recess crossing said bore between its ends; with a cooperating body member adapted to be clamped to the first body member and having a resilient
15 metal projection adapted to enter the recess in the first body member and press into the bottom part of the recess a wire extending into the bore beyond the recess, said projection forming an electrical connection to said wire.
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8. In a device of the character described, the combination of a body member having a bore extending at least part way therethrough for receiving the end of a wire and a recess intersecting said bore between its ends, a cooperating
80 body member, means for holding the body members together, a member adapted to enter the recess in the first mentioned body member and press a wire in the bore thereof and extending beyond the recess into the bottom of the
85 recess when the cooperating body members are assembled, said member being held in its wire engaging position by the second mentioned body member when the body members are held together by the holding means.
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