

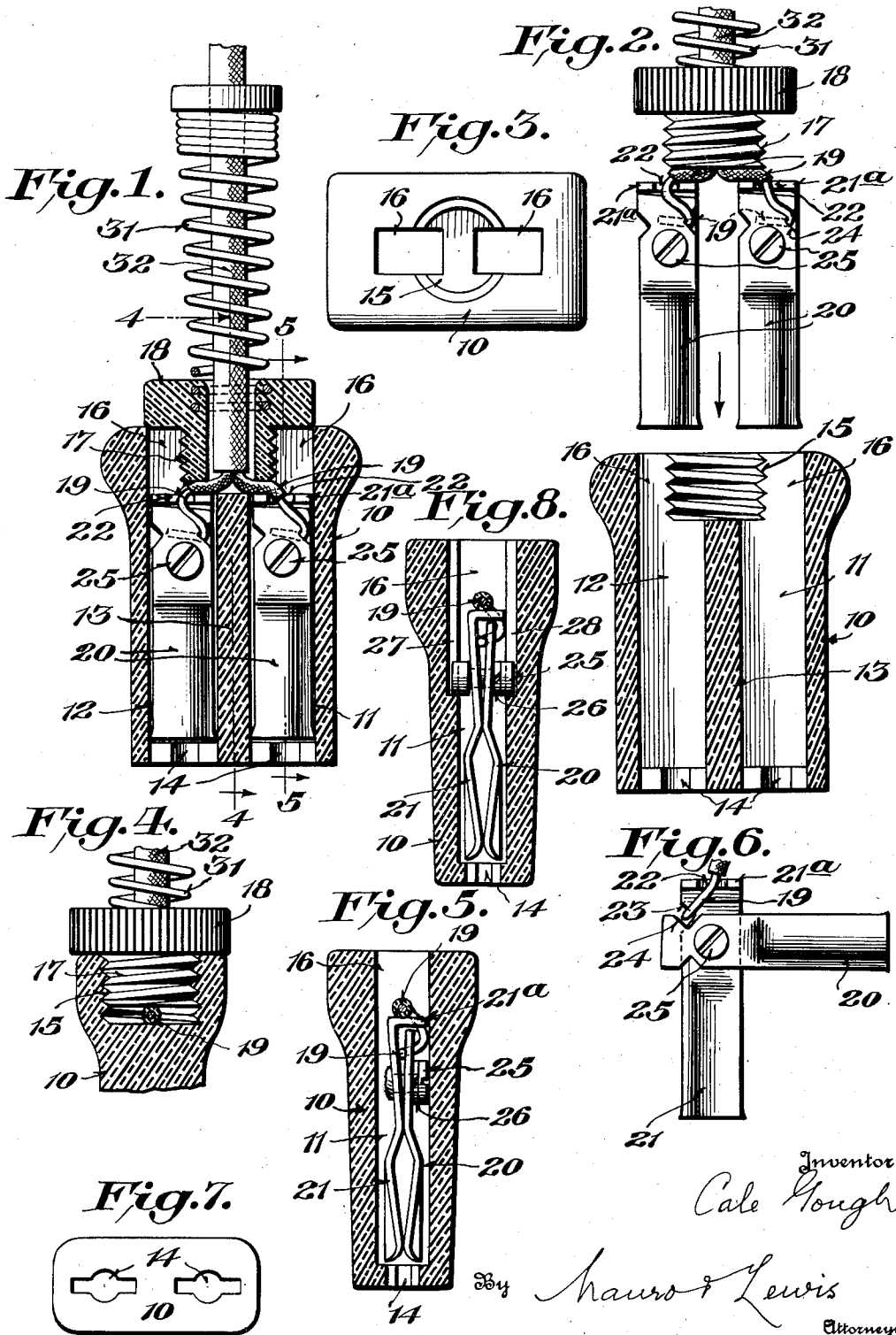
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ELECTRICAL CONNECTER

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UNITED STATES PATENT OFFICE

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ELECTRICAL CONNECTER

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This invention relates to an electrical connector plug.

Its main object is the production of a simplified construction such as to provide for the expeditious insertion of the line terminals into the enclosing insulating casing and for the expeditious removal of said terminals for repairs, replacement, or other purposes; also to provide for such insertion, removal, or replacement of the terminals without the use of a tool.

A further object is to provide a line terminal of such construction that the end of a line conductor may be attached or fastened thereto in a simple and effective way and without the use of a tool.

Still other objects realized by the present invention will be apparent from the following detailed description in connection with the accompanying drawing which illustrates what is regarded as the preferred embodiment of said invention.

In said drawing:—

Fig. 1 is a view in longitudinal section of a connector plug constructed according to the present invention;

Fig. 2 is a similar view, the closure member or screw plug and terminals being shown detached and separated from the main body portion;

Fig. 3 is a top-end view of the body portion;

Figs. 4 and 5 are longitudinal sections on lines 4—4 and 5—5 (Fig. 1) respectively;

Fig. 6 is a detail of a line terminal showing the members thereof spread apart;

Fig. 7 is a bottom-end view of the plug body; and

Fig. 8 is a view similar to Fig. 5 showing a modified construction.

The main body portion or member 10 of the connector plug is formed preferably of one piece of suitable insulating material, bakelite for example. It has two parallel chambers or spaces 11, 12 (Fig. 2) for housing the line terminals 20. These chambers or housings are separated by a partition 13, integral with the body 10, and each chamber has an opening 14 at its lower end of the usual form (see Fig. 7) for admission of the

complementary prong terminals of the appliance to be supplied with current, such as an electric flat iron.

The chambers or spaces 11, 12 at their upper ends lead into a common chamber comprising a circular middle portion 15, interiorly screw-threaded as shown, and two diametrically opposite extensions 16 which are in line with and constitute continuations of chambers 11, 12 respectively. The continuity of the screw threads is, of course, interrupted at these lateral extensions.

Cooperating with the threaded opening 15 is a correspondingly threaded closing and retaining plug or member 17 of suitable insulating material having a head 18 preferably of a diameter large enough to cover and completely close the chamber 15 and its extensions 16, when the plug is screwed in place (Figs. 1 and 4). Said plug is perforated axially to form a passage way for the cord which contains conductors 19, 19. The roughened peripheral surface of head 18 is gripped for screwing the plug 17 into and out of position within the chamber 15.

The usual helical coil of wire 31 surrounds and supports the portion of the conductor cord 32 adjacent to the plug, one end of said coil being embedded in and thereby secured to head 18 of plug 17.

Each of the terminals housed in the body 10 of the connector plug consists of a pair of spring blades 20, 21 formed from sheet metal and attached together near one end by means of a pivot stud 25 upon which the blades can be turned relatively to each other, permitting a movement like that of a pair of scissors. A spring member or washer 26 (Fig. 5) around the pivot stud 25, between the head thereof and the blade 20, yieldingly presses the blades 20 and 21 together. The blade 21 is bent over at its short end to form an overhanging extension 21a which overlies the short end of the other blade 20, and prevents a conductor gripped between the blades from being pulled out by movement endwise of the blades. The blade 20 may be turned on pivot stud 25 to a position on the right of blade 21, as shown in Fig. 6, but blade 20 cannot be turned to the left of blade 21, this

being prevented by the end edge of the short end of blade 20 binding against the overlying flange 21a. In other words, the angle of the edge across the short end of blade 20 is such that said edge clears the flange in turning the blades to their relative positions shown in Fig. 6, but prevents turning in the reverse direction. With the blades opened to the relative position shown in Fig. 6, the bared end of a conductor 19 is led through a notch 22 in flange 21a, across the flat face of blade 21 and through notches 23 and 24 in the side edges of said blades 20 and 21, respectively, as shown in Fig. 6. The right hand end of blade 20 in Fig. 6 is then turned down, bringing the blades into parallelism with the bared end of conductor 19 tightly clamped between the opposing flat faces of the blades 20 and 21, as shown in Figs. 1, 2 and 5.

When each of the two conductors 19 is attached in this way to its proper terminal, the removable elements of the device—comprising the closure member or plug 17, conductors 19, and the terminal at the end of each conductor—can be placed in operative position within the plug body 10 by simply introducing the terminals into their respective chambers and screwing closure plug 17 into the threaded socket 15, thus confining each terminal between said closure plug 17, at one end, and the shoulder at opposite sides of the opening 14, at its other end. Said removable elements can be withdrawn as a unit from the body of the connector plug by the reverse operation of simply unscrewing closure member 17, thereby giving access to the terminals for repairs or replacement. This operation consumes a minimum of time, and moreover (this being a matter of practical importance) it does not require the use of any tool.

Furthermore, when the movable parts have been removed, each terminal can be instantly, and without the aid of any tool, detached from its conductor, by spreading the blades apart to the position shown in Fig. 6.

In the modified construction shown in Fig. 8, heads at both ends of the pivot stud 25, which joins the blades 20 and 21, engage in grooves 27 and 28 and bear against shoulders at the inner ends thereof respectively, said grooves being oppositely positioned in the side walls of chamber 11 and its extension 16. In this manner each line terminal is suspended with its end which is to receive a prong terminal clear of the shoulder at opposite sides of the opening 14.

It will be seen that the complete insulating enclosure wherein the line terminals are housed consists of just two parts, the body 10 and the closure member (the latter comprising plug 17 and its head 18), said two parts being coupled by a screw-thread joint so that connection and disconnection can be quickly made without withdrawing any bolts

and without the use of a tool. Further it will be seen that the said closure member serves as a carrier for the line terminals, the construction being such as to admit of the insertion and the withdrawal of both terminals simultaneously.

While it is preferable to use for the connector plug a body portion molded or otherwise formed as a single piece, said body portion may be made of a plurality of parts secured together and not required to be separated for insertion and removal of the terminals. In other words, the important thing is that said body portion should function as one piece, having no detachable part other than the closure plug, so that for removal of the terminals there is but a single operation, and that an operation which requires no tool.

What is claimed as new is:

1. In an electrical connector a terminal consisting of a pair of spring blades united by a pivot permitting said blades to move relatively to each other in the manner of scissors blades in clamping a conductor between opposing surfaces thereof.

2. An electrical connector comprising a one-piece body member of insulating material divided by a partition integral with said body into two parallel terminal housings having each an opening at one end and communicating at the other end with a common chamber in said body member having a screw-threaded opening; a threaded closure plug for engagement with said threaded opening; conductors passing through said plug; and terminals for said conductors and positioned in said terminal housings respectively, said conductors and terminals being removable with said plug when the latter is unscrewed.

3. In an electrical connector, the combination with a conductor of a detachable terminal therefor comprising a pair of blades, a pivot pin connecting said blades while permitting same to move relatively to each other after the manner of a pair of scissors, said parts constituting a releasable clamp for holding a conductor tightly gripped between opposing side surfaces of said blades.

4. A terminal for an electric conductor comprising a pair of blades pivoted together and capable of opening and closing similarly to a pair of scissors, said blades in their closed position forming between them at one end a socket for insertion of a complementary terminal, and forming between them at the other end a clamp for gripping a wire conductor.

5. A terminal for an electric conductor comprising a pair of blades pivoted together and capable of opening and closing similarly to a pair of scissors, said blades in their closed position forming between them at one end a clamp for gripping a wire conductor

between opposing side surfaces of said blades.

6. A terminal for an electric conductor comprising a pair of spring metal blades
5 pivoted together and capable of opening and closing similarly to a pair of scissors, said blades in their closed position forming between them an expansible socket for insertion of a complementary terminal, and forming
10 ing at their other ends a clamp for gripping a wire conductor.

7. An electrical connector of the plug type comprising a body member having a chamber for housing a line terminal and an opening
15 ing at one end leading into said chamber for insertion of a complementary plug terminal, said chamber having shoulders in the side walls thereof; and a line terminal consisting of blades pivoted together, the pivot being
20 ing extended sufficiently at opposite ends to engage said shoulders when said terminal is in place in its chamber.

In testimony whereof I have signed this specification.

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