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SEPARABLE ELECTRIC CONNECTER

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Fig. 2

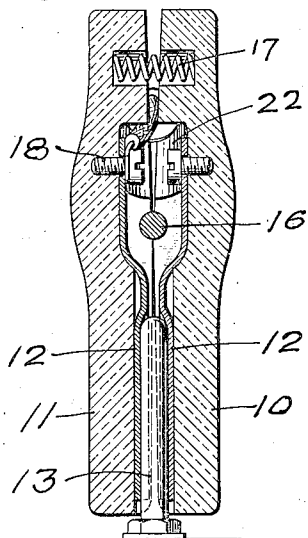


Fig. 1

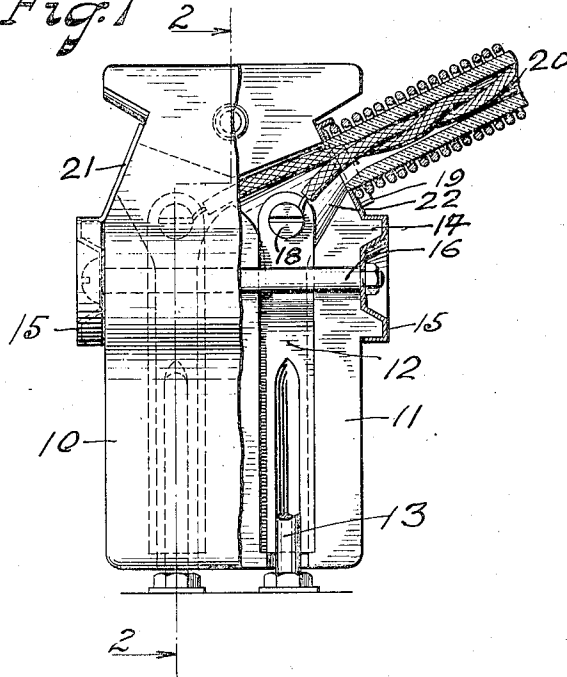
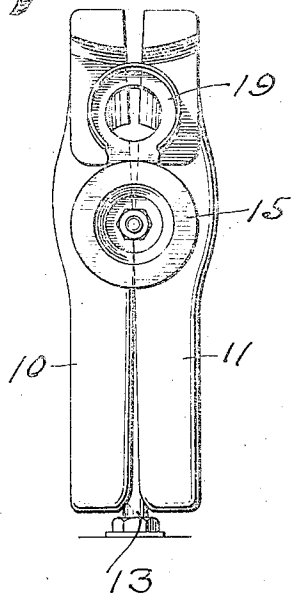


Fig. 3



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SEPARABLE ELECTRIC CONNECTER

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3 Claims. (Cl. 173—332)

The present invention relates to separable electric connectors constituted of a socket member and a plug member, so constructed and adapted that when the members are interengaged in the manner provided, a through path for the electrical current is established, and is maintained so long as the engagement of the members endures. The invention has particular application to separable connectors such as are generally employed in the circuit for conducting an electric current to the resistance element of a domestic hand or smoothing iron, used as a household laundry accessory or appliance.

The socket member is composed of two parts or sections pivoted upon each other at a point intermediate their ends, and urged toward each other by the action of a spring. Each of the said parts supports concealed terminal members, which are opposed to like terminal members in the other part. The opposed and concealed terminals in the assembly are in circuit with the source of electricity at all times, but out of the range of contact with any but the specially designed and arranged prongs in the contact with which the through path for the electrical current is established.

The plug member of a smoothing iron, for example, is composed of exposed prongs designed and adapted for entry into the socket member, to engage the concealed circuit terminals arranged therein, and transmit the current to the functioning elements to which the plug member is attached, which elements are impotent in the absence of a connection in the manner described.

The invention resides in a socket member composed of two pivoted parts or sections of novel arrangement provided with opposed contact terminals, which latter normally engage the prongs of the plug member with a degree of spring induced pressure sufficient to establish a good electrical contact, but which will yield and permit separation of the parts or sections of the socket member whenever the socket member is subjected to a longitudinally exerted pull. In this manner, the usual strain upon the conducting wires at the points of their attachment to the binding posts is eliminated, and such attachment is permitted to persist undisturbed.

The strain, with the attendant forcible disruption of the connections, usually follows the frequent dropping of the smoothing iron from the ironing board. But any such disruption or tendency to damage the connections is obviated in the use of the present invention, by the provision of the yielding, frictional engagement at the points of contact in the socket member, and the easy separation of the parts or sections of the socket member, which takes place whenever the connections are subjected to such a strain.

The construction of the socket member is such

that the flexible cord connection to one end of which the socket member is attached, may be lead in at one side of the socket member, instead of at the rear, as usual. This arrangement is advantageous, inasmuch as the cord connection operates at one side and is clear of interference with the hand of the user of the smoothing iron.

The structural features of the invention will now be specifically described, and the novelty residing in the same will be pointed out in the appended claims.

In the accompanying drawing:

Figure 1 is a view in elevation, partly broken away, showing the general assembly of my improved connector;

Fig. 2 is a vertical sectional view, on the irregular line 2—2, Fig. 1, showing the construction and arrangement of certain of the elements; and

Fig. 3 is a view in elevation looking from the right of Fig. 1, the cord connection shown in Fig. 1 being omitted.

In the drawing, the numerals 10 and 11 indicate two clamping parts or sections, molded from suitable insulating material, and which when pivoted together constitute the socket member or body of my improved connector. The said parts or sections are provided on their inner faces with hollowed out parallel portions in which are secured current terminals 12, of which latter two oppositely arranged ones in the assembly, are adapted to receive between them prongs 13 of the plug member of the connector. The parts or sections 10 and 11 are both provided on their opposite edges with two arcuate embossments 14, which when the parts or sections 10 and 11 are assembled, form ribs of annular form, but broken transversely by a narrow intervening space, separating the pivoted parts or sections. The said annular ribs are encircled by pressed metal caps 15, cup-shaped to conform to the ribs. The caps 15 are shown as provided with concentric depressed portions in the bottoms, which latter depressed portions are entered in the openings of the annular ribs, and are perforated centrally for the reception of a bolt 16, by means of which the caps are held in place, and the members 10 and 11 maintained in their position of assembly.

The bolt 16 forms an axis about which the parts or sections 10 and 11 may have a slight movement of rotation, the said circular ribs forming the journals for the said parts or sections. It is preferable that the countersunk construction in the caps 15 be employed, in order that the head and nut of the bolt 16 may lie below the surface of the parts.

At their upper ends, the parts or sections 10 and 11 are oppositely recessed in their meeting faces. An expansion spring 17 is confined and con-

cealed in the said recesses, and acts at all times to turn the pivoted parts or sections 10 and 11 on the pivot bolt 16, to bring the opposed lower faces of the said parts or sections into engagement with each other. At the same time, the said spring 17 acts to separate slightly the upper ends of the parts or sections 10 and 11, as shown in Figs. 2 and 3.

The terminals 12 are perforated at their upper ends, some distance above the pivot bolt 16, and threaded for the reception of binding screws 18. Although each such terminals will be provided with such a threaded perforations, it will be understood that only two binding screws 18 will be employed in the connector, such screws being entered in the perforations in the pair of terminals contained in one or the other of the parts or sections 10 or 11. In that arrangement, the two binding screws will be side by side in one of the parts or sections. However, the two screws may be staggered, one in each of the parts or sections 10 and 11, but never opposite each other, for obvious reasons.

The lower parts of the terminals 12 should be channeled longitudinally as shown in Fig. 1, so as to give a greater area of surface contact with the prongs 13.

One cap 15 may be provided with a radial extension 19 having a central perforation through which the insulated connecting wires 20 will be lead, the respective wires being connected to the terminals 12 by the binding screws 18, as shown in Fig. 1. The opposite cap 15 may be provided with a plain extension 21 which will partly overlie the space separating the upper ends of the parts or sections 10 and 11 at the opposite edges of the latter.

I have found it advantageous to lead in the cord connection 20 from the edge of the connector instead of from the top of the same, as is usual, inasmuch as the cord connector when so disposed is free from interference with the hand of the person operating the smoothing iron. This arrangement conduces to convenient operation. To permit the cord connection to be thus lead in to the terminals of the connector, I provide suitable channels 22 in the opposed faces of the parts or sections 10 and 11.

The prongs 13 of the plug member are connected to the resistance heating element of the smoothing iron, and when entered into the socket member to engage the terminals 12, will complete the circuit between the heating element and the source of current supply. The engagement of the prongs 13 of the plug member with the terminals 12 of the socket, is a yielding one, due to the resiliency of the spring 17. The latter has sufficient force to maintain a good electrical contact with the terminals, but yet permits a ready separation of the prongs from the terminals whenever a strain is placed upon the cord connection 20, as often occurs when the smoothing iron falls from the ironing table. Heretofore, the strain upon the cord connection under such circumstances has acted disastrously upon the attachment of the current wires with the binding screws 18, straining the latter and often disrupting them. The easily separable connection which I have devised eliminates all of these troubles, and no disarrangement of the fixed connections takes place. The spring 17 may be compressed by grasping the

upper ends of the hinged members 10 and 11 between the thumb and fingers, so as to separate the lower ends of the said members, to facilitate the engagement of the terminals 12 with the prongs 13, or withdrawing them, without overcoming friction, in case it is desired to do so. By making the parts or sections 10 and 11 of the connecting member of insulating material, and concealing the spring and terminals therein, the upper part of the connector, that is, that part of the connector above the pivotal point, does not expose any metal, and it may therefore be grasped by the hand of the operator without contacting with any metal part. This is an additional safety provision.

The upper inner plane faces of the parts or sections 10 and 11, are sloped or diverged from the pivotal point, as will be seen from Figs. 2 and 3. This permits the said parts or sections to be rocked upon their pivotal point, to separate the lower inner plane faces of the said parts or sections. The latter are normally held in parallel relation by the action of the spring.

Having thus described my invention, what I claim and desire to secure by Letters Patent of the United States, is:

1. An electric connector having a socket member comprised of two insulating sections provided with opposed faces having terminals therein and further provided with arcuate embossments on their opposite edges, circular caps enclosing the said embossments to constitute a hinge, and a spring serving to press the terminals into engagement with the prongs of a plug.

2. As an article of manufacture, an electrical connector having a socket member comprising two parts or sections of insulated material, means pivotally connecting said sections for rocking movement at a point intermediate their ends, said sections supporting in their lower faces opposed terminals adapted to receive between them the prongs of a plug member, the upper inner faces of the said two parts or sections being sloped away from the pivotal point, and a spring for acting normally to urge the said lower faces toward each other to engage the terminals with the said prongs, the terminals and spring being concealed, whereby the spring may be reversely actuated to separate the terminals by the hand of the operator engaging the insulated parts or sections of the connector.

3. An electrical connector comprising a pair of molded insulating members of identical shape and dimensions, said members having like complementary recesses formed therein, a pair of stamped metal combined contact and wiring terminal members located within said complementary recesses in said insulating members, each of said pair of members having a plurality of contact portions forming a tubular socket contractible under pressure of said insulating members, and means associated with said insulating members for causing them to exert pressure on the contact portions of said pair of members and for permitting said insulating members to yield upon spreading of said contact portions, said means comprising a pair of spaced metal members each of which engages both of said insulating members externally of the latter to retain them in assembled relation.

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