Oct. 19, 1926. 1,603,681

W. J. GAGNON

ELECTRICAL CONNECTER

Original Filed Feb. 29, 1924

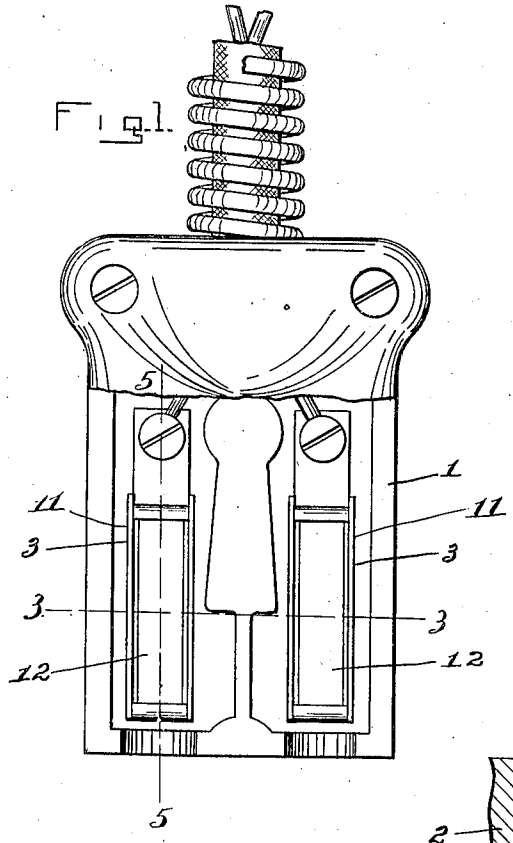


Fig. 1.

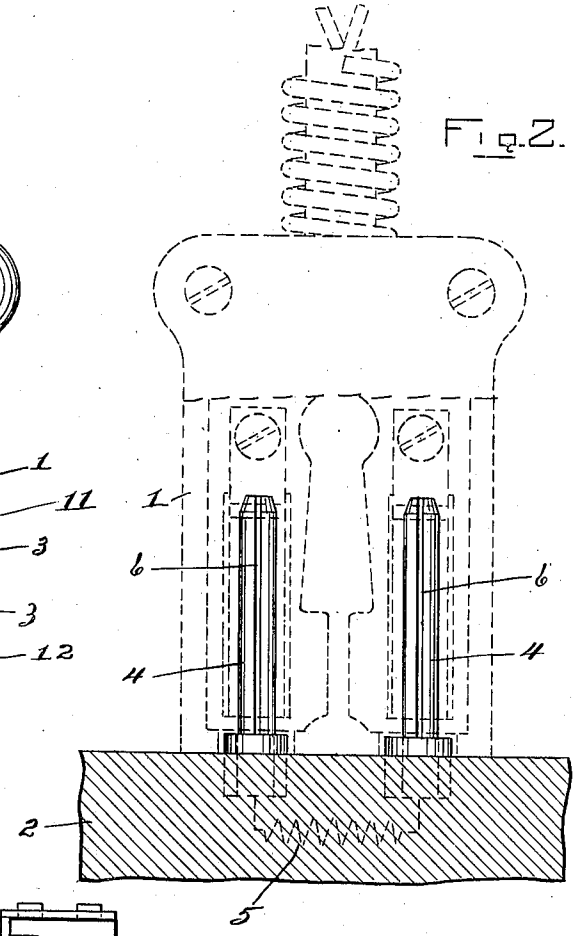


Fig. 2.

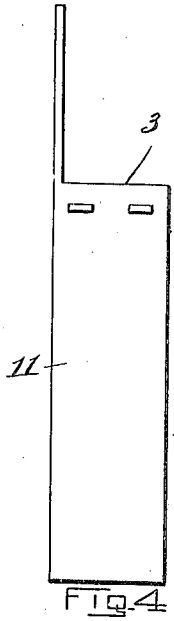


Fig. 4.

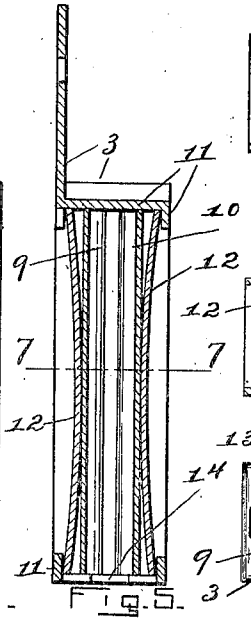


Fig. 5.

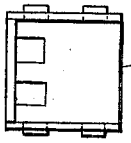


Fig. 6.

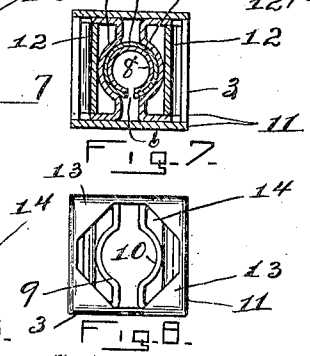


Fig. 7.

Fig. 8.

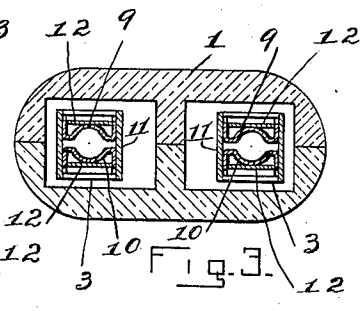


Fig. 3.

Inventor:
William J. Gagnon.
By
Frank C. Curtis
Attorney

Patented Oct. 19, 1926. 1,603,681

UNITED STATES PATENT OFFICE.

WILLIAM J. GAGNON, OF BRIDGEPORT, CONNECTICUT, ASSIGNOR TO THE BEAD CHAIN MANUFACTURING COMPANY, OF BRIDGEPORT, CONNECTICUT, A CORPORATION OF CONNECTICUT.

ELECTRICAL CONNECTER.

Original application filed February 29, 1924, Serial No. 695,972. Divided and this application filed October 9, 1925. Serial No. 61,460.

Reference may be had to the accompanying drawings, and the reference characters marked thereon, which form a part of this specification. Similar characters refer to similar parts in the several figures therein.

This application is a division of an application filed by me February 29, 1924, Serial No. 695,972, for electrical connecters.

The principal object of the invention is to obtain a more effective engagement between the cooperating contact portions of the connecter.

Other objects will appear in connection with the following description.

Fig. 1 of the drawings is a view in side elevation of a socket-member of an electrical connecter with the housing partly broken-away to expose to view the two sockets which are made in accordance with my invention.

Fig. 2 is a vertical cross-section of a broken-away portion of the plug-member of the connecter, showing in side elevation the two plugs, and illustrating diagrammatically a resistance included in the circuit between the plugs.

Fig. 3 is a horizontal section of the socket-member taken on the broken line 3—3 in Fig. 1.

Fig. 4 is a view in side elevation on an enlarged scale of one of the sockets as shown in Fig. 1.

Fig. 5 is a vertical section taken through one of the sockets on the broken line 5—5 in Fig. 1.

Fig. 6 is a top plan view of one of the sockets.

Fig. 7 is a horizontal section taken on the broken line 7—7 in Fig. 5, through one of the contact-plugs and the plug-enclosing socket.

Fig. 8 is a bottom plan view of the same.

Referring to the drawings wherein the invention is shown in preferred form, I have shown the socket-member, 1, provided with two sockets, 3, and the plug-member, 2, provided with two plugs, 4, although my invention is equally applicable to a single socket, 3, and a single plug, 4.

In the drawings I have shown the invention applied to an electrical connecter used for ordinary household devices such as toasters, coffee percolators, electric flat-irons and the like, in which case a plurality of contact-sockets and plugs are employed, the plug-member, 2, being the device to be heated by means of a resistance, 5, included in the circuit between the plugs, 4.

I preferably make the plug in the form of a hollow post, split longitudinally along one side as shown at 6; and form the wall of the plug of two metals, 7 and 8, of split cylindrical form welded or otherwise secured together, the inner member, 8, having a higher coefficient of expansion than the outer member, 7, whereby under the action of heat the post tends to expand or increase in diameter. The plug may be made solid if preferred.

Each socket, 3, includes a contact-socket formed of two complementary members, 9 and 10, enclosed within a metal cage, 11, between two metal plates, 12, which are confined endwise between the opposite ends of the cage and are bent or curved inwardly to engage the respective contact-socket members, said bent plates having a higher coefficient of expansion than the metal of which the sides of the cage are formed which connect together the confining ends of the cage.

Under the influence of heat, the plates, 12, tend to elongate; and as the elongation is prevented or limited by the top and bottom of the cage with which the ends of the plates are in engagement, the plates tend to curve inwardly to a greater extent, thereby forcing the contact-socket-members, 9 and 10, toward each other and thus toward a contact-plug which may be inserted in the socket.

The bottom, 13, of the cage is formed with an opening, 14, adapted to freely admit a contact-plug for engagement with the compressible contact-socket.

For certain purposes of the invention the contact-socket may be made compressible in any known manner.

The operation of the device is as follows:

A contact-plug, 4, is inserted through the bottom opening, 14, in the cage into engagement with the cage-enclosed contact-socket which is made to substantially fit the plug with the socket of normal diameter.

When the electric current is transmitted between the contact-socket and the inserted plug, if the plug does not fit sufficiently tightly within the contact-socket, the plug and the socket, including the plates, 12, be-

come heated, causing the plug to tend to expand and the confined bent plates, 12, to tend to expand and bend inwardly to a greater degree and thus to compress the contact-socket into tighter engagement with the inserted plug.

Any looseness in the fitting of the plug within the contact-socket is thus automatically corrected in the operation of the device.

In the use of electrical connecters of the type to which this invention is particularly applicable, there is a tendency for the resilient and tempered parts to become annealed under the action of great heat developed in the use of the electrically heated device to which the electric current is supplied through the connecter, resulting in loose contacts and resultant arcing between contact-surfaces which should be in close contact with each other.

My invention tends to overcome this difficulty by automatically increasing the pressure between contacting surfaces as the temperature of the connecter parts increases.

I do not wish to be limited to the constructions shown and above described, as, for certain purposes of the invention, various changes may be made in the form and arrangement of various parts of the device without departing from the spirit of the invention.

It will also be understood that claims to patentable features of the connector illustrated, broader than those appended hereto, are not waived. Such generic claims are presented in the aforesaid original application Serial Number 695,972, and one or more of the other divisional cases thereof heretofore filed.

What I claim as new and desire to secure by Letters Patent is—

1. A connecter for electrical conductors including a compressible contact-socket, a socket-compressing member having a relatively high coefficient of expansion, and an intermediate portion bent to engage said contact-socket, said member being confined at its ends by members connected together by means having a lower coefficient of expansion.

2. A connecter for electrical conductors including a contact-socket formed of two complementary members movable toward and from each other, a contact-socket-enclosing cage provided with a plug opening, and a pair of socket-compressing plates confined endwise between the ends of the cage, said plates having a higher coefficient of expansion than the sides of the cage and having their intermediate portions bent to engage the respective contact-socket members.

In testimony whereof, I have hereunto set my hand this 28th day of September, 1925.

WILLIAM J. GAGNON.