E. J. OVINGTON.
ELECTRICAL CONNECTOR.
APPLICATION FILED DEC. 12, 1913.

1,220,780. Patented Mar. 27, 1917.

Fig. 1.

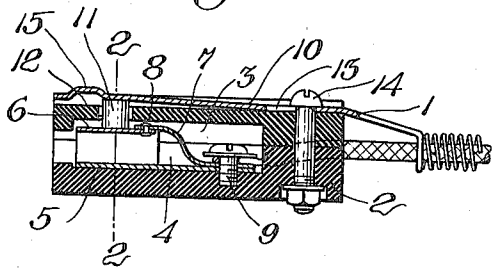


Fig. 2.

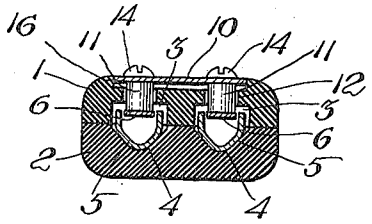


Fig. 3.

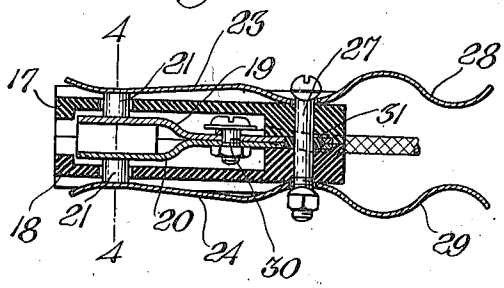


Fig. 4.

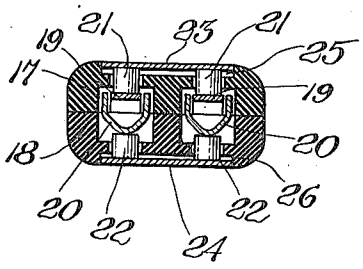


Fig. 5.

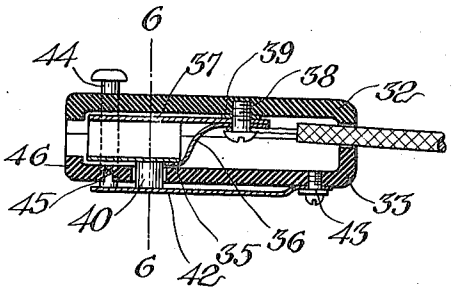
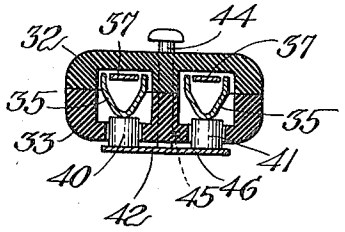


Fig. 6.



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UNITED STATES PATENT OFFICE.

EDWARD J. OVINGTON, OF NEWTON CENTER, MASSACHUSETTS, ASSIGNOR TO SIMPLEX ELECTRIC HEATING COMPANY, OF CAMBRIDGE, MASSACHUSETTS, A CORPORATION OF MASSACHUSETTS.

ELECTRICAL CONNECTOR.

1,220,780. Specification of Letters Patent. Patented Mar. 27, 1917.

Application filed December 12, 1913. Serial No. 806,147.

To all whom it may concern:

Be it known that I, EDWARD J. OVINGTON, a citizen of the United States, and resident of Newton Center, county of Middlesex, State of Massachusetts, have invented an Improvement in Electrical Connectors, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

The present invention is an improvement on the electrical connector shown in the copending application Serial No. 719,759, filed September 11, 1912.

In electrical connectors it is desirable to secure a full and complete electrical contact between the two members comprising the connecting portions, to provide a tension, preferably a spring tension on such two members to insure the better transmission of current. However, if too great a spring tension is arranged, it is apt to be difficult to insert and remove the connecting members from engagement with each other, as well as being apt to roughen the surfaces of the two members, causing same to stick, or the like. In the copending application above referred to, means were illustrated enabling the spring to be manually counteracted to permit easy joining or removal of the connector members, said members being in the form of coöperating plug and socket members. This prior arrangement, however, whereby the spring tension on the connecting members could be counteracted or temporarily released, required that the counteraction of the spring tension be manually maintained as long as it was desired to relieve said tension on either or both of the connecting members. My present invention provides means which will entirely relieve and remove the spring tension on a connector member, and thus permit the same to be entirely freed from such tension, as long as desired.

In a preferred form, as herein shown, I utilize a well-known type of electrical connector, and provide means to exert a spring tension on one of said members, in combination with means to entirely and completely relieve and remove the spring tension from said member.

Other meatures of the invention, novel combinations of parts, and details of construction, will be hereinafter more fully pointed out and claimed.

Referring to the drawings,

Figure 1 is a sectional view of a well known type of connector, wherein the present invention is embodied;

Fig. 2 is a cross sectional view on the line 2—2 of Fig. 1, of the type of connector mentioned;

Figs. 3 and 4 illustrate in a modified form a longitudinal and cross sectional view respectively, of the same type of connector; and

Figs. 5 and 6 are further modified forms of the invention applied to this type of connector.

The electrical connector herein illustrated is the socket member, which is adapted to be fitted on to a corresponding plug member as will be readily understood. This socket member comprises an insulated top portion 1 and lower portion 2 adapted to be joined together, having coöperating recesses 3 and 4 respectively, to receive the socket members, which recesses are of sufficiently greater extent than the metallic socket connector to permit a yielding movement therein. The metallic connector preferably comprises two portions, a U-shaped metallic section 5 and a flat metallic section 6 of appropriate width and length to fit within the open arms of the U-shaped member and to slide relatively therein. This portion 6 is secured to a spring 7 by a rivet 8 and the spring 7 and U-shaped portion 5 are both united by a screw 9 as shown in Fig. 1. This screw also acts as the binding post for the wire led therefrom. The metallic socket portions 5 and 6 are of appropriate size relatively with the plug stem to fit therein so that as the socket and stem are joined together, the stem will force the members 5 and 6 apart thus effecting a spring contact throughout the length of the two electrical members. A spring tension may be exerted either on the portion 5 or the portion 6, as illustrated in Figs. 1 and 2, the tension is exerted on the leaf portion 6 by an outside spring 10 engaging a porcelain button 11, which is adapted to fit freely within a bored recess 12 of the top part 1. This spring 10 is preferably of sufficient width to extend over both the socket connectors and to exert a spring tension on the two porcelain plugs

11, as clearly shown in Fig. 2. The spring 10 is provided with a slot 13 through which screws 14 pass, to retain said spring on the part 1, so that this spring may be slid longitudinally with relation to the member 1, while still retained in assembled relation therewith by the heads of the screws 14. When in the position illustrated in Figs. 1 and 2, the spring 10 is drawn backwardly, *i. e.* to the right viewing Fig. 1, to the limit permitted by the slot 13, the forward portion of said spring being offset or raised as illustrated at 15, relieves the spring tension from the plugs 11, and thus entirely removes said tension from the connector socket member 6, the offset portion 15 being sufficient to permit the spring 10 to lie flat upon the top of the member 1, as will be readily understood. To improve the appearance of the entire connector the spring 10 may be fitted within a recess 16 in the top of the member 1, as illustrated in Fig. 2.

In the form shown in Figs. 3 and 4, I have illustrated a similar connector with a different form of spring, and preferably also with spring tension arranged on both the portions of the connector socket. In this form the upper and lower portions 17 and 18 have coöperating recesses to receive the electrical contacts or socket members 19 and 20. In this form I provide openings for push buttons 21 in the upper portion 17, and corresponding sockets for similar push buttons 22 in the lower portion 18, these push buttons being adapted to bear directly upon the electrical socket members 19 and 20. Springs 23 and 24 fitted in respective recesses therefor 25 and 26 are arranged to bear upon the push buttons 21 and 22, as clearly shown in the drawings. These springs are pivotally mounted at the rear of the connector, being each secured by the bolt 27. The spring 23 has a handle portion 28, extending beyond the bolt 27 and the spring 24 has a similar handle portion 29 also extending beyond said bolt. The two electrical socket contacts 19 and 20 are united by a rivet 30 and short rear portions of the contacts extend sufficiently so that the bolt 27 passes therethrough as indicated at 31. This construction and the size of the recess within the insulating members 17 and 18 is sufficient so that free play is permitted to both of the socket members 19 and 20. In the form shown in Figs. 1 and 2, the member 6 only was permitted to spring or yield, whereas in the form shown in Figs. 3 and 4, both of said socket members will yield. Upon grasping the rearwardly extending portions 28 and 29 of the springs 23 and 24, the spring tension on the socket piece can be removed, or the springs may be pivotally swung off the push buttons 21 and 22, and consequently off the electrical contacts 19 and 20.

A further modification is illustrated in Figs. 5 and 6, wherein the upper part 32 and lower part 33 of the insulated covering of a connector of this general type is shown. In this form the U-shaped contact or terminal member 35 is the one permitted to spring, and is mounted on a spring 36, which is secured to the leaf member 37 by the screw 38. A washer 39 interposed between the leaf member and the inner wall or insulated portion 32 permits a slight amount of play to the leaf member 37 also. Push buttons 40 and 41 extend through the walls of the outer portion 33 to bear upon the respective U-shaped member 35, and a spring 42 secured to the outside of said insulated portion 33 acts to exert the tension on the push buttons. Through the center of the connector is fitted a stem 44 in position to bear against the spring 42, and lift said spring so as to relieve the tension on the push button 40. This stem 44 is provided with a stud 45 fitting in a groove 46 provided therefor adjacent the aperture for the stem 44, so that as the stem is depressed, it may be given a slight rotation with the thumb and finger, and the stud 45 catch on the outside of the casing and thus retain the spring 42 in lifted position, entirely relieving and removing its tension on the electrical socket members 35 and 37.

Having described my invention, what I claim as new and desire to secure by Letters Patent is:

1. An electrical connector, comprising an insulated casing having two metallic contact members coöperating to form a socket, a spring pivoted outside said casing and adapted normally to exert tension on one of said contact members toward the other, in combination with means to move said spring on its pivot to free said contact member from the spring tension.

2. An electrical connector, comprising an insulated casing containing a plurality of metallic contact members in the form of a socket, one of said contacts being substantially U-shaped in cross section and the other adapted to fit freely between the open arms of the U-shaped member, in combination with a spring secured to the said casing and adapted to exert tension on one of said contacts relatively with the other, and means outside said casing to remove, instantly, the said spring from exerting tension on said contact member, before separating the connector.

3. An electrical connector, comprising an insulated casing containing a plurality of metallic contacts in the form of a socket, one of said contacts being substantially U-shaped in cross section and the other adapted to fit freely between the open arms of the U-shaped member, a leaf spring secured on the outside of said casing, a plug adapted to

extend through said casing from said spring to one of the contacts, whereby said leaf spring will exert tension on one of said contacts and move it relatively with the other, in combination with devices operable from the outside of said casing to remove the action of the spring on said plug and metallic contact, before separating the connector.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

EDWARD J. OVINGTON.

Witnesses:
EDWARD MAXWELL,
JAMES R. HODDER.