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E. W. RAZLAG
ELECTRICAL CONNECTORS

2,787,693

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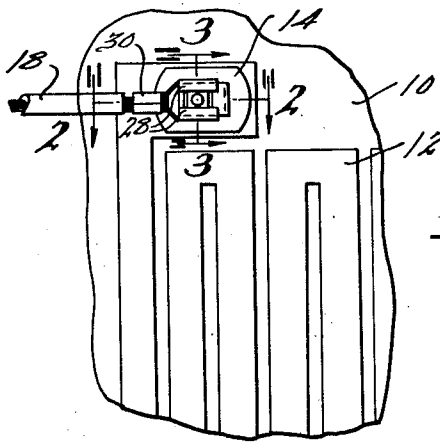


FIG. 1.

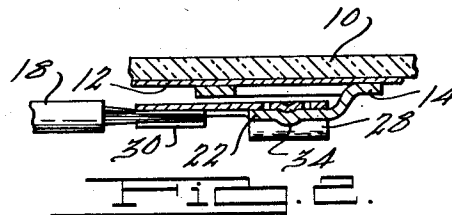


FIG. 2.

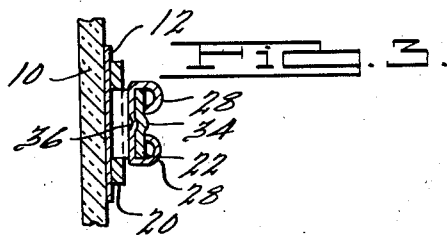


FIG. 3.

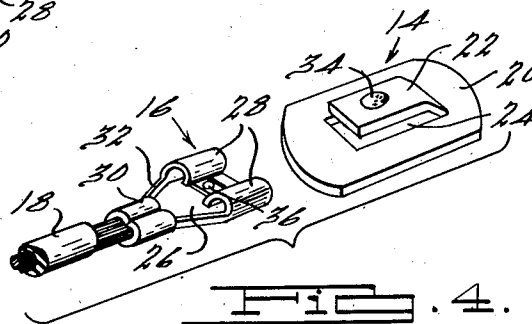


FIG. 4.

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ELECTRICAL CONNECTORS

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1 Claim. (Cl. 219—19)

This invention relates to electrical connectors or terminals, and in particular to connector terminals suitable for use with heating panels using heating elements of sheet form.

It is an object of the invention to provide a two-part connector terminal for connecting the power supply wires of an electric radiant heating panel to the glass heating plate thereof in such manner that said wires may be readily disconnected and reconnected for service purposes, yet accidental or inadvertent disconnection cannot easily occur.

Another object is to provide a device of the aforesaid type wherein one part of the terminal assembly is adapted to be securely attached to the glass without damage thereto and the other part is adapted to be carried by the power supply wire.

Other objects and advantages of the invention will appear from the following description of a preferred form of the device.

In the drawing accompanying the description,

Fig. 1 is a plan view, approximately full size, of a section of glass heater plate with my improved connector applied thereto;

Figs. 2 and 3 are sectional views taken as indicated by the lines 2—2 and 3—3 respectively of Fig. 1; and

Fig. 4 is a somewhat enlarged perspective view of the connector in disconnect condition.

Referring to the drawing, it will be seen that the heating plate 10 has a resistance grid 12 fused on one surface thereof. The plate 10 is made of tempered glass and is intended to be mounted in a frame substantially as illustrated and described in my copending application Serial No. 208,738, filed January 31, 1951. The resistance grid 12 is preferably of metallic alloy and when it is connected across a source of suitable voltage, the glass plate is heated and it emits infra-red rays.

The problem of making a suitable connection of the power supply wires to the grid has been a troublesome one. Various expedients have been tried; among them, soldering of the wires to the ends of the grid, casting a metal slug in the glass at the ends of the grid, etc. These have been unsatisfactory because special solder is necessary to avoid drawing the temper of the plate, which solder is not generally available, and the metal slug is expensive to cast in the glass and causes breakage. In either case, the wires were permanently attached to the glass before shipment and frequently became detached at the joint during installation of the panel causing service troubles.

My improved connector terminal comprises a member 14 adapted to be carried by the heater plate and a member 16 adapted to be carried by the supply wire 18 (see Fig. 4).

The member 14 consists of a flat base 20 provided with a tongue 22. The latter is formed by a stamping operation, the main portion of the tongue being disposed in a plane parallel and slightly above the plane of the base such that a space 24 is provided between these planes.

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The member 16 consists of an intermediate base portion 26 having a pair of oppositely disposed ears 28 at its wider end and another pair of ears 30 at its narrow end. Both of the members 14 and 16 are formed from flat stock, preferably brass or bronze having spring characteristics. The member 16 is of channel shape, the ears 28 and 30 being extensions of the channel side-walls 32 as will be clear from Figs. 3 and 4.

The ears 30 are intended to be crimped around the power supply wire 18 by a suitable tool to provide a firm connection. Solder may be used if desired. The ears 28 are rolled inwardly of the channel to such position that they are adapted to overlie the tongue 22 but be in firm contact therewith when the two parts of the connector are engaged, as shown in Fig. 3.

The base 20 of the member 14 should be flat with .008 inch for best results. As shown in Figs. 1 and 2, the metallic grid 12 terminates at each end in an enlarged portion to which the connector member 14 is attached. Any suitable method of attaching the member may be used so long as any heat utilized is not sufficient to draw the temper of the glass 10 which carries the grid. Low temperature solder may be used, but I prefer to attach the connector member by placing it on the grid in proper position under pressure, then raising the temperature of the parts sufficiently to "sweat" the two elements together. By proper control of the temperature and cooling, the temper of the glass is not affected and a firm attachment results.

When a power connection to the heater is made, the member 16 is pushed with a linear motion into engagement with the member 14, the tongue 22 being received in the open-ended channel portion of the member 16 beneath the ears 28. The disposition of the parts is such that considerable pressure is required to make the connection and to withdraw the members from engagement when a disconnection is made. This tight fit accomplishes two purposes; it makes a firm connection which is not easily broken by stress on the wire 18 or by accident, and it assures strong wiping action along the surfaces of the tongue 22, the base 20, the base 26 and the edges of the ears 28 each time the members are engaged and disengaged. This wiping action removes any corrosion which may have taken place, any dirt which may have accumulated, etc., thereby assuring a low resistance connection at all times.

If desired, a dimple 34 may be provided in the tongue 22 which is adapted to engage a similar dimple 36 formed in the base channel 26 of the member 16. This feature is not necessary but may be desirable in certain instances where frequent disconnections are anticipated. In such cases, the interengagement of the dimples will render the members more resistant to parting.

It may thus be seen that I have provided a simple, economical connector for the purpose set forth, which connector is easy to use, provides a low resistance connection, is self cleaning and which does away with the difficulties experienced with other connector means.

While I have, for illustrative purposes, described and shown a specific embodiment of my invention in a particular environment, it will be understood that by so doing I do not intend to limit the invention to the specific details shown, but only as set forth in the claim appended hereto.

I claim:

An electrical connector adapted to connect an electrical conductor to a resistant element adhering to a vitreous surface comprising, a sheet metal base having one face adapted to lie along and be secured to said resistant element, a struck out tongue having one end integral with said base, said tongue having a main portion arranged in one plane spaced from a second face of the base, a member formed of sheet metal having an electrical con-

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ductor connected thereto, an intermediate portion on said member arranged substantially in a single plane, a resilient ear integral with said member having a continuous free edge overlying and extending along one side edge of said intermediate portion and spaced from the surface thereof a distance less than the thickness of said tongue, another resilient ear integral with said member having a continuous free edge overlying and extending along the other side edge of said intermediate portion and spaced from the same surface thereof a distance less than the thickness of said tongue, parts of said ears along said edges of said intermediate portion being spaced from each other a distance greater than the width of said tongue whereby said member may be moved linearly over the main portion of said tongue with the free edges of said

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ears frictionally engaging surface areas on one face of the tongue and a face of the intermediate portion urged into engagement with the opposite face of said tongue.

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