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W. E. FLADD

2,332,846

ELECTRIC CONNECTOR

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Fig. 1.

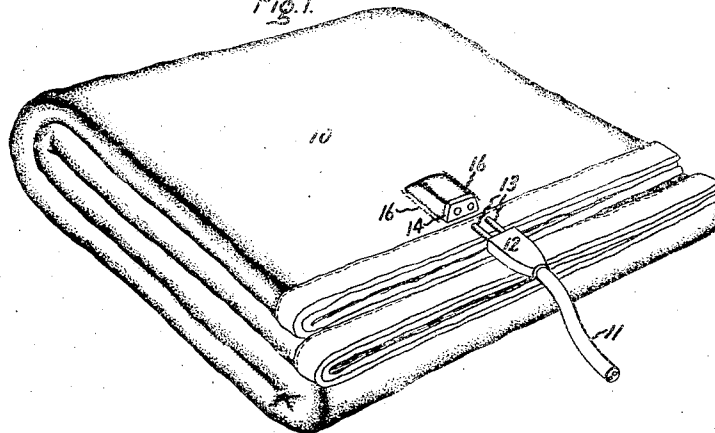


Fig. 2.

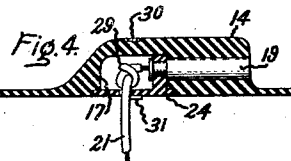
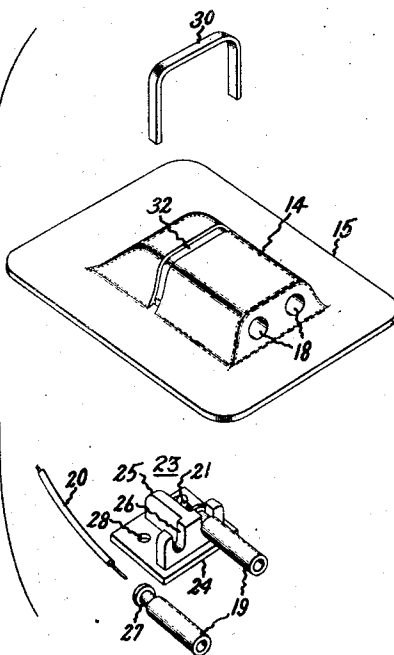
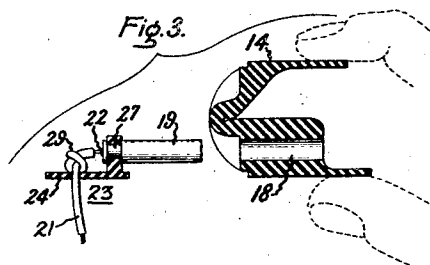


Fig. 3.



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UNITED STATES PATENT OFFICE

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ELECTRIC CONNECTOR

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4 Claims. (Cl. 173—322)

My invention relates to wiring devices and more particularly to an improved strain relief. My invention is particularly well adapted for use in connection with wired fabrics such as those employed in the manufacture of electrically heated blankets, pads, and the like.

In Heiser et al. Patent No. 2,317,189, dated April 20, 1943, and assigned to the same assignee as the present invention, is described and claimed a strain relief particularly adapted for use with wired fabrics in which a body of insulating material provided with flexible flanges is sewed between the layers of the wired fabric. The present invention is in the nature of an improvement on the arrangement disclosed in the above patent and has for its principal object the provision of a simpler and more economical strain relief particularly adapted for use with wired fabrics.

Further objects and advantages of the present invention will become apparent from the following description, reference being had to the accompanying drawing in which Fig. 1 is a perspective view illustrating the present invention applied to an electric blanket; Fig. 2 is an exploded view in perspective showing the details of construction of the strain relief of the present invention; Fig. 3 shows the relative positions of certain of the parts just prior to final assembly thereof, and Fig. 4 is a sectional view of the assembled strain relief.

Referring now to the drawing, I have shown my invention applied to an electrically heated blanket 10 as a means for making electrical connection with a power supply which may be provided by a conventional attachment cord 11 having a plug cap 12 including spaced contact prongs 13. The body 14 of the strain relief is provided with a peripherally extending flange 15 which is positioned between the layers of the fabric comprising the blanket and sewed thereto as illustrated at 16 in Fig. 1. The body 14 is preferably formed of insulating material, such as resilient rubber or similar compound, which may be readily molded in suitable shape. As shown in Fig. 4, the body of the strain relief 14 is provided with a recess 17 opening on one face of the body and with longitudinally extending apertures 18 which extend from one end of the body 14 to an end wall of the recess 17. The apertures 18 are provided to receive cylindrical contact members 19 which are to be permanently connected with the conductors of the electric blanket and detachably connected with the contact prong 13 of the attachment plug cap 12. In order to prevent the exposure of conducting parts the contacts 19 may

be terminated a little short of the end of the body 14, if desired.

In the drawing, the conductors of the wired fabric have been illustrated as comprising flexible insulated conductors 20 and 21 having bared end portions received within one end of each of the cylindrical contacts 19. The connections between the conductors 20 and 21 and the contact members 19 are preferably soldered, as illustrated at 22, in order to insure a good permanent electrical connection. In accordance with an important feature of the present invention, an improved and simplified arrangement is provided for maintaining the relative positions of conductors 20 and 21 and contacts 19 and thereby to prevent the electrical connections therebetween from being subjected to tensile stress during use of the blanket or other device with which the strain relief is associated. In accordance with this feature of my invention I provide a member 23 preferably formed of rigid insulating material and which comprises a base portion 24 and an upstanding web portion 25 of substantially T-shaped longitudinal cross section. The head of the T-shaped web is provided with spaced slots 26 which provide means for receiving the contact members 19. As illustrated, the contact members are provided with a portion of reduced cross section 27 near the inner end thereof to provide spaced shoulders for engaging the web adjacent the slots 26 to secure the contacts 19 from longitudinal movement with respect to the member 23. The conductors 20 and 21 are passed through openings 28 formed in the base 24 of the member 23 and knotted on the upper side thereof as shown at 29 to prevent any tension from being transmitted to the connection between conductors 20 and 21 and the contact members 19.

In assembling the strain relief in an electric blanket or similar device, the conductors 20 and 21 are first passed through the openings 28 and knotted. The bared ends are then inserted within the contacts 19 and soldered thereto. The contacts 19 are placed in position with the reduced portion 27 of each contact in one of the slots 26 as shown in the left-hand portion of Fig. 3. The body portion 14 of the strain relief is then grasped in the hand and folded back upon itself to expose the ends of the apertures 18 which communicate with the recess 17. In this way it is possible to insert the sub-assembly comprising contact members 19, conductors 20, 21, and the insulating supporting means 23 in the body of the strain relief by sliding the contact members 19 into the aper-

tures 18. The body of the strain relief is then released and returned to its original shape so that the parts have the relative positions shown in Fig. 4 with the base 24 of the member 23 closing the recess 17. It will be noted that the T-shaped web 25 divides the recess 17 into mutually insulated compartments for the electric connections between the respective conductors 20 and 21 and the contact members 10 and that the base portion 24 of the member 23 is arranged flush with the exterior of the body 14 and provides a cover for the recess. In order to secure the member 23 and body 14 together and thereby lock the parts in assembled relation, fastening means such as a staple 30 is passed through openings in the flange 15 adjacent the body portion of the strain relief and bent over against the exterior of the base portion 24 of the insulating member 23 as shown at 31. The body portion 14 of the strain relief is preferably recessed as shown at 32 in Fig. 2 to receive the staple so that it is flush with the exterior thereof. This groove also tends to establish the point at which the body of the strain relief folds back upon itself as shown in Fig. 3 and facilitates the assembly of the strain relief.

While the invention has been described and illustrated in connection with a strain relief for the flexible conductors of a wired fabric and a pair of rigid contact members, it will be understood that the teachings of the invention are applicable to other types of connectors such as the connections necessary between the flexible conductors of a wired fabric and the flexible conductors of an attachment cord.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. In combination, a body of insulating material having a recess formed therein opening on one face thereof, a first pair of conductors supported in said body and communicating with said recess at spaced points, a second pair of conductors extending into said recess in a direction substantially perpendicular to said first conductors, each of the conductors of said second pair being connected with a different one of the conductors of the said first pair, rigid means of insulating material including a portion for subdividing said recess with one of said points being located in each subdivision of the recess and a plate portion substantially perpendicular to said first portion for closing said recess to form mutually insulated compartments for connections between said conductors, and means for securing all of said conductors to said rigid means of insulating material in force transmitting relation

therewith to relieve the connections between said conductors from strain.

2. In combination, a body of insulating material having a recess formed therein opening on one face thereof, a pair of substantially parallel passages extending from one end of said body through a side wall of said recess, rigid conductors positioned in said apertures and extending into said recess, rigid means of insulating material including a web portion extending over said end of the wall of said recess and engaging said rigid conductors in interlocking relation to prevent relative movement thereof with respect to said body of insulating material, a pair of flexible conductors connected respectively with said rigid conductors, and means for securing said flexible conductors in force transmitting relation with said rigid means of insulating material to relieve the connections between said conductors of strain.

3. In combination, a body of insulating material having a recess formed therein opening on one face thereof, a pair of parallel passages formed in said body and extending from one end of said body into said recess through a side wall thereof and in a direction substantially perpendicular to the axis of said recess, a rigid conductor positioned in each of said openings and having a shouldered end portion extending into said recess, a rigid plate member of insulating material positioned in said recess against said side wall and provided with spaced slots for receiving the end portions of said rigid conductors, the shouldered portions of said rigid conductors being located to engage said rigid means to determine the relative positions of said rigid conductors in said body of insulating material.

4. In combination, a body of insulating material having a recess formed therein opening on one face thereof, said body being provided with a pair of parallel passages extending from an end of said body into said recess through a side wall thereof, a pair of rigid conductors positioned in said passages and each having a shouldered end portion extending into said recess, a member of rigid insulating material comprising a base portion and an upstanding web portion, said web portion being provided with spaced openings for the reception of the shouldered ends of the rigid conductors, the base portion of said rigid means providing a cover for said recess and also means for positioning said web portion with respect to said body to hold said rigid conductors in fixed position with respect to said body.

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