

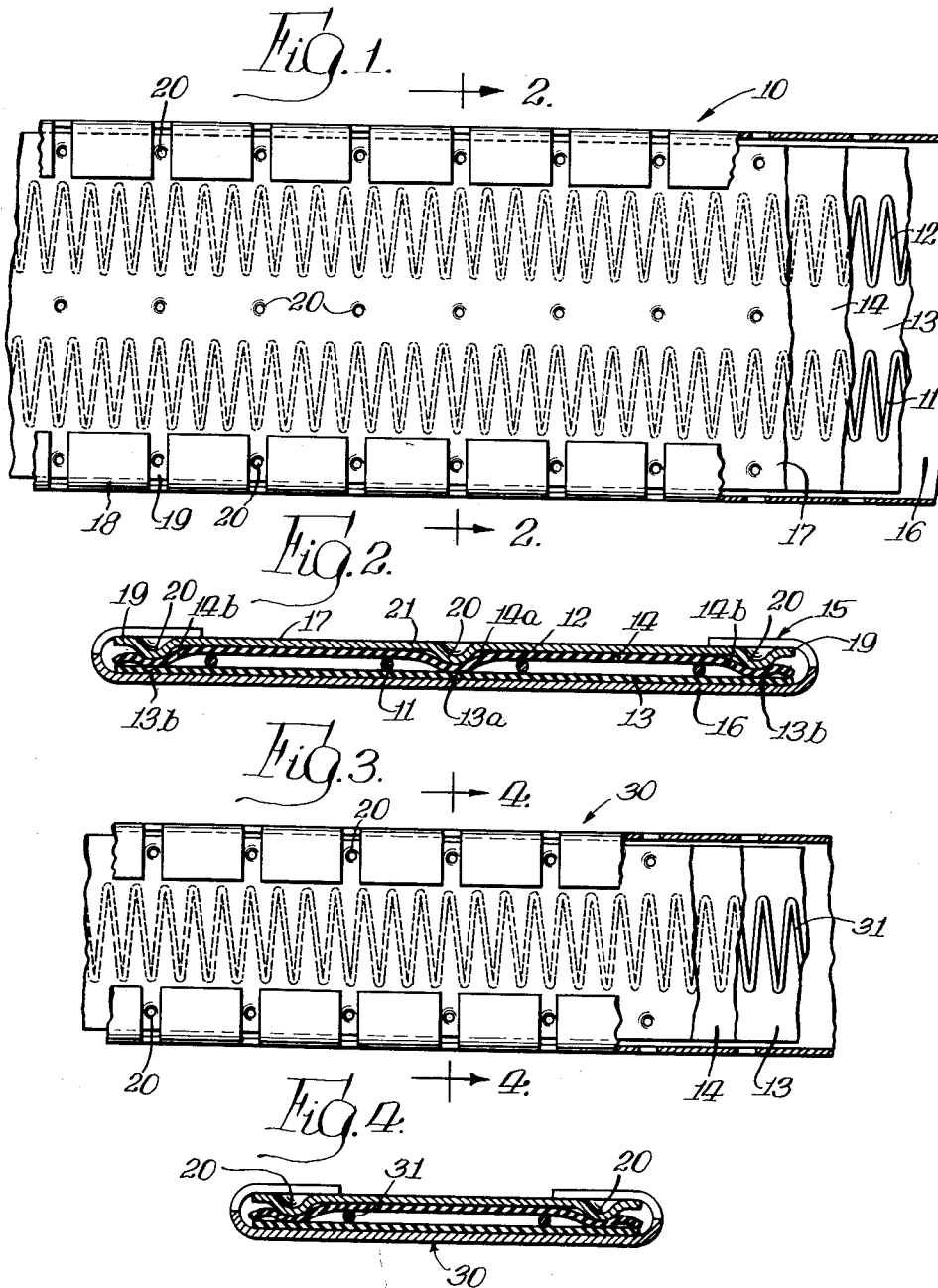
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HEATER BAND

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HEATER BAND

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1 Claim. (Cl. 219—19)

This invention relates to heater bands and in particular to heater bands utilizing electrical heating elements.

In one form of electrical heater band, the heating element is disposed between sheets of insulating material to effect the necessary electrical insulation thereof. The assembly of the heating element and juxtaposed insulating sheets is enclosed in a protective sheath which conventionally is formed of a rigid material such as metal. A problem arises in such heater band constructions; namely, lateral displacement of the heating element sometimes occurs, permitting the heating element to contact the metal sheath and, as a result, have portions thereof shorted out.

The principal feature of this invention is the provision of a new and improved heater band construction arranged to preclude undesired lateral translation of the heating element therein.

Another feature is the provision of such a heater band construction having new and improved means for reducing the spacing between the insulating sheets at a point laterally of the heating element, thereby to preclude such undesirable lateral translation.

A further feature is the provision of such a heater band construction wherein a portion of the sheath structure projects toward an opposed portion thereof to effect a desired reduced spacing therebetween, said portion being disposed laterally of the heating element.

Still another feature is the provision of such a heater band construction wherein the sheath comprises a support portion and a cover portion, and the projecting portion comprises a depression formed in the sheaths.

A still further feature is the provision of such a heater band construction having a pair of transversely spaced heating elements, and including means for reducing the spacing between the insulating sheets laterally between said elements to preclude undesirable translation of the heating elements such as would result in contact of one element with the other.

Other features and advantages of this invention will be apparent from the following description taken in connection with the accompanying drawings wherein:

Fig. 1 is a fragmentary elevation of a portion of a heater band construction embodying the invention, with portions thereof broken away;

Fig. 2 is an enlarged transverse section thereof taken approximately along the line 2—2 of Fig. 1;

Fig. 3 is a reduced, fragmentary elevation of another form of the invention, with portions thereof broken away; and

Fig. 4 is an enlarged, transverse section taken approximately along the line 4—4 of Fig. 3.

In the exemplary embodiment of the invention, as disclosed in Figs. 1 and 2 of the drawing, a heater band construction generally designated 10 is shown to comprise a pair of elongated electrical heating elements 11 and 12 disposed between a pair of insulating sheets 13 and 14. The assembly of heating elements and insulating sheets is enclosed by an outer protective sheath 15

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herein comprising a support member 16 and a cover member 17.

Heating elements 11 and 12 are preferably formed of a high resistance heating wire and may be formed in a zigzag pattern as best seen in Fig. 1. The heating elements extend in a generally flat plane and the width of each heating element is substantially less than one-half the width of insulating sheets 13 and 14 whereby the heating elements may be transversely spaced relative to each other between the insulating sheets. Insulating sheets 13 and 14 are formed of an electrically insulating material, such as mica, and extend transversely to adjacent the longitudinal edges of sheath 15. Thus, in addition to facially overlying and underlying heating elements 11 and 12, the insulating sheets 14 and 13 extend laterally of the heating elements to define mid-portions 13a and 14a and side portions 13b and 14b, respectively.

Support member 16 of sheath 15 is provided with discontinuous overturned flange portions 18 disposed along each of the opposite longitudinal edges thereof. The side margin portions 19 of cover member 17 underlie flanges 18 and are urged thereby against the upper surface of lateral side portions 14b of insulating sheet 14. Thus, flanges 18 retain the elements of heater band construction 10 in assembled relationship.

To preclude positively inadvertent lateral translation of heater elements 11 and 12 which could otherwise result in a shorting out of the heating elements by their contact with sheath support member 16 or their shorting out with one another, means are provided to effect a positive decrease in the spacing between insulating sheets 13 and 14 at the mid-portions and side portions thereof. These means comprise a plurality of projecting portions 20 on sheath 15, herein on cover member 17 thereof, which extend toward the opposed sheath portion, herein confronting portions of the support member 16, to apply pressure to localized areas of the insulating sheet mid-portion and side portions and reduce the spacing between said mid-portion and side portions to less than the thickness of the heating elements. As best seen in Fig. 2, projecting portions 20 comprise indentations, or dimples, in cover member 17 and may extend sufficiently toward support member 16 to effect substantial abutment of the confronting portions of the insulating sheets. A plurality of such projections 20 is provided in mid-portion 21 of cover member 17 overlying mid-portions 14a and 13a of the insulating sheets to provide a plurality of localized pressure areas spaced longitudinally of the heater band construction. An additional plurality of projections 20 is provided in the side margin portions 19 of cover member 17, one each between each pair of flanges 18. The projections 20 may be formed in cover member 17 prior to its installation over insulating sheet 14, and the completion of the assembly of the heater band construction effected by the overturning of flanges 18. Alternatively, the cover member 17 may be installed without the depressions 20 and flanges 18 overturned to secure the assembly of the heater band construction, the depressions 20 being then formed in the cover member by subsequent suitable pressure applications to the cover member.

Thus, heater band construction 10 provides improved positive means for precluding undesired lateral translation of the heating elements thereof in an extremely simple and foolproof manner.

Turning now to Figs. 3 and 4, a single circuit heater band construction generally designated 30 is shown to comprise structure similar to that of heater band construction 10 except that only a single heating element 31 is provided. Heating element 31 is arranged to extend intermediate the edges of heater band construction

30 and, thus, no projections are provided in the mid-portion thereof. In all other respects, the structure and functioning of heater band construction 30 is substantially identical to that of heater band construction 10.

While I have shown and described certain embodiments of my invention, it is to be understood that it is capable of many modifications. Changes, therefore, in the construction and arrangement may be made without departing from the spirit and scope of the invention as defined in the appended claim.

I claim:

A heater band construction comprising: a generally flat heater element; a pair of insulating sheets juxtaposed to opposite sides of said heater element and extending laterally therefrom; a support sheet facially juxtaposed to one of said sheets and having discontinuous overturned edges overlying portions of said sheets laterally of said heater element; a cover sheet facially juxtaposed to the other of said sheets and extending to between said overlying edges and said lateral portions of said other of said sheets; and means associated with at least one of said support and cover sheets providing

a localized pressure on points of said sheets laterally of said heater element, said pressure providing means comprising a projection on one of said support and cover sheets extending to a point spaced from the other of said support and cover sheets less than the thickness of the arrangement of said insulating sheets and heater element, said projection being aligned with a discontinuity of said edges.

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