

Aug. 22, 1939.

A. P. WIEGAND

2,170,175

HEATING MEANS

Filed Nov. 12, 1937

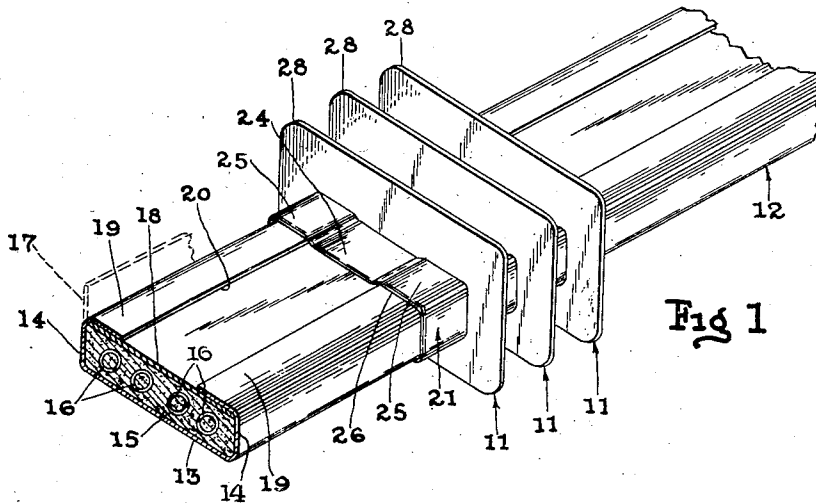


Fig 1

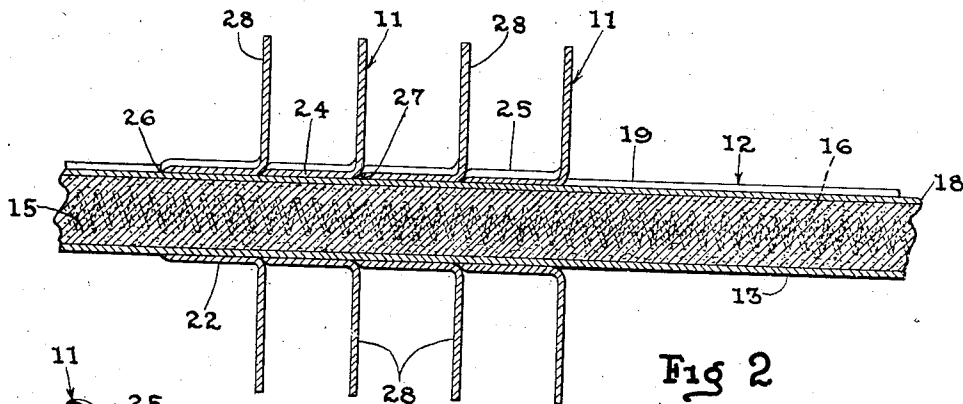


Fig 2

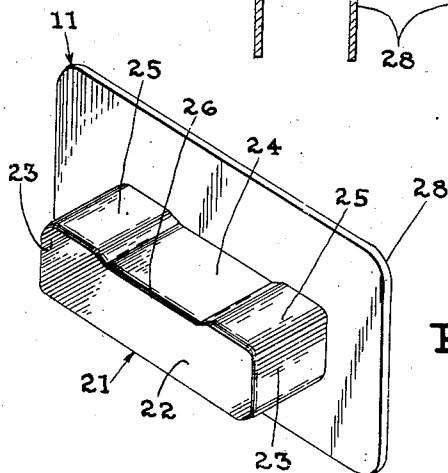


Fig 3

Albert P. Wiegand  
INVENTOR

BY *Freeman, Hunt, Albert, and Wiedman*  
ATTORNEYS

## UNITED STATES PATENT OFFICE

2,170,175

## HEATING MEANS

Albert P. Wiegand, Pittsburgh, Pa., assignor, by  
mesne assignments, to Edwin L. Wiegand,  
Pittsburgh, Pa.

Application November 12, 1937, Serial No. 174,218

4 Claims. (Cl. 219—38)

This invention relates to heating means, more particularly to heating means having surfaces constructed and arranged to facilitate the transfer of heat from heat-producing means, such as for instance, an electric resistance element, and the principal object of this invention is to provide new and improved heating means of this type.

In the drawing accompanying this specification, and forming a part of this application, there is shown, for purposes of illustration, one form which this invention may assume, and in this drawing:

Figure 1 is a fragmentary perspective view illustrating an embodiment of the invention, a part of this view being shown in section,

Figure 2 is an enlarged fragmentary longitudinal sectional view of the embodiment, and

Figure 3 is a perspective view of one of the parts shown in Figures 1 and 2.

The embodiment of the invention herein disclosed comprises a plurality of heat-conducting means 11, so positioned as to facilitate the transfer of heat from heat-producing means, such as a heating member 12.

The heating member 12, may be of the electric resistance type shown, and in this particular instance, comprises a sheet-metal trough, referring particularly to Figure 1, having a flat bottom wall 13, and side walls 14. The trough contains refractory material 15, in which is embedded a suitable electrical resistance, such as the resistance coils 16 illustrated. In the formation of the heating member herein illustrated, the side walls 14 are first formed as shown in dotted lines at 17 in Figure 1, and a plate 18 is disposed in the trough, and overlies the refractory material 15. The ends of the side walls 14 are then bent toward each other, and over the plate 18, as shown at 19. It will be obvious that this construction provides a recess, or longitudinal groove 20, defined by the edge margins of the side walls 14 and the outwardly disposed portion of the surface of the plate 18.

Each of the heat-conducting means 11 comprises a flange so constructed to provide a collar 21. The opening of the collar, referring particularly to Figure 3, is defined by a bottom surface 22 and side surfaces 23, corresponding respectively to the bottom wall 13 and side walls 14 of the heating member 12, and by a top surface having a depressed portion 24 closely fitting the surfaces defining the groove 20, and having also portions 25 closely fitting the bent parts 19 of the side walls 14 of the heating member 12. It will thus be

obvious that each collar 21 closely fits the transverse contour of the heating element 12, so that substantially all surfaces defining the collar are in heat-conducting relation with the adjacent surface of the heating member 12. One end of each collar 21 is feathered or tapered to a thin edge, as shown at 26, while the other end is curved, as at 27, and extended laterally to form a heat-transfer surface or fin 28.

The coils 16, of the heating member shown, are so connected that the resistance terminals are disposed at one end of the member, and the collars 21 are assembled from the opposite end of the member, the end collar being held to the member 12 in any suitable manner. In instances where the resistance terminals are disposed intermediate the ends of the heating member, the collars 21 may of course be assembled from both ends of the member.

Referring to Figure 2, the plurality of collars 21, when slid to a predetermined position, are so arranged that the feathered end 26 of one collar nests within the curved part 27 of the adjacent collar, thereby providing a sheath substantially covering the heating member 12. The abutment of the feathered end 26 of one collar with the curved part 27 of an adjacent collar provides means for spacing the heat-transfer surfaces or fins 28. It will of course be obvious that the spacing depends upon the width of the surfaces forming the collar, and in some instances the width of the collars 21 may be less or greater at one portion of the heating element 12 than at a different portion, thereby providing less or greater heat-transfer at this portion, as the condition demands.

It will be apparent to those skilled in the art that I have accomplished at least the principal object of my invention, and it also will be apparent to those skilled in the art that the embodiment herein described may be variously changed and modified, without departing from the spirit of the invention, and that the invention is capable of uses and has advantages not herein specifically described; hence it will be appreciated that the herein disclosed embodiment is illustrative only, and that my invention is not limited thereto.

I claim:

1. Heating means, comprising: a heating member, having a recess in its exterior surface; and a heat-transfer means, comprising a continuous flange extending about said heating member, having a portion closely fitting the surfaces defining said recess, and comprising also a laterally extending heat-transfer fin.

2. Heating means, comprising: an elongated electrical resistance heating element, having an outer metallic casing formed with a longitudinally extending groove; and a heat-transfer means, comprising a homogeneous continuous metallic collar closely transversely embracing said casing, and having a portion closely fitting the surfaces defining said groove, providing heat-transfer contact between substantially the entire inner surface of said collar and the adjacent portion of said casing; said collar having an integral fin extending laterally from one end.

3. Heating means, comprising: an elongated electrical resistance heating element of oblong rectangular cross-section, having an outer metallic casing formed with a longitudinally extending groove in one of the wider faces; and a heat-transfer means, comprising a homogeneous continuous oblong-rectangularly shaped sheet-metal collar closely embracing said casing, and having an inwardly pressed portion in one of the wider faces closely fitting the surfaces defining said groove, providing heat-transfer contact between substantially the entire inner surface of said collar and the adjacent portion of said casing; said collar having an integral fin extending laterally from one end.

4. Heating means, comprising: an elongated electrical resistance heating element of rectangular cross-section, having an outer metallic casing formed with a longitudinally extending groove in one of the faces of said element; a plurality of heat-transfer means, each comprising a homogeneous continuous rectangularly shaped sheet-metal collar closely transversely embracing said casing, and having an inwardly pressed portion in one of the faces of said collar closely fitting the surfaces defining said groove, thereby providing heat-transfer contact between substantially the entire inner surface of said collar and the adjacent portion of said casing; and each collar having an integral fin extending laterally from one end; said collars being separately slidable over an end of said heating element, and along said heating element to predetermined position; the ends of each collar being constructed and arranged to interfit with ends of adjacent collars, providing a substantially continuous metallic sheath-like covering closely embracing said heating element and having a portion fitting the groove of said heating element, said covering having a plurality of spaced-apart heat-transfer fins.

ALBERT P. WIEGAND.