July 30, 1940. H. L. GRAPP 2,209,816

OVEN PANEL

Filed April 4, 1938

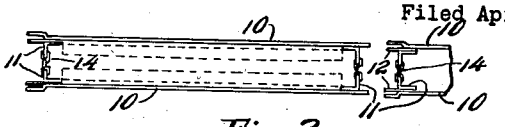


Fig. 2.

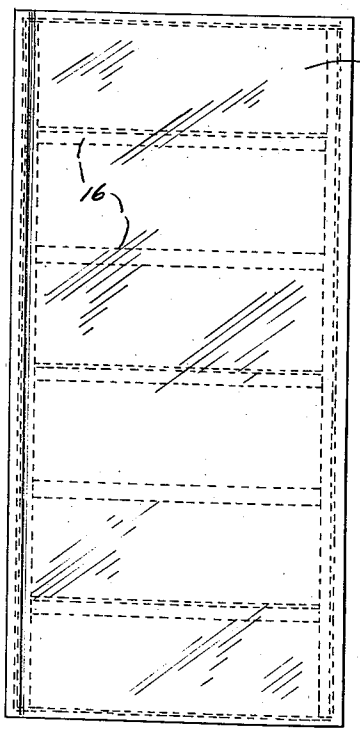


Fig. 1.

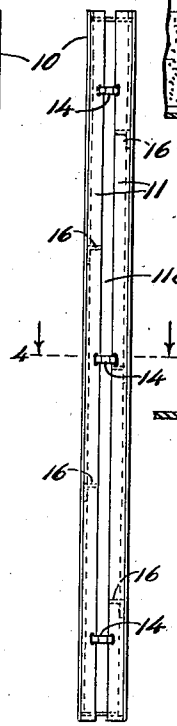


Fig. 3.

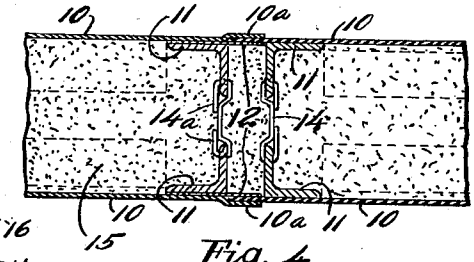


Fig. 4.

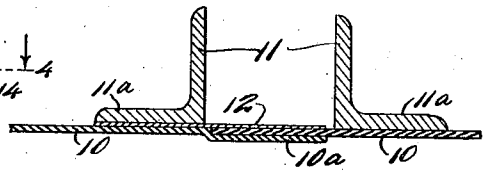


Fig. 5.

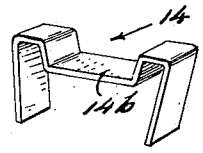


Fig. 7.

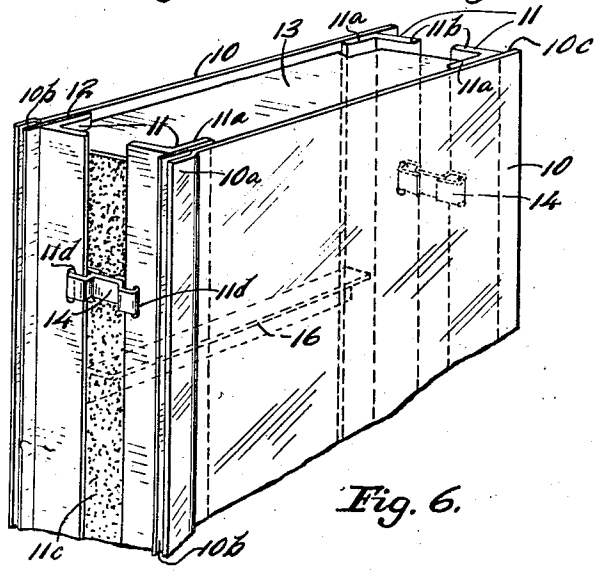


Fig. 6.

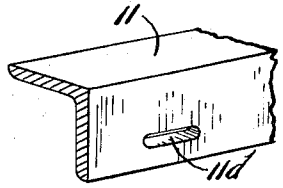


Fig. 8.

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OVEN PANEL

Herbert L. Grapp, Minneapolis, Minn.

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3 Claims. (Cl. 189—34)

This invention relates to an oven panel or wall. Such panels are used as doors, partitions and walls of ovens used for drying, baking and other purposes and in which quite a high temperature is maintained. It is desirable to have such an oven panel having high insulating qualities, a simple and inexpensive construction and yet one which is strong and rugged to withstand the necessary use.

It is an object of this invention to provide an oven panel of simple and inexpensive construction and one having the flat sides thereof insulated from each other in a very effective manner.

It is a further object of the invention to provide a simple and efficient construction of oven panel in which there is little or no metallic path for conducting heat from the inner to the outer wall thereof.

It is still another object of the invention to provide an oven panel of simple, strong and desirable construction and one having exceedingly high insulating qualities.

These and other objects and advantages of the invention will be fully set forth in the following description made in connection with the accompanying drawing in which like reference characters refer to similar parts throughout the several views and in which:

Fig. 1 is a view in front elevation of the panel;

Fig. 2 is a top view thereof;

Fig. 3 is a view in side elevation of said panel;

Fig. 4 is a horizontal section taken on line 4—4 of Fig. 3 as indicated by the arrows;

Fig. 5 is a partial view similar to Fig. 4 shown on an enlarged scale;

Fig. 6 is a partial perspective view of the panel;

Fig. 7 is a perspective view of a connecting clip used; and

Fig. 8 is a partial view of one of the side angles used.

Referring to the drawing an oven panel or section of an oven wall is shown comprising the flat side portions 10 which as illustrated, are made of flat plates. It will be seen that the panel is substantially rectangular in transverse cross section and plates 10 are thus spaced a distance equal to the thickness of the panel. The narrow side portions of the panel are formed principally by members 11. While these members might be variously made, in the embodiment of the invention illustrated they are shown as angle members having one flange 11*a* disposed flat against and secured to the inner side of the plate 10 adjacent the longitudinal edge thereof. The other flanges 11*b* of members 11 are disposed adjacent said longitudinal edges and extending at right angles to the plates 10 and thus extend toward each other in substantially the same plane. At one side of each plate 10 a thin plate 12 is disposed between the angles 11 and the plates 10 and this plate projects from the inner edge of flange 11*a* to a plane in which the adjacent edges of the plates 10 are disposed. Each plate 10 is offset outwardly for a short distance away from the plate 12 as shown at 10*a* to form a longitudinally extending slot 10*b* between plates 10 and 12. The slot 10*b* has a width equal to the thickness of plates 10. It will be noted that the adjacent edges of flanges 11*b* are spaced a considerable distance from each other so that there is a longitudinally extending slot or space 11*c* between said edges, which slot or space extends throughout the length of the panel at the narrow side thereof. Plates 13 may be provided to form end portions of the panel, these plates extending between the plates 10 and the angles 11 and fitting about the latter. The flanges 11*b* of the angles 11 have elongated slots 11*d* formed therein adjacent their proximate edges and at comparatively wide intervals. A connecting member is provided for the angles 11 and while various members might be used, in the embodiment of the invention illustrated clips 14 are used. Clips 14 are formed from a small flat metallic strip and the end portions thereof extend through the slots 11*d* and are reversely bent at the inner side of angles 11 as shown at 14*a* in Fig. 4. The central portion 14*b* of clip 14 is offset inwardly between flanges 11*b* and is in contact with the reversely bent ends 14*a*. The clips 14 therefore, extend across or span the space 11*c* and connect angle members 11. As shown in Fig. 4 the outer ends of the flanges 11*b* are rounded and this results in a substantial opening extending vertically through the loop formed by the bent ends of the clip 14. The cross sectional area of the openings 11*d* is also somewhat greater than the cross sectional area of the clip 14 disposed in said openings and there is more or less of a space or air space in said opening about or adjacent clip 14. Packing material 15 of any suitable type such as rockwool is disposed between plates 10 and between the angles 11 at the opposite sides of plates 10. Angle bars 16 extend in spaced relation transversely of plates 10 having one of their flanges engaging and secured to the inner sides of said plates in any suitable manner as by welding or riveting. The other flanges of angles 16 project inwardly. It will be noted that the angles 16 on one of the plates are disposed substantially mid-

way between the angles 16 on the opposite plate, said angles on the opposite plates thus being arranged in staggered relation.

When a plurality of panels are used to form a wall they will be disposed as shown in Fig. 4. The portion 10c of the plates 10 projecting beyond the angles 11 at one side of the panel is disposed in the slot 10b of the adjacent panel. A very secure, rigid and efficient joint is thus produced. Insulating material 15 can be disposed between the angles 11 and clips 14 at the inner sides of the panel so that a continuous insulation effect is produced.

From the above description it will be seen that I have provided a very simple and yet highly efficient structure of oven panel or wall. It will be noted that there is little or no continuous path from the inner wall of the panel to the outer wall thereof. The only metallic path through which the heat can pass from the inner wall to the outer wall would be through the clips 14. This is not a continuous path on account of the air space about the ends of the clips in the openings 11d. There is really therefore, no continuous metallic path for the heat to pass through from the inner wall of the oven to the outer wall. This results in an unusually efficient insulation. A very high temperature can be maintained at the inner side of the panel and yet a person can hold their hand on the outer wall without discomfort. The structure at the same time is very strong and rigid. The angles 11 make a very strong and rigid panel. The panel is further strengthened and held in proper form by the member 16. While the structure is thus strong and efficient it is at the same time simple and can be quite inexpensively produced. The panel has been amply demonstrated in actual practice, found to be very successful and efficient and is being commercially made.

It will, of course, be understood that various changes may be made in the form, details, arrangement and proportions of the parts, without departing from the scope of applicant's invention, which generally stated, consists in a device capable of carrying out the objects above set forth, in the parts and combinations of parts disclosed and defined in the appended claims.

What is claimed is:

1. An oven panel comprising spaced flat metallic plates forming the flat sides of said panel, rigid members secured to the inner sides of said plates adjacent the longitudinal edges thereof so as to leave narrow projecting portions beyond said members, said plates at one longitudinal edge being offset, a narrow plate secured to each of said flat plates along said offset edge and forming a slot between the same and said offset edge whereby an adjacent panel can have said projecting portion received in said slot to form a connection between said panels and packing material in said panel between said flat plates and members.

2. An oven panel having spaced metallic plates and metallic portions extending from opposite plates toward each other adjacent the edges of said plates but spaced from each other to leave an elongated opening therebetween and widely spaced means of small dimension lengthwise of said panel connecting said portions to hold the same against movement toward or from each other and spanning said opening and insulating packing disposed between said plates and portions, said portions having apertures therethrough and said means comprising small metallic clips extending through said apertures and being of less cross-sectional area than said apertures whereby a space is left in said apertures adjacent said clips.

3. An oven panel having spaced flat metallic side portions, members secured to said portions adjacent their longitudinal edges and having portions extending substantially at right angles thereto so as to extend toward each other between said portions forming part of the narrow sides of said panel but spaced from each other, said members having holes therethrough at widely spaced intervals and entirely within said members, insulating material disposed between said flat portions and said members whereby a space extends longitudinally of said panel at the narrow sides thereof between said members exposing said packing, small narrow clips extending through said openings and spanning said space, said clips being reversely bent at the inner sides of said members, the outer central portion of said clips being offset inwardly into said space to engage the adjacent sides of said members so that said clips prevent movement of said members both toward and away from each other.

HERBERT L. GRAPP.