Oct. 25, 1966 G. R. DAVENPORT 3,280,814

OVEN LINER SUPPORT STRUCTURES

Filed Jan. 11, 1965

FIG. 1

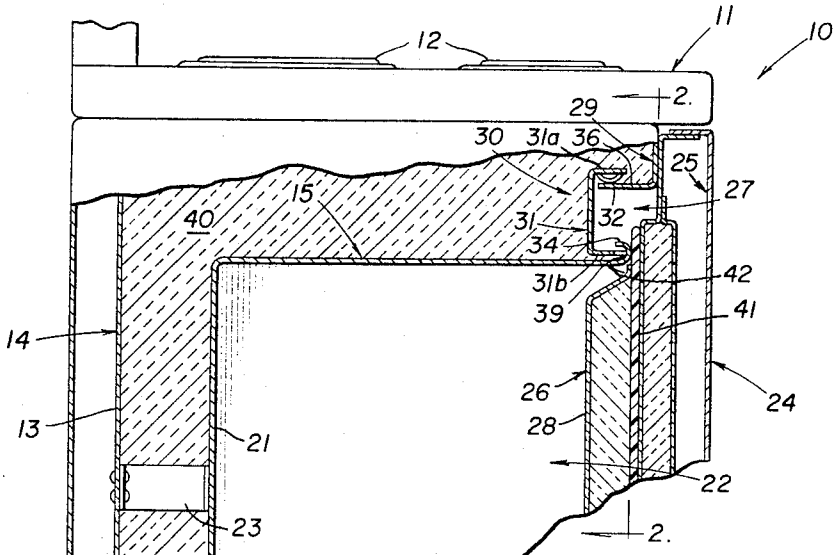


FIG. 2

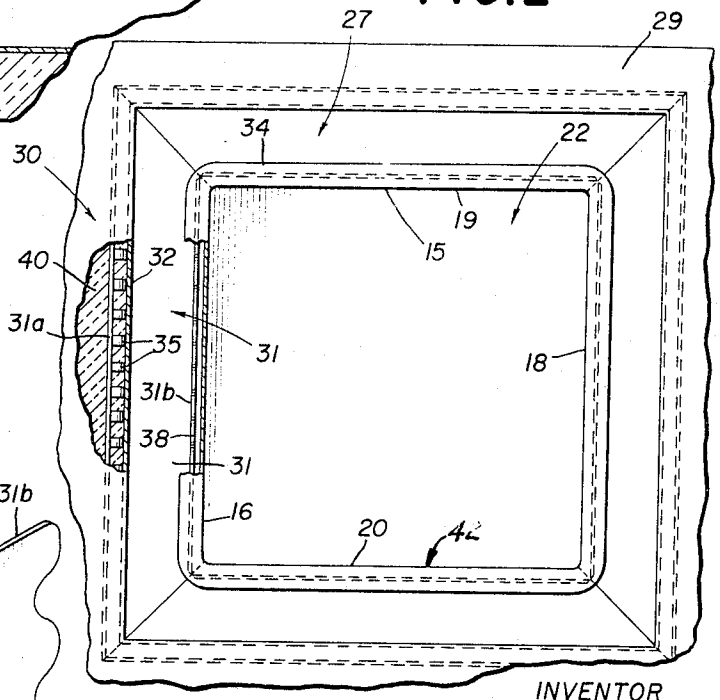
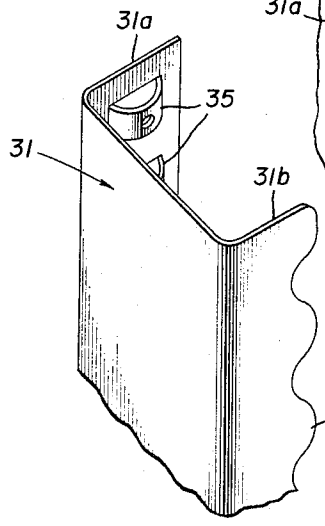


FIG. 3



INVENTOR
GEORGE R. DAVENPORT
BY Peter S. Lucyshyn
ATTY

United States Patent Office

3,280,814

Patented Oct. 25, 1966

3,280,814

OVEN LINER SUPPORT STRUCTURES

George R. Davenport, Effingham, Ill., assignor to Borg-Warner Corporation, Chicago, Ill., a corporation of Illinois

Filed Jan. 11, 1965, Ser. No. 424,602
2 Claims. (Cl. 126—19)

The present invention relates to an oven and more particularly to an improved support structure for a liner in such oven.

When an oven is heated to a high temperature, the oven liner must be thermally insulated so that it does not transmit heat to the exposed surfaces of a range or like structure surrounding the oven and thereby raise the temperature of the latter above a safe level. For example, the inside of a domestic oven may be heated to 1000° F. and maintained at that temperature for approximately two hours to burn off or clean deposited food substances and grease. While the oven is heated to and maintained at this high temperature for a predetermined period of time, the outside exposed structure must not rise above about 150° F.

Furthermore, it is undesirable to have heat transmitted away from the liner at support points so that the latter are cooled below the necessary high temperature, in the range of 1000° F., to effect oven cleaning.

Accordingly, it is an object of the present invention to provide a support structure for an oven liner enclosed in a range body or like structure, which thermally insulates the oven liner from the surrounding enclosure to assure that the exposed surfaces, customarily contacted by a housewife or, in built-in units, by wood or other high heat sensitive structural members, are maintained at a predetermined safe temperature. Along these lines, it is an object of the present invention to provide an oven liner support of the above type which assures that the oven liner is maintained at a uniformly high temperature throughout including the support points, when heated to such a desired high temperature.

It is a more detailed object of the present invention to provide a support collar or bracket constructed of heat conducting material which is capable of supporting the oven liner in a fixed, stable position yet restricts conduction of heat from the liner to the outside structure of the range or like surrounding enclosure.

It is an overall object of the present invention to provide an economically manufacturable and easily installable support means for an oven liner adaptable to standard oven units which is reliable in operation, making ovens raised to high temperatures much safer in operation.

Other objects and advantages of the present invention will become apparent upon a reading of the following detailed description taken in conjunction with the drawings in which:

FIGURE 1 is a side elevation partial cross-section of a range embodying the present invention;

FIGURE 2 is a front elevation of the range of FIGURE 1; and

FIGURE 3 is an enlarged perspective view of the oven liner support bracket shown in FIGURES 1 and 2.

Referring more particularly to the drawings, FIGURE 1 shows a range **10** having an outside, exposed surface generally designated as **11**. Atop the range are provided a plurality of burners **12**. A frame structure **14** holds the different parts of the range in assembled position, including a box-like oven liner **15**. The latter has a pair of opposite side walls **16, 18**, respective top and bottom walls **19, 20**, and a rear wall **21**. A bracket **23** maintains the rear wall **21** attached to the oven frame **13**. The front of the box-like oven liner, as herein illustrated,

has an access opening **22** to permit insertion or removal of articles being heated in the oven.

The access opening **22** is selectively closed by an oven door **24** hingedly attached to the frame (not shown) and including a pair of respective inner and outer interfitting panels **25, 26**. A central portion **28** of the inner panel **26** is embossed so as to extend into the oven liner enclosure through the access opening **22** when the door is closed, aiding in sealing the opening. Disposed about the oven liner and positioned to engage the inner panel **26** of door **24** when the latter is closed, is a range front frame structure **29**, often referred to as the mullion portion of the oven. The oven liner is installed through an opening **27** defined by the mullion portion.

In accordance with the present invention, the oven liner **15** is supported on the front portion **29** of the range frame by a liner support assembly **30** so as to restrict the conduction of heat from the oven liner to the range frame. As herein illustrated, the latter includes a support bracket or collar **31** of a generally U-shaped construction having a pair of respective legs or cross-sectional end portions **31*a***, **31*b*** with one longitudinally extending leg engaging an integral flange **32** of range frame **29** and another longitudinally extending leg engaging an inturned lip **34** of oven liner **15**. The preferred embodiment of leg **31*a*** is provided with a plurality of dimples **35** to press against an upper surface **36** of flange **32**. The other leg **31*b*** is formed with a scalloped edge **38**, as best shown in FIGURE 3, to engage an inner surface **39** of the oven liner inturned lip **34**. As is clear from the foregoing, the contact between the liner **15** and the support bracket **31** is reduced to less than what the contact would be if the engagement between the two parts was along the overall length of the bracket.

To effectively support the oven liner in position while permitting adjustment for dimensional differences between different oven liners and range mullion portions, resiliency in both the support collar **31** and the legs **31*a***, **31*b*** is utilized. Thereby, the oven liner **15** can be aligned properly. Surrounding the oven liner is insulation **40** of a suitable type to assure that the high heat possessed by the oven liner is not conducted or transmitted to the exposed structure of the range **10**. For effecting a seal between the oven door **24** and the oven liner **15** when the door **24** is closed, a braid insulation member **41**, formed of fiber glass, for example, is carried on the door about the embossed portion **28**. The latter is pressed tightly against the liner lip **34**.

In operation, the oven liner **15** can be raised to a high temperature, for example in the range of 1000° F. without raising the exposed metal surface of the range to an unsafe temperature. In practice, the temperature of the exposed structure of the range is maintained below 150° F. The contact between the support collar and both the range frame and oven liner is limited to only a portion of the area over which contact would be made if both of the support bracket legs **31*a***, **31*b*** were in contact along their full length. In the instance of leg **31*b***, the area of contact is limited to the engaging portions of the scalloped edge **38** of the bracket leg. The support collar is not heated to as high a temperature as the liner **15**. To further restrict thermal conduction between the oven liner and the exposed structure of the range, the dimples **35** in the bracket leg **31*a*** reduce the area of contact in that portion of the structure.

In addition, the present inventive structure assures that the front portion of the oven liner does not lose heat and that its temperature does not fall below a range near 1000° F., assuring that proper burning off or cleaning of the oven liner occurs even along a front inner peripheral edge portion **42**.

Though the present invention has been set in the environment of a range, it is understandable to those skilled in the art that it is usable in a built-in type oven also. Furthermore, though a specific shape of thermal conduction restriction collar is described, other shapes effecting a restriction of area of contact to reduce thermal conductivity may also be used. Additionally, it is not necessary that the collar be continuous in surrounding the oven liner, as it may be comprised of parts making contact with the oven liner along a sufficient area to support the latter and maintain it aligned within the range framework.

While the invention has been described in connection with a preferred embodiment, it is understood that I do not intend to limit the invention to such embodiment. On the contrary, I intend to cover all alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention as defined by the appended claims.

I claim:

1. A supporting bracket adapted for use in a range or the like having an exposed outside surface enclosing a frame and an oven liner, said frame having a fixed supporting portion, said oven liner disposed adjacent said frame supporting portion and being of a generally box-like construction having a bottom wall, a pair of side walls, a top wall, and a rear wall, said walls arranged to define a front opening for permitting access thereto, said support bracket positioned about said liner and having a cross-section form adapted to extend between said liner and said frame fixed portion, first and second cross-sectional end portions on said bracket extending longitudinally for engaging the liner and said frame fixed portion, respectively, a plurality of projections carried by said first cross-sectional end portion adapted to engage only predetermined areas of said liner disposed along the longitudinal extension of said first cross-sectional end portion, a plurality of protuberances carried by said second end portion adapted to engage only predetermined areas of said fixed frame portion disposed along the longitudinal extension of said second cross-sectional end portion, said bracket projections and protuberances effective both to support said liner on said fixed frame portion and to restrict heat transfer between said liner and said range frame and exposed surfaces.

2. The supporting bracket of claim 1 wherein said frame fixed supporting portion is formed as a flange, first and second cross-sectional end portions carried by said bracket for engaging said liner and said flange, respectively, said first cross-sectional end portion formed with cut-outs to reduce the heat conducting contact surface between said bracket and said liner, said second cross-sectional end portions formed with protuberances to reduce the contact area and thereby the heat transfer between said bracket and said flange, said bracket second cross-sectional end portion protuberances pressing against said flange so that said bracket first cross-sectional end portion is positioned to receive said oven liner and maintain the latter in aligned position, said bracket effective to support said oven liner while restricting heat transfer between said liner and said range frame and exposed surfaces.

References Cited by the Examiner

UNITED STATES PATENTS

3,066,212 11/1962 Hurko ..... 126—273 X

FREDERICK L. MATTESON, JR., *Primary Examiner.*

E. G. FAVORS, *Assistant Examiner.*