

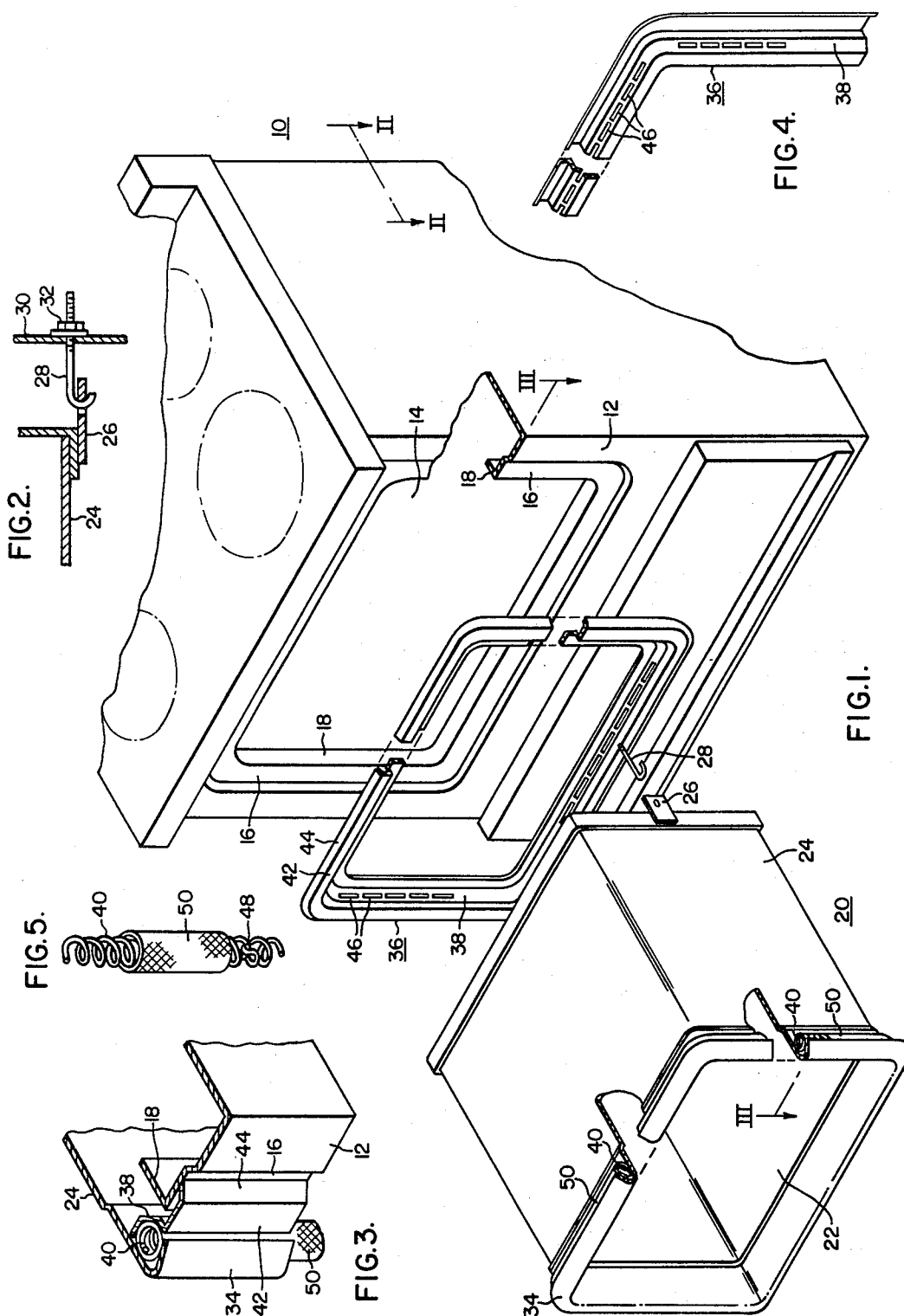
May 28, 1968

H. SCHMAHL

3,385,280

MOUNTING ARRANGEMENT FOR OVEN LINER

Filed May 24, 1966



1

3,385,280

MOUNTING ARRANGEMENT FOR OVEN LINER
Henry Schmah, Springfield Township, Mansfield County,
Ohio, assignor to Westinghouse Electric Corporation,
Pittsburgh, Pa., a corporation of Pennsylvania
Filed May 24, 1966, Ser. No. 552,449
5 Claims. (Cl. 126—19)

This invention relates to an arrangement for mounting an oven liner in a cooking range, particularly a range of the character adapted to undergo heat cleaning of the oven. The principal purpose of the mounting arrangement is to provide physical support for the front of the liner and to provide a thermal break between the oven liner and the range body.

It is required, as a practical matter, that ovens which are heated to a high temperature for the purpose of heat cleaning have the oven liner mounted in the range body in such a manner that conduction of heat from the oven liner to the range body is restricted to a substantial degree.

An object of the present invention is the provision of a mounting arrangement in which the oven liner is adequately supported adjacent its front opening from the range body, and which also provides an inexpensive, but effective, thermal break which limits the rate of heat conduction from the oven liner to the range body supporting the oven liner.

While the invention is applicable to ovens installed in various ways, the invention will be described in connection with a free standing range.

A typical range which may incorporate the invention includes means defining a forwardly-open cavity adapted to receive the rectangular-box-shaped oven liner therein. The oven liner includes an outwardly-projecting peripheral flange adapted to seat upon structure at the throat of the range body cavity when the oven liner is installed and pulled rearwardly by fastening means connecting the rear end of the oven liner to the range body.

In accordance with my invention, it is contemplated that helical spring means encircling the oven liner adjacent the back face of the peripheral flange of the oven liner serve as the means to space and support the oven liner from the range body throat and at the same time provide a substantial degree of thermal isolation of the liner structure from the range body structure. Preferably, a generally rectangular adaptor collar is provided between the helical spring and the oven liner peripheral flange. The adaptor collar is contoured in cross-section so that its outer peripheral edge bears against the border of the opening of the range body, and another portion of the adaptor collar provides a seat for a portion of the circumference of the helical spring means. The helical spring may be installed under slight tension initially with the opposite ends thereof hooked together to hold it in place while the oven liner is being installed. The coils of the spring may be spaced apart a substantial degree and still provide relatively uniform support for the entire periphery of the oven liner front flange. The circular configuration of the spring coils limits the degree of contact between the oven liner and the adaptor collar, in the preferred embodiment, to point contact and limited line contact. Accordingly, the total area of contact through which conduction of heat can take place is greatly limited.

A preferred embodiment of my invention as incorporated in a typical free standing range will be described in connection with the accompanying drawing wherein:

FIGURE 1 is an exploded isometric view of the basic structure of a range incorporating the invention;

FIG. 2 is a fragmentary horizontal sectional view, corresponding to one taken along the line II—II of FIG. 1, showing the connection of the back wall of the oven liner

2

to the range body after installation of the liner in the body;

FIG. 3 is an isometric sectional view corresponding to one taken along the line III—III of FIG. 1 and with the parts in their installed relationship;

FIG. 4 is a fragmentary isometric view of one corner portion of the adaptor collar illustrating the provision of slots in the adaptor collar for increasing the thermal isolation of the liner and range body; and

FIG. 5 is a fragmentary, partly-broken view of the spring means and a sleeve therefor.

As shown in FIG. 1, the exterior appearance of the range body 10 is substantially conventional and includes front wall structure 12 provided with a rectangular opening 14 defined by an inset border 16 and rearwardly directed flange 18.

The oven liner 20 is of generally rectangular-box-shape and is substantially enclosed on all sides except for the front opening 22 which is framed by an outwardly-directed peripheral flange 34. Each of the opposite vertical side walls 24 of the liner has an apertured, small flat bracket 26 welded to its rear portion. The aperture of the bracket receives the end of a hook bolt 28 after the liner is placed in the range body. The liner is pulled toward the rear of the range by the bolt so that the front of the liner seats firmly in its proper location. FIG. 2 illustrates the relationship of the liner rear corner edges, the bracket 26, the hook bolt 28, and the vertical rear wall 30 of the range body through which the hook projects. A nut 32 is turned onto the threaded ends of the hook bolts to draw the liner firmly into a seated position.

In the preferred embodiment of the invention an adaptor collar generally designated 36 (FIGS. 1, 3 and 4) is provided. The collar is in the form of a generally rectangular frame which seats between the oven liner front and the range body cavity throat in the finished product. The adaptor collar is of generally S-shape in lateral cross-section through each of its four sides. The inner margin 38 (FIG. 3) provides a generally forwardly facing concave surface against which the back side circumferential portion of the helical spring 40 seats. The outer margin 42 of the adaptor collar curves in an opposite direction from the inner margin and is preferably provided with a slightly rearwardly-directed edge flange 44 which seats against the range body inset margin 16. The contact between the adaptor collar and the margin 16 of the range body is thus limited to line contact.

As shown in FIG. 4, a series of spaced slots 46 extending lengthwise of the sides of the adaptor collar may be used to further thermally isolate the liner from the body by reducing the heat conduction through the adaptor collar. The slots may be spaced non-uniformly in accordance with the parts of the range body which normally have the highest temperature rise.

The helical spring 40 used in the currently preferred embodiment of the invention is a single length, steel helical spring having coils of about $\frac{5}{16}$ inch in diameter with the spring coils pulled apart to provide a pitch of about $\frac{1}{4}$ inch between adjacent coils. The single length of spring is wrapped about the liner and the ends hooked together where they meet as at point 48 shown in FIG. 5. Primarily for the purpose of obstructing any view of the spring coils, and to some extent assisting in reduction of heat transfer, a glass cloth sleeve 50 is slipped over the spring before installation.

The parts of FIG. 1 are installed by first wrapping the helical spring 40 around the periphery of the oven liner and hooking the ends as at 48. The helical spring may be sized so that at this time there is slight tension in the spring to maintain it in place around the oven liner. Then the adaptor collar 36 is slipped onto the oven liner from the rear and the liner and collar are slid into the range

3

body cavity 14. The hook bolts 28 are applied to pull the assembly tightly into place. As is best shown in FIG. 3, a flanged edge of the outer marginal portion of the adaptor collar seats against the inset portion 16 of the range body front opening border. The spring seats between the opposing concave faces defined by the inner marginal portion 38 of the adaptor collar and the oppositely facing concave face presented by the liner flange 34 and the liner walls. It will be apparent from FIG. 3 that point and line contact of a limited degree exists between the spring coils and their engaging structure with this arrangement. To the extent that the glass sleeve 50 is interposed between certain contact locations which would be metal-to-metal otherwise, the glass sleeve does not increase the extent of the contact.

The illustrated arrangement is the currently preferred arrangement as embodied in commercial devices. Alternate designs utilizing the helical spring concept may well be devised within the scope of the invention. For example, redesign of the border of the front opening of the range body to receive one circumferential portion of the helical spring in a seat, and modifying the configuration of the peripheral flange 34 of the oven liner would permit the elimination of the intermediate adaptor collar. An example of the modification in an opposite sense would be the provision of an additional helical spring to seat between the opposing faces of the adaptor collar and the range body.

It will be appreciated that a number of advantages are available with an arrangement according to the invention. For example, the arrangement provides mechanical support and spacing between the range body and oven liner with relatively limited conductive contact. The support provided is uniform around the entire periphery of the front opening. The helical spring arrangement lends itself to variation in spacings of the coils in accordance with design requirements dictated by particular ovens. Additionally, the invention permits the design of the parts to take a form which substantially hides the helical spring portion without impairing its function.

I claim as my invention:

1. In an oven:

oven cabinet means encompassing a forwardly-open cavity adapted to receive an oven liner therein;

a forwardly-open oven liner sized to be received within

4

said cavity with the forward portion of said liner located generally in the throat of said cabinet means cavity, said liner including outwardly-projecting peripheral flange means bordering said liner front opening; and

helical spring means disposed between said oven liner peripheral flange and said oven cabinet cavity throat physically support said liner at said throat, and to provide a thermal break between said liner and said oven cabinet means.

2. In an oven according to claim 1:

a peripheral collar disposed between said liner flange and said oven cabinet front opening border, said collar being contoured in cross-section to form a seat against which a portion of the circumference of said spring means bears.

3. In an oven according to claim 2:

said collar is generally S-shaped in lateral cross-section the concave face of one portion thereof serving as said seat, with an edge of the other portion thereof engaging said oven cabinet means.

4. In an oven according to claim 2:

said spring means comprises a single helical spring of a length adapted to encircle said oven liner with the ends of said spring means connecting to place said spring means under slight tension for installation.

5. In an oven of heat cleaning character in which an oven liner is supported within oven cabinet means with the forward portion of the oven liner supported from means bordering the front opening of the oven cabinet in which the oven liner is situated, the improvement comprising:

helical spring means encircling a forward portion of said oven liner and seating against said forward portion of said oven liner to space said forward portion of said oven liner from said border of said oven cabinet means and provide a heat break between said oven liner and said oven cabinet means.

References Cited

UNITED STATES PATENTS

3,280,814	10/1966	Davenport	126—19
3,327,094	6/1967	Martin et al.	126—19 X

FREDERICK KETTERER, *Primary Examiner.*