Sept. 1, 1931. W. NOBLE 1,821,232

OVEN CONSTRUCTION AND HINGE THEREFOR

Filed July 7, 1930 2 Sheets-Sheet 1

Fig. 1

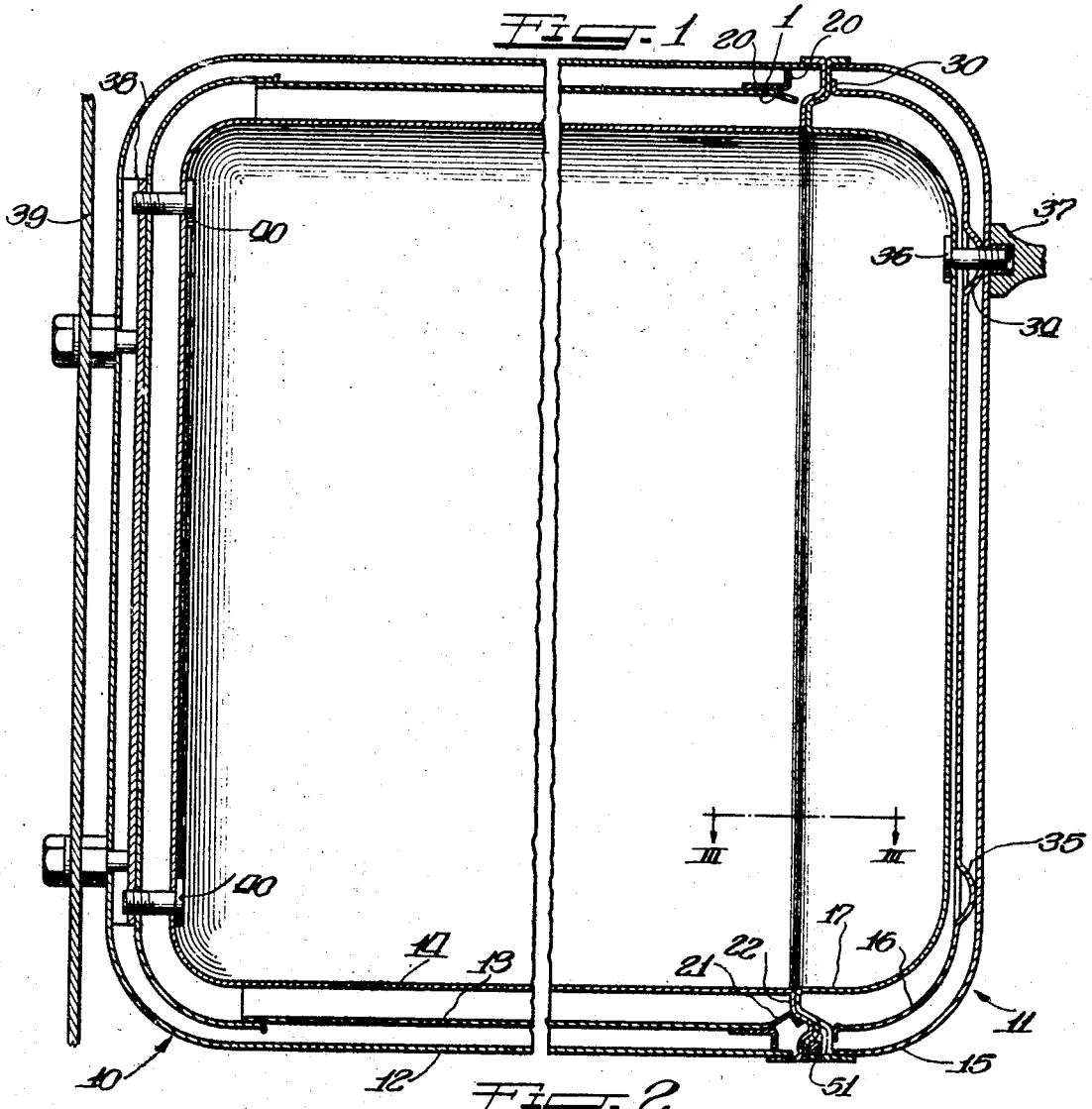
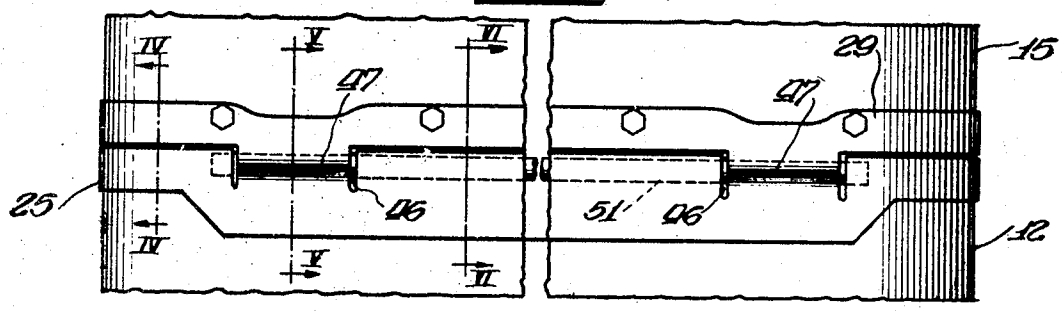


Fig. 2



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Fig. 3

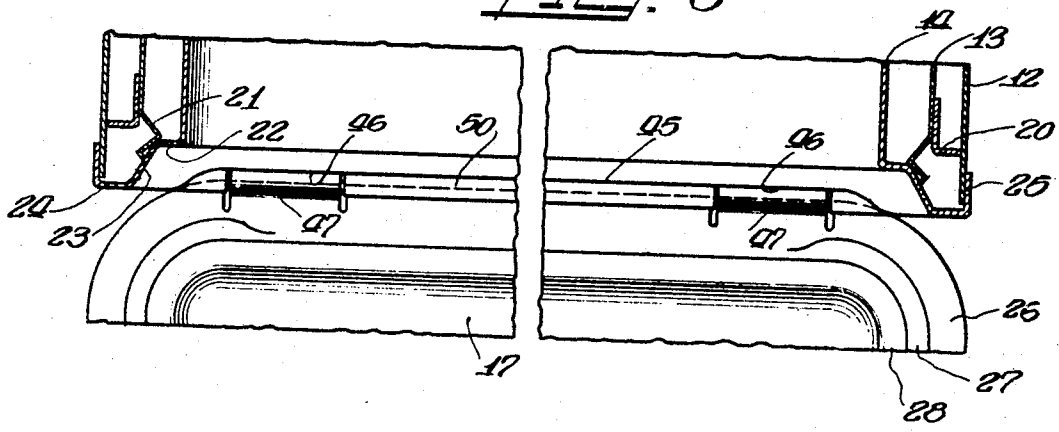


Fig. 4

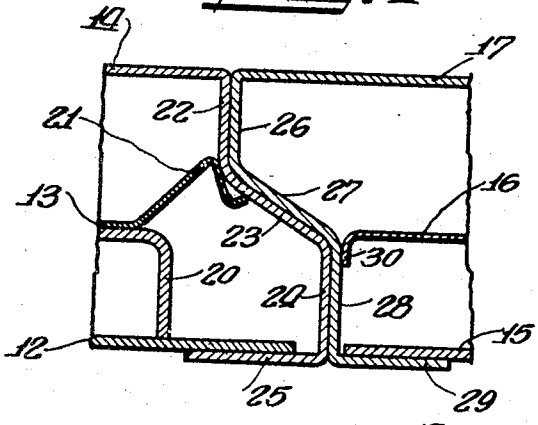


Fig. 5

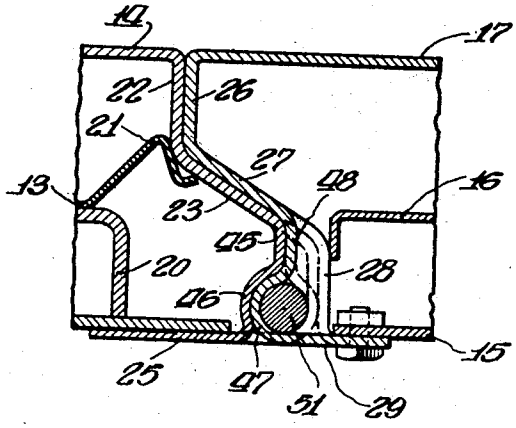
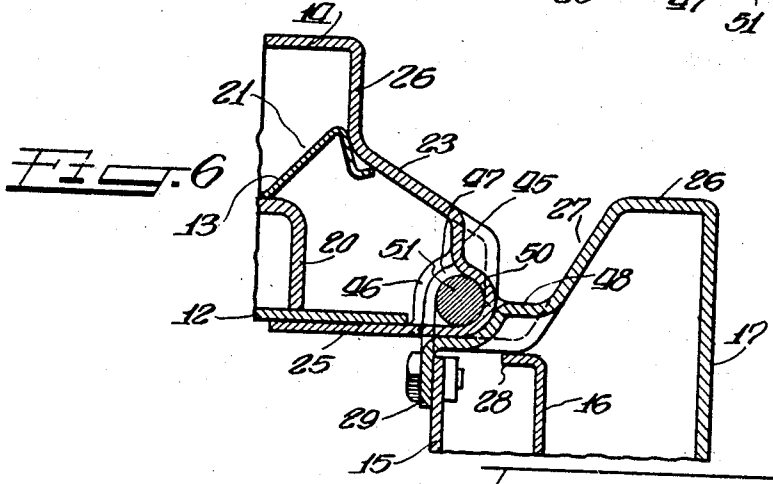


Fig. 6



Inventor.

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Patented Sept. 1, 1931

1,821,232

UNITED STATES PATENT OFFICE

WARREN NOBLE, OF DETROIT, MICHIGAN

OVEN CONSTRUCTION AND HINGE THEREFOR

Application filed July 7, 1930. Serial No. 466,130.

This invention relates to an oven construction and more particularly to an oven and door therefor composed of a plurality of nested shells and a hinge for the oven door.

It is an object of this invention to provide a novel hinge mounting for connecting an oven door to an oven, whereby both the door and the oven are formed of a plurality of nested shells.

Another object of the invention resides in the provision of a simple and inexpensive hinge structure for securing a hollow oven door to an oven having hollow walls.

A further object of the invention has to do with the utilization of the innermost shells of a multi-shell oven and door therefor, to define a hinge structure for securing the door to the oven.

A still further object of the invention is to utilize the inner shell of a multi-shell oven to define a stepped ledge or seat for accommodating an oven door as well as a hinge structure for the door.

In accordance with the general features of this invention there is provided an oven and door therefor, each composed of a plurality of nested shells, the innermost shell of the oven being bent to define the end of the oven cooperable with the door as well as a portion of the hinge for the door and the innermost shell of the door being extended to define the edge of the door adapted to rest against the end of the oven as well as another portion of the hinge cooperable with the other hinge portion.

Other objects and features of this invention will more fully appear from the following detailed description taken in connection with the accompanying drawings which illustrate a single embodiment thereof, and in which

Figure 1 is a fragmentary vertical sectional view through an oven construction embodying the features of this invention;

Figure 2 is a fragmentary bottom view of the oven illustrating the hinge between the door and the oven proper;

Figure 3 is a fragmentary plan view of the oven door in its open position and illustrating the side walls of the oven in section, this view taken on substantially the line III—III of Figure 1;

Figure 4 is an enlarged fragmentary sectional view taken on substantially the line IV—IV of Figure 2 looking in the direction indicated by the arrows and illustrating the manner in which the door is seated on the open end of the oven;

Figure 5 is a fragmentary enlarged sectional view taken on substantially the line V—V of Figure 2 looking in the direction indicated by the arrows and illustrating in detail the hinge construction; and

Figure 6 is a view similar to Figure 5 taken on substantially the line VI—VI of Figure 2 illustrating the position of the door when the oven is open.

As shown on the drawings:

The reference character 10 designates generally an oven proper, having one end formed open for cooperation with a door 11 adapted to be hingedly connected thereto. The oven, proper, comprises a plurality of nested shells which are preferably punched from sheet metal and which are designated by the reference characters 12, 13 and 14. These shells are spaced from each other to provide a plurality of air compartments in the wells of the oven 10. It is, of course, to be understood that while I have illustrated the walls of the oven 10 as well as the walls of the door 11 as being made up of three nested shells, that the invention is not to be thus limited for obviously, the number of shells used may be varied in accordance with the particular desires or requirements of the manufacturer of the oven. Also, it is to be noted that while the oven illustrated is designed especially for use in connection with an electric stove, the invention may be used in any other types of ovens without deviating from the features of this invention.

The door 11 of the oven, is also as previously pointed out, made up of a plurality of sets of metallic shells which are designated by the reference characters 15, 16 and 17.

The outermost shell 12 of the oven is spaced from the middle shell 13 by means

of an angular spacing element illustrated in Figure 1 and designated by the reference character 20. The inner shell 14 of the oven is spaced from the middle shell 13 by means of the outermost end of the middle shell 13 which is bent in a diagonal direction and toward the shell 14 for cooperation with an annular flange portion 22 formed integral with the inner shell 14. This bent outer end of the shell is designated by the reference character 21, and will be more fully discussed hereinafter.

The outer end of the innermost shell 14 is bent in a direction toward the outermost shell 12 to form the flange portion 22 which is at substantially right angles to the shell 14, a diagonal portion 23 and another flange portion 24 parallel to portion 22 terminating in an outside strip 25 disposed parallel to the shell 14 and adapted to overlap the outer edge of the outermost shell 12. It will be evident from the drawings that the three flange portions 22, 23 and 24 serve to completely enclose the open ends of the spaces between the nested shells 12, 13 and 14 as well as to define a stepped seating portion for the door 11 when it is in its closed position.

The innermost shell 17 of the door has its outermost end bent into flange portions 26 and 28 and an intermediate diagonal portion 27 which portions are of a similar shape to the three portions 22, 23 and 24 of the inner shell 14 of the oven. In fact, when the door is in its closed position the portion 26 will engage the portion 22, the portion 27 will engage the portion 23 and the portion 28 will engage the portion 24, as is best shown in Figure 4. Also, the portion 28 terminates in an overlapping strip 29 disposed substantially parallel to the shell 17 and adapted to overlap the outer surface of the outer shell 15 of the door as shown in Figure 4. Obviously, the provision of the diagonal contacting portions 23 and 27 of the oven and door respectively enable a more nearly seal-tight engagement of the oven by the door.

It will now be noted that the bent portion 21 comprising the outer end of the intermediate shell 13 of the oven is so formed as to abut both the portions 22 and 23 of the innermost shell at the junction of these portions. Also, the intermediate shell 16 of the door is provided with an outwardly bent edge 30 for engaging and abutting the portion 28 on the inner shell 17 of the door.

Referring to Figure 1 it will be observed that the middle shell 16 of the door is separated from the outermost shell 15 by means of protuberances 34 and 35 formed integral with the middle shell and arranged to contact the inner surface of the outer shell 15.

A bolt 36 extends through the three shells on the door as well as through the protuberance 34 and is adapted to have threaded on its outer end a handle 37 for the door.

The rear part of the oven proper has a plate 38 disposed between the middle shell 13 and the outer shell 12 which is adapted to be bolted to a side 39 of the range or stove carrying the oven. Also, the bolts 40 extend through suitable openings of the innermost shell 14 and middle shell 13 and are threaded into the plate 38 for fixedly anchoring the plate to the shells of the oven.

Also, the inside surfaces of the shells 14 and 17 may be chromium plated in order to enhance the heat radiating qualities of these surfaces.

I shall now proceed to describe in detail the novel hinge of my invention between the door 11 and the oven 10. The coacting portions going to make up this hinge comprise in part an extension of the inner shell 14 of the oven and in part an extension of the inner shell 17 of the door. More specifically the vertical portion 24 of shell 14 is depressed inwardly at the bottom of the oven where the hinge connection is to be established as indicated at 45 (Figs. 3 and 6). The ends of this depression 45 are slotted and depressed still further into the air compartment behind the shell 14 as indicated at 46—46 (Figs. 3 and 5). Each of the depressed portions 46, as will be evident from Figure 5, terminates at its lower end in the flange 25. The two depressed portions 46 are adapted to cooperate with spaced hinge portions on the oven door which take the form of curved extensions 47 formed integral with the vertical portion 28 of the inner shell 17 of the door. Each of the pressed down extensions 47 to the door has a curvature conforming to that of the depression of the corresponding depressions 46 so as that as the door is swung to its full open position the extension 47 will move easily over the curved surface of the depression 46 as is evident from Figures 5 and 6. Furthermore, it will be observed that the vertical portion 28 of the shell 17 has an outwardly pressed portion 48 adapted to abut the inwardly depressed portion 45 of the vertical portion 24 of shell 14 (Figure 5).

The depressed portion 45 of the vertical portion 24 of shell 14, as best shown in Figure 6, terminates in a semi-cylindrical projection 50 having its outermost surface flush with the normal outer surface of the portion 24. This semi-cylindrical extension 50 extends the full distance between the hinge projections 47—47 on the door so as to accommodate a hinge-bolt 51 extending through the semi-cylindrical portion 50 and having its ends passing through the interior of the extensions 46—46 on the door. It is to be noted that the hinge-bolt 51 may comprise a single rod or it may comprise two

sections, one for each of the hinge extensions 47—47 on the oven door.

From the foregoing description it will now appear that the intermediate portion of the hinge-bolt 51 is mounted in and supported by the semi-cylindrical projection 50 on the vertical portion 21 of the inner shell 11 of the oven and the ends of this hinge-bolt 51 extend through the hinge extensions 47—47 of the oven door so that these extensions may pivot about the ends of the hinge-bolt as the door is opened and closed. The cooperating depression 45 and the extension 48 on the shells 14 and 17 respectively are provided to insure a tight engagement of the oven by the door at the point of the hinge when the door is in its closed position. Then, too, it will be observed that each of the curved depressions 46 is shaped so as to fit around the associated semi-cylindrical extension 47 on the oven door so that the extension may freely move back and forth over the curved surface of the depression 46 as the door is moved from open to closed position and vice versa.

The cooperating diagonal portions 23 and 27 on the inner shells 14 and 17 of the oven and door respectively are advantageous in that when the door is in its closed position a more effective seal is established between the door and the oven due to the fact that in order for any air or gas to leave or enter the oven it is necessary for such air or gas to follow a tortuous path defined in part by the aforesaid diagonal portions.

Now I desire it understood that although I have illustrated and described in detail the preferred embodiment of the invention the invention is not to be thus limited but only insofar as defined by the scope and spirit of the appended claims.

I claim as follows:

1. In combination in an oven construction, an oven composed of a plurality of nested shells and a door therefor formed of a plurality of nested shells, the innermost shell of the oven and the innermost shell of the door being extended to define cooperating hinge portions of a hinge for connecting the door to the oven.

2. In combination in an oven construction, an oven composed of a plurality of nested shells and a door therefor formed of a plurality of nested shells, the innermost shell of the oven and the innermost shell of the door being extended to define cooperating staggered ends of the oven and door respectively as well as hinge portions cooperable with each other to hingedly secure the door to the oven.

3. In combination in an oven construction, an oven composed of a plurality of nested shells, a door therefor formed of a plurality of nested shells, the innermost shell of the oven and the innermost shell of the door being extended to define cooperating hinge portions of a hinge for connecting the door to the oven and a hinge bolt extending through said portions for connecting them together.

4. In combination in an oven construction, an oven composed of a plurality of nested shells and a door therefor formed of a plurality of nested shells, the innermost shell of the oven and the innermost shell of the door being extended to define cooperating staggered ends of the oven and door respectively as well as hinge portions cooperable with each other to hingedly secure the door to the oven, said staggered ends including diagonal surfaces on the door and oven arranged for abutment when the door is in its closed position and formed to define a tortuous path over which any gas leaving the oven must pass.

5. In combination in an oven construction, an oven composed of a plurality of nested shells and a door therefor formed of a plurality of nested shells, the innermost shell of the oven and the innermost shell of the door being extended to define cooperating hinge portions of a hinge for connecting the door to the oven, said extended portions of the innermost shells of the door and oven being formed to aid in the spacing of the shells of the door and oven respectively.

6. In combination in an oven construction, an oven member composed of a plurality of nested shells, a door member therefor formed of a plurality of nested shells and a hinge between the door and oven comprising in part an extension on a shell of one of said members and a cooperable extension on a shell of the other member formed to be aligned with said first extension and a hinge bolt disposed in said aligned extensions.

7. In combination in an oven construction, an oven member composed of a plurality of nested shells, a door member therefor formed of a plurality of nested shells and a hinge between the door and oven comprising in part an extension on a shell of one of said members and a cooperable extension on a shell of the other member formed to be aligned with said first extension and a hinge bolt disposed in said aligned extensions, said extensions comprising parts of the cooperating ends of said members and said ends including cooperable diagonal surfaces formed to abut each other when the door member is in its closed position so as to define a tortuous path over which any gas escaping the oven must pass.

8. In combination in an oven construction, an oven member composed of a plurality of nested shells, a door member therefor formed of a plurality of nested shells and a hinge between the door and oven comprising in part an extension on a shell of one of

said members and a cooperable extension on a shell of the other member formed to be aligned with said first extension and a hinge bolt disposed in said aligned extensions, said extensions comprising parts of the cooperating ends of said members, said ends including curved surfaces disposed about said extensions and over which said extensions must move as said door member is moved on said hinge bolt.

In testimony whereof I have hereunto subscribed my name at Detroit, Wayne County, Michigan.

WARREN NOBLE.