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H. E. MILLS
OVEN DOOR SEAL FOR STOVES

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Fig. 1

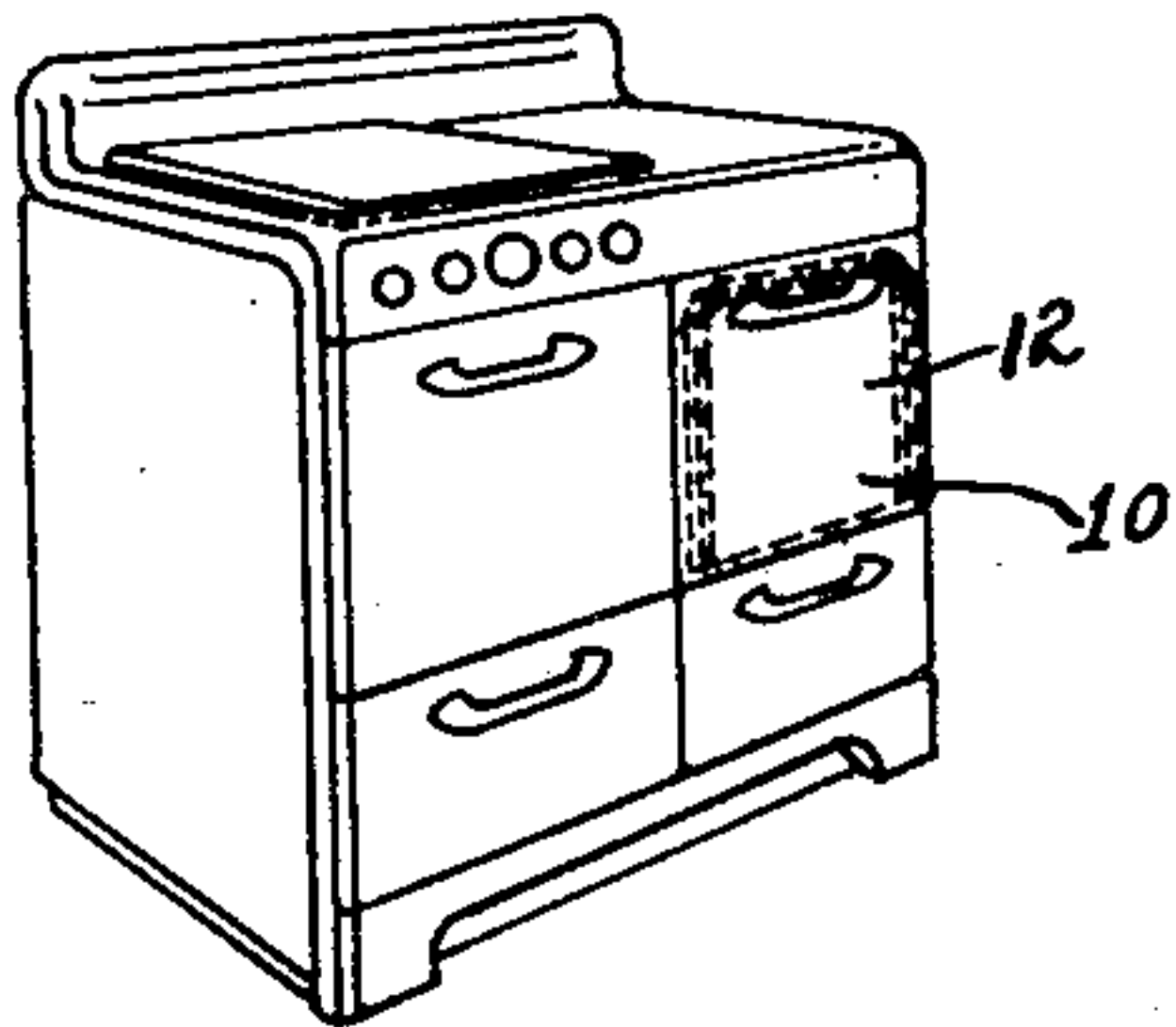


Fig. 2

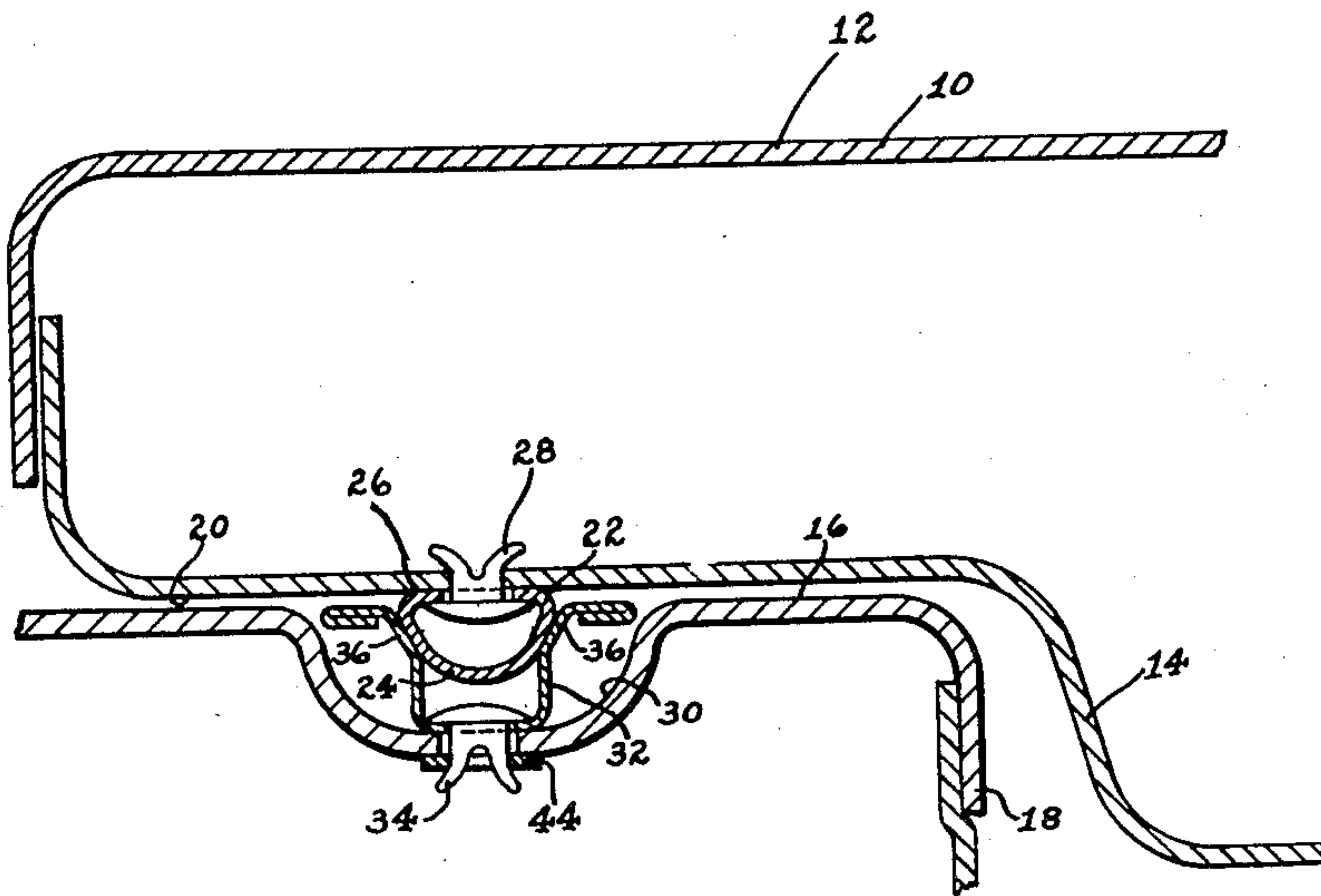


Fig. 3

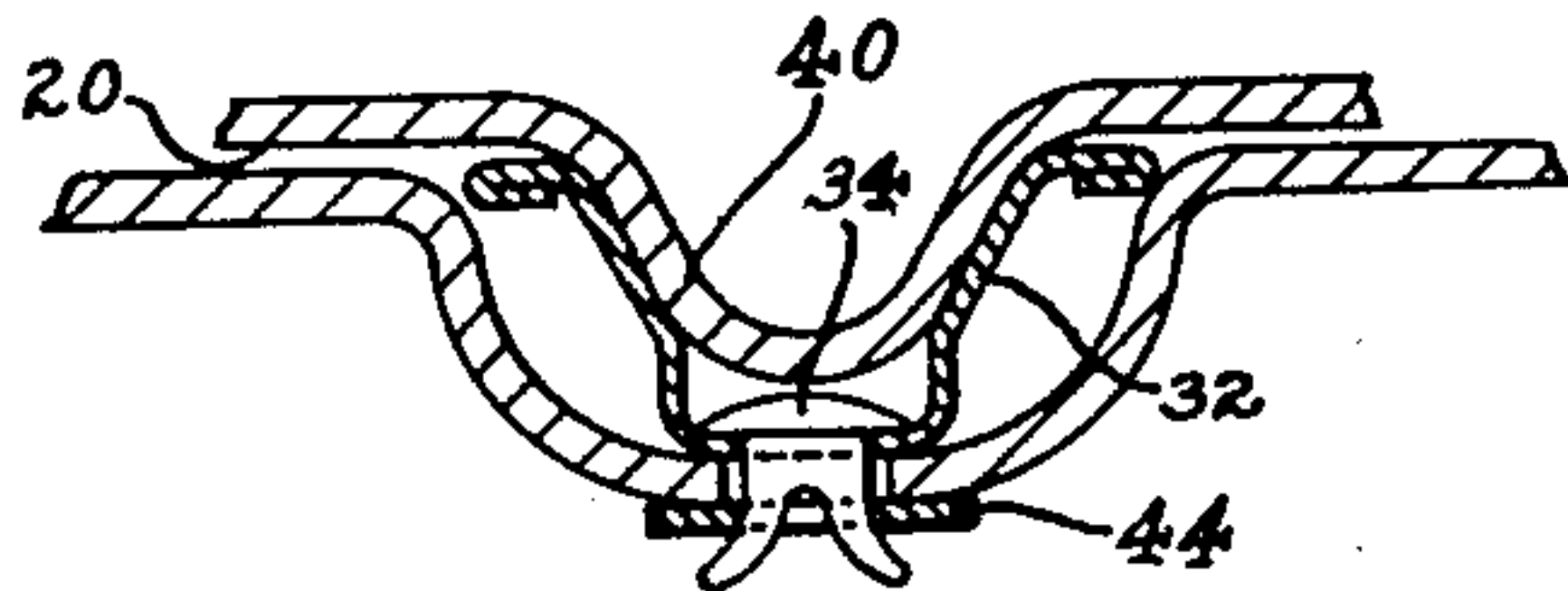
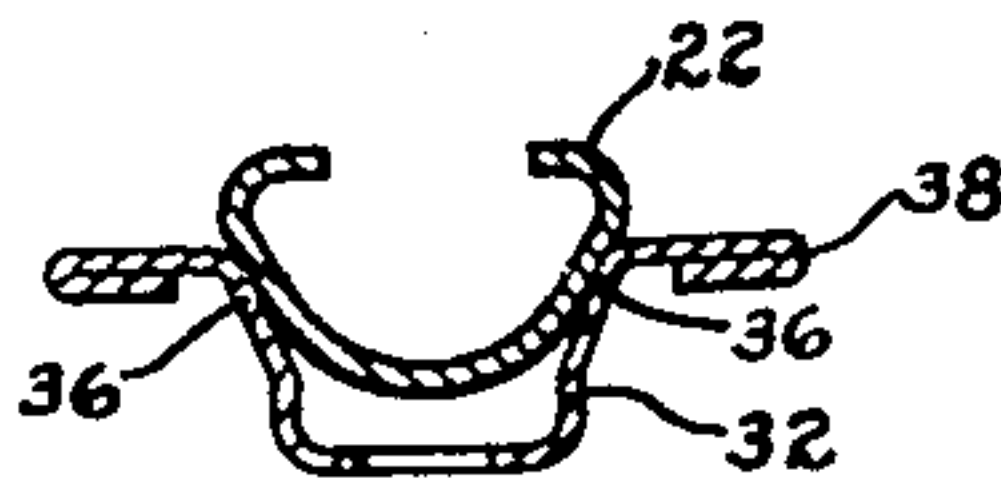


Fig. 4



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OVEN DOOR SEAL FOR STOVES

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3 Claims. (Cl. 20—69)

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This invention relates to oven door seals for stoves and has for its principal object to provide an effective seal on oven doors such as are used on domestic gas and electric ranges to prevent the escape of heat and products of combustion from inside the oven when the door is closed.

Many attempts have been made heretofore to provide an effective seal for an oven door, but so far as I have been able to ascertain, none of these have been satisfactory. One arrangement heretofore commonly employed provided a flat surface on the inside of the door which was supposed to seat against a flat surface around the door opening, but such surfaces, when heated, warped and thereby left a crack or opening through which heat and products of combustion escaped from the stove. This is objectionable for two reasons, one of which is that it throws more heat into the kitchen, and the other of which is that it causes the stove parts around the door, particularly the outside door panel and the top panel of the range, to become highly heated.

According to the present invention, use is made of two V or channel shaped members, one of which nests within the other, one of which is secured to the door and the other of which to the surface around the door opening. At least one of the V-shaped members is made resilient so as to permit it to conform to and contact with the surface of the other V member.

Other objects of the invention, therefore, are to provide:

An effective oven door seal;

An oven door seal which embodies a certain amount of resiliency so that it can conform to the adjacent surfaces of the joint and effectively seal the same, thereby compensating at least to a certain extent for warpage of the parts which form the oven door and the oven door opening;

A new and improved seal for oven doors and the like.

Other and further objects of the invention will be apparent from the following description and claims and will be understood by reference to the accompanying drawings, of which there is one sheet, which, by way of illustration, show preferred embodiments and the principles thereof and what I now consider to be the best mode in which I have contemplated applying those principles. Other embodiments of the invention embodying the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention

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and the purview of the appended claims. I also contemplate that of the several different features of my invention, certain ones thereof may be advantageously employed in some applications separate and apart from the remainder of the features.

In the drawings

Fig. 1 is a perspective view of a stove embodying the invention;

Fig. 2 is an enlarged sectional view through the oven door taken generally along the line 2—2 of Fig. 1;

Fig. 3 is a view similar to Fig. 2 illustrating a modified form of the invention; and

Fig. 4 is a fragmentary view of the parts of the seal illustrated in Fig. 2 but in their approximate shape before one of the sealing members is seated against the other.

While this invention is particularly adapted for use in oven doors of gas or electric ranges, I contemplate that it may be used on any door on any appliance having use for a seal of this kind, or for any other purpose where a seal of this kind may be used to advantage. The seal construction herein disclosed is particularly adapted for use in applications where heat is employed, although it might be used advantageously in applications where heat is not employed because of the permanence of the finish on the sealing members and the non-hygroscopic nature of the material.

Referring now to the drawings, a modern range is there illustrated in Fig. 1 provided with an oven, the opening to which is closed by the door 10. The inside dotted line shown on the door 10 in Fig. 1 is employed to designate the opening to the oven which is closed by the door 10, while the outside double dotted line is employed to designate the seal embodying the invention herein disclosed which is provided between the inner face of the door 10 and the surface around the opening to the oven. I contemplate extending this seal along the vertical sides of the door 10 and across the top thereof, although it may be made to extend across the bottom of the door if desired. I have found, however, that across the bottom of the door the seal provided by the contact between the inner face of the door and the surface below the opening is ordinarily sufficient, particularly since the door 10 is hinged along its bottom to the stove which tends to properly position and space the lower edge of the door relative to the surface below the opening to the oven.

The door 10 is adapted to swing outwardly and downwardly to a horizontal position to expose the oven opening and, as is customary in modern

ranges, spring means are provided to counterbalance the weight of the door 10 as well as to urge the same to its closed position. However, such spring means have not been shown as the illustration thereof is not believed to be necessary.

In Fig. 2 an enlarged section through the door 10 is illustrated. This section indicates that the door 10 may be provided by outer and inner panels 12 and 14, the edges of which are flanged and nested so as to provide space inside the door for insulation, etc.

A surface 16 surrounds the opening 18 to the oven, and this surface is customarily provided by a sheet metal panel or frame member of the stove. This surface which extends around the oven opening lies in a plane which faces a plane surface 20 provided on the periphery of the inner face of the door 10 and when the door is closed the spring means associated with the mounting of the door bias or resiliently hold the door 10 in the position illustrated in Fig. 2 relative to the face 20 around the opening 18. The face 20 has secured thereto a sealing member or bead 22 which is hollow and of a cross section so as to provide a curved, generally cylindrical surface 24 which projects away from the face 20.

The member 22 preferably is formed of light gauge stainless steel, such for example as .006 sheet stock. This member 22 extends along the sides and across the top of the door and may, if desired, extend across the bottom of the door so as to extend completely around the inner face of the door at the periphery thereof. The surface of the member 22 opposite the curved surface 24 is made flat as indicated at 26, and shaped to seat on the flat surface of the face 20. A series of rivets 28 may be employed for clamping the member 22 to the surface 20 so as to form a good seal therebetween. The stock of which the member 22 is formed, however, may be sufficiently flexible and resilient to readily conform to the surface 20.

The surface 16 around the door opening 18 is provided with a channel 30 for accommodating the sealing member 32. The sealing member 32 is channel-shaped in cross section and extends around the door opening 18 co-extensive with the member 22. The open side of the channel-shaped member 32 is constructed and positioned to receive the curved surface 24 of the sealing member 22 in the manner as illustrated in Fig. 2. The channel-shaped member 32 is loosely secured, such as by means of rivets 34, to the bottom wall of the groove 30. The connection between the member 32 and the wall of the groove 30 is what might be termed a floating connection so as to permit the channel-shaped member 32 to shift within limits in order to properly align itself with the sealing member 22.

The pressure exerted by the counterbalance spring associated with the hinged mounting of the door, or an independent pressure-applying means if desirable, provides sufficient pressure between the door 10 and the surface 16 around the door so as to cause the members 22 and 32 to seat on and seal against the door and frame respectively, as well as to seat against each other as illustrated in Fig. 2 so as to provide an effectively sealed joint between the door and the door opening.

The member 32 may be made of stock of a somewhat lighter gauge than the stock employed for the member 22 so that the surface of the sealing member 32 engaging the surface of the sealing member 20 will seat on and conform thereto so as to provide an effective seal therebetween. The side walls of the member 32

are flared outwardly, as indicated at 26, so as to readily receive the sealing member 22 as the door is closed and to cause the member 32 to properly align itself with the member 22.

The outer edges of the sealing member 32 may be folded back on themselves as indicated at 38 in Fig. 4, and be positioned in spaced relation to the side walls of the groove 30 and below the surface 16 so as to be out of the way. Preferably the member 32 is made (as shown in Fig. 4) so that the spacing between the flared out portions 36 is slightly less than the width of the sealing member 22 so that when the door 10 is closed the sealing member 22 will have penetrated into the channel in the sealing member 32 and have deflected the flared portions 36 thereof outwardly in order to provide a positive contact between the interengageable sealing surfaces of the members 22 and 32.

In the modification illustrated in Fig. 3, in lieu of employing the sealing member 22, the surface 20 of the door may be provided with an integral bead 40 to take the place of the separate sealing member 22 and cooperate with the sealing member 32 to provide a sealed joint.

The rivet 34 may be connected to a washer 44 so as to permit floating movement of the sealing member 32 relative to the wall to which it is affixed.

While I have illustrated and described preferred embodiments of my invention, it is understood that these are capable of modification and I therefore do not wish to be limited to the precise details set forth but desire to avail myself of such changes and alterations as fall within the purview of the following claims.

I claim:

1. Sealing construction for sealing between two surfaces, comprising a sealing member for each of said surfaces, one of said sealing members comprising a bead, the other of said sealing members being open channel-shaped and flexible and positioned to receive said bead, means providing a floating connection between one of said sealing members and the surface on which it is arranged, said bead being of generally convex configuration and continually decreasing in width toward the end thereof presented toward said channel-shaped member, the sides of said channel-shaped member flaring outwardly at the ends thereof, said outwardly flaring ends being positioned to engage the sides of said bead and to be forced apart by the penetration of said bead into said channel-shaped member, the width of said bead being greater than the width of the innermost portions of said outwardly flaring ends of said channel-shaped member.

2. Sealing construction for sealing between two surfaces, comprising a sealing member for each of said surfaces, one of said sealing members comprising an elongated bead having a curved surface transversely thereof, the other of said sealing members being open channel-shaped and flexible and positioned to receive said bead, means providing a floating connection between said channel-shaped member and the surface on which it is arranged, the sides of said channel-shaped member flaring outwardly and being positioned to sealingly engage the curved surface of said bead at the sides thereof upon penetration of said channel-shaped member by said bead, the width of said bead being greater than the width of the channel-shaped member at the bottom thereof, the portions of said sides of said channel-shaped member engaged by said bead being of

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substantially the same configuration as the engaged portions of said bead so as to provide a surface to surface contact between said sealing members.

3. Sealing construction for stoves and the like in which an access opening is provided with a door for closing the same and wherein said door and access opening have bounding surfaces facing and contiguously arranged when the door is in closed position, each of said surfaces being provided with a sealing member, one of said sealing members comprising an elongated bead of convex configuration, the other of said sealing members being an elongated channel-shaped and flexible member positioned to receive said bead when said door is in closed position, the sides of said one of said sealing members being loosely mounted upon one of said surfaces so as to permit lateral adjustment of said one member with respect to the other of said members upon engagement of said members, the sides of said channel-shaped member being positioned to engage

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the sides of said bead and to be deflected by the penetration of said bead into said channel-shaped member so as to provide a seal therebetween, the width of said bead being greater than the width of the channel-shaped member at the bottom thereof whereby said sides of said channel-shaped member are subjected to increasing deflection as said bead is moved into said channel-shaped member.

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