

No. 611,770.

Patented Oct. 4, 1898.

R. S. CHADWICK & F. CLARKE.

OVEN DOOR.

(Application filed May 4, 1898.)

(No Model.)

Fig. 1.

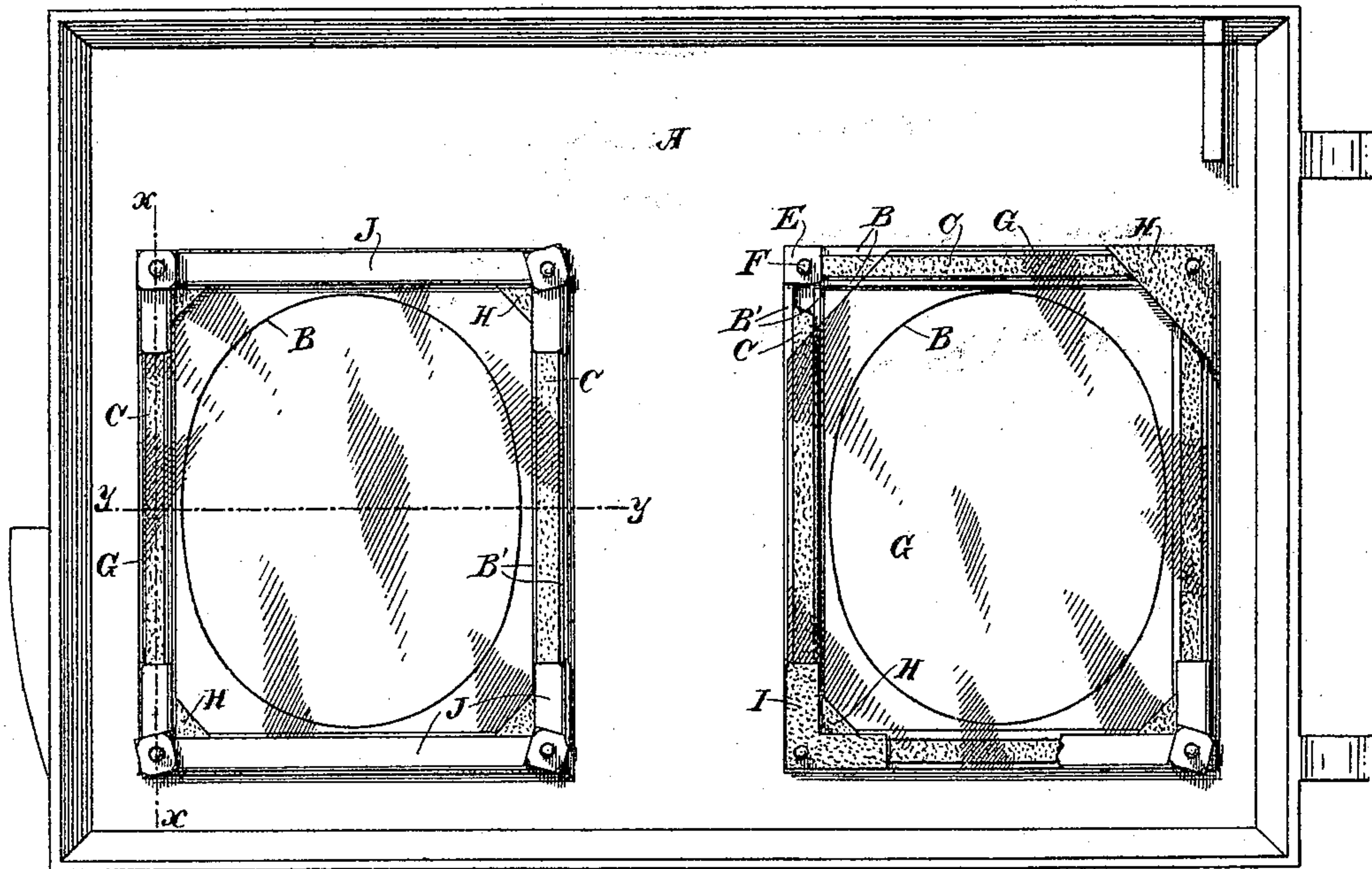


Fig. 2.

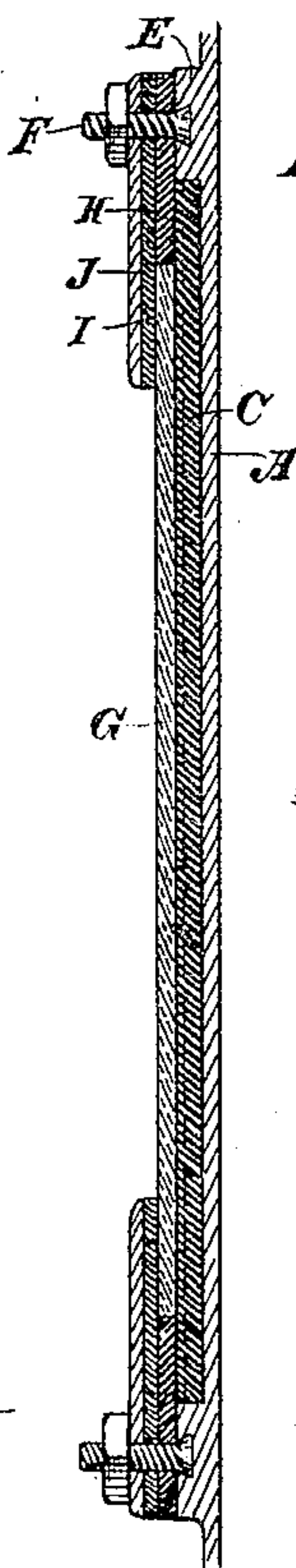
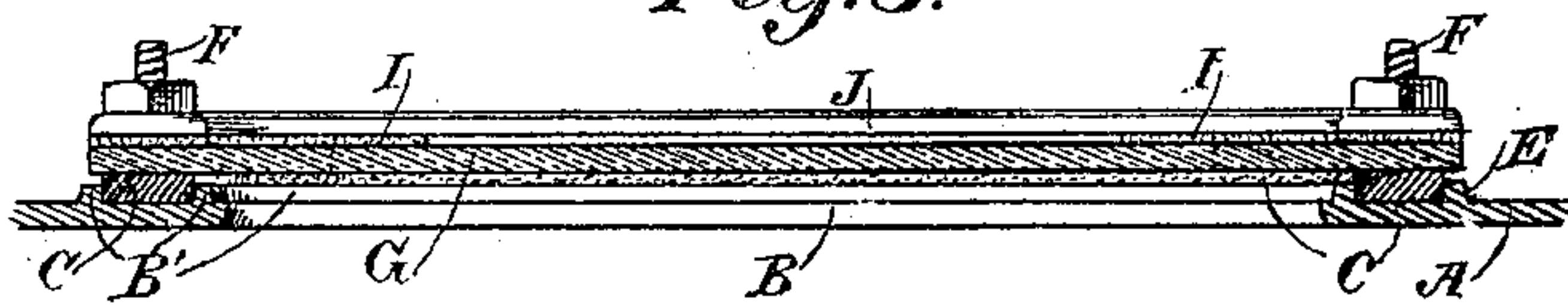


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## OVEN-DOOR.

SPECIFICATION forming part of Letters Patent No. 611,770, dated October 4, 1898.

Application filed May 4, 1898. Serial No. 679,669. (No model.)

*To all whom it may concern:*

Be it known that we, RUFUS S. CHADWICK and FRANK CLARKE, citizens of the United States, residing in the city and county of San Francisco, State of California, have invented an Improvement in Oven-Doors; and we hereby declare the following to be a full, clear, and exact description of the same.

Our invention relates to improvements in transparent attachments for oven-doors, whereby the interior of the oven may be inspected without opening the door.

It consists, essentially, in the employment of a plurality of openings made through the door, with transparent covering-plates, and a means for supporting and fixing said plates in position, whereby an evenness of expansion and contraction is effected and the danger of fracture to the glass is reduced to a minimum.

It also consists in details of construction which will be more fully explained by reference to the accompanying drawings, in which—

Figure 1 is an interior view of the door. Fig. 2 is a vertical section on line *xx* of Fig. 1. Fig. 3 is a horizontal section on line *yy* of Fig. 1.

In the use of glass to provide transparent closures for oven-doors it has been customary to make a single opening of considerable size and various devices have been adopted to secure the glass in such a manner as to allow it to expand and contract with the variations of heat and at the same time to make a tight joint; but where a large sheet of glass is employed it is almost impossible to prevent currents of varying temperature striking different portions of the glass, with the result that the unequal contraction or expansion will fracture the glass. In our invention we reduce this liability to fracture and at the same time provide for a sufficient amount of light within the oven by making a plurality of smaller openings having correspondingly smaller covering-glass, and the manner of fitting the glass to these openings is designed to further protect the glass and make it durable.

As here shown, A is an oven-door of any suitable or desired shape hinged or otherwise attached in any usual manner so as to be

opened and closed. In this door we make two or more small oval openings B, which are so situated with relation to each other that the shadow of a person inspecting the oven through one of these openings will not fall over the other one so as to obstruct the light which it is necessary to have within the oven, the person using one of the openings to look through while the light passes freely into the other. Around these openings on the interior of the door are cast parallel raised lugs B', which form channels between them. These are here shown as being rectangular, as most convenient for the fitting of the packing and the glass.

For the purpose of packing we prefer to use a substance known as "usidurian" or "salamander," a well-known material which possesses the quality of increasing in thickness when subjected to heat, thus making it unnecessary to set the clamping-nuts down as snug as would have to be done if asbestos or other non-expansile packing is used. It is also easily cut and adapted to its place. Strips C of this material are fitted into the grooves or channels extending along the four sides a little distance from the oval openings. At the angles raised lugs E are cast, within which are cast the heads of bolts F, which project from the inner face of the door. These lugs insure a strong hold of the bolts without their passing through and showing on the outside of the door, and they also serve to support a triangular piece of packing at each of the angles, the use of which will be hereinafter described. The glass plate G rests upon the packing-strips C, with its edges projecting slightly beyond each of the strips, as shown. The angles of the glass strips are cut off diagonally, so that they pass inside of the holding-bolts. Triangular strips H of the packing material are perforated, so as to slip down over the bolts, and the inner edges fit against the diagonally-cutaway corners of the glass, practically forming a continuation of the glass, and by reason of their being secured upon bolts they act to lock the glass in place without the necessity of other attachments, thus preventing it from slipping sidewise or endwise in either direction.

Angular strips I are cut corresponding in



shape with the angles of the frame and essentially coincident with the packing-strips C, which lie in the grooves and upon which the plate of glass rests. These angular strips

5 I have holes made in the corners to fit over the bolts, which project up through them, so that the strips lie upon the triangular pieces and extend in each direction a short distance upon the glass.

10 Angular metal strips J extend from one corner to the other and a short distance along the sides of the glass, and these are also bored at the corners to fit over the bolts, thus resting upon the packing-strips I, these packing-strips being all made of the material previously described. Nuts are then screwed down upon the ends of the bolts and the whole clamped in place.

The peculiar characteristic of the packing material which inclines it to swell under heat will always make a tight joint without screwing the nuts down too closely, and they can be turned with the fingers. The glass then resting upon the packing-strips in the grooves or channels, the edges project, as previously stated, beyond these strips, thus leaving them exposed to the heat of the interior of the oven.

The short angular strips I raise the metal binding-strips J a short distance above the glass upon each side and upon the ends, and this allows a free access of the heated air to all parts of the surface and edges of the glass, so that the whole of the glass is exposed to an even temperature.

35 No openings are made to connect the interior and exterior of the oven, as no draft or cold air is desired upon the inner portion of the glass; but the strips C, upon which the glass rests, raise it sufficiently above the metal of the door to allow free access to the outer air against the outer surface of the glass.

By reason of the small size of the openings the glass of each will be exposed to a practically even temperature and the expansion and contraction will be evenly regulated, whereas if the larger glasses are used there is danger of unequal expansion and contraction over so large a surface. One of these small spaces serves to allow the light to enter freely, while the other serves for inspection without the body of the person making such a shadow as to prevent a clear view of the interior.

The expense for the small glasses is much less than for those of larger dimensions.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. An oven-door having a plurality of openings, spaced vertical and horizontal ribs upon the interior face of the door and adapted to form channels, packing-strips fitted in said channels and a glass having its outer face resting in contact with said strips, and bolts at the angles of the channels and having their heads cast permanently and rigid with the door-plate and projecting inwardly and adapted to receive nuts whereby the parts are clamped in place.

2. An oven-door having a plurality of openings, rectangular channels formed around said openings on the interior face of the door, packing-strips of expansible material fitting said retaining-channels, raised lugs cast integral at the angles of the channels and having bolts projecting therefrom, the heads of which are cast in said lugs, glazed plates resting upon the packing-strips having the edges projecting beyond said strips, sectional angle-strips perforated to fit the bolts and resting upon the glazed plates, and means for securing said strips so as to leave air-spaces of contact on the interior faces and edges of the glass.

3. An oven-door having a plurality of openings, channels extending upon the sides and ends of said openings, strips of packing material fitting and retained in said channels extending along the sides and ends and forming a surface, glass plates resting upon said packing-surface, with the edges extending beyond the outer edges of the packing-strips, said plates having the angles cut away diagonally, bolts projecting inwardly having their heads cast in lugs at the channel-angles, triangular packing-strips perforated to fit said bolts with one edge contacting with the cut-away edges of the glass whereby the latter is prevented from side movement, angle-strips of packing material perforated to fit over the bolts and extending a short distance in each direction along the glass coincident with the inner packing-strips, and metal plates fitting the bolts and resting upon said angular packing-strips with nuts whereby the whole are locked together so that air-spaces are formed beneath said locking-plates substantially as described.

In witness whereof we have hereunto set our hands.

RUFUS S. CHADWICK.  
FRANK CLARKE.

Witnesses:

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