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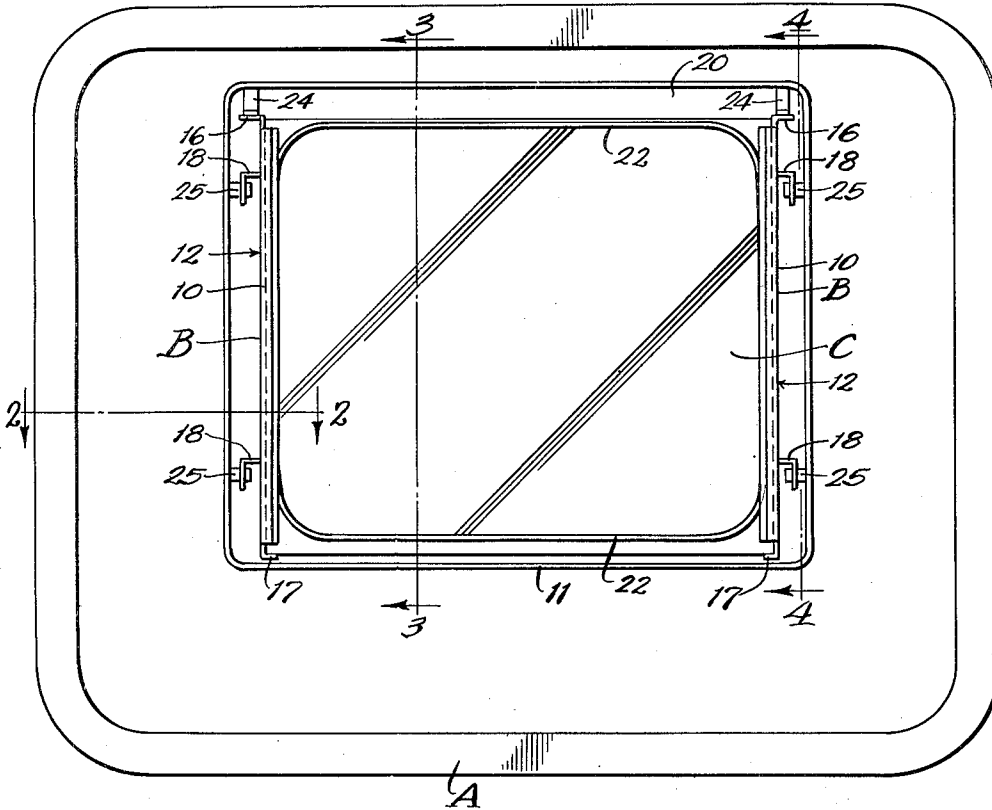
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OVEN DOOR WITH TRANSPARENT PANEL

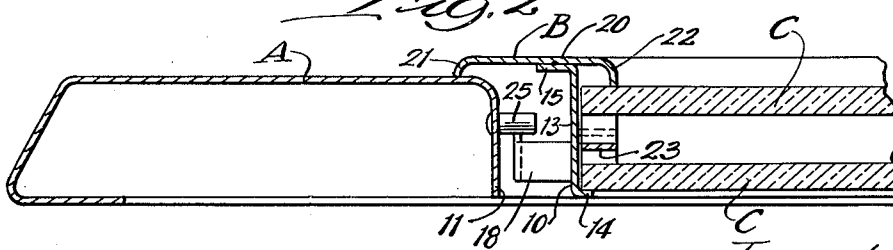
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*Fig. 1*



*Fig. 2*



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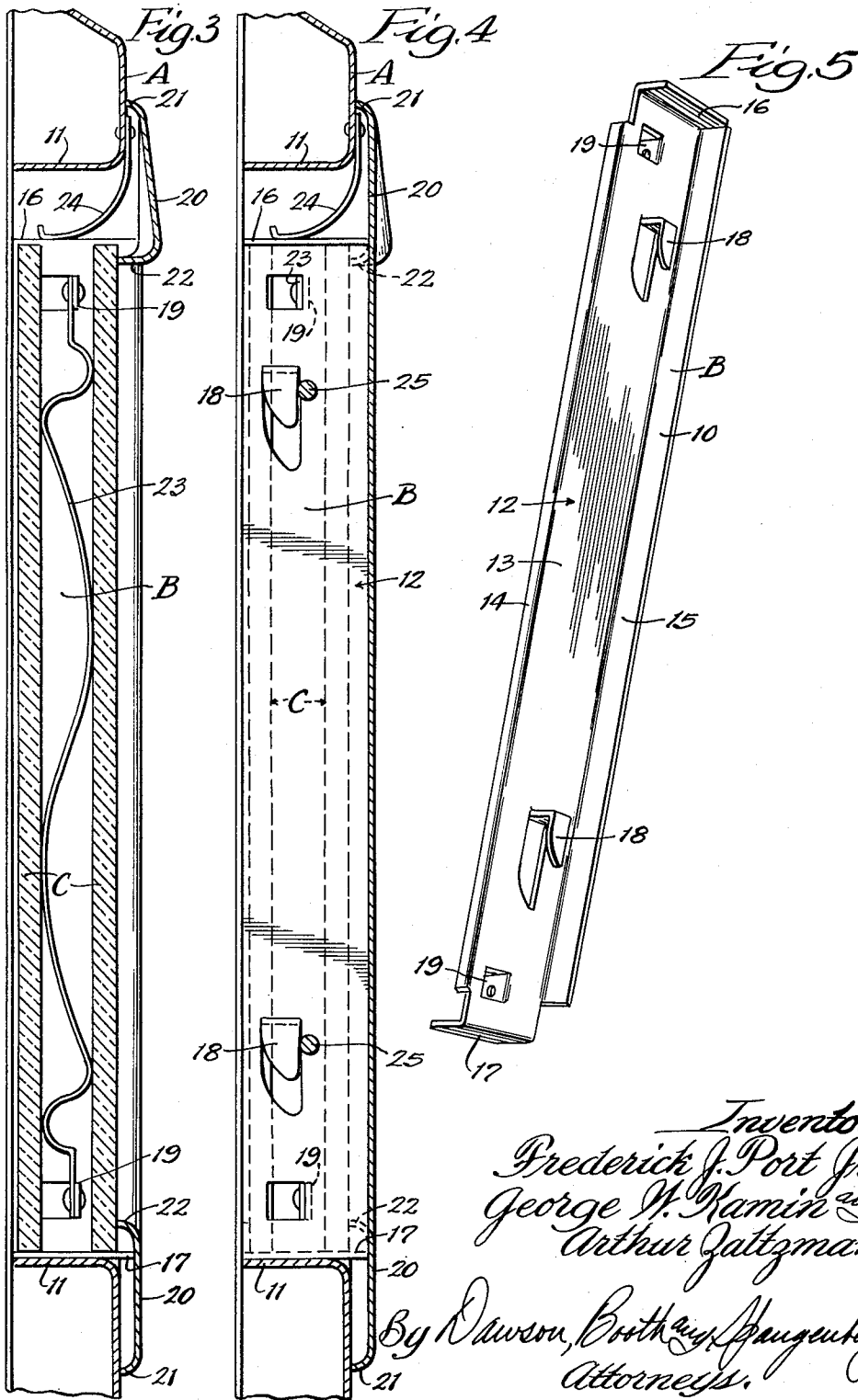
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# UNITED STATES PATENT OFFICE

2,514,590

## OVEN DOOR WITH TRANSPARENT PANEL

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8 Claims. (Cl. 126—200)

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This invention relates to a range door and more particularly to a range or oven door having a removable, transparent panel therein.

It is common practice to mount glass panels within an oven door. Usually the glass panes are mounted on a frame unit and secured within the door, the frame being ventilated so that air inside the glass may breathe, that is, be expelled as its volume increases on heating and augmented by fresh air as its volume decreases on cooling. The frames are sometimes permanently installed, permitting no removal by the user, unless the door is taken apart. Sometimes, however, the frame is made removable by using a tool such as a screw driver to remove the fastenings.

The above structure has been unsatisfactory because the breathing of air into the frame structure during the heating and cooling periods results in bringing grease-laden vapors into the interior of the frame where some of the grease condenses out on the inner surfaces of the glass. The glass is obscured and the panel becomes unsightly. On the other hand, if the panel is entirely sealed so that no breathing can occur, there is distinct danger of the assembly blowing up when the air between the panels becomes heated to a high temperature. Further, the positive fastening means heretofore employed for securing the glass panes in position, places strains upon the glass during the heating and cooling of the metallic parts, with the result that openings occur for the influx and outflow of air and often cracks are formed in the glass panels.

An object of the present invention is to provide a range door with a transparent panel assembly in which breathing is allowed to occur while at the same time the structure can be removed and the panels cleaned by the user with a minimum of effort. Yet another object is to provide a frame insert for a range door which is removable by fingertip pressure and which supports glass panes in a floating arrangement relieving them of strains and twists as the metal parts become heated and cooled, while at the same time permitting their ready removal for cleaning upon the withdrawal of the insert frame. Other specific objects and advantages will appear as the specification proceeds.

The invention is illustrated, in a preferred embodiment, by the accompanying drawings, in which:

Fig. 1 is a front view in elevation of a door structure and panel unit embodying my invention; Fig. 2, an enlarged transverse sectional detail view, the section being taken as indicated at

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line 2 of Fig. 1; Fig. 3, an enlarged sectional view, the section being taken as indicated at line 3 of Fig. 1; Fig. 4, an enlarged detail sectional view, the section being taken as indicated at line 4 of Fig. 1; and Fig. 5, a perspective view of a side frame member employed.

In the illustration given, A designates a door structure, B a frame insert structure, and C, transparent panes supported within the structure B.

The door A may be of any suitable type or construction. In the illustration given, a hollow frame structure is shown having a central window aperture at 10. As shown more clearly in Fig. 2, the casing A has a central portion cut away and has one side wall turned inwardly toward the other, as shown at 11, to provide a frame border for the window.

The insert structure B may be of any suitable type or construction. In the illustration given, we employ the metal side frame members 12, as illustrated best in Fig. 5, one being employed as a left-hand side frame and the other as a right-hand side frame. Each member 12 is provided with a web body 13, an inwardly turned front flange 14, an outwardly turned rear flange 15, an outwardly turned top flange 16, and an inwardly turned bottom flange 17. The web portion 13 is struck outwardly to form a pair of locking members 18 and a portion of the web 13 near each end is struck out and turned inwardly to form spring supporting brackets 19.

The side frame members 12 extend vertically along each side of the frame B and are enclosed by a perimetric border strip 20. The border 20 may be spot welded or otherwise secured to the flange 15 of each of the members 12. The perimetric border strip 20 extends entirely around the panel and has an outer edge turned inwardly at 21 to engage the casing of the door structure A. The border strip 20 also has an inwardly turned edge portion 22, as shown more clearly in Fig. 2.

The two side frame members 12 of the perimetric border strip 20 provide between them a hollow frame adapted to receive the transparent panes C of glass or other suitable material. The panes C are held apart in a floating arrangement by the springs 23. As shown more clearly in Figs. 2 and 3, the ends of the springs 23 are secured to the brackets 19 of each of the frame members 12 and the springs are of the waved curvature shown so as to resiliently maintain the panes C in the positions shown best in Figs. 2 and 3. It will be noted that the inturned border 22 urges the rear

pane C inwardly while the ledge or flange 14 of the member 12 urges the opposite pane C inwardly. Upon the heating and cooling of the metal parts, the panes C may move toward each other and against the force of spring 23.

Secured to the casing A and directly above each of the side frame members 12, is a leaf spring 24. The springs 24 bear upon the top flange 16 of each of the members 12, as shown best in Figs. 1 and 4.

Pins 25 are secured to the flange walls 11 of casing A, as shown best in Figs. 1 and 2, and, when the panel B is pressed downwardly into the position shown in Fig. 1, the pins engage the locking members 18 and prevent movement of the frame unit B from its position within the aperture of the door.

It will be understood that the door A may be equipped with lining, handles, hinges and other usual parts.

#### Operation

In the operation of the structure, the unit B is placed in position by pressing the unit upwardly against the spring 24 until the locking members 18 are above the pins 25 and then pressing the unit B inwardly and downwardly so as to bring the locking members 18 behind the pins 25, as shown best in Fig. 4. Within the structure B, the transparent panes C are held in the spaced apart position illustrated best in Fig. 3 by means of the curved springs 23. The structure described remains firmly in position within the aperture of the door frame because of the locking pins 25 and because the springs 24 urge the unit B downwardly into the locked position.

While the unit B and the panes C are supported within the aperture of the door, expansion and contraction of the parts may take place freely and air may be breathed into and out of the space between the panes C. The floating glass panes will not have twists and strains transmitted to them as a result of heating and cooling of metallic parts or as a result of imperfectly formed or shaped mating parts, because the spring members 23 yield while at the same time providing even support of the panes C throughout their length.

When the vapors drawn into the space between the panes cause a deposition of grease upon the panes, the entire structure may be quickly withdrawn and the panes separately cleaned. The user may raise the panel B so that the border strip 20 moves upwardly along casing A, thus compressing the top springs 24. The entire unit may then be drawn rearwardly and removed from the aperture of the door. In the illustration given, the removal is from the inner side of the door and is accomplished when the range door is swung to open position.

After removal of the frame unit B, the panes C are exposed at their upper ends and may be drawn upwardly to remove them. Upon being cleaned, they may be readily inserted into the hollow frame structure B to the position illustrated in Fig. 3. The unit B may then be inserted in the manner already described.

While in the foregoing specification, we have set forth certain structures in great detail, it will be understood that such details may be varied widely by those skilled in the art without departing from the spirit of our invention.

We claim:

1. In a range door having a window aperture therein, a perimetric frame adapted to be brought into sealing relation with said aperture, a pair

of transparent panes removably mounted in spaced relation in said frame, cooperating locking members carried by said frame and door, and yieldable spring members urging said frame toward a position in which said locking members are engaged.

2. In a range door having a window aperture therein, a hollow frame unit adapted to be brought into sealing relation with said aperture, a pair of transparent panes slidably received in said frame, spring means engaging edge portions of said panes for spacing them in floating relation within said frame, and means for releasably securing said frame upon said door.

3. In a range door having a window aperture therein, a hollow frame unit adapted to be brought into sealing relation with said aperture, a pair of transparent panes slidably received in said frame, elongated spring members secured to said frame unit and having curved portions engaging both panes along their edges for spacing the panes in floating relation, and means for releasably securing said frame upon said door.

4. In a range door having a window aperture therein, a hollow frame unit adapted to be brought into sealing relation with said aperture, said frame having flanges adapted to engage the outer edges of transparent panes, a pair of transparent panes in said frame and engaging said flanges, and tortuous spring members extending between said panes and supporting the same in floating relation within said frame, and means for releasably securing said frame upon said door.

5. In a range door having a window aperture therein, a hollow frame unit adapted to be brought into sealing relation with said aperture, a pair of transparent panes in said frame, elongated spring members supporting said panes in floating relation within said frame, cooperating locking elements carried by said frame and door, and yieldable spring means at one end of said frame for urging said frame into a position in which said locking elements engage.

6. In a range door having a window aperture therein, a pair of side frame members, each member having an inwardly turned flange at its bottom, an inwardly turned flange along one side, an outwardly turned flange on the other side, and an outwardly turned top flange, a perimetric frame secured to the outwardly turned side flange of each of the frame members to provide a closed frame adapted to receive transparent panes, a pair of transparent panes in said frame structure, spring means for supporting said panes in spaced apart relation, and means for releasably securing said frame structure within said aperture.

7. In a range door having a window aperture therein, a pair of side frame members, each member having an inwardly turned flange at its bottom, an inwardly turned flange along one side, an outwardly turned flange on the other side, and an outwardly turned top flange, a perimetric frame secured to the outwardly turned side flange of each of the frame members to provide a closed frame adapted to receive transparent panes, a pair of transparent panes in said frame structure, spring means for supporting said panes in spaced apart relation, means for releasably securing said frame structure within said aperture, said last mentioned means including lugs struck outwardly from said side frame members and pins secured to the door frame along the sides of said window aperture.

8. In a range door having a window aperture

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therein, a pair of side frame members having their end portions provided with brackets, each member having an inwardly turned flange at its bottom, an inwardly turned flange along one side, an outwardly turned flange on the other side, and an outwardly turned top flange, a perimetric frame secured to the outwardly turned side flange of each of the frame members to provide a closed frame adapted to receive transparent panes, a pair of transparent panes in said frame structure, spring means for supporting said panes in spaced apart relation, means for releasably securing said frame structure within said aperture, said spring means comprising elongated members having their ends secured to said brackets of said side frame members.

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