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CONCEALED HINGE CONSTRUCTION

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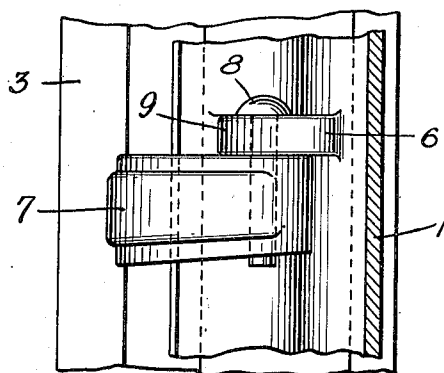
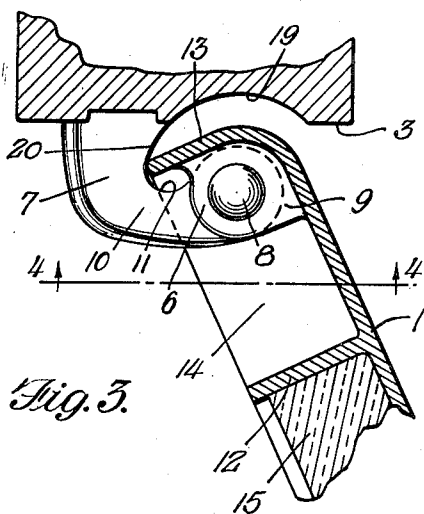
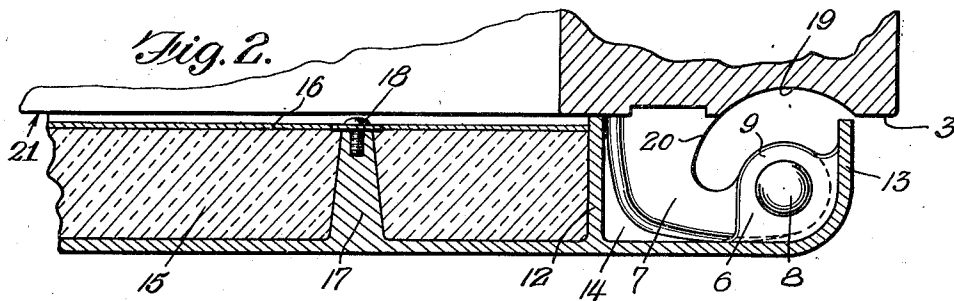
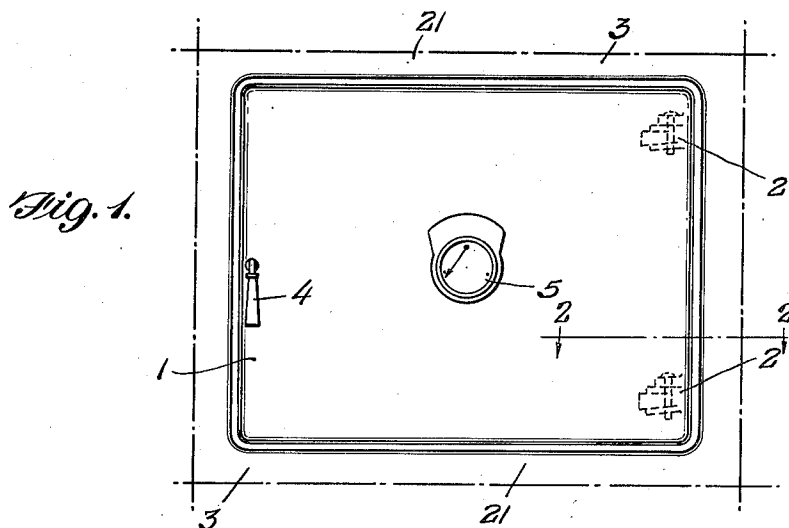


Fig. 4. Wilbur Bennett

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CONCEALED HINGE CONSTRUCTION

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4 Claims. (Cl. 126—194)

This invention relates to hinges and more particularly to an improved hinge structure of the concealed type.

It will be appreciated that in the construction and use of hinges in connection with stoves, that in addition to appearance, that is, the attractiveness and general ornamentation afforded by having a hinge arrangement which is entirely concealed when the door is in closed position, it is of the utmost importance that the structure be inherently strong, rugged and of easy access for inspection and repair. In addition to the design aspect and mechanical features of the hinge, doors used in conjunction with stoves must of necessity be mounted and arranged so that a tight connection will be effected between the surfaces near the peripheries of the various openings and the edges of the door used to cover the openings.

Since the present trend in the design of cooking stoves for domestic purposes has as its objective ornamentation and attractiveness, as well as an increase of the over-all or general heating efficiency of the stove as a unit, the necessity of tight joints between the closures and the openings to the stove has become most important. In order to prevent infiltration of air to or from the oven, modern design requires that the door and its hinge construction, combine to form a tight seal between the surfaces adjacent the opening.

Heretofore, it has been suggested to provide concealed hinges for use with stove ovens and the like, wherein the hinge elements have been formed as separate units adapted to be attached to the interior of the door and to the frame, that is, the individual hinge elements are bolted or otherwise attached to the door and the frame, after the stove has been assembled. While these devices are satisfactory in so far as appearance is concerned, they are open to the objection that they do not form a strong support for the door, particularly heavy oven doors and further, these arrangements do not provide an effective seal to prevent infiltration of air to or from the oven.

According to the present invention, the hinge elements are formed integral with the door and the stove frame. The interior of the door is provided with a pocket or compartment adapted to completely house the hinges, the pocket being constructed and arranged to form a tight seal between the front frame of the stove and the door. The hinges are accessible and since they are formed integral with the door and the door

frame, they provide a strong rugged structure providing ample support for the door.

An object of the invention is to provide a hinge structure for stove doors and the like wherein the hinge elements are completely concealed when the door is in the closed position.

Another object of the invention is to provide a concealed hinge for oven doors, constructed and arranged to maintain tight engagement between the periphery of the door and the frame surrounding the opening to the oven.

A further object of the invention is to provide a concealed hinge structure for oven doors wherein the hinge elements are formed integral with the door and its frame, the elements being positioned and arranged to effect tight engagement between the parts when the door is in the closed position.

A still further object of the invention is to provide a hinge structure for oven doors and the like, wherein a smooth continuous surface is provided exteriorly of the door, the hinge elements being completely concealed when the door is in the closed position.

With these and other objects in view, which may be incident to my improvements, the invention consists in the parts and combinations to be hereinafter set forth and claimed, with the understanding that the several necessary elements, comprising my invention may be varied in construction, proportions and arrangement, without departing from the spirit and scope of the appended claims.

In order to make my invention more clearly understood, I have shown in the accompanying drawing means for carrying the same into practical effect, without limiting the improvements in their useful applications to the particular construction, which for the purpose of explanation, have been made the subject of illustration.

In the drawing:

Figure 1 is a front elevational view of an oven door equipped with my improved hinge.

Fig. 2 is a sectional view along line 2—2 of Fig. 1.

Fig. 3 is a sectional view similar to Fig. 2, showing the position of the parts when the door is in the open position; and

Fig. 4 is a sectional view along line 4—4 of Fig. 3.

Referring to the drawing, and more particularly to Figure 1, there is shown an oven door equipped with my improved hinge structure designated generally by numeral 2. The door is constructed and arranged to fit snugly against

the stove front plate 3, is provided with a handle member 4 and a conventional temperature indicating means 5.

As shown more clearly in Figs. 2 and 3, the hinge structure 2 comprises elements 6 and 7, formed integral with door 1 and front plate 3 respectively, the door being mounted in the operative position by means of a pintle 8. It will be noted that the hinge element 7, attached to plate 3, terminates in a substantially cylindrical shaped portion 9 and that the body portion 10 of the element is recessed as at 11, intermediate its point of attachment to plate 3 and its end portion 9. The purpose of this arrangement is to accommodate the edge of the door when the door is opened and also to provide a stop to limit the degree of opening or swinging movement of the door, as will be described more fully herein-after.

The oven door 1 is provided with a longitudinally extending rib 12, which forms with the flange portion 13 a hinge compartment or pocket 14. Hinge element 6, cast integral with the door, is positioned in the angle portion formed between flange portion 13 and the horizontal part of the door. The interior portion of the door between rib 12 and the edge opposite the hinge compartment may be provided with heat insulating material 15, held in place by means of a plate 16, adapted to seat on projections in the form of posts 17. Plate 16 is clamped in position by means of suitable screws 18 adapted to thread into post 17.

Referring to Figs. 2 and 3, it will be noted that the front portion of stove plate 3 is cut away or recessed as at 19 and that the curved portion thereof forms a continuation of curve 20 at the base of hinge element 7. As indicated hereinbefore, provision must be made to accommodate the edge of end portion 13 when the door swings to the open position. This is accomplished by forming recesses in hinge element 7 and stove front plate 3 of predetermined radius of curvature, so that curved portions 11 and 19 form a continuous surface. Recessed portion 11 also serves another function, namely, to provide a stop to limit the length of arc through which the door may swing.

It will be seen from Fig. 3, wherein the door is shown in the open position, that the edge of portion 13 engages with or contacts hinge element 7 after it has passed a certain distance along curved portion 20, thereby preventing further turning movement of the door. It will be understood that recessed portion 19 of front plate 3 extends from the top to the bottom thereof, a distance slightly greater than the length of the door and that the horizontal portions 21 of the plate lie in a plane in front of that portion of the plate with which the periphery of the door, top and bottom, contacts.

With reference to the sealing effect obtained by my improved structure, it will be observed that the hinges 2 are contained in the hinge pocket 13 when the door is in the closed position. As shown in Fig. 2, rib 12 engages with the surface of the plate so that infiltration of air into or out of the oven, through the edge of the door in the vicinity of the hinges, is prevented. The partition members or ribs 12 also serve to prevent hot gases from the interior of the oven, directly contacting the hinge elements. In this connection, it will be appreciated that the hot gases emanating from the oven may carry particles of foreign matter, which if permitted to

contact with the hinges, will cause a deposit in the form of a film or coating which will interfere with free movement of the door about the hinges.

To assemble the hinge construction it is only necessary to bring the hinge elements in the operative position, with the pintle receiving apertures in alignment and insert the pins through the apertures. In this connection it will be noted that after the door and its hinge elements are placed in position to remove the hinge pins, that the pins are inserted from the inside of the door.

It will thus be seen that I have provided an improved hinge structure of the concealed type which is strong and sturdy in construction, of easy access and one that is not liable to get out of order even after a long and continued use. By forming the elements integral with the stove parts, during the casting operation, economies are effected both in the quantity of material used and time required than could be obtained when the elements are made up of separate units and have to be machined to fit the parts and attached by means of bolts or screws.

While I have shown and described the preferred embodiment of my invention, I wish it to be understood that I do not confine myself to the precise details of construction herein set forth, by way of illustrations, as it is apparent that many changes and variations may be made therein, by those skilled in the art, without departing from the spirit of the invention, or exceeding the scope of the appended claims.

What I claim is:

1. In a stove, a door frame having horizontal and vertical portions defining an opening therein, a hinge element formed integral with one of the vertical portions of the frame, a door adapted to cover the opening in the frame, comprising a body portion formed with a flange portion on the periphery thereof of sufficient depth to contact with the door frame when the door is in the closed position, a partition member extending parallel to a side flange of the door and forming with said flange a hinge compartment, a hinge element formed integral with the door interiorly thereof, adapted to seat on the complementary hinge element formed on the door frame, both elements of the hinge being concealed when the door is in the closed position and pintle means for connecting the elements for pivotal movement thereon.

2. In a stove, a door frame having horizontal and vertical portions defining an opening therein, a hinge element formed integral with one of the vertical portions of the frame, said element comprising a base, a body portion extending outwardly therefrom and in spaced relation with respect to the door frame, said body portion terminating in an end member having an opening therein, a door adapted to cover the opening in the frame, comprising a body portion formed with an inwardly turned flange portion on the periphery thereof of sufficient depth to contact with the door frame when the door is in the closed position, one of the vertical portions of the door being provided with a hinge element formed integral therewith, said hinge element being adapted to seat on the complementary hinge element formed on the door frame, both hinge elements being concealed when the door is in the closed position.

3. In a stove, a door frame having horizontal and vertical portions defining an opening therein, a hinge element attached to one of the vertical

portions of the frame, said element comprising a base, a body portion extending outwardly therefrom and in spaced relation with the plane of the door frame, said body portion terminating in an enlarged end member, a door adapted to cover the opening in the frame comprising a body portion formed with a flange portion on the periphery thereof of sufficient depth to contact with the door frame when the door is in the closed position, a partition member extending parallel to a side flange of the door and forming with said flange a hinge compartment, a hinge element attached to the door within said compartment adapted to seat on the complementary hinge element formed on the door frame, both elements of the hinge being concealed when the door is in the closed position, and pintle means to connect the elements for pivotal movement thereon.

4. In a stove, a door frame having horizontal and vertical portions defining an opening there-

in, a hinge element attached to one of the vertical portions of the frame, said element comprising a base, a body portion extending outwardly therefrom and in spaced relation with the plane of the door frame, said body portion terminating in an enlarged end member, a door adapted to cover the opening in the frame comprising a body portion formed with a flange portion on the periphery thereof of sufficient depth to contact with the door frame when the door is in the closed position, one of the vertical portions of the door being provided with a hinge element interiorly thereof, adapted to seat on the complementary hinge element formed on the door frame, both elements of the hinge being concealed when the door is in the closed position and pintle means for connecting the elements for pivotal movement thereon.

WILBUR BENNETT.