

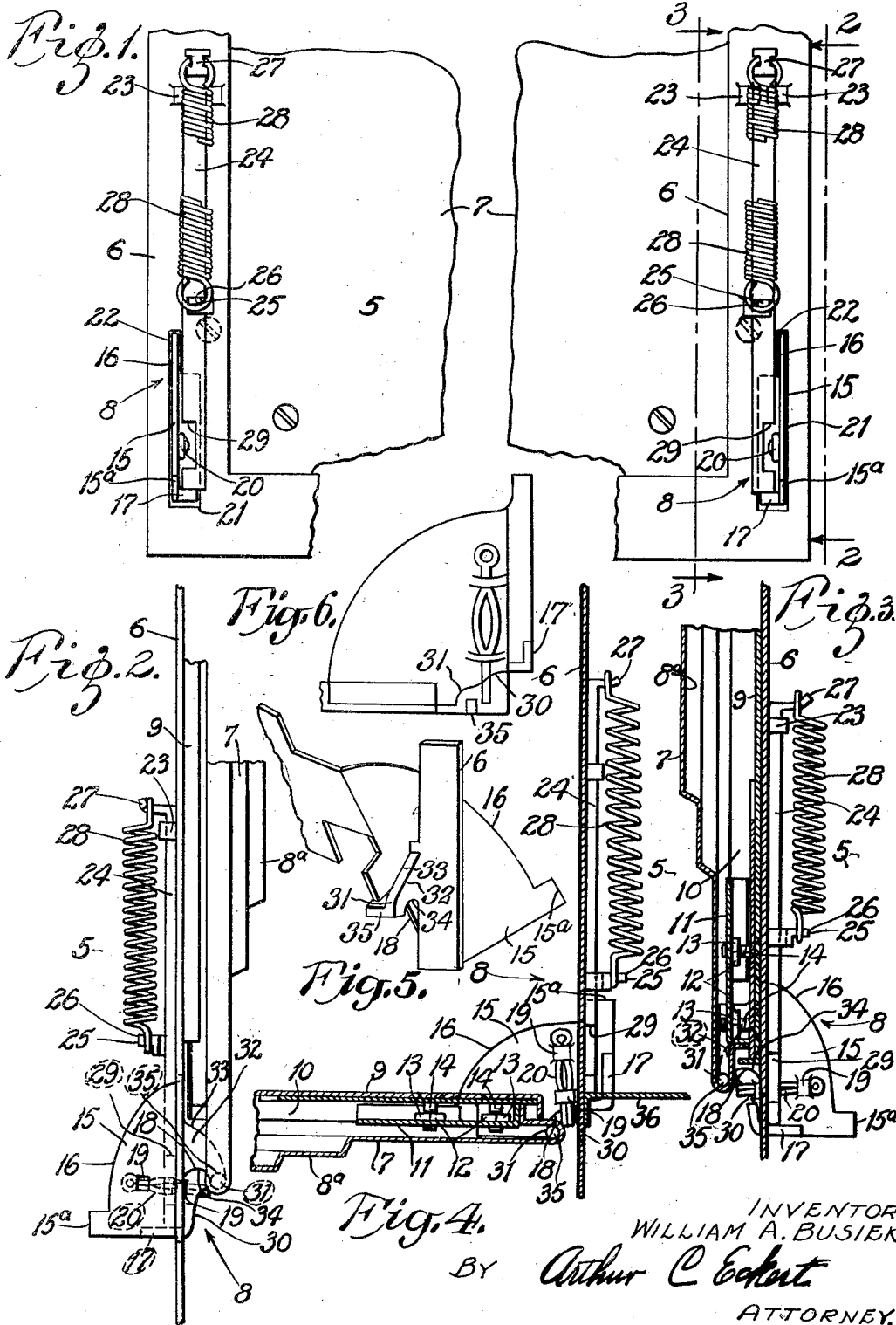
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HINGE

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UNITED STATES PATENT OFFICE

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HINGE

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The object of my invention is to devise a hinge of the concealed type principally for the use of doors for ranges. The hinge may however be advantageously employed in refrigerators, etc. Among my objects are the following:

To devise a hinge and door structure for a range in which the enameled portion of the door does not come in contact with the frame portion of the oven at any time. The hinge of my construction operates on the outside front of the range instead of on the inside. The door is normally held in either an open or closed position. The hinge is secured to the lining of the door and not to the front panel of the door. For this reason the door panel may be removed without removing the door. When the door is open and in the horizontal position shown in Fig. 4 the lining of the door is in the same plane as the floor of the oven. When the oven door is in its closed position the inside face of the lining is in contact with the frame and flush therewith, thereby preventing the escape of heat between the door and frame.

With these and other objects in view my invention has relation to certain novel features of construction and arrangement of parts as will be hereinafter more fully described, pointed out in the claims and illustrated in the drawings, in which

Fig. 1 is a fragmental front elevation of an oven and frame showing the back or lining of the door and the rear or back of my hinge mechanism. The hinge mechanism is positioned and secured on each side of the oven. The structure shown on one side of the oven is duplicated on the other side of the oven.

Fig. 2 is a fragmental side elevation of the oven frame, oven door and hinge mechanism as seen from the arrows 2—2 in Fig. 1.

Fig. 3 is a fragmental section on the line 3—3 of Fig. 1 showing the oven frame and oven door hinge mechanism. The door is shown in its closed or vertical position.

Fig. 4 is a view similar to Fig. 3 showing the door in the open or horizontal position.

Fig. 5 is a perspective view of the hinge

mechanism, with the door partially open, and eyes 19 and cotter pin, not shown.

Fig. 6 is a view similar to Fig. 4 showing the journal notch 31 and the pivotal projection 35 in detail.

Numeral 5 designates the oven, numeral 6 the oven frame, numeral 7 the oven door generally and numeral 8 the hinge mechanism generally.

The oven door 7 is formed of the outside panel 8 and the door lining 9. Numerals 10 designate panel flanges to which are secured the angular plates 11 in such manner that they are parallel to the plane of the outside panel 8 and in spaced relationship therewith. In the angular plates 11 are formed the tapped holes 12, and to which are welded concentrically and in alinement therewith the nuts 13. Numerals 14 designate bolts, which pass through holes in the door lining 9 and are in threaded engagement in the tapped holes 12 and the nuts 13. By these means the outside panel 8 and the door lining 9 are selectively secured together as shown in Figs. 2, 3 and 4. As previously stated the hinge mechanism 8 is secured to the oven frame 6 in part and in part to the door lining 9. There is no jointure between the hinge mechanism directly and the outside panel 8.

This is important for the reason that the outside panel 8 is enameled and the door lining 9 is not enameled. When in shipping or otherwise the enamel on the outside panel 8 is injured by being chipped or crazed, the panel may be easily removed by unscrewing the bolts 14 and other securing bolts not shown and sent back to the factory to be repaired instead of being compelled to return the entire door in such a contingency.

The portion of the hinge mechanism 8 secured to the door lining 9 consists of the hinge plate 15, which is secured at right angles to the plane of the door lining 9 to the lower edge of each side. All of the mechanism to be subsequently described is duplicated on the right and left side of the door lining 9 and on the right and left side of the oven frame 6. The structure will be described as it exists on one side.

The hinge plate 15 is formed with the curve edge 16 at the lower end of which is formed the rectangular protuberance 15^a. On the left lower corner of the hinge plate 15 is formed the angular projection 17. On the hinge plate 15, above the rectangular protuberance 15^a and the angular projection 17, on the inner face are formed two eyes 19 for the reception of the cotter pin 20. The purpose of the eyes 19 and the cotter pin 20 will be subsequently described.

In the oven frame 6, as shown in Fig. 1, is cut the rectangular slot 21 having the rectangular slotted extension 22 connected therewith. The rectangular slotted extension 22 is of lesser width than the rectangular slot 21, its width being slightly greater than the thickness of the hinge plate 15 permitting the hinge plate 15 to be inserted therein. Numeral 23 designates prongs formed on the oven frame 6 above the rectangular slotted extension 22 and bent so as to form a guide for the spring slide 24. Numeral 25 designates a prong formed on the oven frame 6 below the prongs 23 and above the rectangular slotted extension 22 and in vertical alinement with the prongs 23, and acts as a second guide for the spring slide 24. On the top of the prong 25 is formed the spring hook 26. The spring slide 24 is a slide of rectangular section in sliding engagement in the prongs 23 and the prong 25 and of such length as to extend from the angular projection 17 above the prongs 23. The upper end of the spring slide 24 is bent at right angles to its shank to form the hook 27. Numeral 28 designates a coil spring having one end hooked over the hook 27 and the other hooked over the spring hook 26. The lower end of the spring slide 24 has the rectangular notch 29 cut therein. The coil spring 28 is of such length that it is in its normal or non-extended position when the oven door 7 is closed. When the oven door 7 is opened, the opening is accomplished against the tension of the coil spring 28. The bottom of the spring slide 24 is rounded and in engagement with the inner corner of the angular projection 17. When the oven door 7 is opened the lower edge of the spring slide 24 rotates in the corner of the angular projection 17, the angular projection 17 is moved upwardly thereby moving the spring slide 24 upwardly against the tension of the coil spring 28. At the same time the portion of the spring slide 24 below the prongs 23 is moved away from its contact with the oven frame 6 until the spring slide 24 comes in contact with the spring hook 26 in which the spring slide 24 slides. The lower corner of the hinge plate 15 opposite the rectangular protuberance 15^a has the arcuated edge 30 formed thereon and above it has the journal notch 31 formed thereon. On the oven

frame 6 on the inner side of the rectangular slot 21 is formed the finger 32, having the upper arcuated surface 33 and the lower arcuated surface 34 and at right angles to the plane of the finger 32, extending partially across the rectangular slot 21 is formed pivotal projection 35.

When assembled the pivotal projection 35 is in pivotal contact in the journal notch 31. the corner of the flanges of the outside panel 8 are cut away to permit the insertion of the pivotal projection 35 in the journal notch 31.

Let numeral 36 designate the floor of the oven. When the oven door 7 is in the open or horizontal position shown in Fig. 4, the inside face of the door lining 9 is in the same plane as the floor of the oven 36. In order to prevent the oven door 7 from falling to a plane lower than this plane, that is to say to limit the rotation of the door 7 to its open position, the rectangular protuberance 15^a is of such length that when the door reaches the horizontal position, the rectangular protuberance 15^a will extend above the rectangular slotted extension 22. This offers a bearing surface of the rectangular protuberance 15^a against the oven frame 6 above the rectangular slotted extension 22. The weight of the door is such, relative the strength of the coil spring 28, that when the oven door 7 is brought to the horizontal position the spring will not be strong enough to return the door to its closed position. In any other position of the door the spring is of sufficient strength to return the door to its closed position.

In assembling the door in the oven frame the following procedure must be used. The hinge plate 15 must be inserted in the rectangular slot 21, the door brought to its closed position and in such position the pivotal projection 35 placed in the journal notch 31. This can only be accomplished by elevating the door and the hinge plate 15, so that the hinge plate 15 extends to the top of the rectangular slotted extension 22. When this position is reached and the surface of the door lining 9 is in contact with the surface of the oven frame 6 the dropping of the door slightly will bring this about. The door can not be removed except by reversing the operation. In order to prevent an accidental disengagement of the door plate frame when in use, which might be accomplished by lifting the door upwardly in its closed position and then rotating it outwardly, the cotter pin 20 is inserted in the eyes 19, as previously described. This cotter pin must be of such length as not to come in contact with the sides of the rectangular notch 29 in any rotative position of the door. The extension of the cotter pin beyond the outer one of the eyes 19 prevents the raising of the door in its closed position, which raising is necessary to remove the door because

the end of the cotter pin comes in contact with the inner face of the panel 8^a.

What I claim and mean to secure by Letters Patent is:

1. In combination with an oven frame, an oven door, a hinge mechanism secured in said oven frame and to the lining of said oven door, said hinge mechanism comprising a hinge plate secured to the lining of said oven door and in sliding engagement in a slot formed in said oven frame, a finger formed on said oven frame and having a pivotal projection formed thereon at its free end and extending partially over the slot in said oven frame, said pivotal projection pivotally secured in a journal notch formed in said hinge plate.

2. In combination with an oven frame, an oven door, a hinge mechanism secured in said oven frame and to the lining of said oven door, said hinge mechanism comprising a hinge plate secured to the lining of said oven door and in sliding engagement in a slot formed in said oven frame, a finger formed on said oven frame and having a pivotal projection formed thereon at its free end and extending partially over the slot in said oven frame, said pivotal projection pivotally secured in a journal notch formed in said hinge plate, said hinge plate having a rectangular protuberance formed thereon, which, when said door rotates to its open position slides in a rectangular slotted extension to the slot formed in said oven frame and comes in contact with said oven frame, above the rectangular slotted extension to the slot formed in said oven frame, and which prevents the rotation of said door to a position lower than a horizontal position.

3. In combination with an oven frame, an oven door, a hinge mechanism secured in said oven frame, and to the lining of said oven door, said hinge mechanism comprising a hinge plate secured to the lining of said oven door and in sliding engagement in a slot formed in said oven frame, a finger formed on said oven frame and having a pivotal projection formed thereon at its free end and extending partially over the slot in said oven frame, said pivotal projection pivotally secured in a journal notch formed in said hinge plate, said hinge plate having a rectangular protuberance formed thereon, which, when said door rotates to its open position slides in a rectangular slotted extension to the slot formed in said oven frame and comes in contact with said oven frame, above the rectangular slotted extension to the slot formed in said oven frame, and which prevents the rotation of said door to a position lower than a horizontal position, a spring slide in sliding engagement on the back of said oven frame, a spring hook formed on the same side of said oven frame, a spring having one end secured to said

spring hook and the other secured to said spring slide, an angular projection formed on said hinge plate, the lower end of said spring slide being in frictional pivotal contact with the angular spring projection formed on said hinge plate, so that a movement of the oven door will move said spring slide against the tension of said spring.

4. In combination with an oven frame, an oven door, a hinge mechanism secured in said oven frame and to the lining of said oven door, said hinge mechanism comprising a hinge plate secured to the lining of said oven door and in sliding engagement in a slot formed in said oven frame, a finger formed on said oven frame and having a pivotal projection formed thereon at its free end and extending partially over the slot in said oven frame, said pivotal projection pivotally secured in a journal notch formed in said hinge plate, said hinge plate having a rectangular protuberance formed thereon, which, when said door rotates to its open position slides in a rectangular slotted extension to the slot formed in said oven frame and comes in contact with said oven frame, above the rectangular slotted extension to the slot formed in said oven frame, and which prevents the rotation of said door to a position lower than a horizontal position, a spring slide in sliding engagement on the back of said oven frame a spring hook formed on the same side of said oven frame, a spring having one end secured to said spring hook and the other secured to said spring slide, an angular projection formed on said hinge plate, the lower end of said spring slide being in frictional pivotal contact with the angular spring projection formed on said hinge plate, so that a movement of the oven door will move said spring slide against the tension of said spring, and means for preventing the accidental disengagement of said door from said oven frame.

In testimony whereof I affix my signature.

WILLIAM A. BUSIEK.