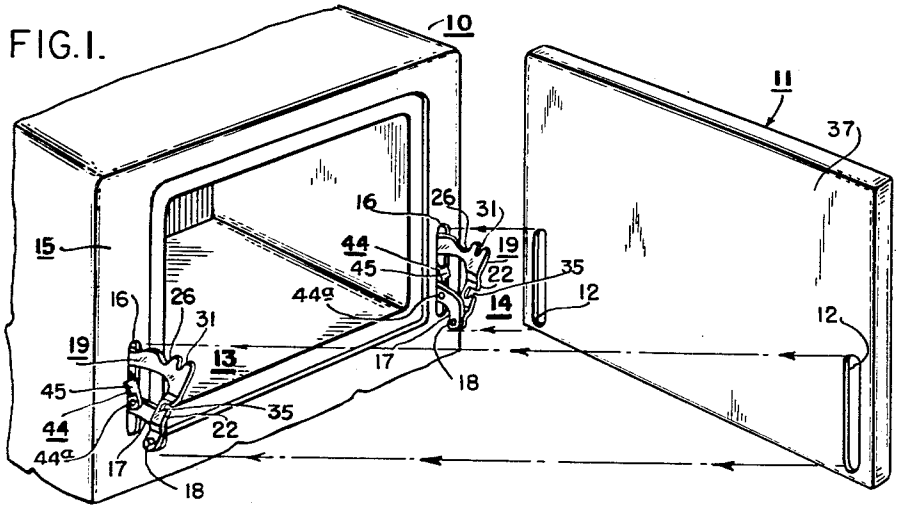
April 26, 1960 G. E. BAKER 2,934,059

OVEN DOOR STRUCTURE

Filed Nov. 28, 1958 2 Sheets-Sheet 1

FIG.1.



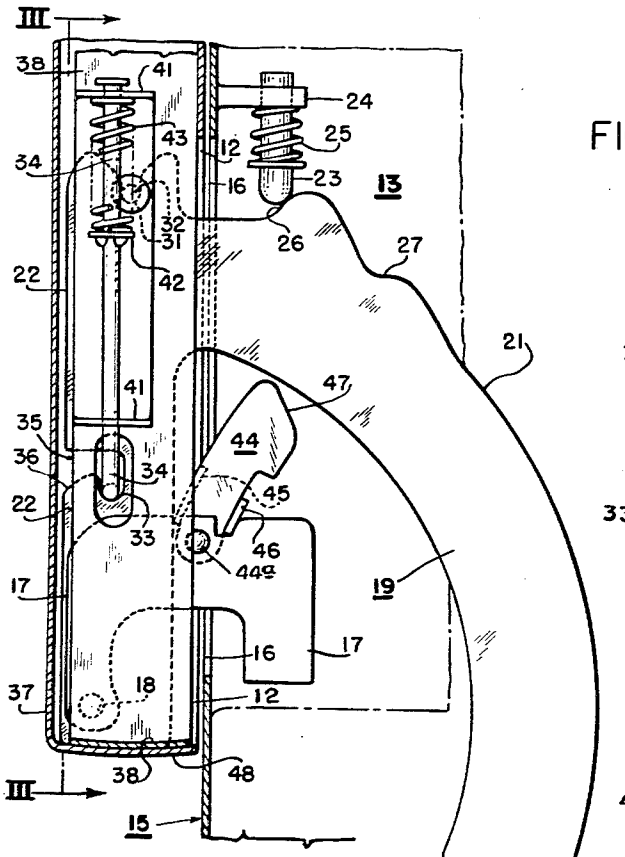
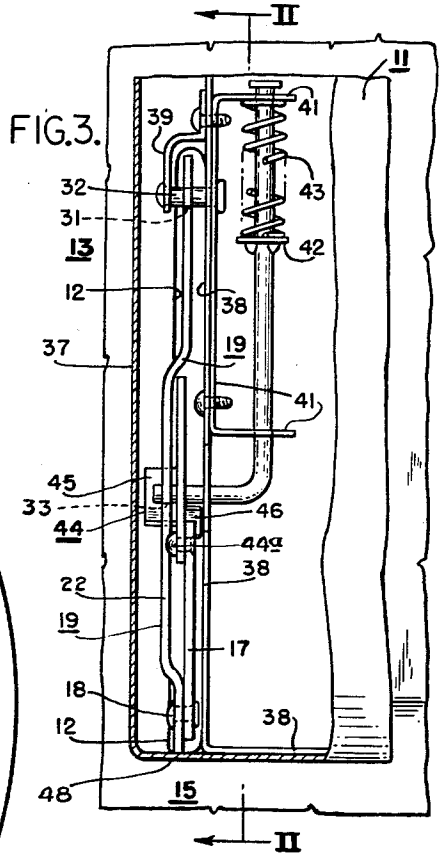


FIG.2.

FIG.3.



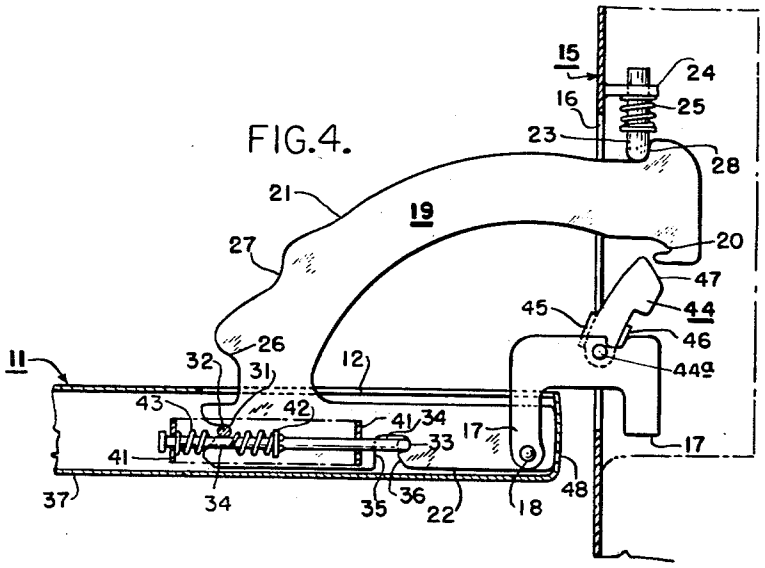
INVENTOR
GERALD E. BAKER
BY Robert T. French
ATTORNEY

April 26, 1960 G. E. BAKER 2,934,059

OVEN DOOR STRUCTURE

Filed Nov. 28, 1958 2 Sheets-Sheet 2

FIG.4.



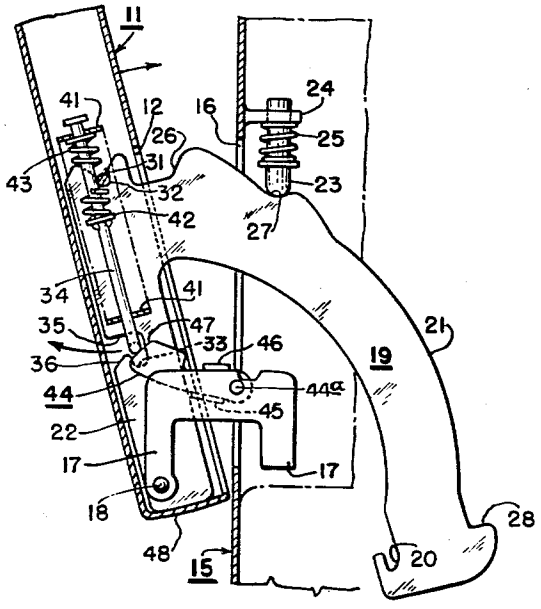


FIG.5.

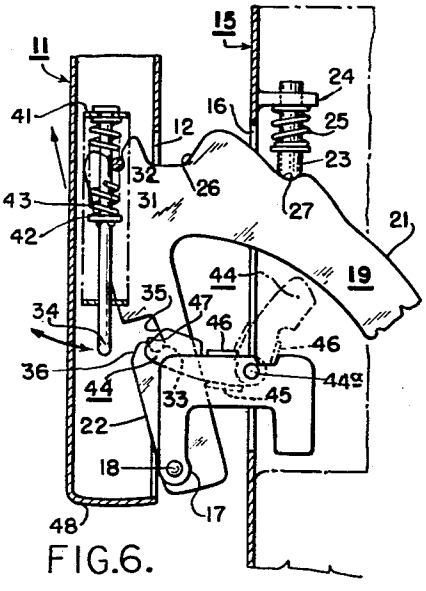


FIG.6.

INVENTOR
GERALD E. BAKER
BY Ralph T. French
ATTORNEY

United States Patent Office

2,934,059

Patented Apr. 26, 1960

2,934,059

OVEN DOOR STRUCTURE

Gerald E. Baker, Mansfield, Ohio, assignor to Westinghouse Electric Corporation, East Pittsburgh, Pa., a corporation of Pennsylvania

Application November 28, 1958, Serial No. 776,989

3 Claims. (Cl. 126—194)

This invention relates to a detachable door for an oven or the like and has for an object to provide improved apparatus of this kind.

A further object of the invention is to facilitate the removal of a pivoted door from an oven structure and the subsequent reassembly of these elements.

In practising the invention, a pair of hinging structures is provided for the oven door, each of which is constructed as follows. A hinge blade is pivotally carried by the oven and movable to open, closed and broil positions in conventional manner. The door is detachably secured to the blade and includes a pin which suspends the door and a spring pressed latch member for retaining the door coupled to the hinge blade. The latter is provided with formed seats for the pin and latch, respectively. The pin rests in one seat and the door may be rocked angularly about the axis of the pin. When the door is rocked to its assembled position on the blade, the spring pressed latch is snapped into its seat for fixing the door on the hinge blade.

In order to readily detach the door from the hinge blade, a release lever is provided, which lever is pivoted to the oven structure adjacent the pivot of the hinge blade. This lever is normally stationed out of engagement with the door structure so that it is inactive. When the lever is adjusted to its release position, a camming surface thereon is moved into the path of movement of the latch, so that, as the door is moved toward its closed position, the camming surface is engaged by the latch, and the latter is forced, in opposition to its spring bias, to the unlatched position thereof. Accordingly, the door may then be rocked slightly about its pin axis and lifted from the hinge blades. Removal of the door by this operation, of course, facilitates the cleaning of the door and oven.

The release lever is preferably provided with a handle which functions as a stop preventing the hinge blades from being inadvertently pushed into the oven wall during periods when the door is detached from the hinge blades.

The foregoing and other objects are effected by the invention as will be apparent from the following description and claims taken in connection with the accompanying drawings, forming a part of this application, in which:

Fig. 1 is a perspective of an oven construction arranged in accordance with the invention, the door of the oven being removed;

Fig. 2 is a vertical section through one of the hinge mechanisms and is taken along the line II—II of Fig. 3;

Fig. 3 is a section taken along the line III—III of Fig. 2;

Fig. 4 is a view similar to Fig. 2 but showing the door in open position and the release lever in its storage or inactive position;

Fig. 5 is a view similar to Fig. 4, showing the door in the position wherein tripping of the latch is effected, the release lever being in its "release" position; and

Fig. 6 is a view similar to Fig. 5 but showing the latch released and the door swung about its supporting pin and uncoupled from the hinge blade, so that the door may now be lifted from the blade.

Referring now to the drawings, the invention is shown applied to an oven 10, generally of the type found on domestic cooking stoves and including a door 11 which, in Fig. 1, is shown disengaged from the oven. The door 11 may be of sheet metal construction and is referred to somewhat more in detail hereinafter. As shown in Fig. 1, the door is provided with spaced, elongated openings 12 through which respective hinge mechanisms, shown generally at 13 and 14, extend. Since the hinge mechanisms 13 and 14 are similar in construction, only the mechanism 13 will be described in detail hereinafter. The front surface of the oven is indicated by the numeral 15 in the various figures and respective openings 16 are provided therein for the hinge mechanisms 13 and 14. Hinge pivot brackets 17 are suitably secured, as by welding, to the oven structure and extend through their respective openings 16, as best shown in Fig. 1.

As best shown in Figs. 2 and 3, the hinge mechanism 13 includes a pivot 18 secured to a lower end of the bracket 17 and pivotally supporting a hinge blade 19. It will be understood that the hinge blade 19 swings from a door closed position, as shown in Fig. 2, through an arc of approximately 90° to a door open position, as shown in Fig. 4. The hinge blade 19 is biased clockwise about the pivot 18 at all times by a conventional tension spring, not shown, but which may be hooked in a notch 20 formed in the blade 19, all of which is well understood. The hinge blade 19 includes an arcuate portion 21 and a radial portion 22, the lower end of the latter being supported by the pivot 18. A pin 23 slidable in a bracket 24 engages the arcuate portion 21 of the blade 19 under the influence of a compression spring 25. As shown, the bracket 24 is secured to the interior of the oven wall 15 in any suitable manner. The pin 23 engages a cam surface 26 as shown in Fig. 2 when the door 11 is in closed position and is seated in an indentation 27 when the door is partly open, as shown in Fig. 5 and commonly referred to as the "broiling" position of the door. When the door is completely open or in its horizontal position as shown in Fig. 4 the pin is engaged by a stop member 28 formed adjacent the end of the arcuate portion 19 of the blade.

The hinge blade 19 in accordance with this invention includes an open outer seat 31 which faces upwardly, as viewed in Fig. 2, for the reception of a supporting pin 32, fixed to the door 11 and referred to more in detail hereinafter. The blade 19 is also provided with an inner seat 33 for the reception of a latch 34, to be referred to hereinafter. The seat 33 has a laterally extending slot 35 which is open in a direction at right angles to the open direction of the outer seat 31. The slot 35 is defined, in part, by an inclined surface 36 to be referred to hereinafter.

The pin 32 is fixed to the door structure in any suitable manner. As shown, the door 11 includes an outer panel 37 carried by a relatively rigid inner frame 38, see Fig. 3. It is to this inner frame 38 that the pin 32 is secured, preferably by means of a bracket 39. The latch 34 is slidably mounted in a pair of brackets 41 that are fixed, as by means of screws, to the inner frame 38 of the door. The latch 34 carries a shoulder 42 of suitable construction and a compression spring 43 bearing at one end against stationary bracket 41 and at its other end against the shoulder 42 biases the latch 34 downwardly, as viewed in Fig. 2, at all times.

In order to uncouple the door 11 from the hinge support 13, as described hereinafter, a release lever 44, pivoted to a fixed portion of the oven 10, is employed. The

release lever 44 may be pivoted, as shown at 44a, to the hinge pivot bracket 17. The lever 44 is provided with a finger actuated handle 45 by which the lever 44 is manually moved from its inactive, storage position, shown in Fig. 4, to its latch releasing position, shown in Fig. 5 and referred to later. The levers 44 are normally or usually in the storage position of Fig. 5 wherein they are ineffective to trip their respective latches 34. In this storage position, the handle 45 engages the front surface 15 of the oven and prevents the lever from falling inwardly through the opening 16. The handle 45 also provides a stop for the hingle blade 19 preventing its entry too far into the opening 16 in the event that the blade 19 is inadvertently pushed inwardly toward the oven with the door 11 detached. The lever 44 is also provided with a finger 46 which engages the top of the hinge pivot bracket 17 in the "release" position of the lever, shown in Fig. 5, for properly positioning the lever 44 at this time. The lever 44 is provided with a latch release camming surface 47 which will be described in detail in the following.

During normal operation of the door structure, as described, the release lever 44 is disposed in its storage position, shown in Figs. 1 and 4, so that it is inactive. The door is retained fixed on the hinge blades 19 as its supporting pin 32 is seated in the seat 31 and the latch 34 is forced into its seat 33 by the compression spring 43. At this time, it will be noted that the bottom flange 48 of the door bears against the bottom of the hinge blade 19 so that the door is firmly coupled to the hinge blade 19 causing the door and hinge blades to move in unison to the various operating positions of the door.

When it is desired to separate the door from the hinge blades in order to gain ready access to the door and the oven for cleaning, the operator moves the door to the open position and then manually adjusts the release levers 44 to their release position, as shown in solid lines in Figs. 5 and 6. The door is then swung upwardly toward its closed position and, as it approaches the broiling position of the door, as shown in Fig. 5, the latch 34 engages the inclined camming surface 47 of the release lever 44 and rides upwardly thereon, as shown in Fig. 5. The continued closing pressure, imparted to the door by the operator, then causes the door to swing clockwise about the axis of the pin 32, the latch 34 at this time riding out through the slot 35 to the position shown in Fig. 6. During this movement, the door flange 48 swings outwardly from beneath the blade portion 22.

It will be noted at this time that the hinge blades 19 are urged to the position shown in Figs. 5 and 6 by the pin 23 which is nested in the indentation 27. It will also be noted that the handle stop members 45 are now in the path of movement of the hinge blade portions 22 and will prevent accidental movement of the blades 19 clockwise from their position in Figs. 5 and 6.

In order to reassemble the door to the blades, the door is first hung on the blades by means of the pin 32, as shown in Fig. 6. The door is then swung counterclockwise about the axis of the pin 32, the flange 48 moving beneath the portion 22 of the hinge blades 19. Continued counterclockwise movement of the door about its pin 32 causes the latch 34 to ride upwardly over the inclined portion 36 of slot 35 and fall into the seat 33 after having been moved away from the camming surface 47 on lever 44. The door is now completely coupled to the hinge blades. The operator may then swing the door to its open position (Fig. 4) and adjust the two release levers 44 upwardly to their storage position as shown. This completes the reassembling of the door to the blades 19 and the positioning of the release levers 44 to their inactive, storage stations.

From the foregoing description, it will be apparent that the separation of a door from an oven and the reassembly thereto are readily effected in accordance with the present invention. The adjustment of the release levers, which is done with substantially no effort, and the movement of the door toward its closed position, also with little effort, are all that is necessary to carry out the uncoupling of the door from its hinge blades, so that it may be removed from the oven structure. In the reassembly of the elements, the door is easily hung by its supporting pins on the blades and a movement in door opening direction operates the latch for coupling the door to its blades. The small release levers may then be flipped to their storage stations in which they are inactive. These operations may be carried out with very little effort on the part of the operator and the cleaning of the oven and door are facilitated.

While the invention has been shown in but one form, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various changes and modifications without departing from the spirit thereof.

What is claimed is:

1. In a detachable door for an oven structure or the like, the combination of a door, a pair of hinge mechanisms supporting the door for movement between a vertical closed position and a generally horizontal open position, each hinge mechanism including a hinge blade, a pivot carried by the oven structure for pivotally supporting said blade, detachable means securing the door and blade and including a pin fixed to the door, said blade having an open seat formed in a side thereof for receiving said pin, a latch member movably supported by the door, said blade having a second seat formed therein for said latch member and aligned substantially with said first seat, biasing means carried by the door for forcing said latch member into engagement with the second seat, said blade having a slot extending from its edge to the second seat for the passage of said latch member, said slot being disposed to first compress the biasing means when the door is assembled to the hinge blade and then release the latch member for engagement with the second seat, and a release lever pivoted to the oven structure and selectively movable to an inactive storage position and a releasing position, said release lever having an inclined surface for engaging the latch member in the releasing position of the lever when the door is actuated toward its closed position, said latch member being moved from its seat in opposition to the biasing means and then forced through said slot for the release of the door from said hinge blade.

2. In a detachable door for an oven structure or the like, the combination of a door, a pair of hinge mechanisms supporting the door for movement between closed and open positions; each of said hinge mechanisms including a hinge blade, means pivotally supporting said blade from the oven structure, a supporting pin secured to the door for the suspension thereof, said blade having an open seat formed therein for seating said pin, said door and pin being rockable about said seat between positions wherein the door and blade are uncoupled and coupled, means latching the door to said blade in the coupled position and including a latch movably supported by the door and a spring biasing the latch to its latching position, and a manually adjustable release lever movable between an inactive position and a releasing position, said lever having a cam surface which, in the latter position of the lever, engages said latch as the door is moved toward its closed position and moves the latch in opposition to the spring for unlatching the door from the blade, whereby the door may be swung about said seat from the coupled to the uncoupled positions thereof.

3. In a detachable door for an oven structure or the like, the combination of a door, a pair of hinge mechanisms supporting the door for movement between closed and open positions; each of said hinge mechanisms including a hinge blade, means pivotally supporting said blade from the oven structure, a supporting pin secured to the door for the suspension thereof, said blade having an open seat formed therein for seating said pin, said

door and pin being rockable about said seat between positions wherein the door and blade are uncoupled and coupled, means latching the door to said blade in the coupled position and including a latch movably supported by the door and a spring biasing the latch to its latching position, a manually adjustable release lever movable between an inactive position and a releasing position, said lever having a cam surface which in the latter position of the lever, engages said latch as the door is moved toward its closed position and moves the latch in opposition to the spring for unlatching the door from the blade,

whereby the door may be swung about said seat from the coupled to the uncoupled positions thereof, and a stop carried by the release lever and interposed between the hinge blade and the oven when the door is uncoupled from the hinge blade.

References Cited in the file of this patent

UNITED STATES PATENTS

2,842,117 Berge et al. ---------- July 8, 1958