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OVEN DOOR CONSTRUCTION

Filed July 24, 1957

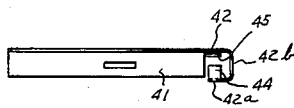


FIG. 3

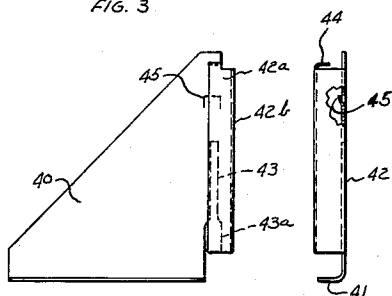


FIG. 1

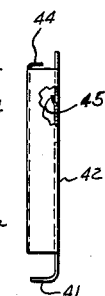


FIG. 2



FIG. 5

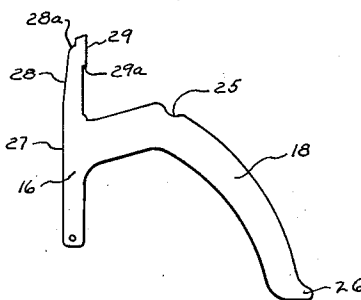


FIG. 4

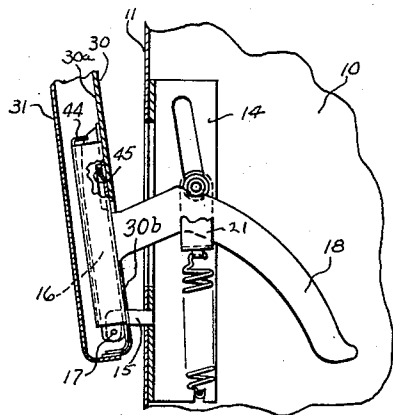


FIG. 6

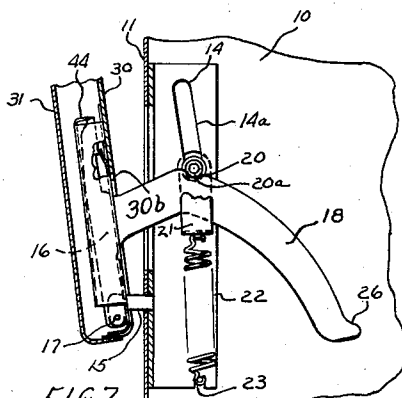


FIG. 7

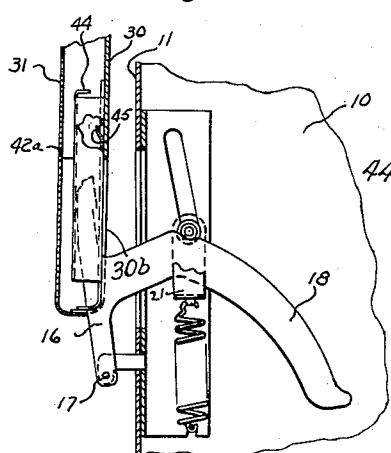


FIG. 8

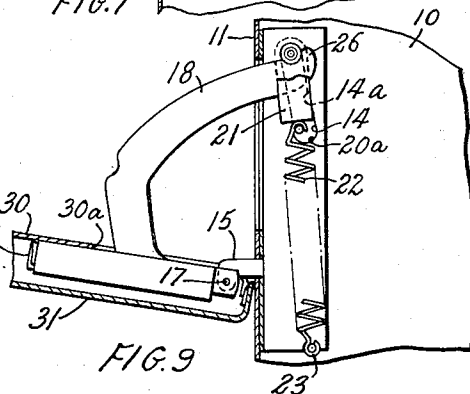


FIG. 9

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1

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OVEN DOOR CONSTRUCTION

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This invention relates to cooking ranges and more particularly to a range oven door that is quickly removable.

It is desirable, in the manufacture of ranges, to provide doors for the oven or storage spaces that may be quickly and easily installed or removed. Heretofore, doors have been provided that were removable, but, they required special tools and were difficult to assemble on the range.

By the present invention a door installation is provided which requires no tools for its installation or removal and where there are no small parts to be used in the assembly. The removal and assembly can be effected by persons having little skill in mechanics.

Still other advantages of the invention and the invention itself will become more apparent from the following description of an embodiment thereof which is illustrated by the accompanying drawings and forms a part of this specification.

In the drawings:

FIG. 1 is a front elevational view of an element used for connecting the door to a door hinge bracket;

FIG. 2 is a side elevational view thereof;

FIG. 3 is a plan view thereof;

FIG. 4 is a side elevational view of a hinge bracket;

FIG. 5 is a plan view thereof;

FIG. 6 is a fragmentary view of an oven and a door in association therewith illustrating the element of FIGS. 1-5 in position, with the door opened to a "broil" position;

FIG. 7 is a view similar to FIG. 6 illustrating the position of the parts as the door is being removed;

FIG. 8 shows the door still further removed; and

FIG. 9 is a side elevational view showing the hinge and the door in the fully open position.

Referring now to the drawings throughout which like parts are designated by like reference characters, briefly the invention contemplates a bracket that is pivotally mounted on the oven and having a portion extending outwardly arranged for quick removable interlocking engagement with a socket carried by the door.

As best shown in FIGS. 6 to 8 inclusive, there is shown a fragment of the wall 10 of an oven liner having a front flange 11 which forms the door opening and extends at right angles to the wall 10. It is arranged to cooperate with an outer housing, not shown. This structure is well known, and the space is usually filled with a bat of insulating material with space left for the operation of the door hinge parts.

Secured to the flange 11 is a hinge bracket housing 14, which is provided with an outwardly extending L shaped pivot support 15.

A hinge, door pivot bracket or attaching member 16 is pivotally connected to the support 15 at 17. It comprises a body of thin metal, FIGS. 4 and 5, having a rearwardly and downwardly extending curved counterbalance arm 18. The arm is arranged to cooperate with a detent follower 20 secured in a yoke 21 and biased downwardly by a spring 22 the upper end of which is connected to the lower end of the yoke 21 and the lower end of which is connected to a pin 23 seated in notches in the lower end of the housing 14.

The movement of the follower 20, under pressure of the spring 22 is controlled by the slots 14a which as illustrated incline forwardly and upward. The shape and angle of inclination of the arm is such that the follower

2

tends to move the bracket along with the door attached thereto, to a closed position. A detent notch 25 is provided into which the follower may drop for holding the door in a partially open position. As illustrated, at the end of the arm, it curves upwardly to provide a seat 26 which engages with the follower when the door is in the open position and holds the door against further movement.

It should be noted that the curvature of the arm 18 is such that as the door is swung outwardly and downwardly, the follower 20 is progressively moved upwardly in the guide slots 14a. The bracket 14 has a pair of spaced parallel side walls through which the ends of a pin 20a which supports the follower extend. The upward movement of the follower 20, which occurs as the arm 18 is swung counterclockwise upon opening of the door, increases the tension on the spring 22 by pressing the follower 20 upward. This serves to counterbalance the weight of the door to retain it in a selected position when released. In the open position of the door the pin 20a is close enough to the upper ends of the slots 14a that the yoke can no longer be moved upward and the upwardly extending part of the bracket beyond the seat 26 prevents the escape of the bracket from the follower.

The front edge 27 of the bracket, FIG. 4, is straight and perpendicular for most of its length, then slants rearward at 28 and terminates in a curved end 28a which cooperates with a socket in the door to hold the element tightly in position when the door is installed.

The rear edge of the bracket is provided with a projection 29 that provides a lower step 29a which interlocks with the socket upon assembly.

The oven door per se comprises telescoped inner and outer pans or shells 30 and 31 having a space therebetween for insulation.

The socket for cooperation with the bracket includes a triangular gusset plate 40 which is adapted to lie against and be secured to the inner face 30a of the shell 30, by spot welding. Obviously it could be held by bolts or screws. It has a lower flange 41 which is bent to follow the contour of the shell flange.

A socket for the reception and engagement with the bracket 27-29 is carried by the plate 40 at one vertical edge thereof. It comprises a pair of spaced parallel walls 42 and 42a connected by a wall 42b to form a vertical channel at one edge of the plate. When the plate 40 is secured in position to the inner pan 30, the channel wall 42 lies against the inner wall of the inner panel and the connecting wall 42b is adjacent the flange of the pan which defines the side edge of the door. The wall 42a of the channel member is then in spaced parallel position to the wall of the outer pan 31 and is therefore capable of a limited amount of displacement, being of a springy nature.

The wall 42 is provided with a slot 43 which extends upward from the bottom slightly beyond the longitudinal center. At the lower end 43a the slot is slightly wider. This slot is to allow the easy insertion of the pivot bracket and lines up with a slot 30b in the inner pan.

At the upper end the socket is provided with a tab 44 which is in prolongation of the wall 42a and is bent over toward the wall 42 so that it projects over the channel to approximately the center line. This tab cooperates with the end 28a of the pivot bracket as will later appear.

The wall 42 of the socket spaced from the top is formed with an inwardly projecting tongue 45, struck from the wall which, as will later appear cooperates with the shoulder or step 29a on the pivot bracket.

In operation the pivot bracket after once assembled by the pivot 17 to the arm 15 of the hinge bracket housing, remains in place. To assemble the door the pivot bracket is moved to the position where the detent follower 20 is

seated in the detent notch 25 which places the bracket body in an outwardly inclined relation to the range.

It should be remarked that there should be at least two pivot brackets mounted one on each side of the door opening.

The door is then placed in the position substantially as shown in FIG. 8 wherein the end 28—29 of the bracket extends through the slot in the rear pan and the slot 43 in the socket. The door is then lowered. The slanting surface 28 engages with wall 42a. As the door is lowered still further, the socket slides down around the pivot bracket until the slanting end of 28a engages with the tab 44. The end of the pivot bracket is now all within the door and the upper end of the door can be moved outwardly to the position as shown in FIG. 7. It will be noted that at this time the cam surface of the end 28a, which is engaging with the edge of the tab 44, causes the door to be moved outwardly relative to the pivot bracket and that the step 28a is now opposite to the upper edge of the lug 45. Further movement of the door downward causes the camming engagement between the surface 28a and the tab 44 to move the door outwardly still further so that the projection 29 now engages with the wall 42 of the socket and the step 29a is over the lug 45. The door is now released and is in position. It may now be operated in a conventional manner.

Any pulling effort on the door during opening or closing fails to dislodge the door because the lug 45 engages with the step 29a.

In order to remove the door, the procedure is reversed. The door is opened to the position shown in FIG. 6. It is then pulled upward to position shown in FIG. 7, which disengages the cam surface 28a from the tab 44. The top of the door is then moved inward to the position shown in FIG. 8, at which time the slant surface 28 engages the wall 42a of the socket. The socket and door pivot at the junction of the straight part 27 and the part 28 which enables the step 29a to move out from over the lug 45 and the door can then be removed.

It will therefore be seen that a door is provided which may quickly and easily be removed or installed without the need for tools. That there are no hinge pins or clips to be lost or which are difficult to assemble, and, that because of the construction the door automatically attains its position to which it was originally adjusted relative to the door opening. It should be remarked that the hinge bracket housing, as is well known in the art, is usually adjustably secured to the oven wall.

It should also be noted that the combination of the formation of the pivot arm along with the slots in the housing wall are such as to simplify the counterbalance of the door.

Having thus described the invention in an embodiment thereof it will be appreciated that numerous and extensive departures may be made therefrom without departing from the spirit of the invention as defined by the appended claims.

I claim:

1. The combination with a stove having a body formed

with an oven access opening and a door to close the opening, of means to support said door comprising a bracket fixed to said body at the base of said access opening, a door attaching member to which said door is releasably attached, said door attaching member being pivotally coupled to said bracket externally of said access opening, said pivotal coupling providing a horizontal axis for said door and being arranged at the base thereof for said door to be urged gravitationally toward an extreme open position thereof, an arm arranged on said door attaching member to extend away from the inward side of said door to within said access opening, means for defining a follower track within said access opening, said follower track being arranged to extend transversely of said arm, a follower slidably received by said follower track, spring means for biasing said follower against said arm and counterbalancing said door, and a follower seat arranged on said arm for engagement by said follower after said door has been swung to a position intermediate its extreme positions thereby to releasably retain said door in said intermediate position.

2. In combination, an oven having an access opening with a lower horizontal edge and a door to close the opening, a bracket fixed to said oven within said access opening, a pivot support on said bracket, said pivot support extending exteriorly of said access opening, a door attaching member to which said door is releasably attached, said door attaching member being pivoted to said pivot support at a point for said door to be urged gravitationally from an oven closing position through an intermediate position and to an extreme open position about an axis adjacent said horizontal edge, a follower track provided by a slot in said bracket, a follower confined by said follower track for movement therein, an arm on said door attaching member disposed for constant engagement with said follower, a spring coupled to said follower for biasing said follower into pressure engagement with said arm and counterbalancing said door, and a detent seat on said arm intermediate its extreme positions for engagement by said follower to releasably secure said door in said intermediate position, said arm angling sharply from a first radial distance from said pivot point adjacent said door to a second radial distance from said pivot point at said detent seat and less sharply therefrom to a third radial distance from said pivot point at the point of engagement of said arm with said follower in said extreme open position of said door, said first radial distance being less than said second radial distance, said second radial distance being less than said third radial distance.

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