Nov. 3, 1964 R. H. BARBER 3,155,088

REMOVABLE OVEN DOOR AND HINGE ASSEMBLY

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Fig. 1.

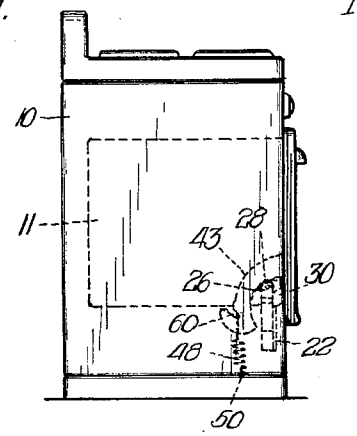


Fig. 3

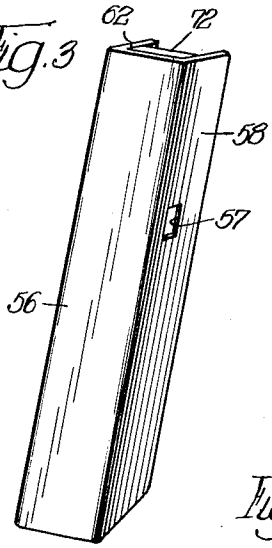


Fig. 6

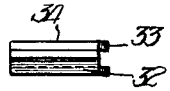


Fig. 5

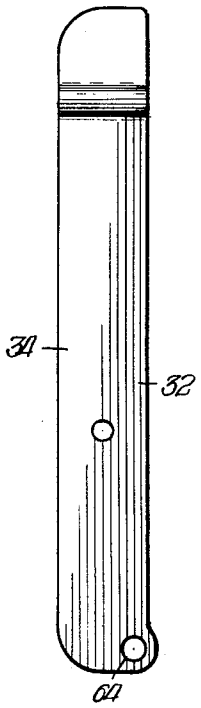


Fig. 7

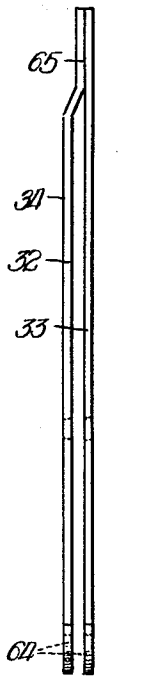
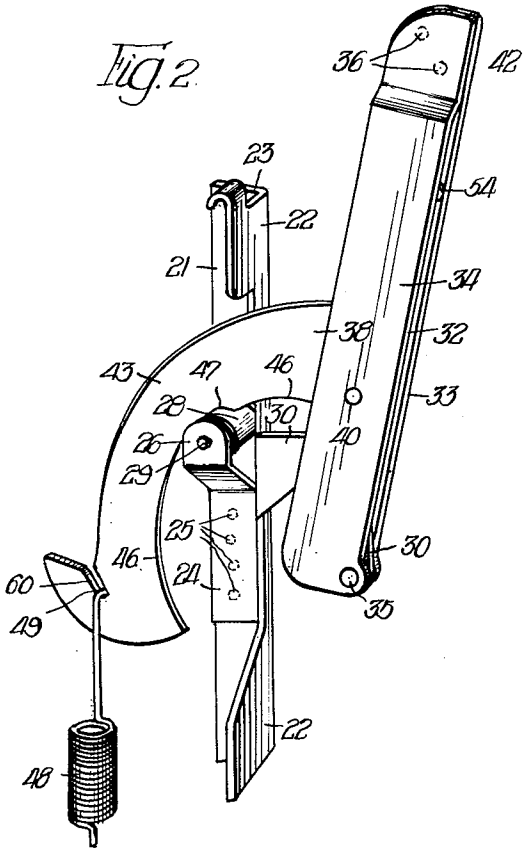


Fig. 2



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Fig. 4

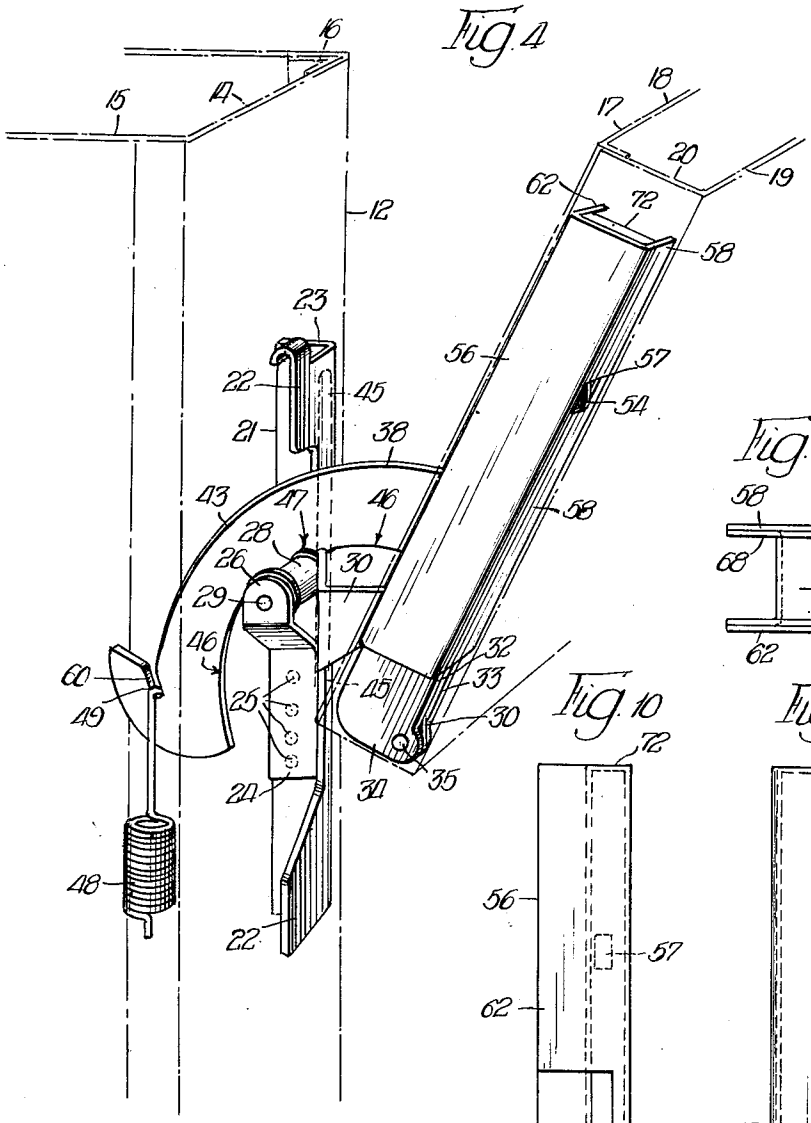
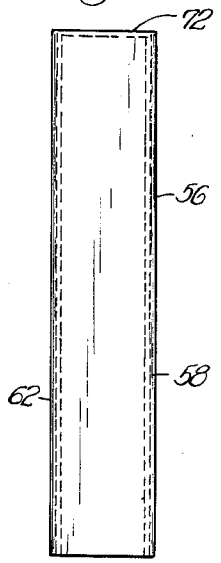


Fig. 11

Fig. 10

Fig. 12



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REMOVABLE OVEN DOOR AND HINGE ASSEMBLY

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Fig. 8

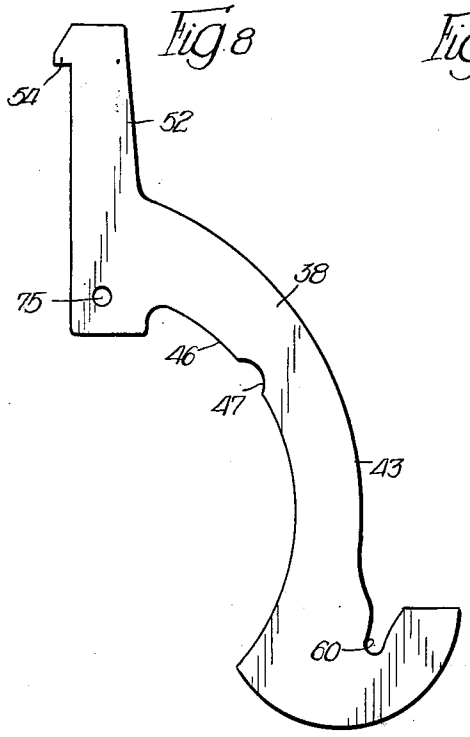


Fig. 9

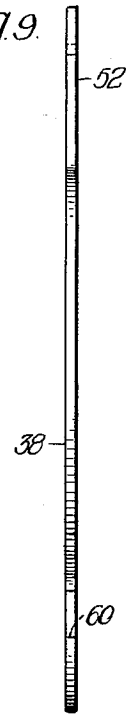


Fig. 16

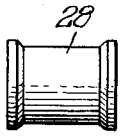


Fig. 17

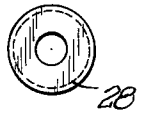


Fig. 13

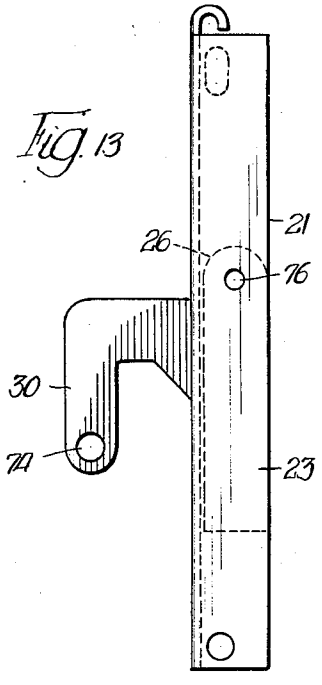


Fig. 15

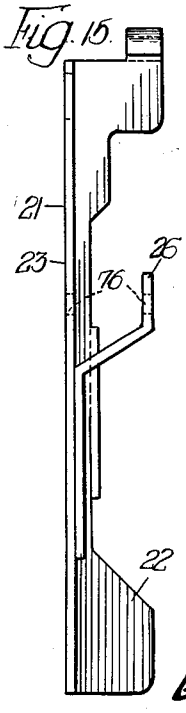
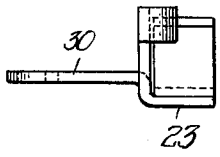


Fig. 14



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3,155,088

REMOVABLE OVEN DOOR AND HINGE ASSEMBLY

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Filed July 22, 1963, Ser. No. 296,523
8 Claims. (Cl. 126—191)

This invention relates to removable door structures and more particularly to a removable oven door for gas and electric ranges and an improved hinge assembly for the door.

More particularly, this invention relates to oven doors which open down from the top and are hinged near the bottom of the door.

One of the main objects of the present invention is to facilitate opening of the oven door and to provide for removal of the door from the range in a simple and improved manner, more particularly when the door is in partially open position, for example, at approximately a 15 degree angle to the vertical by merely grasping the door with two hands and lifting up at the aforestated angle to a point where a hinge holder disengages a hinge assembly guide.

Another object is to provide for quick and simple removal of the oven door from gas and electric cooking ranges and wherein the removal of the door facilitates cleaning of the oven and the door.

Another object is to provide a hinge assembly guide pivoted on the structure of the range, a door having a hinge holder for sliding engagement with the hinge assembly guide for removably mounting the door on the hinge assembly guide and for swinging of the door about the pivoting of the hinge assembly guide on the structure, a hinge roller, a hinge member pivoted to the hinge assembly guide and cooperating with the roller, a notch in the portion of the hinge member which cooperates with the roller, and a spring yieldingly urging the hinge member into cooperation with the roller, which spring when the notch in the hinge member is positioned on the roller acts to release the door for withdrawal from the hinge assembly guide.

Another object is to provide the hinge member with a locking lug for engagement in a slot in the hinge holder to lock the door against removal from the hinge assembly guide except when the notch is positioned on the roller, and wherein when the notch is positioned on the roller the spring causes the hinge member to pivot about its pivot on the hinge assembly guide to release the locking lug from the slot in the hinge holder for convenient removal of the door from the hinge assembly guide.

Another and more specific object is to provide a hinge support which is secured to the structure of the range and which hinge support carries the roller and has an arm to which the hinge assembly guide is pivoted.

Further objects and advantages of the invention will be apparent from the following detailed description taken in connection with the accompanying drawings, it being understood that the invention is limited only within the scope of the appended claims and not to the particular embodiment selected for illustration.

In the drawings:

FIGURE 1 is a side view of one form of range having a removable oven door and hinge assembly embodying the present invention;

FIGURE 2 is a perspective view showing the hinge support, the hinge roller carried thereby, the hinge assembly guide pivoted on an arm of the hinge support, the hinge member and the spring which yieldingly urges the hinge member into cooperation with the roller;

FIGURE 3 is a perspective view of the hinge holder;

FIGURE 4 is a fragmentary perspective view showing the structure of FIGURE 2 as applied to the front frame of the range structure which defines the opening for the oven compartment and further shows the oven door in dotted lines and the hinge holder secured to the oven door as applied to the hinge assembly guide;

FIGURE 5 is a side view of the hinge assembly guide;

FIGURE 6 is a top view of the hinge assembly guide;

FIGURE 7 is a front view of the hinge assembly guide;

FIGURE 8 is a side view of the hinge member;

FIGURE 9 is a front view of the hinge member;

FIGURE 10 is a front view of the hinge holder;

FIGURE 11 is a top view of the hinge holder;

FIGURE 12 is a side view of the hinge holder;

FIGURE 13 is a side view of the hinge support;

FIGURE 14 is a top view of the hinge support;

FIGURE 15 is a back view of the hinge support;

FIGURE 16 is a side view of the hinge roller; and

FIGURE 17 is an end view of the hinge roller.

Referring to the drawings, the range **10** shown in FIGURE 1 has an oven compartment or cavity **11** and as shown in FIGURE 4 the oven compartment **11** has a rectangular front opening **12** defined by a front frame **14** extending, for example, from the side wall **15** of the range structure and flanged inwardly at the opening **12** as indicated at **16**.

The oven door **17** shown in dotted lines in FIGURE 4 opens down from the top and is hinged near the bottom of the door. The door **17** has an inner panel **18**, an outer panel **19**, and side or end walls **20**.

A hinge support **21** is positioned within the front frame **14** and welded or otherwise secured, for example, along its surfaces **22** to the inner side of the front frame **14**. The hinge support **21** has a flange **23** positioned generally parallel to the plane of swinging movement of the door **17**. A member **24** welded or otherwise secured to the hinge support **21** at **25** has a flange **26** spaced from and generally parallel to the flange **23**. A hinge roller **28** is journalled for rotation between the flanges **23** and **26** on a pin **29**.

The hinge support **21** also has a lug or arm **30** which extends between spaced portions **32** and **33** of a hinge assembly guide **34** and the spaced portions **32** and **33** of the hinge assembly guide **34** are pivoted at **35** near their lower ends to the lug or arm **30** of the hinge support **21**. The upper end of the spaced portion **32** is offset into flat contact with the upper end of the spaced portion **33** and is welded or otherwise secured thereto at **36**.

A hinge member **38** extends between the spaced portions **32** and **33** of the hinge assembly guide **34** and is pivoted to the hinge assembly guide on a pin **40**. The hinge assembly guide **34** has opposite guiding edges **42**. The hinge member **38** has an arcuate portion **43** projecting from one guide edge **42** and inwardly through a vertically elongated slot shown in dotted lines at **45** in the front frame **14** in FIGURE 4. The lug of arm **30** of the hinge support **21** also projects outwardly through the slot **45**. The hinge member **38** has a lower arcuate edge **46** provided with a notch **47**. A tension spring **48** coacts with the hinge member **38** at **49** and yieldingly urges the arcuate edge **46** into cooperation with the roller **28**. The other end of the spring **48** is anchored at a suitable location within the range structure as shown, for example, at **50** in FIGURE 1.

The hinge member **38** has an arm **52** disposed between the portions **32** and **33** of the hinge assembly guide **34**. The arm **52** has a hinge holder locking lug **54** which is movable to retracted and extended positions with respect to the opposite guiding edge **42** of the hinge assembly guide **34**. The hinge holder **56** is of channel-shaped

form and has its base welded or otherwise secured to the inside of the adjacent side or end wall 20 of the door 17. The lug 54 is engageable in a locking slot 57 in the flange 58 of the hinge holder 56 to lock the door against removal from the hinge assembly guide 34 except when the notch 47 in the edge 46 of the hinge member 38 is positioned on the roller 28 as will presently appear.

The notch in the hinge member 38 in which the spring 48 coacts with the hinge member 38 is marked 60 in the drawings. The other flange of the hinge holder 56 is indicated at 62. In FIGURES 5 and 6 the openings near the lower ends of the spaced portions 32 and 33 of the hinge assembly guide 34 in which the pin 35 is disposed are indicated at 64. The offset upper end of the spaced portion 32 of the hinge assembly guide 34 is indicated at 65 in FIGURE 7.

Secured within the hinge holder 56 as shown in FIGURES 10, 11 and 12 is a member 68 through the side adjacent the flange 58 and the flange 58 the locking slot 57 extends. The flange 62 of the hinge holder 56 and the adjacent wall of the member 68 have a slot 70 disposed longitudinally and opening from the bottom of the hinge holder 56 and member 68 as shown in FIGURE 10. In applying the door and the hinge holder 56 carried thereby to the hinge assembly guide 34 the hinge holder 56 slides over the hinge assembly guide 34 with the flanges 58 and 62 sliding along the guide edges 42 of the hinge holder guide 34 and the slot 70 passes over the hinge member 38.

The member 68 has a flange 72 at its upper end. In sliding the door 17 and the hinge holder 56 into place on the hinge assembly guide 34 the flange 72 cooperates with the upper end of the hinge assembly guide 34 and limits the downward movement of the door 17 and hinge holder 56 onto the hinge assembly guide 34.

In FIGURE 13 the opening in the arm 30 of the hinge support 21 for the pivot pin 35 is indicated at 74. In FIGURE 8 the opening in the hinge member 38 for the pin 40 is indicated at 75. In FIGURES 13 and 15 the openings in the hinge support for the pin 29 on which the hinge roller 28 is journalled for rotation are indicated at 76. The lower inner edges of the flanges 58 and 62 of the hinge holder 56 are shown at a 45 degree angle at 78 in FIGURE 10.

With the door 17 and hinge holder 56 in place on the hinge assembly guide 34 as shown in FIGURE 4, removal of the door 17 may be accomplished in a simple and convenient manner as follows: the door 17 is swung to an approximate 15 degree angle from vertical or to a broil position in which the hinge assembly guide 34 is positioned in FIGURE 2. In this swinging movement the door 17 pivots on the pivot pin 35 and as shown in FIGURE 2 the hinge roller 28 is located at the notch 47 in the lower arcuate edge 46 of the hinge member 38.

The location of the hinge roller 28 at the notch 47 causes a rigid stop due to the vertical downward force of the spring 48. The spring 48 causes the hinge member 38 to pivot about the pin 40 as the notch 47 positions on the roller 28. This disengages the locking lug 54 from the slot 57 in the hinge holder 56 which is secured to the door lining. The hinge holder 56 secured to the door lining will now pass or slide along the guide edges 42 until contact ceases and the door 17 is released from the range. With the door at approximately a 15 degree angle to the vertical, or other desired angle where the roller 28 is at the notch 47, the door is removed simply and conveniently by merely grasping the door with two hands and lifting up at the aforestated angle to a point where the hinge holder 56 disengages the hinge assembly guide 34.

The door 17 and its hinge holder 56 is replaced in a simple and convenient manner by a reverse procedure. In other words, the hinge assembly guide 34 is positioned as shown in FIGURE 2 with the roller 28 at the notch 47 in the lower arcuate edge 46 of the hinge member 38. The door 17 which has an opening is positioned over the upper end of the hinge assembly guide 34 and the hinge holder 56 is passed or moved slidingly downwardly over the hinge assembly guide 34 along the guide edges 42 until the flange 72 engages the upper end of the hinge assembly guide 34.

In the aforementioned position the door 17 is in place on the hinge assembly guide 34 and any movement of the door about the pivot 35 from position with the roller 28 at the notch 47 will cause the arcuate edge 46 of the hinge member 38 to be pressed yieldingly into cooperation with the roller 28 by the spring 48. This causes the hinge member 38 to pivot about the pin 40 to engage the hinge holder locking lug 54 in the locking slot 57 in the hinge holder 56. This locks the door 17 and its hinge holder 56 against removal from the hinge assembly guide 34 except when the notch 47 in the hinge member 38 is at the roller 28 as previously described.

The embodiment of the invention disclosed in the drawings and the specification is for illustrative purposes only, and it is to be expressly understood that said drawings and the specification are not to be construed as a definition of the limits or scope of the invention, reference being had to the appended claims for that purpose.

I claim:

1. In combination, a structure defining an oven compartment with a front opening, an oven door for said opening, a hinge support carried by said structure, a hinge assembly guide having spaced portions and pivoted near its lower end on said hinge support, a hinge roller carried by said structure, a hinge member pivoted between said spaced portions of said hinge assembly guide and having an arcuate edge with a notched portion, a spring coacting with said hinge member and yieldingly urging the arcuate edge of said hinge member into cooperation with said roller, a generally channel shaped hinge holder secured to said door and slideable over said hinge assembly guide and having a locking slot therein, and a locking lug rigid with said hinge member and engageable in said locking slot to lock the door against removal from said hinge assembly guide, movement of said door about the hinge support for said hinge assembly guide to position where the notched portion of said arcuate edge of said hinge member is presented to said roller causing said spring to pivot said hinge member about its pivot between the spaced portions of the hinge assembly guide to release the locking lug on said hinge member from said locking slot for removal of the door from said hinge assembly guide.

2. The combination according to claim 1, wherein the notched portion of the arcuate edge of said hinge member is presented to the roller when the door is swung to a partially open position.

3. The combination according to claim 1, wherein the hinge roller is journaled for rotation on a pin carried by a hinge support secured to the inner side of the front frame of the structure defining the oven compartment and the hinge support includes an arm on said hinge support.

4. The combination according to claim 1, wherein the hinge member has an upwardly elongated integral arm at one end for positioning between the spaced portions of the hinge assembly guide, the locking lug being integral with said arm and the pivoting of said hinge member between the spaced portions of the hinge assembly guide being at the lower end of said upwardly elongated arm.

5. The combination according to claim 1, wherein the inner wall of the generally channel shaped hinge holder has a slot disposed longitudinally and opening from the bottom of the hinge holder for passage over the hinge member in applying the door and hinge holder to the hinge assembly guide and through which the hinge member extends for cooperation of its notched arcuate edge with the hinge roller.

6. The combination according to claim 1, wherein the

generally channel shaped hinge holder has a flange for cooperation with the upper end of the hinge assembly guide for limiting downward movement of the door onto the hinge assembly guide.

7. The combination according to claim 1, wherein the hinge member has an arcuate portion projecting from said hinge assembly guide and through a vertically elongated slot in a front frame of the structure, and wherein the lower edge of said arcuate portion constitutes the arcuate edge with the notched portion which cooperates with the roller.

8. In combination, a structure comprising an oven compartment with a front opening defined by a front frame, a hinge support positioned within and secured to the inner side of said front frame, a member on said hinge support having a flange spaced from a flange on said hinge support, a hinge roller journaled for rotation between said flanges on a pin, an oven door for said front opening of said structure, a hinge assembly guide having spaced portions and pivoted near its lower end on an arm on said hinge support, a hinge member pivoted between the spaced portions of said hinge assembly guide and having an arcuate portion projecting from said hinge assembly guide with an arcuate lower edge having a notched portion, a spring cooperating with said hinge

member and yieldingly urging the arcuate lower edge of said hinge member into cooperation with said roller, a generally channel shaped hinge holder secured to said door and slideable over said hinge assembly guide and having a locking slot therein, and a locking lug rigid with said hinge member and engageable in said locking slot to lock the door against removal from said hinge assembly guide, movement of said door about the hinge support for said hinge assembly guide to position where the notched portion of said arcuate edge of said hinge member is presented to said roller causing said spring to pivot said hinge member about its pivot between the spaced portions of the hinge assembly guide to release the locking lug on said hinge member from said locking slot for removal of the door from said hinge assembly guide.

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