Aug. 14, 1962 E. D. HILLEBRAND 3,049,116

REMOVABLE OVEN DROP DOOR

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Fig. 1.

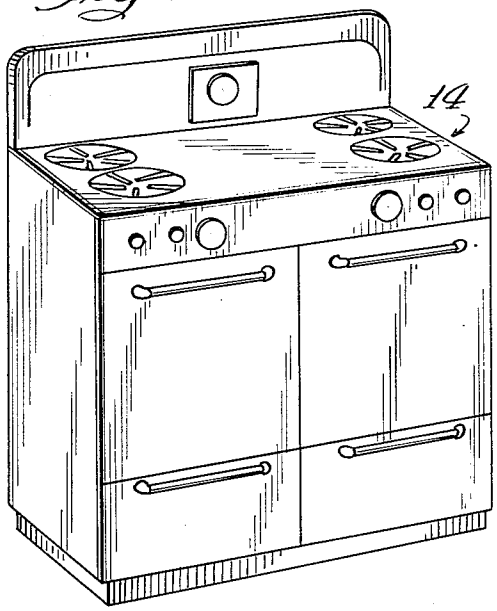


Fig. 2.

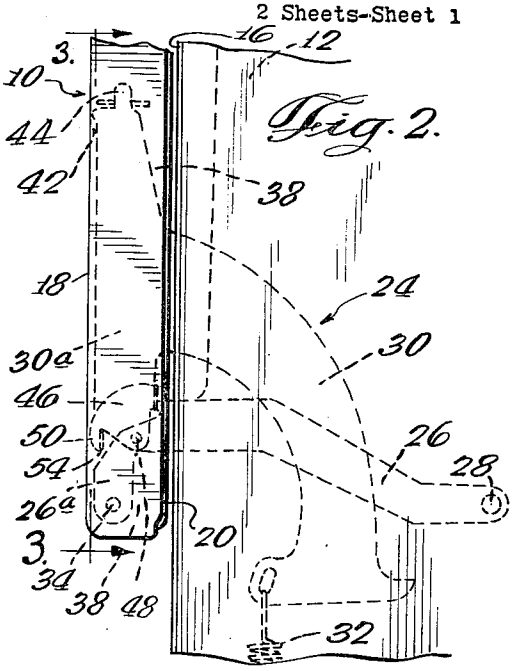


Fig. 4.

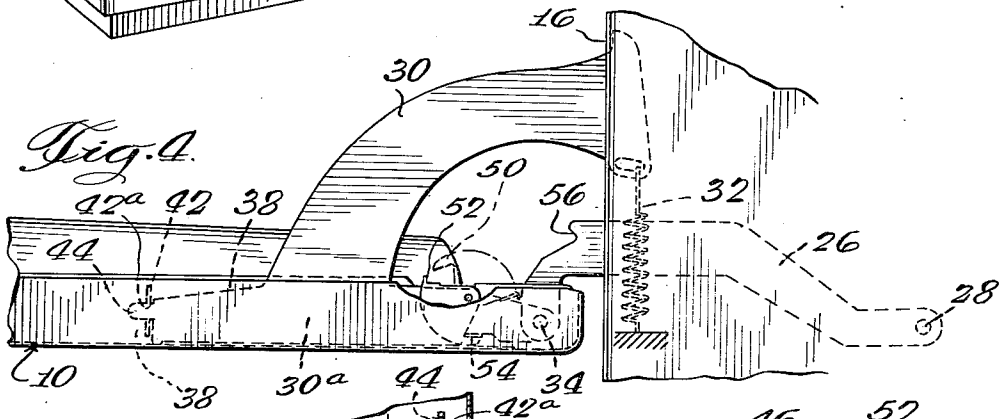
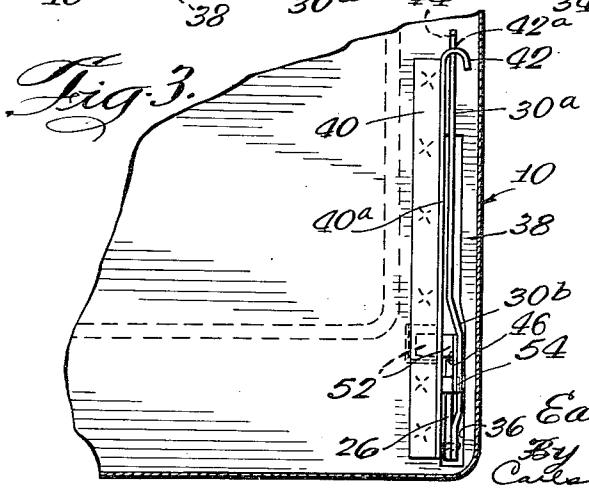


Fig. 3.



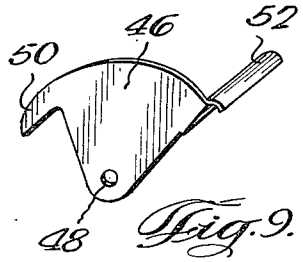


Fig. 9.

Inventor
Earl D. Hillebrand
By Calhoun, Putzner, Hubbard & Wolfe
Attorneys

Aug. 14, 1962 E. D. HILLEBRAND 3,049,116

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Fig. 6.

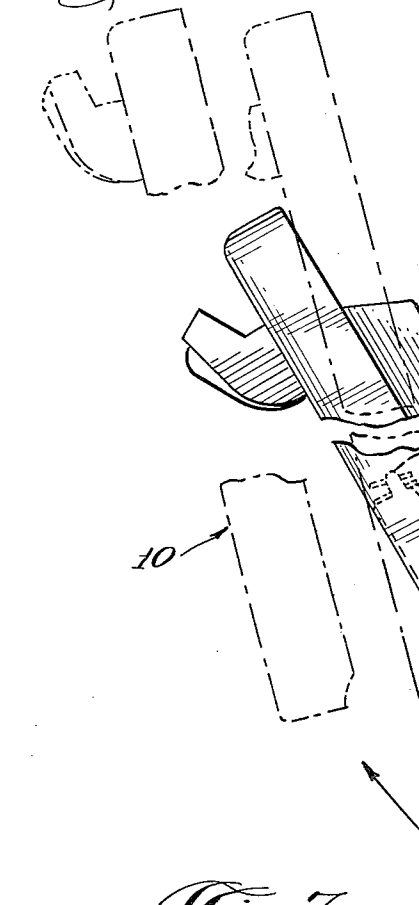


Fig. 5.

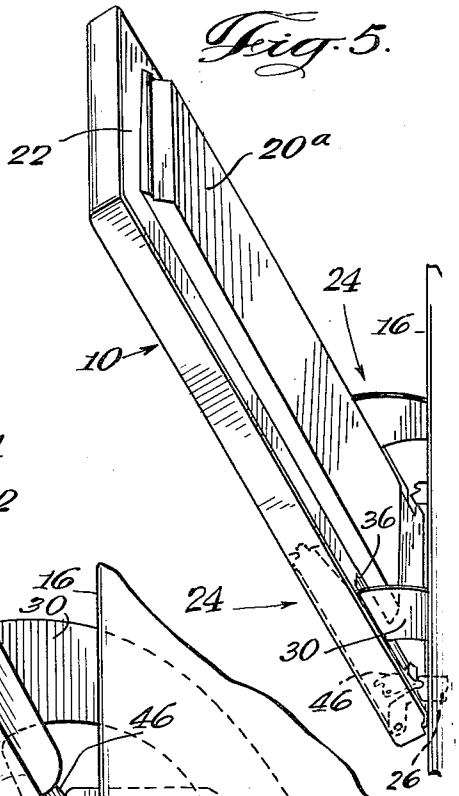


Fig. 7.

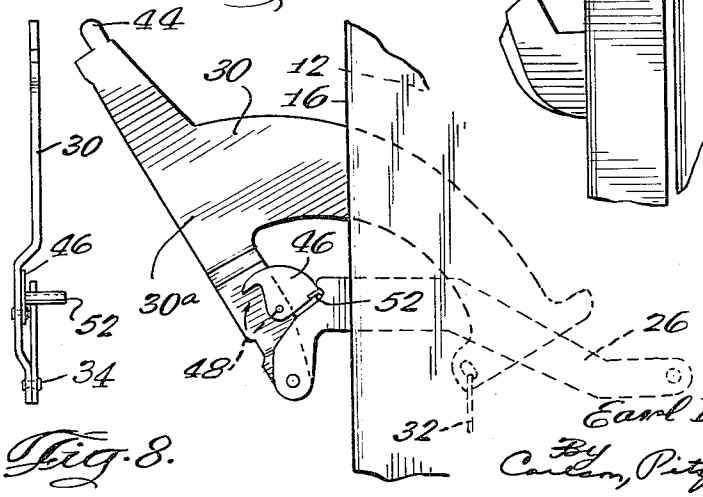


Fig. 8.

Inventor
Earl D. Hillebrand
By Carlson, Pitzner, Hubbard & Wolfe
Attorneys

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3,049,116

REMOVABLE OVEN DROP DOOR

Earl D. Hillebrand, Kankakee, Ill., assignor to Geo. D. Roper Corporation

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2 Claims. (Cl. 126—194)

The present invention relates to ranges and more particularly to an oven door structure for such ranges.

It is a general object of the present invention to provide an oven drop door which may be easily removed from the oven frame so as to facilitate cleaning the oven or broiler interior by a housewife. It is an allied object to provide such a door which may be removed from the oven frame so as to avoid the necessity for a housewife reaching across the open door to clean the back lining of the oven interior. A further allied object of the invention is to provide an oven door structure which may be disengaged from the range frame and placed on a counter-top or a table to facilitate cleaning of the door.

An ancillary object of the invention is to provide a removable oven door structure which is unobtrusive and presents the same smooth exterior appearance as a conventional oven door.

It is another object of the invention to provide an oven door which may be easily removed from and replaced on the range frame by a serviceman if such should be necessary because of damage to the door during transit of the range or otherwise.

It is yet another object of the invention to provide a removable oven door structure which is economically manufactured, may be simply assembled on a range, and may be readily replaced once assembled whether the range is on the assembly line or has been placed in a household.

Other objects and advantages of the invention will become apparent upon reading the attached detailed description and upon reference to the drawings, in which:

FIGURE 1 is a perspective of a typical range, including an oven door mounted thereon in accordance with the present invention.

FIG. 2 is an enlarged fragmentary end elevation showing the manner in which the oven door is mounted upon the oven frame, the door being shown in the fully closed position.

FIG. 3 is a cutaway enlarged fragmentary front elevation of one side of the door taken along the line 3—3 in FIG. 2.

FIG. 4 is an enlarged fragmentary view similar to FIG. 2, except that the oven door is shown in a fully open position.

FIG. 5 is an enlarged perspective showing the door in an open position preliminary to removal thereof from the oven frame.

FIG. 6 is a fragmentary end elevation corresponding to the position of the door shown in FIG. 5, showing in phantom outline the positions of the door when removed.

FIG. 7 is an enlarged end elevation showing the details of the hinge means employed for mounting the door, the latter having been removed from the oven frame.

FIG. 8 is a front elevation of the hinge means shown in FIG. 7.

FIG. 9 is an enlarged perspective of the door locking member employed in practicing the present invention.

While the invention is described in connection with a preferred embodiment, it will be understood that it is not intended to limit the invention to such embodiment but rather it is intended to cover all alternative constructions and embodiments falling within the spirit and scope of the appended claims.

Turning now to the drawings, the invention is shown as embodied in a door **10** associated with the oven **12** of a range **14**. The door **10** is adapted to normally close

the oven opening formed by the front frame **16** of the range.

The door **10**, in its preferred form, comprises outer and inner panels **18**, **20**, secured together in spaced interfitting relation to provide smooth inner and outer surfaces for the door. These surfaces are usually finished with a coating of vitreous enamel to enhance their appearance and to facilitate cleaning. As shown, the inner panel **20** of the door is provided with a raised portion **20***a* defining a peripheral flange **22** thereabout, which flange fits tightly against the front frame **16** of the range when the door is closed.

In accordance with the present invention, means for pivotally supporting the door **10** are provided in the form of a pair of novel hinge assemblies **24** which provide for disengagement of the door from the range for cleaning or the like. One hinge assembly supports the left side of the door **10** and the other assembly supports the right side of the door (see FIG. 5). The left and right hinge assemblies are substantially identical and, for convenience in describing the invention, the same numerals have been applied to corresponding parts of the two assemblies. It may be noted that FIGS. 2, 3, 4, 5 and 9 show the parts of the assembly **24** which support the side of the door **10** at the right when facing the oven, whereas FIGS. 6, 7 and 8 show the parts of the assembly **24** which support the left side of the oven door.

In the present instance each hinge assembly **24** includes a flat, elongated bracket **26** secured within the range frame at **28**, and a flat arcuate door supporting member **30** biased to the frame by a counter-balancing spring **32**. As will be seen, the bracket **26** extends outwardly in a horizontal direction through the oven opening and forms at its outer end a depending leg **26***a* which carries a door pivot **34**. Likewise, the door supporting member **30** extends outwardly through the oven opening and forms at its outer end a vertical plate-like extension **30***a*, also connected at its lower portion to the pivot **34**. In this way the bracket **26** and the door supporting member **30** cooperate to form pivotable supporting means for the door **10**.

Attention may now be given to the means employed for mounting the door **10** on the hinge assemblies **24**. From FIGS. 3 and 4 it will be seen that the door is adapted to receive the supporting member **30** in an inner pocket **38** formed along each of the lateral portions of the flange **22** between the outer and inner door panels **18**, **20**, and accessible through elongated vertical flange slots **36**. Thus, each of the door slots **36** is of sufficient length for insertion therethrough of the supporting member extension **30***a* so that the latter is received in nested position within the pocket **38**.

Arranged within the pocket **38** is a vertically disposed angle **40** which is somewhat longer than the slot **36** and has its inner leg rigidly secured to the outside of the inner door panel **20**, the inner leg **40***a* of the angle being arranged adjacent the slot and extending toward the front of the oven. For nesting the upper end of the member **30** within the angle **40**, the upper end of the angle leg **40***a* is provided with a downwardly turned roll portion **42** having a slot **42***a* adapted to receive a pilot tab **44** extending upwardly from the top of the supporting member extension **30***a*. The tab **44** is thus adaptable to enter the slot **42***a* and thereby firmly lock the door to the upper end of the member **30**.

Manually releasable means are provided within the hinge assembly **24** for mounting the lower end of the supporting member **30** within the door pocket **38**. With particular reference to FIGS. 2 and 9, it will be observed that such means includes a flat sector-like locking member **46** pivotally mounted at **48** on the outer portion of the member **30** adjacent the door pivot **34**.

The member **46** carries on its opposite ends locking and finger tabs **50**, **52**, respectively, the former being shaped to latch over a stop **54** positioned within the pocket **38** and rigidly fastened in a lateral direction to the inner angle leg **40***a*, and the latter serving a purpose to be described presently. It will be observed that the door supporting member extension **30***a* is provided at its lower end with an offset **30***b* to accommodate the locking member **46** to thereby permit latching engagement with the stop **54**. The locking member **46** is thus swingable about the pivot **48** between engaged and released positions of the locking tab and stop **50**, **54** to impart removability to the door **10**. The normal position of the door **10** upon the range **14** is shown in FIGS. 2, 3 and 4 wherein the pilot tab **44** is received in the slot **42***a* provided by the angle **40**, and the locking member **46** is rotated fully outwardly so that the tab **50** is latched over the stop **54**.

For facilitating removal of the door **10** from the frame **16**, the locking member **46** carries the finger tab **52** which comprises a laterally disposed plate adapted to cooperate upon rotation of the member **46** with a suitable notch **56** provided in the outer portion of the bracket **26**. The operation of the tab and notch arrangement **52**, **56**, will be described now in connection with the procedure to be followed in removing the door.

Removal of the door **10** from the range **14** may be easily accomplished in the following manner. The door **10** is first opened to the horizontal position shown in FIG. 4. This exposes the door slot **36** as well as the locking member **46** and the finger tab **52** carried thereon. The housewife then simply places her finger on the tab **52** and manually rotates the locking member **46** about the pivot **48** until the tab **52** rests against the bracket **26** adjacent and just below the notch **56**, as shown in phantom in FIG. 4. This releases the locking tab **50** from engagement with the stop **54**, thus detaching the lower portion of the door from the range proper.

Next, as shown in FIG. 6 with pilot tab **44** still engaged in the slot **42***a*, the door **10** is swung by the housewife as if it were to be closed until the finger tab **52** rides up the edge of the bracket **26** and slips into and engages the notch **56**, which engagement serves to lock the door movement and prevent any further closing of the hinge assembly **24**. An upward lifting movement of the door **10** in the direction of the arrows to the successive positions shown in phantom in FIG. 6 will then effect disengagement of the tab **44** and slot **42***a* so that the entire door may be removed from the range. It will be noted that the door supporting member **30** and the bracket **26** remain attached to the range as viewed in FIG. 7, with the finger tab **52** being firmly seated in the bracket notch **56** to thus maintain the door supporting member in an outwardly extending condition against the bias of the counter-balancing spring **32**. In such a condition the hinge assembly **24** is poised for repositioning of the door thereon.

Replacement of the door upon the range is effected by simply holding the door **10** in the last position shown in phantom in FIG. 6 and moving the door in the reverse direction of the arrows so that the supporting member **30** enters the slot **36** of the door flange **22**. Then,

upon cocking the door slightly rearwardly, the pilot tab **44** is guided into the angle slot **42***a* and the member **30** assumes a nested position within the pocket **38**. Next, the door **10** is lowered to the horizontal position and the locking member **46** is manually rotated back to the locking position shown in FIG. 4 so that the tab **50** is disposed behind the stop **54** and the oven door is firmly locked in place.

It is one of the features of the invention that the oven door **10** may be quickly and easily removed from the range by a housewife to facilitate cleaning of both the oven interior and the door itself. In the same manner, replacement of the door upon the range is simply accomplished in a matter of seconds and the door is firmly locked in place to function as a fully pivotable drop door.

I claim:

1. In a range, the combination comprising a frame defining an opening for an oven or the like, a door for normally closing said opening and having an elongated slot adjacent its edge, a bracket secured to said frame and extending outwardly therefrom, horizontal pivot means disposed on the outward portion of said bracket, a door supporting member extensibly connected at one end to the frame and pivoted at the other end to said pivot means, said door supporting member being of flat, elongated construction arranged for movement through the slot in said door, said door including means releasably engageable by said supporting member and carrying stop means thereon, and means independent of said pivot means including a manually disengageable locking member mounted on said door supporting member and operative to releasably engage said stop means for locking the latter two members together while providing for disengagement thereof to permit bodily removal of the door from the range for cleaning or the like.

2. In a range, the combination comprising a frame defining an opening for an oven or the like, a door for closing said opening, a bracket secured to said frame and extending outwardly therefrom, a door supporting member pivoted on the extending end of said bracket, interfitting means on said door and said member for removably mounting said door on said member, said member being biased to counterbalance the weight of said door about the member's pivot, a latch pivoted on said member and swingable between a first position wherein said interfitting means are locked together and a second position which releases said means but blocks said member from pivoting toward the frame under the urging of said bias.

References Cited in the file of this patent

UNITED STATES PATENTS

831,801	Roberts	Sept. 25, 1906
1,000,879	Amann	Aug. 15, 1911
1,051,538	Barcus	Jan. 28, 1913
2,378,421	McCormick	June 19, 1945
2,541,942	Sherman	Feb. 13, 1951
2,592,333	Reeves	Apr. 8, 1952
2,776,655	Ferguson et al.	Jan. 8, 1957
2,842,117	Berge et al.	July 8, 1958
2,873,737	Sherman	Feb. 17, 1959