Jan. 8, 1963 E. STOLIGROSZ ETAL 3,072,117

HINGE STRUCTURE

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Fig. 1.

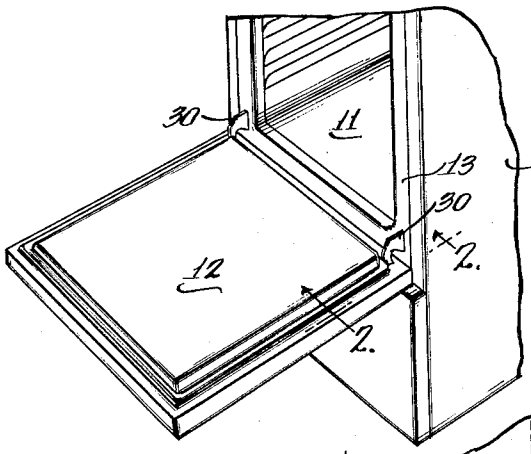
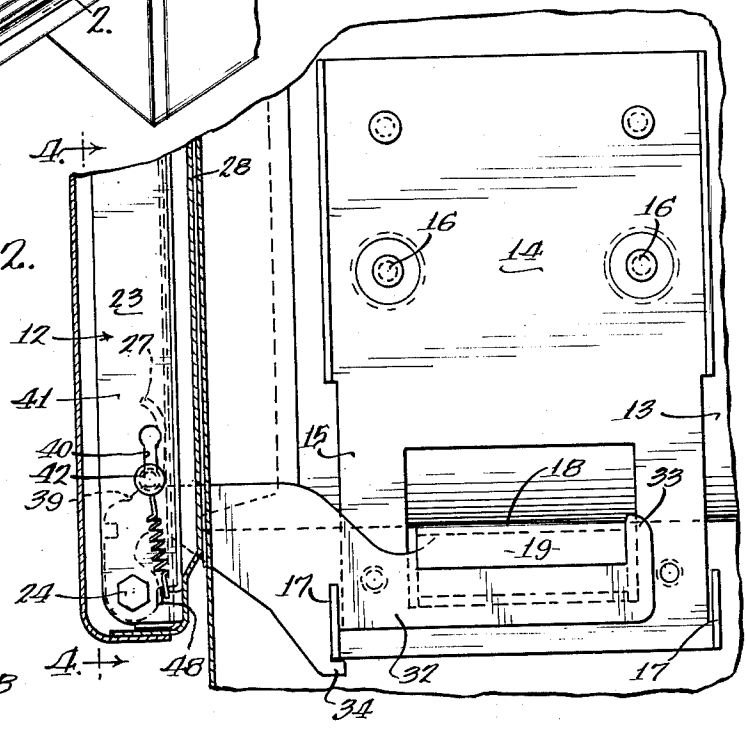


Fig. 2.



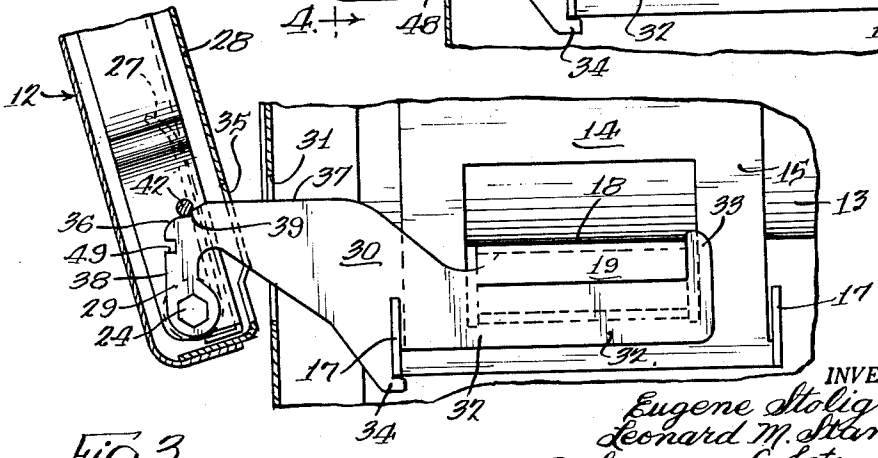


Fig. 3.

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Fig. 4.

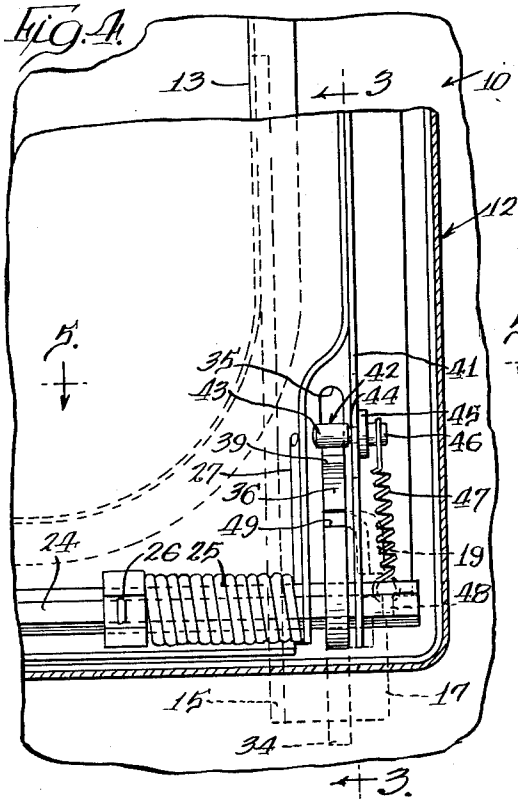


Fig. 5.

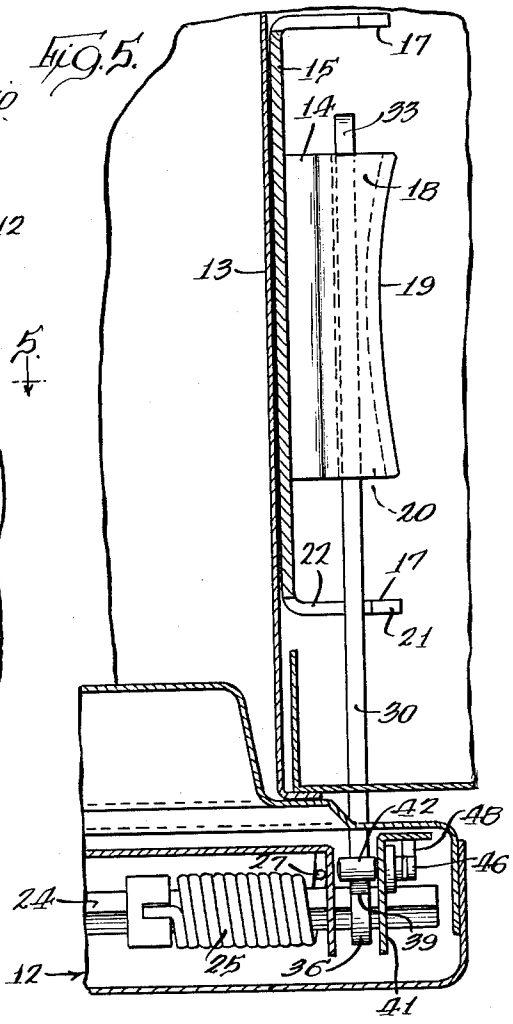




Fig. 7.

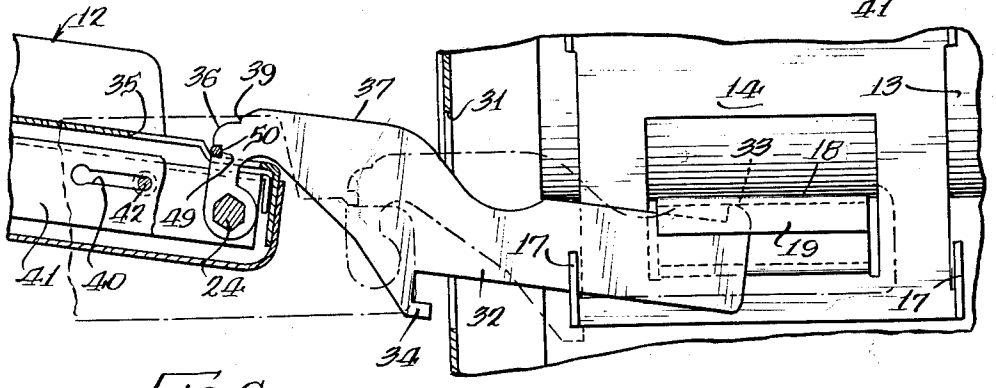


Fig. 6.

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3,072,117

HINGE STRUCTURE

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This invention relates to a hinge structure for mounting a door on a base member.

One of the features of this invention is to provide a hinge structure for a door such as an oven door for a stove in which the door is locked in position but including means for the ready release of the hinge structure so that the door including the hinge structure may be easily removed.

Another feature of the invention is to provide a hinge structure for a door such as an oven door or the like which permits retaining the door in partially open position when such is desired.

Other features and advantages of the invention will be apparent from the following description of one embodiment thereof taken in conjunction with the accompanying drawings. Of the drawings:

FIGURE 1 is a fragmentary perspective view of an oven including a door and hinge structure embodying the invention.

FIGURE 2 is a fragmentary enlarged sectional elevational view taken substantially along line 2—2 of FIGURE 1.

FIGURE 3 is a fragmentary view somewhat similar to FIGURE 2 taken substantially along line 3—3 of FIGURE 4 and showing the door in partially open position.

FIGURE 4 is a sectional elevational view taken substantially along line 4—4 of FIGURE 2.

FIGURE 5 is a sectional elevational view taken substantially along line 5—5 of FIGURE 4.

FIGURE 6 is a sectional elevational view similar to FIGURES 2 and 3 but showing the door locked in fully open position and with the door and hinge structure partially removed from the stove.

FIGURE 7 is a side elevational view of a locking pin that may be used to lock the door in fully open position.

In the illustrated embodiment there is provided a stove or cooking range 10 having an oven 11 with the stove being provided with a door 12. Mounted within the shell 13 of the stove adjacent the bottom of the side walls of the oven 11 are a pair of mounting members 14 in the form of side brackets. Each side bracket includes a base 15 attached to the shell 13 as by means of rivets 16 and a pair of parallel end flanges 17 on the ends of the base 15. Also forming a part of the base 15 is a horizontal extending inverted U-shaped bracket 18. This bracket 18 is located above the upper extremities of the end flanges 17. The mounting member 14 is preferably made of sheet metal with the flanges 17 and the bracket 18 struck therefrom. As is shown in FIGURE 5, the bracket 18 has the front 19 of arcuate shape so that the internal channel 20 is flared outwardly at its opposite ends and narrowed in the center. Each flange 17 has an upturned end 21 and a relatively narrow body portion 22 between this end 21 and the base 15.

The door 12 has a hollow interior 23 and extending across the hollow interior adjacent the bottom of the door is a hexagonal rod 24. This rod is non-rotatably mounted within the door and is provided with a coil spring 25 having one end attached to the rod as indicated at 26 and the opposite end 27 extending upwardly from the rod 24 and bearing against the inner surface 28 of the door to urge the door toward closed position as shown in FIGURE 2. The door is provided with a pair of these

springs on opposite ends of the rod 24. Engaging opposite ends of the rod 24 outwardly of the springs 25 are the forward ends 29 of a pair of hinge plates 30. Because both hinge plates are identical only one is illustrated in detail.

Each hinge plate 30 extends through an opening 31 in the front of the shell 13 of the stove. The portion of the hinge plate 30 within the shell 13 is provided with a locking portion 32 adapted to be located within the bracket 18. The extreme rear end of this locking portion 32 is provided with an upwardly extending first projection 33 or spur adapted to engage the rear edge of the bracket 18 when the hinge plate is located in position. The bottom of the locking portion 32 is provided with a downwardly and rearwardly extending second projection 34 adapted to be hooked under the forward flange 17. With this arrangement the first projection 33 prevents the hinge plate which is preferably of sheet metal being withdrawn outwardly through the opening 31 while the second projection 34 being hooked under the front flange 17 prevents the door spring 25 causing upward shifting of the hinge plate 30. Without the second projection 34 this would occur when the springs were holding the door against the stove 10.

The forward end 29 of each hinge plate 30 extends through an opening 35 in the inner surface plate 28 of the door. This forward end is provided with a path section 36 on its upper forward edge with this path section being generally convex and connecting an upper flat edge 37 that is generally horizontal and a generally vertical flat edge 38. In this path section 36 there is provided a stop portion 39 in the form of a notch.

Movably mounted in a vertical slot 40 in an inner panel 41 on each side of the door adjacent each hinge plate 30 is a movable member 42 in the form of a locking pin. This pin is provided with an inner end portion 43 engaging the path section 36, a narrow shank portion 44 held in the slot 40, a collar 45 located outwardly of this slot and an end portion 46. Attached to this end portion is one end of a helical spring 47 with the other end being attached to a tab 48 adjacent but rearwardly of the rod 24 in order that the spring 47 will hold the pin 42 against the path section 36.

In order to lock the door 12 in fully open position, as shown in FIGURE 6, there is provided a pin receiving notch 49 in the vertical forward end 38 of the forward end 29 of each hinge plate. This notch 49 is forwardly of the path section 36 of the hinge plate 30. When the door 12 has been turned about the rod 24 to fully open position, as shown in FIGURE 6, the notch 49 is exposed exteriorly of the door. It is then only necessary to position a pin 50 which may be of the type shown in FIGURE 7 within the notch 49. The springs 25 which tend to rotate the door toward closed position will then hold the door tightly against the pins 50 so that the effects of the springs 25 are nullified.

When the hinge plates are in their normally locked positions, as shown in FIGURES 1–5 inclusive, the door may be easily moved about the rod 24 between open and closed positions. When the door is moved to a partially open position in which the first pin 42 engages the stop portion 39, the spring pressure of this pin within the stop portion will hold the door in partially open position as shown in FIGURE 3. This position is particularly useful when the broiler (not shown) is being used as it provides ventilation.

When it is desired to remove the door from the stove for cleaning or other purposes, the door is rotated to fully open position and the pins 50 are positioned in the forward notches 49 so that they lock the door against movement as previously described. It is then necessary only to rock the hinge plates 30 in a clockwise direction as

viewed in FIGURE 6 to lower the first projection 33 from its engagement with the bracket 18. The door and the hinge plates may then be pulled forwardly to withdraw the entire assembly as shown in solid lines in FIGURE 6. The broken lines in this figure illustrate the positions of the door and hinge plates when in locked positions.

Having described our invention as related to the embodiment shown in the accompanying drawings, it is our intention that the invention be not limited by any of the details of description, unless otherwise specified, but rather be construed broadly within its spirit and scope as set out in the accompanying claims.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows.

We claim:

1. A hinge structure for mounting a door on a base member, comprising: a pair of hinges on which the door is mounted for arcuate movement; a mounting member on the base member for receiving each hinge, the door thereupon being movable between open and closed positions, each hinge having a stop portion thereon; cooperating holding means fixedly on each hinge and mounting member engageable to hold the hinges in locked positions and disengageable on movement of the hinges relative to said mounting means to permit removal of said hinges from said mounting means and thus said door from said base member; means urging said door toward one of said open and closed positions and simultaneously urging said holding means toward said locked positions; movable means on said door engageable with each stop portion to hold said door in partially open position; and means selectively operable to prevent relative movement between said hinges and the door to permit said movement of the hinges relative to said mounting means.

2. A hinge structure for mounting a door on a base member, comprising: a pair of hinges on which the door is mounted for arcuate movement; a mounting member on the base member into which each hinge is insertable, the door thereupon being movable between open and closed positions, each hinge having a path section adjacent said door including a stop portion and a catch portion; a movable member held by said door normally engaging said path; spring means urging said movable member against said path, the engagement of each of said movable members with a stop portion holding said door in partially open position, said movable member being movable away from said stop portions on said paths by force applied to said door; a first projection on each hinge engaging a mounting member to prevent withdrawal of said hinge; a second projection fixedly on each hinge engaging a mounting member to prevent arcuate movement of each hinge relative to said mounting member, said first projection being movable from a mounting member and said second projection then being movable from said mounting member to release said door from said base member; spring means urging said door toward closed position and simultaneously urging said first projection into said engagement with said mounting member; and a catch member engaging each catch portion and said door to prevent relative movement between said hinges and door to permit said movement of said first projections from said mounting member.

3. A hinge structure for mounting a door on a base member, comprising: a pair of hinges on which the door is mounted for arcuate movement; a mounting member on the base member for receiving each hinge, the door thereupon being movable between open and closed positions; releasable cooperating holding means on each hinge and mounting member engageable to hold the hinges in locked positions while said door is arcuately movable on the hinges; means selectively precluding arcuate movement of the door on the hinges for moving the hinges relative to said mounting members during removal of said hinges from said mounting members and thus said door from said base member; and means for urging said door toward one of said open and closed positions and for simultaneously urging said holding means toward said locked position.

4. A hinge structure for mounting a door on a base member, comprising: a pair of hinges on which the door is mounted for arcuate movement; a mounting member on the base member into which each hinge is insertable, each of said mounting members including a flared section for guiding said respective hinge into its mounting member, the door thereupon being movable between open and closed positions; means operable to prevent arcuate movement of the door on the hinges; a first projection on each hinge engaging a mounting member to prevent withdrawal of said hinges; a second projection on each hinge engaging a mounting member to prevent arcuate movement of each hinge relative to said mounting member, both said projections being movable from said mounting members to release said door from said base member; and spring means for urging said door toward closed position and simultaneously urging said first projection into said engagement with said mounting member.

5. A hinge structure for mounting a door on a base member, comprising: a pair of hinges on which the door is mounted for arcuate movement; a mounting member on the base member into which each hinge is insertable, the door thereupon being movable between open and closed positions; a first projection on each hinge engaging a mounting member to prevent withdrawal of said hinge; a second projection fixedly on each hinge engaging a mounting member to prevent arcuate movement of each hinge relative to said mounting member, both said projections being movable from said mounting members to release said door from said base member; spring means urging said door toward closed position and simultaneously urging said first projection into said engagement with said mounting member; and means engageable with each of said hinges and with said door to prevent relative movement of said hinges and door to permit said movements of said first projections from said mounting members by manipulation of the door only.

6. A hinge structure for mounting a door on a base member, comprising: a pair of hinges on which the door is mounted for arcuate movement; a mounting member on the base member into which each hinge is insertable, the door thereupon being movable between open and closed positions, each hinge having a path section adjacent said door including a stop portion; a movable member held by said door normally engaging said path section; spring means urging said movable member against said path section, the engagement of said movable members with said stop portions holding said door in partially open position, said movable members being movable away from said stop portions on said paths by force applied to said door; a first projection on each hinge engaging a mounting member to prevent withdrawal of said hinge; a second projection on each hinge engaging a mounting member to prevent arcuate movement of each hinge relative to said mounting member while said door is arcuately movable on said hinges; locking means operable to prevent said arcuate movement of the door for moving said first projection away from said mounting member and said second projection from said mounting member on manipulation of said door to release said hinge from said base member; and spring means continuously urging said door toward closed position and simultaneously urging said first projection into said engagement with said mounting member.

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