

Nov. 12, 1929.

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1,735,653

OVEN DOOR CONSTRUCTION

Filed Feb. 2, 1928

2 Sheets-Sheet 1

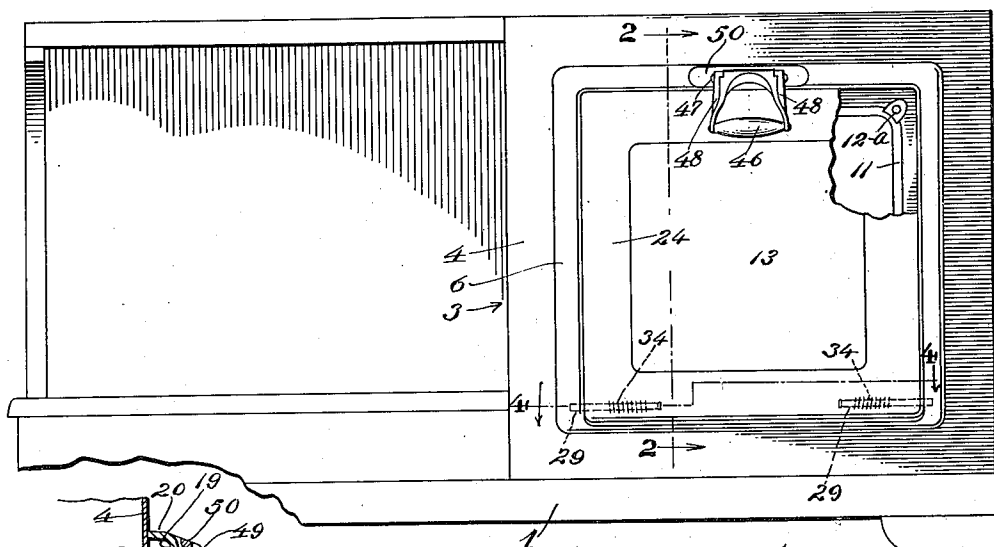


Fig. 1.

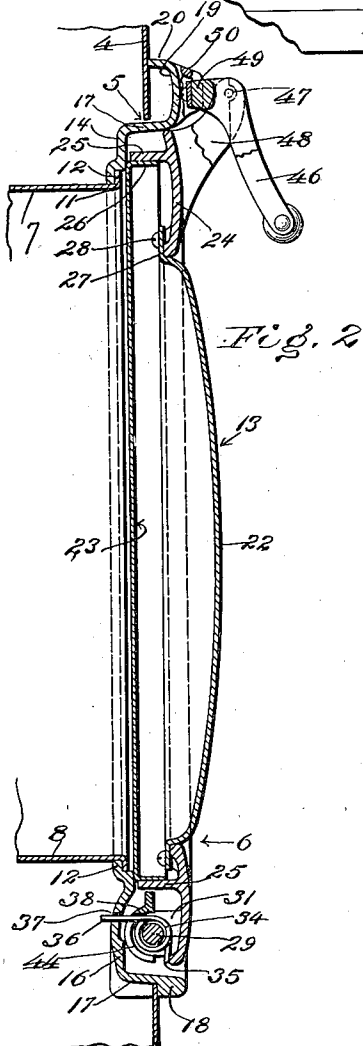


Fig. 2.

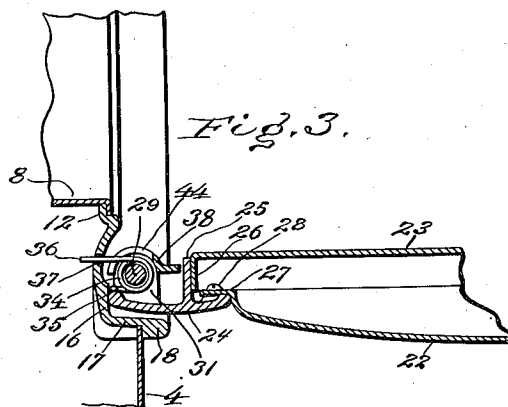


Fig. 3.

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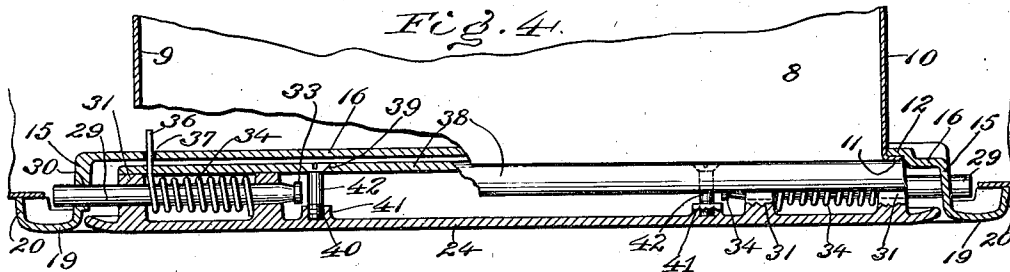
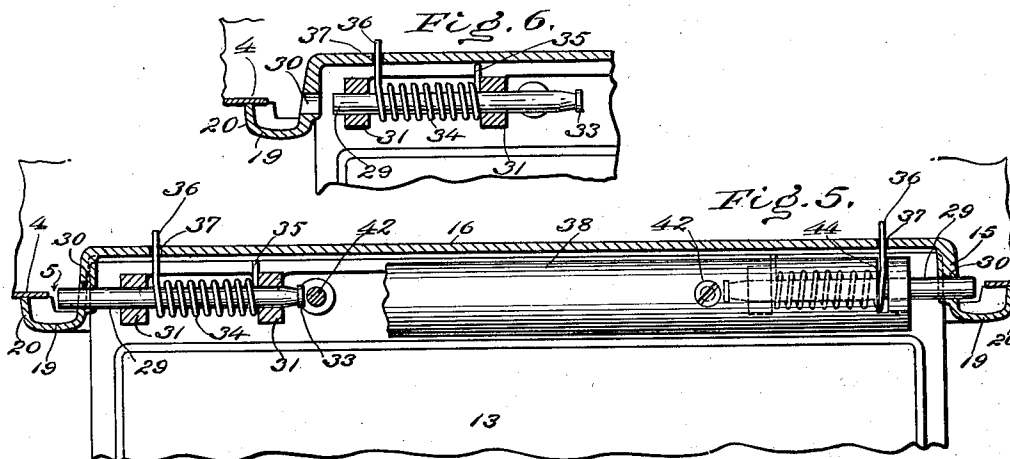
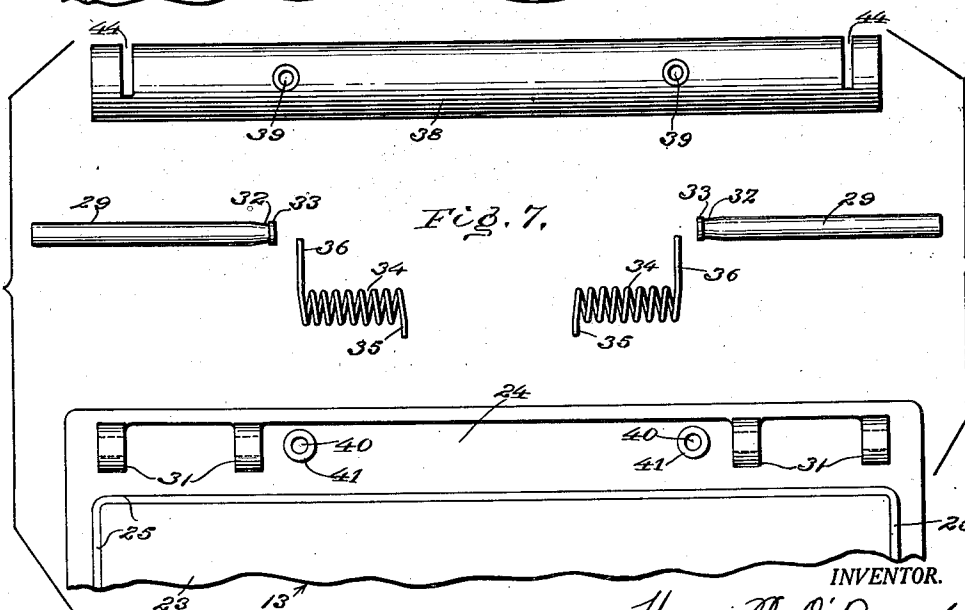
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2 Sheets-Sheet 2



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OVEN-DOOR CONSTRUCTION

Application filed February 2, 1928. Serial No. 251,266.

This invention relates to door mountings for cooking range ovens and the like, and has particular reference to a simplified construction of detachable hinge connections.

5 The general object of the present invention is to provide a door mounting which is simpler in construction and more convenient in assembling and disassembling than those which have preceded it in the art. More specifically, the invention contemplates the provision of a door which is swingingly mounted on trunnions which extend laterally from the opposite side edges of the door and are received in suitable sockets in the door frame. There are preferably two of such trunnions or hinge pins in axial alinement, and they are capable of being moved longitudinally toward and away from each other whereby to render them withdrawable from the sockets without actually detaching them from the door on which they are mounted. Each of said trunnions or hinge pins is slidably and detachably supported in spaced apertured lugs on the inner side of the door and gives support to an encircling coil spring which has one of its ends connected with the door and the other end connected with the door frame in such manner as to resist opening movement of the door. The axial adjustment of the trunnions does not affect the mounting of the springs, unless they are withdrawn from their supporting lugs, in which case the springs can be removed and replaced with facility.

35 Another feature of the invention resides in the provision of a cover plate to overlie the springs and portions of the hinge pins in the inner side of the door, whereby to protect the same from the heat of the oven and enable it more easily to be kept in a sanitary condition. Said cover plate is detachably mounted by means of screws, or the like, which, in the illustrated embodiment of the invention, also serve to restrict axial movement of the trunnions toward each other, and thus maintain said trunnions in their respective sockets in the door frame. The construction is extremely simple, and capable of economical production, assembly and disassembly. The foregoing and other objects,

features, and advantages will be more readily apparent from the following description in connection with the accompanying drawings wherein a preferred form of the invention has been shown by way of illustration, and wherein

Fig. 1 is a front elevation of a cooking range embodying the invention;

Fig. 2 is a vertical transverse sectional view on line 2—2 of Fig. 1, on a larger scale, and showing the door in closed position;

Fig. 3 is a fragmentary view similar to Fig. 2, with the door in open position;

Fig. 4 is a fragmentary horizontal sectional view on line 4—4 of Fig. 1 with the door closed and with parts broken away;

Fig. 5 is a similar view with the door opened;

Fig. 6 is a fragmentary view similar to Fig. 5, showing one of the hinge pintles removed from its socket in the door frame; and

Fig. 7 is a view showing the component parts of the door mounting disassembled.

Referring to the drawings in detail, the invention has been shown as applied to a cooking range comprising a rectangular base 1 supported at its corners by legs 2, only one of which is shown. Mounted upon the base 1 adjacent one end thereof is an oven 3 which preferably includes an outer casing connected together in spaced relation. The front wall 4 of the outer casing has a substantially rectangular opening 5 of slightly greater area than the cross-section of the inner casing, and at this opening the edges of the wall 4 are reinforced by a door frame 6. The inner casing comprises upper and lower walls 7 and 8 respectively, side walls 9 and 10, and a back wall (not shown) all formed of relatively thin sheet metal whereby to render the device light in weight, and at their front edges said walls 7, 8, 9 and 10 or provided with annular flanges 11 to which inner edge flanges 12 of the frame 6 are secured by screws 12^a (Fig. 1) or by welding or otherwise, as desired. The frame 6 is preferably a light weight casting which fills the space between the front edges of the bounding walls of the inner casing and the edges of the opening 5 of the outer casing, permanently uniting said casings together. In

the illustrated embodiment of the invention, the frame 6 is continuous and of rectangular outline and has offset wall portions which define a recess for the reception of a door 13 constituting a closure for the oven. The bottom of said recess is formed by continuous wall portions 14 (at the top), 15 (at the vertical sides); and 16 (at the bottom), said wall portions being substantially parallel with the front 4 of the outer casing, but in a different plane, as best shown in Figs. 2 and 5. Integral with said wall portions 14, 15, and 16 and extending forwardly therefrom through the opening 5, are continuous wall portions 17, the lower one of which has a shoulder 18 (Fig. 2) which seats against the front of the outer casing wall 4, while said portions 17 on the top and side edges terminate in lateral portions 19 and edge flanges 20, also seating against said front casing wall 4. The lower wall portion 16 of the frame 6 is wider than the portions 14 and 15, and is slightly curved transversely whereby to more readily accommodate the door hinge members, as will hereinafter be described.

The door 13 is of rectangular outline corresponding with that of the door frame 6 so as to fit in the recess defined by the frame walls 14, 15, 16 and 17, and comprises front and rear plates 22 and 23 of thin sheet metal secured to a cast peripheral frame member 24. The outer surface of the body of the frame member 24 is substantially flush with the portions 19 of the frame 6 and carries inwardly extending continuous flanges 25, to which peripheral flanges 26 of the rear plate 23 are secured. The front plate 22 may preferably be bulged outwardly by way of enhancing the appearance of the range, and has edge flanges 27 secured to the inner side of the frame member 24 by means of screws 28 or other suitable fastening means. The arrangement is such that the door plates 22 and 23 are spaced apart providing a heat insulation chamber within the door, and the edge portions of said rear plate 23 are adapted to abut against the stationary wall portions 14, 15 and 16 when the door is closed to seal the oven.

Extending laterally from the side edges of the door, adjacent the lower edge thereof, is a pair of hinge pintles or trunnions 29 which are pivotally received in apertures or sockets 30 in the side wall portions 17 of the fixed frame 6. As best shown in Figs. 4, 5 and 7, the trunnions 29 are in the nature of cylindrical pins which are slidable axially in spaced apertured lugs 31 arranged in pairs adjacent the opposite side edges of the door, and each of said pins is provided with a beveled groove 32 adjacent its inner end to form a head portion 33. Surrounding each of the trunnions 29, and between the spaced lugs 31, is a coiled torsion spring 34, one end 35 of which bears against the lower edge of the door, while its

other end 36 extends inwardly through an aperture 37 in the frame wall portion 16. As thus arranged, the springs 34 resist opening movement of the door, acting to partially counterbalance its weight during movements from one extreme position to the other. The hinge pintles and springs are entirely concealed from view when the door is closed, yet readily accessible when the device is open, and in view of the fact that the pintles 29 can be withdrawn from the sockets 30 without disturbing the springs 34 or their tension, the door can be very easily mounted and dismounted.

In order to protect the springs 34 from the high temperature heat of the oven, and to maintain the same in sanitary condition, a transversely curved cover plate 38 extends longitudinally over the two pairs of lugs 31, overlying the major portions of the trunnions 29 and the springs 34 and in opposition to the door wall portion 24. Said cover plate 38 is provided with a pair of countersunk holes 39 which respectively aline with tapped holes 40 in bosses 41 on the door frame wall 24, and thus accommodate a pair of flat head screws 42 which hold the plate 38 in position. As best shown in Figs. 4 and 5, the bosses 41 are positioned close to the two inner lugs 31 and in such manner that the screws 42 extend across the inner ends of the hinge pintles 29. Thus, when the pintles are disposed in their respective sockets, the screws 42 are located close to the head portions 33 of the pintles, and in the line of their movement, so that they act as stops to prevent accidental withdrawal of the pintles from their sockets. The plate 38 is further provided, adjacent its ends, with a pair of transverse slots 44 in line with the ends 36 of the springs 34, whereby the plate will be capable of movement relative to said spring ends as the door is swung about its hinge members.

When it is desired to remove the door from the range, it is first swung to its open position, (Figs. 3 and 5) whereupon the screws 42 can be removed and the cover plate 38 lifted off the door. Then with the aid of any suitable tool, such as a pair of pliers or a prying instrument under the head portions 32, the pintles 29 can be moved axially inward until they are withdrawn from the sockets 30, leaving the door free to be dropped down or drawn forwardly and entirely separate from the oven. Instead of first withdrawing both pintles or trunnions 29 from the sockets 30, one alone may be so withdrawn and the door removed by shifting it endwise for the short distance necessary to disengage the other trunnion from its socket, this being possible by virtue of the clearance provided in the holes or sockets 30 which permit slight tilting of the trunnions therein. When the door is removed as just explained, the springs 34 are sustained by the trunnions 29, but can read-

ily be removed or replaced by further axial movement of the trunnions with reference to their supporting lugs 31. In remounting the door, it is only necessary to guide the ends 36 of the springs into the holes 37 in the oven frame, after which the trunnions 29 can be moved axially outward to seat them in their respective sockets 30, whereupon the cover plate 38 can be applied and fastened by the screws 42.

Any preferred type of latch and handle may be employed to facilitate moving the door and fastening it in closed position. For this purpose, the illustrated embodiment has been shown as having a handle 46 which is pivoted at 47 between a pair of spaced arms 48 extending outwardly and upwardly from the upper edge of the door, and the inner end 49 of said handle is in the nature of a latch for engaging a bracket portion 50 of the oven frame. Such a latch and handle is disclosed more fully in my co-pending application Serial No. 251,265, filed February 2, 1928, and as it does not constitute part of the present invention, further description of it is unnecessary in this application.

From the foregoing it will be evident that an improved oven door mounting has been provided, which is of extremely simple construction, economical to manufacture, strong and durable in service, and a substantial advance in the art. Of course, the invention is susceptible of modification in the details of construction and arrangement of parts, and the right is herein reserved to make such changes as fall within the scope of the appended claims without departing from the spirit of the invention.

Having thus described my invention, what I claim is:

1. In or for a range, an oven, a door forming a closure for the oven, a pair of trunnions extending laterally from the opposite side edges of the door and providing a pivotal connection between the oven and the door, said trunnions being movable inwardly toward each other to permit removal of the door from the oven, coil springs encircling portions of the trunnions, said springs having their ends respectively connected to the door and to the oven whereby to resist opening movement of the door, a cover plate overlying said springs and portions of the trunnions, and means for detachably securing said cover plate to the door, said securing means being adapted to normally limit inward movement of the trunnions.

2. In or for a range, a sheet metal casing having an open front, a reenforcing frame associated therewith, a door pivotally connected to said frame, the pivotal connections comprising laterally extending trunnions mounted on the door, said frame having apertures for rotatably receiving said trunnions, the trunnions being adjustable toward each

other whereby to be withdrawn from said apertures to permit removal of the door from the frame, and means for normally limiting movement of the trunnions toward each other to prevent their accidental displacement from the apertures in the frame.

3. In or for a gas range, an oven having a door frame, a door mounted in said frame, and a pair of hinge pins or trunnions pivotally connecting the door at its opposite side edges to the door frame, said hinge pins being inaccessible when the door is closed but rendered accessible when the door is opened, and at least one of said pins being movable endwise away from the door frame in the open position of the door to break the pivotal connection between the two and permit the removal of the door.

4. In or for a gas range, an oven having a door frame, a door mounted in said frame, and a pair of hinge pins or trunnions pivotally connecting the door at its opposite side edges to the door frame, said hinge pins being inaccessible when the door is closed but rendered accessible when the door is opened, and said pins being movable endwise toward each other or away from the door frame in the open position of the door to break the pivotal connection between the two and permit the removal of the door.

5. In or for a gas range, an oven having an inset door frame, a door mounted in said frame with its front face substantially flush with that of the door frame, and a pair of hinge pins or trunnions mounted on the inside of the door at its opposite side edges and engaged in aligned apertures formed in the door frame, at least one of said hinge pins in the open position of the door being slidable endwise away from the door frame to clear the aperture therein and permit the removal of the door.

6. In or for a gas range, an oven having an inset door frame, a door mounted in said frame with its front face substantially flush with that of the door frame, a pair of hinge pins or trunnions mounted on the inside of the door at its opposite side edges and engaged in aligned apertures formed in the door frame, at least one of said hinge pins in the open position of the door being slidable endwise away from the door frame to clear the apertures therein and permit the removal of the door, and a detachable guard plate also mounted on the inside of the hinged door and movable therewith, said plate covering the hinge pins and removable independently thereof.

7. In or for a gas range, an oven having an inset door frame, a door mounted in said frame with its front face substantially flush with that of the frame, said door being formed on the inside and at its lower edge with an inwardly facing longitudinally extending groove or channel, a pair of hinge pins or trunnions mounted within said groove

at the opposite side edges of the door and engaged in aligned apertures formed in the door frame, said pins in the open position of the door being slidable endwise longitudinally of the door groove away from the door frame to clear the apertures therein and permit the removal of the door, and a guard plate detachably connected to the hinged door and forming a closure or covering for the open side of the door groove in order to house the hinge pins.

8. In or for a gas range, an oven having a door frame formed with aligned apertures in its opposite side members, a door mounted in said frame and formed on the inside and at its opposite side edges respectively with pairs of apertured supporting lugs aligned with the apertures in the door frame, and a hinge pin or trunnion mounted in each pair of apertured lugs and engaged in the adjacent aperture of the door frame whereby the door is pivotally connected to the frame, at least one of said hinge pins being slidable endwise in its supporting lugs into and out of engagement with the aperture in the door frame to make or break the pivotal connection between the door and the frame.

9. In or for a gas range, an oven having a door frame, a door mounted in said frame, a pair of hinge pins or trunnions pivotally connecting the door at its opposite side edges to the door frame, and a torsion spring encircling one of the hinge pins and having one end engaged with the door and the other end with the door frame to resist opening movement of the door, said hinge pins and torsion spring being inaccessible when the door is closed but rendered accessible when the door is opened, and the spring encircled pin being movable endwise in the open position of the door to free the spring for instant removal.

10. In or for a gas range, an oven having a door frame, a door mounted in said frame, a pair of hinge pins or trunnions pivotally connecting the door at its opposite side edges to the door frame, and a torsion spring encircling one of the hinge pins and having one end engaged with the door and the other end with the door frame, to resist opening movement of the door, said hinge pins and torsion spring being inaccessible when the door is closed but rendered accessible when the door is opened, and the spring encircled pin in the open position of the door being slidable endwise upon the door away from the door frame far enough to break the pivotal connection between the two without freeing the encircling spring or for a greater distance to free the spring as well.

11. In or for a gas range, an oven having a door frame, a door mounted in said frame, a pair of hinge pins or trunnions pivotally connecting the door at its opposite side edges to the door frame, and a torsion spring encircling one of the hinge pins and having one

end engaged with the door and the other end with the door frame to resist opening movement of the door, said hinge pins and torsion spring being inaccessible when the door is closed but rendered accessible when the door is opened, and the spring encircled pin in the open position of the door being removable bodily to break the pivotal connection between the door and the door frame as well as to free the encircling spring.

12. In or for a gas range, an oven having an inset door frame, a door mounted in said frame with its front face substantially flush with that of the door frame, and a pair of hinge pins or trunnions mounted on the inside of the door at its opposite side edges and engaged in aligned apertures formed in the door frame, a torsion spring encircling each of the hinge pins and having one end engaged with the door and the other end with the door frame to resist opening movement of the door, said hinge pins being removable bodily by an endwise sliding movement in a direction away from the door frame.

13. In or for a gas range, an oven having a door frame formed with aligned apertures in its opposite side members, a door mounted in said frame and formed on the inside and at its opposite side edges respectively with pairs of apertured supporting lugs aligned with the apertures in the door frame, a hinge pin or trunnion mounted in each pair of apertured lugs and engaged in the adjacent aperture of the door frame whereby the door is pivotally connected to the frame, and a torsion spring encircling each hinge pin and having one end engaged with the door and the other end with the door frame to resist opening movement of the door, said springs being located between the apertured lugs of the respective pairs and thus confined on the corresponding hinge pins, and each of the hinge pins being removable endwise from its pair of supporting lugs by a sliding movement in a direction away from the door frame, as and for the purpose described.

14. An oven as in claim 13 including as an additional element a detachable guard plate also mounted on the inside of the hinged door and movable therewith, said plate covering the hinge pins and their encircling springs and removable independently thereof.

In testimony whereof, I have affixed my signature hereto.

HENRY W. O'DOWD.