Dec. 16, 1930. E. A. CHANDLER ET AL 1,785,514

DROP DOOR OVEN

Filed Aug. 31, 1929

FIG. 1.

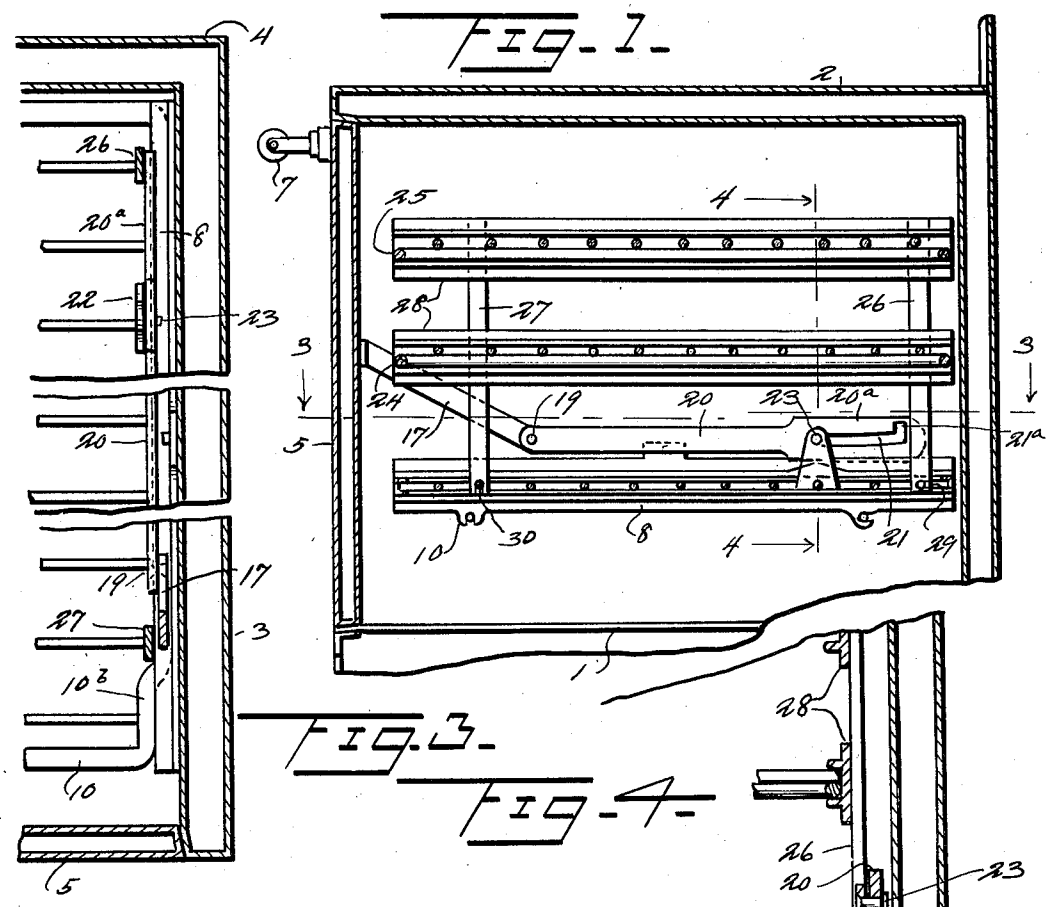


FIG. 3.

FIG. 4.

FIG. 2.

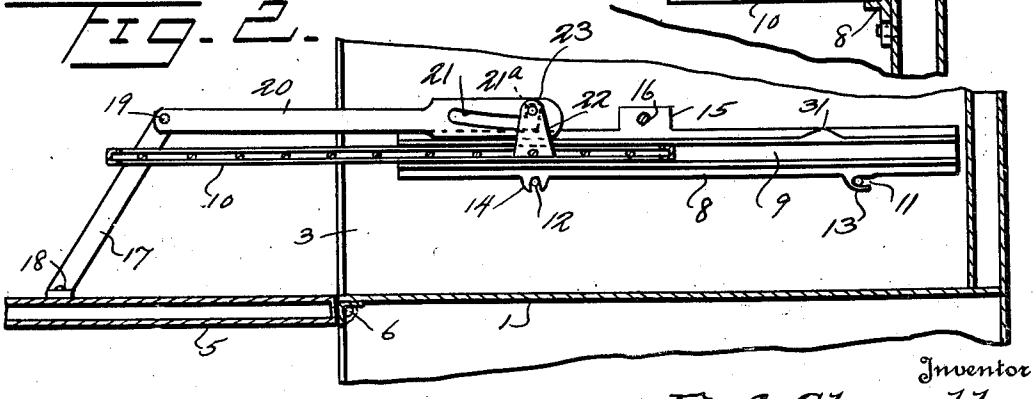


FIG. 5.

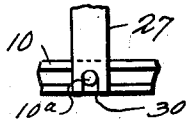
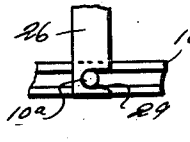


FIG. 6.



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UNITED STATES PATENT OFFICE

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DROP-DOOR OVEN

Application filed August 31, 1929. Serial No. 389,852.

This invention relates to a stove or range oven of that type having movable pan-supporting racks or shelves, and more particularly to operating means for the racks or shelves.

The invention has for one of its objects to provide novel, simple and inexpensive means of the character stated which shall be adapted to move an oven rack or shelf outwardly as the door of the oven is opened and to move the rack or shelf inwardly as the door is closed, whereby to permit a pan to be placed within and removed from the oven easily and quickly and without danger of burning the hands.

The invention has for a further object to provide means of the character stated which shall be adapted to effect the inward and outward movement of the rack or shelf in a straight path and in a manner to prevent its contacting with the door, whereby to permit the opening and closing of the door and the consequent inward and outward movement of the rack or shelf with but comparatively little effort.

The invention has for a further object to provide means, through the medium of which one or more auxiliary racks or shelves may be supported from the main or that rack or shelf connected to the door.

The invention has for a still further object to provide auxiliary rack or shelf supporting means which shall be adapted to be detachably connected to the main rack or shelf and which shall be adapted to slidably support the auxiliary racks or shelves.

With the foregoing and other objects in view, the nature of which will appear as the description proceeds, the invention consists in the construction, combination and arrangement of parts hereinafter fully described and claimed, and illustrated in the accompanying drawing, wherein:—

Figure 1 is a sectional view taken on a vertical plane extending centrally and longitudinally through a stove or range oven equipped with racks or shelves and rack or shelf operating means constructed in accordance with our invention, the door of the oven being shown in closed position and the racks or shelves in their normal position;

Figure 2 is a sectional view taken on a vertical plane extending centrally and longitudinally through the oven with the door in opened position and with the main rack or shelf in outward position, the auxiliary racks or shelves and the supporting means therefor being omitted from this view;

Figure 3 is a sectional view taken on the horizontal plane indicated by the line 3—3 of Figure 1;

Figure 4 is a sectional view taken on the vertical plane indicated by the line 4—4 of Figure 1;

Figures 5 and 6 are elevational views illustrating the manner in which the auxiliary rack or shelf supporting means are detachably engaged with the main rack or shelf.

Referring in detail to the drawing, 1 designates the bottom, 2 the top, 3 the sides, 4 the back, and 5 the door of a stove or range oven of the usual construction. The door 5, which is of the drop type, is hinged at its lower edge, as at 6, to the bottom 1, and it is provided adjacent its upper edge with a handle 7.

In accordance with our invention, the oven is provided with a pair of guides 8 which are secured to the sides 3 of the oven and are grooved, as at 9, for the slidable reception of the side edges or a rack or shelf 10. The guides 8 are detachably secured to the sides 3 through the medium of rear pins 11 and front pins 12 secured to the sides, rearwardly facing rear hooks 13 secured to the guides and engaging the pins 11, and slotted front lugs 14 extending downwardly from the guides and engaging the pins 12. The means for securing the guides 8 in place also comprises ears 15 extending upwardly from the centers of the guides, and with set screws 16 carried by the ears and engaging the sides 3 of the oven.

The securing means therefor permits the guides 8 to be easily and quickly placed within or removed from the oven. To apply the guides 8, it is only necessary to first engage the hooks 13 with the pins 11, and this may be done readily by holding the guides in a downwardly and rearwardly inclined posi-

tion. After the hooks 13 have been engaged with the pins 11, the guides 8 are swung downwardly on the pins to engage the lugs 14 with the pins 12, and thereafter the set screws 16 are turned into engagement with the sides 3 of the oven. To remove the guides 8, it is only necessary to withdraw the set screws 16 from engagement with the sides 3 of the oven, rock the guides upwardly on the pins 11, so as to withdraw the lugs 14 from engagement with the pins 12, and thereafter disengage the hooks from their pins.

The rack or shelf 10, which may be of any well known or appropriate construction, constitutes the main rack or shelf of the oven, and this rack or shelf is connected to the door 5 of the oven by means which cause it to move outwardly as the door is opened and to move inwardly as the door is closed. This means comprise arms 17 which are secured, as at 18, to the door 5 at points above its lower hinged edge and adjacent its lateral or side edges. The arms 17 extend downwardly, and rearwardly from the door 5, and their lower or rear ends are pivotally connected, as at 19, to the front ends of links 20. The links 20 are located directly above the guides 8, and are provided with enlarged rear end portions 20*a* which rest upon the guides.

The link portions 20*a* are provided with longitudinally extending and substantially horizontal slots 21 which are provided at their rear ends with upwardly extending branches 21*a*. Lugs 22 extend upwardly from the sides of the main rack or shelf 10 inwardly of the guides 8 and links 20, and are provided at their upper ends with pins 23 which pass through the slots 21 of the links. Auxiliary racks or shelves 24 and 25, which may also be of any well known or appropriate construction, are arranged above the main rack or shelf 10 and supported upon the main rack or shelf for inward and outward movement therewith. The means for mounting the auxiliary racks or shelves 24 and 25 upon the main rack or shelf 10 comprise upright rear bars 26, upright front bars 27 and horizontal guides 28, the bars and guides being secured together in a manner to provide a rigid rack or shelf supporting structure or bracket. The bracket embodies four of the guides 28, two being provided for each of the auxiliary racks or shelves 24 and 25.

The rear bars 26 are provided at their lower ends with the rearwardly facing notches 29, and the front bars 27 are provided at their lower ends with downwardly facing notches 30, the notches being engaged with two of the rods 10*a* of the main rack or shelf 10 to effect a connection between the bracket and main rack or shelf. The bracket may be readily connected to the main rack or shelf 10 by holding it in a downwardly and rearwardly inclined position while engaging its notches 29 with the rearward bars 10*a* of the rack or shelf, and by them swinging the rack or shelf downwardly on such bar to engage its notches 30 with the forward bar 10*a* of the rack or shelf.

The combined weights of the bracket and the auxiliary racks or shelves 24 and 25 will hold the bracket against accidental tilting movement on the main rack or shelf 10. When it is desired to remove the bracket from the main rack or shelf 10, its front end is swung upwardly to disengage the notches 30 from the front rod 10*a* and it is then moved forwardly to disengage the notches 29 from the rear rod 10*a*.

When the door 5 is closed, the main rack or shelf 10 and the auxiliary racks or shelves 24 and 25 occupy their normal position within the oven with their front ends spaced from the door, the rear ends of the links 20 rest upon cam lugs 31 extending upwardly from the upper sides of the guides 8, and the pins 23 are arranged in the front ends of the slots 21 of the links. As the pins 23 are arranged in the front ends of the slots 21, the first phase of the opening movement of the door 5 will not impart any movement to the racks or shelves 10, 24 and 25. During this phase of the opening movement of the door 5, the links 20 are moved forwardly with respect to the pins 23, and on the completion of this phase of the opening movement of the door, the pins 23 will be in contact with the rear end walls of the slots, with the result that during the next and larger phase of the opening movement of the door the racks or shelves 10, 24 and 25 will be moved outwardly.

After the links 20 pass the cam lugs 31, they move downwardly, with the result that the pins 23 will be carried into the upwardly extending branches 21*a* of the slots 21. Such a connection is now established between the links 20 and the pins 23 that the racks or shelves 10, 24 and 25 will be moved inwardly during the first phase of the closing movement of the door 5. During the latter part of this phase of the closing movement of the door 5, and immediately after the racks or shelves 10, 24 and 25 have been returned to their normal position within the oven, the rear ends of the links 20 will be moved upwardly by the cam lugs 31, and upon the completion of this phase of the closing movement of the door, said ends of the links will rest upon the cam lugs. During the upward movement of the rear ends of the links 20 by the cam lugs 31, the upstanding branches 21*a* of the slots 21 are moved out of engagement with the pins 23. The pins 23 are now in the rear ends of the slots 21, with the result that the door 5 will move through its final and smaller closing phase without imparting any movement to the racks or shelves 10, 24 and 25. To permit the front end portion of the main rack or shelf 10 to occupy a position

between the arms 17 when the door 5 is in opened position, the front end portions of the sides of the rack or shelf are offset inwardly, as at 10b.

It should be understood from the foregoing description, taken in connection with the accompanying drawing, that the racks or shelves 10, 24 and 25 are supported by their guides 8 and 28 for movement in straight paths, that there is no possibility of the racks or shelves contacting with the door 5 during the opening or closing of the latter, and that the auxiliary rack or shelf supporting bracket may be easily and quickly applied to and remove from the main rack or shelf and firmly connects and substantially supports the auxiliary racks or shelves from the main rack or shelf.

While we have described the principle of the invention together with the structure which we now consider the preferred embodiment thereof, it is to be understood that the structure shown is merely illustrative and that such changes may be made, when desired, as fall within the scope of the invention as claimed.

We claim:—

1. In combination, an oven provided with a hinged door, guides secured within the oven, means for detachably securing said guides in said oven, a rack slidably supported by the guides, an arm secured to the inner side of the door, a link pivotally connected to the arm and resting upon one of the guides, and means connecting the link to the rack to permit the door to move the rack outwardly during the final phase of its opening movement and to permit the door to move the rack inwardly during the first phase of its closing movement.

2. In combination, an oven provided with a hinged door, guides secured within the oven, a rack slidably supported by the guides, an arm secured to the inner side of the door, a link pivotally connected to the arm and resting upon one of the guides, the link being provided at its inner end with a longitudinally extending slot having an upstanding rear end extension, a bracket extending upwardly from the rack, a pin carried by the bracket and extending through the slot of the link, and means adapted to permit the rear end of the link to move downwardly during the first phase of the opening movement of the door and adapted to elevate said end of the link during the final phase of the closing movement of the door.

3. In combination, an oven provided with a hinged door, guides secured within the oven, a rack slidably supported by the guides, an arm secured to the inner side of the door, a link pivotally connected to the arm and resting upon one of the guides, the link being provided at its inner end with a longitudinally extending slot having an upstanding rear end extension, a bracket extending upwardly from the rack, a pin carried by the bracket and extending through the slot of the link, and a cam carried by said guide and adapted to permit the rear end of the link to move downwardly during the first phase of the opening movement of the door and adapted to elevate said end of the link during the final phase of the closing movement of the door.

4. In combination, an oven provided with a hinged door, guides secured within the oven, a main rack slidably supported by the guides, means connecting the rack to the door to permit the rack to be moved outwardly during the opening of the door and to be moved inwardly during the closing of the door, rear upright bars provided with rearwardly opening notches engaged with the rack, front upright bars provided with downwardly opening notches engaged with the rack, guides secured to the bars, and an auxiliary rack slidably mounted in the guides.

In testimony whereof we hereunto affix our signatures.

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