Nov. 4, 1924. 1,513,902

J. J. FUTRELL

STOVE RACK AND SHELF LIFTER

Filed April 9, 1923 3 Sheets-Sheet 1

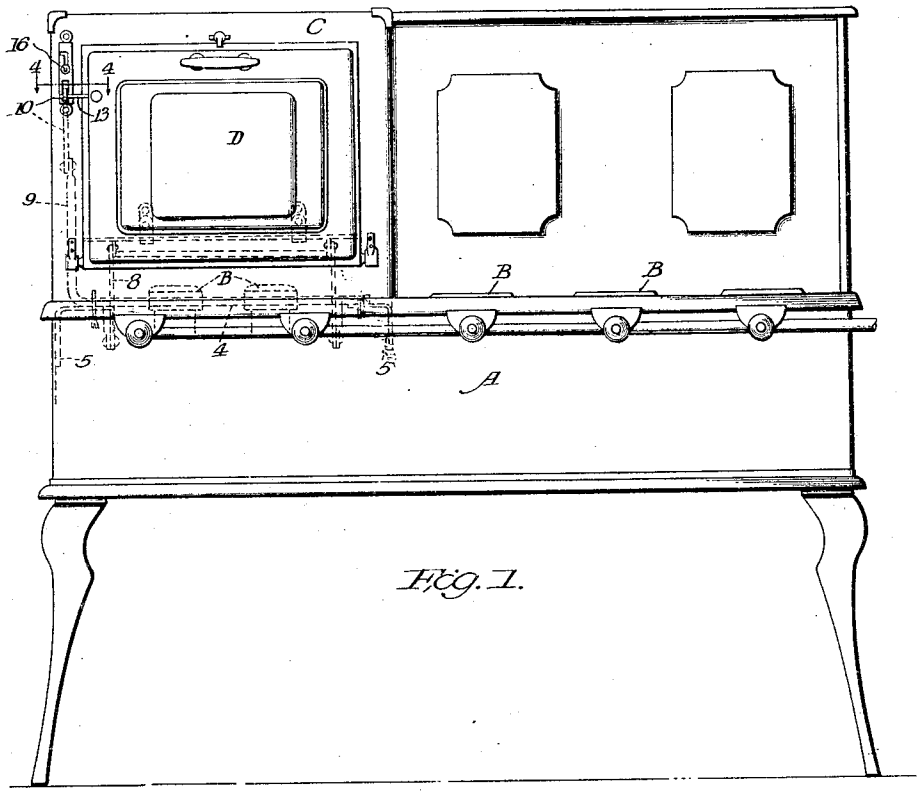

Fig. 1.

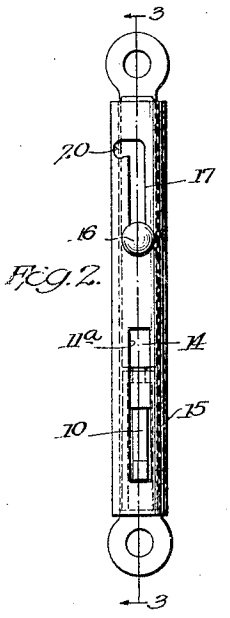

Fig. 2.

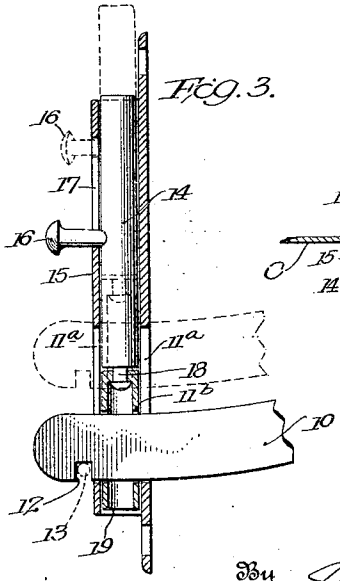

Fig. 3.

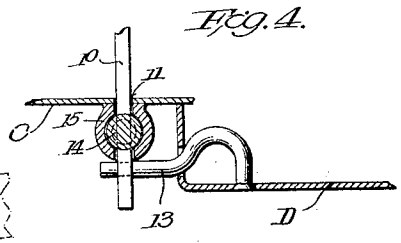

Fig. 4.

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STOVE RACK AND SHELF LIFTER

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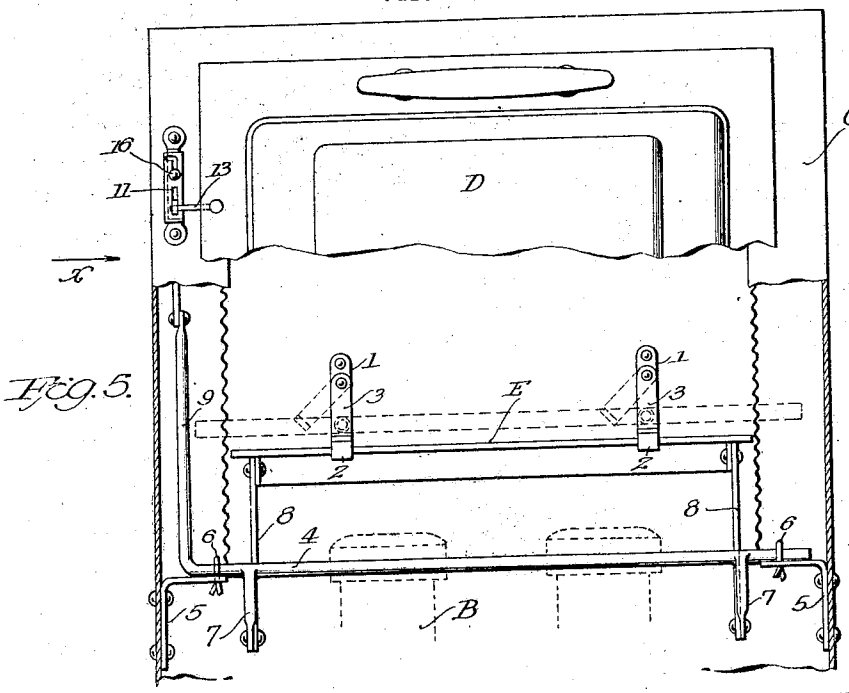

Fig. 5.

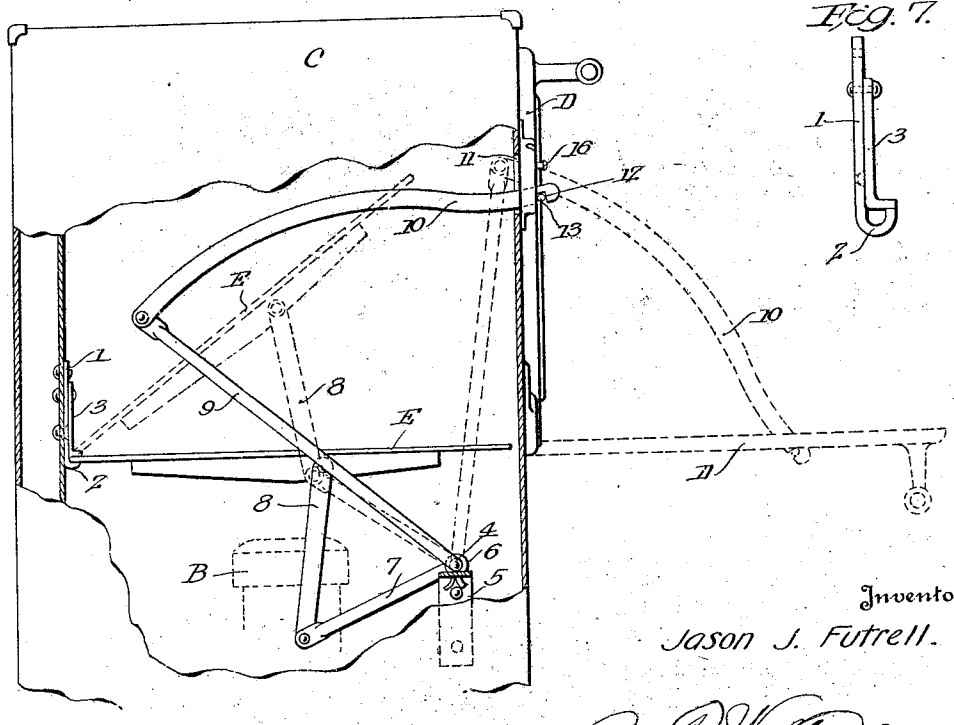

Fig. 6.

Fig. 7.

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STOVE RACK AND SHELF LIFTER

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Fig. 8.

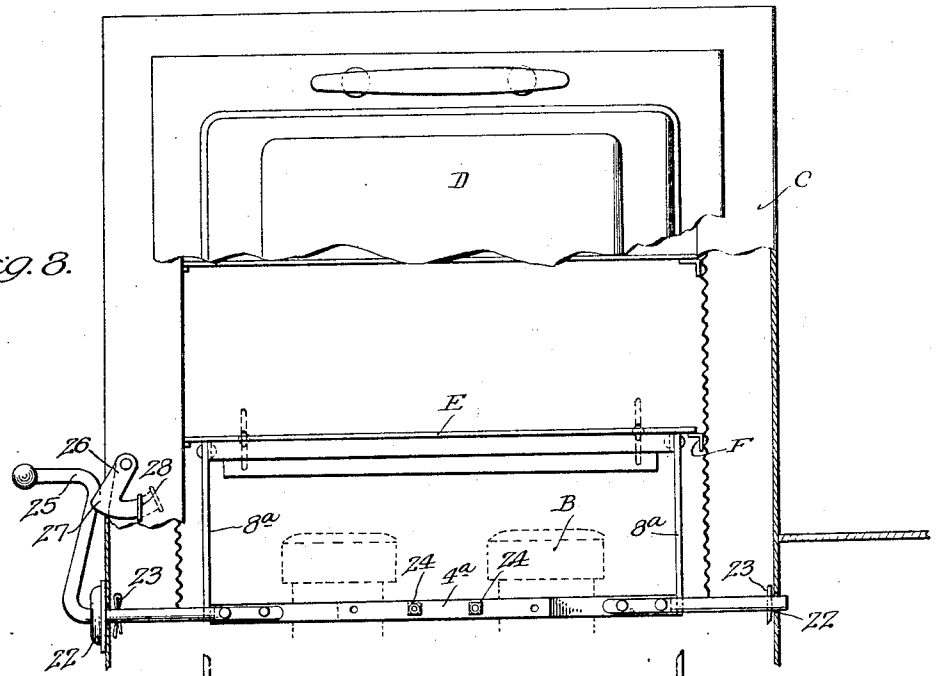
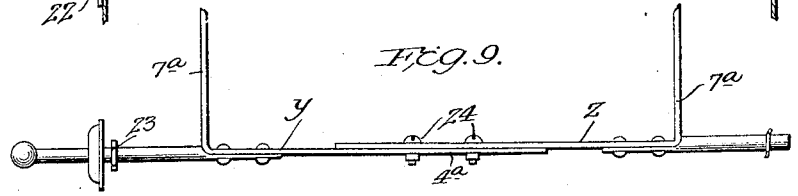


Fig. 9.



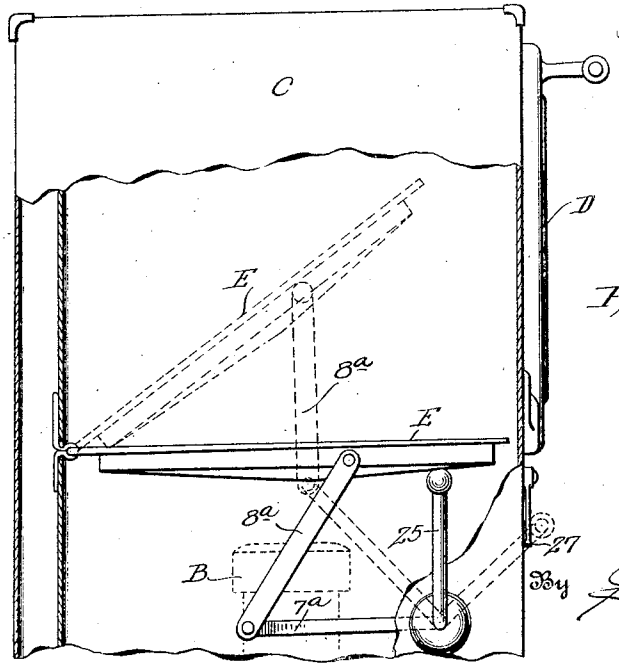


Fig. 10.

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Patented Nov. 4, 1924. 1,513,902

UNITED STATES PATENT OFFICE.

JASON J. FUTRELL, OF NASHVILLE, TENNESSEE, ASSIGNOR OF ONE-HALF TO ELIOTT P. JONES, OF NASHVILLE, TENNESSEE.

STOVE RACK AND SHELF LIFTER.

Application filed April 9, 1923. Serial No. 630,951.

To all whom it may concern:

Be it known that I, JASON J. FUTRELL, a citizen of the United States, residing at Nashville, in the county of Davidson and State of Tennessee, have invented new and useful Stove Rack and Shelf Lifters, of which the following is a specification.

The present invention relates to improvements in oil and gas stoves and is particularly concerned with operable mechanism for raising and lowering shelves or racks of these stoves especially in the ovens thereof, or in ovens adapted for use therewith.

Gas and oil burning stoves are so designed that the burners thereof, particularly those inside the oven cannot be reached to light them without removing or raising the racks or shelves. Because of constant use these shelves become greasy and black with soot and dirt, thereby soiling the hands when lighting the burners, or if it is required to relight the burners before the stove cools off there is great liability of burning the hands. Also, in the types of stoves now generally in use, both hands of the operator are required to light the burners, one to raise and maintain the shelf in position to permit access to the burner and the other to apply the match or ignitor.

The present invention aims to overcome all of these draw-backs, and has for its principal objects the production of efficient and relatively inexpensive means for raising and lowering the shelves or racks either automatically by the opening and closing of the oven door, or manually, the shelves or racks being sustained in their raised position.

The novel feature of the invention resides in its novel construction, combination and arrangement of parts, one of the features being that the oven door may be readily connected and disconnected with the operating mechanism as desired.

In this specification and the annexed drawings, the invention is disclosed in the form in which it is considered to be the best, but the invention is not limited to such form because it is capable of being embodied in other forms; and it is to be understood that in and by the claims following the description herein it is intended to cover the invention in whatever form it may embody within the scope thereof.

In the drawings, which disclose the preferred embodiments of the invention as at present devised:

Figure 1 is a front view of the oil or gas range, equipped with the present invention adapted to be operated by opening and closing movements of the oven door,

Fig. 2 is an enlarged front view of the latch mechanism for operatively connecting and disconnecting the door with the operating mechanism,

Fig. 3 is a longitudinal sectional view taken substantially on line 3—3 of Fig 2,

Fig. 4 is an enlarged fragmentary detailed sectional view taken substantially on line 4—4 of Fig. 1,

Fig. 5 is an enlarged front view of the oven of the range with a portion of its front broken away to illustrate the construction of the shelf operating mechanism therein,

Fig. 6 is an enlarged side view of the oven looking in the direction of the arrow X of Fig. 5, with a portion of the side wall broken away to illustrate the construction and arrangement of the shelf operating mechanism,

Fig. 7 is an enlarged detailed view of the hinge bearing for the shelf,

Fig. 8 is an enlarged front view of the oven range, showing the modified form of the shelf operating mechanism,

Fig. 9 is a detailed plan view of the operating mechanism shown in Fig. 8, and

Fig. 10 is a side view of the oven shown in Fig. 8 with a portion of the side wall broken away to illustrate the construction and arrangement of the operating mechanism.

Like characters of reference denote similar or like parts throughout the specification and drawings.

Referring particularly to the drawings, A denotes the gas or oil stove or range of the usual design common in use in cook stoves, wherein a number of burners B arranged on the cooking top, and over one or more of these burners, usually at one end of the stove, is provided an oven C, having on its front face a door D suitably hinged.

Shelves E are ordinarily provided in superimposed relation within the oven C, upon

which pans or articles of food are supported during the cooking. These shelves are ordinarily supported and held in position at their edges by transverse flanges F, or ledges, upon which the ends of the shelves rest.

As above stated, it is the purpose of this invention to provide means for raising and lowering the lowermost shelf in the oven, to permit access to the burners B, in order that they may be lighted. To this end, two plates 1, are riveted to the lining of the back wall of the oven at suitable distances apart, and have their lower ends upturned to form an open loop or hook 2, in which engages the back edge of the shelf as clearly shown in Fig. 6. The shelves E, are usually constructed of wire grating, but in the event they are constructed of sheet material, the rear edges of the shelves are apertured adjacent the loops 2, in order that the end of the loops may extend therethrough. To maintain the shelf in engagement in the loop 2, a lock plate 3 is pivotally mounted on the plate 1 and has one end thereof constructed to overlie the opened end of the loop 2, in order to close the loop and retain the rear edge of the shelf E in engagement therewith. The plate 3, as can be seen from Figs. 5 and 7, will normally gravitate to close the loop 2. It may be found that only one of these hinged bearing supports, just described, are necessary in some instances, consequently the invention is not limited to the use of two.

Extending transversely across the front wall and a suitable distance below the opening therein, is a rod or shaft 4 supported at its ends by suitable supports, such as right angle brackets 5, riveted to the walls of the oven. The shaft 4 is rotatably mounted on the brackets in the present disclosure. This is accomplished by cotter pins 6, having enlarged slits or eyes through which the shaft extends, the ends of the cotter pins extending through the openings in the brackets 5 and being spread apart. Extending laterally from the shaft are lever arms 7, adjacent the end portions of the shaft. There may be one or more lever arms 7, as may be found necessary, however in the present embodiment, two lever arms are shown. These arms extend inwardly and downwardly of the oven, as shown in Fig. 6, and have their distal ends connected with the overlying rack E by link arms 8 which, in the normal and horizontal position of the shelf E, assume a substantially vertical position.

It will thus be seen that when the shaft 4 is rotated in a clock-wise direction, the shelf E will be raised to the dotted line position illustrated in Fig. 6. The shaft 4 may be rotated manually, as shown in Figs. 8 to 10, inclusive, or through the opening and closing movements of the door D of the oven, as shown in Figs. 1 to 7, inclusive. The door D, in the present embodiment, is shown as being a vertical swinging door, commonly used, where the door will form a supporting shelf for pans or the like when in an open position.

To operate shaft 4, by the opening and closing movements of the door D, a relatively long operating lever 9 extends from the shaft 4 in a direction upwardly and rearwardly of the oven, adjacent one of the side walls thereof. In the present disclosure this lever 9 is provided by one end portion of the shaft 4 being bent at an angle thereto. The free or distal end of the lever 9 is pivotally connected to one end of a pull rod 10 and the other end of the latter extends through a slot 11 in an upper portion of the front wall of the oven. This pull rod is preferably curved on a radius which will enable it to be easily drawn through the slot 11 without binding therein.

The free end of the pull rod 10 is formed on its under edges or face with a notch 12, in which will normally engage a laterally extending bolt or projection 13, secured to the door D. This bolt or projection 13 can be attached to the doors now in use, and is shown in detail in Fig. 4.

It will thus be seen that when the door D is opened or lowered to the dotted line position, shown in Fig. 7, the shaft 4 will be rotated and the shelf E raised to the position indicated in dotted line, Fig. 7. Also when the door D is closed to the full line position, the shaft 4 will be reversely rotated, and the shelf lowered to its full line or normal horizontal position. In order to permit the door D to be opened and closed without affecting the operation of the shelf lifting mechanism, means are provided for moving and retaining the notched end 12 of the pull rod 10 out of engagement with the bolt 13 on the door. This means consists of a sliding bolt 14, suitably supported and housed in a casing 15 and operable through a handle 16, projecting through an elongated longitudinal slot 17. The housing 15 is secured to the outer face of the front wall of the oven adjacent and above the opening 11, therein. The casing 15 is further provided with a transverse slot 11^a, registering with the slot 11 in the front wall of the oven and through which the pull rod 10 extends. The lower end of the bolt 14 has a rotatable connection 18 with a sliding member 19, also housed in the casing 15, and having a slot 11^b therein, normally registering with the slots 11 and 11^a. As in Figure 3, the free end of the pull rod 10 normally extends through the slots 11, 11^a and 11^b. When it is desired to disconnect the notched end of the pull rod 10 from the bolt 13 on the door, the handle 16 of the bolt 14 is

raised in the slot 17, thereby raising the notch 12 of the pull rod 10 out of engagement with the latch 13 and permitting the door D to be opened and closed without affecting a raising or lowering movement of the shelf E. In order to maintain the notched end 12 of the pull rod 10 out of engagement with the bolt 13, the slot 17 is provided with a lateral or right angular extension 20, into which the shank S of the handle 16 may be shifted. The lower edge of the slot extension 20 is concaved or cut circular so as to retain the shank therein, under the weight of the bolt 14 and the pull rod 10, against accidental displacement, whereby the pull rod 10 is maintained in its ineffective position.

In the form of the invention shown in Figs. 8 and 10 the operating mechanism for raising and lowering the shelf E is substantially the same as in the embodiment just described. In this embodiment the shaft 4^a is journaled at its ends in suitable openings 22, formed in the side walls of the oven, and is retained therein by cotter pins 23, extending through openings in the shaft adjacent the openings 22 in the walls of the oven. In this embodiment, the shaft is composed of sections Y and Z, adjustably connected together by bolts 24, in order to permit the length of the shaft to be increased or reduced according to requirements. Lever arms 7^a, corresponding to the lever arms 7 in the first embodiment, extend from each of the sections Y and Z, and are connected to the shelf E in the same manner as described in connection with the foregoing embodiment. The shaft 4^a in this embodiment is rotated by a crank handle 25 formed, or otherwise provided, on one end thereof, and lying exteriorly of the oven. When the shelf is in its normal horizontal position, shown in full line in Figs. 8 and 10, the handle assumes the substantial vertical position shown and when rotated in a clockwise direction, the shelf is raised to the dotted line position therein shown. To maintain the shelf in its raised position, gravity latch member 26 is provided, and consists of a substantial L-shaped member pivotally mounted on the face of the oven at one edge thereof and in the path of movement of the handle 25. When it is desired to maintain the shelf in raised position, the latch 26 is moved manually into dotted line position in order to permit the handle 25 to pass the same, and then the latch 26 will move by gravity to its full line position, so that its nose or catch end 27 will lie in the path of the crank handle 25. To release the handle 25, to permit the shelf to be moved to its normal position, the operation is reversed. The free or distal arm of the catch 26 moves through a fixed guide 28, secured to the oven in order to make a firm and rigid construction.

From the above it will be seen that a very simple, efficient and economical means has been provided for raising and lowering the shelves or racks of oil and gas ranges, to overcome the drawbacks enumerated in the forepart of this specification.

Having thus described the invention what is claimed as new and desired to be secured by Letters Patent is:

1. In a stove having a burner, the combination of a shelf hingedly supported at one end normally overlying the burner and in horizontal position, means for raising said shelf on said hinged support and returning it to normal position comprising a rotatable shaft, a laterally extending arm movable with the shaft, and a link connection between said arm and shelf, and means whereby the shaft may be rotated.

2. In a cooking stove having a burner the combination of a shelf normally disposed over the burner in horizontal position hingedly supported at one end, means for raising said shelf on said hinged support to permit access to the burner and return it to normal position comprising a rotatable shaft, a laterally extending arm movable with the shaft, and a link connection between said arm and shelf, means whereby the shaft may be rotated, and means for maintaining the shaft in one of its rotated positions whereby the shelf may be sustained in its raised position.

3. The combination with a cook oven adapted to overlie burners of a stove and having a movable closure at the bottom portion thereof, of a shaft rotatably mounted on the oven, a link connection between said shelf and shaft, whereby the shelf will be raised to permit access to the burner from within the oven and lowered to normal position upon rotative movements of the shaft.

4. The combination with a cook oven having a shelf therein at the lower part thereof to overlie stove burners, of a rotatable shaft mounted within the oven, a link connection between the shelf and shaft, means in the oven with which one edge of the shelf hingedly engages, whereby the shelf will be swung to raised position to permit access to the burner from within the oven and lowered to normal position upon rotation of said shaft.

5. The combination with a cook oven having a supporting shelf therein, of a shaft rotatably mounted within the oven, a link connection between said shelf and shaft, whereby the shelf will be raised and returned to normal position upon rotative movements of the shaft, and an operative connection between said shaft and the door

of the oven, whereby the shaft is rotated to raise the shelf when the door is open and to lower the shelf when the door is closed.

6. The combination with a cook oven having a shelf therein and an enclosing door, of a shaft rotatably mounted within the oven, a link connection between said shelf and shaft, whereby the shelf will be raised and lowered upon rotative movement of the shaft, a lever arm extending from the shaft, a pull rod connected with said lever arm and having a detachable connection with said door, whereby the shaft is rotated to raise the shelf when the door is open and to lower the shelf when the door is closed.

7. The combination as set forth in claim 6 further characterized by means for disconnecting said pull rod from the door to render the shelf raising mechanism ineffective upon opening and closing movements of the door.

8. The combination as set forth in claim 6 further characterized by said detachable connection between said pull rod and the door comprising a projection on the door and said pull rod having a notch therein to engage said projection, a sliding bolt mounted on the oven and having slidable connection with the said pull rod, whereby said pull rod can be moved by the movements of the bolt to disengage the notch therein from said projection on the door, and means for retaining said bolt in its adjusted position.

9. The combination with a cook oven having a supporting shelf therein and an enclosing door, means for supporting said shelf in its normal horizontal position including opened loop members on the rear wall of the oven in which the rear edge portion of the shelf engages, pivoted lock plates positioned to overlie said open loops to retain the shelf therein, brackets secured to the walls of said oven within the same and below the door opening therein, a shaft supported on said brackets by cotter pins extending through openings in the brackets and having the shaft extending through the eyes of said cotter pins, an arm laterally extending from said shaft, a link connecting said arm and said shelf, whereby the shelf is raised and lowered upon rotative movements of the shaft, a second arm laterally extending from said shaft, and a pull rod connected to said arm and having detachable connection with said door, whereby the shaft is rotated to swing the shelf upwardly when the door is open and to move the shelf to its normal horizontal position when the door is closed.

10. The combination as set forth in claim 9 further characterized by means for disconnecting said pull rod from said door to render said shelf raising mechanism ineffective upon opening and closing movements of the door.

11. The combination with a cook oven having a supporting shelf therein, means for hingedly supporting the shelf, brackets mounted within the oven, a shaft supported on said brackets by cotter pins extending through openings in the brackets and having the shaft extending through the eyes of said cotter pins, an arm laterally extending from the shaft and a link connecting said arm and shelf, whereby the shelf is raised and lowered upon rotative movement of the shaft, and means whereby said shaft may be rotated.

12. The combination with a cook oven having a shelf therein and an enclosing door, of a shaft rotatably mounted within the oven, means connecting said shelf and shaft, whereby the shelf will be raised and returned to normal position upon rotative movements of the shaft, a pull rod connecting said shaft and said door whereby the shaft is rotated when the door is opened and closed.

In testimony whereof I have hereunto set my hand.

JASON J. FUTRELL.