No. 892,779. PATENTED JULY 7, 1908.

C. E. TURNER & W. H. SINGLETON.

SHELF OPERATING MECHANISM.

APPLICATION FILED JUNE 24, 1907.

2 SHEETS—SHEET 1.

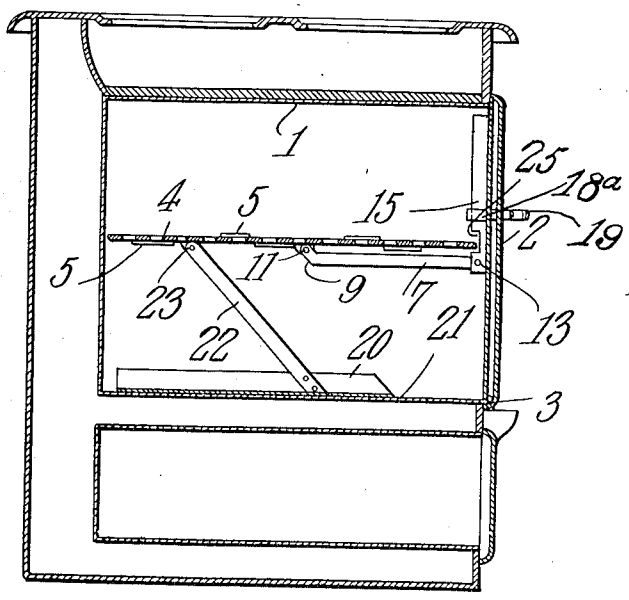
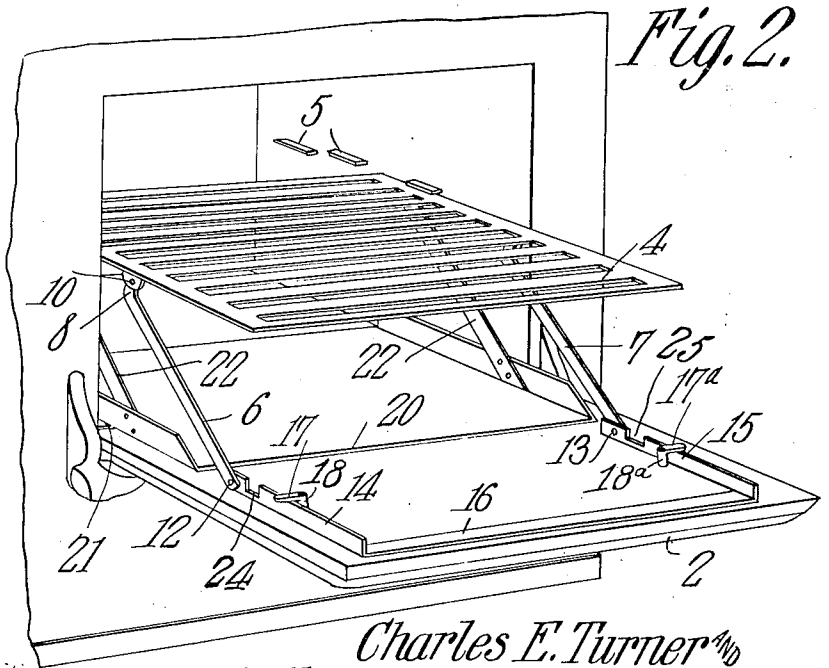


Fig. 1.

Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

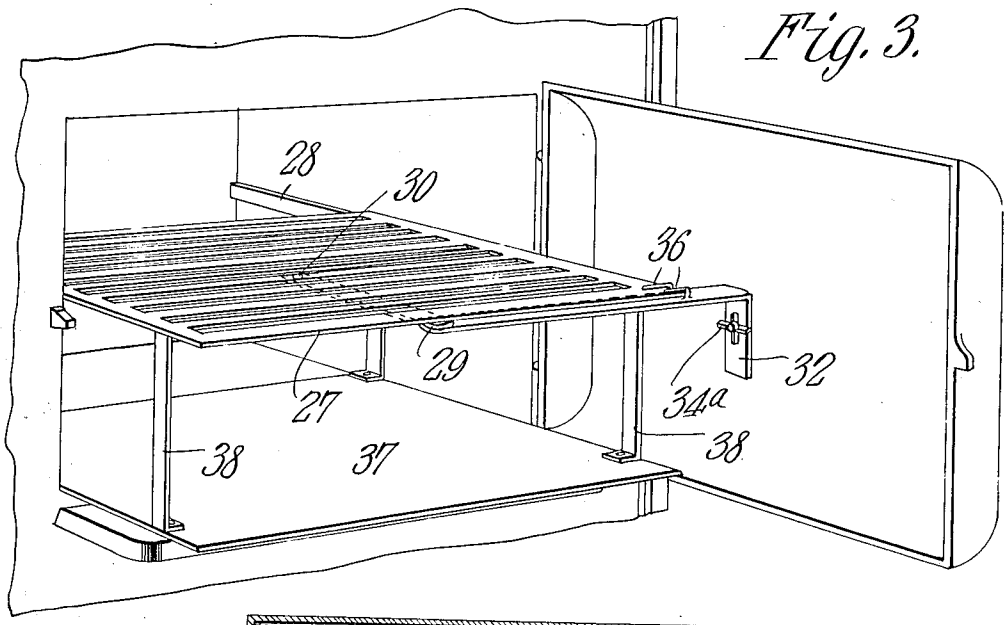
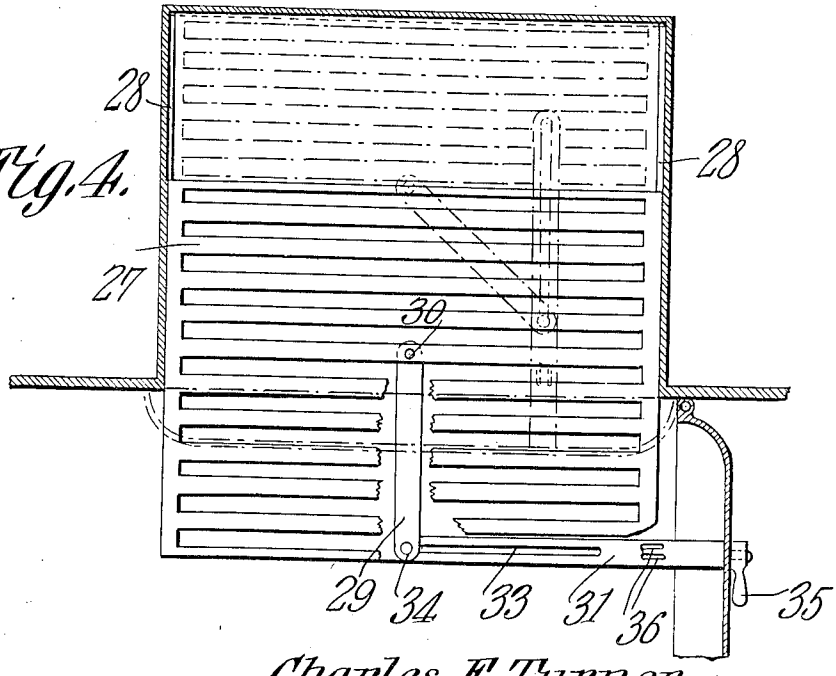


Fig. 4.



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UNITED STATES PATENT OFFICE.

CHARLES EDWIN TURNER AND WILLIAM HENRY SINGLETON, OF MACON, GEORGIA.

SHELF-OPERATING MECHANISM.

No. 892,779. Specification of Letters Patent. Patented July 7, 1908.

Application filed June 24, 1907. Serial No. 380,549.

To all whom it may concern:

Be it known that we, CHARLES EDWIN TURNER and WILLIAM HENRY SINGLETON, citizens of the United States, residing at Macon, in the county of Bibb and State of Georgia, have invented a new and useful Shelf-Operating Mechanism, of which the following is a specification.

This invention relates to improvements in shelf operating mechanism for stoves, refrigerators, and other receptacles whereby the contents thereof may be readily and easily inspected or manipulated, and it has for its object to provide supporting devices that are guided to move into and out of the receptacle as the door thereof is closed and opened, respectively, the devices being so constructed and arranged that they may be readily detached from the door when so desired in order that they will remain stationary within the receptacle during the opening and closing of the door controlling access thereto, or the devices may be easily removed bodily from the receptacle to enable the latter to accommodate articles of unusually large size.

To these and other ends, the invention comprises the various novel features of construction and combination and arrangement of parts, which will be hereinafter more fully described and pointed out particularly in the appended claims.

In the accompanying drawing:—Figure 1 represents a section through a stove provided with an oven attachment constructed in accordance with the present invention, the oven door being shown in closed position. Fig. 2 is a perspective view showing the oven door in open position and the shelves or supports withdrawn from the oven. Fig. 3 is a perspective view of the invention applied to a door which is pivoted on a vertical axis, and Fig. 4 is a plan view of the devices shown in Fig. 3.

Corresponding parts in the several figures are indicated throughout by similar characters of reference.

Oven attachments constructed in accordance with the present invention are capable of being applied to stoves and ranges of various types, refrigerators and other receptacles having shelves to receive provisions and other goods and articles, and may be installed during the construction of the receptacle, or they may be applied to stoves or other devices already constructed.

The shelf operating mechanism is shown in the present embodiment of the invention as applied to a stove of ordinary construction embodying an oven 1 having a door 2 mounted to turn on a horizontal axis 3 at the bottom of the oven. Arranged in the upper portion of the oven is a shelf 4 which may be composed of a grating such as is commonly used in ordinary stoves, the shelf being guided to operate in a horizontal plane by means of the projections 5 which are arranged alternately at the upper and lower sides of the shelf and form guides between which the shelf may operate in moving into and out of the oven.

The operating mechanism shown serves to withdraw the shelf from the oven as the door thereof moves into open position, and to return the shelf when the door closes, and the devices employed in the present instance for accomplishing this purpose comprise a pair of links 6 and 7 having their rear ends offset upwardly, as shown at 8 and 9, and the offset portions are pivotally attached to the shelf by any suitable means, such as by pivot pins 10 and 11, which coöperate with lugs or other suitable portions on the shelf. The forward ends of the links are pivotally attached at 12 and 13 to the free ends of a yoke-shaped frame, the latter comprising, in the present instance, a pair of substantially parallel arms 14 and 15 and an intermediate connecting portion 16, the frame being preferably composed of flat metal and so formed that the three sides thereof engage the inner side of the oven door.

Any suitable means may be employed for connecting the yoke-shaped frame to the oven door whereby the opening movement of the latter will cause a withdrawing movement of the shelf, it being generally preferable to employ a pair of catches that may be readily operated or controlled from the exterior of the oven and which serves to connect and disconnect the oven door relatively to the operating devices of the shelf in order that when so desired the shelf may remain stationary during the opening and closing movements of the door, and, when necessary, the shelf and its attachments may be readily removed from the oven in order that the maximum capacity of the latter may be utilized. The catches shown in the present instance are carried by the oven door and they comprise dogs 17, 17ª which are arranged at opposite sides of the door, the dogs being mounted to turn on pivot pins 18 and 18ª, respectively, which are suitably journaled in

the door and extend to the exterior side thereof, suitable handles 19 being provided on the respective pivot pins at the outer side of the door whereby the catches may be easily manipulated without the necessity of opening the door. The arms 14 and 15 of the frame are provided with slots or recesses 24, 25, respectively, and when the oven door is shut and the arms are moved to the vertical position shown in Fig. 1, these recesses will be entered by the edge of the shelf 4 and in case the dogs 17, 17[a] are disconnected from the arms, the latter will be supported by the engagement of the upper walls of said recesses with the top of the shelf, so that the arms will remain in position to be again engaged by the dogs, after the oven door has been closed.

The invention is not limited, of course, to the use of a single shelf, as the operating devices described are capable of operating either one or more shelves, as may be desired, a supplemental shelf 20 being shown in the present instance which is arranged closely to, and adapted to slide over, the oven bottom 21, the supplemental shelf being connected to operate simultaneously with the upper shelf by means of the connecting members 22 which extend between the shelves, the connecting members being preferably connected rigidly to the forward portion of the supplemental shelf and attached pivotally at 23 to the upper shelf, the horizontal movements of the latter being transmitted to the supplemental shelf.

In Figs. 3 and 4, the mechanism is shown adjusted to an oven or other receptacle wherein the door turns on an axis arranged transverse to the plane of movement of the shelf, the shelf being movable in a horizontal plane and the door being pivoted on a vertical axis at one side of the door opening. In this instance, the grating 27 is mounted to slide into and out of the oven on suitable guides 28, and the operating mechanism shown in this instance comprises a link 29 having its rear end pivoted at 30 to a portion of the grating, preferably at a point midway between those edges thereof which coöperate with the guides, so as to insure a smooth operation of the shelf. On the door of the oven or receptacle is arranged the operating member which comprises, in the present instance, an arm 31 having a bracket 32 formed at one end thereof and adapted to coöperate with the inner side of the oven door at a point adjacent to its pivoted edge, the inner portion of the grating arm being provided with a longitudinally extending slot 33 to receive a pin 34 which serves to operatively connect the arm to the link, the slot being of a length that will permit the oven door to open a predetermined distance before the shelf begins to operate, in order that the door will not obstruct the passage of the shelf. The operating arm may be secured to the oven door in any desired way that will insure transmission of the pivotal movement of the door to the arm, but it is preferable to provide a detachable connection between these parts whereby the shelf may remain stationary within the oven or receptacle during the opening and closing movements of the door, a catch 34[a] being provided, in the present instance, which coöperates at its inner end with the bracket portion of the operating arm and has a handle 35 at the outer side of the oven door, such a construction permitting the shelf to be operated from the exterior of the stove or receptacle to either connect or disconnect the operating arm relatively to the door. When the shelf operating mechanism is disconnected from the door, the operating arm is preferably supported on the grating by means of one or more hooks 36. A supplemental shelf is also shown in this form of the invention, it comprising a tray 37 which is rigidly suspended below the upper shelf by means of a set of supporting arms 38, the lower or supplemental shelf moving into and out of the oven simultaneously with the upper shelf. In operating an oven door provided with a shelf operating mechanism constructed in accordance with this embodiment of the invention, the door will open a considerable distance before the pin 34 in the forward end of the link reaches the end of the slot 33 in the operating arm, so that the shelf does not begin to move forwardly until there is sufficient clearance between it and that portion of the door adjacent to its pivots, the operating arm being rigidly attached to the door so as to turn about the axis thereof, and the continued opening movement of the door will swing the operating arm in an arc to cause the shelf to be withdrawn from the oven. When the door is closed, the parts operate in reverse order, that is to say, the turning movement of the operating arm about the pivot of the door as an axis will cause the shelf to be returned within the oven during the first part of the closing movement of the door, and as the door continues to close, the pin 34 on the link attached to the shelf will operate longitudinally of the slot 33 in the operating arm, permitting the door to be completely closed.

A shelf operating mechanism constructed in accordance with the present invention provides means for facilitating the inspection and manipulation of articles contained in stove ovens, as the contents of the latter are withdrawn from the oven automatically as the door is opened, enabling a thorough inspection to be easily had, and the articles on the shelves may be removed without the necessity of reaching into the oven and burning one's hands.

What is claimed is:—

1. In a device of the character described, the combination with a receptacle having a door movable relatively thereto, of a shelf mounted to slide in the receptacle, a link pivotally connected to the shelf, a member detachably connected to the door and pivotally connected to said link, said member being arranged to be supported by said shelf when disconnected from the door, and means operable from the exterior of the door for connecting and disconnecting said member.

2. In a device of the character described, the combination with a receptacle having a door movable relatively thereto, of a shelf mounted to reciprocate within the oven, a pair of links pivotally attached to the opposite sides of the door, a yoke-shaped frame having an intermediate portion engaging the inner side of the oven door and having a pair of arms pivotally attached to the said links, and a catch on the oven door and coöperating with the said frame for connecting and disconnecting the latter relatively to the oven door.

3. In a device of the class described, the combination with an oven having a door movable relatively thereto, of a shelf guided to slide within the oven, a pair of links pivotally attached to the opposite sides of the shelf, and a yoke-shaped frame composed of flat material having an intermediate portion arranged to engage the inner side of the oven door and provided with a pair of arms arranged at opposite sides of the oven door, the ends of the said arms being pivotally attached to the links, and a pair of catches on the oven door and coöperating with the arms of said frame for detachably connecting the latter and the door.

4. In a device of the character described, the combination with an oven, of a shelf mounted to slide therein in a horizontal plane, a door pivoted on a horizontal axis, a pair of links pivotally attached to the opposite sides of the said shelf, a frame attached to the door and having arms at the opposite sides of the latter pivotally connected to the said links, a supplemental shelf mounted to slide over the oven bottom, and connecting members between the shelf first mentioned and the supplemental shelf for effecting simultaneous movement thereof.

In testimony that we claim the foregoing as our own, we have hereto affixed our signatures in the presence of two witnesses.

CHAS. EDWIN TURNER.
WM. HENRY SINGLETON.

Witnesses:
F. H. JONES,
E. H. AVANT.