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SHELF OPERATING DEVICE

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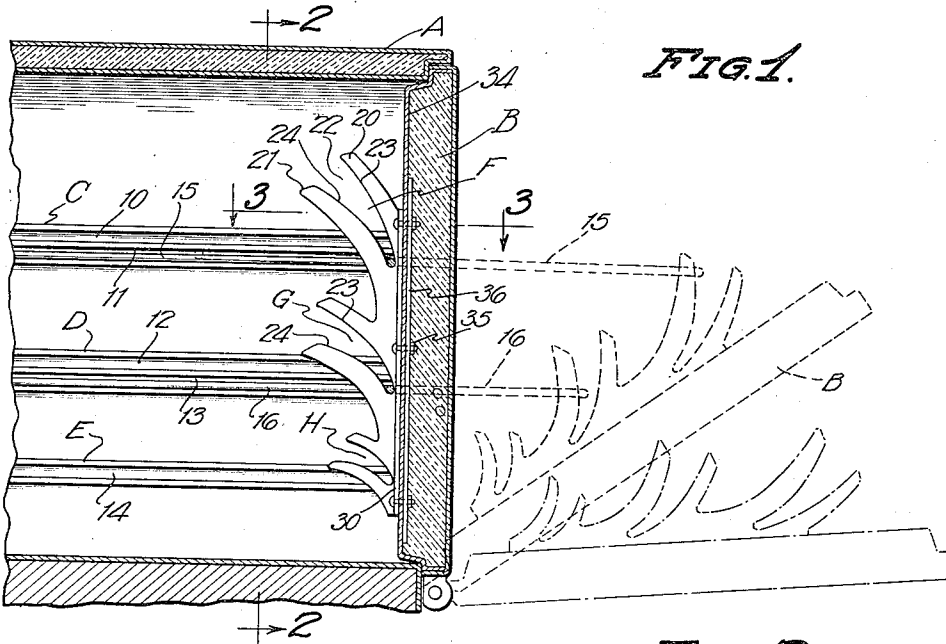


FIG. 1.

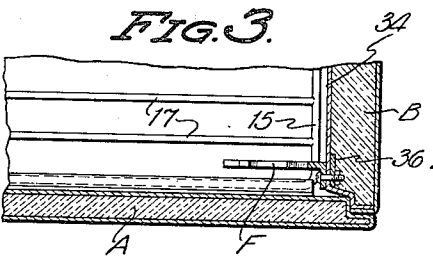


FIG. 3.

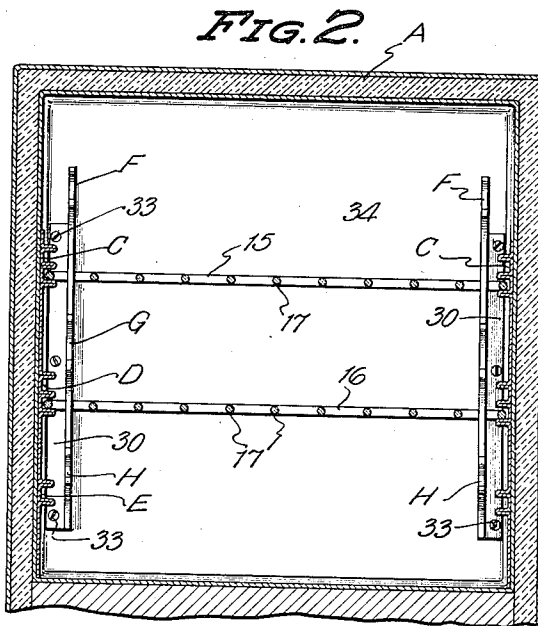


FIG. 2.

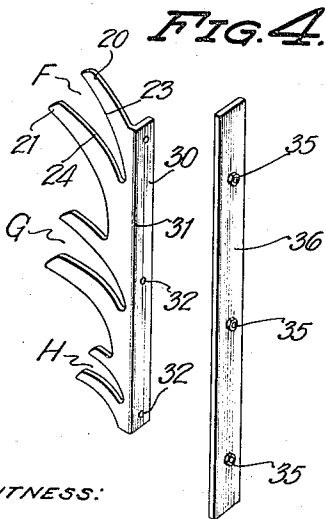


FIG. 4.

WITNESS:

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SHELF OPERATING DEVICE

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2 Claims. (Cl. 126—340)

This invention relates to shelf operating devices and particularly to devices whereby one or more shelves will be automatically withdrawn from an enclosed compartment such as an oven, cabinet or the like, when the door is moved from closed to open position, and in which the shelves will also be moved to position within the enclosed compartment when the door is moved to closed position. In the present application, the invention has been embodied in an oven for gas and similar stoves, but is to be understood that it is not to be limited to such use and that it may be adapted to any type of enclosed cabinet having sliding shelves and a swinging door closure.

It is an object of the present invention to provide a new and novel means whereby one or more of the shelves of an oven or other enclosed compartment may be moved to a position out of the oven by movement of the door of the oven to its open or partially open position, thereby to expose to view and to render accessible, pots, pans and similar vessels carried by the shelves and in which cooking operations are being carried out.

I am aware that such devices, broadly speaking, are not new. However, all such devices with which I am familiar, consist of intricate arrangements of connected links, levers, or gears which are permanently connected to the door of the oven and to the shelves to be operated and do not permit of ready removal of the shelves from the oven, or their use at different heights within the oven.

A feature of the present invention resides in a novel mechanism whereby upon movement of an oven door to partially open position, the shelves of an oven will be moved forwardly of the oven to project therefrom, a distance depending upon the extent of opening of the door.

Another feature of the invention resides in a novel construction whereby when the oven door is moved to its full open position, the shelf operating means will not prevent free and easy removal of the shelves from the oven if desired.

In certain ovens, particularly those of gas and oil stoves, the shelves are capable of adjustment to different levels within the oven and it is a further feature of this invention to provide a novel construction and arrangement of parts whereby the shelves of the oven may be adjusted to any of the levels provided for them and at the same time be subject to operation by the oven door and this without change or adjust-

ment in any manner of the shelf operating mechanism.

The shelves of ovens have a decided tendency to sag when they project from the oven, particularly when there is a weight supported thereon and it sometimes happens that the shelves will sag to such an extent that articles supported upon the shelves will slide thereon, causing serious damage. It is a further feature of this invention to provide a novel construction whereby, when the door is in a partially open position, the shelf or shelves will be supported against sagging to such an extent at least, that articles supported upon the shelf will not slide therefrom.

Other features of the invention relate to certain novel and improved constructions and arrangements of parts hereinafter described and particularly pointed out in the claims, the advantages of which will be readily understood and appreciated by those skilled in the art.

The invention will be clearly understood from the accompanying drawing illustrating the invention in its preferred form, and the following detailed description of the construction therein shown.

In the drawing:

Figure 1 is a fragmentary vertical sectional view of an oven illustrating the shelves, shelf supporting guides, and the oven door, the latter being illustrated in full lines in its fully closed position, in dotted lines in a partially open position, and in dot and dash lines in its full open position.

Figure 2 is a vertical sectional view taken on the line 2—2 of Figure 1.

Figure 3 is a detail horizontal sectional view taken on the line 3—3 of Figure 1, and;

Figure 4 is a detail perspective view of the shelf engaging and operating means.

In the accompanying drawing, the oven is designated A, the door being designated B. The oven and door may be of any desired construction or type, I having merely selected the type herein shown for the purpose of illustrating my invention.

Ovens for gas stoves as generally constructed have two shelves and three sets of shelf supports or guides in order that articles to be cooked in the oven may be positioned at different heights therein to obtain the best results in cooking. In the conventional oven, the two upper sets of shelf supports consist of two guides each, the lower shelf support consisting of but one guide.

In the drawing herewith, the upper shelf support is designated C and will be seen to com-

prise two shelf supporting guides 10, and 11, the intermediate shelf support being designated D, and comprising two shelf supporting guides 12, and 13, the lower shelf support being designated E, and comprising a single shelf supporting guide 14. The two shelves are designated 15, and 16, and are illustrated as supported respectively in the upper and intermediate shelf supports. These shelves are of ordinary construction in that they consist of a frame 16, generally rectangular in shape and cross bars 17, suitably connected at their ends to the frame, the frame and cross bars being constructed from relatively stiff wire. Such a construction provides an open structure in which the side of the shelf which is adjacent the oven opening is free for engagement by suitable means for moving or sliding the shelves in their supporting guides.

In the present embodiment of the invention, I have illustrated three shelf operating means, there being one for each set of shelf supports. The upper shelf operating means is designated F, the intermediate shelf operating means G, and the lower shelf operating means H. The several shelf operating means all being of substantially the same construction, I will describe but one.

By reference to Figure 4, it will be apparent that each shelf operating means consists of two arms 20, and 21, which are spaced from each other to provide an intervening space 22. The inner or adjacent edges of the arms are curved as at 23, and 24. The arcs on which these curves are struck are such that the space 22, between the arms 20, and 21, becomes narrower in the direction of the base of the arms, the space between the arms being widest at the outer ends thereof.

These shelf operating means are, as before stated, arranged in groups of three each and are secured in any desired manner to the rear or inner face of the door B, and while one group of shelf operating means may well serve the purpose, I prefer to employ two sets and so arrange them that there is one set positioned at each side of the door, as illustrated in Figure 2. In forming the shelf operating means, I prefer to strike each group of three from a single piece of sheet metal and to provide for attachment of each group of shelf operating means to the door, I provide each group with a flange 30, which may be provided by bending the body portion thereof along a line designated 31. The flange 30, may be provided with openings 32, for the reception of bolts, rivets or the like 33, which also pass through openings in the inner panel 34, of the door B, and through openings 35, in a backing strip 36. By this construction and arrangement of parts, the shelf operating means may be rigidly secured to the rear panel of the door B, in such a manner as to project rearwardly therefrom into the oven at substantially right angles to the door as best illustrated in Figures 1 and 3, of the drawing.

The device operates in the following manner.

The shelf operating means are so positioned upon the rear face of the door that when the door is in its fully closed position, the inner end of the space 22, between the arms 20, and 21, in the case of the shelf operating means F, and G, will be at substantially the same level as the lower guide of the shelf supports C, and D, the inner end of the space between the arms of the shelf operating means H, coinciding with the

lower shelf supporting guide E, as illustrated at 30, in Figure 1. Therefore, when the door is in its closed position, a shelf mounted upon any of the guides of the shelf supporting means will have that member of its frame 16, which is located at the front of the enclosure, positioned in the space between the arms of the shelf operating means corresponding to the shelf supporting means upon which the shelf is supported.

With the parts in this position, as the door is moved to the partially open position illustrated in dotted lines in Figure 1, the curved edge 24, of each arm 21, will engage the forward frame member of a shelf mounted on the shelf supports and move the shelf or shelves to the position shown in dotted lines in Figure 1. Upon movement of the door to the full open position, the shelf or shelves will be moved still further out of the oven, but the several arms 20, and 21, are of such length that the shelf operating means will become disengaged from the shelves before they are completely removed from the oven. This full open position of the door is illustrated in dot and dash lines in Figure 1.

When the door is moved to the partially open position, the shelves will be withdrawn from the oven sufficiently far to permit of inspection of any articles which may be mounted thereon, while movement of the door to the full open position will permit of ready removal of an article carried by the shelves. It will also be apparent that when the door is in its full open position, the shelves may be readily removed from the oven, the arms of the shelf operating means being so constructed and arranged that the shelves may be removed without interfering therewith.

Upon movement of the door to its closed position, the forward member of the frame of each shelf which may be supported upon the guides of the shelf supports, will pass into the space between the arms of its corresponding shelf operating means. Upon continued movement of the door to its closed position, the curved edge 23, of each of the arms 20, will engage the forward member of the frame 16, of each shelf which may be mounted in the oven and will, upon movement of the door B to full closed position, move the shelves to position within the oven as shown in full lines in Figure 1.

From the foregoing, it will be apparent that the construction and arrangement of parts herein set forth provides a novel and effective device by which one or more shelves of an enclosed compartment may be automatically withdrawn from and returned to position within the compartment upon opening and closing respectively of the door of the compartment. Furthermore, the mechanism is of simple construction and so arranged that permanent or fixed connections between the door and shelves are wholly dispensed with, thereby permitting of adjustment and operation of shelves to different heights within the oven, or the complete removal of any or all of the shelves without the necessity of removing any parts.

While the invention has been herein illustrated in its preferred form, it is to be understood that it is not limited to the specific construction and arrangement of parts herein shown and described, and that it may be practiced in such other forms as rightfully fall within the scope of the appended claims.

Having thus described the invention, what is claimed as new, and what is desired to protect by Letters Patent of the United States, is:

1. The combination with an oven having a sliding shelf therein, a door for closing said oven, and means carried by said door for engagement with said shelf for moving the same outwardly of the oven upon movement of the door to open position, said means comprising brackets mounted upon the door, and arms projecting from said brackets and arranged in vertically spaced pairs between which a portion of the shelf is positioned, one of the arms engaging the shelf to pull the latter outwardly during opening movement of the door and the other arm engaging the shelf to push the same inwardly during closing movement of the door, said shelf being gradually disengaged from the arms as the door approaches its open position.

2. The combination with an oven having a shelf slidably mounted therein, a swinging door for the oven, and a pair of vertically spaced arms carried by and projecting from the inner face of the door, said arms being curved upwardly and inwardly of the oven to receive a portion of the shelf, one of the arms engaging the shelf to pull the latter outwardly during opening movement of the door and the other arm engaging the shelf to push the same inwardly during the closing movement of the door, said arms being gradually disengaged from the shelf as the door approaches its open position.

JOSEPH WERTZHEISER. 15