

April 17, 1962

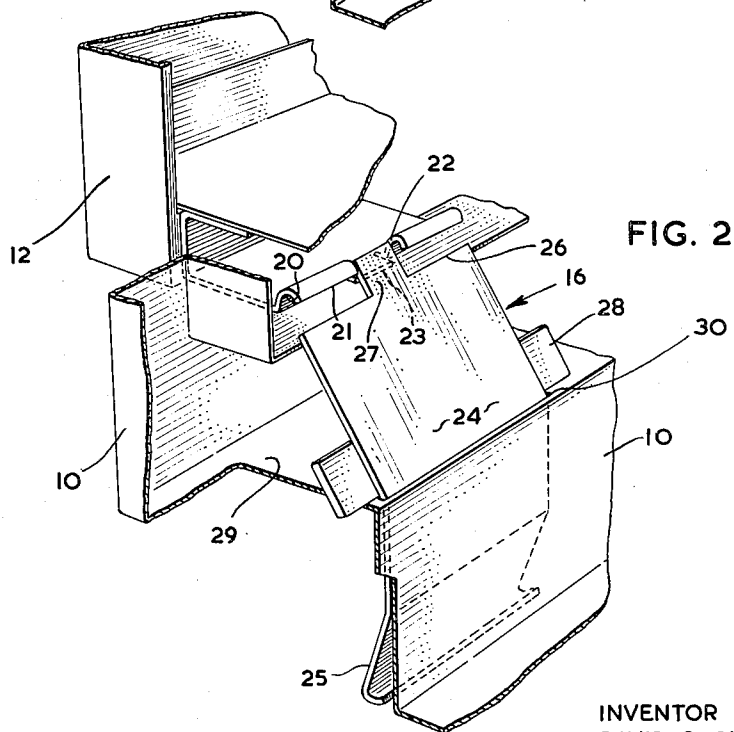
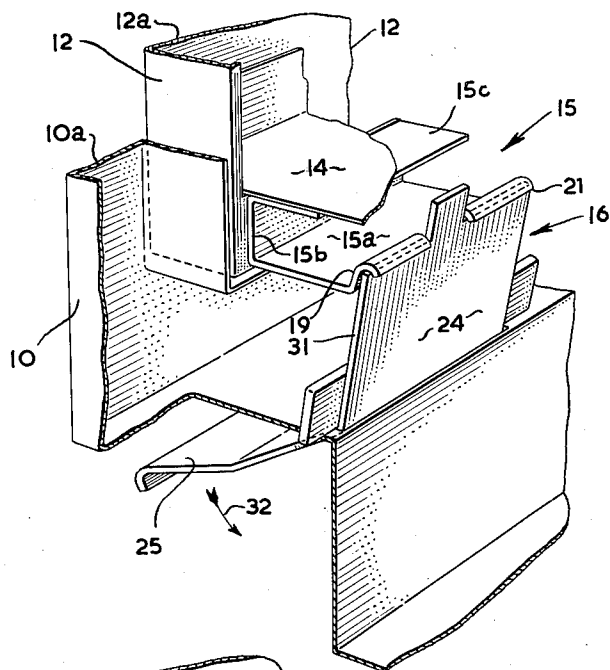
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FOOT OPERATED CATCH FOR DOORS

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2 Sheets-Sheet 1



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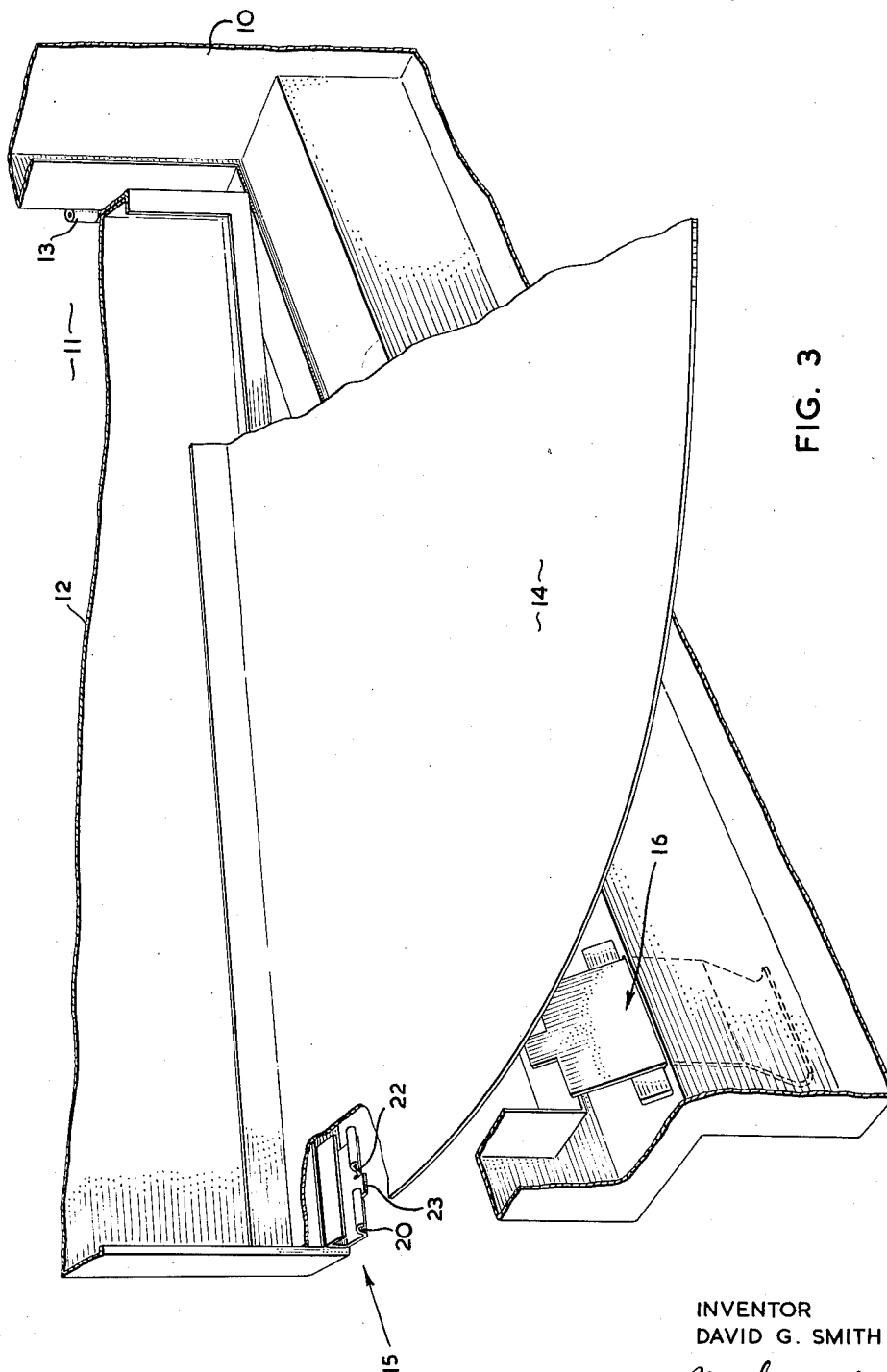


FIG. 3

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FOOT OPERATED CATCH FOR DOORS

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This invention relates to door assemblies and in particular, to latching devices for door assemblies which enable the door to be opened by means of a foot operated pedal.

In recent years the domestic cookstove industry has developed a type of cooking stove which makes use of a series of surface elements carried by a unit at a convenient working height and which is provided with an oven mounted above the surface cooking unit. This provides for storage space in the area normally occupied by the oven. The present invention has been designed primarily for use in latching closed the door to such storage space below the cooking elements of a high-oven cooking range but, of course, has application in other environments as well.

It is an object of the present invention to provide for a door latching mechanism which will enable the door to be opened without the necessity of providing projecting handles or recesses hand grips but which can be operated solely by foot pressure on a pedal which may project to a convenient location in the "toe-space" which is conventionally provided adjacent the lower edge of cupboards and kitchen appliances.

A preferred embodiment of the invention will be described in detail with reference to the accompanying drawings in which like reference numerals denote like parts in the various views and in which;

FIGURE 1 is a perspective view, partly cut away of a portion of a door and frame showing the latching device in the closed position;

FIGURE 2 is a view similar to FIGURE 1 showing the door beginning its opening movement, and

FIGURE 3 is a view showing, in greater detail, the door and frame arrangement and showing the door in a partly open position.

Referring now to the drawings and, in particular, to FIGURE 3, there will be seen to be provided a stationary frame 10 which defines an opening 11 within which is mounted a door 12 by means of hinges 13 which provide for pivotal movement of the door 12 about a vertical axis.

Conveniently, the door may carry a shelf 14 which, in plan view, would constitute one-quarter of a circle and when the door is opened, the entire shelf would travel with the door and would be therefore exposed and readily accessible over its entire area.

The latching mechanism which comprises the present invention includes a striker plate, indicated generally by the reference character 15, and a latching member indicated generally by the reference character 16 in FIGURE 3. Referring more particularly now to FIGURES 1 and 2, the latching device will be described in greater detail.

The door 12 carries, along one edge, a striker plate 15 which comprises a first horizontal flange 15a, a vertical flange 15b and a second horizontal flange 15c. The vertical flange 15b and the second horizontal flange 15c are secured to the door by any suitable means such as, for example, welding, riveting bolting or by means of sheet metal screws. In the embodiment illustrated in FIGURE 1 the vertical flange 15b might be welded to the door 12 and the second horizontal flange 15c might be welded to the lower surface of the shelf 14 to provide for increased support and reinforcement.

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The edge of the first horizontal flange 15a remote from the door 12 is provided with a first portion 19 which is bent upwardly and which, at its upper extremity, is bent forwardly and downwardly to define a groove 20 for a purpose which will become apparent. The edge 21 of the striker plate 15 lies well above the lower horizontal flange 15a of the striker plate so that the groove, which opens downwardly, also may be said to open slightly in a direction away from the door 12.

The groove 20 is interrupted, preferably substantially at its midpoint, by a notch 22, the bottom of the notch being constituted by a tab 23 which is integral with the flange 15a of the striker plate 15 for a purpose which will also become apparent below.

The latching member 16 comprises a piece of sheet metal having a first portion 24 and a second portion 25. The first portion 24 is provided with an edge 26 which is adapted to enter the groove 20 as the door 12 approaches the closed position and which is adapted to be carried to an over-center position as the door reaches the closed position shown in FIGURE 1. The edge 26 of the first portion 24 of the latching member is also provided with a lug 27 which is adapted to enter the notch 22 and which will contact the tab 23 so as to lead the edge 26 into the groove 20 to provide for correct engagement therebetween.

The portion 25 of the latching member lies at an angle to the portion 24 so that when the latching member is in the position shown in FIGURE 1 the pedal portion 25 is raised and is presented to the foot of an operator so that, upon being depressed, it may be readily moved to the position shown in FIGURE 2 to thereby start the door moving from the closed position towards the open position.

The latching member 16 is pivotally carried by the stationary frame 10 by means of a cross bar 28 which extends laterally beyond the edges of the first portion 24 and which rest upon the horizontal surface 29 of the stationary frame member. A slot 30 is provided in this horizontal surface 29 through which the latching member extends and by means of which it is located and pivotally carried by the stationary frame. The notch 30 is slightly oversized for the latching member 16 and thereby provides for free pivoting movement of the latching member.

Having described the structure of the device, its method of operation will be made clear by the following description.

First of all, considering that, in FIGURE 3, the door is moving towards the closed position, the door will, as it closes, assume the position shown in FIGURE 2. In this position the lug 27 is first of all contacted by the tab 23 and as the door continues to close, the latching member 16 will be pivoted from the position shown in FIGURES 2 and 3 towards the position shown in FIGURE 1. As it does so the lug 27 will slide on the end of tab 23 which constitutes the bottom of the notch 22 and will lead the edge 26 into engagement with the downwardly opening groove 20. The length of the side 31 of the portion 24 of the latching member 16 is such that there is a slight "over-center" action as the door moves from the position shown in FIGURE 2 towards the position shown in FIGURE 1. In the position shown in FIGURE 1 the door is completely closed and its outer surface 12a will be flush with the surface 10a of the surrounding stationary frame. In this position it is clear from FIGURE 1 that the portion 24 of the latching member 16 is in an "over-center" position relative to the position shown in FIGURE 2 and, in this position, the latching member 16 will serve to maintain the door in the closed position.

When it is desired to open the door, it is merely neces-

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sary for the operator to apply downward pressure to the pedal 25 in the direction of the arrow indicated by reference character 32 in FIGURE 1. This will cause the portion 24 to move to the other side of the "center" position and will move the door from the position shown in FIGURE 1 to the position shown in FIGURE 2 and will begin its opening movement. If the pedal 25 is depressed reasonably sharply the momentum or impetus imparted to the door 12 will carry it towards the open position for at least a distance sufficiently great to enable the door to clear the door frame and to thereby be grasped by the operator to continue moving it towards the open position. From the above description of the invention it will be clear that an extremely simple, economical, reliable mechanism has been provided for latching a flush closing door in the closed position and which enables it to be opened without the provision of either projecting or recessed handle members.

The tab 23 which is integral with the lower flange 15a of the striker plate 15 may be either bent upwardly or downwardly to enable the lug 27 to enter the notch 22 to a greater or lesser extent so as to provide for an adjustable point of contact between the lug 27 and the striker plate thereby ensuring, despite manufacturing tolerances that every device can be so adjusted to ensure that the edge 26 of the latching member 16 will accurately and properly enter the groove 20 to provide for correct engagement therebetween.

While the invention has been described by way of example with reference to the accompanying drawings it is to be understood that minor modifications in the particular structure, configuration and arrangement of parts is contemplated within the spirit of the present invention and the scope of the appended claims.

What I claim as my invention is:

1. In a door assembly which includes a stationary frame defining an opening and a door mounted in the opening for pivotal movement between a closed position and an open position; a latching device comprising a striker plate carried by the door and having a groove opening towards the frame, the groove being interrupted by a notch, means carried by the striker plate to enable the

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depth of the notch to be adjusted, a latch member pivotally carried by the frame and having an edge lying in the path of the striker plate, a lug extending from said edge and adapted to enter the notch in the striker plate as the door approaches the closed position and to lead the edge of the latch member into the groove as the door continues to move towards the closed position, the engagement between the said groove and the said edge carrying the latching member into an "over-center" position as the door reaches the closed position to hold the door in said closed position and a foot operated pedal portion projecting from the latch member which, when depressed, will pivot the latch member in the frame to move the latch member and the door from the closed position towards the open position.

2. A latching device as claimed in claim 1 wherein the means carried by the striker plate to adjust the depth of the notch comprises a tab, integral with the striker plate but adapted to be bent to vary the depth of the notch so as to provide for adjustable contact between the striker plate and the latching member.

3. A latching device as claimed in claim 1 wherein the latching member is pivotally carried by the frame by means of a cross bar secured to the latching member and resting upon a horizontal surface of the frame, the latching member extending through a slot provided in the frame so that limited pivotal movement is achieved within the slot, the pedal portion being constituted by that portion of the latching member which lies on that side of the frame member remote from the cross bar.

4. A latching device as claimed in claim 3 wherein the latching member is bent along its length so that when the door is closed and the latching member is in the "over-center" position, the pedal portion is raised and is presented to the operator so that it may readily be depressed to move the door from the closed position towards the open position.

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