Nov. 21, 1939. L. M. COCKERHAM 2,180,797

FURNACE DOOR STRUCTURE

Filed May 25, 1939

Fig. 1.

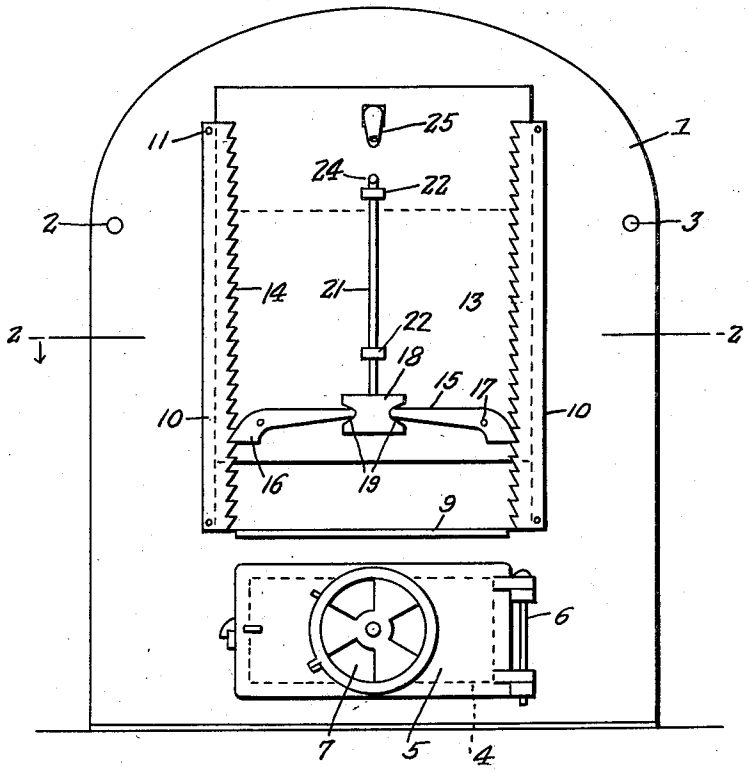
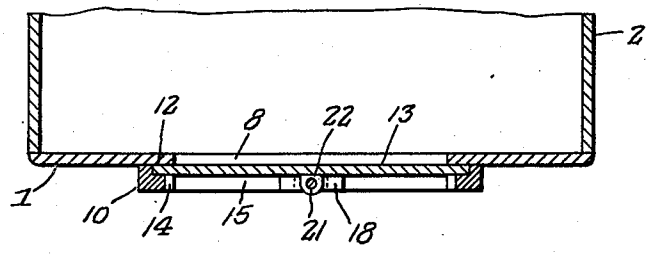


Fig. 2.



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FURNACE DOOR STRUCTURE

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2 Claims. (Cl. 110—173)

My invention relates to improvements in door structures for furnaces such as are used more particularly in tobacco storing and curing barns.

The invention is designed with the particular purpose in view of providing a simply constructed door for such furnaces vertically slidable to different set positions within a wide range of adjustment to vary opening movement thereof, together with quick acting means for retaining the door in selected positions.

To the accomplishment of the above, and subordinate objects presently appearing, a preferred embodiment of my invention has been illustrated in the accompanying drawing, set forth in detail in the succeeding description, and defined in the claims appended hereto.

In said drawing:

Figure 1 is a view in front elevation of the preferred embodiment of my invention applied to a furnace, and

Figure 2 is a fragmentary view in transverse section taken on the line 2—2 of Figure 1 looking downwardly as indicated by the arrows.

Referring to the drawing by numerals, the illustrated embodiment of my invention comprises a front metallic plate 1 for the furnace 2, fitting over the front thereof and which may be of any suitable size and shape, for instance, as shown substantially rectangular with an arched upper edge, the size and shape depending on the type of furnace to which the invention is applied. The plate 1 may be bolted, as represented at 3, to the furnace or otherwise secured thereto in any suitable manner. The lower portion of the plate 1 has formed therein a suitable ashpit doorway, represented at 4, by dotted lines, and adapted to be closed by a door 5 hinged, as at 6, to said plate 1 and provided with a suitable damper 7 therein preferably of the rotary type.

Above the doorway 4 is a vertically elongated rectangular doorway 8 for access to the firebox, not shown. Along the bottom of the doorway 8 a forwardly extending stop flange 9 is formed on the plate 1 for a door presently described. A pair of guide bars 10 are secured to the plate 1, as at 11, to extend along opposite side edges of the doorway 8, respectively, from top to bottom of the latter, said guide bars being L-shaped in cross section to form together with the side edges of the plate 1 vertical guideways 12 for a rectangular door plate 13 vertically slidable in said guideways to open and close said doorway 8 and limited as to downward movement by said stop flange 9.

Means are provided for releasably locking the door plate 13 in different elevated, or opened, positions to open the doorway 8 in different degree and as follows. The guide bars 10 are provided with ratchet toothed inner edges 14 and the door plate 13 with a pair of horizontally extending latch bars 15 arranged in end to end spaced apart relation and comprising downturned outer end pawls 16 pivoted, as at 17, to said plate 13 for movement to engage and disengage the teeth of said edges 14 under downward and upward swinging of the inner ends of said bars 15, respectively. The pawls 16 and the teeth of said edges 14 are arranged to interlock under the weight of the plate 13 in the engaged position thereof and to thereby retain said plate in different vertical positions. Intermediate the inner ends of said latch bars 15 is a block-like counter-weight 18 having notched ends 19 in which the inner ends of said latch bars 15 extend and fulcrum. The inner ends of the latch bars 15 are counter-balanced by said weight 18 to normally urge said ends downwardly and engage the pawls 16 with said teeth.

Suitably attached at its lower end to said counter-weight 18 is a vertically extending latch bar operating rod 21 slidably mounted in a pair of upper and lower guide lugs 22 on said plate 13 and having a forwardly extending upper end 24 providing a hand grip. Immediately above the upper end 24 of said rod 21 a forwardly extending bar-like hand grip 25 is provided on said plate 13 for grasping together with said end 24 to facilitate lifting said end and the rod 21 to thereby elevate the counter-weight 18. As will be obvious the hand grip 25 may be grasped alone to lift the door plate 13, as will be readily understood. Upon lifting of the door plate 13 by means of the hand grip 25, the pawls 16 will ratchet over the teeth of edges 14 and under the influence of the counter-weight 18 be caused to engage and interlock with said teeth to retain the plate 13 in any selected vertical, or opened, position. When it is desired to lower said plate 13 to close the doorway 9, the pawls 16 may be quickly disengaged by exerting a lift on the hand grip end 24 of the latch bar operating rod 21, such lifting of said rod elevating the counter-weight 18 and swinging the inner ends of the latch bars 15 upwardly to disengage the pawls 16. The hand grip 25 is spaced from the hand grip end 24 of said rod 21 to limit upward movement of the latter and thereby prevent overthrow movement of the pawls 16 past disengaging position.

The foregoing will, it is believed, suffice to im-

part a clear understanding of my invention without further explanation.

Manifestly the invention, as described, is susceptible of modification without departing from the inventive concept and right is herein reserved to such modifications as fall within the scope of the subjoined claims.

What I claim is:

1. In a furnace, a front plate having a doorway therein, a pair of vertically disposed guides secured to said plate upon opposite sides of said doorway, respectively, and provided with ratchet toothed inner edges, a door vertically slidable in said guides, a pair of horizontally disposed latch bars pivoted intermediate the ends thereof upon opposite sides of the vertical central axis of said door, respectively, in end to end spaced apart relation and having pawl-like outer ends adapted to engage and disengage said teeth upon movement of the inner ends of said latch bars downwardly and upwardly, respectively, a counterweight bridging the inner ends of said latch bars and operatively connected thereto to normally urge said ends downwardly, and manually operative means on said door for elevating said counterweight at will.

2. In a furnace, a front plate having a doorway therein, a pair of vertically disposed guides secured to said plate upon opposite sides of said doorway, respectively, and provided with ratchet toothed inner edges, a door vertically slidable in said guides, a pair of horizontally disposed latch bars pivoted intermediate the ends thereof upon opposite sides of the vertical central axis of said door, respectively, in end to end spaced apart relation and having pawl-like outer ends adapted to engage and disengage said teeth upon movement of the inner ends of said latch bars downwardly and upwardly, respectively, a counterweight bridging the inner ends of said latch bars and operatively connected thereto to normally urge said ends downwardly, manually operative means on said door for elevating said counterweight at will, comprising a vertically slidable weight operating lever having a hand grip at the upper end thereof, and a hand grip extending from said door in the path of movement of the hand grip first mentioned for limiting upward movement of the latter and said rod and weight.

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