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LATCH FOR FURNACE DOORS

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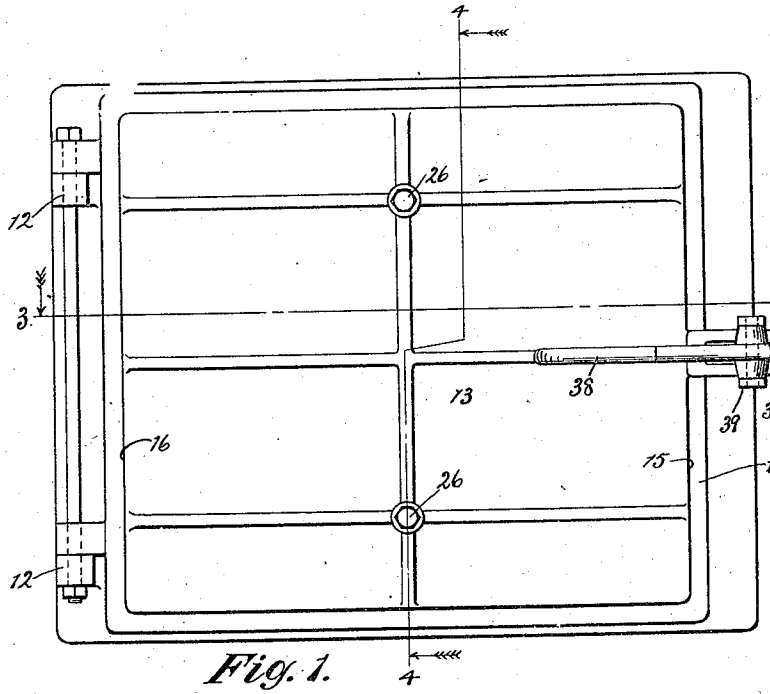

Fig. 1.

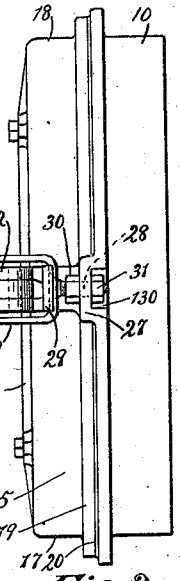

Fig. 2.

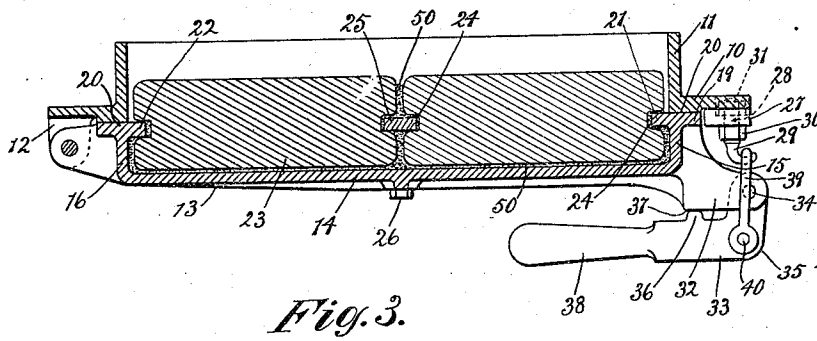

Fig. 3.

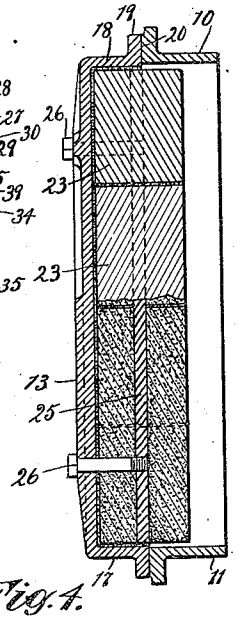

Fig. 4.

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LATCH FOR FURNACE DOORS.

Application filed December 21, 1922. Serial No. 608,333.

This invention relates to furnace doors and has for an important object to provide a latch for the doors that will secure them tightly closed and can be easily and quickly fastened and unfastened.

Further objects of the invention will become apparent as the description is read in connection with the accompanying drawings illustrating a selected embodiment of the invention and in which—

Figure 1 is a front elevation of a furnace door embodying the invention;

Fig. 2 is a side elevation looking from the right in Fig. 1; and

Figs. 3 and 4 are sectional views taken on the lines 3—3 and 4—4 of Fig. 1.

Referring to the drawings, the reference numeral 10 indicates a door frame here shown as of angle shape in cross section, whereby a flange 11 is provided to be fitted in the wall of the furnace. At one side the frame carries lugs 12 upon which is hinged a door 13 here shown as including a body portion 14, side flanges 15 and 16 and bottom and top flanges 17 and 18. The four flanges are preferably joined to make a continuous rim about the edge of the body portion which terminates in a head 19 having a flat face 20 to rest against the face of the door frame.

As here shown, the head 19 projects inwardly from the sides to form ribs 21 and 22 for cooperation with the edges of the lining, which preferably is formed of lateral sections each composed of separate bricks 23 having grooves 24 in each end. The aligned grooves 24 at the outer edges of the lateral sections form recesses in which the ribs 21 and 22 are received; and the aligned grooves at the inner edges of the sections form a pocket in which is located a key bar 25 that is secured to the body of the door by bolts or screws 26. It will be observed that the ribs seated in the grooves at the outer edges of the sections and the key bar 25 seated in the grooves at the inner edges of the sections are well protected from the heat of the furnace. If desired the spaces between the bricks and between the bricks and the body of the door may be filled with grout as indicated in the drawings at 50. The foregoing subject matter is not claimed herein, but forms the subject matter of our divisional application, Serial No. 683,644, filed December 31, 1923, for furnace door, now Patent No. 1,541,016 of June 9, 1925.

The door frame is provided at the right side with a laterally projecting lug 27 which is perforated at 28 to receive the threaded shank of a hook 29, and nuts 30 and 31 threaded on the shank adjustably retain the hook in substantially the position shown in Fig. 3. The nut 31 may be located in a recess 130 on the inner side of the door frame to prevent interference with the wall of the furnace.

The body of the door is also provided with a laterally projecting lug as indicated at 32, to which a latch lever 33 is pivoted at 34. Preferably the latch lever has a handle or grip 38 and is bent at a sharp angle between the pivot and the handle as indicated at 35, and has an abutment lug 36 adapted to strike against the face of the door at 37 when the latch is fastened.

A link 39 is pivoted to the lever at 40, a point some distance from the pivot 34 of the lever, and is adapted to be engaged with the hook 29 when the door is to be latched. The pivots 34 and 40 and the abutment 36 are so located that in order for the lever to take the position shown in Fig. 3 the link 39 must be sprung past the axis of the pivot 34. There will be sufficient resilience in the link or the hook or both to permit this movement of the parts past what may be called "center" in fastening and unfastening. As a result the tension on the link and the hook will automatically lock the latch in fastened position and securely hold the door tightly closed until the handle or grip 28 is swung so as to move the pivot 40 of the link to the right in Fig. 3 and swing the link across the axis of the pivot 34 or past "center." By shifting the nuts 30 and 31 the hook 29 may be moved inwardly or outwardly to adjust the tension and determine the tightness with which the door is held in closed position.

A door made in accordance with this invention will have its metal parts fully protected from the heat of the furnace by the lining, which will be securely and rigidly supported in proper position during use and yet can be readily removed and replaced when occasion requires; and a latch embodying the principles set forth will hold the door securely and tightly closed while permitting

it to be easily and quickly fastened and unfastened.

We claim as our invention—

1. In a furnace the combination of a door frame having a depression therein, a door hinged at one side to the frame, a lever pivoted to the opposite side of the door, a hook on the frame mounted in said depression adjacent to the pivot of the lever when the door is closed, and a link pivoted to the lever away from the pivot of the lever and adapted to engage the hook and be moved by the lever across the pivot of the latter.

2. In a furnace the combination of a door frame having a depression therein, a door adapted to close against said frame, a hook on the frame, means in said depression for adjustably securing said hook to said frame, a link adapted to engage the hook, and a lever pivoted to the door, said link being pivoted to said lever, said lever being adapted to swing the link about the hook as a pivot and across the pivot of the lever with the door.

3. In a furnace the combination of a door frame, a door adapted to close against the frame, a lever pivoted to the door and having an abutment to bear on the door to space said door and lever throughout the length of the latter, and a link pivoted to the lever and adapted to engage the hook and extend between the dead center of the pivot of the lever and the abutment on the side of said pivot least removed from said abutment when the latter is against the door.

4. In apparatus of the class described, a door frame, a door hinged thereto, a lug carried by the door, a lever pivoted to said lug, a link pivoted to the lever, and an adjustable hook carried by the frame to be engaged by said link, said hook having its inner end disposed between the inner and outer surfaces of said frame, said link being moved by the lever across the pivot thereof in locking said door.

5. In apparatus of the class described, a door frame, a door hinged thereto, a hook secured to said frame, a lug integral with said door and extending beyond the free edge thereof, a lever pivoted to said lug, a link pivoted to said lever and adapted to engage said link in locking said door, and means for adjusting said hook for effecting a closer contact of said door with said frame when in locked position.

6. In apparatus of the class described, a door frame, a door hinged thereto, a hook carried by said frame outside of the door opening, a lug integral with said door, and extending beyond the perimeter thereof into substantial alinement with said hook when said door is closed, a lever pivoted to said lug, a link pivoted to said lever and adapted to engage said link in locking said door and means for adjusting said hook for effecting a closer contact of said door with said frame when in locked position, said means comprising a pair of nuts threaded on the shank of said hook and coacting with a portion of said frame.

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