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H. H. WEISS

FURNACE DOOR

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Fig. 1.

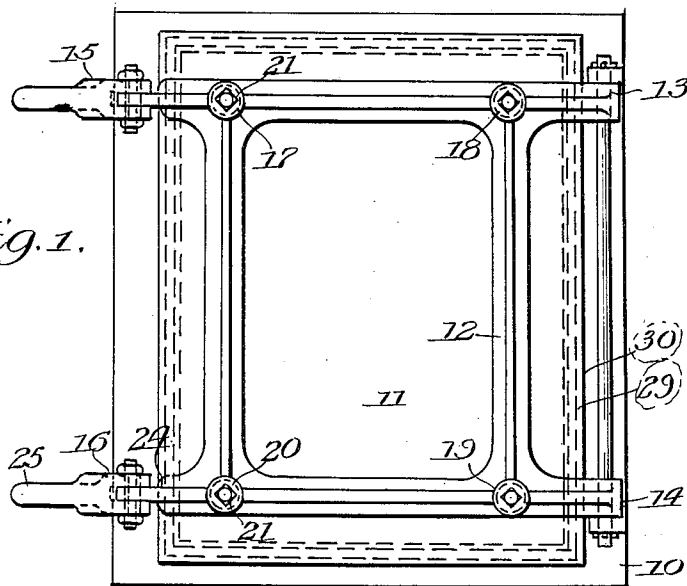


Fig. 2.

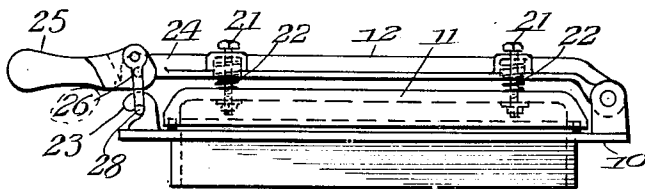
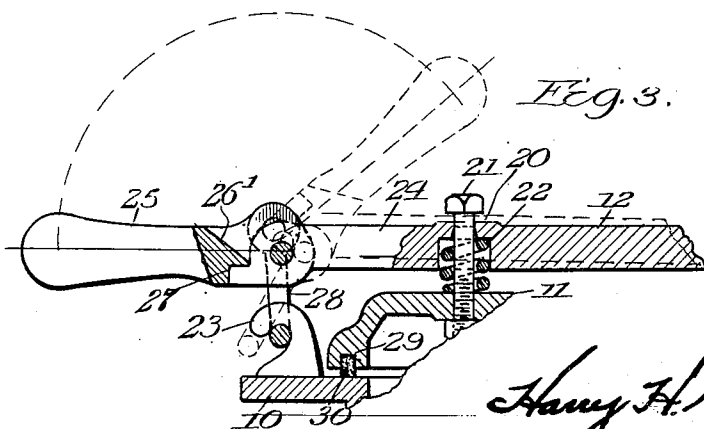


Fig. 3.



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FURNACE DOOR.

Application filed September 25, 1924. Serial No. 739,847.

The invention relates to doors and particularly to furnace doors and has as its prime object the provision of a construction whereby the door and frame may co-operate with each other to maintain an air tight connection between them.

It is another object of the invention to provide a construction whereby the door may be adjusted so as to compensate for warping of the door or door frame and thereby insure the seal above referred to.

In addition it is an object to construct a door structure in which the door may yield and thereby insure against breakage thereof should it be brought into engagement with material or an object which might become lodged between the door and its frame.

It is a further object of the invention to mount the door upon a hanger, the latter of which is secured to the door frame and to provide upon the hanger the means for accomplishing the adjustment of the door and the means for permitting the door to yield.

Another feature of the invention is to provide a lock upon the hanger for the door to lock the hanger to the door frame and to mount the door with relation to the hanger so that it may yield to compensate for the expansion and contraction of the door when the latter is in engagement with the door frame and the hanger frame is locked to said door frame.

It is a further object of the invention to provide the hanger frame and the door with a locking means having a mechanism which will permit the door to be locked to the door frame regardless of the position which the door may assume with respect to the door frame.

It is another object to construct the door so that it may accommodate packing material which is removable and provided for the purpose of maintaining the seal between the door and frame.

The invention has these and other objects all of which will be explained and more readily understood when read in conjunction with the accompanying drawings which illustrate one embodiment of which the invention is susceptible, it being obvious that changes and modifications may be resorted to without departing from the appended claims forming a part hereof.

In the drawings Figure 1 is a front elevation of a door, frame and hanger con-

structed in accordance with one embodiment of the invention.

Figure 2 is an end elevation of the structure shown in Figure 1 and

Figure 3 is a sectional view of a fragment of the structure shown in Figures 1 and 2 showing in dotted lines a portion thereof in changed position.

In the embodiment of the invention illustrated in the drawings a door structure having a door frame 10, door 11 and door hanger frame 12 is contemplated.

The hanger frame is pivotally secured to the door frame 10 at 13 and 14 and is designed to be releasably locked to the door frame by means of the locking mechanism generally designated 15 and 16.

This hanger frame 12 has the door 11 secured to it so that said door and hanger frame may move relatively to each other when the door is brought into engagement with the door frame or caused so to do by the expansion and contraction of the elements entering into the structure. The door 11 is mounted for adjustment relatively to the hanger frame 12 so as to compensate for warping of the door or frame and thereby permit an air tight connection to be formed between the door and door frame. The door 11 is also resiliently mounted so that it may yield and compensate for the expansion and contraction of the parts and also prevent breakage thereof should anything become lodged between the door and frame which might interfere with the proper closing of the door.

To permit the adjustment of the door relatively to the hanger frame the door is suspended from the door frame 12 at points 17, 18, 19 and 20 by means of the bolts 21—21 which are threaded with apertures provided in said door, the bolts being loosely mounted at said points so as to allow movement of the door with respect to the hanger frame. The hanger frame is recessed at the apertures through which said bolts are passed to respectively receive coil springs such as 22 which surround the bolts 21 and have one end thereof located in the recess and react between the door and hanger frame.

This last mentioned arrangement provides a means for automatically compensating for the expansion and contraction of the door and its associated elements and in addition provides a means whereby the door may be

adjusted to compensate for the warping of the door and its associated parts and thereby procure and maintain the proper contact between the door and frame to maintain the necessary air tight connection. The arrangement just described also provides a means for preventing cracking of the door should anything become lodged between the door and door frame. As before stated the hanger frame and the door frame are provided with elements which co-operate with each other whereby to releasably lock the door and hanger to the frame. This locking mechanism is designed to lock the elements together even though said elements have become warped or the closing of the door is otherwise interfered with.

To provide a structure for accomplishing the above enumerated objects the door frame is provided with a hook shaped element 23 and the door hanger frame is provided with an arm or extension 24 to which a handle or lever 25 is connected by means of the pivot 26. The handle 25 and the extension are respectively provided with elements 26' and 27 which co-operate with each other to provide stops which co-operate to limit the movement of the handle when the latter is brought to locking position. A member 28 is pivotally secured to the lever and is provided to releasably engage the hook shaped element 23 of the door frame. This member 28 is in the present instance U-shaped and is connected to the lever eccentrically with relation to the pivot of said lever which will thus, when the lever is manipulated, move the member 28 to engage or release the hook shaped element 23.

A means is provided for providing an effective seal between the door and the door frame, this means being preferably removable and of a material such as asbestos or other heat resisting composition.

In order to accommodate this material the inner face of the door is provided with a groove into which the material is pressed or held.

From the foregoing description of the invention it is manifest that an arrangement is provided whereby the door is movable independently of the hanger and is also adjustable and resiliently mounted to compensate for the expansion and contraction of the parts.

It is further evident that a locking mechanism is provided whereby the door may be locked even though it or an associated element is warped or otherwise affected in a manner to ordinarily prevent its closing.

Having thus described the invention what I claim and desire to cover by Letters Patent is:

1. In a device of the class described the combination of a door frame, a door hanger pivotally connected with the door frame, a

door carried by said door hanger, a lock provided to lock said hanger to said door frame and means arranged in spaced relation to each other adjacent the edges of the door for movably mounting said door with respect to said hanger whereby said door and hanger are movable relatively to each other and said door is yieldably held relatively to the hanger and frame when said door is in engagement with said frame.

2. In a device of the character described the combination of a door frame, a door hanger pivotally connected with the door frame, a door carried by said door hanger, a lock provided to lock said hanger to said door frame and a plurality of independently adjustable resilient elements providing means for mounting said door with respect to said hanger and permitting one part of the door to be adjustably held in a relatively different position with respect to another part thereof and to allow movement of said door relatively to the hanger when engaged with said door frame.

3. In a device of the class described, the combination of a door frame, a door hanger pivoted to said door frame, a door carried by said frame, and means providing for adjustment of the top, bottom and sides of said door and resiliently holding said door in said adjusted position with respect to said hanger.

4. In a device of the class described, the combination of a door frame, a door hanger pivoted to said frame, means for permitting the independent adjustment of the top, bottom and side edges of said door with respect to the door hanger, and said means including means whereby said door may move from its adjusted position with respect to said hanger and door frame upon contact of the door and door frame.

5. In a device of the class described, the combination of a door frame, a door hanger pivoted to said door frame, a door, means located in spaced relation adjacent the edges of said door for resiliently and adjustably securing the door to the door frame, said means consisting of a plurality of adjusting screws arranged in the hanger and extending into and being in threaded engagement with said door and a coiled spring reacting between said frame and door, and a lever for releasably locking the door and door frame together, said lever having a link secured eccentrically with respect to the pivot of the link for releasably engaging a member provided upon the door frame.

6. In a device of the class described, the combination of a door frame, a door hanger pivoted to said door frame, a door having a removable packing arranged to engage the face of the door frame and provide a seal between said door and frame, means for resiliently and adjustably securing the door to

the door frame, said means being disposed adjacent the edges of said door and consisting of a plurality of adjusting screws arranged in the hanger and extending into and
5 being in threaded engagement with said door and a coiled spring reacting between said frame and door, and a lever for releasably locking the door and door frame together, said lever having a link secured eccentrically with respect to the pivot of the link for re- 10
leasably engaging a member provided upon the door frame.

In witness whereof, I hereunto subscribe my name this 22nd day of August, A. D. 1924.

HARRY H. WEISS.