Oct. 4, 1932. D. O. MILLER 1,881,287

FURNACE DOOR

Filed March 5, 1929

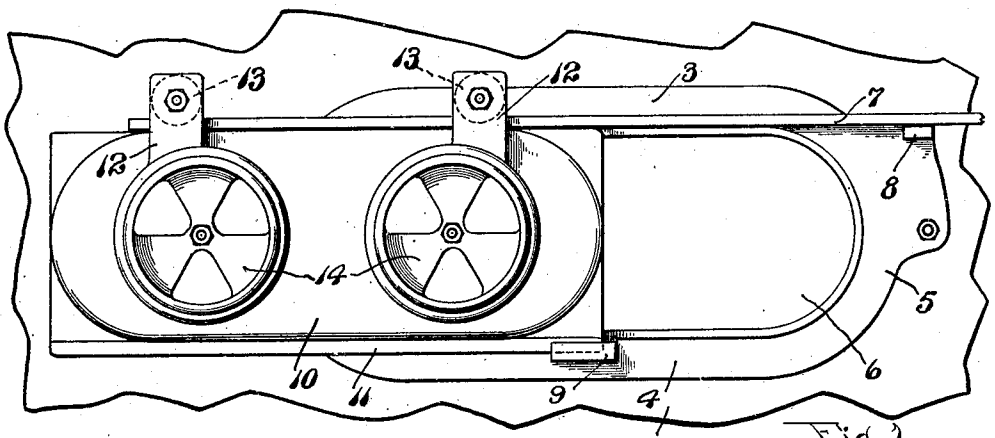


Fig. 1.

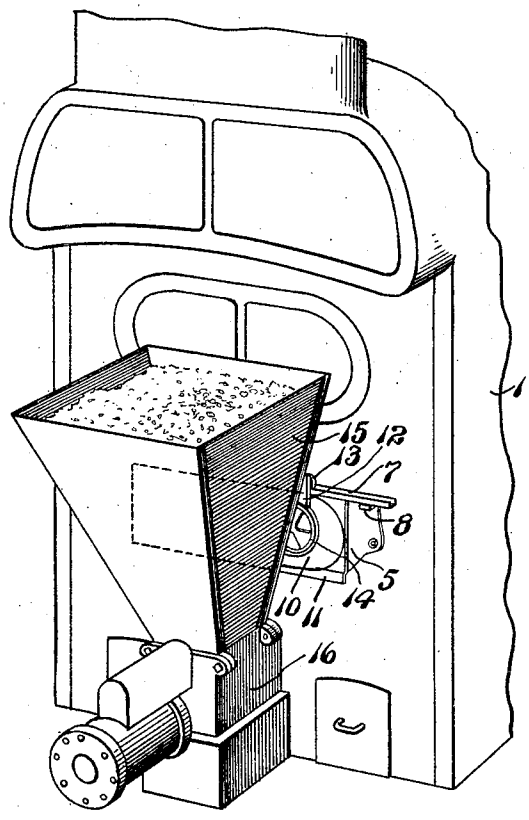


Fig. 3.

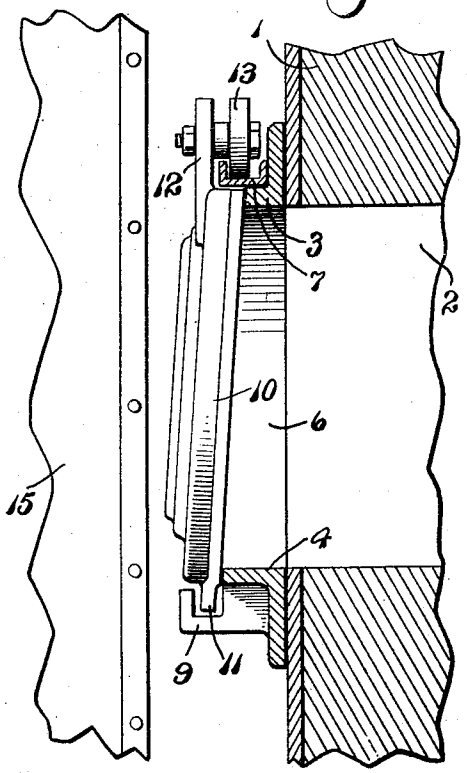


Fig. 2.

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UNITED STATES PATENT OFFICE

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FURNACE DOOR

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This invention relates to furnaces, boilers or the like and is particularly concerned with a novel construction of door for the same, which is of special utility in those cases where stoking mechanisms are used at the front of the furnace or boiler, the hopper of which ordinarily is located immediately in front of the door and which interferes with its operation if the door has to be swung outwardly.

Furnaces, boilers and the like, even though equipped with stoking machines, necessarily require inspection of the fire and in some cases the fire requires attention which is given through a front opening normally closed by a hinged door. With stoking devices, many of which are equipped with hoppers located directly in front of the front opening and door, in order to have such inspection and attention to the fire the hopper must either be removed or swung to one side which is very inconvenient to do.

With my invention a construction of door is provided wherein the door may be slid lengthwise to uncover the opening through which inspection of and attention to the fire may be had without the necessity of moving the hopper in any respect. The invention, accordingly, is directed to a novel construction of door and door unit as applied to a furnace, boiler or the like having means whereby the opening at the front of the furnace is maintained tightly closed when the door is in operative position and wherein the door is held against outward movement or being blasted away from its closed position should gases within the furnace explode and wherein no space at the front of the furnace is required for uncovering the door opening to permit inspection of or attention to the fire.

The construction for attaining these ends is described in the following description, taken in connection with the accompanying drawing, in which,

Fig. 1 is a fragmentary front elevation of the front of the furnace, showing the door unit of my invention applied thereto, the door being in open position.

Fig. 2 is a fragmentary vertical section through a furnace and illustrating the manner in which the door is mounted to maintain its closed position, and,

Fig. 3 is a perspective view of the front end of the furnace or the like, equipped with the sliding door unit of my invention in association with a stoking apparatus.

Like reference characters refer to like parts in the different figures of the drawing.

The furnace 1 may be of any suitable construction having an opening 2 therein at the front, extending from the outside to the fire.

The door unit of my invention includes a base having an upper horizontal portion 3, a lower horizontal part 4 and rounded ends 5 connecting the ends of the upper and lower parts, there being an opening 6 which, when this base or frame is attached to the furnace, is in direct alinement with the opening 2 of the furnace. It will be noted that the cross section of the upper portion 3 of the base member is of angle form, as is also the lower member 4, but that the horizontal outwardly extending flanges are of different dimensions, that is, the lower side being of the greater dimension so that the plane of the outer side of the base member inclines downwardly and outwardly at an angle to the vertical, as best shown in Fig. 2.

A track 7 in the form of a channel member having a horizontal web and upwardly extending flanges is secured at the upper portion of the base member of the unit and bears upon the horizontal flange of the part 3 and upon lugs 8 extending outwardly adjacent the ends of said base member. A U-shaped guard 9 is formed integral with the base member and is located at the front of and below the lower portion 4 thereof as fully shown in Figs. 1 and 2.

The door 10 lies below the track 7 and above the guard 9, at its lower edge having a longitudinal lip 11 received within said guard and having a flat rear face to bear against the inclined outer face of the base member upon which it is mounted. Two arms 12 are cast integral with the door extending upwardly therefrom adjacent each end thereof on each of which a roller 13 is mounted and is received and held in the chan-

nel track 7. The movable door member 10 may be equipped with any desired type of draft device, two of which are shown at 14.

The door unit thus described, when attached to the front end of a furnace, or the like, has its opening 6 in conjunction with the furnace opening 2 and the door 10 is movable to either cover or uncover the opening, being moved laterally, as shown in Fig. 1, when the opening is uncovered. The downwardly and outwardly inclined face at the front of the permanent base of the unit, which is attached to the front of the furnace, causes the door to snugly engage thereagainst by gravity, and the lip 11, slidably received within the guard 9, holds the outer part of the door against outward movement should there be an explosion of gases within the furnace as occasionally occurs.

It is evident also, that to uncover the opening to the furnace fire it is not necessary to have any open space at the front of the furnace as would be the case with a swinging door. This permits the hopper 15, mounted at the upper side of a stoking unit 16, to be located closely adjacent the front side of the furnace, and there is no necessity of removing the hopper or turning it to one side when inspection or any attention to the fire is desired, the door being easily moved in the direction of its length to one side to uncover the door opening.

The construction described is very practical and serviceable and has been especially satisfactory in use. The invention is defined in the appended claim and is to be considered comprehensive of all forms of structure coming within its scope.

I claim:

In combination with a coal burning furnace of the underfeed type, said furnace being of relatively narrow width and having a substantially vertical front with an opening through said front, of a coal stoking appliance permanently located in front of the furnace, said appliance including a relatively large hopper adapted to receive coal, said hopper being located very closely adjacent the front of the furnace and a short distance in front of the opening therein whereby an outwardly swinging door cannot be operatively mounted upon said opening, and a stoking unit, and a sliding door mounted on said front of the furnace for lateral movement in a substantially vertical plane between the front of the furnace and said hopper to cover or uncover said opening whereby access to the coal interiorly of the furnace may be freely had at the point where it leaves the stoking unit.

In testimony whereof I affix my signature.

DALE O. MILLER.