R. W. ZELLER.

FIRE DOOR.

APPLICATION FILED JUNE 26, 1912.

1,073,554. Patented Sept. 16, 1913.

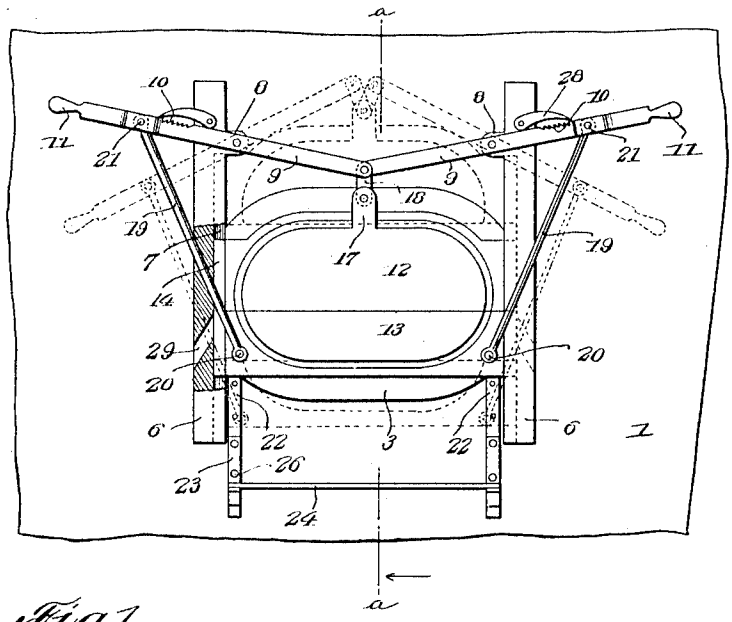


Fig. 1.

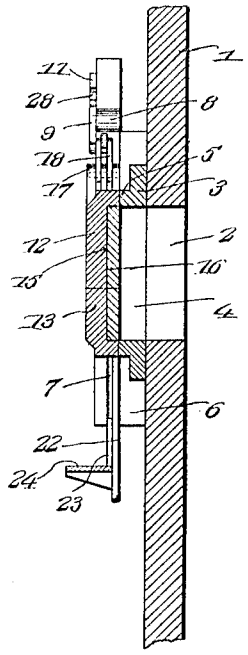


Fig. 2.

Witnesses

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REILLY W. ZELLER, OF SHEPPTON, PENNSYLVANIA.

FIRE-DOOR.

1,073,554. Specification of Letters Patent. Patented Sept. 16, 1913.

Application filed June 26, 1912. Serial No. 706,064.

To all whom it may concern:

Be it known that I, REILLY W. ZELLER, a citizen of the United States, residing at Sheppton, in the county of Schuylkill and State of Pennsylvania, have invented new and useful Improvements in Fire-Doors, of which the following is a specification.

This invention is an improved fire door for steam boiler furnaces and other furnaces and operating means for the fire door, the invention consisting in the construction, combination and arrangement of devices hereinafter described and claimed.

The object of my invention is to provide an improved fire door which is mounted for vertical sliding movement so that it takes up no space when opened as is the case of a hinged door and to also provide improved means for operating the door.

In the accompanying drawing:—Figure 1 is an elevation of a portion of a furnace provided with a fire door constructed in accordance with my invention, the door being shown in closed position in full lines and in open position in dotted lines. Fig. 2 is a vertical sectional view of the same on the plane indicated by the line *a*—*a* of Fig. 1.

For the purposes of this specification, a portion of the end wall of the furnace is indicated at 1, the fire opening being shown at 2. A plate 3 is secured on the outer side of the said wall and has an opening 4 which is coincident with the fire opening and around the outer side of which is a flange 5. This plate is arranged between a pair of vertical guide rails 6 which have vertical guide grooves 7 in their opposing sides. Each of the said guide rails is provided on its inner side near its upper end with an arm 8 to which is pivoted a lever 9, the said levers being provided on their upper sides at points near their pivots with ratchet teeth 10. Said levers have handles 11 at their outer ends.

My improved fire door comprises an upper member 12 and a lower member 13, the said members being provided at their ends with tongues 14 which operate in the guide grooves 7. Thereby the members of the fire door are arranged for sliding movement vertically between the guide rails 6 and across the fire opening. The upper member 12 is larger and considerably heavier than the lower member. Each of the said members is hollow on its inner side as at 15 and is provided in its hollowed inner side with a removable plate 16 which may be readily renewed when burned out, so that the members 12—13 of the door may be continued indefinitely in use. The upper heavier member 12 is provided with lugs 17 which extend from its upper side at the center thereof and between these lugs are pivoted the lower ends of links 18, the upper ends of the said links being pivotally connected to the inner ends of the levers 9. Link rods 19 have their lower ends pivotally connected to the lower door member 13 as at 20 and their upper ends pivotally connected to the levers 9, as at 21 and the distance between the fulcrum of each of said levers and the point of connection of the lever with the upper door member is greater than the distance between said fulcrum and the point of connection between said lever and its coöperating link rod. Hence, it will be understood that the door members are arranged to move vertically, simultaneously in opposite directions. Owing to the superior weight of the upper member 12, it descends and in so doing causes the levers 9 and the link rods 19 to raise the lower member 13 and, hence, the said members 12—13 of the door are normally in closed position.

In order to enable the door to be opened by moving the upper member upwardly and the lower member downwardly, I provide a pair of hanger bars 22 which are secured to the lower member at the ends thereof and extend downwardly therefrom. A pair of brackets 23 are secured on the outer sides of the said hanger rods for vertical adjustment thereon and support a pedal or step 24. Within the scope of my invention any suitable means may be employed for adjustably securing the brackets to the hanger rods. The hanger rods are here shown as provided with openings and with studs 26 to enter the said openings and thus provide for the vertical adjustment of the step or pedal according to the convenience of the fireman.

In order to open the door, the fireman is merely required to place one foot on the pedal or step and to bear downwardly thereon, thereby causing the lower door section or member 13 to descend and in so doing cause the link rods 19 to turn the levers 9 and, hence, cause the inner ends of said levers 9 to rise and carry up the upper door member 12. As soon as the fireman removes his foot from the pedal or step,

the weight of the upper door member 12 causes the door members to reassume closed position, as hereinbefore stated. If it be desired to hold the door members in open position, this may be readily accomplished by causing dogs or pawls 28 to engage the rack teeth 10 of the levers 9, the said dogs or pawls being pivotally mounted near the upper ends of the guide bars 6. The guide bars 6 are provided with inclined openings 29 which permit of the escape of coal dust and other foreign substances from between the members of the door and serve to prevent the doors from clogging between the guide bars.

While I have herein shown and described a preferred form of my invention, I would have it understood that changes may be made in the form, proportion and construction of the several parts without departing from the spirit of my invention and within the scope of the appended claims.

I claim:—

1. In combination with a pair of vertical guide bars, upper and lower fire door members mounted for vertical movement between said guide bars, a pair of levers fulcrumed at points between their ends and each connected at its inner end to the upper door member, and link rods connecting the outer ends of said levers to the ends of the lower door member, said levers and link rods causing the said door members to move simultaneously in reverse directions, said levers having ratchet teeth, and pawls adapted to engage the ratchet teeth of the levers in different positions of the levers to hold the door members in adjusted position.

2. In combination with a pair of vertical guide bars, upper and lower fire door members mounted for vertical movement between said guide bars, a pair of levers fulcrumed at points between their ends and each connected at its inner end to the upper door member, and link rods connecting the outer ends of said levers to the ends of the lower door member, said levers and link rods causing the said door members to move simultaneously in reverse directions, said upper door member being heavier than the lower door member and the distance between the fulcrum of each of said levers and the point of connection of said lever with the upper door member being greater than the distance between said fulcrum and the point of connection between said lever and its coöperating link rod.

In testimony whereof I affix my signature in presence of two witnesses.

REILLY W. ZELLER.

Witnesses:
MEYER PARET,
EDWARD J. LORAH.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."