J. R. BAZZILL.

LOCOMOTIVE FIRE DOOR.

APPLICATION FILED OCT. 23, 1917.

1,278,293.

Patented Sept. 10, 1918.

3 SHEETS—SHEET 1.

Fig. 1.

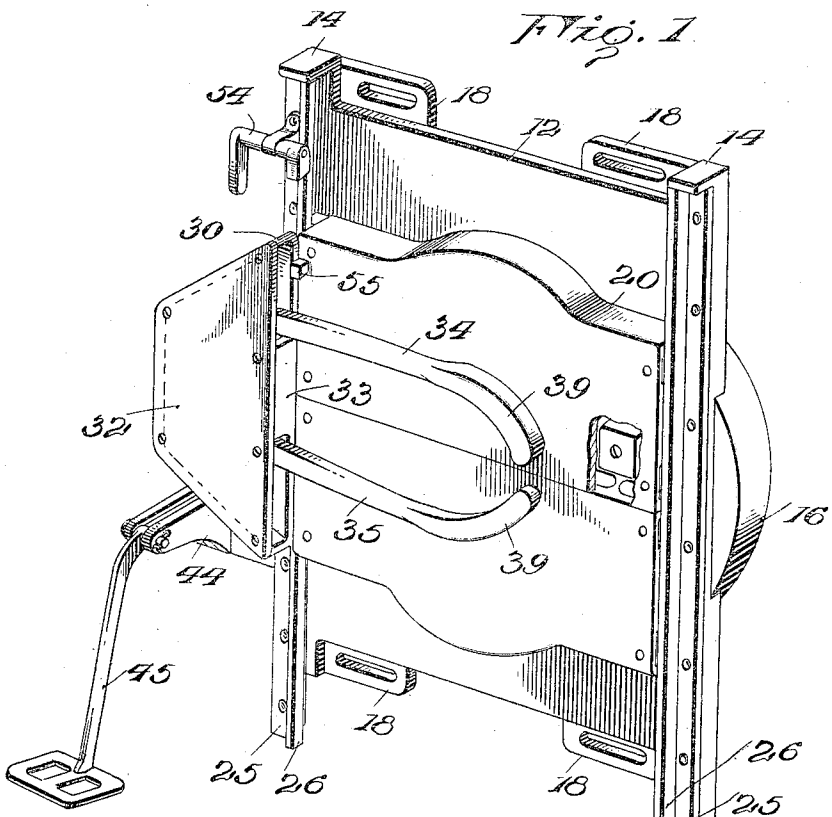
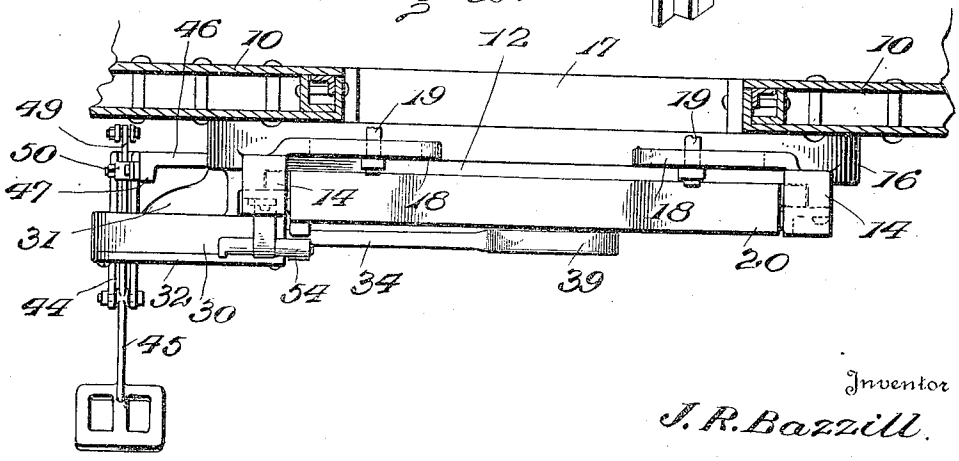


Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 4.

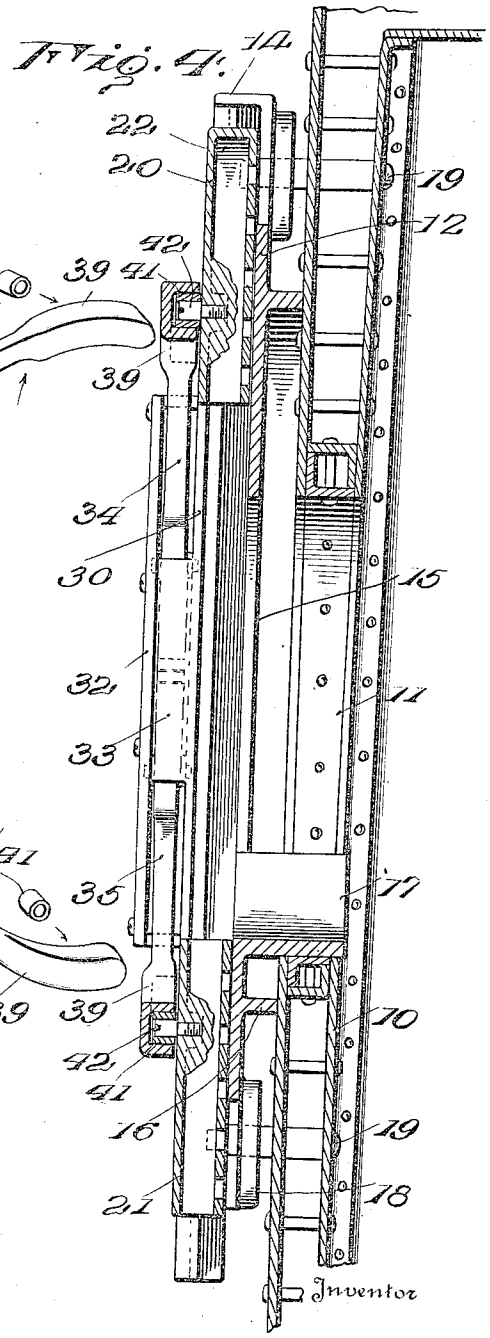
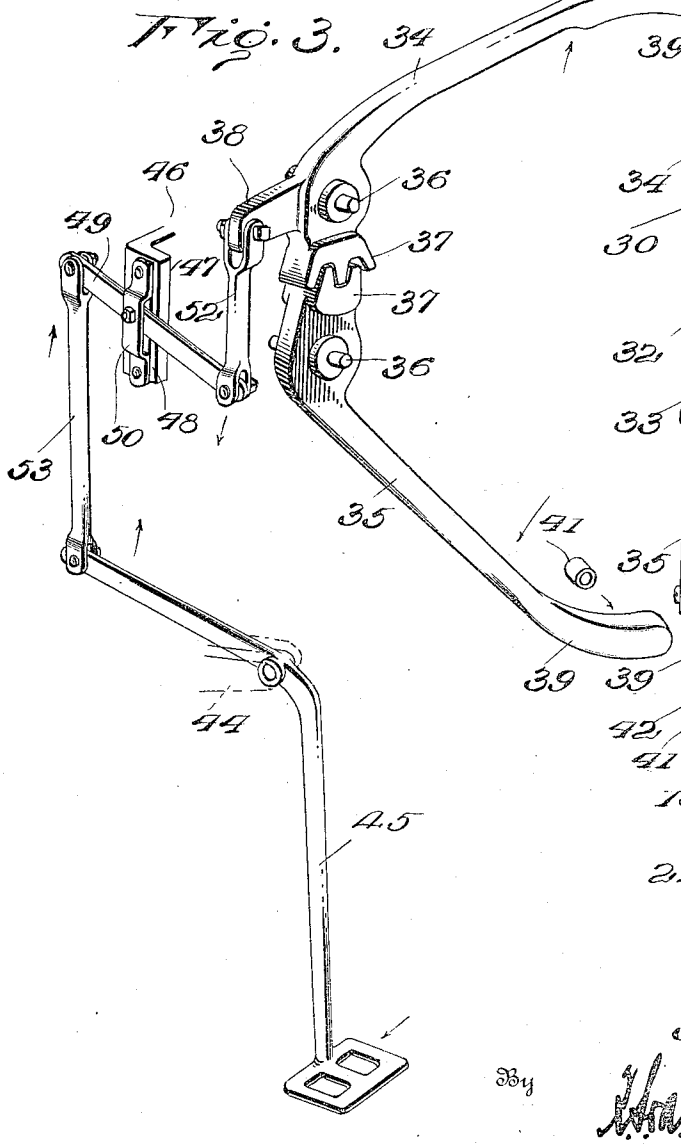


Fig. 3.



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3 SHEETS—SHEET 3.

Fig. 5.

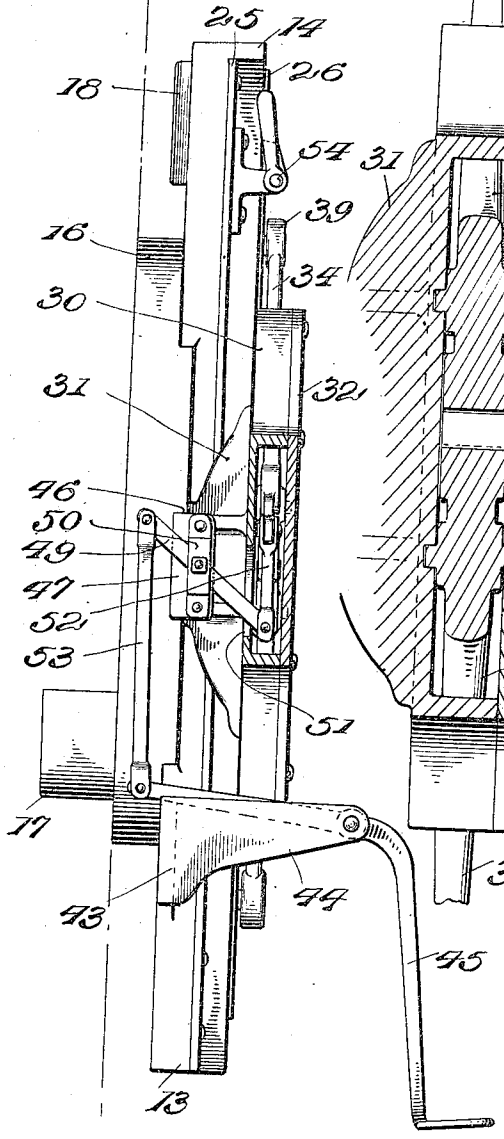
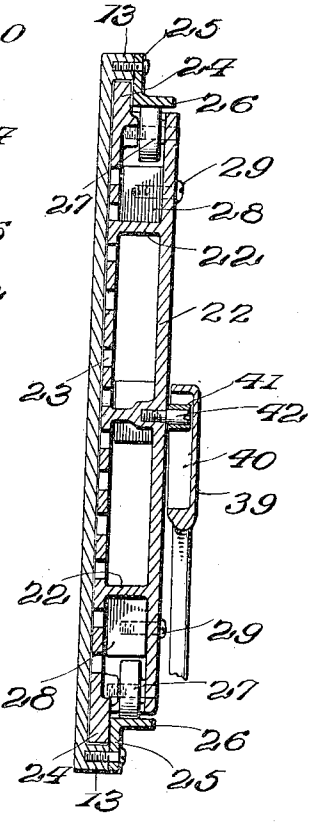


Fig. 6.

Fig. 7.



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UNITED STATES PATENT OFFICE.

JAMES R. BAZZILL, OF COLUMBIA, SOUTH CAROLINA.

LOCOMOTIVE FIRE-DOOR.

1,278,293. Specification of Letters Patent. Patented Sept. 10, 1918.

Application filed October 23, 1917. Serial No. 198,131.

To all whom it may concern:

Be it known that I, JAMES R. BAZZILL, a citizen of the United States, residing at Columbia, in the county of Richland and State of South Carolina, have invented certain new and useful Improvements in Locomotive Fire-Doors, of which the following is a specification.

This invention relates to an improved locomotive fire door and has as its primary object to provide a construction wherein the door may be manually opened and wherein the door will, by gravity, automatically close.

The invention has as a further object to provide an arrangement employing oppositely movable sliding door sections normally held closed by the weight of the uppermost section and wherein a foot lever will be provided for shifting the said sections in opposite directions for opening the door.

And the invention has as a still further object to provide a simple and at the same time thoroughly effective connecting means between the foot lever and the sections of the door whereby the door may be easily and quickly opened.

Other and incidental objects will appear as the description proceeds and in the drawings wherein I have illustrated the preferred embodiment of the invention and wherein similar reference characters designate corresponding parts throughout the several views:

Figure 1 is a perspective view of my improved door showing the device detached,

Fig. 2 is a top plan view illustrating the door in connection with the firing opening of a locomotive boiler,

Fig. 3 is a detail perspective view illustrating the mechanism employed for manually opening the door,

Fig. 4 is a vertical sectional view showing the mounting of the door frame upon the locomotive boiler,

Fig. 5 is a side elevation of the door particularly illustrating the mounting of the foot lever employed, the housing for the door operating arms of the device being shown in section to particularly illustrate the connection between the said arms and the said lever,

Fig. 6 is a sectional view taken through the housing for the door operating arms and particularly illustrating the pivotal mounting of the said arms, and

Fig. 7 is a sectional view showing the guide rollers employed for the sections of the door.

As previously intimated, the present invention is particularly designed for use as a fire door for locomotives and, in the drawings, I have conventionally illustrated a portion of a locomotive boiler at 10. Formed through the rear end of the boiler is the firing opening 11. In carrying out the invention, I employ a substantially rectangular door frame 12 provided at its side edges with vertical flanges 13 at the upper ends of which are arranged stops 14. Formed through the door frame centrally thereof is a door opening 15 arranged to register with the door opening 11 of the boiler and projecting laterally from the frame to surround the door opening 15 is an integral flange 16 seating against the adjacent water wall of the boiler to space the door frame therefrom. As particularly shown in Fig. 4 of the drawings, the flange 16 also surrounds the firing opening 11 of the boiler to provide a throat between the door frame and the boiler and projecting from the lower edge of the door opening 15 of the frame into the door opening 11 is a shoveling plate 17 for protecting the lower edge of the said boiler door opening against wear. Formed on the upper and lower edges of the door frame are attaching flanges 18 which are longitudinally slotted to receive suitable bolts 19 engaging with the boiler for connecting the door frame thereto.

Mounted to slide upon the door frame 12 between the flanges 13 thereof, are vertically movable door sections 20 and 21 respectively. As particularly shown in Figs. 4 and 7 of the drawings, these door sections are hollow and the parallel front and back walls thereof are connected by a plurality of transversely spaced vertical connecting webs 22. The upper door section is closed at its upper end, while the lower door section is open at both ends and formed through the inner side walls of the said door sections are a plurality of ventilating openings 23. Consequently, it will be seen that when the door sections are closed, as shown in Fig. 1 of the drawings, air may enter at the lower end of the lower door section between the walls of the said door sections to flow through the openings 23 into the boiler. Warping of the door sections will thus be prevented while, when the door is closed, a supply of fresh air will

be admitted through the firing opening of the boiler. Formed on the side edges of the door sections to extend from the back walls thereof, are lateral flanges 24 confronting the flanges 13 of the door frame 12 and engaging over the said door flanges and arranged to coöperate with the said door frame to provide guide ways for the flanges of the door sections are angle irons having flanges 25 and 26. The flanges 25 of the said angle irons are bolted or otherwise detachably secured to the flanges 13 of the door frame and engage over the flanges 24 of the door sections for slidably connecting the said sections with the door frame. The angle irons are, as particularly shown in Fig. 1, seated beneath the stop lugs 14 of the door frame and the flanges 26 thereof are arranged to confront the side edges of the door sections to coöperate with suitably spaced guide rollers 27 arranged at the ends of each of the said sections. The guide rollers 27 are mounted upon suitable pins therefor, between the front and back walls of the door sections and engage the flanges 26 of the angle irons to prevent longitudinal angular movement of the door sections within the guide ways therefor and consequently overcome the possibility of wedging of the door sections between the said guide ways. Furthermore, the guide rollers 27 will coöperate with the flanges 24 of the door sections to support the said door sections for easy vertical sliding movement and in this connection, it will be observed that the stops 14 are disposed to coact with the upper door section for limiting the said section in its upward movement. Removably fitted between the front and back walls of the upper door section are suitable weights 28 which may be held in position by bolts or other suitable fastening devices 29 engaging through the front wall of the said door section. The presence of these weights thus makes the upper door section somewhat heavier than the lower door section.

Supported at one side edge of the door frame is a housing 30 connected with the said frame by an integral web or bracket arm 31 extending between the back wall of the housing and the adjacent edge of the frame. The housing is open at its inner end and closing the front side of the said housing is a removable cover plate 32, the inner edge of which is supported by a block 33 rising from the bottom wall of the housing at its inner extremity. Mounted at their inner extremities within this housing are coacting lever arms 34 and 35 respectively, disposed flush with the front of the door sections 20 and 21. At their inner extremities, the arms 34 and 35 are formed with trunnions 36 which, as particularly shown in Fig. 6 of the drawings, engage within suitable sockets in the bottom wall of the housing 30 and the cover plate 32 for pivotally supporting the said arms. Between the pivot points of the arms, the inner terminals thereof are formed with interengaging toothed segments 37 and projecting from the inner extremity of the arm 34, is a lug 38. The purpose of this lug will presently appear. The outer extremities of the arms 34 and 35 extend from the housing 30 at opposite sides of the block 33 and the outer ends of the said arms are formed with curved terminals 39 in which are formed arcuate slots 40. These slots receive rollers 41 which are mounted upon pins 42 screw threaded through the front walls of the door sections into the intermediate vertical webs thereof. The arm 34 is thus connected with the upper door section 20, while the arm 35 is connected with the lower door section 21 and, as will now be seen, the upper door section will, in normally gravitating downwardly, act, through the lever arms 34 and 35, to shift the lower door section upwardly so that the said sections will be normally held in engagement with each other, as shown in Fig. 1, closing the fire door opening.

Extending from the adjacent side edge of the frame 12 at a point below the supporting web 31 for the housing 30 is a lateral bracket 43, the outer terminal of which is formed with spaced angularly disposed fork arms 44 extending forwardly with respect to the frame. Pivotally mounted between the outer extremities of these arms is a foot lever 45, the lower end of which will be disposed adjacent the deck of the locomotive. Extending laterally from the adjacent edge of the frame 12 in the rear of the housing 30 is an arm 46 the outer end of which is formed with a lateral flange 47. Bolted or otherwise secured upon this flange is a bearing plate 48 upon which is pivoted a rock bar 49 held by a keeper 50. The rock bar 49 projects, at its inner extremity, through a suitable slot 51 in the back wall of the housing 30 and is connected by a link 52 with the outer end of the lug 38 upon the lever arm 34. It will now be observed that the foot lever 45 is in the nature of a bell crank lever and pivotally connecting the inner end of this lever with the outer end of the rock bar 49 is a link 53. The foot lever is thus operatively connected with the lever arms 34 and 35 so that upon depressing the said lever, the lever arms will, as will be readily understood, be swung apart for shifting the door sections 20 and 21 in opposite directions to open the door. In this connection, it will be noted that the lever arms 34 and 35 connect the door sections for simultaneous movement under the control of the foot lever 45 and, as will be seen, I provide a very simple arrangement whereby the door sections may be easily opened by manually depressing the foot lever. At the same time, the mechanism

employed for accomplishing this result is of a very simple nature and of a character to prove thoroughly efficient in use. Upon opening of the door sections by means of the foot lever 45, the said sections will, as previously described, immediately be automatically closed by the gravitation of the upper door section 20 when the said foot lever is released. In order to hold the door sections apart to maintain the door open, a latch 54 is swingingly mounted upon the upper extremity of the door frame at one side thereof and is adapted for engagement with a stop 55 upon the upper door section 20. As shown in Fig. 5 of the drawings, this latch when engaged with the said stop will hold the door sections at the limit of their movement away from each other.

Having thus described the invention, what is claimed as new is:

1. A device of the character described including a door frame, flanges carried thereby, angle members having corresponding flanges thereof coöperating with the flanges of the frame to provide guide ways, complemental door sections having flanges at their vertical edges slidable in said guide ways, guide rollers carried by the vertical edges of said door sections to engage with opposite corresponding flanges of the said angle members in front of the flanges of the door sections for directing the said door sections in their sliding movement, means connecting the said door sections for simultaneous movement in opposite directions, one of the door sections gravitating to shift the said sections toward each other and normally hold the door closed, and foot operated means connected with said first-mentioned means for shifting the door sections away from each other to open the door.

2. A device of the character described including a door frame, coacting door sections slidably mounted thereon, a housing carried by the frame, a cover plate for said housing, a wall of the housing and said plate being provided with sockets, coacting lever arms having trunnions engaging in said sockets and pivotally supporting the said arms upon the housing, the said lever arms connecting the door sections for simultaneous movement in opposite directions and one of said sections gravitating for shifting the sections toward each other and normally holding the door closed, and foot operating means operatively connected with one of said lever arms for shifting the door sections away from each other to open the door.

3. A device of the character described including a door frame, coacting door sections slidably mounted thereon, a housing carried by the frame and having a slot formed in a wall thereof, an arm projecting from the frame in the rear of said housing, coacting lever arms pivoted within the housing and connecting the door sections for simultaneous movement in opposite directions, one of the sections gravitating to shift the sections toward each other and normally hold the door closed, a rock bar pivoted upon the said arm and projecting through the said slot into the housing, means connecting the inner extremity of said rock bar with one of said lever arms, and foot operated means operatively connected with the outer extremity of said rock bar for shifting the door sections away from each other to open the door.

4. A device of the character described including a door frame, a housing carried thereby, an arm projecting from the frame in the rear of the housing, a bracket projecting from the frame below said arm, complemental door sections mounted to slide upon the frame, coacting lever arms pivoted within said housing and connecting the door sections for simultaneous movement in opposite directions, one of the door sections gravitating to shift the said sections toward each other and normally hold the door closed, a lug projecting from the inner extremity of one of said lever arms, a rock bar pivoted upon the said arm of the frame and projecting into the housing, a link connecting the inner extremity of said rock bar with the said lug, a foot lever pivoted upon said bracket, and a link connecting the inner extremity of the foot lever with the outer extremity of the said rock bar, the foot lever being operable to shift the door sections away from each other to open the door.

In testimony whereof I affix my signature.

JAMES R. BAZZILL. [L. S.]

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