March 31, 1931. M. F. FITZPATRICK ET AL 1,798,663

VENTILATOR DOOR

Filed Oct. 23, 1929 2 Sheets-Sheet 1

FIG. 1.

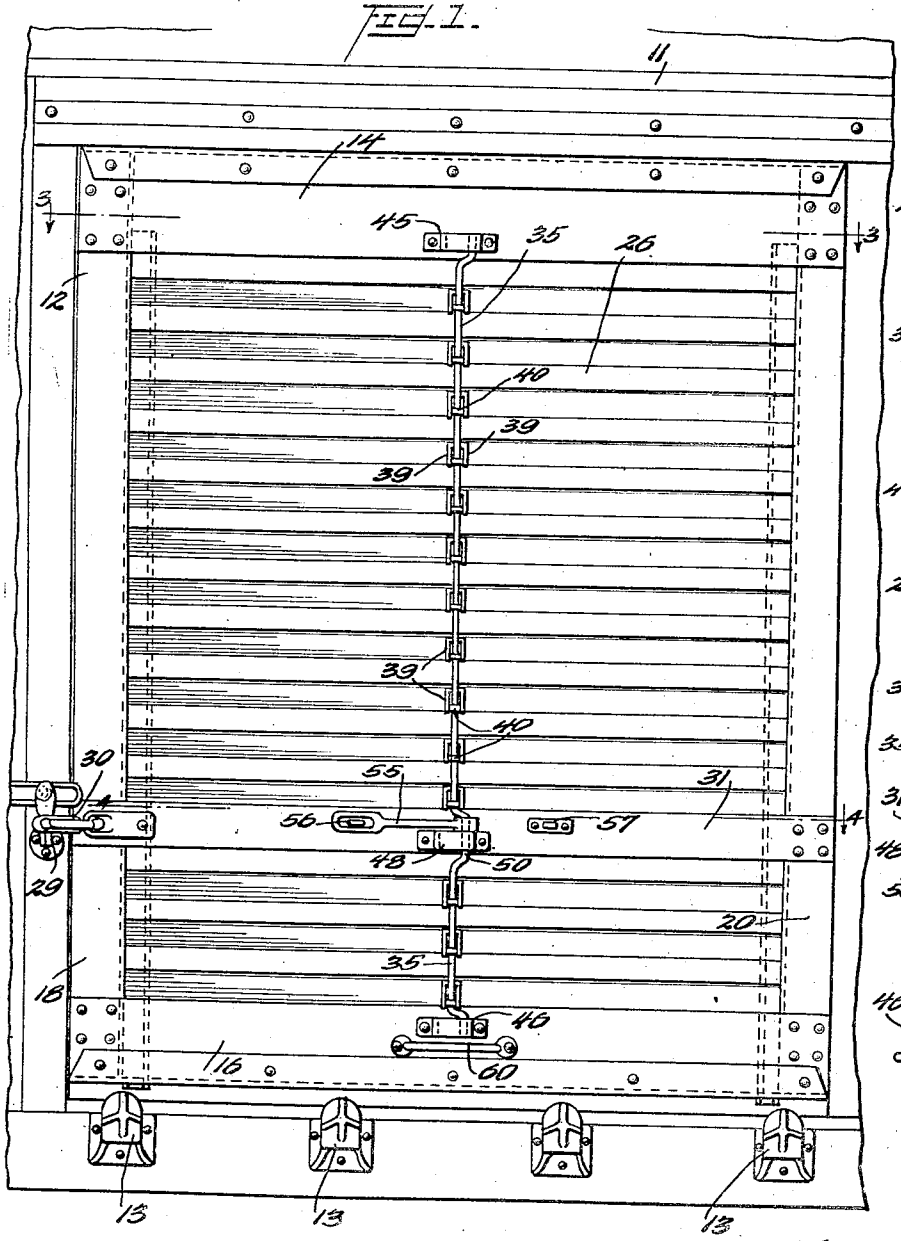


FIG. 2.

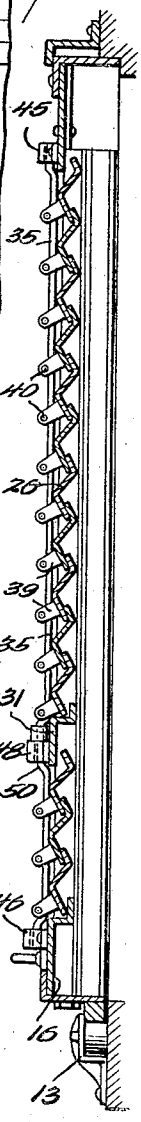
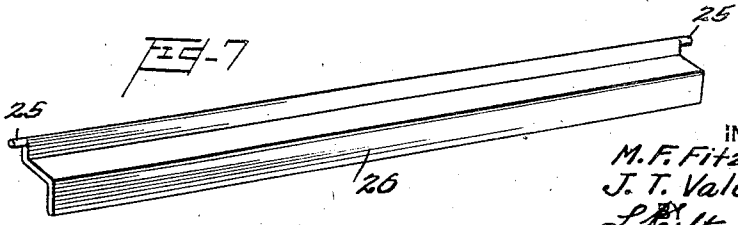


FIG. 7.



INVENTORS
M. F. Fitzpatrick
J. T. Valentin
L. Parker Mostiller
Howard F. Breese
ATTORNEYS

March 31, 1931. M. F. FITZPATRICK ET AL 1,798,663

VENTILATOR DOOR

Filed Oct. 23, 1929 2 Sheets-Sheet 2

FIG. 3.

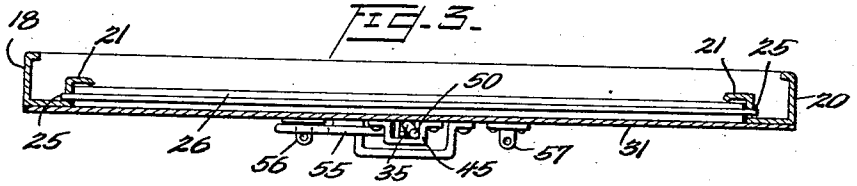


FIG. 4.

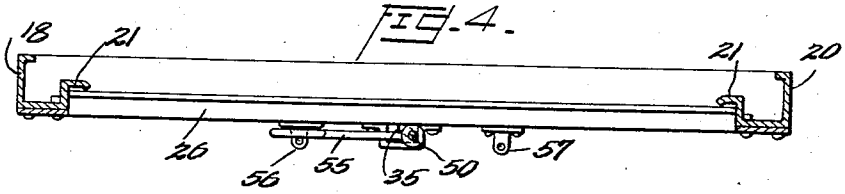


FIG. 8.

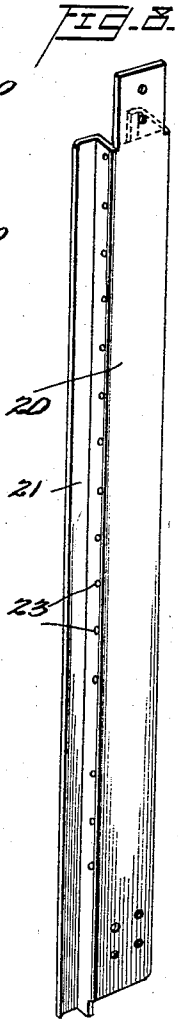


FIG. 5.

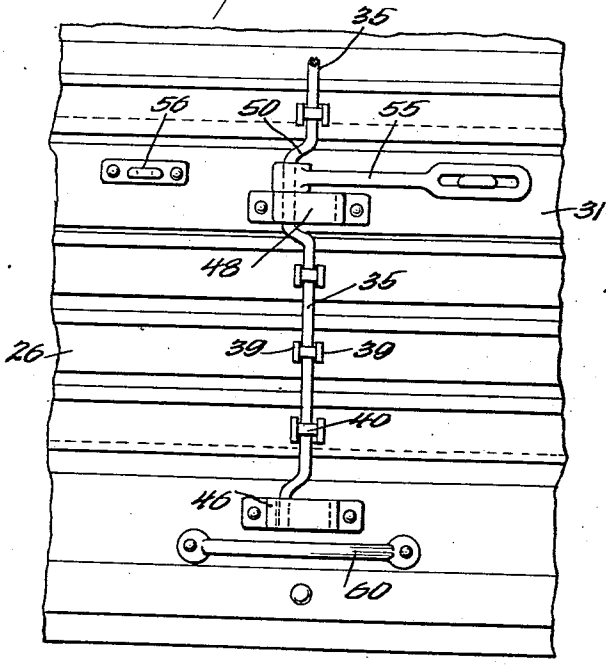
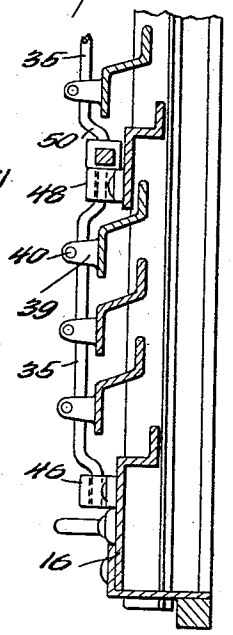


FIG. 6.



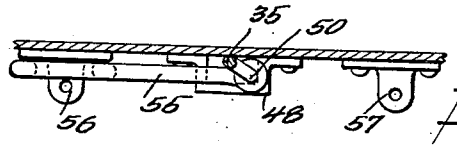
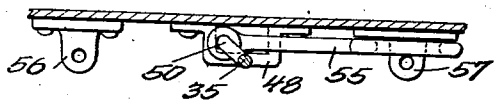


FIG. 9.

FIG. 10.



INVENTORS
M. F. Fitzpatrick
J. T. Valentin
BY
L. Harlton Mostiller
Howard F. Breese
ATTORNEYS

Patented Mar. 31, 1931

1,798,663

UNITED STATES PATENT OFFICE

MARION FRANK FITZPATRICK AND JOHN THOMAS VALENTIN, OF JACKSONVILLE, FLORIDA

VENTILATOR DOOR

Application filed October 23, 1929. Serial No. 401,845.

The present invention relates to ventilated doors and particularly to ventilated doors for freight cars.

The principal object of the invention is to provide a freight car door composed of movable elements which can be shifted readily and simply to ventilating position, in which position they can be locked; and which elements, when desired, can also be shifted to closed position by a simple movement, and which, in the closed position, will be water-tight, and when closed will prevent any water from entering through the door even though a heavy and powerful stream of water be directed by a hose against the door.

Other objects and advantages of the invention will appear from the following description, taken in connection with the accompanying drawings, which illustrate a preferred embodiment of the invention, but which are not to be taken as a definition of the limits thereof, reference being had to the appended claims for that purpose.

In the drawings:

Fig. 1 is a front elevation of a door embodying the present invention, showing fragmentarily therearound adjacent portions of a freight car or other enclosure in connection with which the door is used;

Fig. 2 is a vertical sectional view of the door taken on the line 2—2 of Fig. 1;

Fig. 3 is a horizontal sectional view taken on the line 3—3 of Fig. 1;

Fig. 4 is a horizontal sectional view taken on the line 4—4 of Fig. 1;

Fig. 5 is a fragmentary view on a somewhat enlarged scale of the structure shown in the lower central portion of Fig. 1;

Fig. 6 is a vertical sectional view through Fig. 5 taken on the line 6—6;

Fig. 7 is a perspective view of one of the movable shutter elements of the door;

Fig. 8 is a perspective view of one of the vertically extending side frame elements in which the shutters are movably mounted;

Fig. 9 is a horizontal sectional view through the structure of Fig. 5, taken on the line 9—9 of said figure, but illustrating the locking elements in the closed shutter position; and

Fig. 10 is a similar view of the same structure, illustrating the locking elements in the position in which they hold the movable shutters open.

Referring in detail to the drawings, a freight car body 11 is provided with a door opening closed by a door 12 slidable on rollers 13 located at the bottom of the opening.

The door comprising the present invention consists of an upper frame piece 14, a lower frame piece 16 and vertically extending frame pieces 18 and 20. The vertical frame pieces are formed as shown in Fig. 8 and are illustrated in section in Figs. 3 and 4. The flange 21 extends in a vertical direction in rear of the movable shutter elements hereinafter described in detail and with which they coact to form a water-tight joint.

The side pieces 18 and 20 are each provided with a plurality of aligned circular openings 23, in which are revolubly mounted the pins 25 of the shutter elements 26, which, in ventilating position, are located with respect to each other as shown in Fig. 6, and which, in closed position, are located with respect to each other as shown in Fig. 2.

It will be observed that each movable pivoted shutter is, in cross-section, somewhat Z-shaped and that when the shutters are in closed position, their ends lie in overlapping contact relation with each other, as shown in Fig. 2, to form an absolutely closed door.

The door, as a whole, slides in a vertical plane across the outer side of the freight car upon the rollers 13, already described, and may be locked in shut position by a padlock 29 cooperating with a hasp 30 secured to a rigid cross piece 31 fixed to the vertical frame pieces 18 and 20, preferably near the lower ends thereof in order to be within convenient reach of a person standing on the ground adjacent the freight car.

The present invention is concerned not only with the shutter elements themselves, but also with the means now to be described for locking these elements either in ventilating or closed position with respect to the door frame.

The shutter actuating and locking means includes a rod 35, which may be located substantially centrally of the shutters 26 and which is confined between aligned pairs of

lugs 39 formed on or secured to the outer lower portions of the shutters. The lugs 39 of each shutter section are connected at their outer ends by pins 40 so that the locking and actuating rod 35 is confined between the aligned pairs of lugs.

In the present embodiment of the invention, three bearing guides are provided for portions of the rod 35 and, as shown in Fig. 1, an upper bearing guide 45 is secured to the upper rail 14 of the door, a lower bearing guide 46 is secured to the lower rail 16 of the door, and an intermediate bearing guide 48 in alignment with the other guides is secured to the rigid cross piece 31.

Each of these guides is sufficiently deep to permit rotation of the rod 35 without allowing any substantial movement of said rod in a direction at right angles to the door. Each of the guides is sufficient in length to permit a substantial travel of that portion of the rod located in the guide in the direction of the plane of the door, as indicated on each guide by the dotted lines.

Each end of the rod 35 is offset as shown in Fig. 1, the offset portions being located in the guides 45 and 46, and an intermediate offset portion 50 is located within the intermediate guide 48.

At this point it may be mentioned that at all times and in all positions of the shutters 26, the rod 35 lies adjacent the pins 40 and adjacent the shutter bodies and never moves any substantial distance away from or towards the shutters 26, but is sufficiently loosely mounted with respect to said shutters to permit of its free rotation between the lugs 39. If the rod 35 moves away from the door in a vertical direction, it carries the pins 40 and consequently the shutter elements with it, thereby bringing them to the position of Fig. 6. If said rod 35 moves vertically inward with respect to the door, it abuts against the shutter sections and forces them into the closed position of Fig. 2.

The portions of said rod in the aligned guides 45, 46 and 48 are not only rotatable within said guides, but are longitudinally movable therein, that is, movable in the direction of the length of the shutter sections 26.

To the central offset portion 50 of the rod 35 is rigidly secured an actuating and locking lever 55 provided with an opening in its outer end which cooperates with either of two spaced-apart locking elements 56 and 57.

When the actuating handle 55 is moved as far as possible to the right as shown in Figs. 5 and 10, the intermediate offset portion 50 of the rod 55 is moved to the left in intermediate guide 48, as shown in said figures, and the main or straight portion 35 of the rod is moved outwardly away from the freight car as shown in Figs. 6 and 10, with the result that during this movement it bears against the pins 40 and thereby forces the shutter sections 26 into the open or separated position illustrated in Fig. 6.

When the actuating and locking lever 55 is moved to the left as shown in Figs. 1, 3, 4 and 9, the main portion 35 of the rod is rotated from the position of Fig. 10 to the position of Fig. 9, the offset ends and the intermediate offset portion 50 of the rod rotating also, but being prevented from moving either inwardly or outwardly by the aligned guides 45, 46 and 48, but said offset portions moving to the right in said guides as illustrated in Figs. 1 and 9. This rotation causes the main straight portion 35 of the rod to move inwardly against the shutter sections, forcing them inwardly with respect to the door and into the closed shutter position of Fig. 2.

The door, as a whole, is guided in its sliding movement along the outer face of the freight car or other structure by the usual upper and lower flanged guideways and may be moved with respect to said guideways by a lower fixed handle 60.

It will be observed that in opened position the shutters permit of ventilation, while preventing access through the door to the interior of the freight car or other structure, and that in the closed position the rod 35 forces the shutter sections not only against each other in water-tight relation, but also against the flanges 21 of the vertical members 20 of the door in water-tight relation thereto.

It will also be observed that, when actuated, the offset portions of the actuating rod are rotatable in their fixed guides and also movable therein horizontally in the direction of the width of the door, whereas, with respect to the shutter sections, the main straight portion 35 of the actuating rod rotates between the lugs 39 and is movable at right angles thereto away from the door to open the shutter sections and inwardly towards the door to close the shutter sections.

Various changes may be made in the structure of the specific embodiment of the invention herein described without departing from the invention itself, as defined by the appended claims.

What is claimed is:

1. A ventilating door comprising a plurality of overlapping pivoted shutter elements, a frame supporting said elements and having in rear of said elements a pair of flanges extending toward each other against which said shutter elements may abut, aligned guide bearings in said frame, and a shutter actuating rod having offset portions in said bearings and straight portions associated with said shutters, by which said shutters may be locked in open ventilating position and also in closed water-tight position against said flanges.

2. A ventilating door comprising a plu-

rality of overlapping pivoted shutter elements, a frame supporting said elements and having in rear of said elements a pair of flanges extending toward each other against which said shutter elements may abut, aligned guide bearings in said frame, and a shutter actuating rod having offset portions in said bearings, rotatable therein and movable bodily therein in a direction at right angles to its own axis and in the direction of the length of said shutter elements, said rod having a straight portion rotatably associated with said shutter elements and movable bodily in a direction at right angles to the plane of said frame to move said shutter elements to, and lock them in, open ventilating position and closed water-tight position against said flanges.

3. A ventilating door comprising a frame having flanges on opposite sides extending toward each other, a plurality of shutter elements pivotally mounted in said frame, said shutter elements having aligned guides thereon, said frame having aligned guides, an actuating rod having offset portions in said frame aligned guides and having straight portions in said shutter aligned guides, a handle for said rod by which it may be rotated, the straight portions of said rod, when said rod is rotated, moving at right angles to said frame and moving said shutter elements, and the offset portions of said rod, when said rod is rotated, moving in a plane parallel to said frame and in the direction of the length of said shutter elements.

In testimony whereof we affix our signatures.

MARION FRANK FITZPATRICK.
JOHN THOMAS VALENTIN.