W. P. MURPHY.

SHEET METAL GRAIN DOOR.

APPLICATION FILED FEB. 4, 1915.

1,266,301.

Patented May 14, 1918.

2 SHEETS—SHEET 1.

Fig. 2.

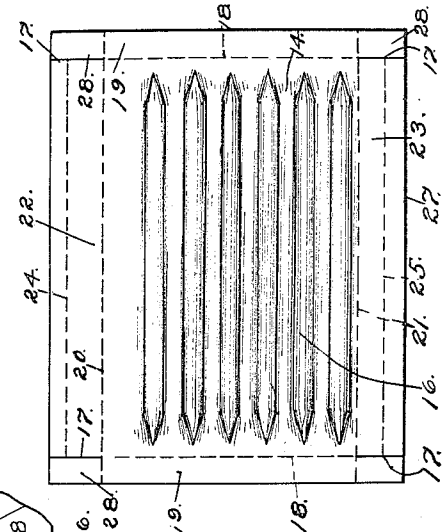


Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 3.

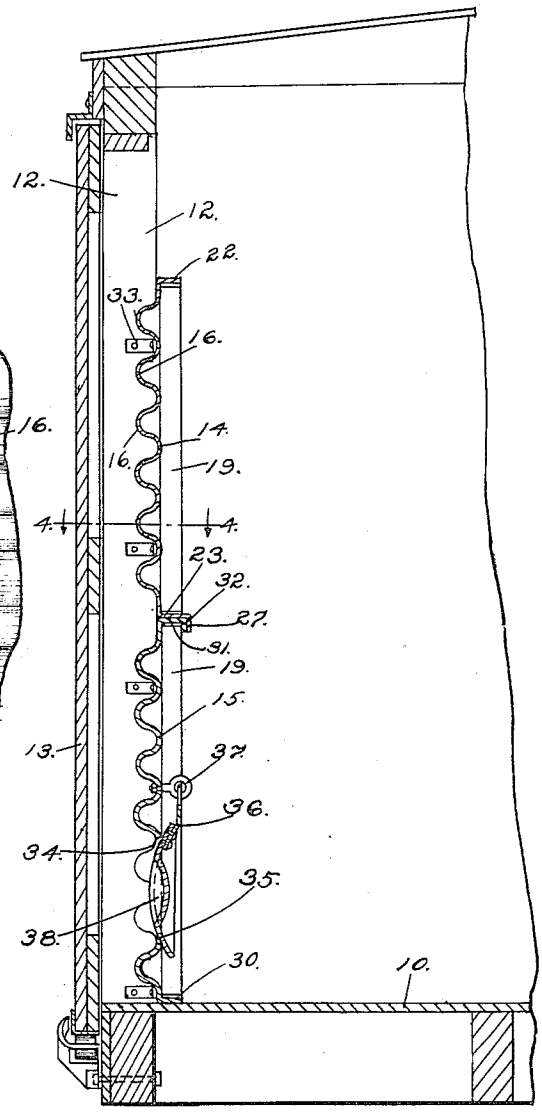


Fig. 5.

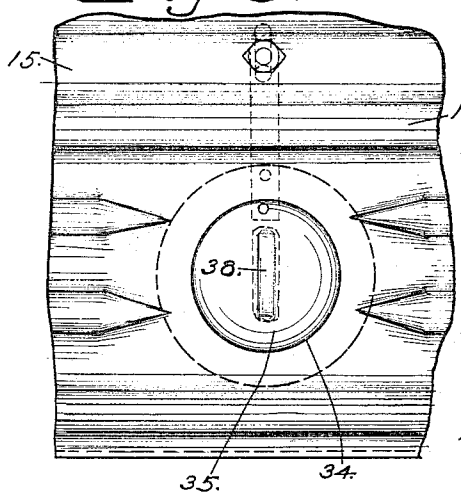
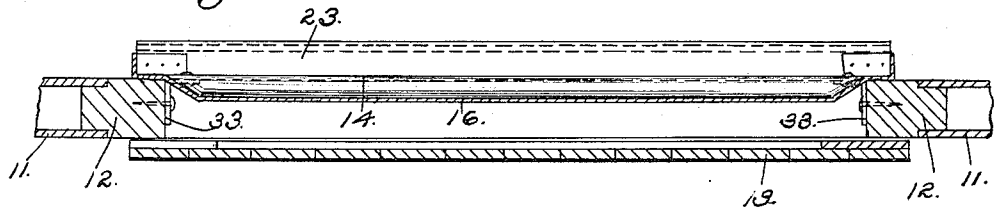


Fig. 4.



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UNITED STATES PATENT OFFICE.

WALTER P. MURPHY, OF CHICAGO, ILLINOIS.

SHEET-METAL GRAIN-DOOR.

1,266,301. Specification of Letters Patent. Patented May 14, 1918.

Application filed February 4, 1915. Serial No. 6,144.

To all whom it may concern:

Be it known that I, WALTER P. MURPHY, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sheet-Metal Grain-Doors, of which the following is a specification.

My invention relates to grain doors for railway box cars, and the principal object of the invention is to provide a grain door which will be strong, light, durable and inexpensive to manufacture, and which may be entirely removed from the car when not in use. In respect to the latter feature my invention contemplates furnishing a railroad with a number of doors, constructed in accordance with the invention, which may be kept in some suitable place of storage and used only with box cars actually employed for carrying grain. As is well known, box cars are used indiscriminately for the transportation of grain and other merchandise. A serious objection to the ordinary grain door is that it is permanently attached to the car so that for considerable periods it is likely to be not only useless but a positive encumbrance. Moreover, the expense of equipping all the box cars of a railroad with grain doors is prohibitive. Another objection is that the ordinary grain doors are more or less complicated in their structure so that they are likely to be injured or to get out of order. The door of my invention consists of one or more sheet steel panels, which, when not in use, may be removed from the car and stored in some suitable place. The panels are preferably strengthened and stiffened by corrugations pressed therein and are of such form and construction that they are not likely to be injured even with the rough usage to which everything connected with a railway car is subjected. At the same time, they are relatively light in weight and take up a comparatively small amount of room when stored. The invention consists further of certain arrangements between the panels (when the door, as is preferred, consists of more than one panel) whereby a grain-tight joint is provided.

A further object of the invention is to construct one of the panels, preferably the lower panel, with a valve controlled discharge outlet which may be operated from the outside of the car to relieve the pressure on the door when the car is to be unloaded.

The invention has for further objects such other new and improved constructions and arrangements relating to grain doors for railway cars as will be hereinafter described and claimed.

The invention is illustrated, in a preferred embodiment, in the accompanying drawings wherein—

Figure 1 is a fragmentary view, in perspective, of the interior of a railway box car showing the door opening as covered by a grain door constructed in accordance with the invention.

Fig. 2 is a diagram showing the manner in which the panels of which the grain door is composed are formed; the view showing a corrugated sheet of metal suitable for making the upper panel of the door, the dotted lines indicating the places at which the metal is bent in order to provide flanges.

Fig. 3 is a vertical sectional view through the grain door and adjacent portions of the car.

Fig. 4 is a sectional plan on line 4—4 of Fig. 3, and

Fig. 5 is a fragmentary view from the outside of a portion of the lower panel showing the valve controlled discharge opening formed therein.

Like characters of reference designate like parts in the several figures of the drawings.

In the drawings, 10 designates the flooring of the car, 11 the side sheathing, 12 the door posts and 13 the sliding side door, which may be of any desired type. The grain door, in the preferred embodiment shown, consists of an upper panel 14 and a lower panel 15 both formed of sheet steel and provided with horizontally disposed stiffening corrugations 16 which terminate within the edges of the panel in each case. The sheet of metal from which the upper section 14 is made is slit at the corners, as indicated at 17, and bent on lines 18 to form side flanges 19, and on lines 20, 21 so as to form an upper flange 22 and a lower flange 23. The flanges 22, 23 are further bent on lines 24, 25 to provide lips 26, 27. The corner portions 28 are bent over upon the adjacent upper or lower flanges, as the case may be, and are preferably united thereto

by spot welding or by other suitable means. The lower panel is formed in a similar manner with side flanges 29, a bottom flange 30, and a top flange 31 provided preferably with a downturned lip 32. Both panels bear against the corner posts 12, the flanges 23, 27 of the upper panel fitting over the flanges 31, 32 of the lower panel. This provides a grain-tight joint at the juncture of the panels. Each panel, it will be seen, is provided with an angularly disposed flange which extends around the edges of the same. It is, of course, unimportant, except from a manufacturing point of view, as to whether the flanges are bent and united as indicated in Fig. 2, or are integral with each other and are pressed out. When the grain is run into the car it holds the panels in place across the doorway. In order to hold them in place while the car is being loaded the panels are preferably provided with angle pieces 33 which may be nailed or otherwise fastened to the inner sides of the door posts. Any other suitable means might be employed for retaining the panels in position.

The lower panel has cut therein a preferably circular discharge opening 34 which is covered on the inside by a preferably dish-shaped sheet metal valve 35 secured to a link 36 which is loosely connected with an eye-bolt 37. The valve is formed with a depression 38 which provides a handhold whereby, when the car is to be unloaded, the valve may be moved from its seat, by manipulation from the outside of the car, enough to permit the grain to outflow and relieve the pressure against the panels. When the pressure has been somewhat relieved by discharge of part of the load the panels may be removed. The retaining devices 33 are intended particularly to hold the panels in place during the loading of the car. When the car is full of grain up to the normal grain level, the grain, by filling into the corrugations and into the spaces between the flanges of the panels, will effectually anchor the panels as against any tendency to be displaced by vibration or other like causes.

When the car is to be used for carrying other kinds of merchandise the panels may be removed bodily and kept in a suitable place of storage where, on account of their shape, they will take up but little room.

I claim:

1. The combination with the door frame of a railway car, of a temporary grain door structure comprising a plurality of sheet metal panels disconnected from each other and bodily removable from the car and arranged one above the other and of a width to bear against the door frame on opposite sides thereof, and depending flanges providing a grain-tight joint between said panels, said panels being formed with horizontal corrugations terminating within the edges of said panels and extending outwardly into the door opening.

2. A grain door for a railway-car comprising separable upper and lower sheet metal panels, means providing a grain-tight joint between said panels, the lower panel being formed with a discharge opening, a dish-shaped sheet metal valve for said opening, and means for loosely supporting said valve on the inside of the panel.

3. A grain door for a railway car comprising upper and lower sheet metal panels separately removable from the car, means providing a grain-tight joint between said panels, the lower panel being formed with a discharge opening, a dish-shaped sheet metal valve for said opening, and means for loosely supporting said valve on the inside of the panel so as to permit it to seat itself in the opening while standing at an angle to the said panel.

4. The combination with the door frame of a railway car, of a temporary grain door structure comprising separable upper and lower corrugated sheet metal panels bodily removable from the car, one adapted to rest upon the other and both of a width to bear upon the door frame on opposite sides thereof, and means providing a grain-tight joint between said panels, said corrugations of said panels being formed so as to project into the door opening.

5. The combination with the door frame of a railway car, of a temporary grain door structure for the same comprising two sheet metal panels wider than said door opening and formed with horizontal corrugations which project into the door opening and terminate within the edges of the panels and with inturned flanges on their edges providing, in each case, a unitary reinforcing structure around the edge of the panel, the portions of the flanges along the lower edge of the upper panel and the upper edge of the lower panel being formed with down-turned lips.

6. The combination with the door frame of a railway car, of a grain door for the same comprising two sheet metal panels wider than said door opening and formed with horizontal corrugations which project into the door opening and terminate within the edges of the panels, and with inturned flanges on their edges providing, in each case, a unitary reinforcing structure around the edge of the panel, the portions of the flanges along the lower edge of the upper panel and the upper edge of the lower panel being formed with down-turned lips, one of said panels being formed with a discharge opening, a dish-shaped sheet metal valve, and means for loosely mounting the same on the inside of the panel.

7. As an article of manufacture, a remov-

able grain door for railway cars, comprising a plurality of corrugated sheet metal panels, the corrugations terminating within the sheet to provide a flat margin to bear against the door frame, and an integral flange around the edge of said door extending in a direction opposite to the corrugations, the corrugations in the panel extending outwardly into the door opening for preventing lateral movement of the door.

8. A grain car door having a discharge opening therein and a valve for said opening having a spherical surface covering said opening, means for supporting said valve on the inner side of the door so that it is free to adjust itself.

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Witnesses:
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