Mar. 27, 1923. 1,449,434.

W. P. MURPHY.

DUMP CAR DOOR.

FILED JULY 30, 1920. 2 SHEETS—SHEET 1.

Fig. 1.

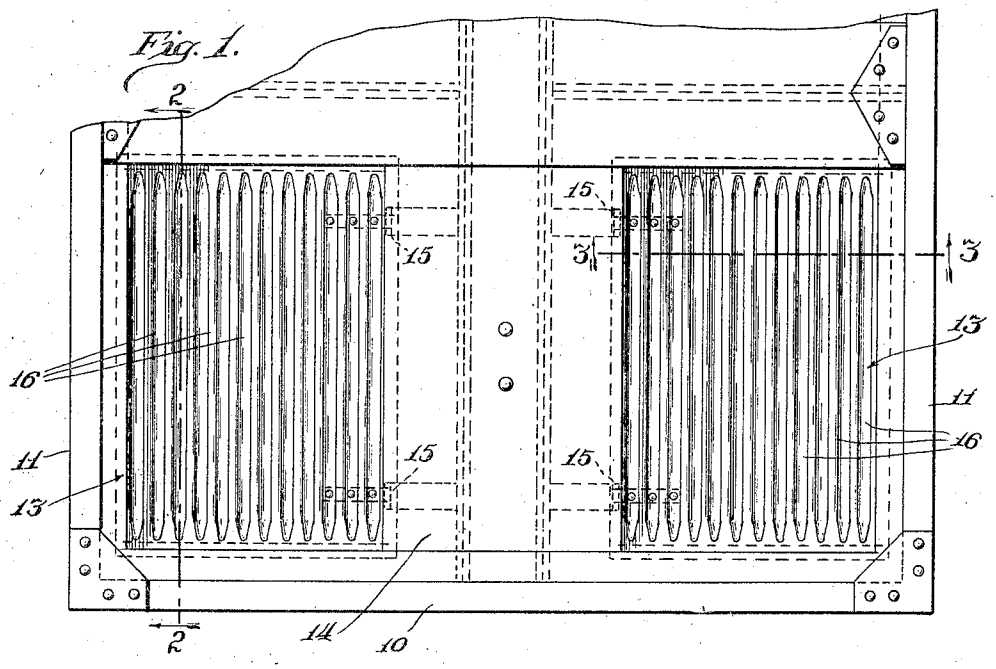


Fig. 2.

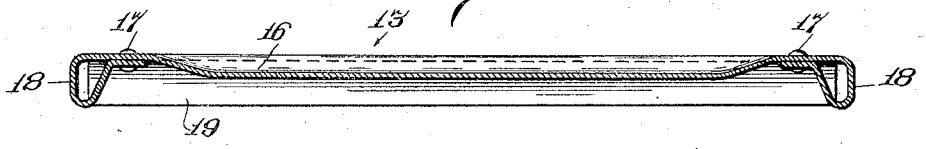


Fig. 3.



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2 SHEETS—SHEET 2.

Fig. 4

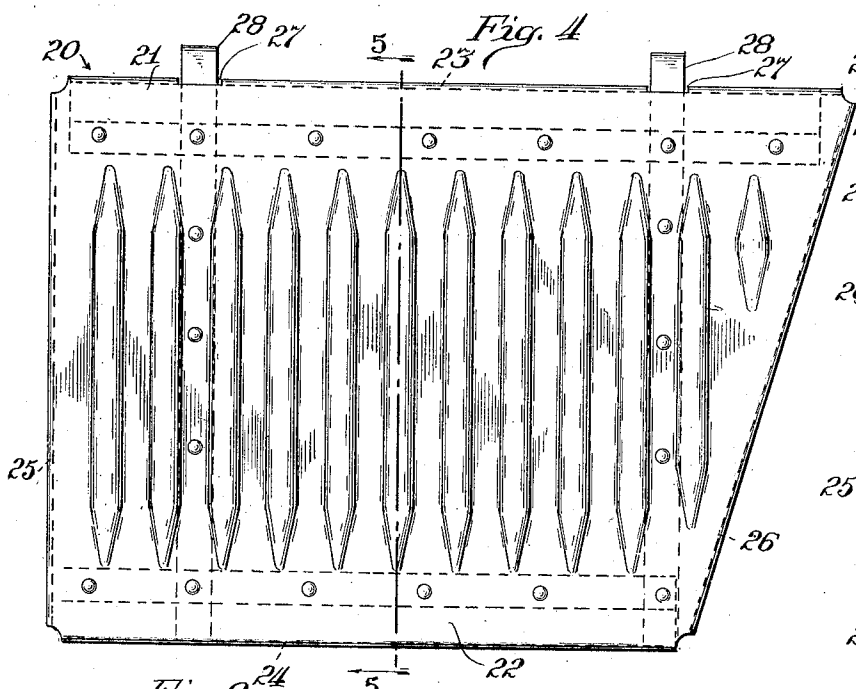


Fig. 5.

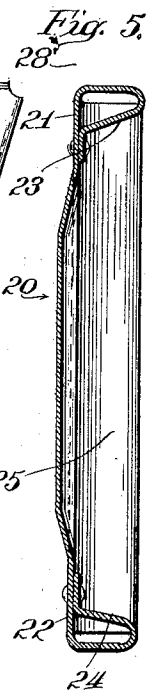


Fig. 6.

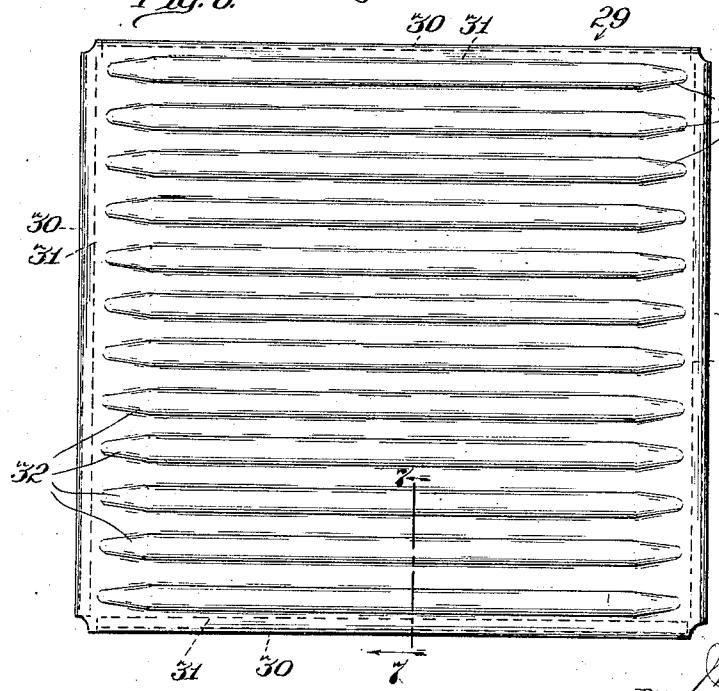
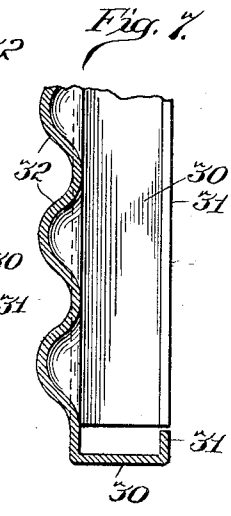


Fig. 7.



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Patented Mar. 27, 1923. 1,449,434

UNITED STATES PATENT OFFICE.

WALTER P. MURPHY, OF NEW YORK, N. Y.

DUMP-CAR DOOR.

Application filed July 30, 1920. Serial No. 400,269.

To all whom it may concern:

Be it known that I, WALTER P. MURPHY, a citizen of the United States, residing at New York city, in the county of New York and State of New York, have invented certain new and useful Improvements in Dump-Car Doors, of which the following is a specification.

My invention relates to hinged doors or drop bottom panels for railway cars of the dumping type, such as hopper cars, hopper gondola cars and general service cars. These doors, it will be understood, are subject to very severe shocks and pressures when the cars are loaded, for example, and also when the loaded cars are in transit since the doors must carry, to a considerable extent, the weight of the cargo. It is, therefore, important that they be constructed so as to be sufficiently strong and rigid to resist breakage or deformation under the stresses exerted against them when the cars are in service.

The principal object of this invention is to provide a sheet metal door for a railway car of the dumping type which, without being unduly heavy and bulky, will have the characteristics of strength, stiffness and durability.

A further object is to provide a door of this sort which may be manufactured at relatively low cost.

The invention is illustrated, in certain preferred embodiments, in the accompanying drawings wherein—

Fig. 1 is a fragmentary plan view of a general service car provided with doors or drop bottom elements constructed in accordance with my invention.

Figs. 2 and 3 are sectional views on lines 2—2 and 3—3 of Fig. 1, the framing of the car, however, being omitted.

Fig. 4 is a plan view of a form of door intended particularly for hopper cars.

Fig. 5 is a sectional view on line 5—5 of Fig 4.

Fig. 6 is a plan view illustrating another modification, and

Fig. 7 is a fragmentary sectional view on line 7—7 of Fig. 6.

In Fig. 1 I have shown a general service gondola car of common construction provided with doors or drop bottom panels formed in accordance with my invention. In this figure 10 designates the end wall of the car and 11, 11 the side walls thereof. The doors or drop bottom elements 13 are arranged in pairs along the car being hinged to the top plate 14 of the center sill by hinges 15. Fig. 1 shows the end pair of doors. The others may be of like construction.

Each door consists preferably of a single sheet of metal which has formed therein, preferably by pressing, a plurality of corrugations or ribs 16 which are preferably parallel and merge one into the other, giving the sinuous configuration shown in Fig. 3, and terminate within the edges of the panel. Certain of the edges of the panel, preferably the edges at the ends of the corrugations, are bent around and preferably secured to the body of the panel, for example, by rivets 17, so as to provide hollow reinforcements 18. These reinforcements add considerably to the strength and rigidity of the door, reinforcing it in the direction at right angles to the reinforcement provided by ribs 16. That is, the hollow reinforcements 18 take the stresses transmitted by the ribs 16 which under load function as beams. The other two edges of the door may be correspondingly formed, but ordinarily it will be sufficient to merely bend over the sheet at these places to provide downturned flanges 19.

In Figs. 4 and 5 the same principle of construction is applied to a door intended for a hopper car. The door 20 is formed of a sheet of metal having pressed therein rigidifying ribs or corrugations extending from the hinged edge 21 of the door to the opposite edge 22. These edges of the door are provided with hollow reinforcements 23, 24, the other two edges being bent over to form flanges 25, 26. The reinforcing ribs or corrugations are shown as extending from the hollow reinforcement 23 at one side of the door to the opposite reinforcement 24. The reinforcement 23 is cut away as indicated at 27 for the hinge members 28.

In Figs. 6 and 7 the marginal reinforcement of the door is accomplished in a somewhat different way. All four edges of the door 29 are bent down to provide flanges 30, these flanges having inturned flanges 31 to give additional stiffness to the structure. The body of the door is formed with rigidifying ribs or corrugations 32.

I claim:

1. A door or drop bottom panel for a

railway dump car comprising a sheet metal element formed with rigidifying corrugations and having its edges, at opposite ends of said corrugations, bent over upon themselves to form marginal hollow reinforcements extending substantially the length of said edges.

2. A door or drop bottom panel for a railway dump car comprising a sheet metal element formed with substantially parallel rigidifying corrugations and having its edges, at opposite ends of said corrugations, bent over upon themselves to form marginal hollow reinforcements extending substantially the length of said edges.

3. A door or drop bottom panel for a railway dump car comprising a sheet metal element formed with rigidifying corrugations and having opposite edges thereof bent over upon and riveted to the body of said sheet metal element to form marginal hollow reinforcements extending substantially the length of said edges.

4. A door or drop bottom panel for a railway dump car comprising a sheet metal element, one edge of which is bent over and secured to the body of the door to form a hollow integral marginal reinforcement extending substantially the length of said edge.

5. A door or drop bottom panel for a railway car comprising a sheet metal element opposite edges of which are bent over and secured to the body of the door to form integral hollow marginal reinforcements extending substantially the length of said edges.

6. A door or drop bottom paned for a railway car comprising a sheet metal element, opposite edges of which are bent over and secured to the body of the door to form integral hollow marginal reinforcements extending substantially the length of said edges, the door being provided with reinforcing ribs between said marginal reinforcements.

7. A door or drop bottom panel for a railway car comprising a sheet metal element, opposite edges of which are bent over and secured to the body of the door to form hollow marginal reinforcements extending substantially the length of said edges, the door being provided with reinforcing ribs between said marginal reinforcements which extend at substantially right angles thereto.

8. A door or drop bottom panel for a railway dump car consisting of a single sheet of metal formed with a plurality of substantially parallel corrugations which terminate within the edges of the sheet and merge one into the other giving the sheet a sinuous configuration, the edges of the sheet being bent down to rigidify the structure and certain of them bent around and secured to the body of the sheet to provide hollow marginal reinforcements.

9. A door or drop bottom panel for a railway dump car consisting of a single sheet of metal formed with a plurality of substantially parallel corrugations which terminate within the edges of the sheet and merge one into the other giving the sheet a sinuous configuration, the edges of the sheet at the ends of the corrugations being bent around and secured to the under side of the sheet to form hollow marginal reinforcements and the other edges being bent down to provide flanges.

10. A door or drop bottom panel for a railway dump car, consisting of a sheet of metal formed with a plurality of substantially parallel corrugations, terminating within the edges of the sheet, the said edges being bent over and riveted to the sheet to form integral hollow reinforcements at opposite ends of said corrugations, and means for hinging the door to the car comprising hinge elements which extend across the door parallel to said corrugations, and are riveted to said reinforced edges.

11. A door or drop bottom panel for a railway dump car comprising a sheet metal element formed with rigidifying corrugations and having its edges at opposite ends of said corrugations bent first away from and then toward the sheet to provide reinforcements extending substantially the length of said edges.

12. A door or drop bottom panel for a railway dump car comprising a sheet metal element one edge of which is bent first away from and then toward the sheet to form an integral reinforcement extending substantially the length of said edge.

WALTER P. MURPHY.