

W. E. WILLIAMS.
METAL DOOR FOR RAILWAY CARS.
APPLICATION FILED APR. 16, 1918.

1,354,929.

Patented Oct. 5, 1920.

Fig. 1.

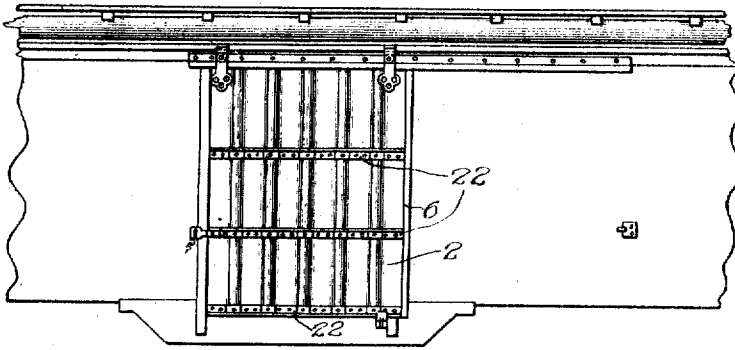


Fig. 2.

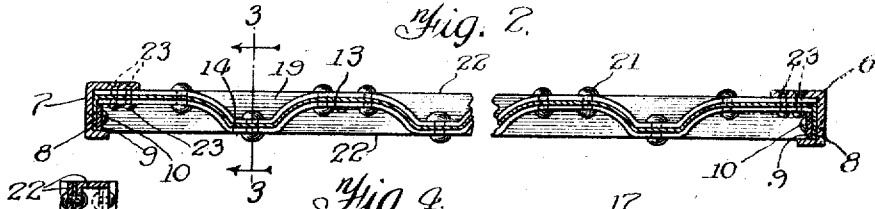


Fig. 4.

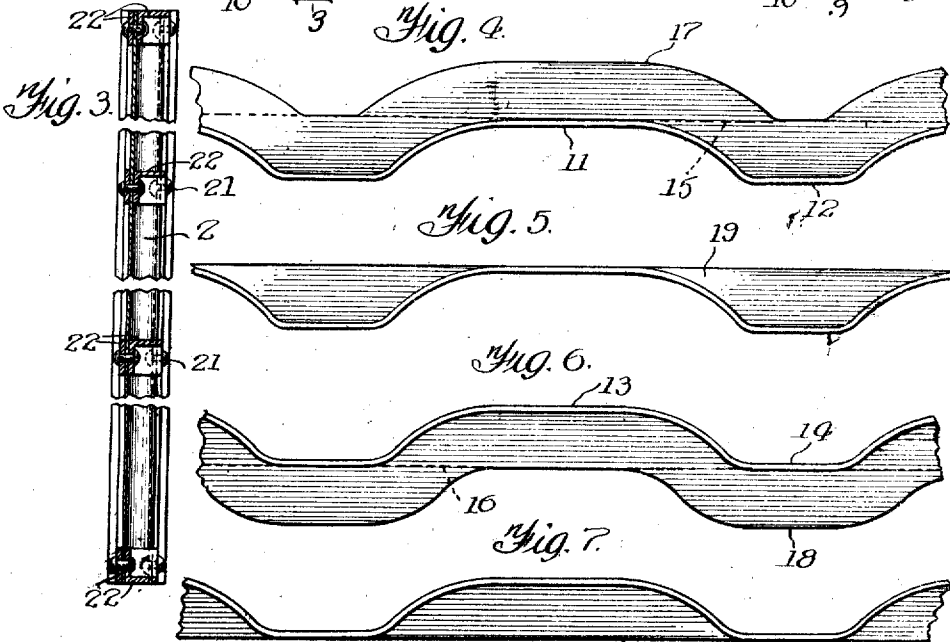


Fig. 5.

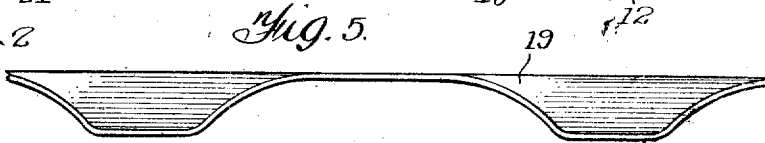


Fig. 6.

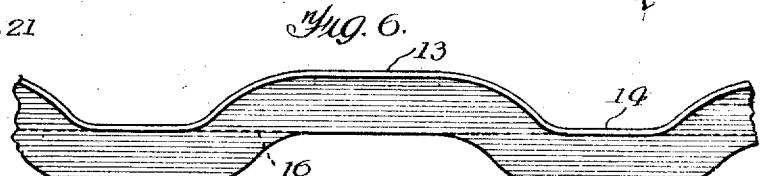


Fig. 7.

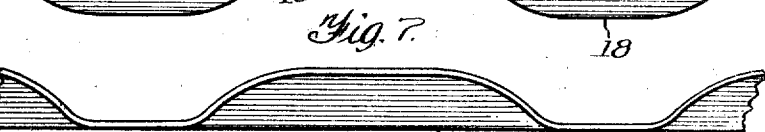
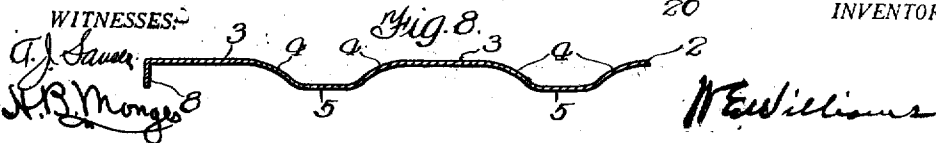


Fig. 8.



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METAL DOOR FOR RAILWAY-CARS.

1,354,929.

Specification of Letters Patent.

Patented Oct. 5, 1920.

Application filed April 16, 1918. Serial No. 228,914.

To all whom it may concern:

Be it known that I, WILLIAM ERASTUS WILLIAMS, a citizen of the United States, and a resident of Chicago, county of Cook, and State of Illinois, have invented a new and useful Improvement in Metal Doors for Railway-Cars, of which the following is a specification.

My invention relates to doors that are sheathed with corrugated metal and the object is to produce a light, very strong, cheap door, having the merits and novelty herein set forth and claimed.

Reference will be had to the accompanying drawing in which—

Figure 1 is an elevation of my door mounted on the side of a car.

Fig. 2 is a transverse section across the width of the door.

Fig. 3 is a vertical section of the door.

Figs. 4, 5, 6, and 7 are plan views of the angle sections used in making the cross stiffening girders of the door.

Fig. 8 is a section of the corrugated sheathing of the door.

Car doors should be as light as possible for the reason that they must be opened and closed under unfavorable conditions and should move on their hangings easily.

Further, freight cars are subjected to severe and prolonged use and the fastenings which support the door on the car get loose, corrode and rot at the bolt and screw holes, so that after very long use the weight of the door is a serious strain on the weakened fastenings which hold it to the car.

Further, doors of this class are greatly abused in opening and in closing them and cargoes placed against them or falling against them in transit tax to the utmost, the strength of the door in every way.

It often happens that cargo gets wedged against the inside of the door and thus makes a door hard to open and hence sharp corners or edges on the inside of a door should be avoided as much as possible.

I prefer to make the body of my door out of a vertically corrugated sheet.

I prefer to make my corrugations with flat surfaces or summits 3 having rounded easy corners 4 on the inside of the door and with rather sharper and narrower outside summits of the corrugations as indicated by 5.

I prefer to bind the vertical edges of my door with the channel bars 6 and 7, and

turn flanges 8 on the edge of my corrugated sheet which flanges are embraced within the channel section of the bars 6 and 7 and clamped therein by plates 9 riveted through by rivets 10.

The cross girders or cross stiffening members of my door I make out of angle sections as shown by Figs. 4 and 6 which are bent in suitable dies to conform to the shape of the contour of the corrugations of the sheet. Thus the bar shown in Fig. 4 fits across the inside of the door sheet having the surfaces 11 fitting the faces 3 of the sheet and the projections 12 fitting the inside of the corrugations 5.

The bar shown in Fig. 6 is bent to fit the outside of the corrugated sheet having the surface 13 fit the outside of surface 3 of the sheet and the surfaces 14 to fit the projections 5 of the sheet 2.

After the bars shown by Figs. 4 and 6 are bent as indicated they are then sheared off on the dotted lines 15 and 16 which causes them to appear as shown in Figs. 5 and 7. The pieces 17 and 18 that are sheared off then become scrap metal or are used for other purposes.

The bars 19, as shown in Fig. 5 and bars 20, as shown in Fig. 7 are then clamped on opposite sides of the corrugated sheet 2 and are riveted through by rivets 21. Fig. 2, the two rigidly connected bars with the corrugated sheet between them then acting substantially like a single girder. The weak sections of one bar are offset by the strong sections of the bar on the opposite side and thus the corrugated sheet is stiffened crosswise as desired and bound at the top and bottom in the same way.

The ends of the cross girders made of the bars 19 and 20 which I designate as 22 when riveted together are secured by rivets 23 to the vertical channel bars 6 and 7 at the vertical edges of the door.

The hangers and door fastenings are of the usual type.

The flat surfaces 3 and the gently rounded corners 4 of the corrugated sheathing do not injure any cargo that happens to rest against them and at the same time when the door is forcibly opened the inclined surfaces will press back and slip by any material pressing against the door.

By shearing off the surplus parts 17 and 18 of the angle cross bars I obtain straight lines for the outer edges of the bars when

in place that gives a uniform thickness to the door.

By the construction indicated I get a very light and very strong door and one in which the parts are strongly bound together.

In place of angles for cross girders I may use other forms such as channels or T's as desired.

What I claim is:

1. The combination with a corrugated metal sheet forming the body of a door, of two similarly curved transverse sheet stiffening girder bars forming a part of the door, lying in the same plane on opposite faces, respectively, of the sheet and each closely fitting the adjacent face of the sheet and rigidly secured in contact therewith.

2. In a door of the class described a corrugated sheathing stiffened across the corrugations by cross girders composed of angles bent to conform to the corrugations and placed opposite each other with the sheet between them and riveted through binding the three parts together at each girder.

3. In a door of the class described a corrugated sheathing stiffened across the corrugations by cross girders composed of angles bent to conform to the corrugations and placed opposite each other with the sheet between them and riveted through binding the three parts together at each girder, with the edges of the projecting flanges sheared off on straight lines.

4. In a door of the class described a corrugated sheathing stiffened across the corrugations by flanged sections made to conform to the contour of the sheet and placed opposite each other on the sides of the sheet and secured together by suitable means with stiffening members on the vertical edges secured to the sheet and to the cross girders.

5. In a door of the class described a corrugated sheathing bound on its vertical edges by channel sections and on its top and

bottom margins by angular sections bent to conform to the shape of the sheet and embracing the sheet between and riveted together and with the projecting flanges cut away on straight lines.

6. A door having a body of corrugated metal stiffened by transverse inside girders at intervals between the ends of the corrugations, and by outside girders similarly disposed, both sets of girders fitting the corresponding faces of the body and lying between it and the planes of the corresponding corrugation ridges.

7. In a building construction, the combination with a corrugated plate, of a series of oppositely disposed pairs of transverse beams provided with interpenetrating arms adapted to register with and grip said corrugated plate, and means for securing said beams and said plate together, substantially as described.

8. In a building construction, the combination with a corrugated plate, of a series of oppositely disposed pairs of transverse beams provided with interpenetrating flanged arms, said flanges registering with and gripping said corrugated plate, and means for securing said beams and said plate together, substantially as described.

9. The combination with a corrugated metal sheet forming the body of a panel, of two similarly curved transverse sheet stiffening girder bars forming a part of the panel, lying in the same plane on opposite faces, respectively, of the sheet and each closely fitting the adjacent face of the sheet and rigidly secured in contact therewith.

Signed at Chicago, county of Cook, and State of Illinois, the 11th day of April, 1918.

WILLIAM ERASTUS WILLIAMS.

Witnesses:

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C. J. WEIL.