Aug. 6, 1935. A. E. SMALL 2,010,381

RAILWAY CAR SIDE WALL

Filed Dec. 14, 1933 2 Sheets-Sheet 1

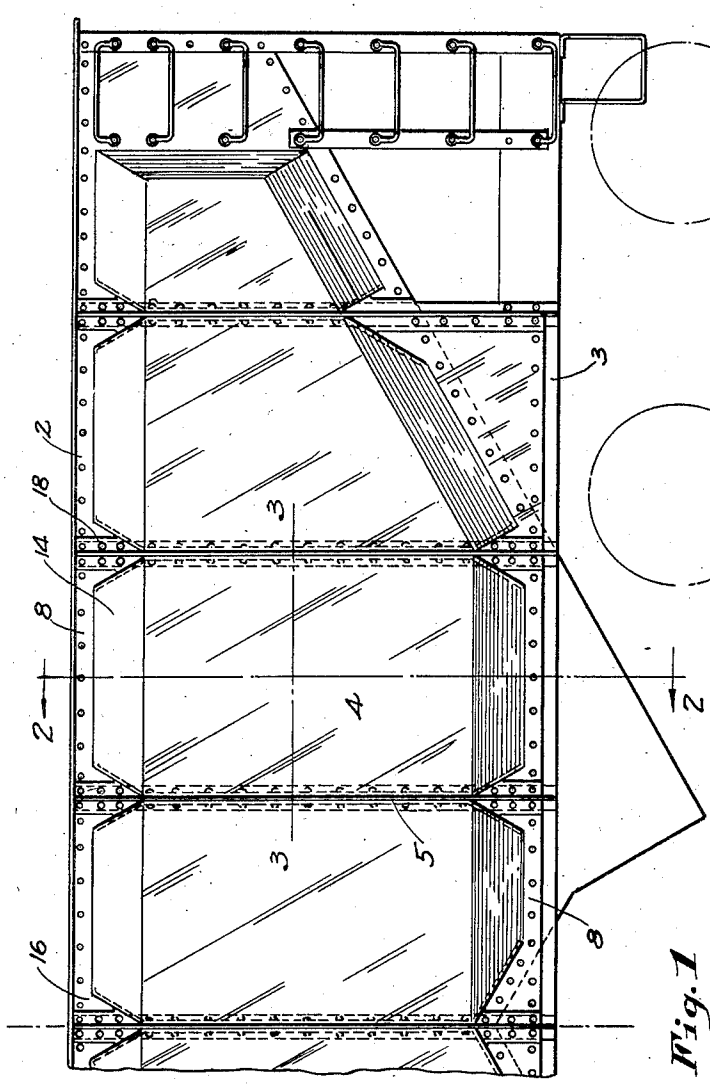


Fig. 1

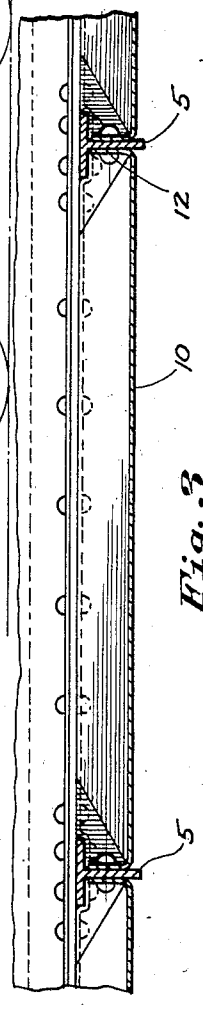


Fig. 3

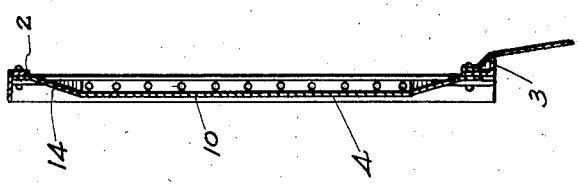


Fig. 2

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Aug. 6, 1935. A. E. SMALL 2,010,381

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Filed Dec. 14, 1933 2 Sheets-Sheet 2

Fig. 4

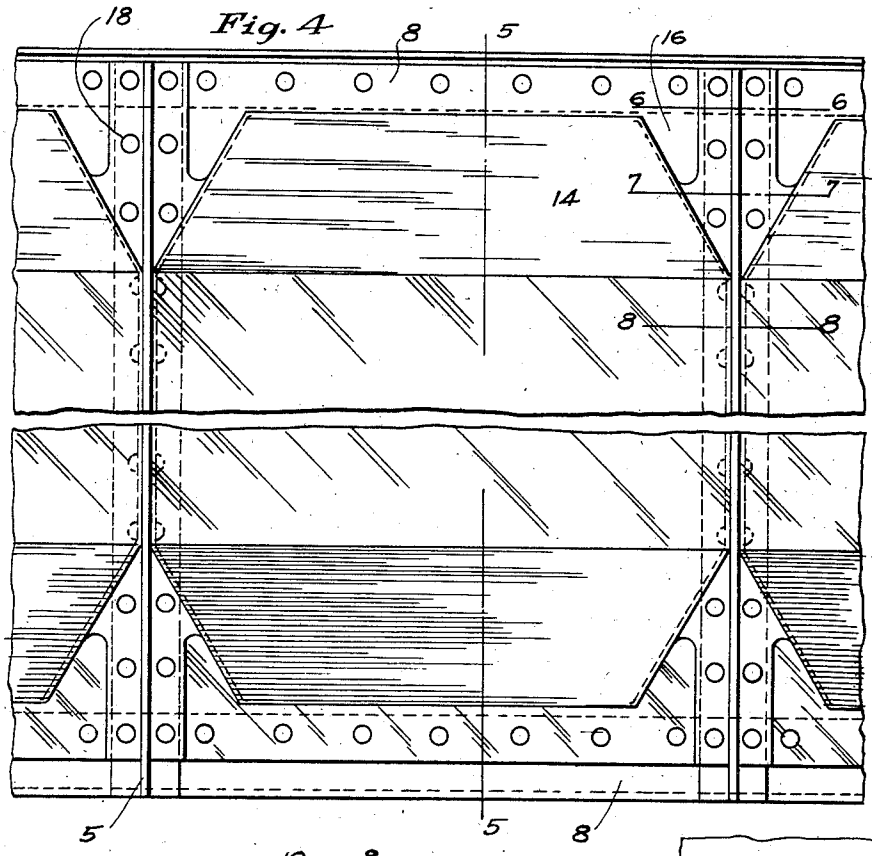
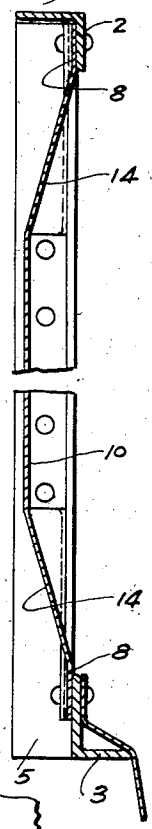



Fig. 5



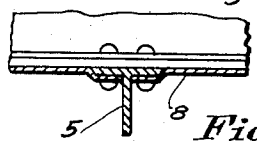




Fig. 6

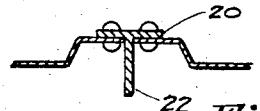



Fig. 7

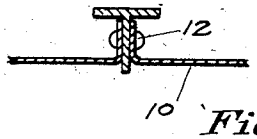



Fig. 8

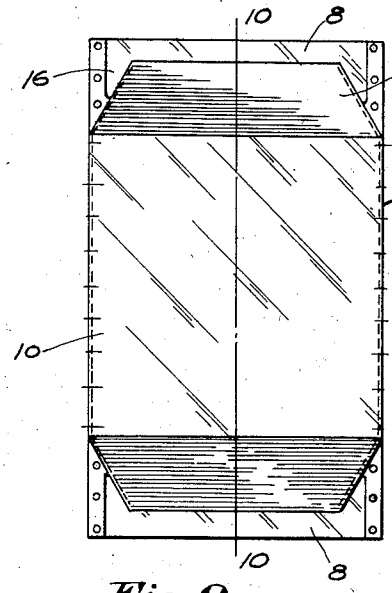



Fig. 9

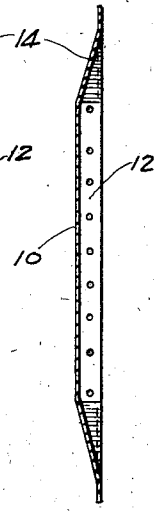



Fig. 10

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# UNITED STATES PATENT OFFICE

2,010,381

## RAILWAY CAR SIDE WALL

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Application December 14, 1933, Serial No. 702,315

7 Claims. (Cl. 105—409)

The construction relates to railway cars, particularly the open top car, that is, hopper or gondola cars wherein the side walls form trusses or girders to carry a part of the load to the body bolsters.

The object of the invention is to provide a side wall which not only performs the function of a girder, but is so arranged to obtain approximately the maximum cubical capacity of the car within a given width and height thereof, and a further object is to provide a post or strut between the top and bottom chords of the girder, which strut is provided by a new and novel arrangement and formation of the side wall sheets or web members of the girder in combination with a relative light weight, preferably rolled steel, bar.

Such walls must be very light, as it is expensive to transport dead weight in a car and such walls must be very strong as girders to carry the load and must be very strong as vertical beams to carry the horizontal thrust of the lading, which is very great on account of the impact thereof due to the movements of the car when running. The parts of the wall must be capable of easy assemblage because replacements frequently are necessary on account of wearing out of the parts, corrosion and wrecks.

An object of the invention is to provide a very light and strong car wall which can be quickly and economically made, installed and repaired.

Another object of the invention is to provide a car wall so that the component parts thereof may be secured together by bolting, riveting or welding.

Another object is to provide a car wall wherein the component parts can be made of pressed steel plates between reciprocating dies.

Another object is to provide a car wall to obtain the maximum cubical capacity of the car commensurate with the strength requirements.

Another object is to provide a car which will dump the entire lading when turned upside down in an unloading machine.

In the drawings:

Figs. 1, 2 and 3 show a typical application of my improved car wall to a railway hopper car.

Fig. 2 is a section on line 2—2 of Fig. 1.

Fig. 3 is an enlarged section on line 3—3 of Fig. 1.

Fig. 4 is an enlarged portion of Fig. 1.

Fig. 5 is a section on line 5—5 of Fig. 4.

Fig. 6 is a section on line 6—6 of Fig. 4.

Fig. 7 is a section on line 7—7 of Fig. 4.

Fig. 8 is a section on line 8—8 of Fig. 4.

Fig. 9 is a detail of one wall plate.

Fig. 10 is a section on line 10—10 of Fig. 9.

The drawings show the side wall of a railway hopper car which is a girder to carry the weight of part of the lading to the bolsters of the car and comprises upper chord or frame member 2; lower chord or frame member 3; web plate 4; and stiffeners 5. The wall plate has marginal portions 8 preferably in substantially the same plane which are secured to the upper (2) and lower (3) frame members, respectively. The wall plate also has a central portion 10 extending between the spaced apart stiffeners or posts 5 in a plane spaced apart from the plane of the marginal portions 8 and provided with inwardly projecting flanges 12 which are secured to the posts or stiffeners 5. The plate is also provided with sloping portions 14 extending from the central portion 10 and merging into the marginal portions 8 adjacent the frame members, respectively.

The plate is also preferably provided with triangular gusset portions 16 at each corner thereof which are preferably in substantially the plane of the marginal portions 8 and which are secured to the adjacent posts 5, respectively, by the rivets 18.

In the preferred form each post comprises base flanges 20 and a stem 22 extending away from the interior of the car. (See Figs. 6, 7 and 8.) This section is known as a T-bar and the inwardly projecting flanges 12 of the central portion of the wall plate are secured to the stems 22 of the spaced apart stiffeners 5 and also the gusset portions 16 of the wall plate are secured to the base flanges 20. In this construction the wall plate and the posts combine to form a very strong column or strut between the spaced apart framing members or chords. This construction also provides a very strong vertically disposed beam to resist the horizontal thrust imposed thereon by a plastic lading or a shifting lading as the wall plates form the tension members of the beam and the flanges of the post form the compression members of the beam, and, furthermore, the component parts cooperate to prevent the beam from buckling sidewise thereby increasing its strength.

I prefer to provide sloping portions 14 between the central portion 10 and the marginal portions 8, so that the car will discharge its lading when turned upside down in an unloading tipple.

It will be noted that the wall plate is so formed that it can easily be made between dies on a reciprocating press.

The accompanying drawings illustrate the preferred form of the invention, though it is to be

understood that the invention is not limited to the exact details of construction shown and described, as it is obvious that various modifications thereof, within the scope of the claims, will occur to persons skilled in the art.

I claim:

1. A wall for a railway car comprising an upper horizontal frame member, a lower horizontal frame member, spaced apart posts extending between and secured to said frame members, and a wall plate having marginal portions secured to said frame members, respectively, and a central portion in a plane spaced apart from said marginal portions provided with inwardly projecting flanges substantially normal to the central portion secured directly to said posts, respectively.

2. A wall for a railway car comprising an upper horizontal frame member, a lower horizontal frame member, spaced apart posts extending between and secured to said frame members, and a wall plate having marginal portions secured to said frame members, respectively, and a central portion in a plane spaced apart from said marginal portions provided with inwardly projecting flanges substantially normal to the central portion secured directly to said posts, respectively, said plate provided with sloping portions extending from the central portion and merging into the marginal portions adjacent the frame members.

3. A wall for a railway car comprising an upper horizontal frame member, a lower horizontal frame member, spaced apart posts extending between and secured to said frame members, and a wall plate having marginal portions secured to said frame members, respectively, and a central portion in a plane spaced apart from said marginal portions provided with inwardly projecting flanges substantially normal to the central portion secured directly to said posts, respectively, said plate having triangular gusset portions at each corner thereof in the plane of the marginal portions, said gusset portions being secured to said posts, respectively.

4. A wall for a railway car comprising an upper horizontal frame member, a lower horizontal frame member, spaced apart posts extending between and secured to said frame members, and a wall plate having marginal portions secured to said frame members, respectively, and a central portion in a plane spaced apart from said marginal portions provided with inwardly projecting flanges substantially normal to the central portion secured directly to said posts, respectively, said plate provided with sloping portions extending from the central portion and merging into the marginal portions adjacent the frame members, said plate having triangular gusset portions at each corner thereof in the plane of the marginal portions, said gusset portions being secured to said posts, respectively.

5. A wall for a railway car comprising an upper horizontal frame member, a lower horizontal frame member, spaced apart posts extending between and secured to said frame members, each of said posts comprising base flanges and a stem extending away from the interior of the car, and a wall plate having marginal portions secured to said frame members, respectively, and a central portion in a plane spaced apart from said marginal portions provided with inwardly projecting flanges substantially normal to the central portion secured directly to said stems, respectively, said plate having triangular gusset portions at each corner thereof in the plane of the marginal portions, said gusset portions being secured to said base flanges, respectively.

6. A wall panel for a railway car comprising end marginal portions, a central portion in a plane spaced apart from and substantially parallel to said end marginal portions and intermediate portions connecting the central portion and the marginal portions, each decreasing in width toward the adjacent end of the plate, the sides of said central portion being formed with right angle flanges, the ends of said flanges being deflected inwardly to form the sides of the intermediate portions and merging into the adjacent marginal portions coincident with the intermediate portions to form gusset portions in the plane of the marginal portions.

7. A wall panel for a railway car comprising end marginal portions, a central portion in a plane spaced apart from and substantially parallel to said end marginal portions and intermediate portions connecting the central portion and the marginal portions, each decreasing in width toward the adjacent end of the plate, the sides of said central portion being formed with right angle flanges, the ends of said flanges being deflected inwardly to form the sides of the intermediate portions and merging into the adjacent marginal portions coincident with the intermediate portions to form gusset portions in the plane of the marginal portions, the edges of said flanges being in the same plane as said marginal portions.

ARTHUR E. SMALL.