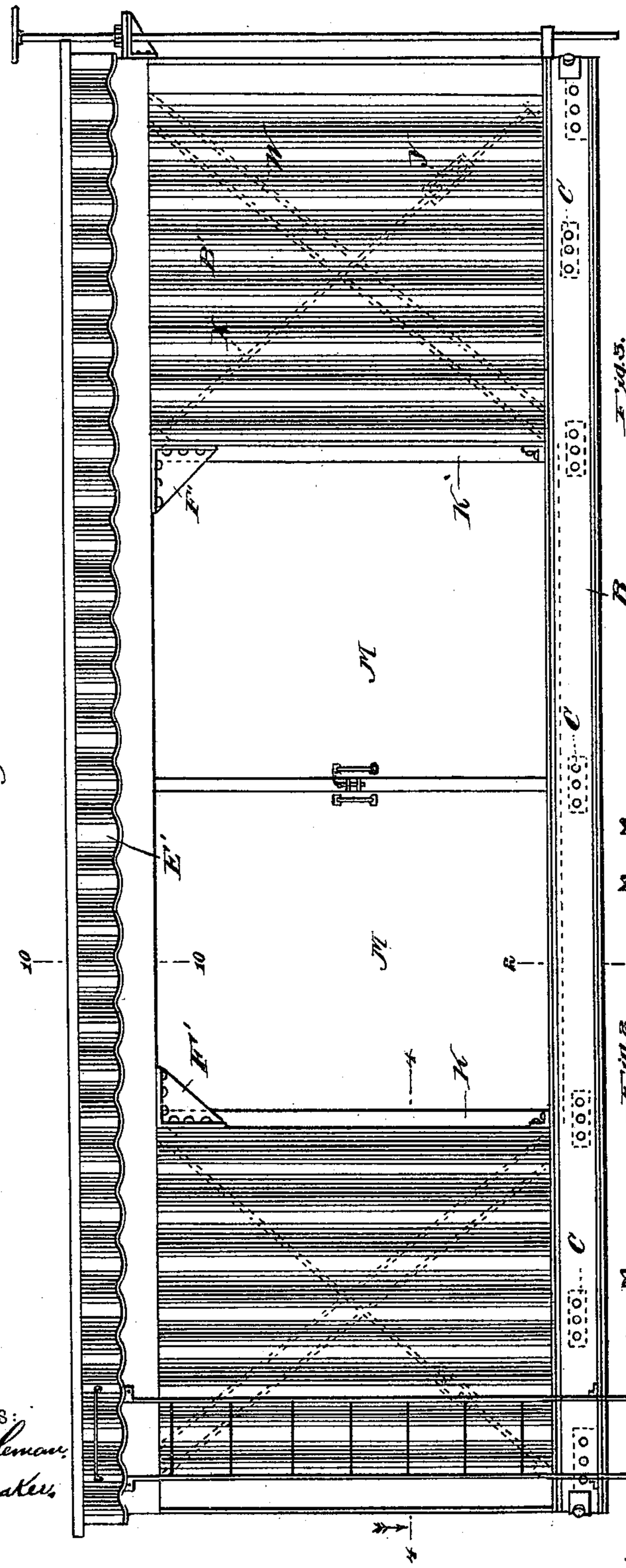
No. 637,403. Patented Nov. 21, 1899.

L. R. McAFOOS.

STEEL CAR CONSTRUCTION.

(Application filed July 8, 1899.)

(No Model.) 3 Sheets—Sheet 1.



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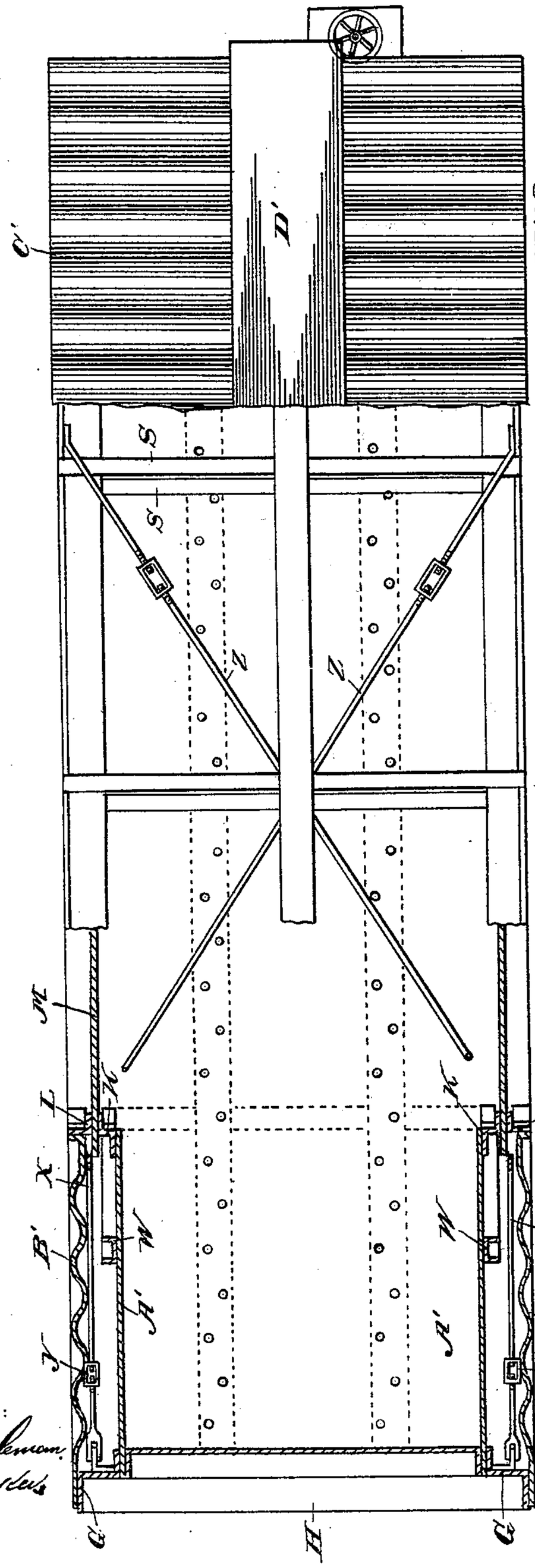

Fig. 4.

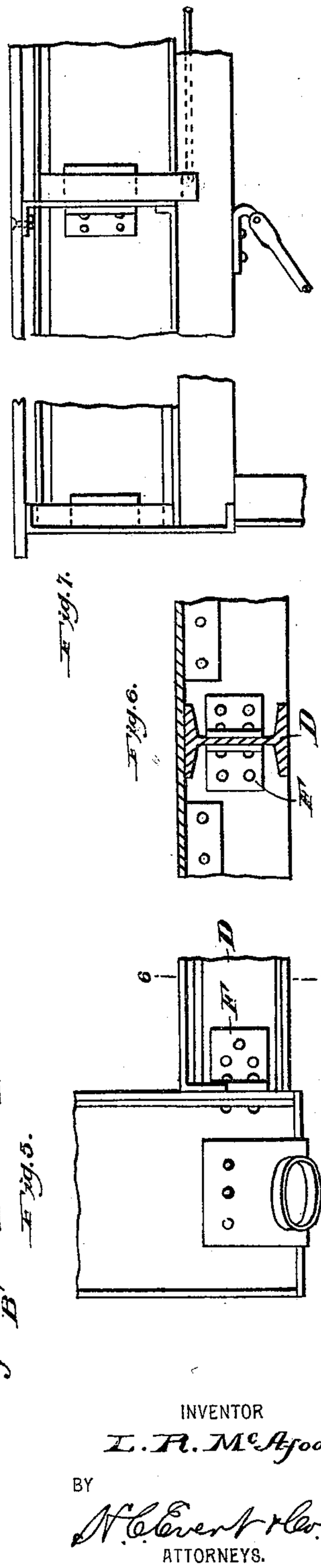

Fig. 8.

Fig. 7.

Fig. 6.

Fig. 5.

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(No Model.) 3 Sheets—Sheet 3.

Fig. 9.

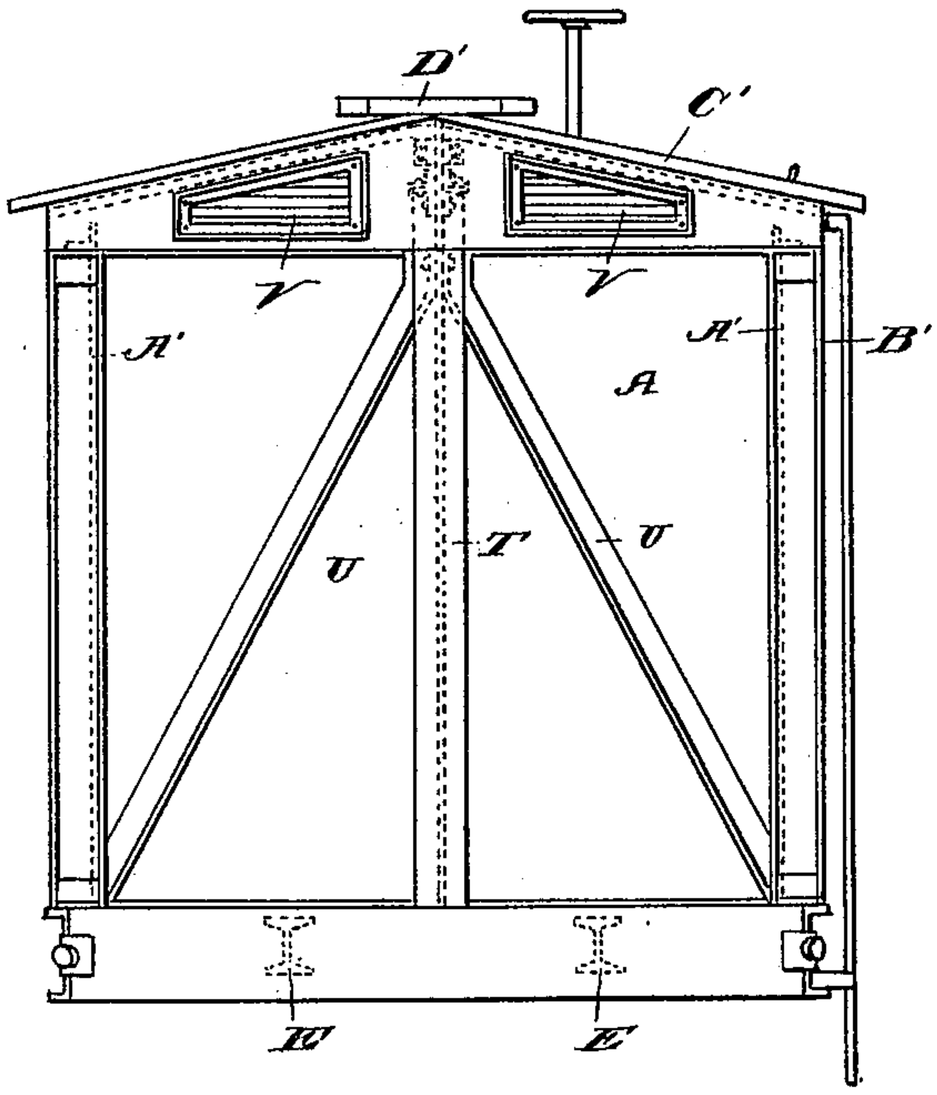


Fig. 10.

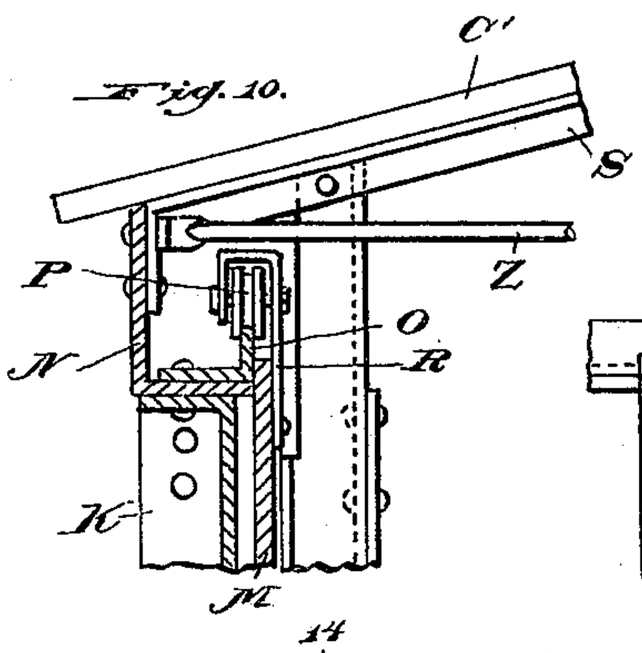


Fig. 11.

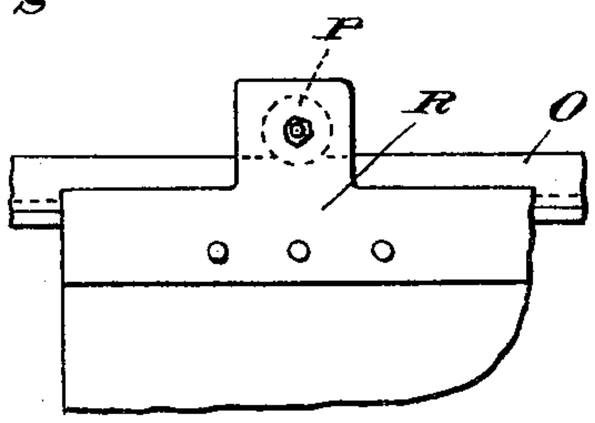


Fig. 12.

Fig. 13

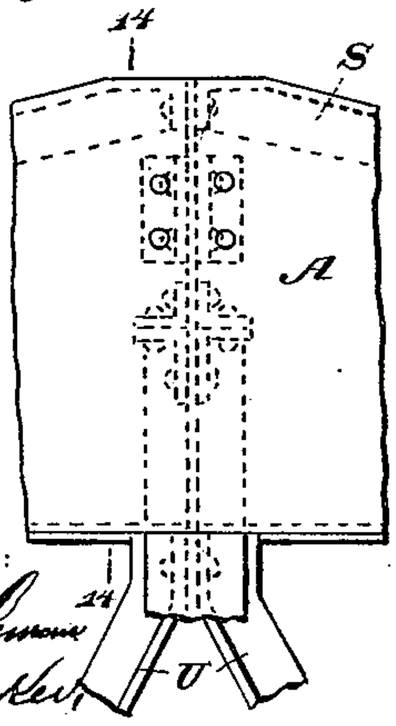


Fig. 14.

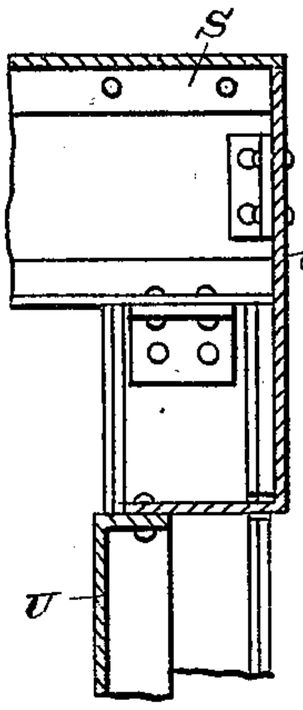
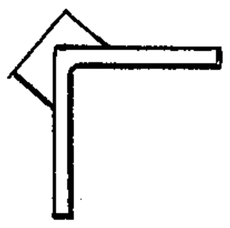


Fig. 15.



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UNITED STATES PATENT OFFICE.

LAURENCE R. McAFOOS, OF ALLEGHENY, PENNSYLVANIA.

STEEL-CAR CONSTRUCTION.

SPECIFICATION forming part of Letters Patent No. 637,403, dated November 21, 1899.

Application filed July 8, 1899. Serial No. 723,208. (No model.)

To all whom it may concern:

Be it known that I, LAURENCE R. McAFOOS, a citizen of the United States of America, residing at Allegheny, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Steel-Car Construction, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to certain new and useful improvements in freight-cars, and more particularly to that class constructed of structural iron or steel.

The invention has for its object to cheapen the construction of this class of cars and at the same time construct a car possessing advantages in points of strength, durability, and simplicity.

The invention has for its further object to so construct the walls of the car that the strength of the car will be largely increased without materially increasing the weight thereof.

Briefly described, my invention consists in providing an inner and an outer wall both of sheet metal, steel, or the like, and the inner wall being preferably plain, with the outer wall corrugated. The sills, cross-beams, and studding are all composed of angle, T-irons, I-beams, channel-bars, or like structural iron or steel, and the roof is preferably composed of corrugated sheet metal or steel of the same nature as the outer sheathing of the car, all of which construction, together with the various other novel features entering into the invention, will be hereinafter more particularly described, and specifically pointed out in the claims.

In describing the invention in detail reference will be had to the accompanying drawings, forming a part of this specification, and wherein like numerals of reference will indicate similar parts throughout the several views, in which—

Figure 1 is a side elevation of my improved car, showing the doors in an open position. Fig. 2 is a vertical sectional view taken on the line 2 2 of Fig. 1. Fig. 3 is an end view of the same. Fig. 4 is a top plan view, partly in section. Fig. 5 is an end view of the draw-head. Fig. 6 is a vertical sectional view of the same on the line 6 6 of Fig. 5. Figs. 7 and 8 are side elevations of the top of the car. Fig. 9 is an end view of the car. Fig. 10 is a vertical sectional view taken on the line 10 10 of Fig. 1. Fig. 11 is a side elevation of the upper portion of the door and track. Fig. 12 is a vertical sectional view of the ventilator. Fig. 13 is an end view of the top of the car and is a partially-enlarged view of Fig. 9. Fig. 14 is a vertical sectional view taken on the line 14 14 of Fig. 13. Fig. 15 is a detail view of the corner-braces at the end of the draw-head.

Referring to the drawings by reference-letters, A represents generally the body of the car, which has the general shape shown in end view in Fig. 9. It is made of structural iron, steel, or the like firmly fastened together, the two lower sills B being each composed of two channel-bars placed with their backs toward each other and spaced apart by means of filler-plates C. These two lower sills B are connected together by I-beams D, extending transversely of the car and being in section, so as to intersect with and be secured to the sills E, extending horizontally of the car between the two outside sills. The sills E and I-beams D may be secured together at their points of intersection by riveting through the respective webs, as shown, and also by riveting angle-plates F thereto, similar angle-plates being employed for riveting the I-beams to the outside sills B. The corner posts or uprights G, I may construct of Z-bars and the end beams of an angle iron or bar H, which is securely riveted at its ends to one web of the Z-bars G. The studding of the car I construct of angle-bars K and Z-bars L, set side by side, but spaced apart sufficiently to permit the passing of the doors M between the same.

The upper sills of the car are constructed of angle-bars N, placed on top of and securely riveted to the studding K, and to this angle-bar N, I place and rivet thereto a track O, which is substantially in the form of an angle-bar and the vertical web of which receives the rollers P, which are mounted in hangers R, secured to the doors M. The rafters S of the car may also be of angle-bars riveted at their ends to the top sills N of the car and given the desired slope or pitch and secured together at the apex of the roof.

At each end of the car I provide studding T, which may be formed of a pair of angle-bars, and for additional bracing I provide a pair of angle-bars U, abutting at their lower ends against the corner posts or studding and at their upper ends fastened to the end studding T.

In the ends of the car underneath the roof I provide ventilators V, preferably formed of a series of shutter-slots. For bracing the sides of the car I may employ channel-bars W, arranged at an angle of about forty-five degrees, and also employ for this purpose truss-rods X, formed in sections, with turnbuckles Y mounted thereon for tightening. Similar truss-rods Z are arranged under the roof of the car.

The inner wall A′ is preferably smooth and is composed of sheet-steel or the like, while the outer wall B′ is preferably corrugated. The roof C′ is also preferably composed of corrugated material and has arranged on its apex a running-plank D′, this latter being the only wood necessary in the construction of the car.

If desired, I may employ a suitable coping E′, extending the length of the car, or the outer corrugated wall or sheathing may be continued to the rafters at the sides of the doors. The lower ends of these doors slide between the two channel-bars of which the lower sills are formed and at their upper end project above the horizontal web of the angle-bar N. I employ angle-plates at all convenient points for fastening the structure together and for bracing, as shown at F′, where they are riveted to the studding and upper sills. The doors are of course formed with the usual handles for manipulating and with the ordinary straps to receive lock-pin and seal, which I do not show in detail or specifically describe, as the same may be of the ordinary form of construction.

There are numerous advantages which are obtained by the use of my improved car—for example, by the use of the double walls and ventilator heat will not affect the merchandise or other commodities that are placed in the car. By the peculiar construction of the floor the latter will not only be sufficiently braced and strengthened, but will also serve as a ballast and prevent any top-heaviness of the structure.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A side sill for cars, consisting of a pair of elongated channel-beams arranged back to back and having interposed between and secured thereto a series of filler-plates to form an uninterrupted passage, substantially as shown and described.

2. The car construction herein shown and described, consisting of side sills formed of a pair of elongated channel-beams arranged back to back so that the flanges of one beam will extend in an opposite direction to that of the other, a series of filler-plates interposed between and secured to the said beams forming a continuous passage-way for the car-doors, in combination with a series of transversely-extending cross-beams formed of I-bars secured to the said sills, and a series of horizontally-extending sills formed of I-beams suitably secured and arranged between the said cross-beams, substantially as set forth.

3. The car construction as herein shown and described consisting of side sills formed of elongated channel-beams so arranged that the flanges of one beam will extend in an opposite direction to that of the other, a series of filler-plates interposed between and secured to the said channel-beams forming a passage-way, combined with the studding consisting of angle-bars secured to and supported by the upper flange of the inner channel-bar, and the inner and outer walls suitably secured to the said studding, substantially as set forth.

4. The car construction herein shown and described, consisting of the metallic sills each formed of a pair of channel-beams arranged back to back with filler-blocks interposed and secured between the same to form a passage-way, combined with the studding consisting of angle-bars secured to and supported by one of the said beams, and an inner smooth wall and an outer corrugated wall secured thereto, substantially as described.

5. The car construction herein shown and described, consisting of the side sills formed of a pair of elongated channel-beams arranged back to back spaced apart with filler-blocks interposed between and secured to the same forming a passage-way, combined with the studding and rafters consisting of angle-bars, an inner smooth wall and an outer corrugated wall secured to said studding, and a corrugated roof secured to the rafter, substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

LAURENCE R. McAFOOS.

Witnesses:

JOHN NOLAND,

H. H. PATTERSON.