

1,247,822.

2 SHEETS—SHEET 1.



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CAR CONSTRUCTION.
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2 SHEETS—SHEET 2.

Fig. 4.

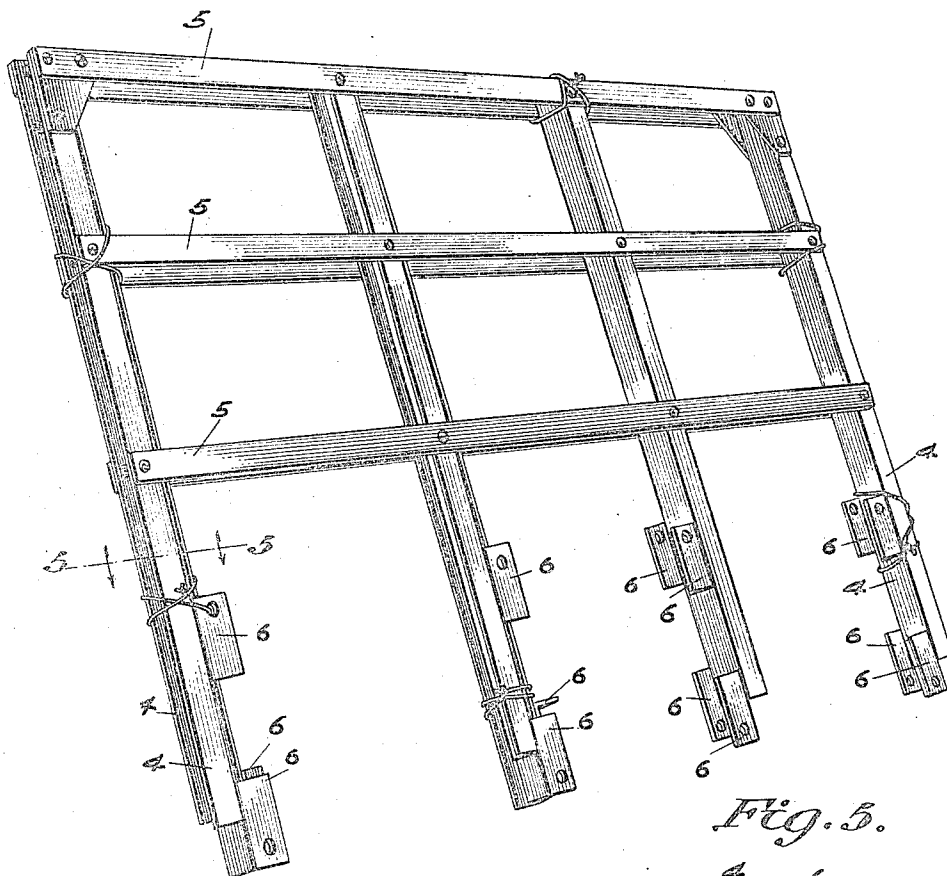


Fig. 3.

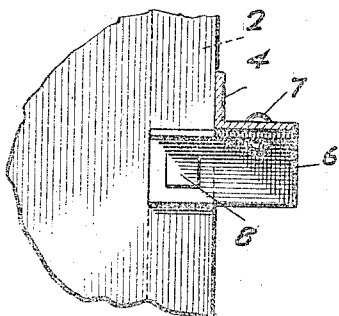


Fig. 6.

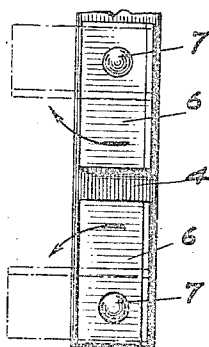
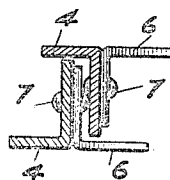


Fig. 5.



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UNITED STATES PATENT OFFICE.

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CAR CONSTRUCTION.

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To all whom it may concern:

Be it known that I, LOUIS DAMARIN GREGG, a citizen of the United States, residing at Hackensack, in the county of Bergen and State of New Jersey, have invented certain new and useful Improvements in Car Constructions; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the characters of reference marked thereon, which form a part of this specification.

My invention relates to car-frame construction, and more particularly to the fastening of the end-uprights or end racks to the underframe, or car body. It has for its object to effect greater strength of connection between the end uprights and car body so as to afford greater resistance to the leverage of the load pressing outward on the end uprights, which advantage is gained by having the contact points at which the strain occurs disposed at the maximum permissible distances apart. It has also for its object to obtain the maximum strength of the means connecting the end uprights to the car body which is effected by disposing bracing clips in relation to the end uprights and car body so that direct tension is brought to bear on the angle clip in a direction through or cross-wise of the angle of the clip so that the maximum strength of the clip is utilized and the tendency of the clip to straighten or its flanges to be bent or deflected is eliminated.

It has also for its object a fastening for connecting together the end sills of the car body and the bracing angle clips so that the tendency of the fastening means to twist or slant in the direction of strain will be overcome, which advantage is attained by passing the fastening means, which may be a bolt, through the end sill from top to bottom as well as through the top and the bottom angle clips.

It has also for its object to provide a construction in which the cubical space occupied by the end frames, or racks, during storage or transportation will be the minimum and thus storage or transportation charges materially reduced, and this advantage is obtained by attaching and disposing the angle clips in relation to the end uprights so that

the flanges or wings of the angle clips may lie or extend in the direction of the longitudinal axis of the end uprights before the end uprights are attached to the car underframe or body.

To the accomplishment of the foregoing, and such other objects as may hereinafter appear, the invention consists in the features hereinafter described and then sought to be clearly defined by the claims, reference being had to the accompanying drawings forming a part hereof, and in which

Figure 1 is a perspective of a car with the invention applied thereto;

Fig. 2 is a detail, sectional view, enlarged scale, on line 2—2 of Fig. 1;

Fig. 3 is a section one line 3—3 of Fig. 2;

Fig. 4 is a perspective of two of the upright ends, or racks, assembled for shipment;

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

Fig. 6 is a side view of a portion of one of the bars of the end uprights, showing in full lines two of the angle clips with their wings extending in the direction of the longitudinal axis of the bar, and in dotted lines showing them extending at right angles thereto.

In the drawings the numeral 1 designates the underframe, or car body, having the end sills 2, illustrated as of channel iron, and end uprights, or racks 3 composed, as shown, of the upright angle bars 4 and cross bars 5.

The vertical bars of the end uprights are provided at their lower portions with angle clips 6 attached at one end to the vertical bars by rivets 7 passing through one wing of the clips and the vertical bars, and disposed at such distances apart that the lowermost clips will extend beneath the lower edge of the end sill and the uppermost clips extend over the top edge of the sill. These angle clips are so disposed in relation to the end sill that when in position for being fastened to the sill the angle of the clips will extend or lie transversely to the longitudinal axis of the vertical bars of the end uprights and in the direction of the length of the car underframe so that when the clips are fastened to the end uprights and to the sills direct tension is brought to bear on the angle clips in a direction through or crosswise of the angle of the clips and thus the maximum strength of the angle clip

is utilized and the tendency of the clip to straighten or its wings be deflected is eliminated.

The ends of the angle clips which extend above and beneath the end sill are attached to the sill by bolts 8 which pass through the uppermost clips and down through the flanges of the channel iron constituting the sill and through the lowermost clips as clearly illustrated in Fig. 2 of the drawing. If one set of bolts were used for fastening the uppermost clips to the sill and another set for attaching the lowermost clips, there would be a tendency of the bolts to twist or assume a slanting position in the direction of strain on the bolts as the bolt holes are almost invariably punched so much larger than the diameter of the bolts that the bolts fit loosely in the holes. But by using a single bolt and passing it through both upper and lower clips as well as through the end sill from top to bottom this twisting or slanting is prevented, and it is made possible to employ cotter-pins instead of nuts at the ends of the bolts for holding the bolts in place if it be desired to use that means.

In cars of this type it is usual to fasten the vertical bars of the end uprights or racks to the end sills by two bolts passing transversely through the sill and each upright bar. Accordingly the space between each two bolts, one above the other, is very small and as the bolts constitute the contact points at which the strain comes, this makes the leverage of the load in the car pressing outward on the end uprights, very severe on the fastenings of the end uprights to the sill. By applying the fastening bolts, however, as illustrated, that is at the top and the bottom of the sill, the contact points at which the strain comes are at the maximum permissible distance apart, being as far apart as the full depth of the channel bar sill, and thus the strain is distributed and greater strength obtained. For illustration, in a car having a five inch channel bar end sill with the fastening bolts passed through the end uprights and the sill in the direction of the longitudinal axis of the car underframe, the distance between the fastening bolts would be approximately two and one half inches, whereas under the present invention the distance is approximately five inches, or a fraction more than the full depth of the end sill.

A further additional advantage of attaching and disposing the angle clips to the end uprights in the relation specified is that prior to fastening the end uprights to the end sills, the angle clips may have their wings stand or extend in the direction of the longitudinal axis of the end uprights as illustrated in Figs. 4, 5 and 6 and thus be caused to occupy less cubical space so that

charges for storage or for freight transportation will be materially decreased where the charges depend on the cubical space occupied. The cubical dimensions, calculated according to the extreme depth by extreme width by extreme length, is what governs in determining freight charges for most ocean steamer freight. On one end upright or rack with the angle clips disposed so that the wings of the clips will extend or lie in the direction of the longitudinal axis of the vertical bars constituting the end uprights as illustrated in full lines in Fig. 6, the freight charge would be approximately one-half of what it would be if the clips stood in their relation to the upright bars illustrated by dotted lines in the same figure. The construction described also makes it possible to bundle together two of the end uprights as illustrated in Fig. 4 to save measurement and thus further reduce freight charges. The clips may be riveted to the bars of the end uprights in the position shown in full lines, or in the position indicated in dotted lines in the same figure and then turned to the position shown in full lines, for the proper disposition of the angle clips for shipment of the end uprights, and when the end uprights are to be assembled with the end sills the angle clips will be turned so that their angles will stand transversely or at right angles to the longitudinal axis of the bars constituting the end uprights. It will thus be appreciated that several material advantages result from disposing and attaching the angle clips as described.

For purposes of illustration I have shown the end uprights attached to the end sills of a car underframe but it is obvious that the invention is the same whether applied to the end sills or to side sills or to both end and side sills, and the designation "end uprights" is therefore to be understood and read as applied to either the sides or ends of a car underframe sills.

I have illustrated and described with particularity the preferred details of each of the several features of the invention but changes may be made in the details and essential features of the invention retained.

Having described my invention and set forth its merits, what is claimed is:

1. In car construction, the combination with the car-underframe and end uprights, of angle clips connecting the end uprights and sills of the underframe, the clips being so disposed in relation to the end uprights and underframe that the angle of the clips will lie transversely to the longitudinal axis of the end uprights and to the longitudinal axis of the sill to which the clips are attached.

2. In car construction, the combination with the car-underframe and end uprights, 130

of means connecting the end uprights and sills of the underframe, the points of attachment of said means to the end uprights being substantially above and below the top and bottom of the car sills so that the points of strain will be spaced apart substantially the depth of the sill.

3. In car construction, the combination with the car-underframe and end uprights, of angle clips connecting the end uprights and sills of the underframe, the clips being attached to the end uprights and to the sills above and below the sills and so disposed that the angles of the clips will lie transversely to the longitudinal axis of the end uprights and to the longitudinal axis of the sills to which the clips are attached.

4. In car construction, the combination with the car underframe and end uprights, of angle clips connecting the end uprights and sills of the car and disposed above and below the sills, said clips being attached at one end to the end uprights and at the other end connected to the sills by bolts passing through the upper and the lower clips and through the sills from top to bottom.

5. In car construction, the combination

with the car underframe and end uprights, of angle clips connecting the end uprights and sills of the car above and below the sills and so disposed that the angles of the clips will lie transversely of the longitudinal axis of the end uprights and of the longitudinal axis of the sills to which the clips are attached, said clips being attached at one end to the end uprights and at the other end connected to the sills by bolts passing through the sills from top to bottom.

6. In car construction, end uprights comprising vertical bars and angle clips attached to the bars for connecting the end uprights to the sills of a car-underframe, said clips being so disposed and attached to the bars of the end uprights that in one position both wings and angle of the clips will lie in the direction of the longitudinal axis of the bars and in another position will extend transversely to said axis.

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

LOUIS DAMARIN GREGG.

Witnesses:

S. LESLIE DAVIDSON,

A. L. YOUNG.