

April 6 , 1926.

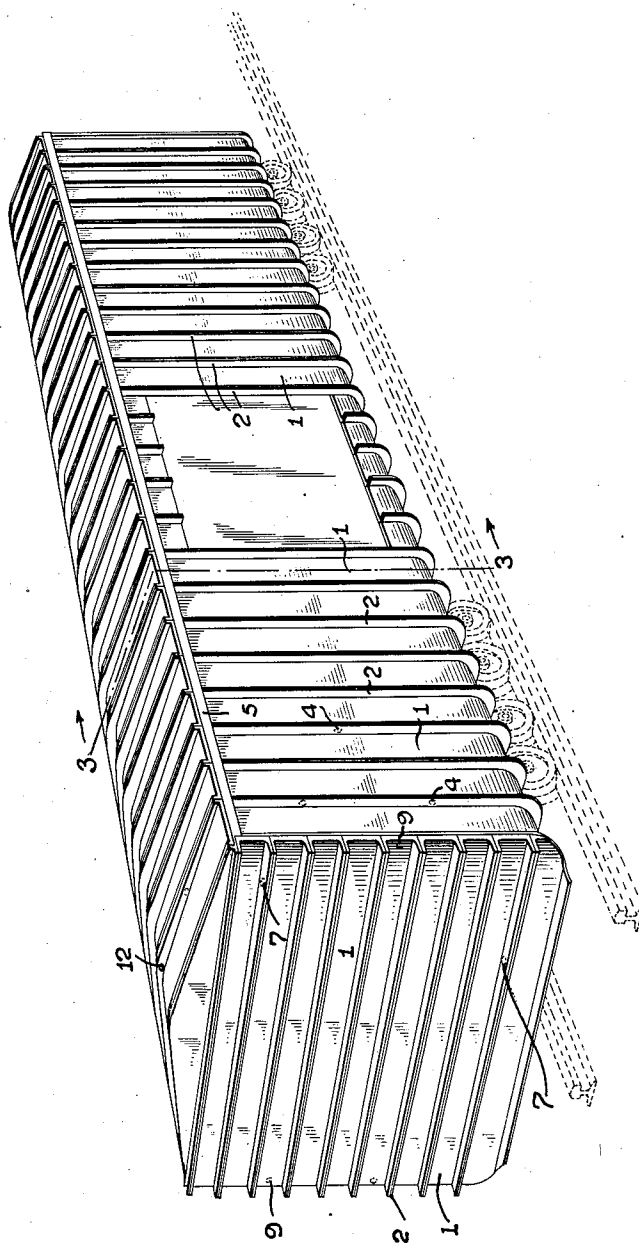
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F. TENCH ET AL
METAL CAR BODY

Filed Jan. 30, 1925

3 Sheets-Sheet 1

Fig. 1



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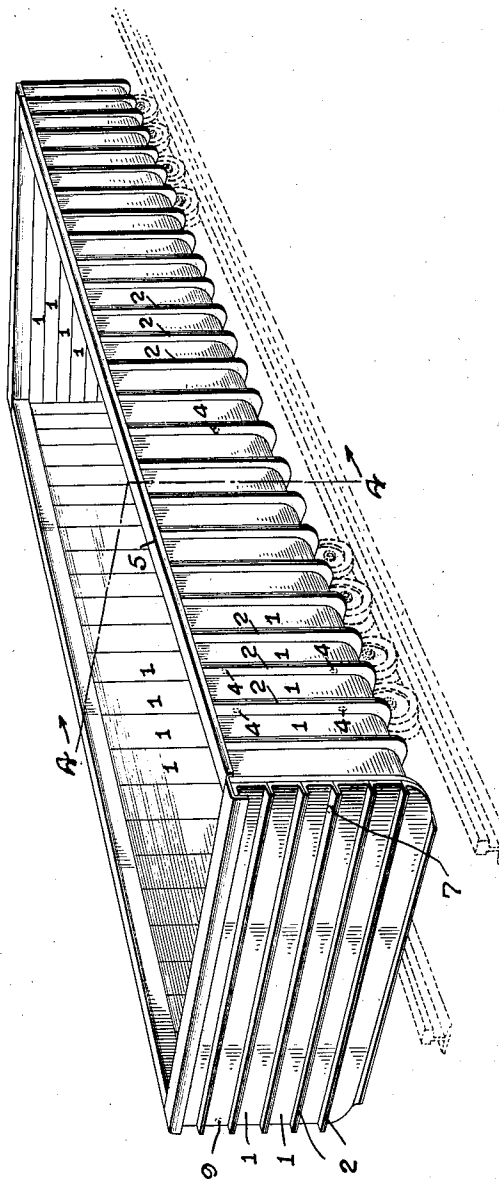
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Fig. 2



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Fig. 5

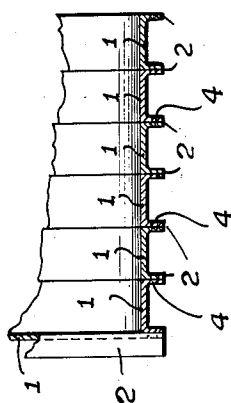


Fig. 4

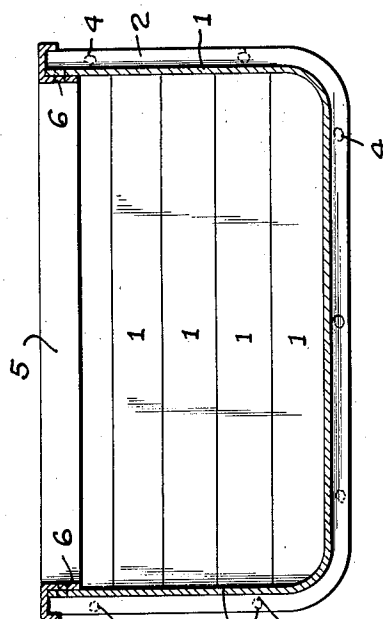
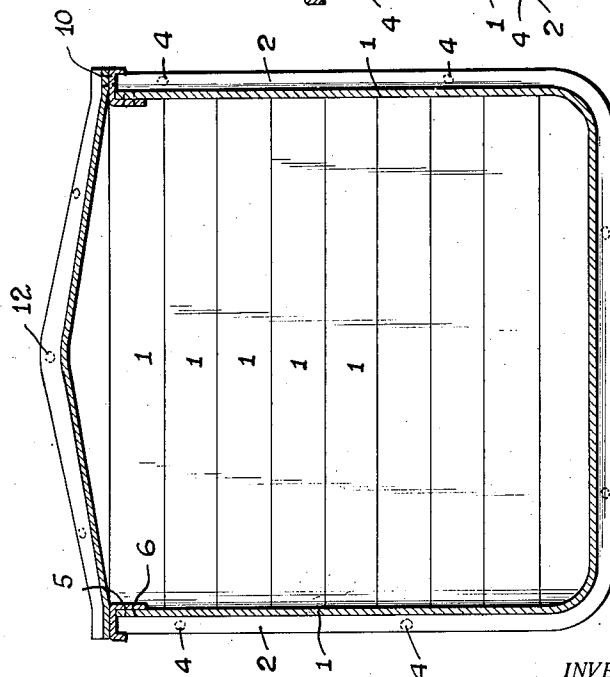


Fig. 3



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UNITED STATES PATENT OFFICE.

FREDERICK TENCH, OF WHITE PLAINS, AND MAURICE LACHMAN, OF NEW YORK, N. Y.

METAL CAR BODY.

Application filed January 30, 1925. Serial No. 5,709.

To all whom it may concern:

Be it known that we, FREDERICK TENCH and MAURICE LACHMAN, citizens of the United States, and residents of White Plains, county of Westchester, State of New York, and New York, county and State of New York, respectively, have invented certain new and useful Improvements in Metal Car Bodies, of which the following is a specification.

Our invention relates to the construction of metal car bodies and is applicable to steel box cars, gondola cars as well as passenger and Pullman cars.

The invention further may be used for the construction of the bodies of trucks propelled by gasoline motors or other means and by the term "car" as hereinafter used in the specification and claims we wish to be understood as including truck bodies.

The invention is particularly useful, however, for railway car bodies such as box, gondola and other railway cars.

The object of the invention is to provide an all-metal body that may be constructed at a minimum cost for material and labor for manufacture while at the same time attaining maximum of strength, minimum of overall width, a maximum of cubic carrying capacity and great mechanical resistance to torsion, shock or other disintegrating influences.

A further object is to dispense with the necessity for employing side sills, posts, and other additional members heretofore considered necessary in the construction of an all-steel car body for attachment of the metal plates of which the body is composed.

Our invention embodies novelty not only in the body itself but also in the construction of the end walls as well as the roof.

Briefly stated, the invention consists, so far as the body proper is concerned, in making it up from U-shaped channel members disposed transversely of the body and welded together by their flanges, the legs of the U's forming the side walls of the car and the bases or bottoms of the U's together forming the floor. To secure the objects of our invention to the fullest extent we dispose the channel members with the flanges projecting outwardly and the webs of the

U's forming together flush surfaces of the side walls and floor of the car.

In the construction of the end walls we employ a series or assemblage of U-shaped channel members disposed horizontally and welded together by the meeting surfaces of the flanges, said flanges preferably projecting outwardly and the unflanged sides of the webs forming together a continuous interior flush surface for the end of the car.

The invention further consists in the construction of the roof of the car in a similar manner but by the use of members of less gage or thickness than those employed for the body and end where strength is a factor of the greatest importance.

The manner in which the purposes of our invention are attained and other advantages and purposes are secured will be made more apparent from the following description taken in connection with the accompanying drawings in which:

Fig. 1 is a perspective view of a box car body constructed in accordance with our invention.

Fig. 2 is a similar view of a gondola car embodying our invention.

Fig. 3 is a transverse section through the car body on the line 3—3 Fig. 1.

Fig. 4 is a similar transverse section on the line 4—4 Fig. 2.

Fig. 5 is a longitudinal section of the lower portion of the car body embracing one end.

Each of the members which in assemblage form the wall and bottom of the car body consists of a channel member the web of which is indicated at 1 in the various figures while 2 indicates the flanges of said member projecting from one side of the bar. In the body each flanged member is made of a bent length of channel member bent to U form as shown better in Figs. 3 and 4. Said U-shaped members are secured together side to side with the flat outer faces of the flanges engaged directly with one another as shown in the perspective views and in the section Fig. 5 and, in carrying out our invention, said flanges are fastened directly to one another by welding them by the resistance method of electric welding practiced by the use of any suitable apparatus which will per-

mit the pressure members or dies of the welding machine to embrace the flanges of contiguous channel members between them to effect the weld in the manner well understood in the art.

One of such welds is indicated in the drawings at 4. Any number of such welds may be employed as may be found desirable for best securing the members together. By employing an electric weld for this purpose we are enabled to utilize channel members in which the flanges project from the base or web to a much less distance than would be required if the fastening were effected by the employment of rivets, the reason of this being that in riveting practice good engineering demands that the rivet be set in from the edge of the flange a distance equivalent to the diameter of the rivet. By welding, however, the union may be made near to or may embrace in part the edge.

Hence, as will be obvious, we are enabled to reduce the over-all width of the car while securing the desired rigidity and as a consequence are enabled to obtain an increase in the inside width and add thereby to the total cubic carrying capacity of the body. Also, as will be seen, by arranging the U-formed channel members with the flanges projecting outwardly and the web parts meeting closely, we obtain smooth flush interior surfaces for the sides and floor, said flush sides consisting of the web part of the U-formed channel members and said flush floor comprising the base portion of the U connecting said legs. At the top end of the U's we apply an inverted channel member 5 running the length of the body and embracing the ends of said U's between its flanges. This ties the U's together against relative displacement sidewise and adds further to the strength and rigidity of the body. The flanged rail or finishing member 5 preferably has an inside flange extending downward a somewhat greater distance than the outside flange in order to obtain an extended bearing surface and to permit ready welding or fastening of said flange to the inside face of the channelled U by, preferably, electric welds of any desired number at positions indicated at 6 in Figs. 3 and 4. The outer flange of said channel 5 being shorter, leaves room for the application of the welding tools or dies which embrace the web of the upper end of the U-shaped, flanged member and the downwardly depending deeper flange of the finishing rail or channel bar.

The end wall of the body consists of similar channel members arranged transversely, as better shown in the perspective views. The flanges of these members project outwardly and the webs thereof together form a continuous flush inner surface for the end wall. The flanges are fastened together in a similar way to that already described by

electric resistance welds of any desired number, one of which is indicated at 7 in Figs. 1 and 2. The channel members thus assembled horizontally and fastened together afford a complete end wall adapted to resist effectually the strains and shocks and give maximum strength under all conditions with minimum of weight.

In this case, as before, the welding permits the projection of the flange to be minimized with attendant advantage as respects the space occupied by thickness of the end wall. Also it contributes to giving a maximum inside length for the interior of the car body and in this respect adds to the cubic carrying capacity. The end wall thus formed is secured directly to the side walls of the body without the intervention of the usual uprights or posts by fastening the webs of the end channels to the flanges of the last upright U-shaped channel member entering into the formation of the body. One of such welds, of which there may be any desired number, is indicated at 9.

As will be seen, a further advantage of this end wall construction is that it dispenses with the necessity for using an end sill for fastening the upright end wall in position. In the end wall the upper channel member may be specially formed as shown in Fig. 1 to match the pitch of the roof by making its web part of diminishing width from the center, as shown in the figure, and the flange at the upper edge of said web may be omitted, said web being secured or welded with its face against the outer side of the flange for the end member of the roof.

The roof may be constructed in a similar manner or in any other desired way in the case of a box or similar roofed car by supporting the edges of the roof directly upon the longitudinal finishing channels which connect the ends of the U-shaped members, as indicated in Fig. 3. When the roof is made of channel members each member may be bent to give the desired pitch, as indicated in Fig. 3, and at its ends each said member may be welded by its web directly to the web of said longitudinal, channelled tying member by any desired number of welds, one of which is indicated at 10. The shorter outside flange of said longitudinal, channelled member assists in providing for ready application of the welding or pressure electrodes. The roof channel members have their flanges projecting outwardly and rest in close side contact with one another to effect complete closure of the roof elements of the car and are welded directly to one another by welds of any desired number, one of which is indicated at 12. By this means and by the close fitting of the outside surfaces of said flanges the body is closed effectually against entrance of moisture.

As will be seen, our construction not only

provides a very rigid structure of the car body with few chances for collection of dirt and moisture on the inside in the case of the gondola car, a feature which is also of use in the closed box car since the channel member may be bent to form a curve, as illustrated in Fig. 4, at the junction of the leg and base of the U.

From the foregoing it will be apparent that by our invention we are enabled not only to eliminate practically all riveting, reduce or do away with the weights of angle or channel framing, splice plates, stakes, etc., but also effectually secure the main objects of our invention as heretofore set out.

The usual longitudinal central beam or girder for the under body may obviously be employed. The webs and flanges of the channel members at the bottom of the body afford convenient means for making the attachment of the latter member as will be well understood by those skilled in the art of steel car constructions.

In the carrying out of our invention we prefer to employ as the channel members rolled channel bars, suitable lengths of the same to form the floor and side walls being bent up to U form and some of them being stopped off at the door or window openings in the case of the box or passenger car, as indicated in Fig. 1.

If under certain circumstances it is desirable to turn the flanges of the channels inwards it can readily be done.

What we claim as our invention is:—

1. A metal car body having its sides and floor integral and composed of an assemblage of U-shaped channel members disposed transversely of the body and secured together by their flanges, the legs of the U's forming the side walls of the car and the bases or bottoms of the U's together forming the floor.

2. A car body having its sides and floor integral and composed of an assemblage of U-shaped channel members disposed transversely and secured together by their flanges, the legs of the U's forming the side walls of the car and the bases or bottoms of the U's together forming the floor, said channel members forming means for attachment of a central longitudinal under frame, sill or beam.

3. A metal car body having its sides and floor integral and composed of U-shaped channel members disposed transversely of the body in an assemblage wherein the webs of the channels form interior flush surfaces for the sides and floor, the flanges of said members lying in contact and being welded together outside the body in combination with longitudinal channelled finishing bars embracing the free ends of the U's and being welded by their flanges to the webs of said channels.

4. A metal car body comprising essentially U-shaped channel members welded together by their flanges, a finishing longitudinal channel member embracing by their flanges the free ends of said U-shaped members and channel members composing the roof and assembled with their flanges engaged and welded together, the ends of the roof members resting by their web part upon and being welded by said web part to the web part of the finishing channel.

5. A car body having an all-metal end composed of an assemblage of channel bars disposed transversely and engaging one another by their flanges to form a complete end wall, said flanges being directly welded to one another in their meeting surfaces, and an all-metal side wall comprising upright channel members secured together by their flanges, the end members of said side wall being secured directly by their flanges against the webs of the bars composing the end wall at the car body corners.

6. A car body having an all-metal end composed of an assemblage of channel members disposed transversely and engaging one another by their flanges to form a complete end wall, said flanges being directly secured to one another in their meeting surfaces and said flanges extending outwardly so that the webs of the bars will form a flush inside surface for said end wall, and an all-metal side wall comprising upright channel bars secured together by their flanges, a flange of the channel at the car body corner lying against and being secured directly to the webs of the members transversely disposed of the end.

7. In a metal car body, the combination of a body portion comprising U-shaped channel members disposed transversely of the body with the legs of the U upright and welded together by their flanges and an end member comprising transversely extending channel members welded together by their flanges and welded by their webs directly to the flange of the end member of the body.

8. A metal car body having its sides and bottom composed of U-shaped channel members, the legs and bottom of the U's being integral and said members being disposed transversely of the body with the webs of the channels on the inside, the flanges of said members lying in contact outside the body and being welded together.

9. A metal car body composed of integral U-shaped channel members disposed transversely of the body with their flanges directly welded together on their meeting surfaces and longitudinal finishing channels embracing the ends of the U's and having a flange on one side deeper than on the other side, said deeper flange being welded directly to the webs of the U's.

10. A metal car body composed of integral U-shaped channel members disposed transversely of the body with their flanges directly welded together on their meeting surfaces and longitudinal finishing channels embracing the ends of the U's and having a flange on one side deeper than on the other side, said deeper flange being welded directly to the webs of the U's, and a roof

supported directly upon and engaging the surface of the webs of said finishing channels and welded directly thereto. 10

Signed at New York, in the county of New York and State of New York, this 29th day of January, A. D. 1925.

FREDERICK TENCH.
MAURICE LACHMAN.