W. VOSS.

KNOCKDOWN PASSENGER CAR.

APPLICATION FILED OCT. 8, 1921.

1,432,223.

Patented Oct. 17, 1922.

2 SHEETS—SHEET 1.

Fig. 7.

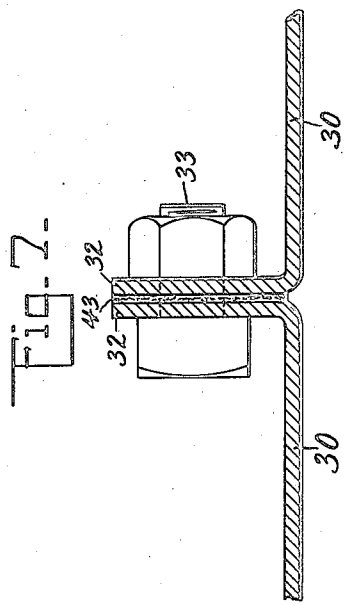


Fig. 6.

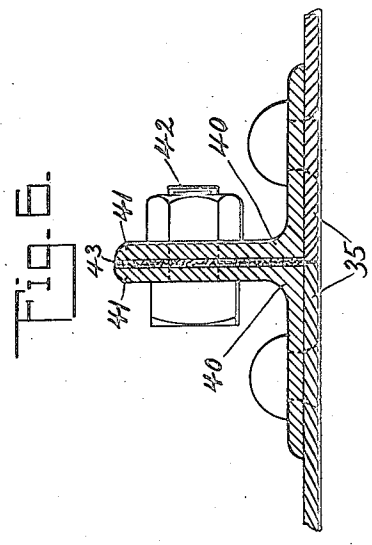
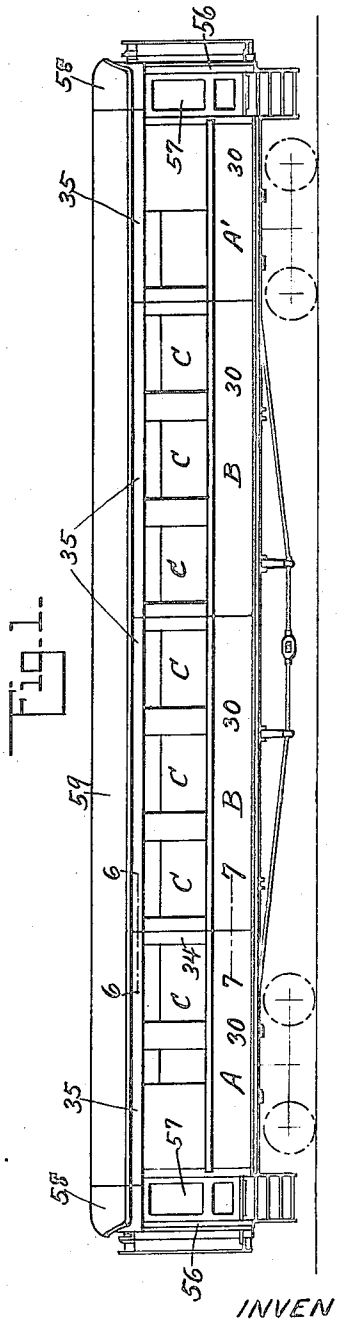


Fig. 1.



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2 SHEETS—SHEET 2.

Fig. 2.

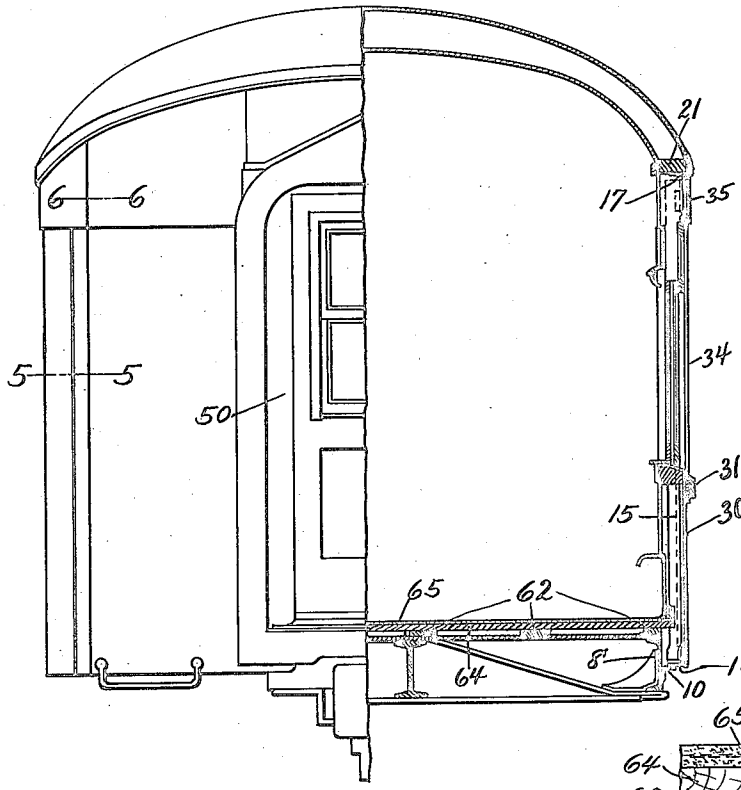


Fig. 3.

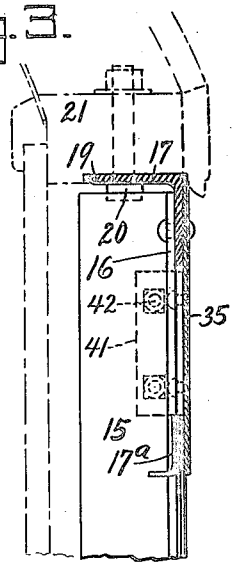


Fig. 4.

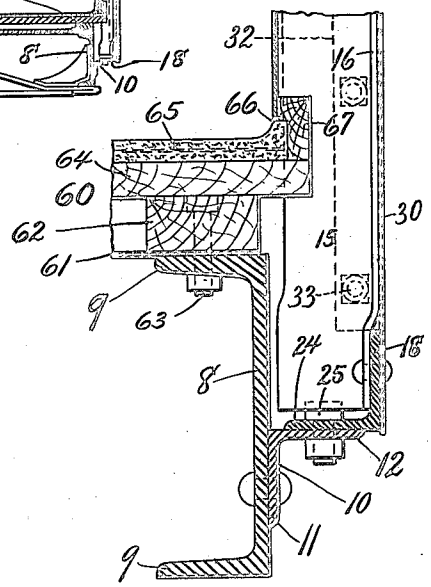
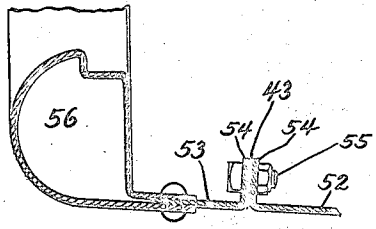


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILLIAM VOSS, OF WILMINGTON, DELAWARE, ASSIGNOR TO AMERICAN CAR AND FOUNDRY COMPANY, OF NEW YORK, N. Y., A CORPORATION OF NEW JERSEY.

KNOCKDOWN PASSENGER CAR.

Application filed October 8, 1921. Serial No. 506,336.

To all whom it may concern:

Be it known that I, WILLIAM VOSS, residing at Wilmington, New Castle County, Delaware, and being a citizen of the United States, have invented certain new and useful Improvements in a Knockdown Passenger Car, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and to use the same, reference being had to the accompanying drawings, which 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.

In said drawings:

Fig. 1 is a side elevational view of an assembled passenger car embodying my invention;

Fig. 2 is a view showing at the left an end elevational view and at the right a transverse sectional view of a car built in accordance with the present invention;

Fig. 3 shows in elevation the upper portion of one of the side posts of the car framing and in section a discontinuous angle riveted to the flanges of said post with a portion of the sheathing positioned outside of said post and angle and riveted to both so as to be permanently attached thereto;

Fig. 4 is a similar view showing the bottom portion of the same post attached to which is one of the discontinuous angles hereinafter referred to with the sheathing secured to the outer face of the post and angle and with the angle connected by bolts to the horizontal outstanding flange of an angle which is connected by rivets to one of the side sills, a portion of the floor of the car being shown in section.

Fig. 5 is a horizontal sectional view of an end portion of the car, the section being taken on line 5—5 of Fig. 2;

Fig. 6 is a horizontal sectional view, the section being taken on the line 6—6 of Fig. 1 or line 6—6 of Fig. 2; and

Fig. 7 is a similar view, the section being taken on the line 7—7 of Fig. 1.

The object of the invention is to produce a knock down car of the passenger car and mail car type which is adapted to be fabricated in attachable sections comprising vertical posts to which are riveted top and bottom angles with metallic sheathing riveted to the outer faces of the posts and angles and so fabricated that the side sections may be assembled each independently of the other, the portions of each section being permanently united by rivets, and the several sections being adapted for assembly "in the field" or at the point of delivery of the car sections. In the fabrication of passenger cars for export, it is desirable that the parts shall be so built up as to possess the requisite strength and be capable of assembly after they have been shipped to their destination.

In export work it has been found convenient to ship car underframes practically as units, that is, with all of the parts of the underframe permanently united by rivets which can be better applied in the shops where riveting machinery is available. In some cases it may be desirable to fabricate the transverse members of the underframe as units, including for example, the bolsters, cross bearers and end sills, etc., and connect to them the longitudinal sills, including the center sills and side sills, at the point of delivery, or all these parts may be assembled in the shops ready to receive the body or super-structure and shipped complete in one piece or spliced at one or more places. In the present instance, the side sills are of channel form comprising commercially rolled channel sections 8. These channels are arranged with the flanges 9 thereof so disposed as to be turned inwardly, that is, towards the central portion of the car underframe, thereby having the web portion vertical. Riveted to the outer face of the web portion of each side sill is a continuous commercially rolled angle 10 which has its vertical leg 11 in contact with and permanently riveted to the side sill, the horizontal leg 12 of this angle being perforated preferably by punching, and projecting outwardly from the side sill for the purpose hereinafter described. It is preferred that

the angle 10 shall be riveted to the side sill 8 relatively low down, that is, near the bottom flange 9 of the side sill, and the outstanding flange 12 of this angle serves as a supporting means upon which the side sections hereinafter described in detail can rest, while the parts of the car body are being assembled in the field. Referring to the side sections, it will be noted that in the car of Fig. 1 there are four of these side sections lettered respectively A, B, B, and A'. These side sections comprise, as is usual in passenger car construction, numerous posts which are placed one at each side of each window opening C and these posts are connected together by top and bottom angles. These angles serve for connection respectively with the underframe and with the roof framing members and the sections are fabricated as follows:

It is relatively unimportant what shall be the section of the posts 15, but it is important that said posts shall have longitudinally extending vertical flanges 16 and connected to said flanges both at top and bottom are discontinuous angles 17 and 18, the angle 17 being riveted to the flanges 16 near the upper end of the posts and extended inwardly above the tops of the posts, the horizontal legs 19 of said angle 17 being perforated for attachment by means of bolts 20 with the wood side plates 21 shown in Fig. 3. The inturned horizontal legs 24 of the angles 18 extend inwardly below the posts 15 and are perforated to receive the bolts 25 which connect the continuous angle 10 attached to the side sill with the discontinuous angles 18 which are connected each to a plurality or series of the side posts 15. The sheathing 30, which extends from the bottom portion of the angles 18 to and within or under the belt rail 31, comprises relatively wide sheets of metal and each sheet is flanged as shown at 32 in Fig. 7. These flanges are perforated to receive the securing bolts 33, which is will be noted extend longitudinally of the car and are projected through the flanges 32 to secure the sheets of the side sections together. The sheathing 34 which covers the posts between the window openings is similarly flanged and connected together. At the letter board 35 and extending from the lower edge of the plate angle 17 to the upper edge of the letter board stiffener 17^a there are provided vertically extending angles 40 which are secured by countersunk rivets to the sections of the letter board. The inturned legs 41 of the angles 40 are perforated, extend inwardly towards the interior of the car and are connected by bolts 42 as best shown in Fig. 6.

Interposed between the flanges 32 of Fig. 7 and the flanges 41 of Fig. 6, protective packing 43 is provided, which packing serves as cushioning means in assembling the parts and it also serves as insulation for the joints referred to.

The side sections of the car being fabricated as described in the shops may be set up into a complete car, assembled at the shop for painting, lettering, etc., after which they may be taken down, packed or crated, and shipped as sectional units of the car, thereby providing sections of such area that they may be placed in the holds of the vessels in which the car is to be shipped to its destination.

Fig. 5, which is a horizontal sectional view taken on the line 5—5 of Fig. 2 looking downwardly, illustrates the manner of connecting the end sections A, A' of the car side with each end portion of the car, each of which is fabricated as a unit, including door framing 50 of the vestibule end portion of the car, and it is to be noted that the end sheet sections 52 and 53 are flanged at 54 and are united through the flanges 54 by means of the bolts 55, the connection at this point being substantially the same as the connection of the side sheets, with this difference, that the corner post 56 is of relatively tubular form to serve as one of the framing members of the side door 57 and to support the hood portion 58 which serves as an extension of the roof 59 of the car, this hood portion being fabricated separately, preferably, from the roof portion 59, but as the details of the roof and hood extensions vary considerably, details thereof are not illustrated or claimed. It is evident from the foregoing that the side sections B, B and end sections A, A' may be bolted to the angles 10, the side plates 21 secured in position and the end portions of the car bolted together, thereby forming the shell of the super-structure, upon which the roof 59 and hoods 58 may be built at the point of delivery, it being understood that the bolts 25 connecting the angles 18 and 10 are to be placed in position before the flooring, indicated generally by the reference character 60, is placed in position. This flooring comprises in its details the bottom sheet 61 which may be either a flat sheet or of corrugated metal upon which is placed the floor nailing strip 62 which strip is secured by the bolts 63 to the top flange of the side sill 8. The wood floor 64 is connected with the floor nailing strip 62 and similar strips extending longitudinally of the car as shown in section in Fig. 2, after which the composition surface 65 may be floated into position and be anchored by the shoulder 66 formed on the wood longitudinal strip 67. All of the parts from 60 to 67 may be applied either at the fabricating shop where the process of manufacture is started or in the field as may be desired. It is preferable that this shall be done in the field so as to afford more ready

access to the bolts 25 connecting the sections of the car side to the sills.

What I claim is:

1. In a knock down passenger car adapted to be fabricated in attachable sections, vertical posts, horizontal top and bottom angles riveted thereto, metallic sheathing riveted outside of the posts and angles, continuous side sills and side plates spanning a plurality of said sections and adapted to be bolted to the top and bottom angles riveted to the posts.

2. In a knock down car, a continuous side plate, a continuous side sill, spaced side posts, angles riveted to and extending outwardly from said sill, a series of angles riveted to the outer faces of said posts and extending inwardly therebelow and connecting a plurality of said posts, the angles on the sills being adapted to support said posts and the angles secured thereto while said angles are being bolted together and sheathing sections secured to said posts, there being perforated flanges on said sheathing adapted to extend relatively inwardly and between some of said posts to receive securing bolts.

3. In a knock down car, a plurality of side sections each of which comprises flanged posts commercial sections having vertically extending flanges connecting said posts and horizontally extending flanges adapted to connect the section to the car frame, side sheets permanently connected to said posts, said sheets including contiguous perforated flanges turned inwardly towards the interior of the car and adapted to receive securing bolts which are not visible from the exterior of the assembled car.

4. A knock down passenger car which is adapted to be built up and painted and which can be disassembled, crated, shipped and reassembled where it is to be used and comprising continuous underframe members, angles riveted thereto and having outwardly disposed supporting flanges, side posts, a series of angles each riveted to a plurality of posts at top and bottom, metallic sheathing riveted to the outer side of said posts, there being perforated flanges on said sheathing adapted to be bolted together intermediate certain of said posts.

5. In a knock down car, a continuous side plate, a continuous side sill, spaced side posts, discontinuous flanged top and bottom members permanently attached each to a plurality of said posts near the tops and bottoms thereof, sheathing extending longitudinally of the car and having inturned flanges between said posts and removable securing means extending through said flanges.

6. In a knock down passenger car adapted to be fabricated in attachable sections, vertical posts, horizontal top and bottom angles riveted thereto, metallic sheathing riveted outside of the posts and angles, there being integral perforated and inturned flanges on said sheathing adapted to be connected by bolts between said posts, continuous side sills and side plates spanning a plurality of said sections and adapted to be bolted to the top and bottom angles riveted to the posts.

7. In a knock down car, a continuous side plate, a continuous side sill of channel form with inturned flanges and vertical web, spaced side posts, angles having vertical flanges riveted to said web and having perforated horizontal flanges extending outwardly from said sill, a series of angles riveted through vertical flanges thereof to the outer faces of said posts and having perforated horizontal flanges extending inwardly therebelow and connecting a plurality of said posts, the angles on the sills being adapted to support said posts and the angles secured thereto while said angles are being bolted together and sheathing sections secured to said posts there being perforated flanges on said sheathing adapted to extend relatively inwardly and between some of said posts to receive securing bolts.

8. In a knock down car, a plurality of side sections each of which comprises flanged posts commercially rolled sections having vertically extending flanges connecting said posts and horizontally extending flanges adapted to connect the section to the car frame, side sheets permanently connected to the outer side of said posts and sections, said sheets including contiguous perforated flanges turned inwardly towards the interior of the car and adapted to receive securing bolts which are not visible from the exterior of the assembled car.

9. A knock down passenger car which is adapted to be built up and painted and which can be disassembled, crated, shipped and reassembled where it is to be used and comprising continuous underframe members of channel form with inwardly disposed flanges, reinforcing and supporting angles riveted thereto and having outwardly disposed perforated flanges, side posts, a series of angles each riveted to a plurality of posts at top and bottom, metallic sheathing riveted to the outer side of said posts and angles, there being perforated inturned flanges on said sheathing adapted to be bolted together intermediate certain of said posts.

10. In a knock down car, a continuous side plate, a continuous side sill, a continuous supporting angle riveted to the outer face of said side sill and having a horizontal perforated projecting flange, spaced side posts, discontinuous flanged top and bottom members permanently attached each to a plurality of said posts near the tops and bottoms thereof, the bottom flanges being adapted to rest on the angle secured to the side sill and be attached thereto by removable bolts, sheathing riveted to the outer

face of said posts and angles and extending longitudinally of the car and having inturned flanges between said posts and removable securing means extending through said flanges.

11. In a knock down car adapted to be assembled, disassembled for shipment and reassembled for service comprising continuous side sills and side plates, and side sections each including a plurality of side posts, and perforated angular sections connected permanently with a plurality of said posts and adapted to be bolted to said side sills and side plates.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

WM. VOSS.

Witnesses:
F. H. GIBBS,
HARRY W. CHAIRS.