METHOD OF FABRICATING AND SHIPPING RAIL CAR BODIES AND SHIPPING UNIT FOR SAME

Albert G. Dean and Walter B. Dean, Narberth, Pa., assignors to Edward G. Budd Manufacturing Company, Philadelphia, Pa., a corporation of Pennsylvania

Application May 18, 1940, Serial No. 335,976

3 Claims. (Cl. 105—363)

The invention relates to method of and means for fabricating and shipping rail car bodies, and is particularly applicable to the fabricating and shipping of such bodies built of sheet metal and where the car bodies are to be used at a distant point from their place of manufacture.

It is an object of the invention to reduce the fabrication and shipping costs, and this object is in large part achieved by first fabricating the body in sub-assembly units which may be fabricated on jigs in the plant of the manufacturer, for example, into an underframe assembly, side sub-assemblies, end sub-assemblies, and an arched roof sub-assembly. These sub-assemblies are formed in their margins with suitable final assembly joint structures through which they may be readily joined together in final assembly, as by spot welding.

The sub-assemblies, according to the invention, are readily secured together into a shipping unit including all the principal sub-assemblies of a body by bringing the roof and underframe sub-assemblies together to form a shipping case by joining them temporarily along their longitudinal margins and storing within the casing so formed the other sub-assemblies, such as the side and end sub-assemblies.

This shipping unit forms a compact case taking up very much less shipping space than the completely assembled body and can be compactly stored on cars or ships for shipment as a unit to the distant point of final assembly. When the unit reaches the point of final assembly, it can be readily assembled into the completed cars by bringing the sub-assembly units together and joining them along their formed final assembly joint margins.

Other and further objects and advantages and the manner in which they are attained will become apparent from the following detailed description when read in connection with the appended drawing forming a part hereof.

In the drawing:

Fig. 1 is a diagrammatic side elevational view of a rail car in connection with which the invention may be practiced.

Fig. 2 is a diagrammatic side elevational view of the shipping case of the invention.

Fig. 3 is a typical more or less diagrammatic cross section of the rail car body shown in Fig. 1, the section being on an enlarged scale.

Fig. 4 is an exploded view in cross section showing the unit sub-assemblies before they are assembled as shown in Fig. 3.

Fig. 5 is a diagrammatic cross sectional view of the shipping case of Fig. 2, on the same scale as Figs. 3 and 4.

According to the invention, the rail car body designated generally by the reference character 10 may be fabricated at the plant of the manufacturer into the separate sub-assembly units indicated in Figs. 4 and 5 and comprising two side wall units 11 and 12, an arched roof unit 13, an underframe sub-assembly unit 14 and two end wall units 15 only one being shown, since these units may be substantially identical. End sill units which are joined in final assembly to the end, underframe and side units to complete the final assembly are not shown as these units do not take up much room and can readily be separately shipped and handled.

In the final assembly the units shown in Fig. 4 can be brought together and joined as generally indicated in Fig. 3 into the full height body structure. The specific construction of the units themselves or their manner of joining in final assembly is not important in the realization of the invention and will therefore not be described except as they enter into the construction of the novel shipping case of the invention.

The roof unit has its margins formed with angular final assembly joint formations, formed by a longitudinal member 16 connecting the ends of the carlines 17, and downward extensions 18 which may be portions of the outer roof sheathing 19.

The underframe unit 14 which may comprise flooring 20, transverse beams including bolsters, as 21, and longitudinal stringers 22 interconnecting the flooring and transverse members, has the sides of the flooring terminate short of the ends of the transverse beams, see Fig. 4, while the transverse members are of a length less than the width between the downward extensions 18 at the opposite sides of the roof.

From this it will be seen that the roof unit and the underframe unit may be brought together as shown in Figs. 2 and 5, to form a closed box-like casing and when so brought together, the members 16 of the roof rest upon the ends of the transverse beams, as bolster 21, the extensions 18 on the roof unit overlap the outer faces of said beams and the flooring 20 of the underframe unit is received between the opposite ends of the carlines 17 of the roof unit, all as clearly appears in Fig. 5.

The roof and underframe units may be conveniently secured together in this relation by angle bars 23 fitting the opposite ends of the transverse beams, such as bolster 21, and secured
thereby, as by bolts 24, as shown at the left of Fig. 5. The roof unit may be secured to the vertical arms of the angle bars by temporarily welding or otherwise securing metal strips as 28, see Fig. 2, to certain of the downward projections 19 and to the angle bars 22. As shown in Fig. 5, the remaining main units of the body, such as the side wall units, and the end units may readily be stored in the space between the flooring 26 of the underframe and the roof. Only one end wall unit 18 appears in this figure, but it will be understood that both end wall units may be arranged in the same plane in end to end relation, so that only one would show in a section according to Fig. 5.

These stored units within the shipping case formed by the underframe and roof units may be suitably secured and spaced to avoid marring by shifting, by wooden stringers, as 26. Also, the ends of the casing may be closed, as indicated in Fig. 2, by removable secured wooden closure caps 27 projecting beyond the metal of the ends of the casing and thus protecting the ends of the casing in shipment. Since parts of the underframe, such as the center plate from the bolster 21, project below the plane of the angle bars at the sides, to protect all such parts and to facilitate moving the shipping case about, wooden skid bars, as 28 are preferably provided under each angle bar 22 and are rigidly secured thereto, as by screws 29. These bars preferably project beyond the units at their ends a distance similar to the projecting portions of the end closures 23.

By comparison of the height of the complete body as shown in Figs. 1 and 3 with the height of the improved shipping case containing the various sub-assembly units entering into the body structure, it will be seen that a very substantial saving in space is secured by shipping the bodies in this compact manner. This method of manufacture and shipment has therefore substantial advantages, particularly in cases where the bodies have to be shipped across long stretches of water.

What is claimed is:

1. A shipping unit for a rail car body fabricated in a small number of main subassemblies which, when joined together in final assembly constitute a substantially complete body structure, each of said subassemblies including framing and paneling, and such subassemblies comprising a full-length underframe subassembly, a full-length deeply arched roof subassembly, full-length side wall subassemblies and end wall subassemblies, the lateral margins of the roof subassembly being provided with angular final assembly joint formations, the roof subassembly superposed directly on the underframe subassembly, being arranged to intersect with corresponding lateral formations on the underframe subassembly and prevent appreciable lateral shifting of said roof and underframe subassemblies with respect to each other and means to secure the roof and underframe subassemblies together in this interlaced relation to constitute them a box-like casing capable of being handled and shipped as a unit, said casing having inside dimensions transversely greater, up to a height equal at least to the aggregate thickness of the side subassemblies and an end subassembly, than the predetermined height of the side wall and end subassemblies, whereby the side and end wall subassemblies may all be received and housed in superposed layers in the casing for shipment as a unit therewith.

2. A shipping unit according to claim 1 in which the means for securing the roof and underframe subassembly together comprises an angular longitudinally extending connecting member associated with each of the lateral interlaced margins of the roof and underframe subassemblies, said member having one arm thereof secured to the underframe subassembly and another arm thereof secured to the roof subassembly.

3. A shipping unit according to claim 1 in which the underframe subassembly has portions projecting some distance below the main body thereof, the provision of longitudinal skid beams extending at least the length of the casing and secured to the underside of the opposite side margins of the casing, said skid beams being of a vertical depth projecting below the deepest projecting portions of the underframe subassembly.

ALBERT G. DEAN,
WALTER B. DEAN.