

The trucks thus located with regard to each other, and with the two wooden side sills resting loosely on the body bolsters, the whole is pushed across the midway into the position shown in fig. 7, in the car shop, where the balance of the underframing is put into position. Along this same track in the building, there is a long row of cars in different stages of advancement, so, in order to have them all pass through the shop uniformly, they are all connected together by chains or other connecting links at the couplers, so that between the different steps, the row moves forward one car length, leaving space for the entry of this skeleton car composed of trucks and centre sill.

THE BOTTOMING is the first operation in the series through which the car passes in working down the shop. There are seven men working on this operation, working together when required, and independently on the smaller parts. Everything runs as by clock work, every man knowing exactly what is expected of him. Very little fitting of any of the wooden members is required, as the machining in the wood-working department takes care of all fitting parts except in such places as it is more convenient or quicker to do the fitting right on the job.

The first step is the fitting of the side sills, which are resting loosely on the body

steel centre sill are also placed. These are for the nailing of the decking.

The truss rods, bent in the shop in the manner described in Canadian Railway and Marine World, of Dec., 1911, are then slipped into position through the holes in the end sills, and after locating on the truss rod posts and under the queen posts, have the turnbuckles attached, and the end washers and nut screwed on, the outer truss rods being then tightened up, the inner ones not being tightened up at this stage, as the end timber has as yet to be added at a latter period in the car construction.

At this point in the proceedings, one of the workmen leaves the general work to assemble the air cylinder to its supporting frame preparatory to fitting to the needle beams as described. Another of the workmen, while the frame is being tightened up at all points, goes over the top surface of the frame thus far assembled, with a paint brush on the end of a stick, covering all the upper surfaces with a coating of red paint, thereby protecting the contact surfaces between the frame and the decking. It might again be emphasized that all the fittings and parts for the car are kept conveniently located to the assembling point at all the stages of erection. At this point, the fittings are kept in the row of bins in the rear in fig. 7, while the members are located in piles alongside of the assembling point.

located squarely across the car and nailed. Working in both directions from this central plank, the balance is laid, the workmen nailing down every third or fourth plank in the edge at the matched strip. The planking is made to fit over any protruding bolt heads in the sills, by chopping out a recess in the lower face. The rest of the base castings for the superstructure framing are also located, and special length decking fitted around. The decking at the centre is slightly longer than that in the body of the car, from the fact that the door spaces are located there.

The decking having been nailed along the intermediate sills on every third or fourth plank, and this operation completed for some distance on each side of the centre, a workman follows along the different sills, driving in nails a short distance as in fig. 8, until they have been placed in each plank the length of the car. This workman then goes over the same nails with a light sledge, driving them home with a single blow. Thus every movement is made to count, and the planking is laid with the least possible amount of labor in the most expeditious manner.

SUPERSTRUCTURE. The most spectacular part of the car construction operation is the erection of the superstructure framing. While the last nails of the decking are being driven home, the train of cars

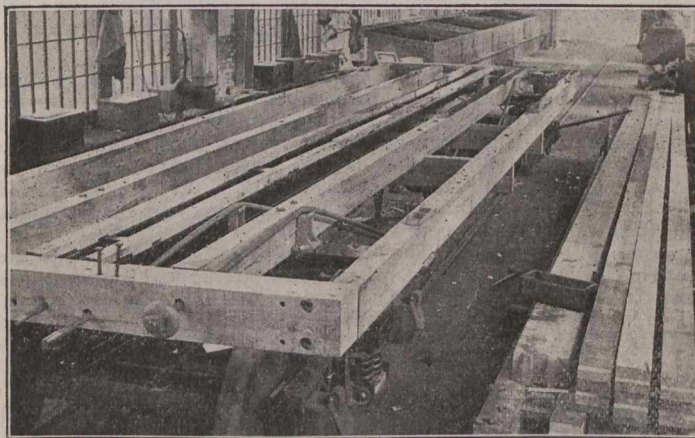


Fig. 7.—Assembling Car Underframing.

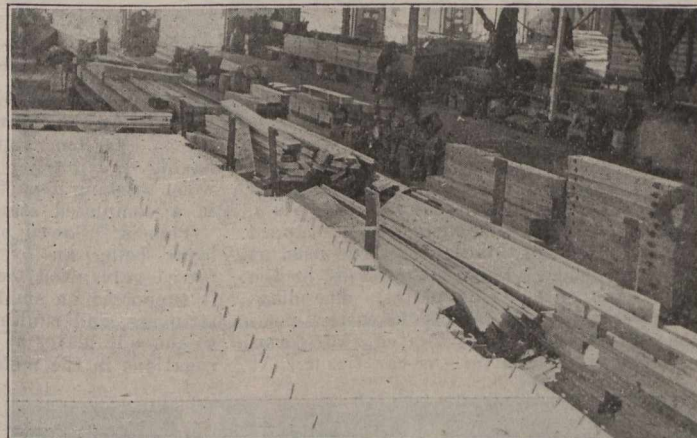


Fig. 8.—Decking Car Top.

bolsters from the locating work they were called upon to perform in the yard. While recessed at the points where they rest on the body bolsters, cavities must be chopped in the bottom of the recesses for the sills to rest evenly over the rivets of the bolster. The side sills are then bolted to the bolsters through the base caps of the superstructure bracing, shown in fig. 7. At the same time, the four truss rod saddles are located on the bolster and bolted in place, and the same operation performed with the queen posts on the needle beams, the latter being then bolted to the side sills. The air cylinder on its supporting framework is then swung up into position under the needle beams, and bolted thereto.

The ends of the side sills, which have previously been tenoned in one direction only, have part of this tenon cut off to fit into the mortise of the end sills, which are loosely put in place. At the same time, the end bumper plate which goes between the end sill and the end of the steel centre sill, is slipped into position. The truck king pins are also dropped into place.

The framing is now ready to receive the wooden intermediate sills which are kept at hand in the pile to the right in the illustration. These are dropped in place and bolted close up against the outer truss rod posts. Similarly the lapping or strips laid on the

Between each pair of assembling tracks, there is a third track communicating directly with the wood-working shop across the midway, on which the stock is constantly replenished. Likewise the fittings, such as turnbuckles, end plates, etc., have limited stores in the bins mentioned, with greater stores outside the wall opposite the point where that particular part enters into the construction. The inside stores are replenished from time to time through doors located along this wall. Convenience is a strong point in the layout of this car building plant, and means a great deal towards the rapidity with which it is possible to turn out the cars.

DECKING. For the decking, the bottomed car is moved a car length further along the shop, a new gang taking up the work at this point, all the cars moving at the same time, each gang changing cars. Another car enters from the outside gang for the bottoming gang to commence operations upon.

The decking operation is shown in fig. 8. On it, seven men are engaged. As soon as the car is placed, the decking gang throw up on to the car from the pile to the right in fig. 8, sufficient decking to cover the car spacing it roughly along the length of the car. From a mark on the side sills at the centre of the car, the first deck plank is

is moved along another car length, and, at the same time, the workmen commence throwing on to the deck of the car the machined car belting rails, the work on which has been completed just previously, by an operator who attaches the upper bevel edges to the rail for the dislodgement of the grain for which the cars are constructed. The triangular shaped strip is nailed to the belting and sawn to the required lengths, and set aside ready to throw on the car as it is moved along the line. While the nailing of the decking is being completed, a workman from the superstructure gang goes over the deck surface and drills the diagonal and vertical holes through the decking for the small superstructure tie rods, completing the task before the car is ready to be moved along. The belting placed on the deck is located in pairs. The material for the superstructure diagonals is also placed on the deck in a convenient manner.

On the edges of the deck, the roof side plates are placed, and across the car on the deck between the side plates, the carlines are fitted with bolts at the ends across between the side plates lightly tightened up, and when tie bolts from the carlines through the side plates are located, all the bolts are tightened down carefully, making sure that the roof structure thus formed