

the fire while the engine is running is by the use of the ash hoe. Experience with drop grates located in the center of the firebox has not been entirely satisfactory.

The suggestion to place these grates in the two back corners of the firebox has been tried with varying success. With a sloping boiler head and small fire door it is a practical impossibility to clean a fire quickly with this arrangement. The opening formed when the grate is down is directly underneath the fire door and the ash hoe or slash bar cannot be used to advantage in punching large clinkers through. An engine with a large fire door and vertical boiler head may permit this plan to be used with some success but, it is a very poor arrangement to put in an engine with a wide fire box having a sloping boiler head and small fire doors.

The road with which I am connected has tried all of the above plans and has found them unsatisfactory for the reasons I have stated above. Experience finally led to placing the dead grates in the second section from the back and time has proved that this is the proper location for them as judged by the service of this road. The fireman has plenty of room to work his ash hoe and can always see what he is doing. The fire does not pile up on the dead grate as the draft carries it forward, and in case it does, through carelessness of the fireman, it can be readily leveled. The location is especially favorable for quick work on the clinker pit. The disadvantages that exist in the other plans have not been found in the one that I suggest.

Yours truly,

A ROAD FOREMAN.

Sixty Thousand Pounds Capacity Box Car

Boston & Maine R. R.

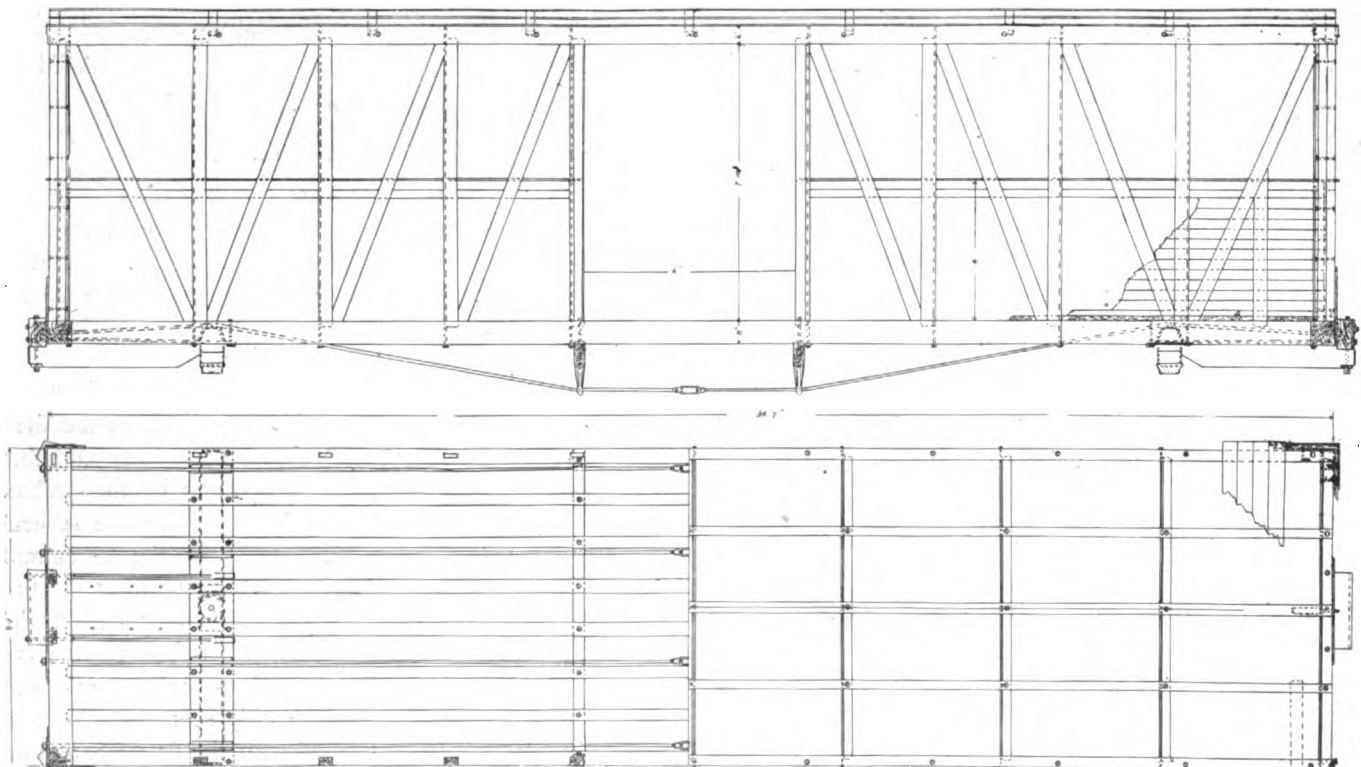
THE Western Steel Car and Foundry Co., of Hege-wisch, Ill., are building an order of 1,500 box cars for the Boston & Maine road. The principal point of interest at this time is that these cars are not of the composite type, but of wood throughout, except the body bolsters, which are of pressed steel, as in the old days before steel construction had reached its present favorable consideration for freight equipment.

These cars are built to the dimensions recommended by the American Railway Association and are of 60,000 pounds capacity. They have a light weight of 32,700 pounds, while the body alone weighs 20,700 pounds.

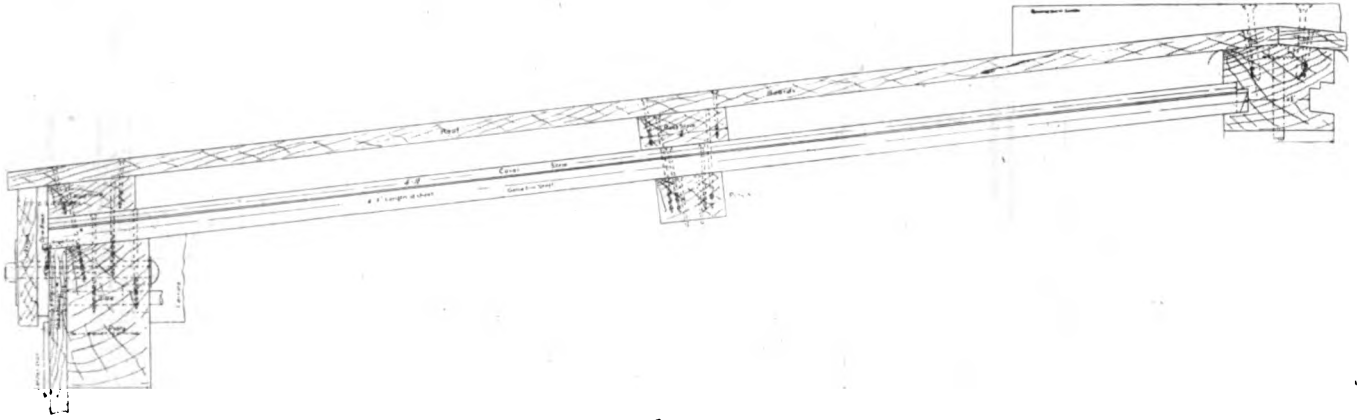
These values give a ratio of light weight to paying load equal to 54.5 per cent, while the weight of the body alone is only 34.5 per cent of the rated loading.

To produce these results the details have been carefully designed to give maximum strength for the least material. All post rods and framing rods are $\frac{5}{8}$ inch in diameter and lag screws $\frac{3}{8}$ and $\frac{1}{2}$ inch, in accordance with the scheme for light weight. The four $1\frac{1}{8}$ inch truss rods with enlarged ends, have a drop of 21 inches and pass over the pressed steel body bolster to the end sills.

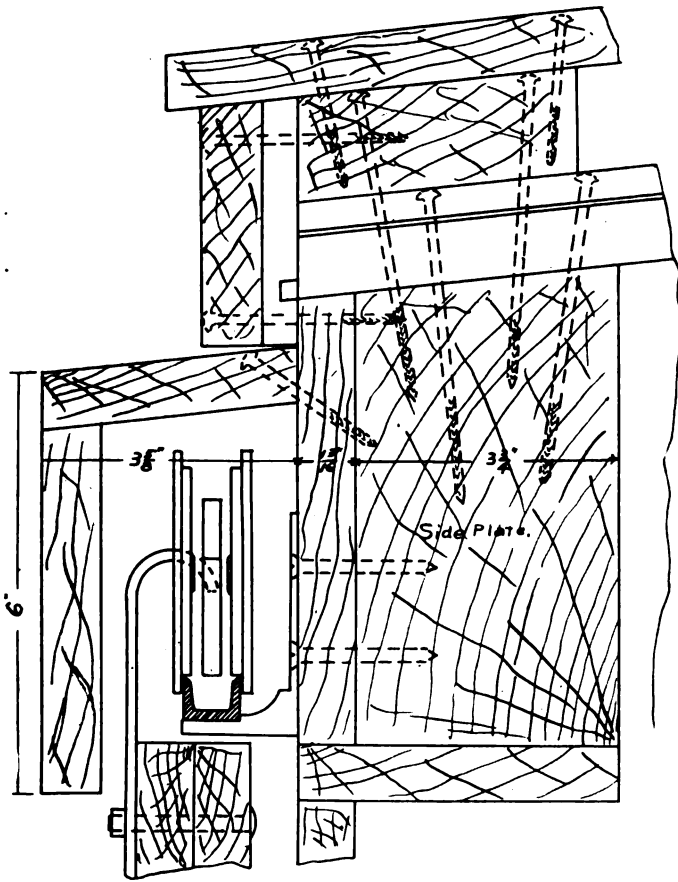
The end sills are exceptionally strong, being 8x8 inches and the corner posts also are of liberal size, in two pieces,



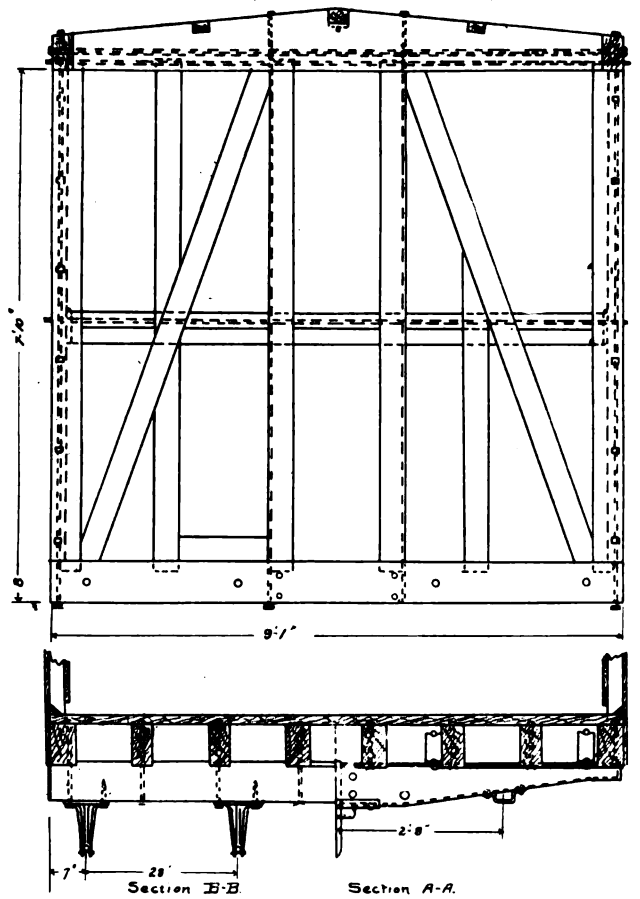
SIDE ELEVATION OF FRAME, HALF FLOOR FRAMING AND HALF ROOF FRAMING—60,000 LBS. CAPACITY BOX CAR, B. & M. R. R.



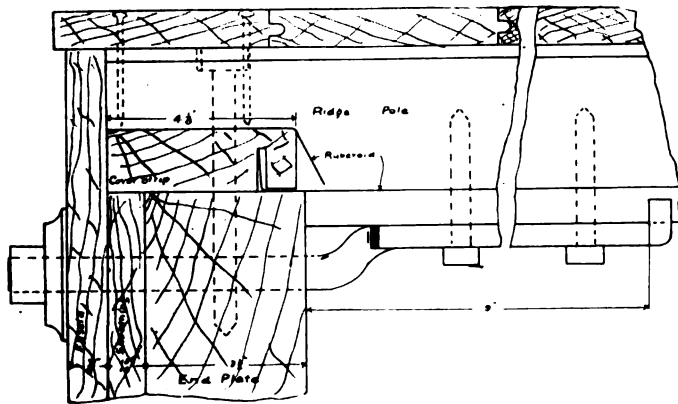
HALF SECTION THROUGH ROOF—60,000 LBS. CAPACITY BOX CAR, B. & M. R. R.



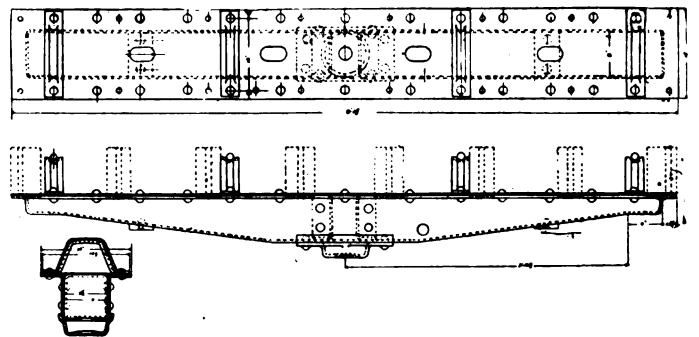
CROSS SECTION THROUGH DOOR CAP—60,000 LBS. CAPACITY BOX CAR, B. & M. R. R.



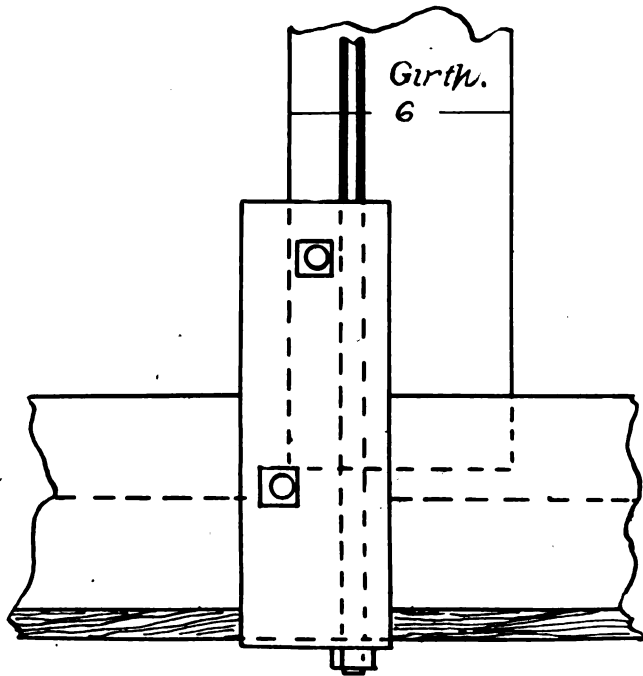
END ELEVATION OF FRAME—60,000 LBS. CAPACITY BOX CAR, B. & M. R. R.



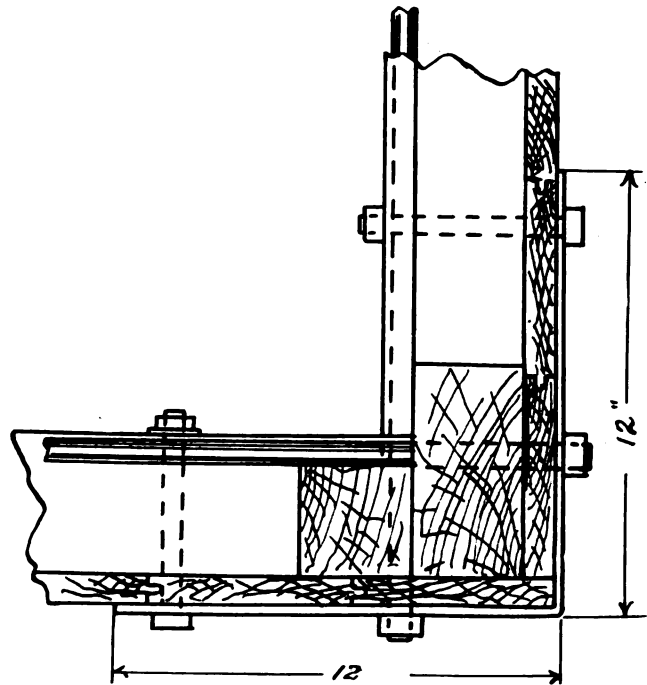
SECTION THROUGH END PLATE—60,000 LBS. CAPACITY BOX CAR, B. & M. R. R.



PRESSED STEEL BOLSTER—60,000 LBS. CAPACITY BOX CAR, B. & M. R. R.



ELEVATION OF GIRTH CONSTRUCTION—60,000 LBS. CAPACITY BOX CAR, B. & M. R. R.



SECTION OF GIRTH CONSTRUCTION—60,000 LBS. CAPACITY BOX CAR, B. & M. R. R.

having a face of six inches at the outside and gained for the girths on the inside, making a solid construction to resist shocks and shifting loads.

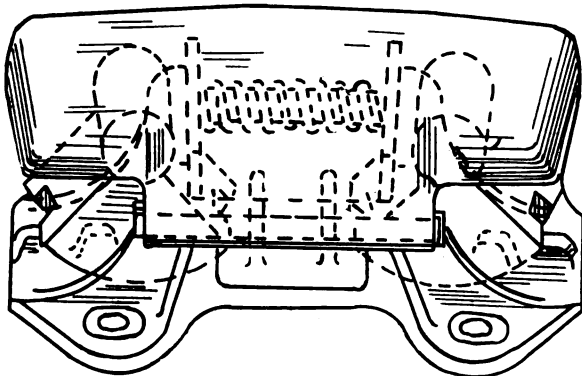
The eight longitudinal sills are double tenoned into the end sills and have no joint bolts, the outside pair of truss rods performing that function. The door posts are $4\frac{3}{4}$ inches on face by $4\frac{5}{8}$ inches thick and grooved for the framing rods, while the intermediate posts are $4\frac{3}{4}$ inches on face by 3 inches thick. All posts are tenoned into sills and plates. The braces which are also $4\frac{3}{4}$ inches by 3 inches, are without pockets.

The body is carried on Fox pressed steel trucks and is equipped with the Miner draft rigging and gravity side bearings. The general dimensions are given herewith, which taken in connection with the elevations and plan of framing furnish the means to an understanding of the general features of the design.

Mr. J. T. Chamberlain, master car builder of the Bos-

ton & Maine, to whom we are indebted for the illustrations, explains that there is a very good reason why this road continues the use of wood in freight car construction, namely, that it fills the requirements of the road better than any other type of car, even though steel may have points of superiority over wood on other roads.

- Length over outside end sheathing...36 ft. 9 and one-fourth in.
- Length over inside end sheathing.....36 ft.
- Width over outside side sheathing...9 ft. 3 and one-fourth in.
- Width over inside sheathing8 ft. 6 in.
- Width over eaves9 ft. 6 and seven-eighths in.
- Height, inside8 ft.
- Height from top of rail to top of brake shaft...13 ft. 11 5-8 in.
- Height from top of rail to top of running board...13 ft. 3 3-4 in.
- Height from top of rail to top of eaves (Murphy roof)12 ft. 7 in.
- Height from top of rail to top of floor.....4 ft. one-half in.
- Height from top of rail to top of body bolster 39 in. with 1 and three-eighth in. spring caps.



MINER GRAVITY SIDE BEARING — 60,000 LBS. CAPACITY BOX CAR, B. & M. R. R.,

