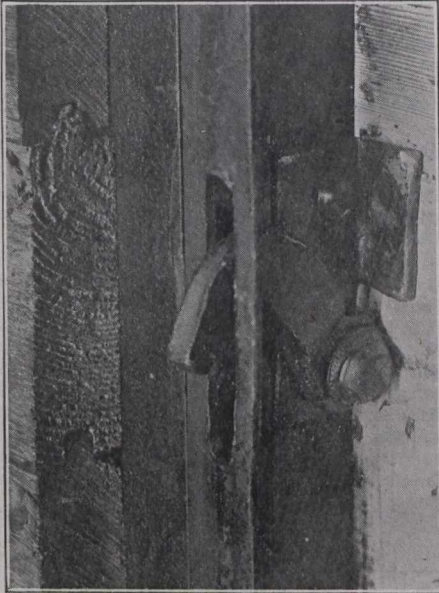
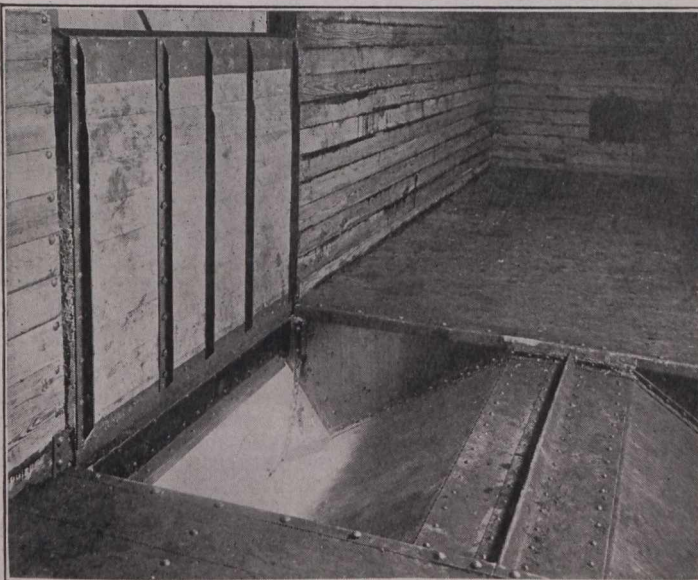


tom and is almost vertical, and has no closing shaft, but is closed by hand, and secured by the shaft, on which are projections which engage the edge of the door at different points, holding it to a positively closed position. The ends of the hopper doors have flanges which shut into pockets or grooves formed by plates on the ends of the hopper. The whole



Grain Door Clasp.

construction of the hopper is so simple and strong that an inspection of the car convinces one that it is very unlikely that the hopper would ever become defective unless in a wreck, and the hopper not being subject to corrosion the same as open coal cars, should, barring wrecks, last the life of the car. The grain doors are formed by section of the floors at the doorway folding up against the door posts. As can be seen,



Hoppers Open and Grain Door Up.

these doors are thoroughly reinforced, are simple, and should not cost much more to maintain than the floor section at this point.

One of the principal reasons for working out this car was to secure a car suitable for coal in one direction and grain in the opposite direction, so as to avoid, to a large extent, empty mileage while

hauling other cars for coal. This refers more particularly to anthracite coal. In working this out, it seems that the solution of the grain door problem has been reached. In building, each hopper is filled with flaxseed and hammered, which is the most severe test possible, outside of water. They are all absolutely flaxseed tight.

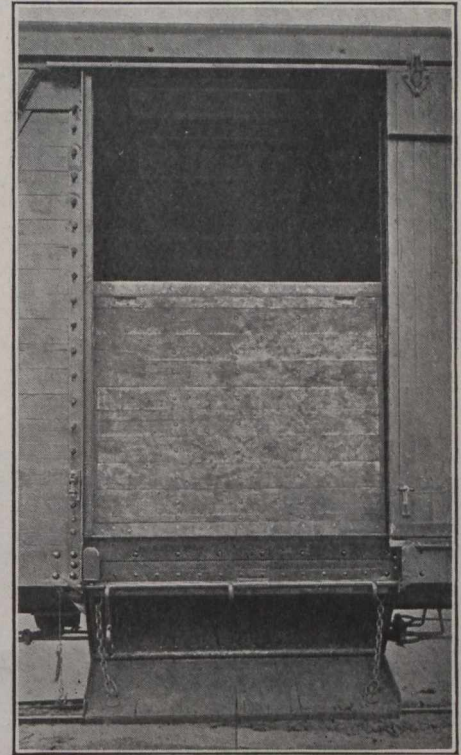
In dumping, the grain is thrown to the side, using the same elevator arrangement as the ordinary car. In dumping coal, it goes without saying that it is better to throw the load to the side rather than to the centre of the track and have the men crawl under for it. To unload a car of grain, the pin which holds the clamping shaft handle is driven out, which allows the hopper door to open and some 50% of the load runs out about as fast as the elevator can take it away, after which the floor door is unlatched and pushed down, and the remainder of the load brought out through the side door in the usual manner. This saves about one third of the time ordinarily taken to unload.

The arrangement increases the weight of the car about 800 lbs., compared with a car not fitted with grain door equipment, but when both cars are loaded with grain this difference is reduced the amount of the grain and fittings of the ordinary car.

The cost of maintenance of the ordinary grain door and fittings, including the usual nailing strips on the door posts, has been variously estimated at from \$6 a year up. Approximating the additional cost of hopper bottom and folding grain door at \$50 a car, the cost would be less with the hopper bottom car than with any kind of grain door that has been used in the past.

In addition to the saving on grain doors and fittings, it has been noted that where ordinary grain doors are used there is quite a force at elevators engaged in removing nails from the door posts and inside lining, etc., and getting the car ready for the load. This force of men

These cars are giving excellent satisfaction in service and are much sought for by the elevator men. The following are some of the advantages it would appear this car has over the ordinary car:—

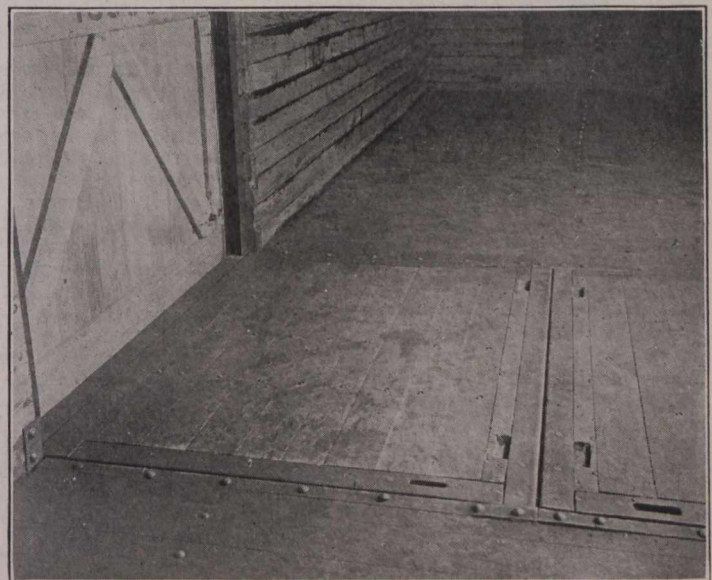


Grain and Coal Door Up, with Hopper Open.

Combined first cost and maintenance less.

Car available for coal or any lading that can be dumped, as well as being absolutely the same for all other lading as the ordinary box car.

A most convenient grain door, which



Interior of Car with Grain Doors Down.

would be almost entirely done away with in the use of this hopper bottom car. Short sections of Z bars are applied on the inside of the door post, above the folding grain door, so that when lading would extend higher than the folding grain doors ordinary boards can be sawn off and dropped in to carry the load to any height desired.

does not waste grain the same as grain doors have in the past, all of the grain that is loaded into the car being delivered at the other end of the run.

In addition to the reduced cost of maintenance, it saves inconvenience, room and cost of handling temporary grain doors at elevators, and cost of shipping temporary grain doors back to