

Cutting off the Flanges of Channels. — The flanges at the ends of channel bars must not be cut away, if it be practicable to avoid doing so: if not, there must be sufficient re-enforcing used to make the strut as strong as it would have been with the flanges uncut.

Sizes of Flooring and Joists. — Pine flooring is to be at least three (3) inches thick, and oak flooring at least two and a half ($2\frac{1}{2}$) inches thick. It is to be laid with close joints, and well spiked to each alternate joist with two (2) seven (7) inch cut spikes. Consecutive boards should not be spiked to the same joists.

Joists are to be proportioned by the formula,

$$W = \frac{bd^3}{cl^2}$$

where W is the safe uniformly distributed load in tons, b the breadth of the joist in inches, d the depth of same in inches, l the length in feet, and $c = 16$ for pine and 11.5 for oak.

Where the greatest load is a concentrated one, it is to be considered as supported equally between the joists directly under the wheels and those contiguous to the same; i.e., the wheels on one side of a wagon are supposed to be placed directly over a joist, which joist is assumed to take half their load, the remaining half being equally divided between the two adjacent joists. All concentrated loads must be reduced to equivalent uniformly distributed loads in respect to deflection by multiplying them by one and six-tenths (1.6) before applying the formula.

Wooden Hand Rails, etc. — Wooden hand railing is to be made of pine, the posts being $4'' \times 6'' \times 4'$, with two runs of $2'' \times 6''$ timbers.—one on its flat, and the other below on edge to support the first for a hand rail—and one run of $2'' \times 12''$ hub plank. The latter and the lower run of $2'' \times 6''$ timber are to be let into the posts to their full depth, and spiked to the same with five (5) inch cut spikes; and the posts are to be halved on the outer joists, to which each one is to be bolted by two (2) three-quarter ($\frac{3}{4}$) inch bolts.

Guard rails are to be of $6'' \times 6''$ pine, bolted to each hand-