

RAILROAD GAZETTE

SATURDAY, AUGUST 9, 1873.

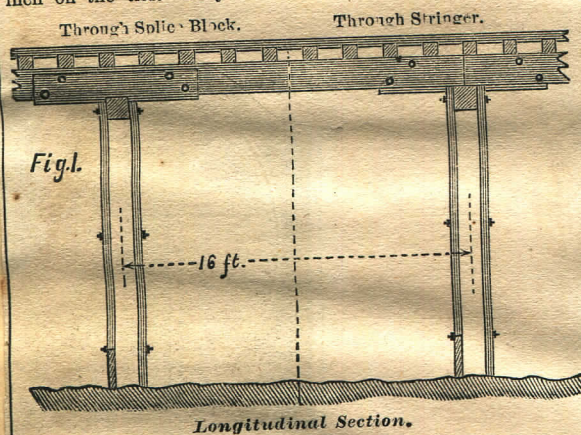
Contributions.

Built Stringers for Bridges.

ELKHORN, WIS., July 18, 1873.

TO THE EDITOR OF THE RAILROAD GAZETTE:

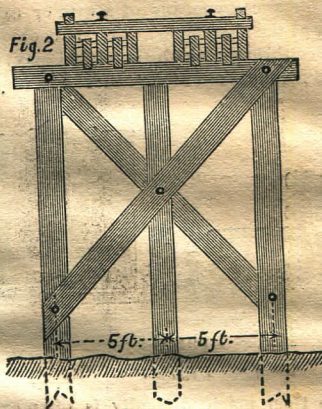
The accompanying sketch will explain a system of built stringers which has been employed with much success for several years on some of our Western railroads, and deserves to be more widely known. Each stringer is formed of three pieces of 6x16, 16 feet long, connected at the caps by two splice blocks 6x16, 8 feet long, bolted together by four clamp bolts, the timbers being kept apart by cup washers or separators of cast iron $2\frac{1}{2}$ inches thick. The stringers rest on the caps, while the splice-blocks are gained $1\frac{1}{2}$ inches into the cap, thus forming a longitudinal brace. The fenders are 4x7, laid flatwise and gained one inch on the ties. They are bolted through tie and outside



stringer wherever they break joint, or at intervals not exceeding twelve feet. The ties are 6x8, 9 feet long, and are laid ten inches apart, clear between. The sway-braces are of 4x10, bolted to the cap and wherever they cross a pile. The piles are not less than ten inches in diameter at the smaller end, three to a bent, five feet apart transversely, for bridges up to fifteen feet in height; for bridges between fifteen and twenty-four feet in height four piles per bent are used, spaced so as to give a sufficient transverse base.

The ends of the stringers forming the bank spans are kept at their proper distances apart by two end-blocks (taking the place of the splice-blocks), 6x16, one foot long, one clamp-bolt and two separators, and rest on a bank sill 6x16, twelve feet long. The earth and ballast are kept from falling between the ends by planks 2x16, ten feet long.

The advantages claimed for this system are the short lengths of the timbers required, no piece (excepting sway braces) exceeding the length of span; while the small size of the



Cross Section.

pieces used insures the detection of any unsoundness, and the separation effected by the cup washers secures free ventilation, admits of full examination and ready replacement of

any member of the stringer, while there is little chance for sparks to catch or lodge.

Among the roads using this class of bridging I may mention the Burlington & Missouri River, the Burlington, Cedar Rapids & Minnesota, the Burlington & Southwestern, the Oregon & California, and, I believe, the Union Pacific on some of its divisions. At one time stringers were used 5x16 for spans of sixteen feet, and I have used the 6x16 quite largely for spans of twenty feet, but am inclined to think the latter rather too much

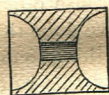


Fig. 3.

Section of Cup Washer.

for the size of the timbers, there being a very visible deflection under passing locomotives. Should some of your readers be acquainted with any system preferable to the above, perhaps they will favor us with a description. Will some one sketch and describe the "cluster bent" for high bridges? It will be new to many of us. I give a bill of timber and iron for a two-bent bridge 48 feet long—three spans of 16 feet. Height, twelve feet. The sawed timber is pine, the piles white or burr oak:

| BILL OF TIMBER. | | | | | BILL OF IRON. | | | | | |
|------------------------|---------------------|-------------|-----------|-----------|------------------------------|--------------------|-------------|-----------|-----------|-----------|
| No. | NAME. | Length, ft. | Size, in. | Fl. B. M. | No. | NAME. | Length, in. | Diam. in. | Weight... | Pounds... |
| 2 | Caps | 14 | 12x14 | 392 | 20 | clamp bolts | 4 1/2 | 1 | 10.64 | 212.80 |
| 18 | Stringers | 16 | 6x16 | 2,304 | 8 | fend'r bolts | 2 1/4 | 3/4 | 3.86 | 30.88 |
| 8 | Splice blocks | 8 | 6x 6 | 512 | 8 | sway brace bolts | 18 3/4 | 1 | 5.52 | 44.16 |
| 8 | End bloc s | 1 | 6x16 | 64 | 2 | sway brace bolts | 22 3/4 | 1 | 6.03 | 12.06 |
| 32 | Ties | 9 | 6x 8 | 1,152 | 16 | cut washers | | | 0.063 | 1.08 |
| 2 | Bank sills | 12 | 6x16 | 192 | Total wrought iron, lbs..... | | | | | 370.98 |
| 2 | Fenders | 48 | 4x 7 | 224 | 80 | separators | | | 3.45 | 276.00 |
| 2 | End plank | 10 | 2x16 | 53 | 60 | sev. wash'rs | | | 1.10 | 66.00 |
| Total feet, B. M. | | | | 5,120 | Total cast-iron, lbs..... | | | | | 342.00 |
| 6. Piles 24 feet long. | | | | | | | | | | |

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