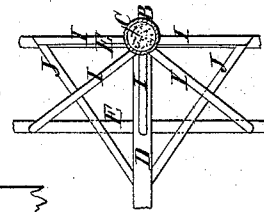
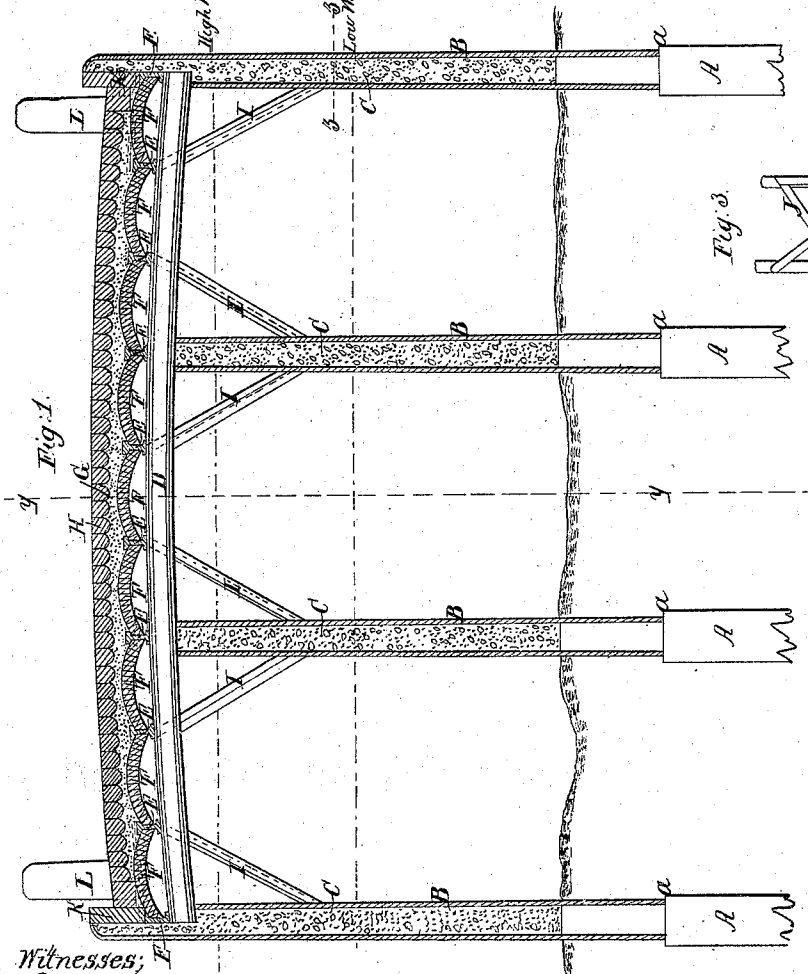
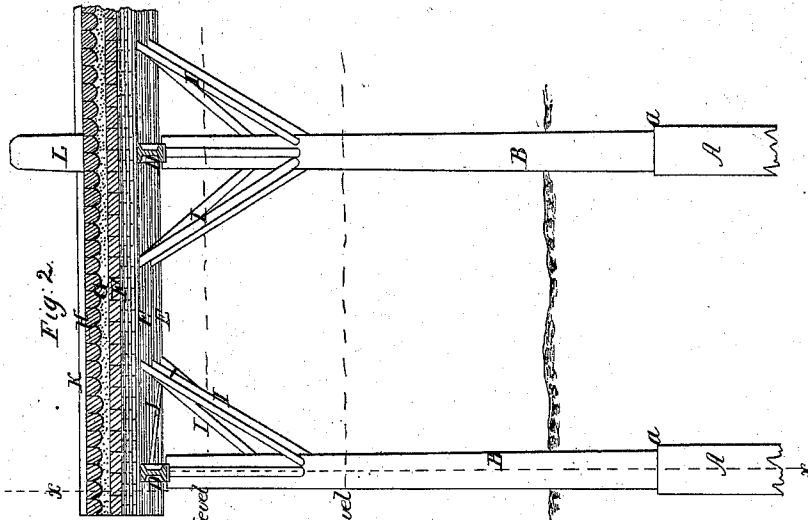


W. H. Wood. Pier.

N^o 36,747.

Patented Oct. 21, 1862.



Witnesses;
R. Lawley
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UNITED STATES PATENT OFFICE.

WILLIAM H. WOOD, OF HUDSON, NEW JERSEY.

IMPROVEMENT IN PIERS AND BRIDGES.

Specification forming part of Letters Patent No. 36,747, dated October 21, 1862.

To all whom it may concern:

Be it known that I, WILLIAM H. WOOD, of Hudson city, in the county of Hudson and State of New Jersey, have invented a new and useful Improvement in the Construction of Piers and Bridges; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, making a part of this specification, in which—

Figure 1 is a vertical section of my invention, taken in the line $x x$, Fig. 2; Fig. 2, a vertical section of the same, taken in the line $y y$, Fig. 1. Fig. 3 is a horizontal section of a portion of the same, taken in the line $z z$, Fig. 1.

Similar letters of reference indicate corresponding parts in the several figures.

The object of this invention is to construct piers and bridges in such a manner that they will be very durable, equally so as stone, and much less expensive, not greatly exceeding the cost of good wooden structures of the kind.

To this end the invention consists in the employment or use of hollow cast-iron columns, filled with concrete or cement, and supported on wooden spiles below the surface of the bed of the river or stream. The cast-iron columns support iron girders, on which an arched flooring of masonry rests, said flooring being covered with sand or cement, on which a trap-rock or other suitable pavement is laid, as hereinafter fully shown and described.

To enable those skilled in the art to fully understand and construct my invention, I will proceed to describe it.

A represents a series of wooden piles, which are driven vertically into the bed of the stream or river at such points where it is designed to have the cast-iron columns of the pier or bridge rest. These piles, after being driven in the bed of the river or stream, are cut off, so that their upper ends will be about "flush" with the upper surface of the bed, and they are cut away circumferentially at their upper parts, so as to leave shoulders a some distance below their upper ends, to serve as supports for the hollow cast-iron columns B. (See more particularly Fig. 1.) In order to cut the piles in this manner, and adjust the columns properly on them, coffer-dams are of course employed.

The cast-iron columns B may be of any suitable dimensions. For ordinary purposes, however, those of two and a half feet in diameter will probably be used, the height being variable, as circumstances may require. The thickness of the shell may be about one inch for columns of the above-mentioned diameter. The columns are filled with concrete or a suitable cement, C, (shown in Figs. 1 and 3,) and they are placed in rows, so as to support girders D, slightly arched, as shown in Fig. 1. These girders D are rolled, so as to be of I form in their transverse section, as shown in Fig. 2, and upon them there are laid similar but lighter girders, E, placed at a suitable distance apart, and the spaces between filled with arches of masonry, as shown at F. On the upper surface of this arched flooring there is laid sand or cement G, and upon the latter is laid a trap-rock or other suitable pavement, H.

The girders D E are supported by braces I, the lower ends of which are secured to the cast-irons columns B in any proper manner. These braces may be of cast or wrought iron, and the end girders, E, of the flooring are braced by horizontal braces J, in order that the thrust of the arches F may be effectually resisted. These arches F (shown in Figs. 2 and 3) are important, as the stability of the flooring depends greatly upon them. The cast-iron columns B, at the sides of the pier or bridge, extend upward above the others sufficiently high to retain in proper position stone curbs K. (See Fig. 1.)

I propose to use cast-iron mooring-posts L, cast with a flange at their lower ends, and the latter bolted to the girders E, as shown by the dotted lines in Fig. 1.

By this mode of construction an extremely durable pier or bridge is obtained. There are no combustible materials used in its construction. The piles A being below the bed or bottom of the river or stream, are inaccessible to the worms, and the columns B, as well as the girders D E, may be protected from oxidation by a suitable coat of paint, or by galvanizing.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

A pier or bridge constructed of hollow cast-iron columns B, fitted on wooden piles A driven into the bed of the river or stream, filled with concrete or cement C, and supporting, by means of braced girders D E, an arched flooring, F, covered with sand or cement G, on which a trap-rock or other suit-

able pavement, H, is laid, substantially as herein set forth.

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Witnesses:

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