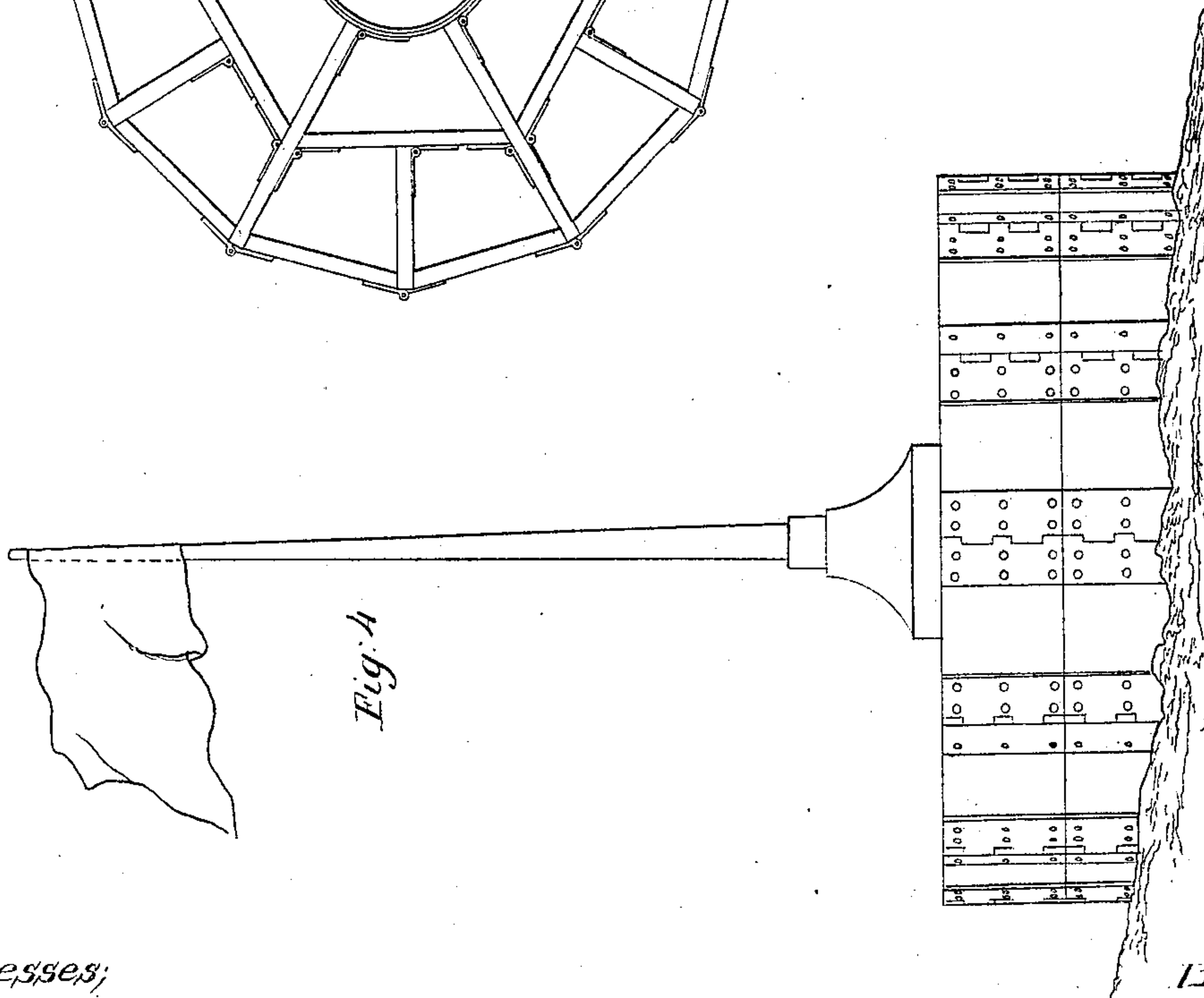
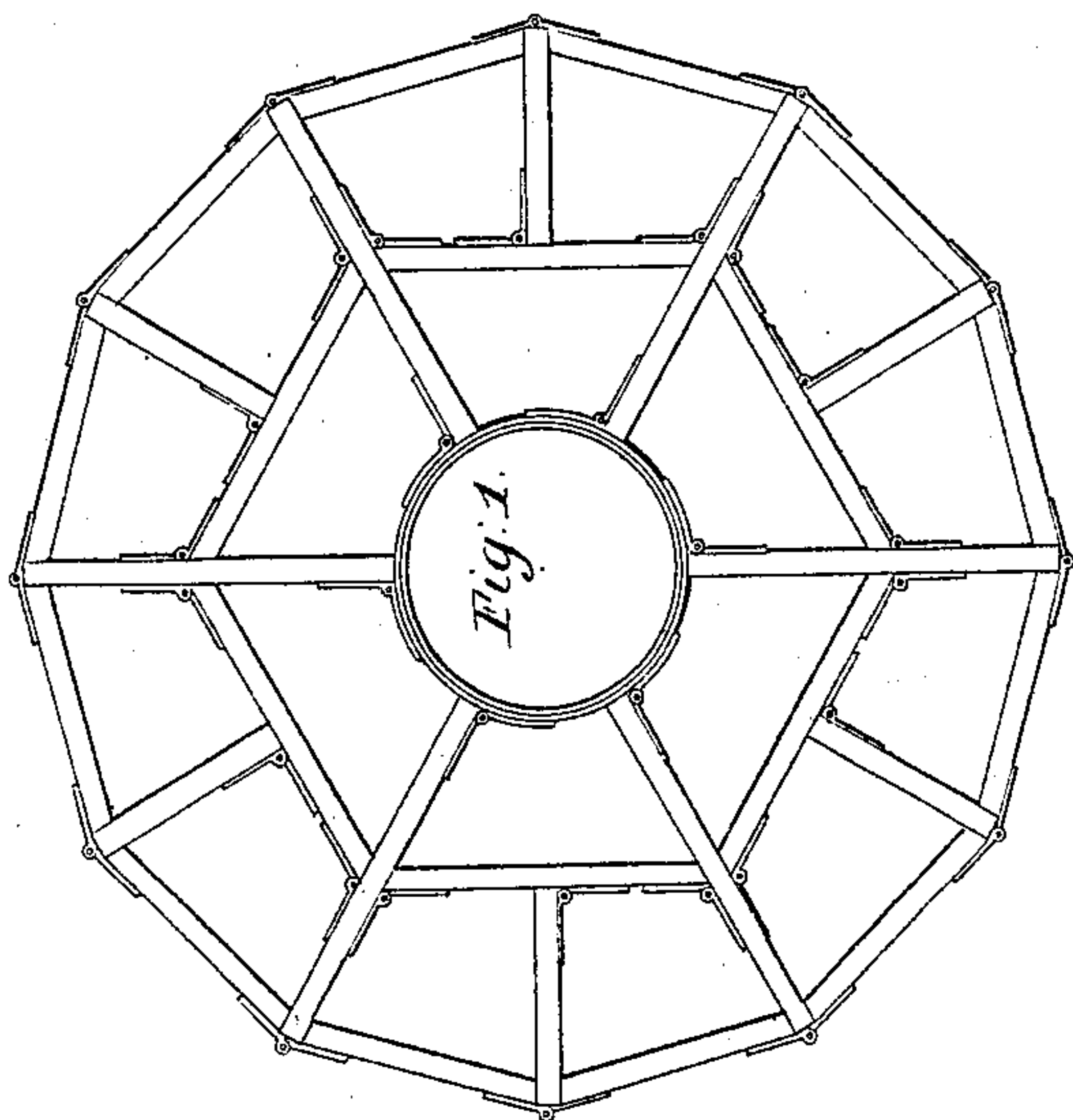
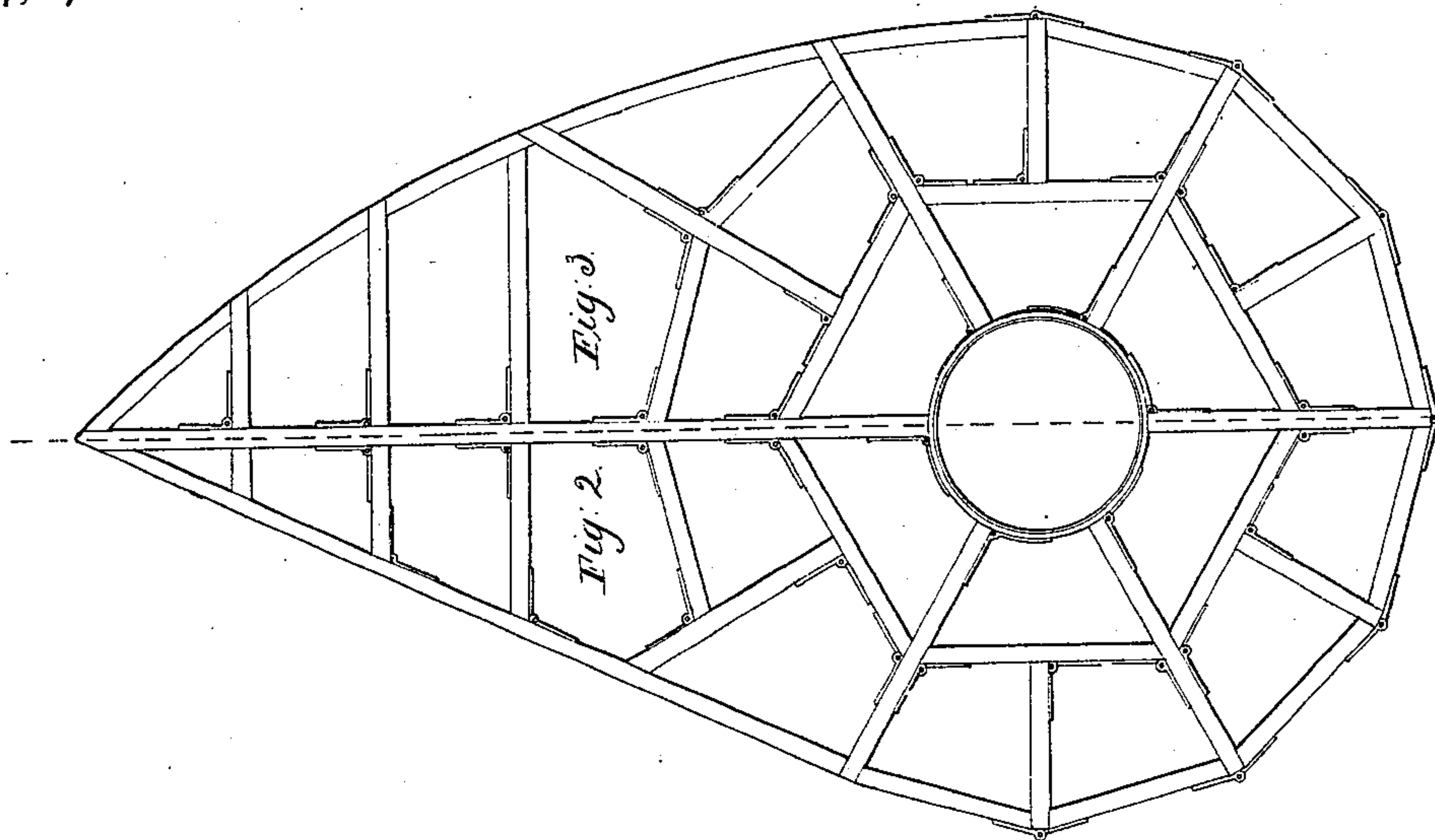


O. A. Howe.

Pier.

N<sup>o</sup> 87,171.

Patented Feb. 23, 1869.



Witnesses;  
Edward P. Flint  
Amos Boudna

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# United States Patent Office.

OZIAL A. HOWE, OF JERSEY CITY, NEW JERSEY.

*Letters Patent No. 87,171, dated February 23, 1869.*

## IMPROVED SECTIONAL PIER.

The Schedule referred to in these Letters Patent and making part of the same.

*To all whom it may concern:*

Be it known that I, OZIAL A. HOWE, of Jersey City, in the county of Hudson, and State of New Jersey, have invented certain new and useful Improvements in the Art of Constructing Bridge-Piers; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the annexed drawing, making part of this specification, in which—

Figure 1 shows a top view of one plan of applying my improvement;

Figures 2 and 3 show top views of the same plan in a modified form, and with additions thereto; and

Figure 4 shows a transverse vertical section through said plan, with an oblique addition applied to the bottom thereof, all of which will be more fully explained and illustrated herein.

The object of my invention is to facilitate the construction of submarine piers.

This object, I accomplish by first constructing a "crib," substantially of the form shown in the drawing, thoroughly stayed, or bolted together with suitable fastenings, in the manner substantially as shown.

The "crib," shown by fig. 1, is constructed of plank, around a central ring, the heels of the radiating pieces, of which there are six, being thoroughly secured to the ring by proper fastenings.

These radiating planks are braced, or stayed in the centre, by planks set between them, arranged to form parallel opposite sides, or a six-sided figure, in the form of a hexagon, and the "crib" is completed by staying, or bracing the sides of the hexagon in the centre, with radiating planks secured thereto, and joined to the ends of the long radiating planks by intervening pieces of plank, thoroughly secured to each other and to the ends of the radiating planks by any suitable fastening.

The "crib," when completed, forms a figure of twelve sides, with eighteen compartments, around a central hole, which should be made large enough to receive the heel of a flag-staff.

The bottom of these compartments, or as many of them as may be necessary, should be covered, or closed with plank or chain, thoroughly fastened to the sides of the compartments. The number of the compartments, the bottoms whereof are to be thus covered,

will depend upon the buoyancy of the "crib," and the weight necessary to sink it to the required depth.

Now let it be desired to construct a pier.

The "crib," having been made in manner and form substantially as described, is first floated and anchored in the desired place, with a flag-staff arranged therein, as shown by fig. 4. The stone-work is then filled into as many of the compartments as may be necessary to sink the "crib," the flag-staff constantly indicating whether the pier is sinking on a vertical central line from top to bottom.

The drawing shows but one horizontal section of the "crib," which consists of as many such sections as may be necessary to gain the required height.

The bottom section being first immersed, the second section is brought out and placed directly over the first. The stone filling, or masonry, is then continued, and so on until the pier has found its bearing on the bottom. The remaining compartments are then filled up and the pier completed.

In case the bottom upon which the pier is to be constructed is oblique, the bottom side of the lower section of the "crib" should be made to correspond with the obliquity of the surface upon which it is to stand, as illustrated in fig. 4, which shows a parallel "crib"-section standing upon one, with the under side cut to match the bottom upon which the pier is to stand.

The "crib" may, of course, be made of some other form than any of those shown in the drawing, figs. 2 and 3 being merely to show with what facility the form can be modified.

Having now described the nature and extent of my invention,

I claim as new herein, and desire to secure by Letters Patent—

Constructing a submarine pier of masonry, or stone-work, of the desired form and extent, by means of a series of floating cribs, constructed substantially as described, and divided in compartments, around a central ring, said series of cribs to be united, filled, and sunk, as set forth.

OZIAL A. HOWE.

Witnesses:

EDWARD P. FLINT,  
AMOS BROADNAX.