

(No Model.)

P. A. KEWLEY.

BUILDING AND SETTING MOLDING CAISSONS.

No. 299,554.

Patented June 3, 1884.

FIG. 1.

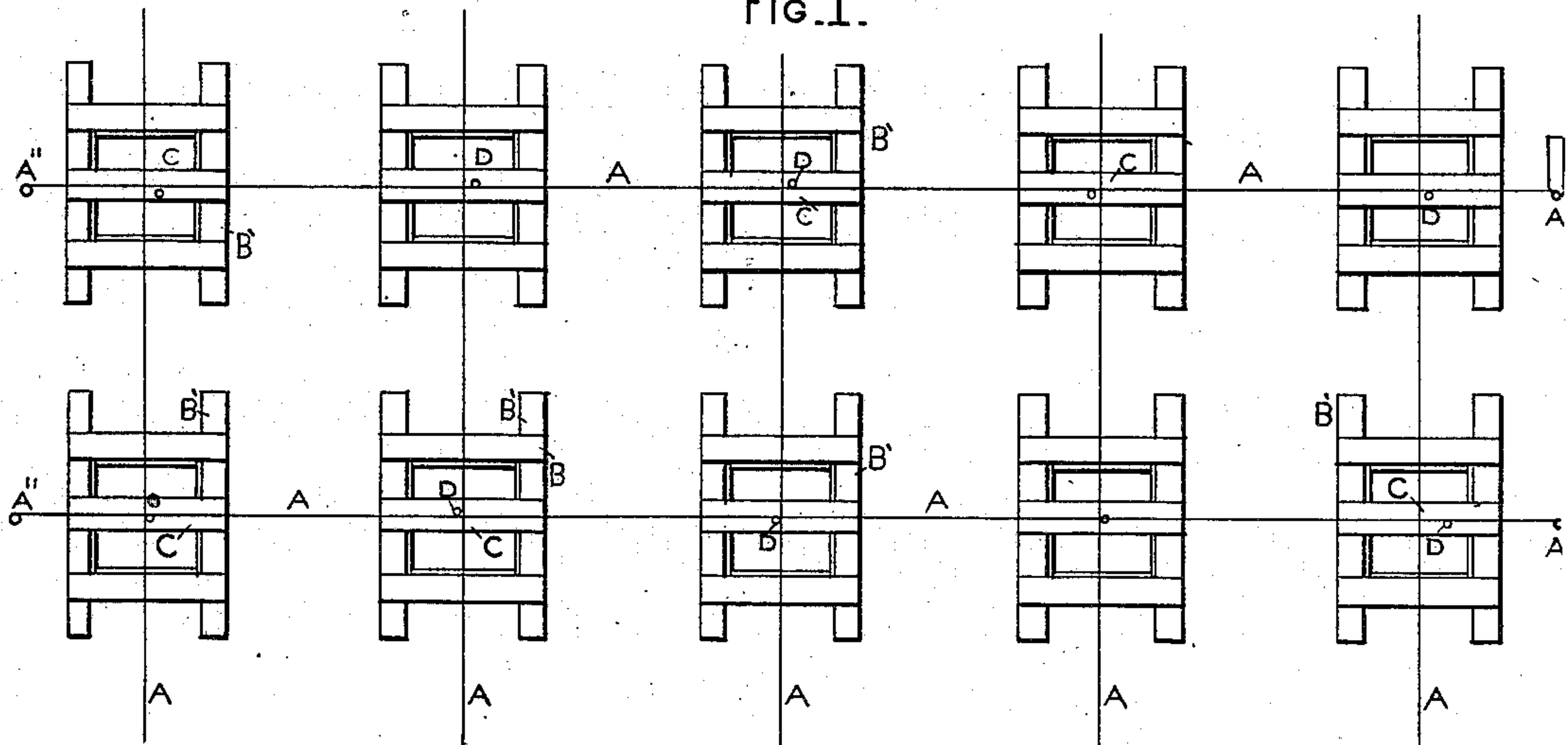
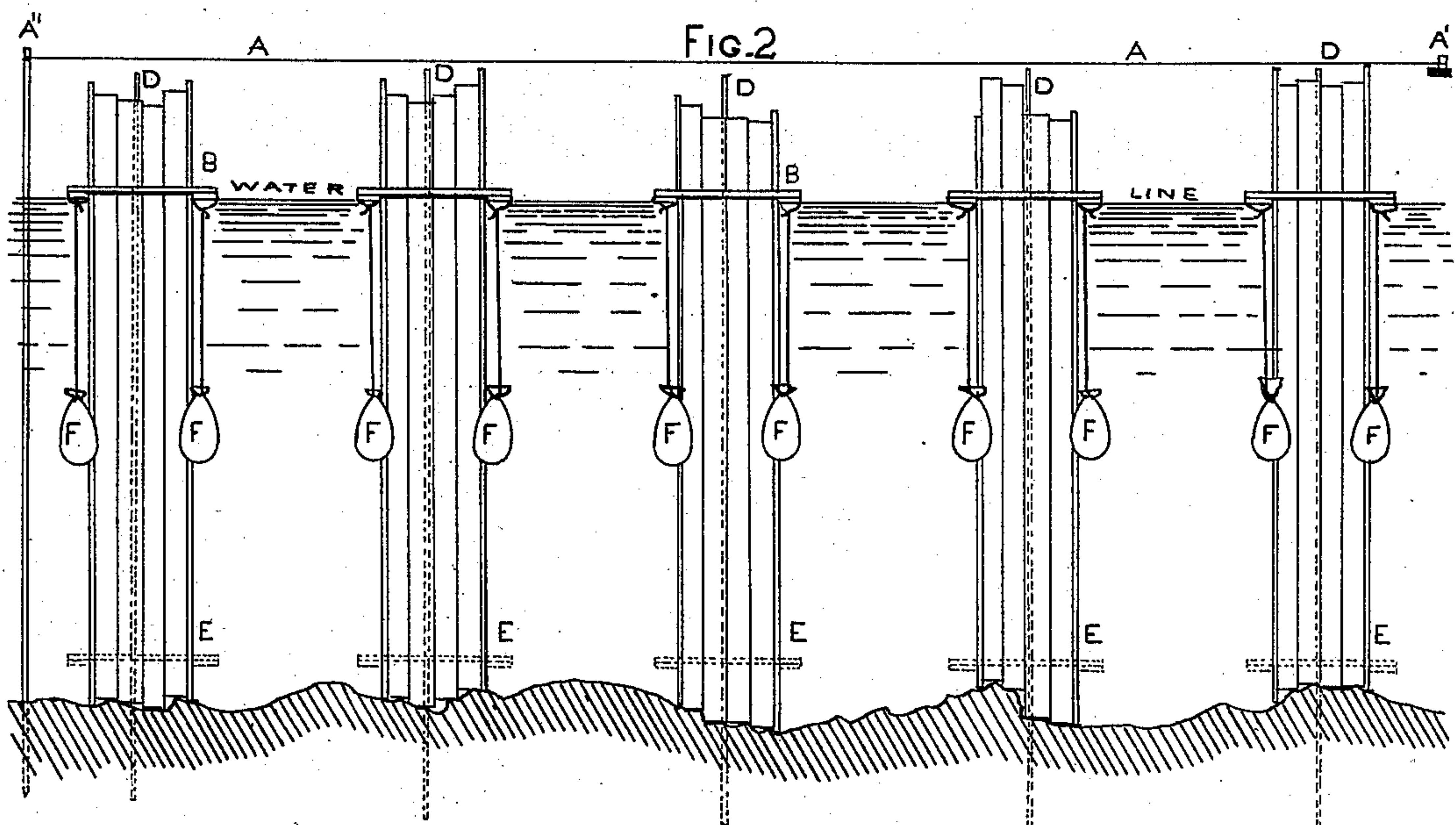


FIG. 2



WITNESSES

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PHILIP A. KEWLEY, OF SAN FRANCISCO, CALIFORNIA.

BUILDING AND SETTING MOLDING-CAISSONS.

SPECIFICATION forming part of Letters Patent No. 299,554, dated June 3, 1884.

Application filed August 21, 1883. (No model.)

To all whom it may concern:

Be it known that I, PHILIP A. KEWLEY, a subject of the Queen of Great Britain, and a resident of San Francisco, State of California, have invented a new and useful Improvement in Building and Setting Molding-Caissons in the Process of Forming Concrete Dwarf-Piers under Water, of which the following is a specification.

My invention relates to the constructing and placing of the molds in the water, especially when the finished piers require to be set with accurate relation to other piers—as, for instance, in erecting a building over water there may be required to support it a number of dwarf-piers to reach from the bed-rock to above the highest water-line, and which piers must be set accurately in line and equidistant apart, from which to spring groin-arches to support the floor of the building.

In the accompanying drawings, forming part of this specification, Figure 1 is a plan of a number of molding frames or caissons ready to receive the concrete. Fig. 2 is an elevation of a row of caissons.

Like letters of reference refer to like parts in both figures.

The difficulty heretofore in making preparations for molding concrete piers under water has been to get the caissons substantially free from leakage at the bottom, and to get them firmly and expeditiously set in place. If the caissons were made on shore completely before being placed, they would seldom or never fit the contour of the ground, and the concrete would spread all around outside of the caisson, and if built in the water they were with great difficulty properly located. My system is as follows: I erect two targets or anchorages for my centering-line, which may be a string or wire, (marked A on the drawings.) Sometimes there will be a structure—as a wharf—conveniently close by, to which the target A' can be fastened; if not, a stake, A'', driven into the bed-rock and standing sufficiently high above the water, will do to attach the centering-line to. If this stake is not driven exactly in the right spot, it is not material, for the line can be attached to a nail driven into a wooden block, which may be secured to the stake, so that the stake may be several inches out of place. When the two

targets are properly erected, the centering-line is drawn from one to the other. Let us say it is two hundred feet long, and we have to place twenty piers equidistant along its length. I first mark upon the line where the centers of the piers will come, and directly under each mark, if convenient, (if not, as near as may be,) I drive an iron rod, D, into the bed-rock, so that it will be a firm and immovable anchor for the caisson. Having made a wooden frame, B, of, say, one-by-six stuff, two inches larger both ways than the size of the intended pier, with a cross-piece, C, in the middle, I note, by accurate measurement, how far out of center my anchor-rod is driven. Let us say it is three inches to the right and one inch in advance of the center-point. This I mark on the cross-piece C of the frame, and bore a hole the same diameter as the diameter of the iron rods D just three inches to the right and one inch in advance of the center-point, because the anchor-rod is that much out of center, so that when the frame is placed upon the rod it will be or may be turned about as it floats on the water until it is exactly located. The two members of the frame B'B' are longer than the other two, and project beyond, so as to conveniently hang sand-bags F upon them to weight down the caisson when finished. The bed-rock or bottom, let us suppose, is very uneven, as shown in the drawings. It generally will be found so. I therefore take somewhat narrow boards—say one by six inches—and set them on end, resting on the rocky bottom and inside of the frame B, to which they are firmly nailed, as many edge to edge as will form a completely-inclosed caisson. If the depth of the water is great, and there is a tendency for the boards to spread outward at the bottom, then I slip over the outside of the box a second retaining-frame, E, which I sink to the bottom by weights, the frame being shown in dotted lines. When the caisson is completed, the concrete is introduced and allowed sufficient time to harden, when the frame-work is removed to be used again in forming another pier.

The particular advantage of my system is the great accuracy with which the piers can be set and the workmanlike and expeditious manner in which the job can be done, together with the cheapness and simplicity of the sys-

tem. After the piers are made, arches may be sprung from one to the other, if of brick or stone, and if of concrete they may be molded in common fashion.

5 What I claim as my invention, and desire to secure by Letters Patent, is as follows:

The method of erecting caissons in the water for molding concrete piers herein described, consisting of driving the anchoring-rod D into

the bed-rock below the water, placing thereon a frame, B, and to this frame securing in the water the narrow boards forming the sides of the caisson, in the manner substantially as and for the purpose described.

PHILIP A. KEWLEY.

Witnesses:

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JAMES COEY.