

W. P. Parrott,

Sea Wall,

N^o 34692.

Patented Mar. 18, 1862.

Fig. 5

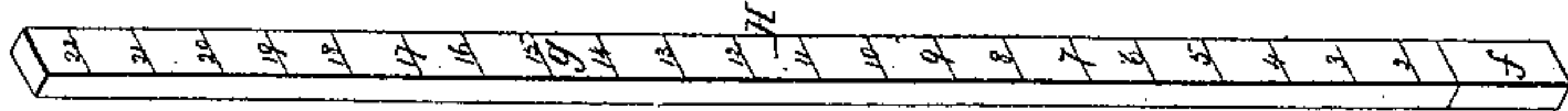


Fig. 4

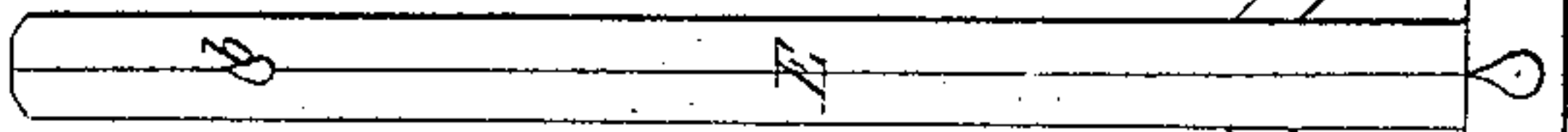


Fig. 3

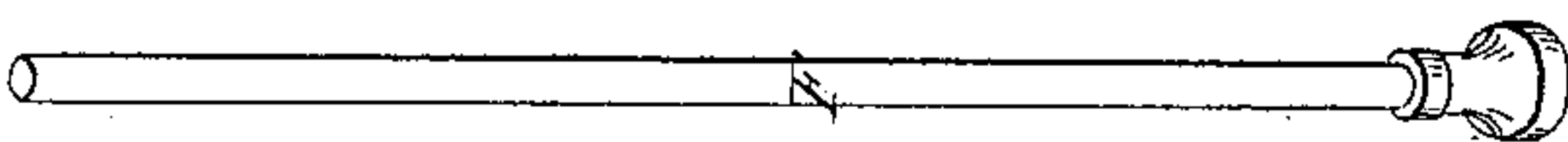


Fig. 2

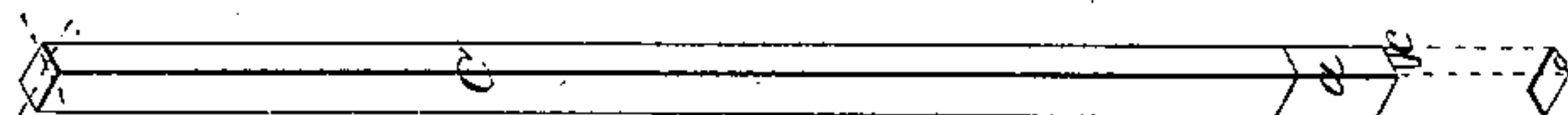
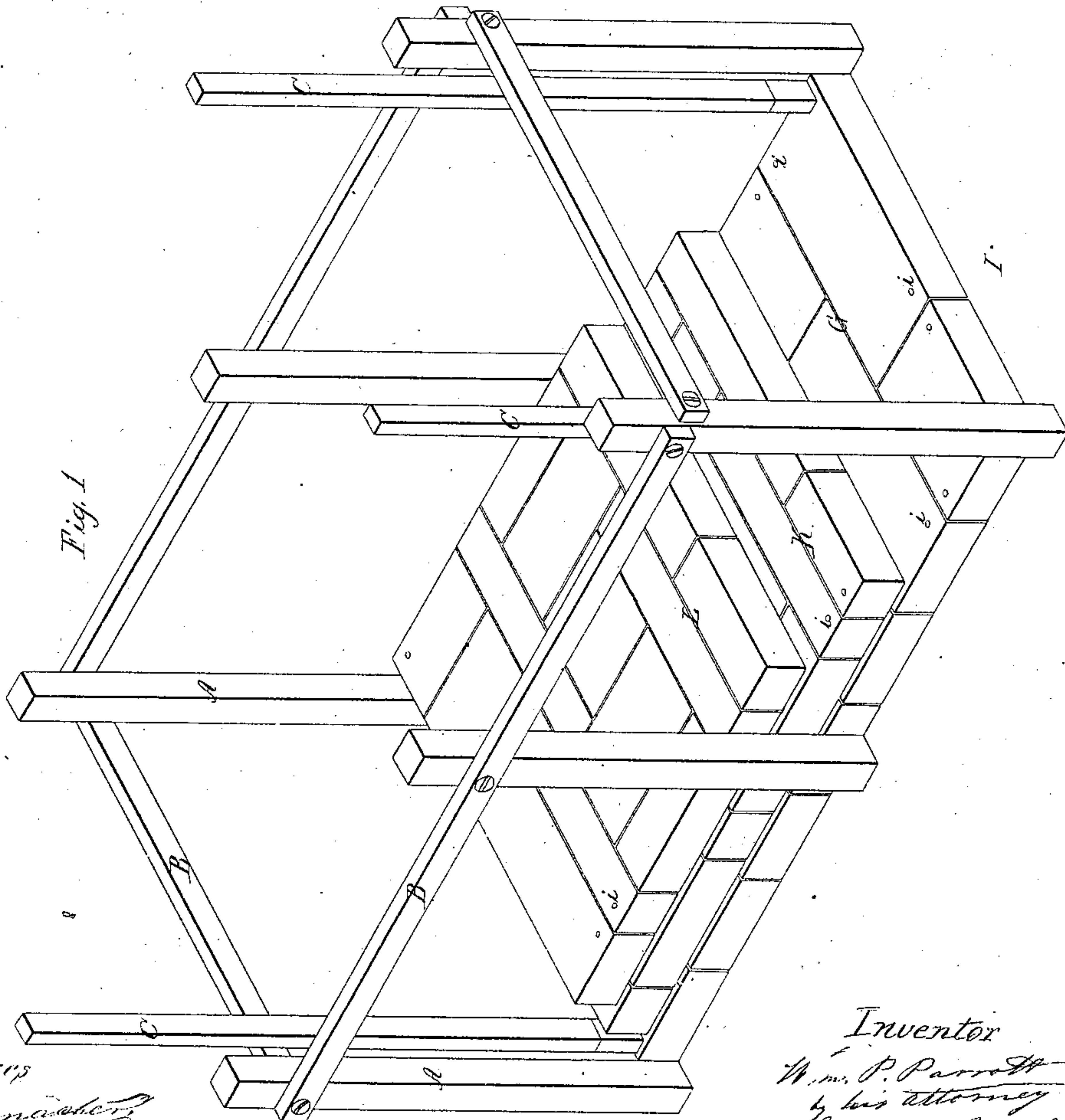


Fig. 6



Fig. 1



Witnesses

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UNITED STATES PATENT OFFICE.

WILLIAM P. PARROTT, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN METHODS OF LAYING STONE, &c., UNDER WATER.

Specification forming part of Letters Patent No. 34,692, dated March 18, 1862.

To all whom it may concern:

Be it known that I, WILLIAM P. PARROTT, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in the Construction of Masonry Under Water, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, making part of this specification, in which—

Figure 1 represents a stone pier in the course of construction beneath the water, and this figure, together with Figs. 2, 3, 4, 5, and 6, the apparatus which I employ in carrying out my invention.

My present invention consists in an improved method, to be hereinafter described, of laying stone-work or masonry under water.

This work has been done either by the use of a "coffer-dam," which is tedious and expensive to construct, and difficult to maintain, or by means of a "diving-bell," or the use of "submarine armor." The workman arranged each stone in position as it was sent down to him, the accuracy with which the stones were laid, and consequently the strength and durability of the work, depending on the skill and faithfulness of this man, who was working frequently at a considerable depth under water, and exposed to the inconveniences of tides or currents or turbid water; whereas by my improved method the engineer or person superintending the work above water may know and determine the position of each stone as it is laid.

That others skilled in the art may understand and use my invention, I will proceed to describe the manner in which I have carried it out.

In the said drawings, Fig. 1 represents a stone pier in the course of construction. The site having been determined from lines and marks on shore is surrounded by piles A, placed at convenient distances apart. These are connected and secured in position by a frame-work B, on which a platform may be laid when required. The stones are dressed to the required size and form, and their joints matched by laying them on a platform on shore in the positions they are intended to occupy in the pier when laid, and the stones are marked. Central lines, both longitudinal and transverse, are marked on the frame B,

or on rods or the platform attached thereto, which lines are determined either by instruments or by permanent marks and ranges on shore. From these lines the position of each stone as laid on shore is transferred to the frame or platform over the pier. The stones are now carried and lowered into position beneath these marks, the workman under water setting each stone according to the marks and directions above water and detaching the "lewis" therefrom. He is guided in his operations, and the superintendent above is informed of the position of the stone, and if it is properly laid, in the following manner: Each stone, when dressed and arranged on land, has a hole *i* drilled in its upper surface near each corner or at a fixed and predetermined distance from each edge. Guide-rods C, one of which is shown detached in Fig. 2, of a sufficient length to reach well above the surface of the water and stout enough to resist the action of the tide or a current, are weighted at their lower ends at *a*, and are provided each with a pin *c*, the position of which in planes passing longitudinally through the rod at right angles to each other is indicated at the top of the rod. The workman under water as he places each stone inserts the point *c* of one of the rods in a hole *i*, (two or more of the rods being applied to a stone.) The rods now being set vertical by those above water, either by plummet or level, the position of the stone is indicated, and may be fixed to correspond with the marks above by orders or signals given to the workman below.

In leveling the stones, particularly the first course G, Fig. 1, I use a level E, Fig. 4, similar to an ordinary mason's level, except that it is weighted and has its staff sufficiently long to reach above water. Its position as regards the vertical is indicated by a plumb-bob swinging in a hole *b* near the top or by a spirit-level. A stone which is thus shown not to be level may be adjusted in position (if on a yielding bed) by a heavy rammer F, Fig. 3.

For occasionally testing the level of the courses as the work progresses I use a staff H, Fig. 5, which is weighted at its lower end *f*, and is marked with a scale *g*. With this I compare the height of different parts of each course with the frame B or with marks on the

piles A which have been leveled. I also use this rod in the same way to level the bed I before the first course of stones is laid.

The first course G of stones having been properly laid and leveled on its bed I, the succeeding courses K and L may be laid more rapidly. The stones being dressed to a uniform thickness, generally, only require to be adjusted horizontally by the rods C.

To assist the workman under water in placing the stones I sometimes use a guide-rule N, Fig. 6, which is a straight square rod with metal slides *m*, which are free to move along it. Each slide has a point *o* projecting down from it. On a stone being in place, two of these points *o* at one end of the rod are placed in two of the holes parallel to one side of the stone, and the next stone is brought up against the one last laid. When the other two points *o* fall into the holes on one side of the stone which is being placed, the workman knows that it is in line with the one already laid. This I only use to assist, but do not depend on it for making accurate work.

As the piles A and frame B are liable to be moved by the current or by vessels striking them, the marks by which the stones are to be

placed should be frequently corrected by instruments on land or by marks and ranges set for the purpose.

This method of laying stones under water may be applied wherever the stones are of such a form as will permit their being laid and jointed before being lowered and set in the work; but the form and arrangement of bond and build which I prefer is that shown in Fig. 1.

I have found in practice that by a careful use of the guide-rods and level the work may be kept in line and level with certainty and proceed rapidly and any error be quickly detected and corrected, and I have by the above-described method laid a handsome and durable wall or pier almost as rapidly as if above water.

What I claim as my invention, and desire to secure by Letters Patent, is—

The above method, substantially as described, of laying stone wall or masonry under water.

WM. P. PARROTT.

Witnesses:

THOS. R. ROACH,

P. E. TESCHEMACHER.