C. VAN HORN.

Apparatus for Obtaining Profiles of Submarine Beds.

No. 37,650. Patented Feb. 10, 1863.

Fig. 1

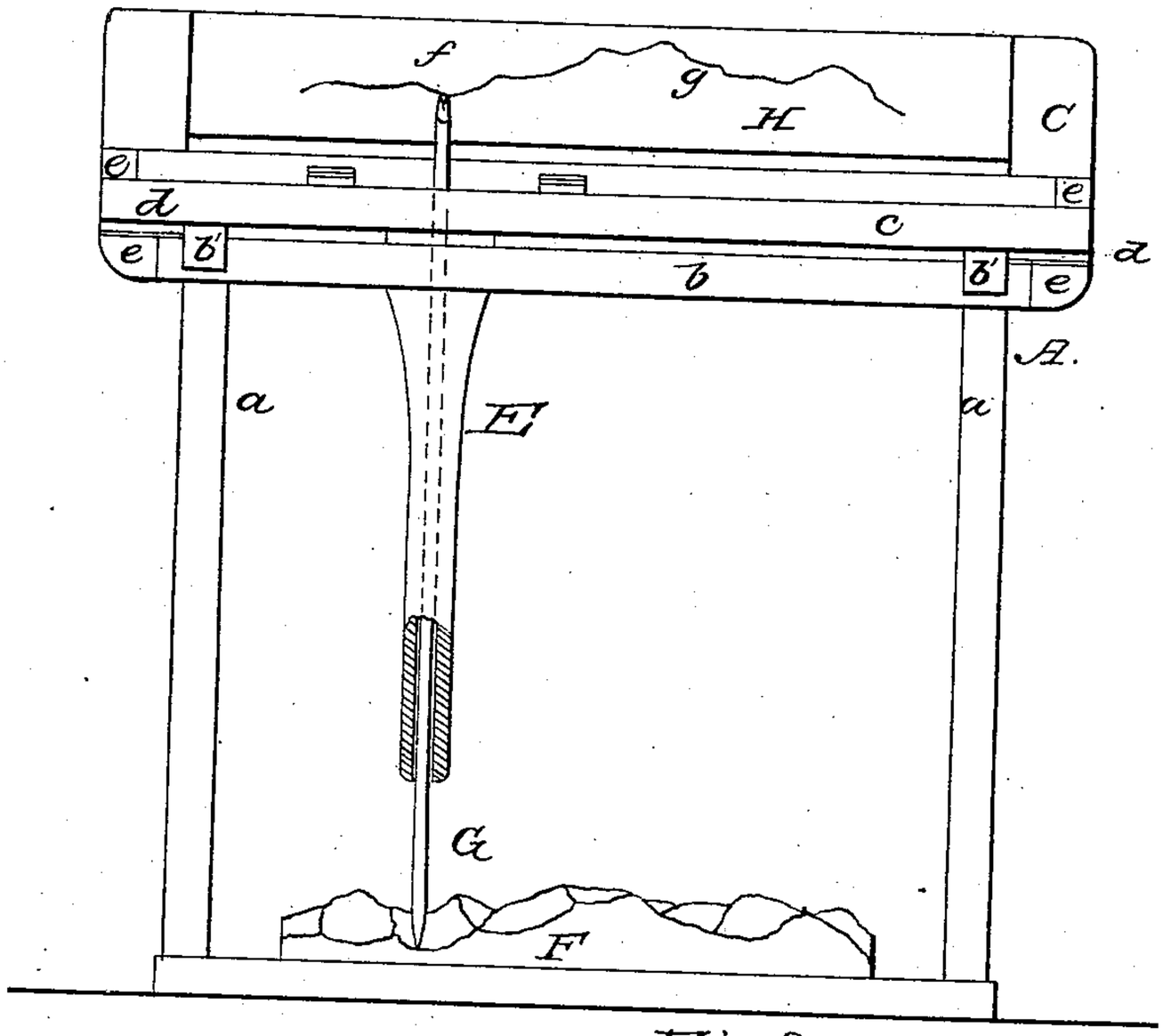


Fig. 3

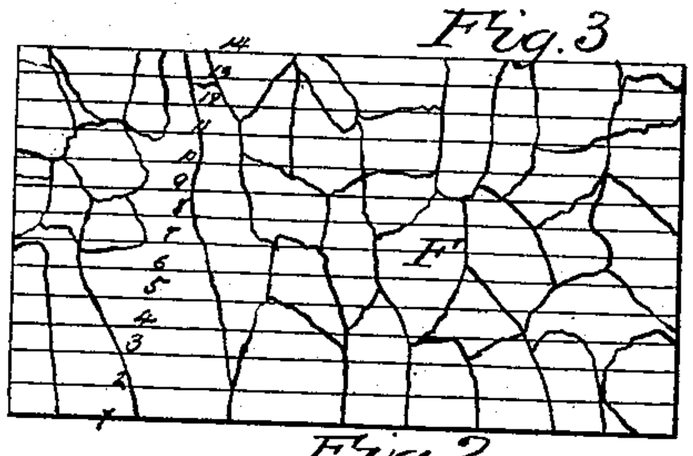


Fig. 2

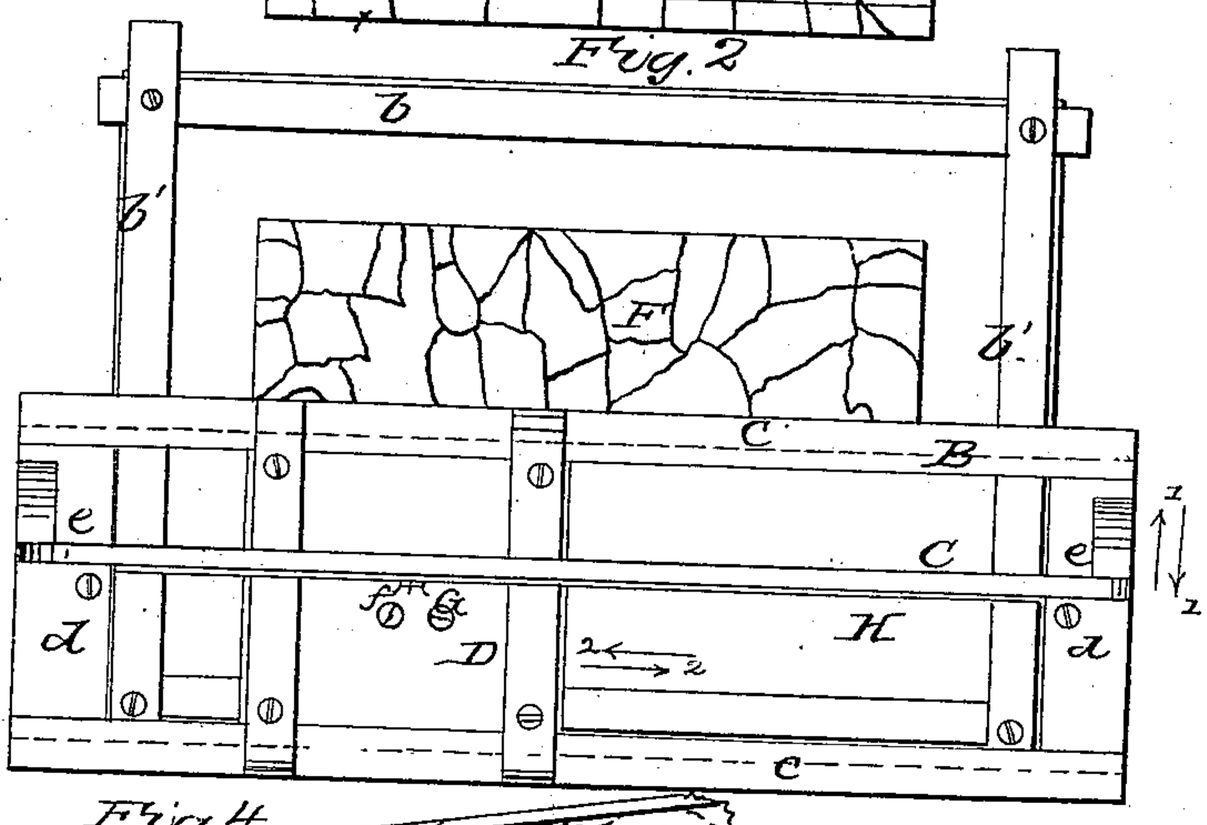
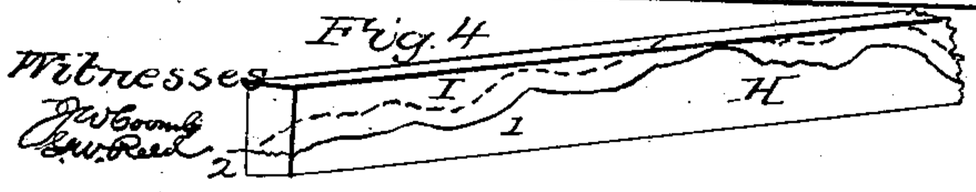


Fig. 4



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UNITED STATES PATENT OFFICE.

C. VAN HORN, OF SPRINGFIELD, MASSACHUSETTS.

IMPROVEMENT IN APPARATUS FOR OBTAINING PROFILES OF SUBMARINE BEDS.

Specification forming part of Letters Patent No. **37,650**, dated February 10, 1863.

To all whom it may concern:

Be it known that I, C. VAN HORN, of Springfield, in the county of Hampden and State of Massachusetts, have invented a new and useful apparatus or device for obtaining correct profiles of hard submarine beds with a view to the building of platforms to rest thereon for the support of piers, bridges, &c.; 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 front elevation of my invention; Fig. 2, a plan or top view of the same; Fig. 3, a plan of the bed of a river or stream; Fig. 4, a perspective view of a piece of timber, showing the manner in which the timbers of a platform are cut in order to conform to the bed on which the former is to rest.

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

The object of this invention is to obtain an apparatus or device by which correct measurements or drafts may be obtained of the prominences and depressions of rocky or other hard submarine beds into which piles cannot be driven for the construction of piers, bridges, &c., and by which measurements or drafts a platform may be constructed so as to conform or fit snugly to the bed to support the caissons of bridges, piers, &c.

The invention consists in placing a sliding rod in a vertical tube, which is attached to a slide or carriage fitted in a sliding frame, the latter being placed in a suitable horizontal bed or support, and so arranged as to be capable of moving in a direction at right angles to the direction of the slide or carriage which has the tube attached to it, the above parts being used in connection with a tracing-board, and all arranged as hereinafter fully set forth to effect the desired end.

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

A represents a framing constructed of upright posts *a*, which rest upon the bed of the river or stream where the pier or bridge is to be constructed. These posts may be braced and secured in proper position in any suitable way, and upon them is placed a horizontal bed or frame, which may be composed simply of cross-ties *b b'*. The posts *a* should be of such a height that the cross-ties *b b'* will at all times be a requisite distance above the surface of the water.

On the cross-ties *b'* of the posts *a* there is placed a sliding frame, B, which may be of rectangular form, and constructed simply of two parallel bars, *c c*, connected at their ends by cross-pieces *d d*, to the under surfaces of which cleats *e e* are attached, the inner ends of the latter bearing against the end cross-ties *b'* of the framing A, said cross-ties *b'* serving as guides for the frame B, which is allowed to slide freely on them in the direction indicated by the arrows 1. (See Fig. 2.)

To each cross-piece *d* of the frame B there is attached an upright, *e*, and these uprights have a board, C, secured vertically to them, and this board is parallel with the bars *c c* of the frame B, as shown in Fig. 2.

In the frame B, or between the two parallel bars *c c* thereof, there is fitted a slide, D, in such a manner that it will be allowed to move freely in the direction indicated by the arrows 2, which direction, it will be seen, is at right angles to the direction of the movement of the frame B. This slide D has a pendent vertical tube, E, attached to it, which extends down nearly to the bed F of the river or stream, and within this tube there is placed a rod, G, the latter being allowed to slide freely up and down in the tube and extending up through the slide D. The upper end of the rod G is notched, as shown at *f*, in order to serve as a guide or rest for a pencil or point, and this notched end *f* extends up in front of the board C, as shown clearly in Fig. 1.

The device above described is used as follows: To the board C there is attached, in any proper way, a thin piece of deal or board, H, and the frame B is adjusted on the cross-ties *b'* in such a position that the lower end of the rod G will be in contact with one side of the front edge or part of the bed F, on which the platform is to rest. The slide D is then moved along in the frame B, the rod G being raised and lowered by hand, its lower end striking the surface of the bed F, and the operator pricking or marking the board H so that a tracing of the surface of the bed F over which the lower end of the rod G passes will be formed on the board H, as clearly shown in Fig. 1 at *g*. After the tracing or profile has

been thus obtained, the frame B is moved a little back so that the lower end of the rod G may be moved over another surface of the bed F in a line parallel with the first and at a distance from it equal to the width of the timbers of which the platform is to be constructed, a new board, H, being attached to the board C at each movement of the rod G over the bed F. By this means it will be seen that a series of tracings or profiles, *g*, may be obtained of the bed F at equal or suitable distances apart. From these profiles *g* the under surface of the platform is formed to correspond with the irregular surface of the bed F, as follows: The profiles *g* are all numbered in accordance as they are formed, and a piece of timber, I, has the profiles 1 and 2 attached to it, one at each side, (see Fig. 4,) and the edge of the timber is hewed out or chamfered off corresponding with the profiles 1 2. This being accomplished, the rough or irregular surface of the edge of the timber will correspond to the irregular surface of the bed F between the lines passed over by the rod G. The several timbers are all cut or hewed out in this way, and are then secured together so as to form a platform, the irregular surface of which will correspond inversely with the irregular surface of the bed F, and will fit snugly and firmly thereon.

In Fig. 3 the red lines marked 1 2 3, &c., indicate the paths of the tracing-rod G over the bed F, and consequently the parts from which the profiles are traced.

The platform thus constructed may receive the caisson for the pier or bridge, or it may form the bottom of the caisson itself, the latter being sunk as usual or in any proper way.

I would remarks that the boards H on which the profiles *z* are marked should, prior to being attached to the timbers I, be cut at their lower edges, so that the latter will all be in one and the same horizontal plane, corresponding to that in which the lower edge of the board of the first profile was placed while being traced, and they should be properly marked from fixtures on the frame B to be thus cut before being detached from the board C. In case, however, the frame B be in a perfectly horizontal position, a stop or cleat may be attached to the board C for the boards H to rest upon. This would insure the lower edges of the boards H being each in the same horizontal plane while the profile is being marked upon it. This is important, for any irregularity in the position of the lower edges of the boards H would cause inaccuracies which might render the whole work useless.

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

The employment or use of a tracing-rod, G, fitted within a tube, E, or an equivalent guide, and arranged with a sliding frame B, slide D, tracing-board C, and a framing, A, substantially as shown, so that a series of profiles may be obtained of the surface of the bed F of a river or stream for the purpose of constructing a platform of a configuration corresponding to the bed to rest on the same and receive or support the caissons or foundations of piers, bridges, &c.

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