

(No Model.)

T. THOMSON.  
BRACING FOR WHARVES.

No. 390,319.

Patented Oct. 2, 1888.

Fig. 1.

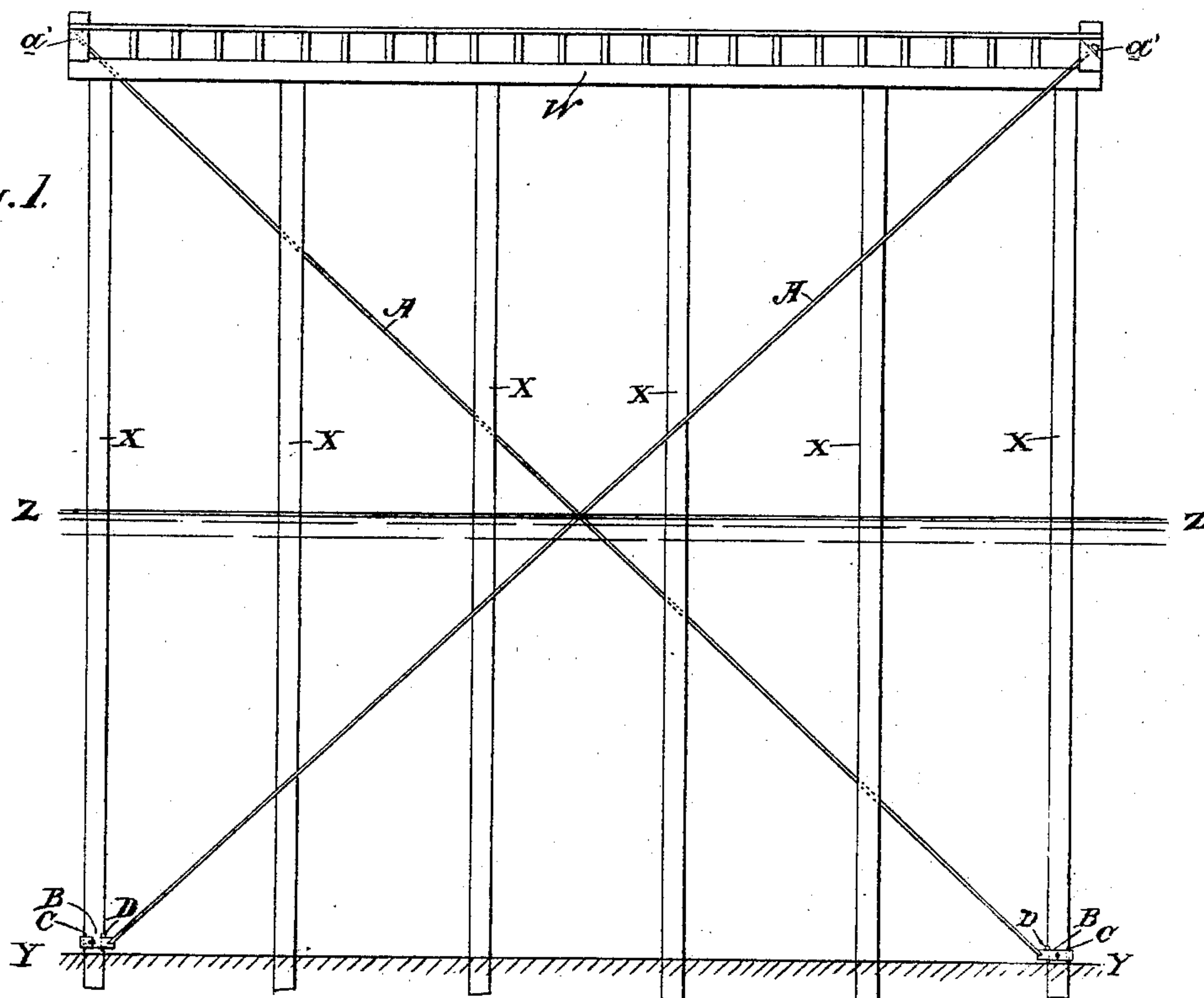


Fig. 2.

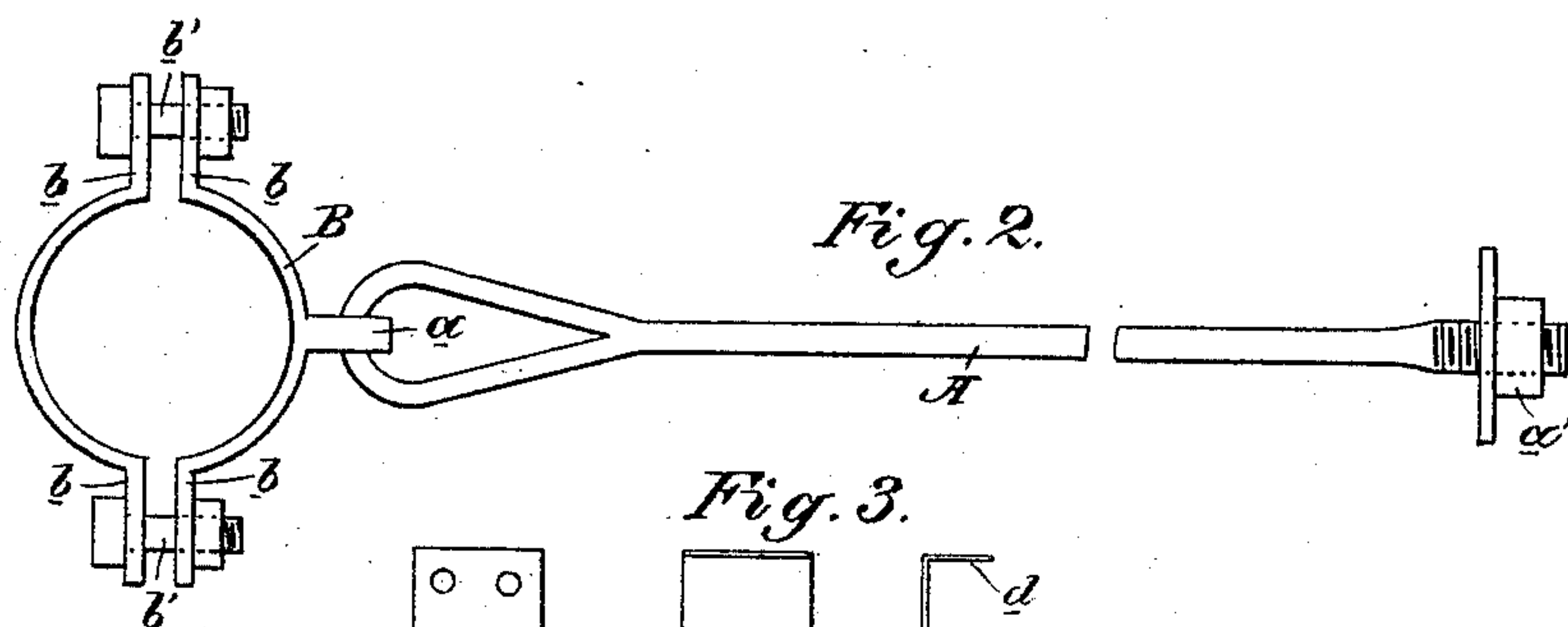
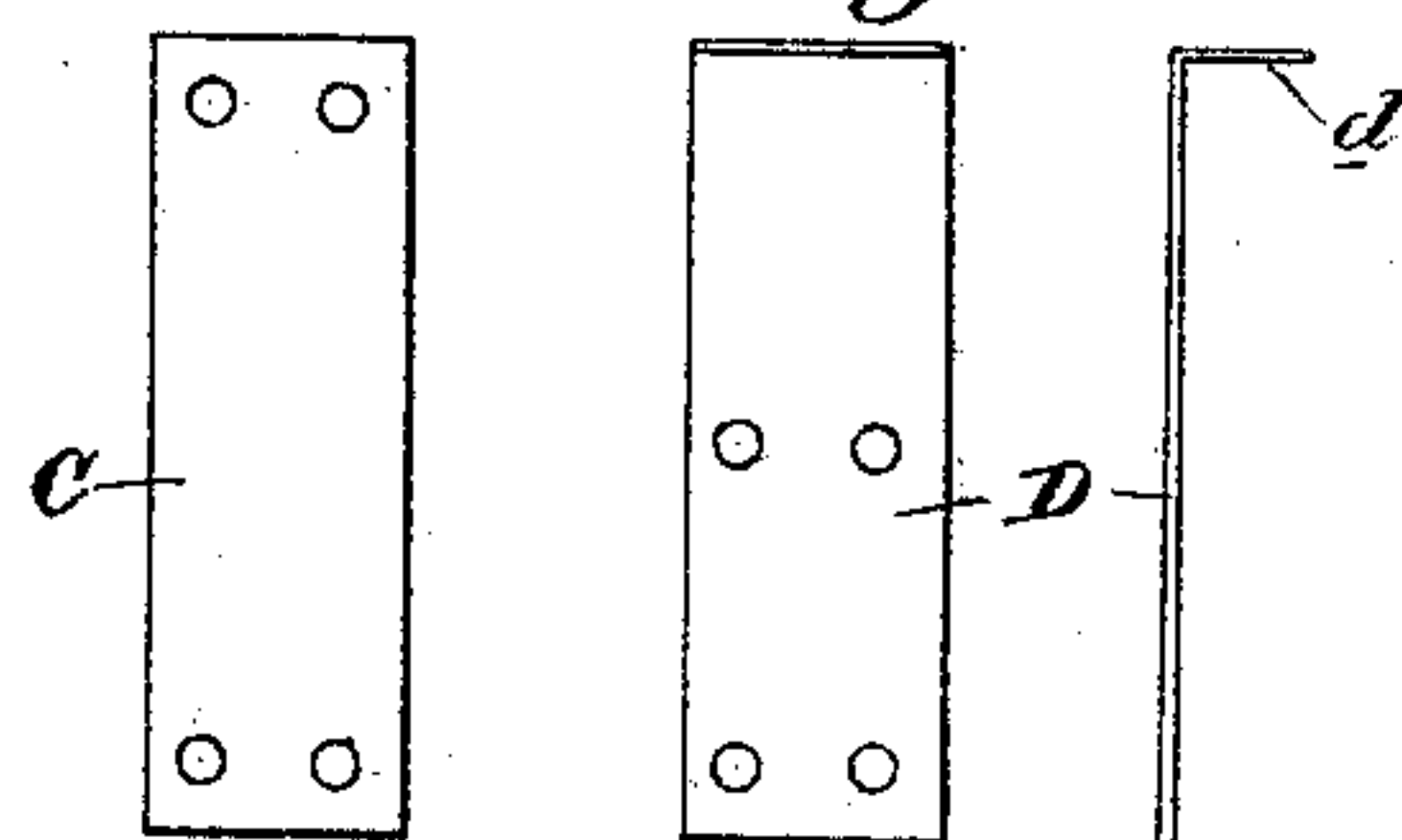


Fig. 3.



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# UNITED STATES PATENT OFFICE.

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## BRACING FOR WHARVES.

SPECIFICATION forming part of Letters Patent No. 390,319, dated October 2, 1888.

Application filed March 27, 1888. Serial No. 268,633. (No model.)

*To all whom it may concern:*

Be it known that I, THOMAS THOMSON, of the city and county of San Francisco, State of California, have invented an Improvement in Bracing for Wharves; and I hereby declare the following to be a full, clear, and exact description of the same.

My invention relates to the class of braces for structures, and especially for wharves, where the depth of the water is such as would affect the stability of the wharf, or where the water may be usually rough; and my invention consists in the constructions and combinations of devices which I shall herein after fully describe and claim.

The object of my invention is to provide a brace for wharves which can be readily and efficiently applied.

Referring to the accompanying drawings for a more complete explanation of my invention, Figure 1 is an elevation of a wharf, showing the application of my brace. Fig. 2 is a plan of brace, showing the connections at each end. Fig. 3 is a front elevation of the projecting plates C and D, an edge view of the latter being also shown.

The wharf W is made in the usual manner, having the supporting-piles X.

Y Y is the ground-line, and Z Z is the water-level line.

A A are rods or bars made of iron or steel. At their lower ends they have connected with them by a loose or pivot or hinge joint a fastening clamp or band, B, comprising two opposing plates adapted to encircle the pile of the wharf, and having ears *b*, through which pass bolts *b'*, for clamping the band on the pile.

The joint connecting the clamp with the rod may be of an eye-loop character, such as is shown at *a*, or it may be any other form of pivot or hinge, such as a pin or a hook, the object being to admit of the clamp being fixed to the pile before being driven, and to allow the rod to be held in the most convenient position during the driving operation. Then when the wharf is complete the rod may be turned to the required inclination and added to or cut off to bring its upper end to the proper fastening-point.

It will readily be seen that if the rod were fastened to the pile below by a stiff joint it would be in the way while driving the pile,

or, if fastened afterward, the operation would have to be performed under water, as my invention contemplates the bracing of the wharf from the ground-line to the top. The upper end of the brace-rod is passed through one of the timbers of the wharf and secured by a nut and washer, *a'*.

In order to prevent the band or clamp B from cutting into and injuring the pile, I place a plate, C, between its outer side and the pile, and a plate, D, between its inner side and the pile, the plate D having a lip, *d*, at its top, which projects over the top of the clamp and prevents it from slipping up under the pull of the rod. The plates C and D are spiked to the pile to retain them in place.

The braces A need not of necessity be confined in their application to the outer pile, but can be put on any pile and be carried upward to any point of the wharf.

I am aware that diagonal braces have heretofore been placed between wharf-piles, and I do not, therefore, claim such, broadly; but

What I do claim as new, and desire to secure by Letters Patent, is--

1. A brace for wharves, consisting of the rod or bar A, having at its upper end the nut and washer for securing it to the top of the wharf, and the two-part clamp B, having ears *b* and bolts *b'*, for securing it to the pile, and a protecting-surface between the pile and clamp, said clamp being loosely jointed or hinged to the lower end of the rod, substantially as herein described.

2. A brace rod or bar for wharves, having a clamp hinged to its lower end for securing it to the pile, in combination with the protecting-plates placed between the clamp and the pile, substantially as herein described.

3. A brace rod or bar for wharves, having a clamp, B, hinged to its lower end for securing it to the pile, in combination with the protecting-plates between the clamp and pile, the inner plate having a lip on its top projecting over the clamp, substantially as herein described.

In witness whereof I have hereunto set my hand.

THOMAS THOMSON.

Witnesses:

RAPHAEL X. BASFORD,  
JNO. O. HANSCOM.