J. C. BELL & P. COSTELLO.

Dock.

No. 207,843. **Patented Sept. 10, 1878.**

Fig 1.

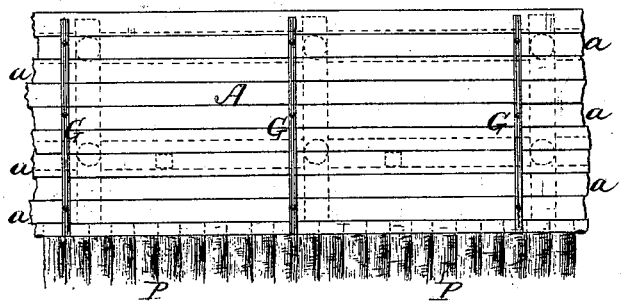


Fig 2.

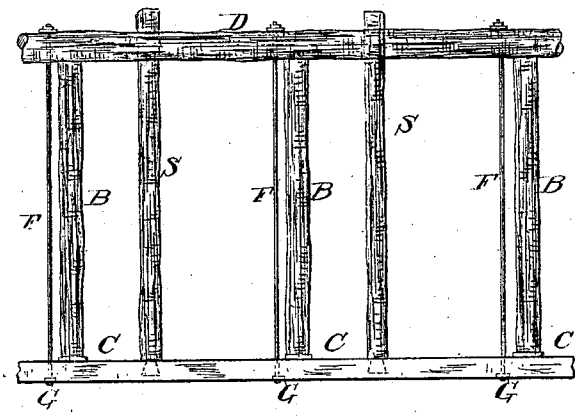
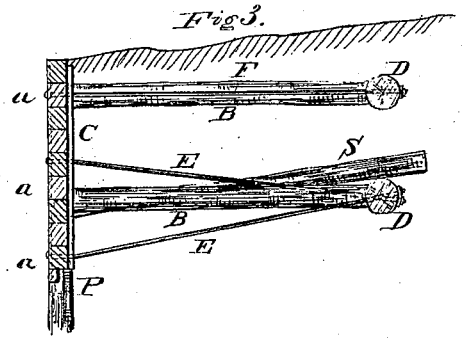


Fig 3.



WITNESSES

Harry King

W. Neil

By

INVENTORS

James C. Bell and
Patrick Costello.

L. Hill Wells *Attorney.*

UNITED STATES PATENT OFFICE.

JAMES C. BELL, OF ALBANY, AND PATRICK COSTELLO, OF WEST TROY, N. Y.

IMPROVEMENT IN DOCKS.

Specification forming part of Letters Patent No. **207,843**, dated September 10, 1878; application filed July 26, 1878.

To all whom it may concern:

Be it known that we, JAMES C. BELL, of Albany, Albany county, New York, and PATRICK COSTELLO, of West Troy, Albany county, New York, have invented certain new and useful Improvements in Docks for Water-Fronts; and we do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 represents a front elevation of a dock constructed in accordance with our invention; Fig. 3, an end elevation of the same, and Fig. 2 a plan view.

Similar letters of reference in the several figures denote the same parts.

Our invention has for its object to improve the construction of docks for water-fronts, in respect to rendering them stronger and more substantial, and less liable to become displaced or floated out of position, than those heretofore in use; and to this end it consists of a front or breast wall composed of horizontal timbers, combined with transverse countersunk plates arranged on the outer face of said wall, and tied by suitable rods to longitudinal timbers or back binders, and with lateral bracing and supporting timbers between the front wall and back binders, substantially as we will now proceed to describe.

In the accompanying drawings, A represents the front or breast wall of the dock, which may be constructed of timbers, iron, or masonry, or a combination of all of these materials, as preferred. In this example of our invention it is composed of timbers *a a*, connected together by vertical transverse bolts, in the usual manner, and mounted upon and secured to piles P P, located at about the low-water line.

A "crib," or any other substantial foundation, may be employed instead of the piles, if found desirable.

B B are braces or lateral timbers, secured at one end to plates or timbers C C, attached to the inner vertical face of the wall A, and at the opposite end to longitudinal timbers D D, which we term "back binders." E E F are ties extending through plates G G, which plates are arranged transversely to the timbers *a a*, composing the wall, and preferably countersunk therein, and also extending through the wall A, and through the back binders, D D, where they are firmly secured, as shown.

By this construction and arrangement the back binders and braces are adapted to firmly support the breast-wall and resist any inward pressure exerted upon the same, while the system of ties and the plates G effectually resist any strain outward, prevent buckling and misplacement of the timbers, and maintain the breast-wall in a substantially perpendicular position at all times.

In order to counteract the tendency of the dock to be raised or floated, we provide diagonal struts S S, extending from the back binders to a point on the breast-wall, as shown, and thus effectually accomplish the object.

The various braces, plates, ties and struts may be constructed of timbers or metal, or both, according to circumstances. When the structure is completed and placed in position, earth and ballast are filled in behind the breast-wall, covering all the members, as shown in Fig. 3. A very strong and substantial dock is thus produced, which will always present a compact and regular front, and not require frequent repairs.

Should any of the parts become damaged from any cause they can be replaced without disturbing the remainder of the structure.

We have shown but three series of ties and two series of back binders and braces; but it is obvious that the number may be varied without departing from the principle of the invention.

We are well aware that it is not new with us to employ a front wall supported by longitudinal back binders and connecting-braces and struts in docks for water-fronts, and such construction we do not, therefore, broadly claim.

We claim as our invention—

A dock for water-fronts, consisting of a breast-wall, A, composed of horizontal timbers, combined with transverse countersunk plates G G, arranged on the outer face of said wall, and tied to the longitudinal back binders, D D, by the tie-rods E E F, and with the lateral bracing and supporting timbers B B between the front wall and back binders, substantially as described.

JAMES C. BELL.
PATRICK COSTELLO.

Witnesses:
J. W. COSTELLO,
JAMES C. BELL, Jr.