

S. J. Seely.

Iron Dock.

N^o 46, 146.

Patented Jan. 31, 1865.

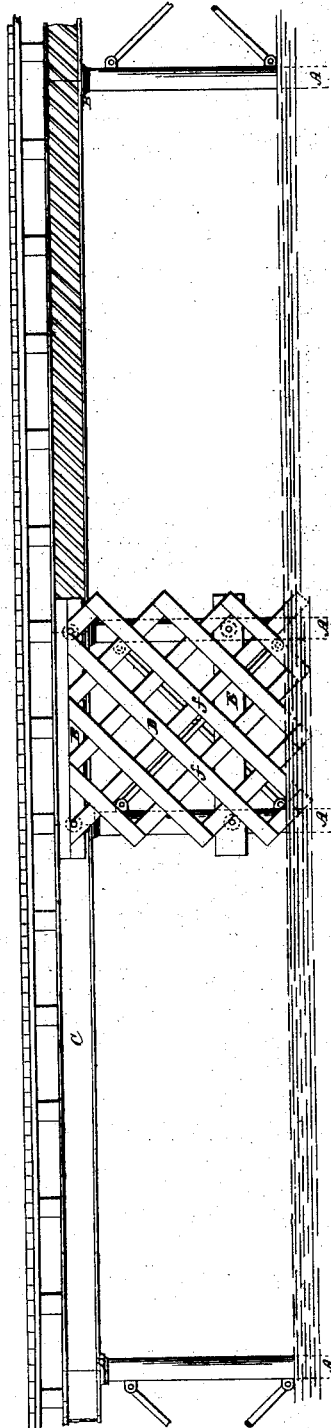


Fig. 1

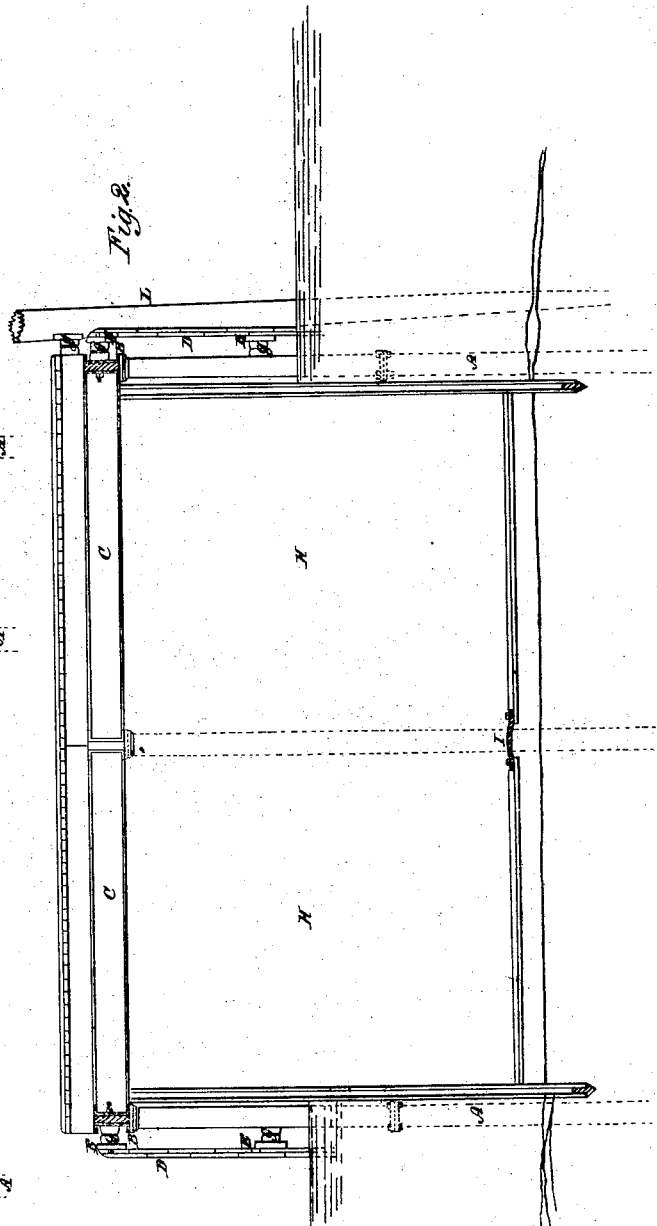


Fig. 2

Witnesses.
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IMPROVEMENT IN CONSTRUCTION OF DOCKS, &c.

Specification forming part of Letters Patent No. **46,146**, dated January 31, 1865; antedated November 3, 1864.

To all whom it may concern:

Be it known that I, SAMUEL J. SEELY, of the city, county, and State of New York, have invented certain new and useful Improvements in the Construction of Docks, Locks, and other Nautical Structures; and I do hereby declare the following to be a full, clear, and exact description thereof, reference being had to the accompanying drawings, making a part of this specification, and to the letters and figures of reference marked thereon.

The nature of my invention consists in the erection of a metallic skeleton dock, composed of piles, columns, or other tubular supports, braced and tied with beams, girders or trusses, and chords, and with a fender to receive the shock, pressure, or strain of vessels, and also with a wall for the support of embankment, as a sea-wall, or for the inclosure of vaults, or to secure foundations for buildings.

To enable others skilled in the art to which my invention appertains to make and use the same, I will proceed to describe its construction and operation.

Figure 1 represents an elevation of a dock constructed on the principle of my improvement. Fig. 2 represents a side elevation of the same.

A A are metallic tubular piles sunk upon the exterior line of the intended structure, of sufficient size, number, and length to obtain a secure foundation, having regard to the nature of the bottom. Intermediate piles may be added to these shown on the plan, where additional security is required for a structure to be combined with the skeleton dock, such piles being used in the ordinary mode of obtaining foundations.

B B are cast-iron caps fitted to the heads of the piles or other tubular supports adapted to hold the ends of the trusses, beams, or girders, which are secured to the same by bolts or rivets.

C C are truss-beams, both longitudinal and transverse, secured to the caps of the tubular supports, as before mentioned. Of these tubular supports and truss-beams I construct a skeleton dock, securely tied together by rods, some of which, at the points most important to be secured, I have represented in the accompanying plan.

The face of the structure, where exposed to

the contact of vessels, is protected from injury by a fender, D D. This fender is a lattice-work of timbers bolted at their ends to a quadrangular frame of timber, E E, and also at their intersections *ff*, so as to make a firm yet yielding structure stretched as an apron along the entire exposed front or fronts of the dock. The height and depth to which this fender is carried will be determined by the circumstances of the extraordinary tides and freshets at the place where the structure is erected, and upon the class and size of the vessels likely to come in contact with or to be fastened to it. The upper and lower ends of the frame of the fender are separated from the tubes by which they are supported by means of elastic cushions or springs, india-rubber being preferred as the cheapest and most durable. The cushions and mode of attaching the fender to the dock I have indicated at *g g*.

In addition to the above means of supporting the fender, independent piles L may be driven, to which the frame may be attached, separated by an interval from the front of the dock. In this case the elastic cushions at the upper edge of the fender are retained, but the elastic cushions at the lower edge of the fender, and the fastenings at that place at the dock structure, are omitted.

The structure above described is applicable for docks intended to be used as wharves, or for dry-docks, for the foundations of buildings standing in navigable waters, for the abutments and piers of bridges and aqueducts, for the support and protection of the walls of locks, and the water-way of aqueducts.

H H show the mode in which I employ the space inclosed by the skeleton dock, when that space is needed for commercial or other purposes, consisting in the construction of a tank or structure within such inclosed area of one or more floors or stories in height, according to circumstances, with suitable openings for doors, hatchways, light, and ventilation.

The walls and roof of the inclosed structure I build of iron, or of iron and cement combined, the ground-floor of cement, and the intermediate floors of iron, or iron and wood combined.

The foundations of the inclosed structure I obtain in the following manner: After having

set the piles and completed the skeleton dock, I surround the entire structure with a line of short piling of iron or wood, or both combined, extending to the required depth below the bottom line of the water, and if it is desired to excavate the bottom within the dock, with a view to securing a better foundation for the inclosed structure, I then carry upon the top of the short piling a coffer-dam structure attached to the dock. Within this inclosed space the earth and mud are removed to the required depth. I then fill in the space within with masonry, dry wall, loose stone, or concrete to the required height. Upon this bottom I build up the inclosed structure. In immediate contact with the surface I lay an iron sheet, forming the bottom of the structure, on which are laid beams for stiffening the ground-floor and supporting the inward pressure of the water against the sides of the structure. This iron bottom has a man-hole, I, through it, through which cement or concrete is injected into the space beneath, so as to exclude all water or air spaces, and complete a perfect cement foundation. This man-hole is closed by a water-tight man-head.

The details of the construction of the inclosed structure are not essential to be presented in my plan of construction, as the ordinary devices and appliances used in the construction of iron or mixed iron and cement buildings are resorted to. It will in some cases be found desirable and practicable to incorporate the dock structure with the walls and roof of the inclosed structure by passing the outer skin of the structure around outside instead of inside the tubular supports.

No important variation in the foregoing plan of construction will be needed to make such an adaptation, the difference consisting of matters of detail alone. In the construc-

tion of walls intended to form an earth support, in combination with the skeleton dock, the foregoing method will be varied only to correspond to the form required, the essential particulars remaining the same. In the case last supposed the foundation on which the wall rests will be conformed in respect of its proportions and materials to the circumstances of the case. The wall may either stand behind the frame, or the frame may be inclosed or incorporated within it, the fender being attached superficially to the same in this case. Instead of a structure resting on the ground, a scow or floating tank may be moored within the inclosure of the piles.

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

1. The construction of a dock, lock, or other subaqueous structure exposed to the contact of vessels, having metallic tubular supports, united together with beams or girders or trusses of iron, or wood and iron combined, in combination with a fender of wood or iron, or both combined, with an elastic substance or spring interposed between the dock and fender to prevent injury to the structure from shock or pressure applied to the fender, constructed and operated substantially in the manner above described.

2. The combination of a tank vessel or wall of iron, or iron and cement combined, having tubular supports, with a fender, and forming a dock, lock wall, or other subaqueous structure exposed to the contact of vessels, so constructed and operating as to ease off all sudden shocks and to be braced within the structure, substantially as above described.

SAML. J. SEELY.

Witnesses:

ED. BARTLETT,
N. BARLOW..