H. J. CRANDALL.

MARINE DOCK.

No. 28,658. Patented June 12, 1860.

Fig. 2.

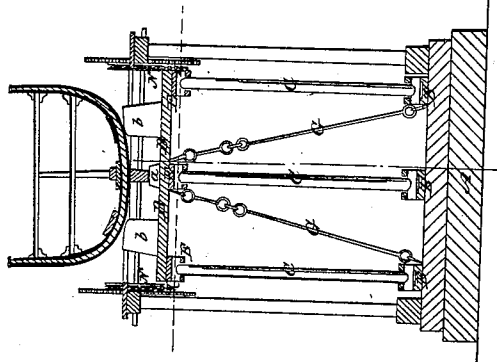
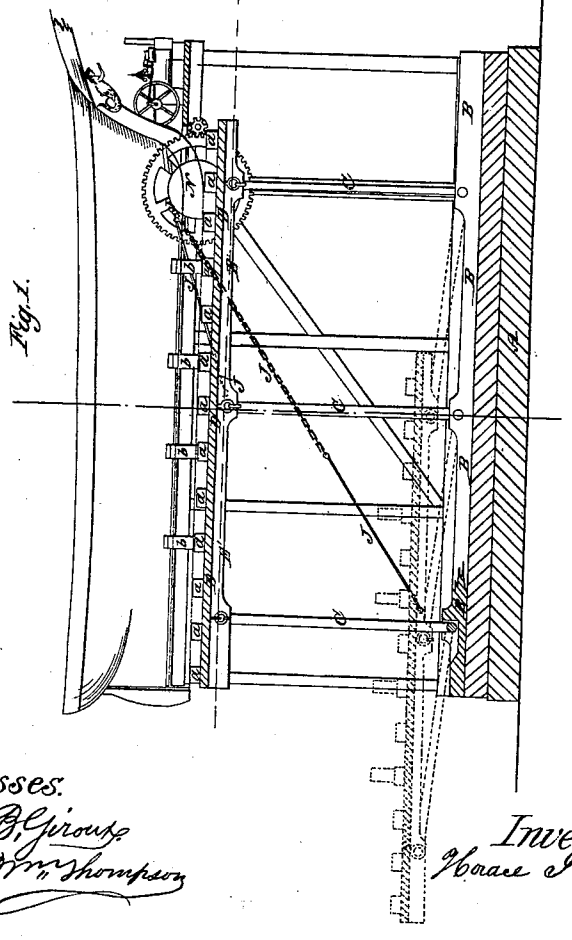


Fig. 1.



Witnesses.

B. C. Giroux

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UNITED STATES PATENT OFFICE.

HORACE J. CRANDALL, OF NEW BEDFORD, MASSACHUSETTS.

MARINE DRY-DOCK.

Specification of Letters Patent No. 28,658, dated June 12, 1860.

To all whom it may concern:

Be it known that I, HORACE J. CRANDALL, of New Bedford, in the county of Bristol and State of Massachusetts, have invented a new and useful Improved Marine Dock for Lifting Vessels Out of Water; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1, is a longitudinal middle section, showing a vessel resting in the dock out of the water and the position of the cradle or platform with its supports when in the water, to receive the vessel upon it, in red lines. Fig. 2, shows a transverse vertical section of the dock, showing the staging, cradle, and its supports when the vessel is in an elevated state.

Similar letters of reference indicate corresponding parts in both figures.

This invention has for its object the docking or shoring of vessels for building or repairing, by a more simple and less expensive structure than those at present in use for this purpose. The invention will obviate many serious objections to the present mode of raising vessels out of the water, and placing them on shore for repairing or rebuilding.

My invention consists in combining with a suitable platform or staging, furnished with bilge and keel blockings, and braces for keeping the vessel in an upright position, a suitable number of columns upon which the cradle is supported, said columns to be jointed at their ends to the cradle and to base timbers, and capable of swinging to and fro, at the same time keeping the cradle in a horizontal position, whatever be the inclination given to these columns or supports, as will be hereinafter described and represented, whereby the cradle may be let down into the water under the vessel's bottom and the vessel elevated with a forward movement until the columns are in a vertical position, when they will serve the very important object of permanent supports, so that the vessel will not rest upon or be supported by the lifting power the whole to be constructed and operated in the manner and upon the principles hereinafter described and represented.

To enable those skilled in the art to fully understand my invention I will proceed to describe its construction and operation.

In the drawings, A, represents the frame work of the foundation which should be constructed upon a good solid bottom, and of sound timber. Upon this frame work are placed, at equal distances apart, and parallel to each other, three, (or more or less) longitudinal timbers B, B, B, and proceeding up from each of these timbers are the supporting columns C, C, for the cradle, or carriage D. The columns each have T-gudgeons on their ends which have their bearings in suitable journal boxes in the frame timbers B, B, B, and the longitudinal timber braces E, E, E, of the cradle D. The columns are all set parallel to each other and are placed at frequent intervals along the timbers, from front to rear of the carriage, according to the tonnage of the vessel to be shored on the dock. G, G, are diagonal bracing rods which are jointed to the carriage and foundation timbers between each row of columns for giving strength to the cradle and preventing it from canting sidewise during the raising of a vessel. These bracing rods are so connected to the cradle and foundation timbers as to partake of the movements of the cradle and to brace the same against lateral motion in whatever position the cradle may be placed.

The cradle or carriage D, is built and furnished like any ordinary cradle for docking vessels, by floating them out of the water or drawing them up on ways, *a*, *a*, being the keel blocks, and *b*, *b*, the bilgings upon which the vessel rests, and by means of which she is kept in a steady, upright position.

J, J, are the chains that are attached to the carriage D, at each side and at or near the middle of the length of the same. These chains or chains and rods, pass around windlasses N, N, that are operated through the medium of large and small spur wheels, or any other suitable hauling-up gear, by hydrostatic engines, steam engines, or any other suitable motive power.

The engines &c., are arranged on a very convenient staging M, erected along the sides, and across the landside or stem of the vessel as shown in the drawings.

Having thus described the main features of my improved mode of docking vessels, without entering into detail of the minor

parts which will be familiar to any ship builder, I will proceed to describe the process of raising a vessel out of water, and placing her on shore, in an elevated position for undergoing repairs &c.

The cradle D, is lowered down into the water as deep as may be necessary to float the vessel over it, the vessel is then floated on it, seated on the bilge blocks, and secured fast by tackle in a suitable manner. The engine is now set in motion, and as the chains J, J, are wound upon these windlasses, the vessel is gradually elevated out of the water with an upward and forward movement, describing the arc of a circle of which the columns C, C, C, are the radii and the axes of these lower journals, the centers thereof, when the columns are brought up to a perpendicular position, the motion is then stopped, and the vessel will rest upon and be supported by these columns, as shown in Fig. 1. The vessel will be high and dry out of the water, so as to allow of the inspection by the shipwrights of every part of her bottom. The chains or rods attached to them are then made fast to the surrounding staging, and the cradle cannot swing back. The same operation reversed will launch the vessel again into the water with speed and great efficiency.

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

Combining with a cradle or carriage D, the supporting and guiding columns C, C, C, when the same are in any suitable manner jointed or hinged to the cradle so as to allow of its being raised or depressed, at the same time keeping the carriage horizontal, and serving as supporting columns, when the carriage is at its highest point, essentially in the manner and upon the principles herein set forth.

HORACE J. CRANDALL.

Witnesses:
B. GIROUX,
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