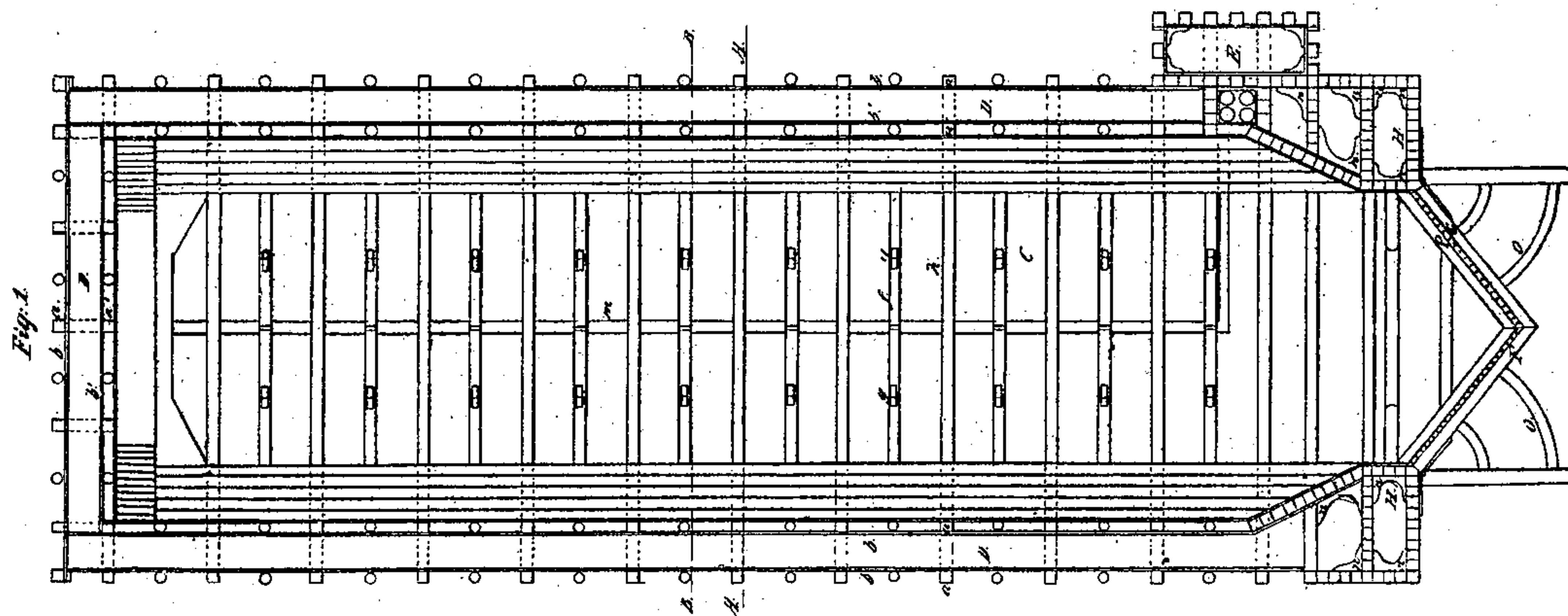
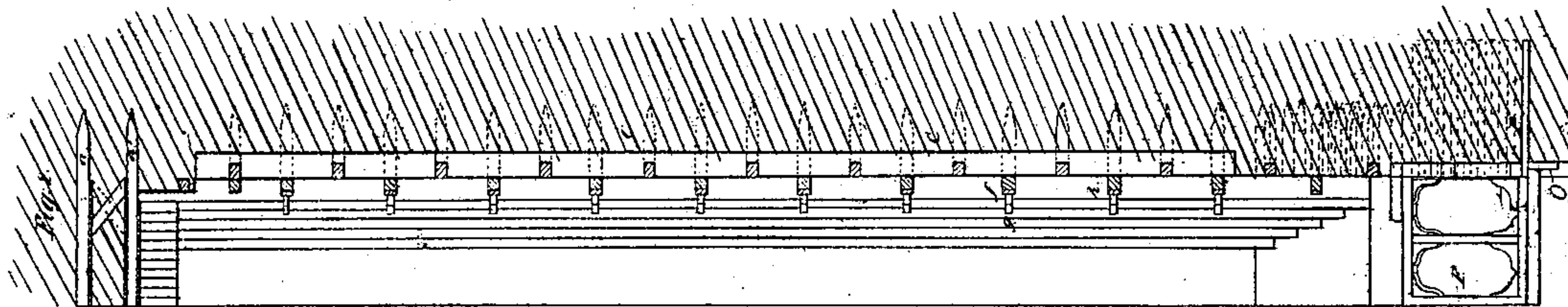
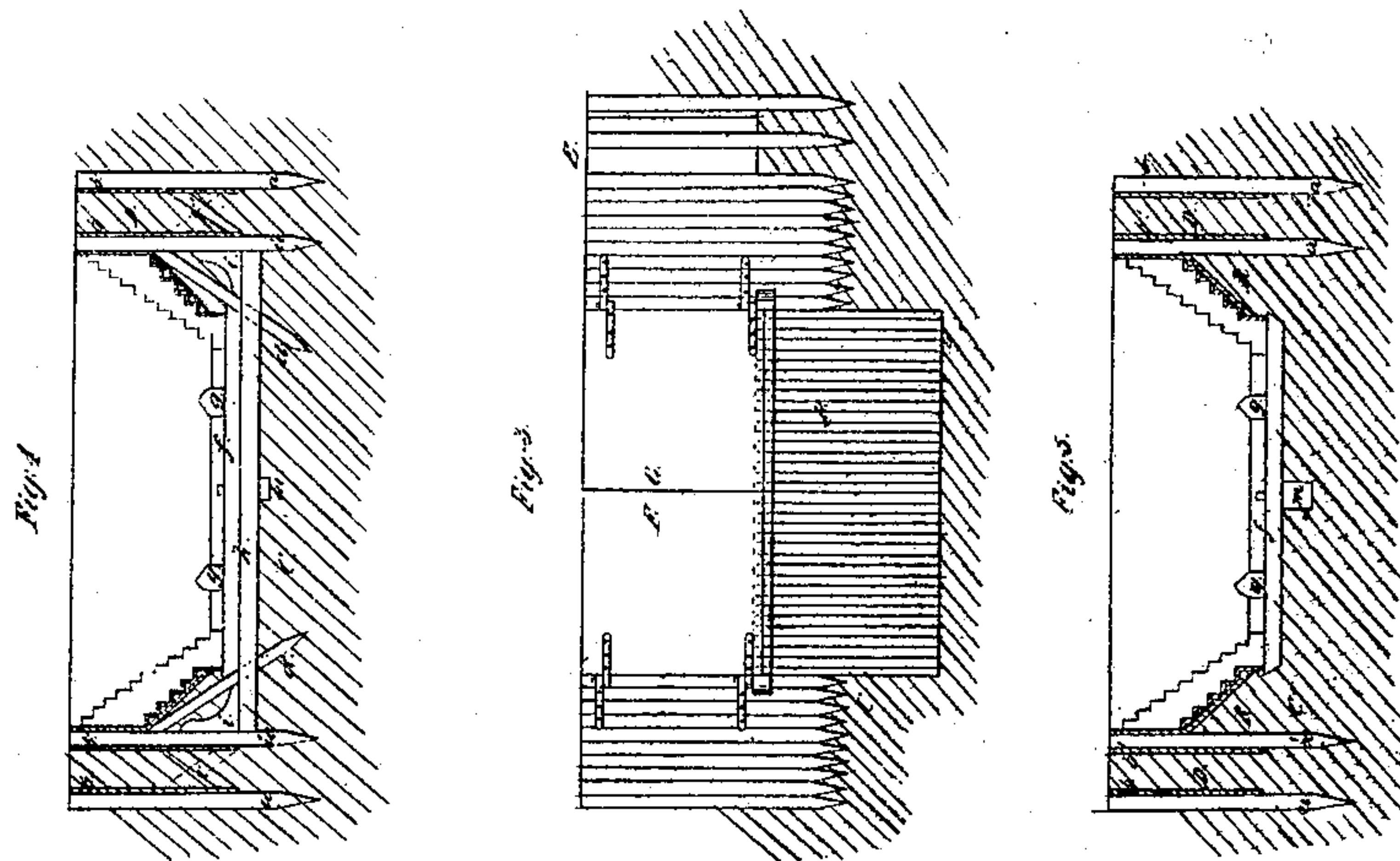


J. E. SIMPSON.
 DRY DOCK.

No. 12,034

Patented Dec. 5, 1854.



Witnesses:

Edw. Crossy
Chas. H. H. H.

Inventor:

J. E. Simpson

UNITED STATES PATENT OFFICE.

JAMES E. SIMPSON, OF EAST BOSTON, MASSACHUSETTS.

DRY-DOCK.

Specification of Letters Patent No. 12,034, dated December 5, 1854.

To all whom it may concern:

Be it known that I, JAMES E. SIMPSON, of East Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Permanent Dry-Docks and in the Method of Constructing the Same, of which the following is a full, clear, and exact description, reference being had to the annexed drawings, making part of this specification, in which—

Figure 1 is a plan of the dock. Fig. 2, a longitudinal section through the center of the same. Fig. 3 a front end view of the dock. Fig. 4 a transverse section upon the line A, A, of Fig. 1. Fig. 5, a section upon the line B, B, of Fig. 1.

Permanent dry docks have heretofore been constructed of cut stone masonry, laid either upon a natural foundation or upon an artificial one composed of piling and timber work. In the former case there is nothing to prevent the water from finding its way beneath the masonry of the dock, and upon the slightest displacement of the stones of the floor; the dock leaks and ultimately the foundation beneath is impaired by the flow of the water. In the case where the masonry is laid upon a foundation of piling and timber, it is found impossible to obtain a floor capable of supporting a heavy partial strain, or one that can safely be trusted with a vessel that is much hogged, as the great weight which is thus brought upon certain points, causes those points to yield, and thus the integrity of the floor is impaired.

To produce a dock that shall be free from these defects and at the same time to reduce the cost of these structures, is the object of my present invention, and my invention consists in making use of the natural clay foundation for the floor of the dock, the sides and back end being formed of piles, the puddling between the inner and outer piling resting upon the clay floor, and forming a continuation of it after the manner in which cofferdams are puddled; the front end of the dock through which the vessels are admitted being occupied by the gates.

To enable others skilled in the art to make and use my invention I will proceed to describe the manner in which I have carried it out.

A spot is selected for the locality of the dock where a clay foundation at the requi-

site depth may be found:—This may be upon the bank or within the river;—in either case the water is to be excluded from the vicinity of the operations by cofferdams pumping, &c., previous to commencing with the dock itself. The earth, mud, or whatever else may overlies the natural clay stratum, is then to be cleaned off down to the depth required:—Into this clay, represented by C, in the drawings, the inner and outer rows of piles *a a'*, are then driven; these piles are stayed by the diagonal braces *c, c'*, and are covered with the sheathing *b, b'*.

d, are spur braces which are driven into the foundation and secured at their tops to the interior piles *a'*, and serve to resist any lateral strain which may be brought to bear against the sides of the dock.

f, are cross sleepers which strut between the spur braces *d*, and upon which the chock blocks *g*, slide in the customary manner; these sleepers rest firmly upon the natural floor of the dock, to which they transmit any weight which may be imposed upon them.

h is another set of sleepers which strut between the piles *a'* and are sunk slightly beneath the level of the sleepers *f*, and into the surface of the foundation clay; these latter sleepers are secured firmly to the piles, and are braced in the most substantial manner by the knees *i*.

The space D inclosed between the rows of piles, is filled with puddling clay, resting directly upon the surface of the natural clay stratum, which is cleaned off for the purpose of receiving it. This puddling thus forms a continuation of the floor of the dock, without interruption or crevice between them.

m is a gutter through the center of the dock, in which any leakage which may take place finds its way to the pumps in the engine house at E, the latter being erected over an extension of the piling made for the purpose at the entrance.

For the purpose of forming abutments to resist the thrust of the gates, square piles are driven as seen at H, in contact with each other, the space inclosed by them being also filled with clay, which like that in the sides of the dock, rests upon and forms a continuation of the foundation; this piling is braced in the most substantial manner by knees *n*, Fig. 1, and is otherwise made as solid and unyielding as possible. To these abutments the gates F, G, are hinged.

For the purpose of preventing the water from making its way beneath the gates the latter are made to shut against the tops of a row of sheet piling P, driven into the clay as seen in Fig. 3, immediately within the bottom of the gate;—O are ways upon which the rollers which support the gates run in the customary manner.

The space R, within the body of the dock not being required to be left vacant, is filled with clay as seen in the drawings, and serves still further to strengthen the sides of the dock against the lateral thrust.

The advantages which a dock constructed upon this principle possesses over all others heretofore constructed are many; a few of these advantages may be enumerated as follows: 1st. The original cost is less than one-tenth of that required for a permanent stone dock. 2nd. No partial strain upon any part of the floor of the dock can possibly result in injury to the structure, as the whole weight is borne by the natural stratum, and it matters not where or to what extent this weight be imposed upon the floor of the dock. This

characteristic renders my dock capable of accommodating vessels which are badly hogged, and that would be in consequence refused admittance into any other docks. 3d. My dock is far more comfortable to the workmen than a stone dock which remains for a long time cold and damp after it is emptied of water.

I do not claim constructing a cofferdam by driving double rows of piles, and filling the interspace with clay, but

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

The method herein described of constructing dry docks by making use of the natural stratum of clay for the floor of the dock, and continuing the same up through the walls by means of puddling, in the manner set forth; the front of the dock being furnished with gates for the admission of the vessel as described.

JAMES E. SIMPSON.

Witnesses:

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