

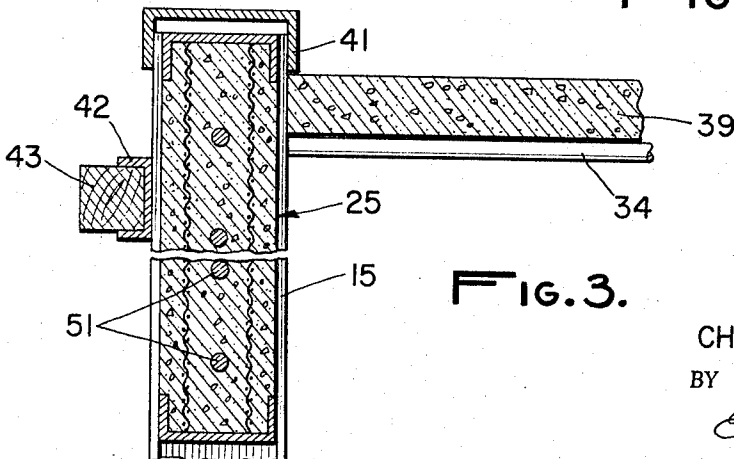
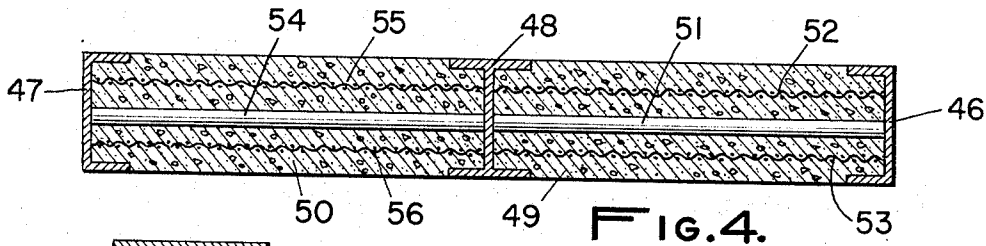
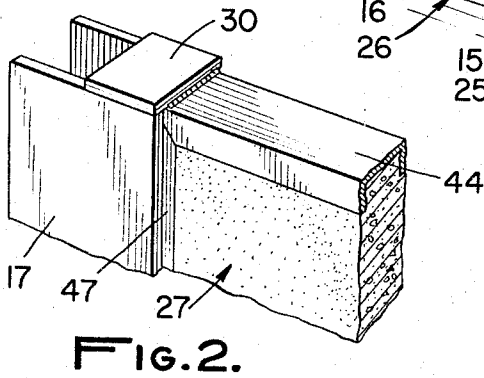
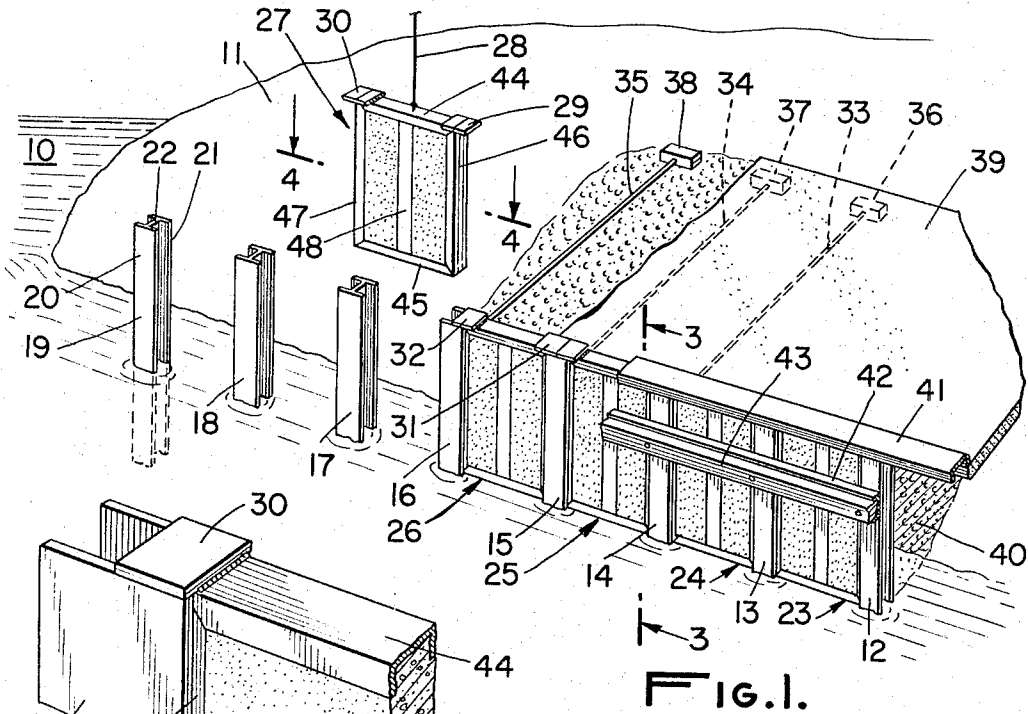
May 7, 1968

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3,381,483

SEA WALL AND PANEL CONSTRUCTION

Filed Sept. 15, 1966



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SEA WALL AND PANEL CONSTRUCTION

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Filed Sept. 15, 1966, Ser. No. 579,569

6 Claims. (Cl. 61-49)

ABSTRACT OF THE DISCLOSURE

A sea wall construction is provided formed from several I-beam columns driven into the ground off shore in parallel equidistantly spaced relationship extending above the surface of the water. A plurality of prefabricated unitary panels are successively positioned between the columns in interfitting relationship therewith to form a continuous vertical wall structure in conjunction with the columns. Overhanging end plates are provided on the top edges of each of the panels to engage the upper surfaces of the I-beams and thus assure that the top edges of all of the panels are in alignment.

This invention relates generally to sea walls and related structures, and more particularly to an improved wall structure utilizing prefabricated components enabling fast and efficient construction of sea walls, docks, piers and the like.

With conventional components and construction techniques, the construction of sea walls, docks, piers and the like is time consuming and expensive. The labor costs are particularly high when the components of the structure must be assembled and joined at the construction site.

Anchoring such structures to the sea floor may be particularly difficult when, for example, the structure includes corrugated sheet piling forming a wall of the structure. Such piling is difficult to drive into the sea floor due to the relatively large area of the lower end of the piling, with the increased possibility of striking rocks and thus buckling the piling. Moreover, corrugated sheet piling does not readily lend itself to incorporation within structures such as docks and piers or other structures in which the piling may be required in a load-bearing capacity.

With the foregoing in mind, it is accordingly a primary object of this invention to provide an improved wall structure adapted to be erected on the sea floor to form the principal portion of a sea wall, dock, pier, or the like, while overcoming the foregoing problems.

More particularly, it is an object to provide an improved structure utilizing prefabricated components with the result that the wall structure may be erected at a minimum of time and expense.

Another object is to provide an improved modular panel adapted for use in the construction of sea walls and the like.

Briefly, these and many other objects and advantages of the invention are attained by providing a wall structure utilizing a plurality of I-beam columns driven into the ground off shore in parallel, equidistantly spaced relation and extending above the water surface along a vertical plane. The wall structure further includes a plurality of unitary panels positioned successively between the columns in interfitting relation therewith to form a continuous vertical wall structure in conjunction with the columns.

Each of the panels may include means for engaging the top of the adjacent columns whereby the tops of the panels and the tops of the columns will be aligned, such that the resulting wall structure terminates in a horizontally extending line.

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A better understanding of the invention will be had by now referring to a preferred embodiment thereof as illustrated in the accompanying drawings, in which:

FIGURE 1 is a perspective view of the wall structure of the invention erected along a shoreline and illustrating the construction of a dock or pier;

FIGURE 2 is a fragmentary perspective view of a portion of the wall structure of FIGURE 1;

FIGURE 3 is a sectional view of the wall structure of FIGURE 1 taken in the direction of arrows 3-3; and,

FIGURE 4 is a section view taken in the direction of arrows 4-4 of FIGURE 1.

Referring first to FIGURE 1, there is shown a body of water 10 adjacent a shore 11. A plurality of I-beam columns 12 through 19 are shown driven into the ground off shore in parallel, equidistantly spaced relation and extending above the water surface in a common vertical plane. The columns are positioned such that the tops are arranged along a common horizontal line. As is typical of each of the columns, the column 19 is formed of a pair of parallel flanges 20 and 21 interconnected by a transverse web 22 bisecting the flanges. It will be apparent that each of the columns is oriented about its longitudinal axis in the same position as each of the others, that is, the webs of the columns are disposed in parallel relation.

In accordance with the invention, a plurality of unitary prefabricated panels are adapted to be positioned successively between the columns in interfitting relation with the columns to form a continuous vertical wall structure. Such panels are illustrated at 23 through 27. The panel 27 is shown being lowered by a hoist line 28 for insertion between the columns 16 and 17 wherein the opposite vertically disposed ends of the panel are received within the flanges and webs of each of the columns 16 and 17. It will be apparent that each of the other panels is positioned in the same manner as illustrated with respect to the panel 27.

Each of the panels includes integral means for positioning the panels with respect to the adjacent columns in a manner such that the tops of the panels will coincide with the tops of the column when the components are assembled. Toward that end, a pair of plates 29 and 30 are secured on the top of the panel 27 so as to project outwardly over the opposite edges of the panel. Accordingly, the plates 29 and 30 will seat against the tops of the columns 16 and 17 respectively, to thus align the tops of the panels in the completed wall structure.

As best shown in FIGURE 2, the plate 30 may be welded on to the top of the panel 27 and is of a size to engage the flanges and web of the column 17.

It will be understood that each of the panels includes a pair of plates as above described. A pair of such plates is shown at 31 and 32 secured to the panel 26 for engaging the columns 15 and 16 respectively.

The provision of the above-described plates may be particularly important in a situation in which the depth of the water is variable along the vertical plane of the wall structure. Without the provision of the plate, the tops of the panels would be disposed at various levels with respect to each other and the columns.

In the illustrated embodiment of the invention, the wall structure may be "tied" to the shore as part of a dock or pier construction. Toward that end, a plurality of elongated structural members 33, 34, and 35 may be secured to the columns 14, 15, and 16 respectively, and extend generally horizontally into coupled relation with so-called "deadman" members 36, 37, and 38 respectively, which are buried on shore. It will be understood that each of the columns may be secured to the shore in the same manner. The members 33 through 35 serve as a means for supporting suitable decking 39 extending from the shore

to the wall structure. Suitable back fill material 40 may be disposed behind the wall structure prior to placing the decking 39 in position.

If desired, the top of the wall structure may receive a channel member 41 as shown. Additionally, a channel 42 may be secured along the wall structure for receiving a timber member 43 which serves as a bumper for boats tied to the dock.

FIGURE 3 illustrates in greater detail the above described arrangement of the structure of the dock.

Referring again to FIGURE 1, the structural arrangement of a panel will be described with reference to panel 27, it being understood that all the panels are identical in construction. The panel 27 includes parallel top and bottom channels 44 and 45 respectively, which are connected by a pair of parallel end channels 46 and 47 so as to define a rectangular frame structure. In order to provide a more rigid structure, an I-beam 48 may be secured between the top and bottom channels 44 and 45 in parallel, equidistantly spaced relation to the end channels 46 and 47. The I-beam 48 divides the panel into a pair of rectangular areas for receiving concrete formed in situ to provide slabs 49 and 50.

Each of the concrete slabs of a panel may include reinforcing means. Toward that end, and with reference to FIGURE 4, a plurality of reinforcing bars 51 extend in spaced parallel relation between the end channel 46 and the I-beam 48 so as to be embedded within the slab 49. The spacing of the reinforcing bars is illustrated in FIGURE 3 in a typical example. In addition, a pair of wire mesh screens 52 and 53 may be embedded within the slab 49 on opposite sides respectively of the plurality of the reinforcing bars 51. Similarly, a plurality of reinforcing bars 54 and a pair of wire mesh screens 55 and 56 are embedded within the slab 50 wherein the reinforcing bars 54 extend between the end channel 47 and the I-beam 48.

From the foregoing it is apparent that the invention provides a means by which docks for example, may be constructed at a minimum of time and expense.

The provision of the prefabricated panels greatly simplifies the construction procedures at the site, with consequent savings in labor costs. While the construction of a dock has been illustrated and described, it will be understood that the panels and the wall structure of the invention may be utilized in a variety of similar applications.

What is claimed is:

1. A sea wall construction adapted to be erected along a shoreline, said construction comprising: a plurality of I-beam columns driven into the ground off shore in parallel equidistantly spaced relation and extending above the surface of the water, said columns being arranged in a common vertical plane; and a plurality of unitary panels positioned successively between the columns in interfitting relation therewith to form a continuous vertical wall structure in conjunction with said columns, each of said panels

including a pair of plates secured on top thereof and projecting over the opposite ends of the panel for engaging the top of the adjacent columns, whereby the tops of the panels will be aligned with the tops of the columns.

2. The subject matter of claim 1, in which each of said I-beam columns includes a pair of parallel flanges interconnected by a transverse web bisecting said flanges; and wherein each of said panels has its vertically disposed ends received within the space defined by the flanges and web of the adjacent columns.

3. The subject matter of claim 1, in which each of said panels includes a pair of parallel top and bottom channels being joined together to form a rectangular structure; a concrete slab formed within and bounded by said channels; and a plurality of reinforcing members embedded in said concrete slab.

4. The subject matter of claim 1, including means securing each of said I-beam columns to the shore for providing lateral support for said wall structure.

5. The subject matter of claim 3, in which said means includes an elongated member secured to the upper portion of each of said columns and extending laterally therefrom into engagement with the shore.

6. A panel member for a sea wall structure, comprising: a pair of parallel top and bottom channels; a pair of parallel end channels being joined at their ends to said top and bottom channels to form a rectangular frame structure; a pair of plates secured to the top channel and projecting over the opposite ends of said top frame structure; an intermediate I-beam member secured between said top and bottom channels in parallel equidistantly spaced relation to said end channels to define first and second rectangular areas bounded by said I-beam member and said channels; a concrete slab formed within each of said rectangular areas; a plurality of reinforcing bars embedded within each said concrete slab; and a pair of mesh reinforcing screens embedded within each said concrete slab, wherein said reinforcing bars are disposed between said screens, and wherein said plates facilitate alignment of said top channel with corresponding top channels of any adjacent similarly constructed panels.

References Cited

UNITED STATES PATENTS

592,738	10/1897	Judson	61—49 X
1,813,909	7/1931	Brainard et al.	52—601
1,863,257	6/1932	Tashjian	52—495 X
3,228,161	1/1966	McCown	52—601 X

FOREIGN PATENTS

1,127,500	8/1956	France.
543,790	3/1942	Great Britain.

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