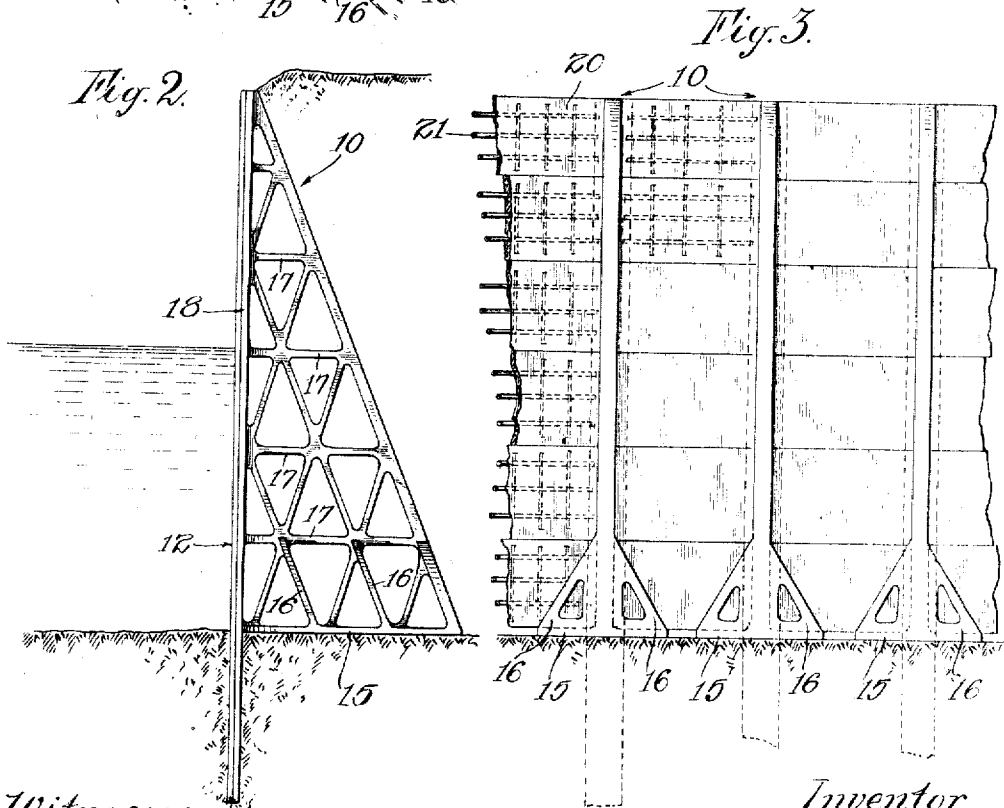
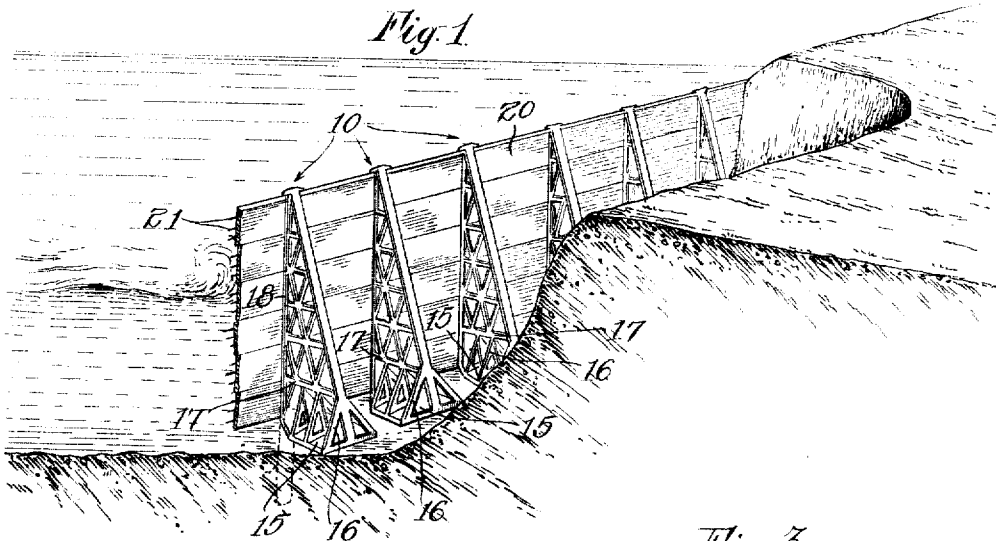


H. L. SMITH.
 REINFORCED CONCRETE SECTIONAL SEAL WALL.
 APPLICATION FILED JAN. 20, 1909.

952,645.

Patented Mar. 22, 1910.

2 SHEETS—SHEET 1.



Witnesses,
Edw. H. Edwards
C. J. Williams

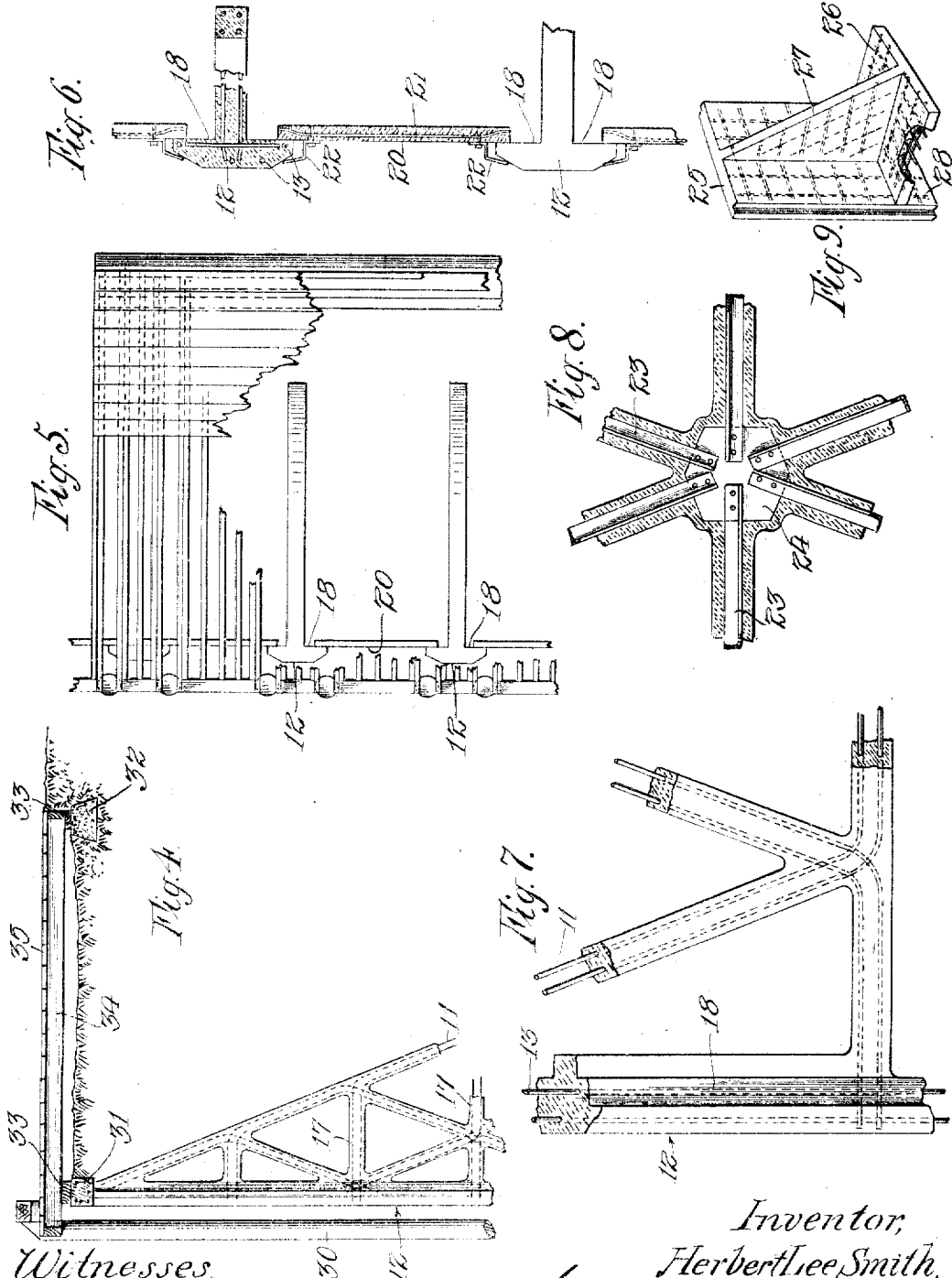
Inventor,
 Herbert Lee Smith,
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2 SHEETS—SHEET 2.



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UNITED STATES PATENT OFFICE.

HERBERT LEE SMITH, OF LOS ANGELES, CALIFORNIA.

REINFORCED-CONCRETE SECTIONAL SEA-WALL.

952,645.

Specification of Letters Patent. Patented Mar. 22, 1910.

Application filed January 20, 1909. Serial No. 473,255.

To all whom it may concern:

Be it known that I, HERBERT LEE SMITH, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented new and useful Improvements in Reinforced-Concrete Sectional Sea-Walls, of which the following is a specification.

My invention relates to reinforced concrete sectional sea-walls adapted for placement along bays, inlets and other arms of the sea where the water is comparatively calm and free from storms, and which is designed to replace the usual form of wooden retaining walls, bulkheads and like structures erected in salt water for various purposes, and a special object thereof is to provide a sectional structure that may be readily transported to the place of use, and which will when erected withstand the destructive action of sea life, such as the teredo.

Another object is to provide a reinforced concrete retaining wall composed of a number of sections so united as to form when in place a single unitary structure of great strength, capable of withstanding the ravages of the elements and the untoward influences of sea water.

In the accomplishment of the above objects I preferably employ a plurality of trussed buttresses or anchorages, between which reinforced concrete filler or backing plates are secured, the whole mass being held in place by an earth backing.

In the drawings hereto annexed and forming a part of this specification: Figure 1— is a perspective view of my improved wall erected along the water front, portions of the embankment being broken away for clarity of illustration. Fig. 2— is a side elevation of one of the buttresses in position. Fig. 3— is a rear elevation of a portion of the wall, the filler plates being in position and some of them partly broken away to disclose their reinforcement. Fig. 4— is a side elevation of the upper portion of my improved wall showing a fender and wharf attached thereto. Fig. 5— is a plan view of the wall with the fender and wharf in place thereon. Fig. 6— is a sectional plan view of my improved sea-wall. Fig. 7— is a detail side elevation of one of the buttresses, portions being broken away to disclose their reinforcement. Fig. 8— is a detail of a modified form of buttress construction. Fig. 9— is a perspective view of another modified form of buttress construction.

Referring more particularly to the drawings, 10 designates a plurality of buttresses preferably formed of concrete properly reinforced and of an angular configuration. As all of the buttresses are of the same construction and also for the sake of brevity I will describe only one. As heretofore mentioned the buttress is of an angular trussed configuration preferably formed of steel reinforcing bars 11 of suitable size and strength which are temporarily tied together preparatory to insertion in the concrete mold forms (not shown). The outer vertical face or pier 12 of the buttress is preferably formed with a plurality of rods 13, as clearly shown in Figs. 6 and 7 of the drawings which extends below the base 15 of the buttress structure, so that when the buttress is erected in place it will be rigidly maintained against movement. Base 15 of the buttress extends beyond each side, and bracing ribs 16 extend upward therefrom at an angle to the lowermost series of cross bars 17, thus insuring strength and stability to the structure. After the buttress structure reinforcing rods have been properly tied together the whole skeleton structure is placed in suitable molds and concrete poured thereon, a sufficient time being allowed for the concrete to thoroughly set when the buttress is ready for transportation to its place of use. When placing the buttresses in position a hydraulic jet is preferably applied to the pier 12 so that it will sink until the base 15 contacts with the bottom. The inner vertical face of pier 12 is provided on each side thereof with a vertically extending groove 18, against which the concrete filler or backing plates 20 are adapted to contact. These plates are preferably formed of concrete and are provided with a reinforcing grid 21 which is formed of horizontally extending and vertically disposed steel bars, by means of which the mass of concrete forming the plate is tied together. These plates 20 are preferably placed end on end between adjacent buttresses to the height of the buttress and are held temporarily in place by means of metallic fingers or arms 22, one end of which is secured to the plate. As fast as a section of wall is completed, the space to the rear of the wall is filled with earth from dredges operating in front, so that when the wall is finally completed it

will form a structure of great strength and rigidity, the bases of the buttresses furnishing a secure anchorage for the walls. By this novel means of construction it is possible to easily erect a wall in a depth of water that would permit the landing of ships of considerable tonnage, and at the same time it would afford a convenient means of reclaiming large areas of land covered by shoal water.

In Fig. 8 I have illustrated another form of buttress construction in which the round reinforcing bars are dispensed with and in lieu thereof I have substituted a construction in which angle irons 23 are bolted or otherwise secured to plates 24, the concrete being cast around the skeleton structure thus formed as in the preferred form.

In Fig. 9 of the drawings I have illustrated still another form of wall construction in which the concrete plates 20 and buttresses are dispensed with, the wall being formed of monolithic reinforced slabs 25 provided with bases 26 and webs 27, both being reinforced similar to the plate construction. In this construction the slabs are tongued and grooved on their vertical edges, thus forming a continuous wall, the portion 28 of the slabs entering the bottom similar to the lower ends of the piers 12 in the preferred form.

In Figs. 4 and 5 I have illustrated a combined wharf fender construction for the purpose of affording a convenient landing place for vessels, furnishing at the same time a protective fender and preventing injury to the sea-wall. In this construction piles 30 are driven or jetted into the bottom in the usual manner directly in front of the wall. The wall top in this instance is furnished with a concrete curbing 31, a similar curbing or footing 32 being laid directly in the rear and parallel with the curb 31, each being provided with wooden plates 33, upon which the stringers or rafters 34 which support the flooring 35 are laid.

It will be observed from the foregoing description that I have provided a novel con-

struction whereby I am enabled to erect a practically indestructible sea-wall in a minimum length of time and in an economical manner.

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

1. In a concrete retaining wall construction, a plurality of concrete buttresses and a reinforcing means embedded therein, a plurality of concrete plates mounted between said buttresses, each plate being provided with a reinforcement and adapted to form with said buttresses a continuous wall, and means formed on the buttresses for retaining the wall so formed in position.

2. In a concrete retaining wall construction, a plurality of concrete buttresses spaced apart and a reinforcing means embedded therein, and a reinforced concrete plate between each two adjacent buttresses, said plates and buttresses adapted when placed together to form a continuous retaining wall construction.

3. In a concrete retaining wall construction, a plurality of trussed buttresses formed of concrete and a plurality of metallic reinforcing rods therefor, said buttresses spaced apart, and a plurality of concrete plates with a reinforcing means embedded therein, said plates adapted to form with said buttresses a continuous wall.

4. In a concrete wall construction, a plurality of triangular supports spaced apart, a plurality of plates mounted therebetween, means formed on said supports to prevent an outward movement of said plates, and means formed on the bases of said supports, whereby they may be rigidly maintained in position.

In witness that I claim the foregoing I have hereunto subscribed my name this 14th day of January, 1909.

HERBERT LEE SMITH.

Witnesses:

EDMUND A. STRAUSE,
M. A. PALMER.