

(No Model.)

T. F. WURTS.

CONSTRUCTION OF BREAKWATERS, SEA WALLS, JETTIES, &c.

No. 411,704.

Patented Sept. 24, 1889.

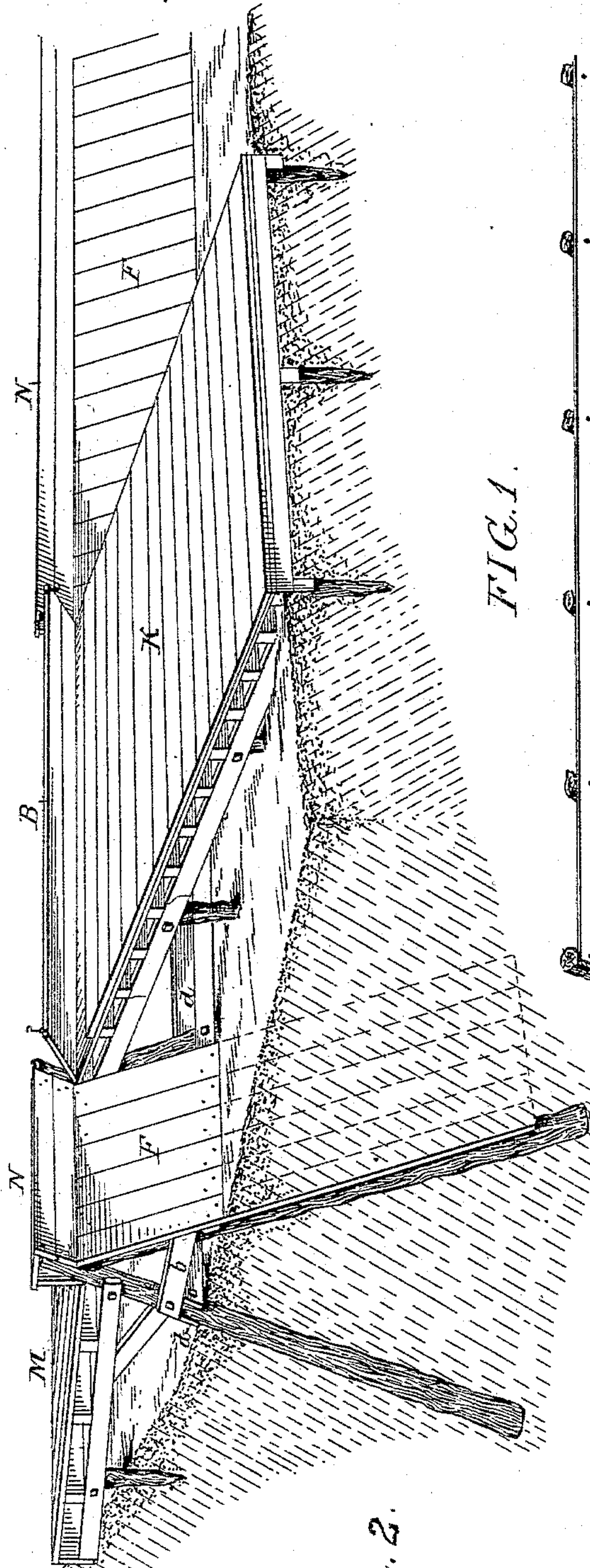


FIG. 1.

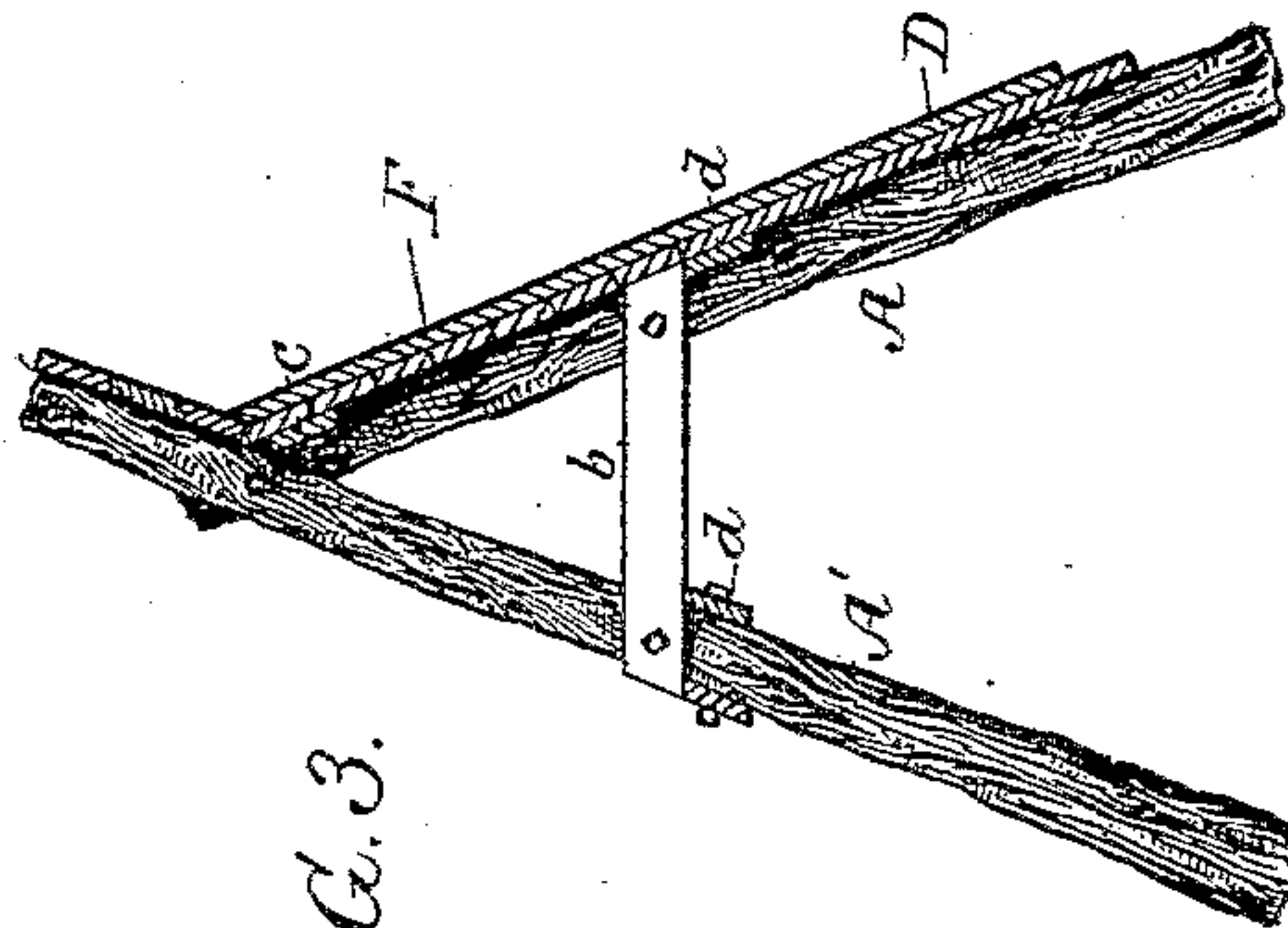
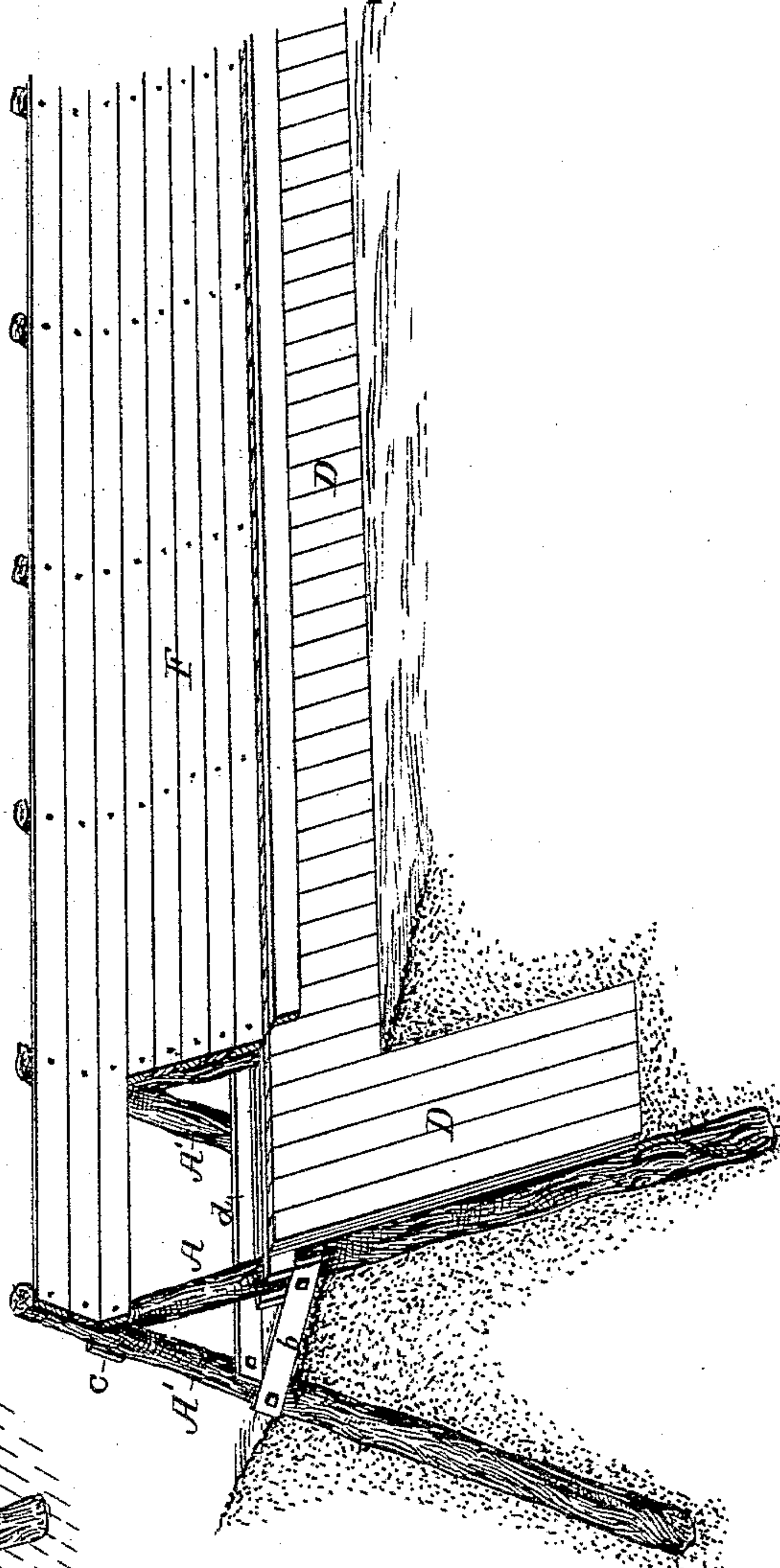


FIG. 3.

Witnesses
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UNITED STATES PATENT OFFICE.

THEODORE F. WURTS, OF BRIDGETON, NEW JERSEY.

CONSTRUCTION OF BREAKWATERS, SEA-WALLS, JETTIES, &c.

SPECIFICATION forming part of Letters Patent No. 411,704, dated September 24, 1889.

Application filed June 29, 1889. Serial No. 316,052. (No model.)

To all whom it may concern:

Be it known that I, THEODORE F. WURTS, a citizen of the United States, and a resident of Bridgeton, Cumberland county, New Jersey, have invented an Improvement in the Construction of Breakwaters, Sea-Walls, Jetties, &c., of which the following is a specification.

The object of my invention is to so construct a sea-wall, breakwater, or jetty that it will be substantial, and material from the sea front of the wall will be carried over and deposited back of the wall by the action of the tide, as fully described hereinafter, reference being had to the accompanying drawings, in which—

Figure 1 is a perspective view of my improved sea-wall, jetty, or breakwater, showing a portion of the beach broken away. Fig. 2 is a perspective view of my improved sea-wall, showing a board walk and driveway; and Fig. 3 is a view illustrating a special form of my improved sea-wall.

My invention is especially applicable to the construction of sea-walls along ocean-fronts, as I have found by experiments that the vertical piling ordinarily used for this purpose is gradually undermined and washed away by the action of the water, so that no matter how perfect such piling or how strong the bulk-head in the first instance the piling will eventually be undermined and the bulk-head destroyed. I overcome this difficulty by first driving two rows of piles, one row being at an angle to the other, and I then tie these piles together, so as to form what may be termed an "A-truss," and sheath this piling, as fully described hereinafter. It is thus impossible for the sea to lift the piling, owing to the fact that the pressure of the sand upon the pile below the water-level is exerted to prevent the rise of the pile.

Referring to the drawings, A A' are the piles, driven at an angle to each other in the form of an A truss and united at their upper ends, as shown, the pile A' extending some distance above the pile A, for a purpose described hereinafter.

Tying the piles together about midway of their length is a brace-piece b, and extending

from pile to pile are longitudinal clamps or stringer-bars c c and d d, as shown in Fig. 1, the bars c being at the junction of the two piles and the bars d d in the present instance being slightly above the cross-braces b. The cross-braces I prefer to place at about the low-water mark; and secured to the longitudinal stringers d d, as shown in Fig. 1, are vertical planks D, which extend into the sand and project above the low-water mark, but in this instance not to the high-water mark, so that the space above the upper edge of the planking is open to allow the sea to wash over the top of the planking and back of the same, thus automatically filling up the space back of the piling. As soon as this space is filled the sheathing F is placed upon the piling to the high-water mark; but this sheathing need not necessarily be placed at one time, as portions of it may be first placed in position, allowing the water to still flow over the sheathing at high water and deposit the sand back of the sheathing. When the high-water mark is reached, however, the sheathing is placed a trifle above this point, and then to prevent the waves from breaking over the piling I place an extra sheathing on the extensions of the piling A', as shown in Figs. 1 and 2.

In constructing a sea-wall on this plan I can place a board walk M back of the sea-wall, as shown in Fig. 2, and on the upper extension of the piling A' secure a seat N, as shown in Fig. 2, and where a street extends to the beach I can hinge the portion B to the sheathing F, so as to enable carriages or wagons to pass over the sheathing and wagon-way K onto the beach; but in case of high tides this sheathing B is raised and secured in position so as to throw the water away from the street as much as possible, although this construction is not absolutely necessary, as in some instances the street may be built up to the edge of the sheathing, or the sheathing discontinued a certain distance at the street-opening.

I do not desire to limit myself to the exact shape of the A-truss shown, as other forms of truss may be used without departing from my invention, my object being to form a truss

that cannot be pulled out vertically by the action of the sea, as is the case in piling now commonly used.

In Fig. 3 I have shown a construction where
5 extra strength is required. The trusses are not only sheathed part way with vertical planks and part way with horizontal planks, but in addition to these planks are placed
10 extra vertical sheathing-planks, as clearly shown in Fig. 3, and as shown in Fig. 2 the vertical planks may be used alone, as in the case of sea-walls; but I prefer, where circumstances permit, to use the construction
15 shown in Fig. 1.

I claim as my invention—

1. The combination, in a breakwater or jetty, of the piles A A', forming an A-truss, substantially as shown, with a cross-piece
20 uniting these piles and clamps or stringer-bars tying the series of piles together, with vertical sheathing on the exterior piles, substantially as described.

2. The combination, in a sea-wall, breakwater, or jetty, of the piles formed in the
25 shape of an A-truss, the rear piles extending beyond the junction, braces connecting the piles together, sheathing on the exterior face of the piles, and sheathing on the extended

portion of the rear piles at an incline to the main sheathing, whereby the water is thrown
30 from the sea-wall, substantially as described.

3. The combination, in a sea-wall, of the A-truss composed of a series of piles arranged
35 substantially as described, with extensions of the rear piles, sheathing on the main portions of the sea-wall, and sheathing on the extended portions of the rear piles, with a driveway, and a hinged portion of the extended sheathing adapted to lie flat upon the
40 driveway or to be placed in an upright position, substantially as described.

4. The combination of the A-truss with the extension of the rear piles extending
45 above the junction of the two piles forming the truss, sheathing on the outer surface of the front pile, with a board walk on the rear of the sea-wall, and a seat supported by the extension of the rear pile, substantially as shown and described.

In testimony whereof I have signed my
50 name to this specification in the presence of two subscribing witnesses.

THEODORE F. WURTS.

Witnesses:

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HENRY HOWSON.