(No Model.)

H. F. KNAPP.

SHORE PROTECTOR AND BEACH BUILDER.

No. 247,065. Patented Sept. 13, 1881.

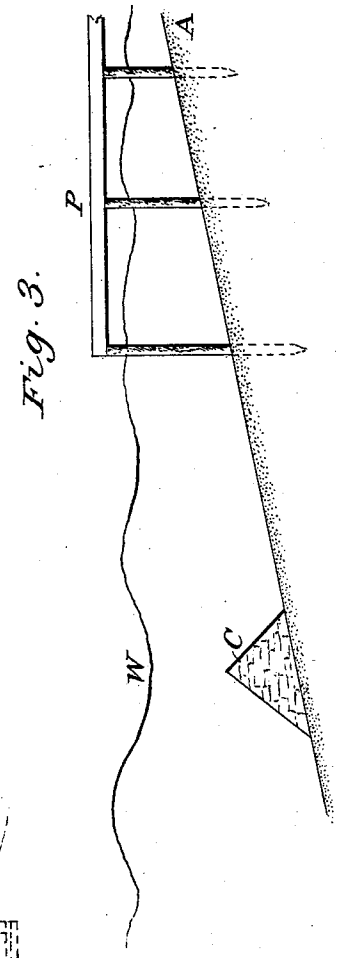


Fig. 3.

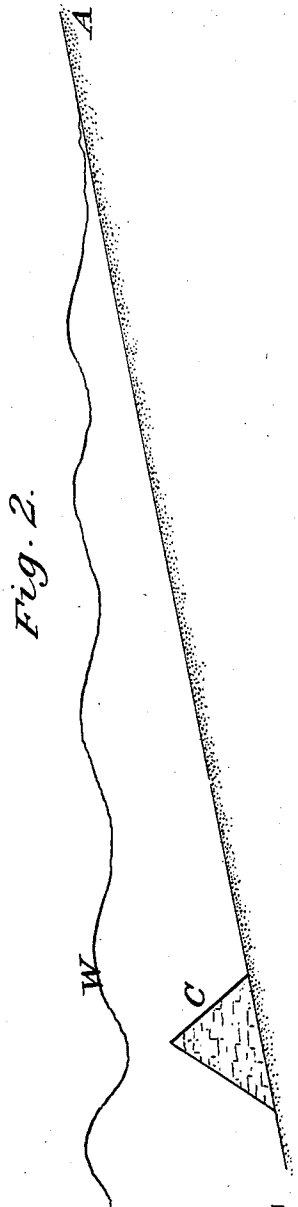


Fig. 2.

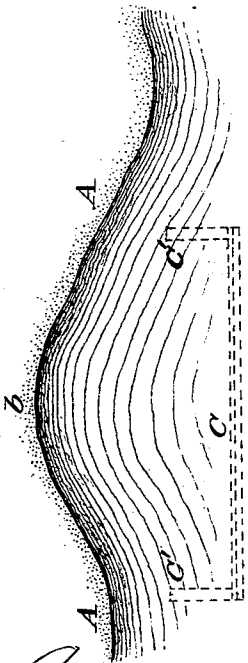


Fig. 1.

Witnesses:
E. Warren

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UNITED STATES PATENT OFFICE.

HENRY F. KNAPP, OF NEW YORK, N. Y.

SHORE-PROTECTOR AND BEACH-BUILDER.

SPECIFICATION forming part of Letters Patent No. 247,065, dated September 13, 1881.

Application filed July 9, 1881. (No model.)

To all whom it may concern:

Be it known that I, HENRY F. KNAPP, of the city, county, and State of New York, have invented a new and useful means whereby the force of sea-waves may be stopped from cutting into and away shores, beaches, &c., without causing any impediment to navigation, the same means also being applicable to piers projecting into a sea, and will afford greater facility and safety for the landing and mooring of vessels alongside by lessening the undulation of the water, all of which is set forth in the following specification, reference being had to the accompanying drawings.

All sand beaches are subject to constant change in hydrography and topography by reason of the varying conditions of ocean currents and force from time to time; and as many marine villas, hotel properties, and farms situated on the ocean-front are being more or less affected and washed away by the force of the sea-waves, the object of this invention is to effectively and economically afford the requisite protection without defacing the sea-view, impeding navigation, or encroaching on the ocean's domain. This will be accomplished by building an artificial bar, submerged and about parallel with the beach, which will cut down and absorb the force of the sea-waves beating on the shores and destroy a part of their force, so that they will strike and break on the shores after passing the artificial bar with far less eroding, tearing, and washing effect. By this means a beach can be effectively saved from washing away, while with slight modifications, according to the hydraulic conditions of the locality, the sand thrown inside the submerged bar by the waves may be held there to build up the beach, or the currents may be made to take away such sand.

Wave force running up an inclined beach often rapidly resolves itself in part into a shore or tidal current (while at the same time it will maintain its wave-like character) by reason of its excessive acquired motion, and which current, as well as any real shore-current that may pertain to the locality, it is intended this bar shall also impede.

In further explanation it may be stated that wave force is always used up by friction on the bottom, and this artificial bar concentrates much of that friction on itself.

Referring to the drawings, Figure 1 represents a top-plan view of a sandy beach, A, washed away and cut into at *b* by reason of the excessive force of the waves at this point. C represents the submerged bar, built of stone or other heavy or fixed material, so as to be immovable by sea force, and quite parallel with the shore line. This bar may have right or obtuse angled extensions C′ toward the shore in case it is also desired to reduce any shore-currents that may exist, whether induced by wave action or otherwise. These extensions striking into the heart of deeper water are far more effective than their same capacity projecting from the shores. This entire bar and its extensions are to be submerged so far under the water-surface as to be invisible, as well as to permit all vessels frequenting the locality to pass safely over its top or apex.

Fig. 2 represents a vertical section of Fig. 1, having like letters of reference, but also showing the undulating water-surface W running upon the shore, but not showing the in-shore-bar extensions.

Fig. 3 represents a pier with the bar in front of it for its protection and the facility of landing at it. This artificial bar, elevated several feet above the bottom and being parallel with the waves as they advance onto it, will take from their force proportionately to its height above the bottom, and consequently the waves, after passing it, will advance on the shore with a much reduced force.

What I claim, and desire to secure by Letters Patent, is—

1. A submerged artificial bar, C, built about parallel with the shore, as and for the purpose described.

2. A submerged artificial bar, C, having in-shore-extensions C′, as described.

3. A submerged artificial bar, C, acting for the protection of a pier, and for the facility of landing vessels thereat.

HENRY F. KNAPP.

Witnesses:
ALBERT F. CARY,
E. E. FITZGERALD.