No. 715,557. Patented Dec. 9, 1902.

F. W. CUSHING.

MEANS FOR FORMING BEACHES.

(Application filed Oct. 19, 1901.)

(No Model.)

Fig. 1.

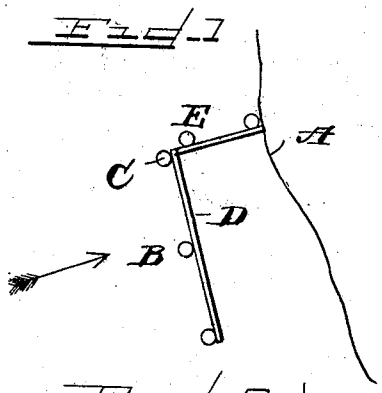


Fig. 2.

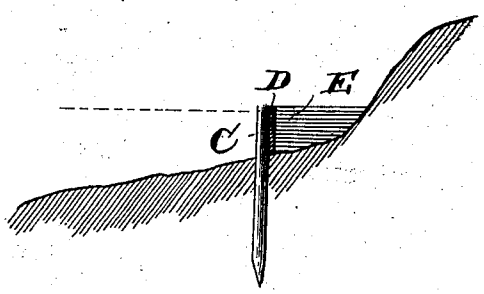


Fig. 3.

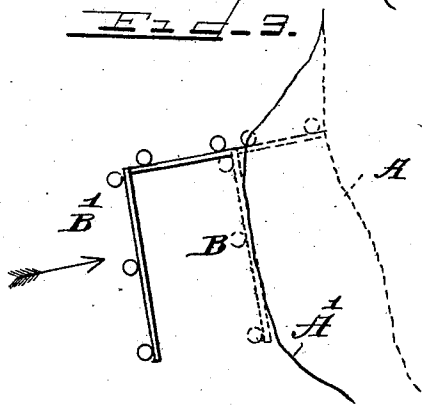


Fig. 4.

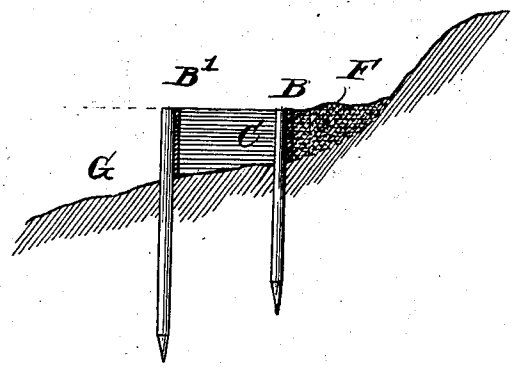


Fig. 5.

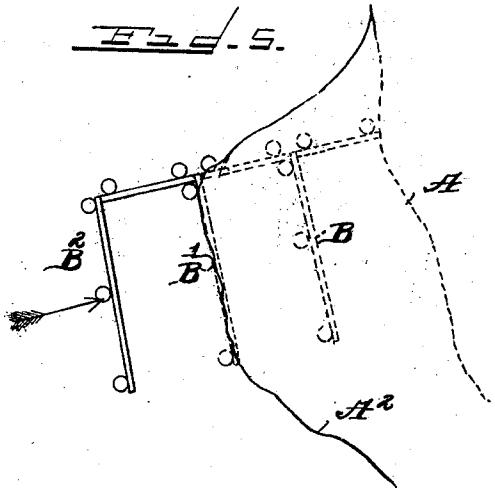
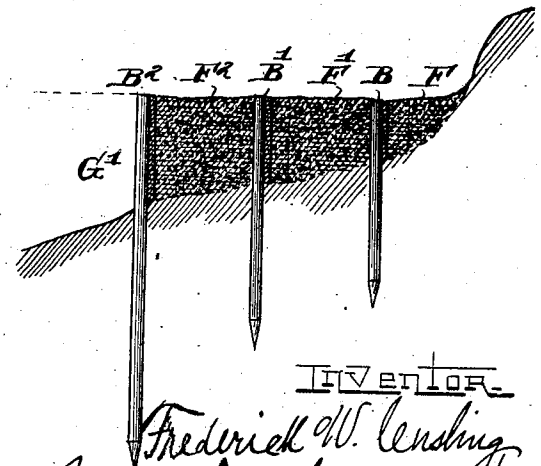


Fig. 6.



Witnesses.

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UNITED STATES PATENT OFFICE.

FREDERICK W. CUSHING, OF HIGHLAND PARK, ILLINOIS.

MEANS FOR FORMING BEACHES.

SPECIFICATION forming part of Letters Patent No. 715,557, dated December 9, 1902.

Application filed October 19, 1901. Serial No. 79,231. (No model.)

To all whom it may concern:

Be it known that I, FREDERICK W. CUSHING, a citizen of the United States, residing at Highland Park, in the county of Lake and State of Illinois, have invented a new and useful Means for Forming Beaches, of which the following is a specification.

This invention relates to means for forming beaches.

The object of the invention is to provide a means for forming beaches along shores or water-lines of bodies of water, and in the attainment of this object it is proposed to utilize the wash of the waves in forming the beach.

The invention consists, substantially, in the combination, location, and arrangement of parts, all as will be more fully hereinafter set forth, as shown in the accompanying drawings, and finally pointed out in the appended claim.

The protection of the shore-line along bodies of water, and especially shore-lines of bodies of water where there is any considerable degree of way or seaway, has long been a most serious problem to the owners of property with riparian rights. In order to prevent the action of the waves from washing away the bounding shore-line, vast sums of money have been expended in the construction of breakwaters to prevent or to arrest the destructive action of the waves along the water front or shore-line; also, vast sums of money have been expended in dredging along coast-lines in order to remove sand, mud, or the like washed away from the shore-line by the waves, it having been the experience of those specially engaged in this line of work for many years that the constant wash of the waves along the shore-line not only saps the surface-soil of the adjacent shore, so that vegetable life cannot be supported thereon, but also effects an undermining of the shore-line or adjacent bluff and the gradual and constant eating away of the same, the sand and soil being carried out into the body of water by the waves, thus not only seriously damaging and eating away the shore, but also filling up and shoaling the adjacent waters, thereby rendering it exceedingly difficult and expensive to maintain a harbor of navigable depth adjacent to the shore-line, and also seriously injuring the property adjacent to the shore-line. It is the especial purpose of my invention to avoid these difficulties and to provide a simple and efficient means for not only preventing the wash from the shore-line, but also in enabling a harbor to be maintained of navigable depth and at the same time utilizing the wash of the waves upon the shore in forming a beach, thus adding to the shore-line and extending the same by accretions due to the wash of the waves.

In carrying out my invention I propose to establish an abutment or barricade presenting toward the direction of the prevailing winds at the particular locality where it is desired to form a beach and to protect the adjacent shore and a short distance into the water from the shore-line or edge of the water, so as to permit the incoming waves, which carry sand and dirt, gravel, and the like, to wash over the barricade or obstruction, permitting the water to be carried back into the main body, but leaving the sand, gravel, dirt, or the like behind the abutment or barricade. This operation continues until finally the space behind or landward of the obstruction or barricade becomes filled with deposit of sand, gravel, dirt, or the like left by the incoming waves, thereby advancing the shore-line to the vicinity of the barricade or obstruction. I then propose to repeat this operation with a new barricade or obstruction similarly placed with reference to the new shore-line established by the preceding abutment or obstruction, thereby permitting the new area to be filled with deposit of sand, gravel, dirt, or the like washed shoreward by the waves, thus again extending the shore-line. Each barricade or obstruction thus planted becomes successively filled over or covered up by the wash of sand, gravel, dirt, or the like from the body of water, and the constant supply of sand, gravel, or the like thus washed up from the bottom of the body of water causes a gradual deepening of the body of water adjacent to the shore-line until finally comparatively deep water is secured at the line of the outermost barricade or obstruction thus erected and filled in to the shoreward thereof. In this manner I not only provide a most simple and efficient manner of avoiding the expense of dredging to maintain a

navigable harbor, but I also protect the adjacent shore against the wash of the waves, and also by this gradual accretion I succeed in extending the shore-line and building up and forming and increasing the extent of a beach along the shore-line.

In the accompanying drawings I have illustrated a manner of carrying my invention into practical effect and operation, wherein—

Figure 1 is a diagram in plan illustrating the arrangement of the first abutment, barricade, or obstruction with reference to the water-line. Fig. 2 is a vertical transverse section of the same. Fig. 3 is a view similar to Fig. 1, showing the effect of the first barricade, obstruction, or abutment and the location relative to the new shore-line established by the second obstruction or abutment. Fig. 4 is a view similar to Fig. 2, being a transverse section of Fig. 1, showing the action and relative location of two barricades or obstructions. Fig. 5 is a view similar to Figs. 1 and 3, showing the effect upon the shore-line of two successive barricades or obstructions and the location relative to the newly-established water-line of a third barricade or obstruction. Fig. 6 is a view similar to Figs. 2 and 4, showing the newly-formed beach with three successive barricades or obstructions.

Referring to the drawings, A, Fig. 1, designates the original water-line, the shore or land being supposed to lie on the right of the water-line and the body of water on the left of the shore-line and which is usually shallow or shoal, and in carrying out my invention I place a barricade (indicated generally at B, Fig. 1) a short distance in the water from the water-line A. This barricade or abutment I place, preferably, at about right angles to the direction of the prevailing winds, as indicated by the arrow in Fig. 1. The specific construction of this abutment or barricade is unimportant. In practice as I have heretofore carried my invention into practical operation, however, I have used an exceedingly simple and inexpensive construction of barricade or obstruction, comprising piles C driven into the ground or bottom of the body of water and having planking D, bolted or otherwise secured thereto. Preferably the barricade or obstruction is provided with a jutting angle portion at one or both ends thereof and similarly constructed, as indicated at E, the purpose and function of which is to form an angle or pocket to retain the deposit of sand, gravel, dirt, or the like washed in by incoming waves and to prevent the same from being carried back into the body of water by the receding waves around the ends of the barricade or obstruction. I have found in practice that a barricade or obstruction so placed and constructed will during a comparatively short period of rough weather result in an accumulation of sand or gravel deposit on the landward side thereof sufficient to advance the water-line, as indicated in dotted lines at A, Fig. 3, to a point adjacent to the location of the abutment or obstruction, as indicated at A′, Fig. 3, the filled-in deposit being indicated at F, Fig. 4. In a similar manner I construct a new barricade or obstruction B′, Figs. 3 and 4, located relatively to the new water-line A′ in the same manner that the barricade B was originally located with reference to the original water-line A, Fig. 1. When the space between the obstructions or abutments B B′ becomes filled, as it will in the manner above described with reference to the initial or original abutment or obstruction by the deposit of sand, gravel, and dirt washed in by the incoming waves, a new water-line (indicated at A^2, Fig. 5) is established, each succeeding barricade or obstruction serving to still further advance the water-line toward the body of water, and these serving to gradually deepen the body of water, as indicated at G G′, Figs. 4 and 6, the space between each succeeding barricade or obstruction being filled up, as indicated at F F′ F^2, Fig. 6, thus gradually extending the beach and at the same time protecting the adjacent land against the wash of the waves.

By placing the planking D on the landward side of the posts or piles I have found that the tendency of the sand or gravel washed up by the waves to be carried back into the body of water by the receding waves is efficiently overcome, and the banking up of the collected deposits of sand, gravel, dirt, or the like on the landward side of the obstructions quickly forms a backing for the planking, enabling the obstructions to resist the force of the incoming waves. I do not desire, however, to be limited in this respect.

It will be observed that the barricades, abutments, or obstructions extend in height to a point slightly above the water-level, as indicated by the dotted lines in Figs. 2 and 4, thus enabling the incoming waves to readily wash over the abutments, but still enabling the abutments to perform their function of retaining the sand, gravel, dirt, or the like and preventing the same from being washed back into the body of water by the receding waves.

As before indicated, the particular construction of barricade or obstruction is immaterial; but the particular form shown I have found to be exceedingly efficient in actual use as well as inexpensive; nor do I desire to be limited to the location of the barricade with reference to the direction of the prevailing winds. That shown, however, I have found to be satisfactory.

Having now set forth the object and nature of my invention and the manner of carrying the same into practical operation, what I claim as new and useful and of my own invention, and desire to secure by Letters Patent, is—

As a means for protecting the shore-line and forming beaches along bodies of water,

a series of posts or piles driven into the bottom of a body of water at a short distance from the water-line thereof and in a line substantially at right angles to the direction of the prevailing winds, in combination with planking applied to said posts or piles on the landward side thereof, thereby forming a barricade or obstruction and a jutting angle extension formed at the end of said obstruction to form a pocket, all combined and arranged as and for the purpose set forth.

In witness whereof I have hereunto set my hand, this 15th day of October, 1901, in the presence of the subscribing witnesses.

FREDERICK W. CUSHING.

Witnesses:

E. C. SEMPLE,

S. E. DARBY.