June 24, 1930. R. O. DARK 1,768,309

REVETMENT

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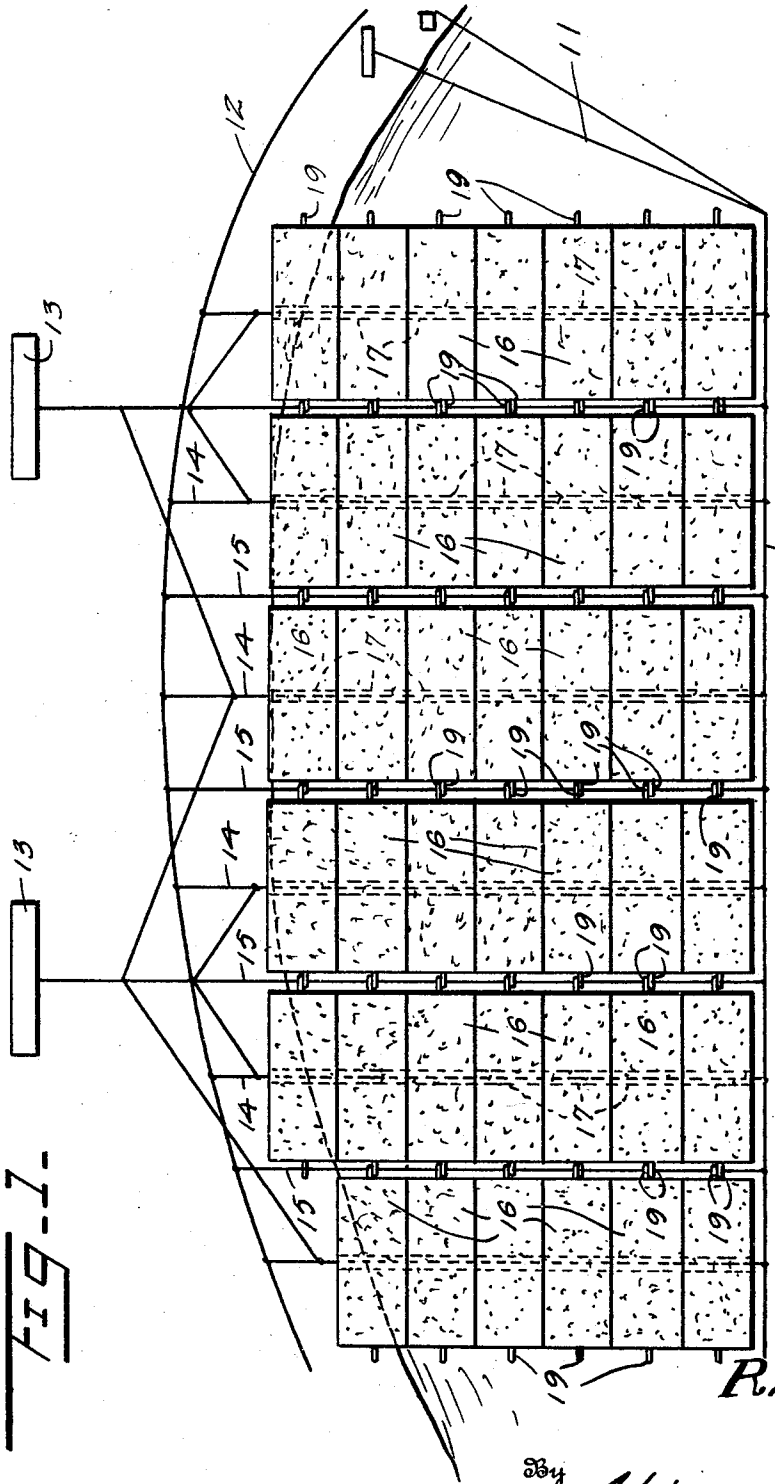


Fig. 1.

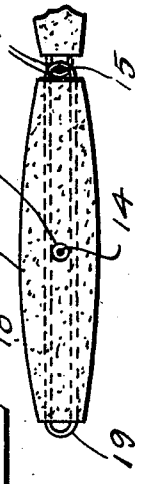


Fig. 4.

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Fig. 2.

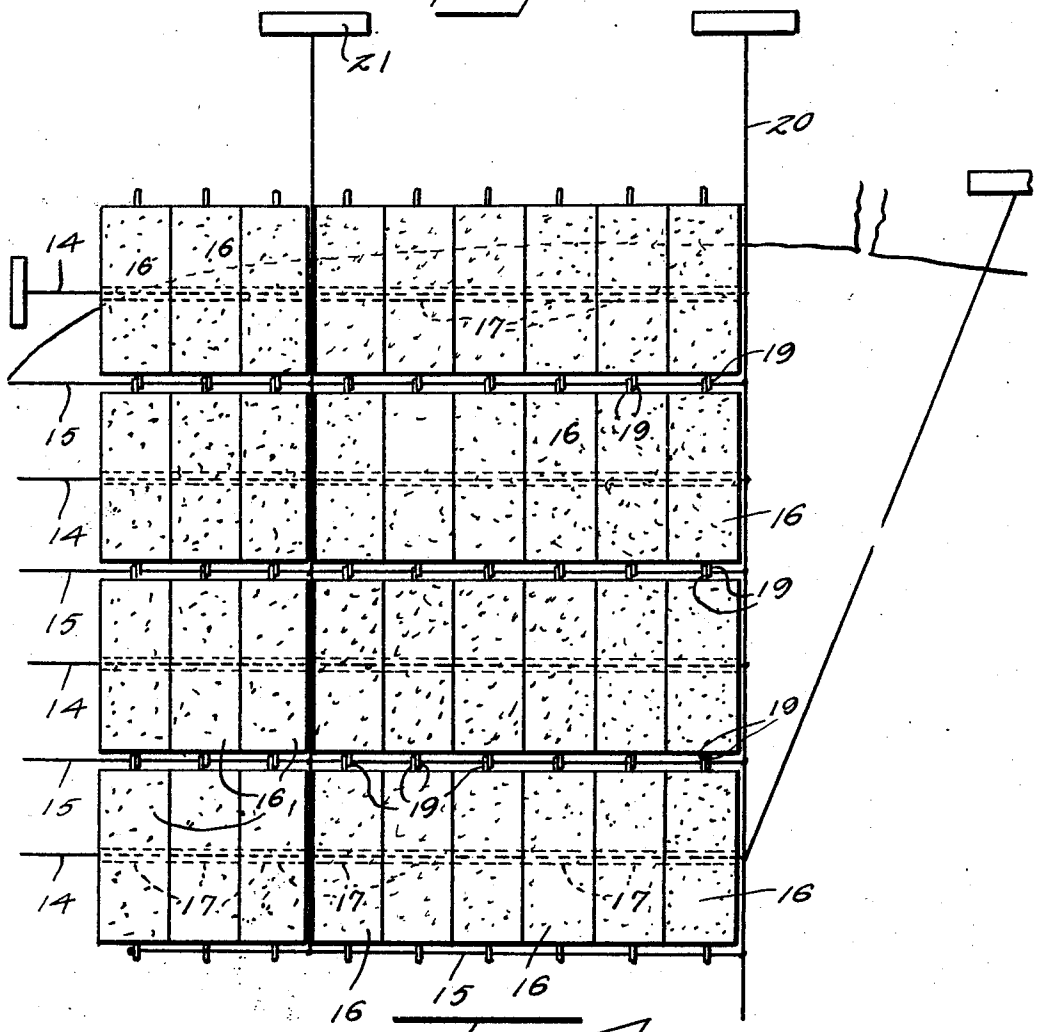
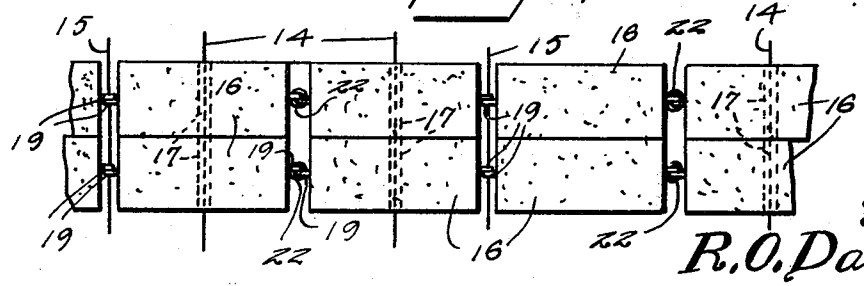


Fig. 4.



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UNITED STATES PATENT OFFICE

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REVETMENT

Application filed June 14, 1928. Serial No. 285,443.

This invention relates to revetments and more particularly to a device of this character which may be installed in sections and which, when installed, provides a continuous flexible mat particularly adapted for covering the banks of rivers and other uneven surfaces which are subject to attrition.

An important object of the invention is to provide in a device of this character a unit which is so constructed that it lends itself to ready installation at a predetermined location at the bottom of a body of water while, at the same time, permitting its connection to adjacent elements.

A still further object of the invention is to provide a device of this character, the sections of which may be assembled at the surface of the water and delivered to their final location by permitting the same to slide down cables or other flexible guides.

These and other objects I attain by the construction shown in the accompanying drawings, wherein for the purpose of illustration is shown a preferred embodiment of my invention and wherein:—

Figure 1 is a plan view of a revetment constructed in accordance with my invention suitable for use where the stream bed slopes gradually;

Figure 2 is a similar view of an arrangement for use where the stream bed slopes steeply;

Figure 3 is a side elevation of one of the elements employed;

Figure 4 is a plan view showing a slightly modified method of connecting the elements to one another.

Referring now to the drawings and more particularly to Figure 1 thereof wherein I have illustrated an arrangement of my invention for use upon a river bank where the water is shallow adjacent the shore, the numeral 10 generally designates the bank line and 11 a cable secured at its ends to the shore by suitable anchoring devices and positioned to define the outer edge of the revetment. A second cable 12 extends along the shore line to define the inner edge of the revetment and is suitably anchored to the shore, as at 13. The cables 11 and 12 are connected to one another at spaced intervals by transversely extending cables 14 and 15 which are either alternated, as shown in this figure, or may be arranged, as shown in Figure 4, wherein the cables 14 are arranged in pairs and the cables 15 are arranged between adjacent pairs.

In combination with this cable net, I employ revetment units 16 which are preferably cast from concrete and made in the form of rectangular blocks. These blocks preferably are from two to six feet long and are from two to four inches thick at their outer ends and increase in thickness toward their centers to three to nine inches, depending upon the character of the bottom upon which they are employed. The blocks 16 are arranged in series, and the series of blocks extend transversely of the revetment. The blocks 16 of each series have their ends arranged in alinement, and the series of blocks are maintained in relatively spaced relation by eyes 19 arranged at the ends of the blocks.

Each block in the process of manufacture is formed with a transversely extending opening 17 which is centrally disposed and is further provided with a longitudinally extending reinforcing element 18 which projects from the ends thereof and has the projecting portions forming the eyes or loops 19.

Assuming the transverse cable arrangement to be that illustrated in Figure 1, the cables 14 are directed through the blocks and adjacent ends of the blocks have their loops 19 engaged with a common cable 15. After the cables are placed upon the blocks, which operation will be performed upon a barge or the like, they may be slid down the cables 14 and 15 until they come to rest either against the cable 11 or against units which have been previously installed.

It will be obvious that with this structure, the several units are pivotally connected to adjacent units at their ends and sides so that they may conform exactly to the surface upon which they finally come to rest. Being made slightly thicker at their centers, they rapidly firmly embed themselves in the bottom so that they become solidly anchored

and provide a substantially continuous revetment which is impregnable to the assaults of flood waters or eddy currents.

Where the bottom to which the revetment is to be applied is steeply sloping and the water is relatively deep, the installation is preferably accomplished in the manner illustrated in Figure 2. In this figure, a header cable 20 corresponding to the cable 11 is arranged transversely of the stream and anchored at one end upon the shore 10. The outer end of this cable is anchored to the shore in advance of the cable. To the cable 20, the cables 14 and 15 are connected and the installation of the blocks is carried on, as previously described. The ends of the cables 14 and 15 may be anchored to the shore line, as illustrated. The cables 14 and 15 are further connected to anchors 21 longitudinally spaced upon the shore line which serve to prevent transverse movement of these cables. Such anchors should be placed at intervals of about twenty-five feet.

Where the cables 14 and 15 are arranged as illustrated in Figure 4, the units 16 are connected to one another through the loops 19 by bindings 22. The ends of these pairs are engaged with the cables 15. The bindings 22 will permit flexible movement of the units of the pairs while reducing the number of cables which must be employed.

It will be obvious that a device of this character may be cheaply and rapidly constructed and may be very easily installed. It will also be obvious that the construction hereinbefore set forth is capable of a certain range of change and modification without materially departing from the spirit of the invention and I accordingly do not limit myself to such specific structure except as hereafter claimed.

I claim:—

In a revetment, flexible elements defining the inner and outer edges of the revetment, relatively spaced transverse flexible elements secured to said first elements, a plurality of transversely extending series of pre-cast blocks, the blocks of each series having their ends arranged in alinement and the series being relatively spaced, the blocks being provided at their transverse centers with openings for the reception of certain of said transverse elements and the blocks increasing in thickness in the direction of their transverse centers, and reinforcing elements embedded in and extending longitudinally of the blocks and provided at their ends with eyes receiving the remainder of said transverse elements and serving to maintain the series of blocks in relatively spaced relation.

In testimony whereof I hereunto affix my signature.

RAY OLIVER DARK.