G. O. ROGERS.
FLEXIBLE REVETMENT.
APPLICATION FILED AUG. 26, 1912.
Patented Aug. 26, 1913.

Fig. I.

Fig. III.

Fig. II.

Attest

Geo. O. Rogers
Inventor:

by

Attys.
To all whom it may concern:

Be it known that I, George O. Rogers, a citizen of the United States of America, and a resident of the city of St. Louis and State of Missouri, have invented certain new and useful Improvements in Flexible Revetments, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to revetments for the protection of the banks of rivers or of levees to prevent the washing away of such banks or levees by the stream of water flowing in contact therewith. This revetment has a requisite degree of flexibility in order that its elements will readily fit against inequalities of a river bank or levee on which the revetment is laid, and in itself contains sufficient weight to provide for the revetment maintaining its position after it is laid. My revetment, as illustrated, is one so constructed that its parts may be readily assembled immediately prior to or during the laying of the revetment, and one in which the parts are permanently connected throughout the revetment when it is finished.

Figure I is a cross section through the bank of a river, with my revetment shown thereon in elevation. Fig. II is an enlarged top or plan view of a fragment of the revetment. Fig. III is an edge view of the fragment of the revetment shown in Fig. II. Fig. IV is an enlarged section through blocks of the revetment and one of the ropes on which the blocks are strung.

In the accompanying drawings: 1 designates blocks of suitable material, preferably concrete, which constitute the main elements of my revetment. These blocks are provided with perforations 4 that permit the passage through the blocks of ropes 6, or other suitable flexible members, on which the blocks are strung to produce a revetment of mat-like nature, which is rendered flexible due to the presence of the portions of the ropes existing between the several blocks through which the said rods extend. As will be seen on reference to Fig. II, the blocks 1 in alternate rows are in the main offset from the blocks in the intervening rows in break-joint fashion, and the ropes 6 which pass through two of the blocks in one of the rows of blocks in the revetment pass through a single block in the next row, which overlaps the ends of the blocks in the first mentioned row. This arrangement of the blocks of ropes is continued throughout the revetment, and it will be apparent that by such arrangement the blocks in the various rows are so tied together as to prevent their separation, or any material transverse movement of any block in any row of blocks in the revetment.

In order that the desired flexibility of the revetment may be obtained, the blocks 1 are provided with rounded edges, 2 and 3, facing adjoining edges of adjacent blocks, thus avoiding the presence on the blocks of flat faces and sharp corners, which would interfere with the flexing of the revetment, and the proper positioning of the blocks upon the surfaces they are intended to lie against when the revetment is deposited upon a river bank or levee. With the same object in view, I provide the blocks with notches 5, at the ends of the perforations 4, whereby the ropes 6 are exposed to a greater degree, thereby increasing the flexibility of the revetment.

The ropes 6 may be provided at their ends with any suitable means for retaining the endmost series of the blocks of the revetment in position upon such ropes, the means illustrated for this purpose comprising clips 7 secured to the ropes and washers 8 interposed between said clips and the adjacent blocks.

For the purpose of increasing the stability of my flexible revetment, I preferably incorporate therein transverse stay ropes 9, which are secured at 10 by wires, or other suitable means of fastening, to the ropes 6, at the points where such ropes are exposed between the blocks 1, and through the medium of which the ropes 6 are held in proper relation after the blocks 1 have been strung thereon. The ropes 9 are of material importance, not only in maintaining the main ropes 6 in their proper relations relative to each other, but are also of importance in supporting the rows of blocks 1 separately when the revetment is being deposited in a river so that the blocks in the rows above those lowermost will not be subjected to the strain of the uppermost blocks, and the ropes 6 will not be subjected to the severe strain they would be subjected to by downward movement of the uppermost blocks toward the lowermost blocks.
It is to be particularly noted that while, as is very evident, my revetment is susceptible of flexing, due to bending of the ropes 6 at points between the blocks through which these ropes extend, the revetment is also capable of flexing in the opposite direction, as it is important that it shall, in order that the revetment may settle perfectly upon an embankment, notwithstanding the existence of depressions or ridges extending downwardly along the banks. The flexing of the revetment in a direction transversely of that permitted by the flexing of the ropes 6 between the blocks occurs readily, due to the possible pivotal movement of sets of the blocks on the ropes 6 that pass there- through; and, when such pivotal movement takes place, the pivoting blocks and those adjacent thereto may readily move either downwardly or upwardly to seat properly into depressions or on ridges beneath them. It will, therefore, be seen that it is not only possible for the revetment to adjust itself to a nicety upon an uneven bank, but also that in the event of undercutting beneath the revetment, the sections above the undercut will naturally fall into the cut and produce a dike to avoid continuance of the undercutting action beneath the revetment.

It will be apparent that the revetment may be extended to any desired degree across the bed of the river instead of being carried only to the foot of the river bank or levee; and I prefer to make the revetment of such dimensions that a considerable portion of it may lie upon the bed of the river to hold the bank protecting portion in its serviceable position.

It is obvious that the ropes entering into the structure of my revetment must be of strong and durable material, and, with this in view, the ropes are preferably wire ropes.

I claim:

1. A revetment comprising a plurality of blocks arranged in rows, and flexible members on which said blocks are strung; said flexible members having associated therewith means for preventing blocks in the revetment back of those in the foremost row from pressing against other blocks in front of them.

2. A revetment comprising a plurality of blocks arranged in rows, and flexible members on which said blocks are strung; and stay members connecting said flexible mem- bers between said blocks.

GEORGE O. ROGERS

In the presence of—

A. J. McCauley,

E. B. Linn.