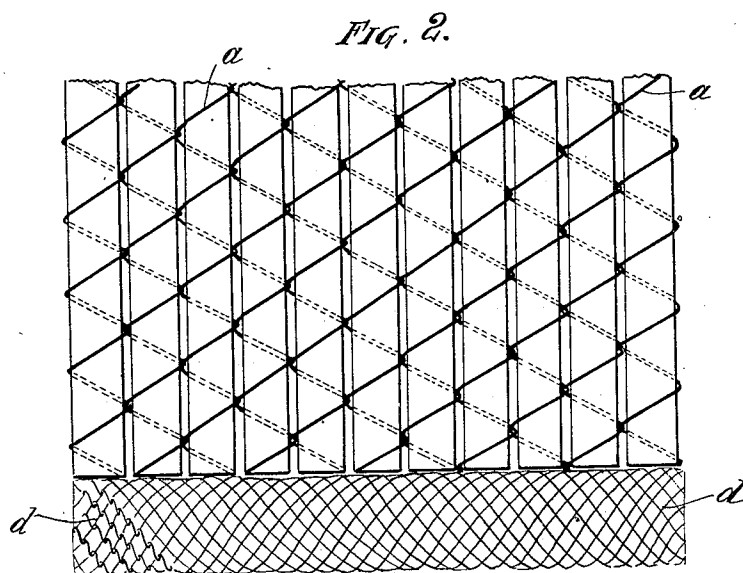
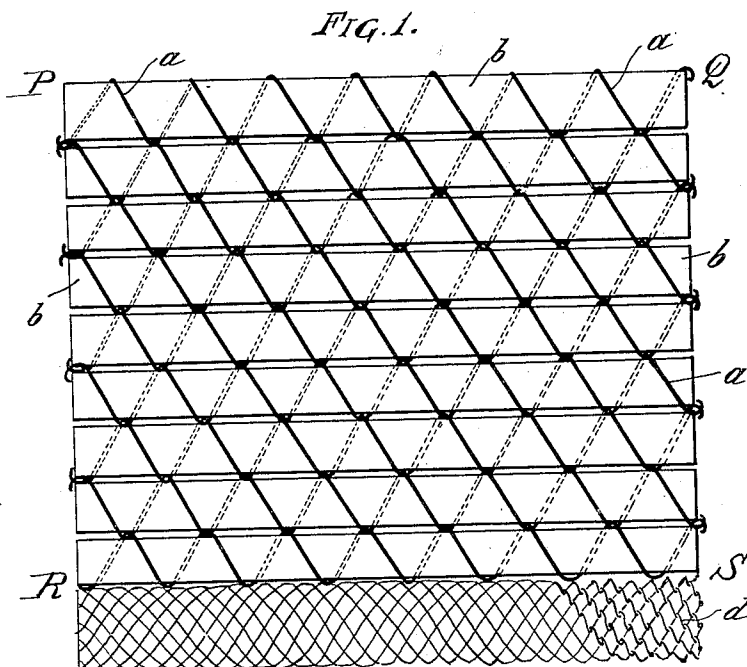


A. C. TIRAPANI.
 REVETMENT FOR PROTECTING EMBANKMENTS AND BANKS OF STREAMS AND THE LIKE.
 APPLICATION FILED FEB. 10, 1911.

1,058,274.

Patented Apr. 8, 1913.

2 SHEETS—SHEET 1.



Witnesses:

E. O. Hildebrand
 A. L. Crockett

Inventor:

Alfredo Carlo Tirapani,

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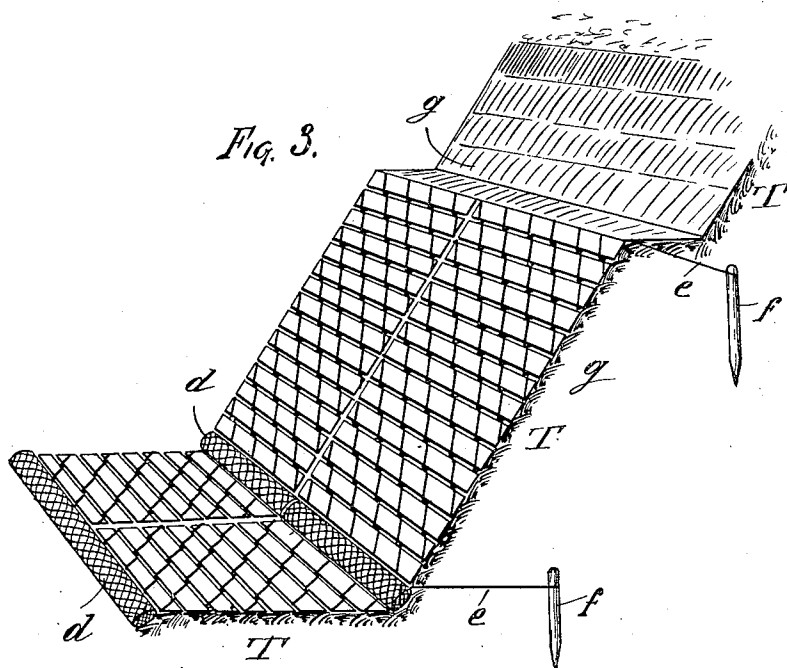
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2 SHEETS—SHEET 2.

1,058,274.



Witnesses:

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UNITED STATES PATENT OFFICE.

ALFREDO CARLO TIRAPANI, OF BOLOGNA, ITALY.

REVETMENT FOR PROTECTING EMBANKMENTS AND BANKS OF STREAMS AND THE LIKE.

1,058,274.

Specification of Letters Patent.

Patented Apr. 8, 1913.

Application filed February 10, 1911. Serial No. 607,834.

To all whom it may concern:

Be it known that I, ALFREDO CARLO TIRAPANI, subject of the King of Italy, residing at No. 21 Via S. Vitale, Bologna, in the Kingdom of Italy, have invented certain new and useful Improvements in Revetments for Protecting Embankments and Banks of Streams and the Like, of which the following is a specification.

This invention is designed for the purpose of providing means for protecting embankments and other earth works, the banks of rivers and canals against the erosive and destructive action of water and the elements, and for this purpose a device embodying the invention comprises a metallic fabric which forms the support for a series of slats passed through the meshes of said fabric and arranged side by side so as to form a pliable cover which may be rolled up, and which, when unrolled and applied to the bank or banks to be protected, fits against the same snugly, so as to sustain the same and preserve them against the action of the elements.

More specifically, a device embodying this invention involves the use of a series of flattened metallic spirals interlocking and arranged side-by-side and combined with slats which are passed through the flattened spirals axially and thus securely held in place, at the same time permitting the fabric to be rolled up or unrolled. My invention includes also the employment with such a fabric, of a weight or weights attached to one end of the fabric, which weight serves to facilitate the unrolling of the fabric, when it is to be applied to the bank or embankment which is to be protected, and thereafter to hold the same securely in place by tension, the opposite end of the fabric being anchored in the embankment in any suitable manner. Said weight is preferably in the shape of a bar which may be arranged either parallel or transverse to the slats at the end of the fabric. With the revetment so formed, there are used, in the preferred form, anchoring wires which are secured at one end to the revetment and at the other to a pile or post driven into the ground.

In the accompanying drawings: Figure 1 represents a front elevation of a portion of

a revetment made according to this invention; Fig. 2 a similar view of a modification; Fig. 3 a perspective view showing the revetment in place on a bank or embankment.

The invention (see Figs. 1, 2 of the annexed drawings) consists of inserting many strips (*b, b, b*) of material which is explained later, between the loops of net (*a, a, a*) or metallic linen, almost equal to the length and width of the loops in the net so as to form a plain surface (*P. Q. R. S*) compact, pliable and easily rolled and unrolled, which when properly spread out upon an inclined surface of earth (Fig. 3 *T. T. T.*) may serve to protect same against the erosive action of water. One or more weights are applied at the lower extreme end of the apparatus, (*d, d, d*) the unrolling being made easier by the use of said weight, which simultaneously holds it securely and stretched firmly over the inclining surface.

For rendering the pliable revetment as adherent as possible to the bank to be protected, it is advisable to apply wire attached to wooden posts or their like driven into the earth (see Fig. 3, *e, e, f, f,*) or heavy blocks of stone.

The net which serves to construct the apparatus may be made of wire of any kind of metal and the loops may be of any dimension and the wire may be single or doubly twisted at the points of intersection. The strips which are inserted through the loops of the net, or metallic fabric are made of cement or terra cotta, galvanized or painted sheet iron or wood, tar coated paper or any other suitable material resisting dampness.

Before the apparatus is applied it is necessary to insert some straw or other like material through the loops of the net on the side closest to the earth the object being to obtain a continual padding so as to avoid possible percolation of water between the revetment and the earth and also for rendering the same (revetment) more adherent and better resistant against erosion.

What I claim and desire to secure by Letters Patent is:

1. In a revetment for protecting embankments, river banks and the like, a pliable fabric consisting of a series of intermesh-

ing flat spirals, in combination with strips of protecting material inserted into the said spirals.

2. In a revetment for protecting embankments, river banks and the like, a pliable fabric consisting of a series of flattened spirals or helical wires intermeshing with each other and arranged side-by-side, in

combination with protecting slats arranged within and engaging the said helical wires and a weight arranged at one end of the said fabric and parallel to the slats.

ALFREDO CARLO TIRAPANI. [L. s.]

Witnesses:

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LUIGI BAGNOLI.