A. C. TIRAPANI.

SYSTEM OF CONSTRUCTION OF GABIONS FOR DEFENSE WORKS IN RIVERS, TORRENTS, AND CANALS, FOR RETAINING AND SUPPORTING WALLS IN MOUNTAINOUS COUNTRY, &c.

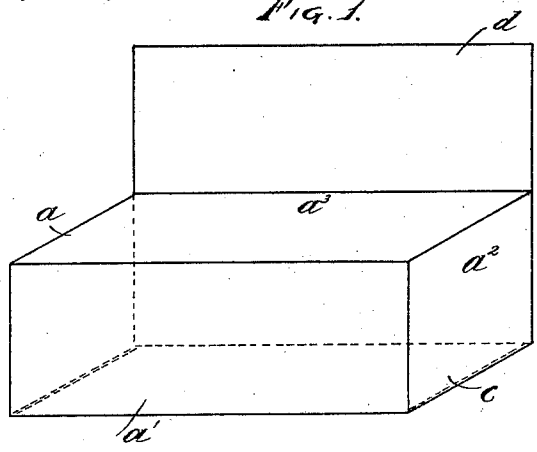
APPLICATION FILED OCT. 6, 1911.

1,047,464.

Patented Dec. 17, 1912.

2 SHEETS—SHEET 1.

Fig. 1.



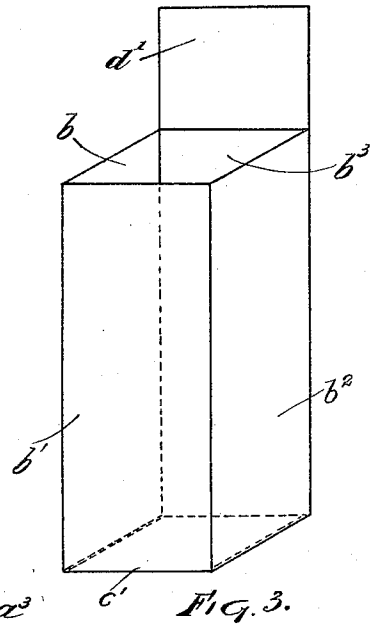


Fig. 3.

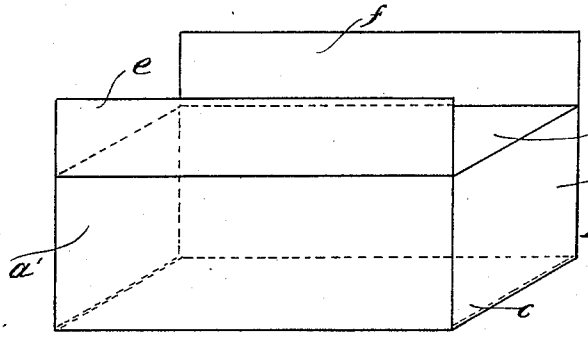


Fig. 2.

Fig. 4.

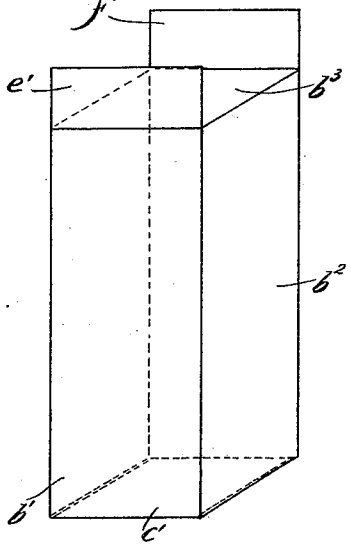
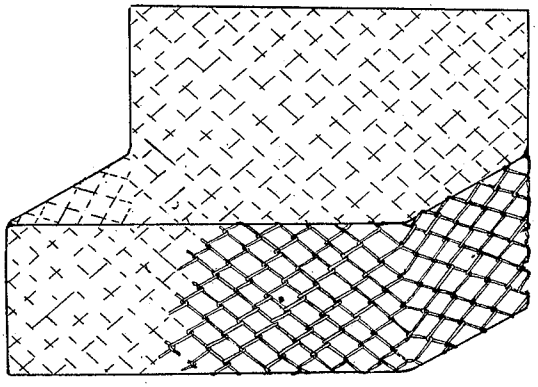


Fig. 5.



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2 SHEETS—SHEET 2.

FIG. 6.

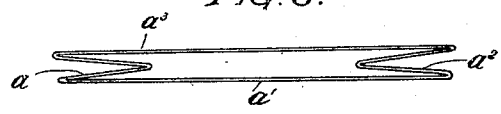


FIG. 8.

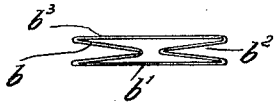


FIG. 7.

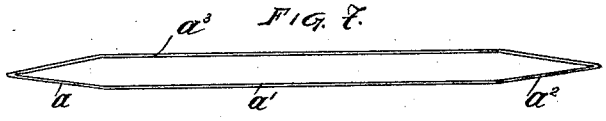
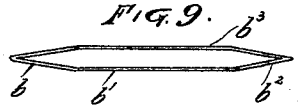


FIG. 9.



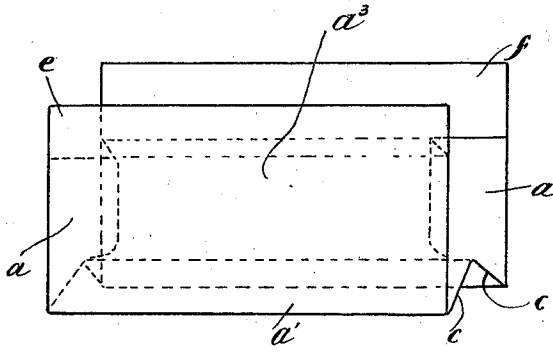


FIG. 11.

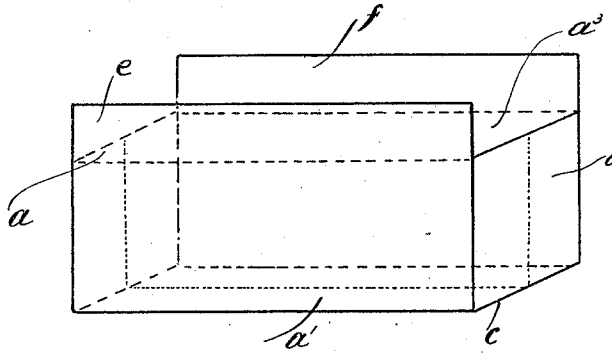


FIG. 10.

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UNITED STATES PATENT OFFICE.

ALFREDO CARLO TIRAPANI, OF BOLOGNA, ITALY.

SYSTEM OF CONSTRUCTION OF GABIONS FOR DEFENSE-WORKS IN RIVERS, TORRENTS, AND CANALS, FOR RETAINING AND SUPPORTING WALLS IN MOUNTAINOUS COUNTRY, &c.

1,047,464. Specification of Letters Patent. Patented Dec. 17, 1912.

Application filed October 6, 1911. Serial No. 653,277.

To all whom it may concern:

Be it known that I, ALFREDO CARLO TIRAPANI, a subject of the King of Italy, residing at 21 Via # S. Vitale, Bologna, in the Kingdom of Italy, have invented certain new and useful improvements in systems of construction of gabions for defense-works in rivers, torrents, and canals, for retaining and supporting walls in mountainous country, &c., of which the following is a specification.

This invention relates to improvements in the construction of and in the method of manufacturing gabions of lattice work or woven metal work of prismatic form by means of a single lattice formed of galvanized iron, wire or other metal of any desired thickness of single or double torsion mesh of any desired width.

Gabions constructed in accordance with the present invention differ from the similar gabions hitherto employed owing to the smaller number of seams that they require and consequently by the greater rapidity with which they can be manufactured while at the same time they present facilities for transport and storage and they can be folded in such a manner as to flatten them. This arises from the fact that the empty gabion as stored and marketed is complete in a single piece, the perimetral walls of which are all united in the manufacture of the meshes of the lattice work itself in such a manner that before effecting the filling and at the moment of opening out the envelop it already presents the form of a prism or of a box. Consequently the work in placing it in position is greatly facilitated because only the minimum number of seams have to be formed.

In accordance with the method of constructing the gabion all the spirals of the grating present themselves in the vertical direction thus imparting far greater strength and rigidity to the walls of the gabion, the result of which is to prevent the weight of the stones from stretching or spreading the meshes of the walls which remain quite taut. By adopting this method a cubical gabion for example with a side of one meter requires a seam of five meters only, two at the bottom and three for closing the cover; the bottom seams are required for fixing it to the two side walls which can be formed before placing the gabions in store in such a manner that in this case a cubical gabion with a side of one meter only requires on the work three meters of seam for closing the cover when the gabion has been filled, whereby great economy is effected in the manufacture of the gabions and their employment is rendered far more rapid. This compares very favorably with other forms of developed gabion in which seven meters of seam are required.

The invention will be readily and clearly understood by reference to the accompanying drawing which illustrates several embodiments thereof by way of example.

Figure 1 illustrates a type of gabion parallelepiped in form intended to be used horizontally with closing cover in a single piece. Fig. 2 represents a similar gabion but with cover in two parts. Figs. 3 and 4 illustrate two types similar to Figs. 1 and 2 respectively but intended to be used vertically, the system of construction being absolutely the same; Fig. 5 shows the arrangement of the meshes in accordance with the invention. Figs. 6, 7, 8 and 9 show in longitudinal section some methods of folding the gabions for storing and transporting them. Figs. 10 and 11 relate to a modification in accordance with which the two seams required for fixing the two side walls to the bottom are formed before placing the gabions in store.

In all the above types the perimetral faces a a' a^2 a^3 and b b' b^2 b^3 respectively are united one with the other in forming the meshes without a seam as clearly shown in Fig. 5. Similarly the bottom c and c' respectively are united to the two opposite perimetral walls a' a^3 and b' b^3 respectively in the manufacture. The single cover d or d' on the other hand or alternatively the two parts of the cover e f e' f' respectively are united in the manufacture only along one of the sides to the contiguous perimetral wall. As shown in Figs. 1 to 9 the seam or joint for the two remaining sides with the bottom is made at the time of use while as shown in Figs. 10 to 11 this seam is made in advance as already stated.

The economy of space for storing and transporting is obtained by suitably folding say for example two opposite perimetral faces, the cover and the bottom.

As diagrammatically illustrated in Figs. 6

and 8 the faces a a^2 and b b^2 respectively are folded inward and in this case the bottom c or c' is folded outward. In accordance with Figs. 7 and 9 these same faces a a^2 b b^2 respectively are folded outward; in this case the bottom c c' may be folded inward or outward while in the case of cover in several parts these parts d d' or e f e' f' in the several cases may be folded either outward or inward as will be readily understood.

In cases in which the bottom is previously joined to the side walls (Fig. 10) it is preferable to make the fold inward (Fig. 11). When the gabions are to be used it is only necessary to extend the folded walls thus immediately obtaining the parallelepiped form and it is only necessary to form the seams in the usual manner along the sides of the bottom indicated in broken lines in Figs. 1, 3, 4 and 5 and then join the closing cover in the usual manner or in Figs. 10 and 11 the seam has merely to be formed along the sides of the cover.

What I claim and desire to secure by Letters Patent of the United States is:—

1. A gabion of the kind described comprising lateral walls forming the body portion, a cover, and a bottom portion, all formed of reticulated material, said lateral walls being constituted as one continuous piece, said bottom portion being continuous with said lateral wall along two edges and adapted to be seamed thereto at the other two edges, and said cover portion being continuous with said lateral walls along one edge and adapted to be seamed thereto at the other three edges.

2. A gabion of the kind described, comprising reticulated lateral walls constituting the body portion and formed as one continuous seamless piece, in combination with a reticulated cover and bottom portion for said lateral walls.

3. A method of manufacturing reticulated gabions of the kind described which consists in forming the four lateral walls constituting the body portion as one continuous seamless piece, making the bottom portion continuous with said lateral walls along two sides thereof, seaming the two free edges of the bottom portion with the corresponding edges of the lateral walls, making the cover continuous with the lateral walls along one side thereof, and in seaming the three remaining free edges of the cover with the corresponding edges of the lateral walls, the said bottom seams being formed prior to the gabion being folded for storage so that when required for use the said three cover seams only have to be made.

In testimony whereof I affix my signature in presence of two witnesses.

ALFREDO CARLO TIRAPANI.

Witnesses:

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CURICO VERONELLI.