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(54) Prefabricated element assembly for making barrier arrangements in rivers and the like.

(57) There is disclosed an assembly of prefabricated elements for making the so-called bridles used in water courses in general.

This element assembly comprises reinforced concrete box caissons, having a substantially parallelepipedal shape and a box caisson having a rectangular trapezium shape, as well as a square plate and a rectangular plate, provided with an edge at one of the great sides thereof.

These elements, in particular, can be suitably joined to one another and/or superimposed onto one another and can be mutually restrained by beams, rods or other suitable mechanical restraining elements.

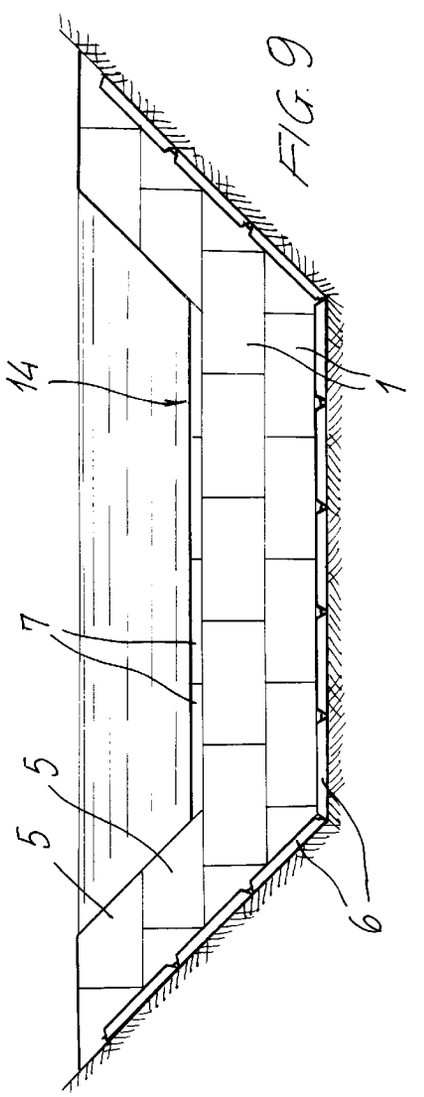

FIG. 9

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BACKGROUND OF THE INVENTION

The present invention relates to a prefabricated element assembly, for making the so-called bridles, in particular for use in water courses and specifically in rivers.

As is known, along the torrential path of a water course, in particular if the latter extends on a water bed which can be easily eroded, there are conventionally provided suitable articles of manufacture.

These articles of manufacture are built through the overall bed of torrents under "excavation conditions", that is under those conditions in which, during water spates, the solid materials forming the bed are quickly removed.

These articles of manufacture substantially operate to reduce the water stream flow rate or speed, and, accordingly, to reduce the eroding power of the water stream itself.

Also known is that conventional articles of manufacture used for the above indicated applications comprise a plurality of cross barrier elements, which are conventionally called "bridles".

Each bridle, by reducing the speed of the upstream water, favours a deposit of the transported solid material, which accumulates behind the bridles.

These bridles, in actual practice, transform the altimetrical profile of the water bed into a plurality of subsequent steps and portions of small slope.

In this connection it should be pointed out that these conventional bridles are usually made of a stone material walling, the stones of which are restrained by mortar or by dry restraining methods, or by using cement concrete (either reinforced or not) or mixed constructions of wood and stones.

Accordingly, the installation of the mentioned bridles is comparatively complex, mainly with respect to the making of the hollow provided in the profile of the top margin or "crest" thereof.

The thus made articles of manufacture, moreover, are not adapted to provide a suitable mechanical strength, mainly against great stresses.

SUMMARY OF THE INVENTION

Accordingly, the aim of the present invention is to overcome the above mentioned drawbacks, by providing a prefabricated element assembly which allows to greatly simplify the making method of the mentioned bridles as conventionally used in water course beds.

Within the scope of the above mentioned aim, a main object of the present invention is to provide a prefabricated element assembly, for making bridles for application in water courses, in particular in rivers, which provides articles of manufactures which are very reliable construction-wise.

Another object of the present invention is to provide a prefabricated element assembly, for making bridles for application in water courses, which can be used in a very flexible way.

According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a prefabricated element assembly, for making bridles to be used in river beds and the like, characterized in that said assembly comprises a plurality of box caissons each having a substantially parallelepipedal shape, a box-caisson having a rectangular trapezium profile, a square plate and a rectangular plate including an edge at one of the great sides thereof, the mentioned elements being adapted to be joined to one another and/or superimposed onto one another and being furthermore adapted to be mutually restrained by beams, rods or other mechanical restraining elements.

BRIEF DESCRIPTION OF THE DRAWINGS

Further characteristics and advantages of the prefabricated element assembly according to the present invention, will become more apparent from the following detailed disclosure of a preferred, though not exclusive, embodiment thereof, which is illustrated, by way of an indicative but not limitative example, in the figures of the accompanying drawings, where:

Figures 1, 2 and 3 are perspective views respectively showing three types of box caissons having a parallelepipedal shape, and different size;

Figure 4 illustrates a box caisson having a trapezoidal profile;

Figures 5 and 6 respectively show a flat plate and an edged plate;

Figure 7 is a top plan view showing a bridle made by using the above mentioned elements; and

Figures 8 and 9 are respectively a longitudinal cross-sectional view and a cross-sectional view of the bridle.

DESCRIPTION OF THE PREFEREED EMBODIMENT

With reference to the figures of the accompanying drawings, the prefabricated element assembly for making bridles to be applied in river beds according to the present invention, comprises a box caisson 1 including a reinforced concrete box like construction, having a substantially parallelepipedal shape.

More specifically, this box caisson has unit height and depth and a double width, and is provided on its small walls with a plurality of gaps 2.

With the above mentioned first box caisson, a second box caisson 3 cooperates, which has a unit size and is open through one of its walls, there being moreover provided a third cooperating box caisson 4

closed through its four walls and having a suitably greater depth.

The subject prefabricated element assembly further comprises another box-like construction 5, also having unit depth and height and a double width.

This box-like construction, in particular, is open on one of the small sides thereof, where the two longitudinal walls 5′ thereof are suitably slanted.

With the above mentioned box-like constructions or box caissons, cooperate moreover a square plate 6 and a rectangular plate 7, or cover plate, which is provided with an edge 7′ on one of its larger walls.

In this connection it should be pointed out that the square plate is provided, on two opposite sides thereof, with annular ridges 8, which are adapted to house anchoring rods 9.

The rectangular plate 7, in turn, is provided, at the edge portion thereof, with a plurality of throughgoing holes 10 which are adapted to house a respective end portion of cross-restraining rods.

In operation, by arranging the above mentioned box caissons adjoining one another and superimposed onto one another with a longitutidinal gap, it is possible to make the foundation 11 and to perform the elevation 12 of the bridle indicated at 13.

In particular, the hollow formation of the bridle, indicated at 14, is laterally delimited by the trapezoidal box caissons 5.

At the top of the box caissons defining the bottom line of the hollow, moreover, there are restrained, by means of rods passing through the holes 10, the edged plates or cover plates 7.

The latter, in operation, will provide a better constructional stability for the article of manufacture, and, moreover, will favour the flowing of the water.

Downstream of the mentioned bridles there are provided a sill element 15, which is suitably slanted, and which is obtained by joining and mutually restraining a plurality of plates 6.

At the end of the mentioned sill, there is provided a cross beam 16, made of box caissons, followed by two or more rows of plates 6, equal to the above indicated plates, but not restrained.

In this connection it should be moreover added that after installation, the mentioned box caissons will be filled by ciment mortar, concrete or the like.

From the above disclosure and the figures of the accompanying drawings, it should be apparent that the present invention fully achieves the intended aim and objects.

While the invention has been disclosed and illustrated with reference to a preferred embodiment thereof, it should be apparent that the disclosed embodiment is susceptible to several modifications and variations, all of which will come within the spirit and scope of the appended claims.

Claims

1. A prefabricated element assembly, for making bridles to be used in river beds and the like, characterized in that said assembly comprises a plurality of box caissons each having a substantially parallelepipedal shape, a box caisson having a rectangular trapezium profile, a square plate and a rectangular plate including and edge at one of the great sides thereof, the mentioned elements being adapted to be joined to one another and/or superimposed onto one another and being furthermore adapted to be mutually restrained by beams, rods or other mechaniccal restraining elements.

2. A prefabricated element assembly according to claim 1, characterized in that said box caissons comprise a box-like reinforced concrete construction, and that one of said box caissons has unit height and depth and a double width, and being provided with a plurality of gaps on the small walls thereof.

3. A prefabricated element assembly according to the preceding claims, characterized in that said assembly further comprises a further box caisson having unit size and open through one of the walls thereof, as well as yet another box-caisson closed on the four walls thereof and having a larger depth.

4. A prefabricated element assembly according to the preceding claims, characterized in that said assembly further comprises another box-like construction also having unit depth and height and a double width, said further box-like construction being open on one of the small sides thereof where the two longitudinal walls of said further construction are suitably slanted.

5. A prefabricated element assembly according to claim 1, characterized in that said square plate is provided, on two opposite sides thereof, with a plurality of annular ridges adapted to house anchoring rods and that said rectangular plate, in turn, is provided, near an edge thereof, with a plurality of throughgoing holes adapted to house a respective end portion of a plurality of cross restraining rods.

6. A prefabricated element assembly according to one or more of the preceding claims, characterized in that said box caissons provided with said longitudinal gaps are adapted to be arranged adjoining one another and superimposed onto one another so as to provide the foundation and elevation of a bridle, the hollow portion of which

is laterally defined by the trapezoidal shape box caissons.

7. A prefabricated element assembly according to one or more of the preceding claims, characterized in that said edge plates, or cover plates, are affixed by means of rods passing through related holes, at the top portions of the box caissons defining the bottom line of said hollow and that the sill, provided downstream of the bridle, is made by adjoining and mutually restraining, by rods, a plurality of said flat plates.

8. A prefabricated element assembly according to one or more of the preceding claims, characterized in that said box caissons are adapted to be mutually engaged so as to provide a cross beam followed by two or more rows of plates equal to the mentioned plates but not restrained.

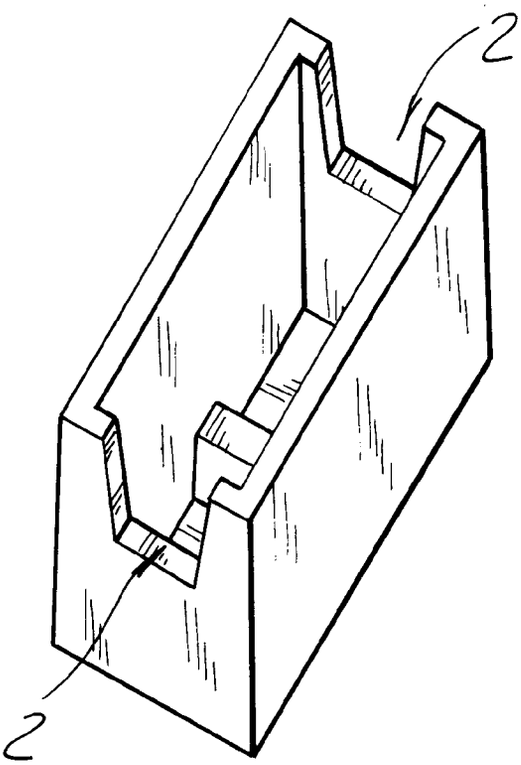

FIG. 1

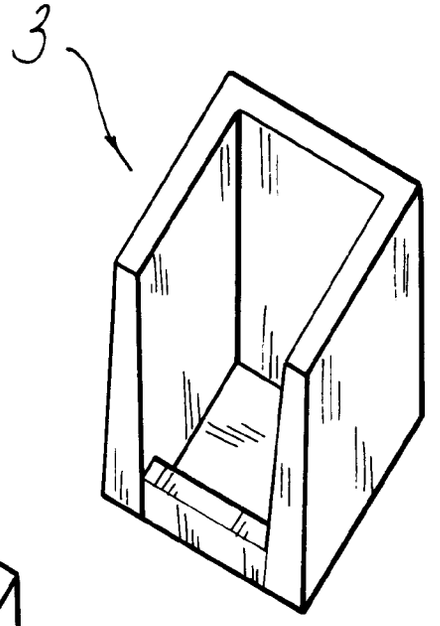

FIG. 2

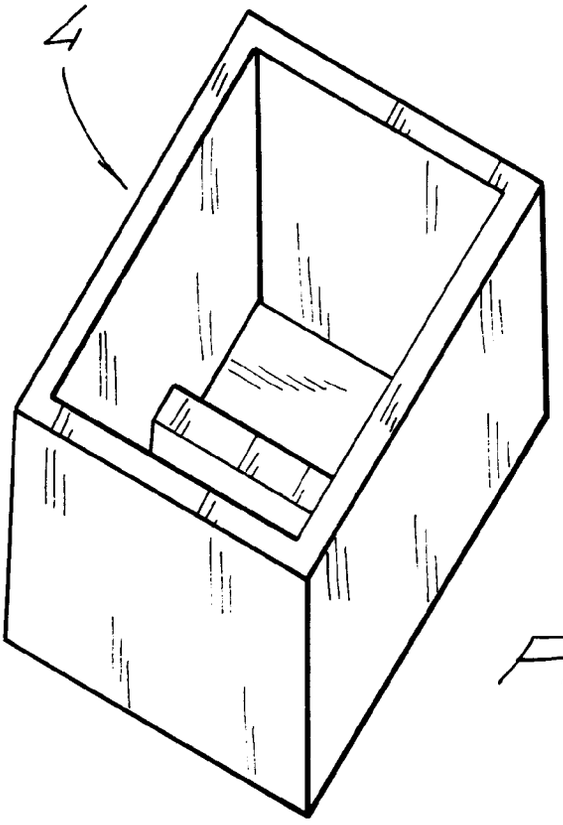

FIG. 3

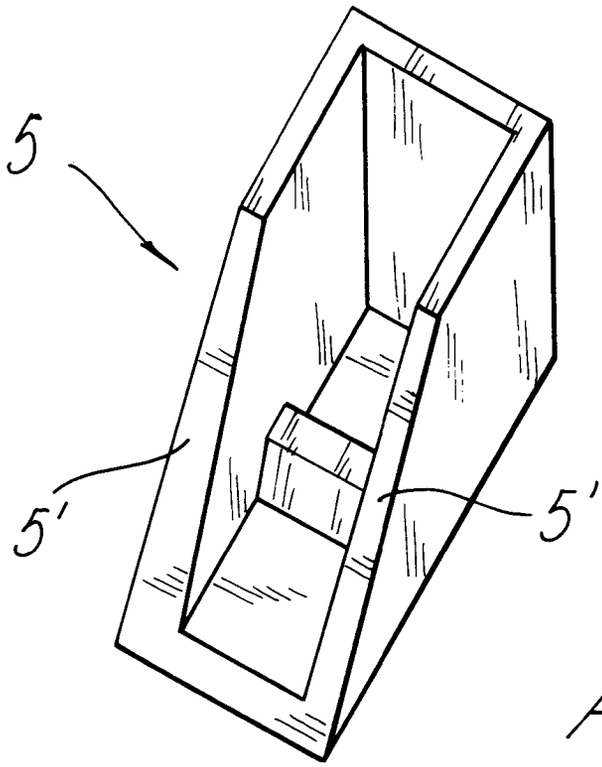

FIG. 4

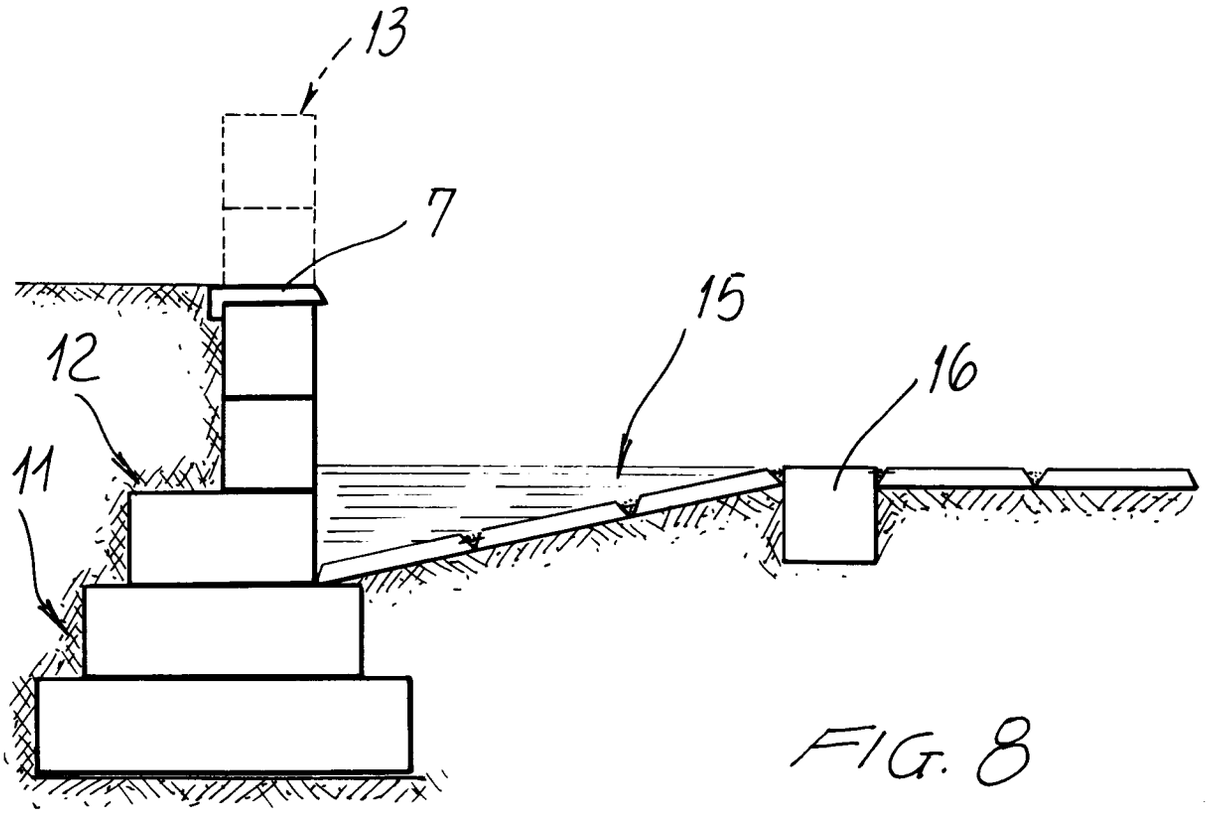

FIG. 8

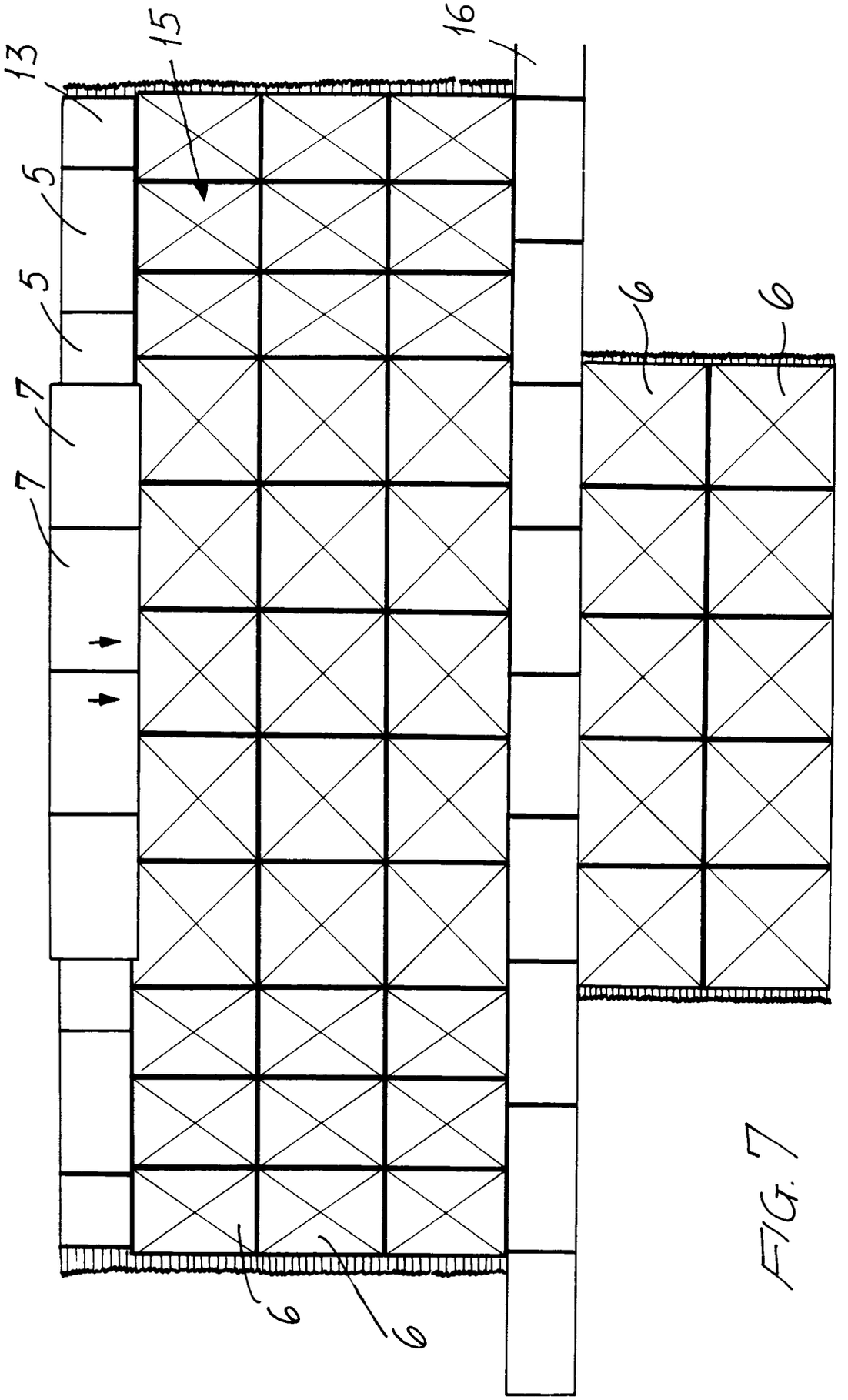

FIG. 7

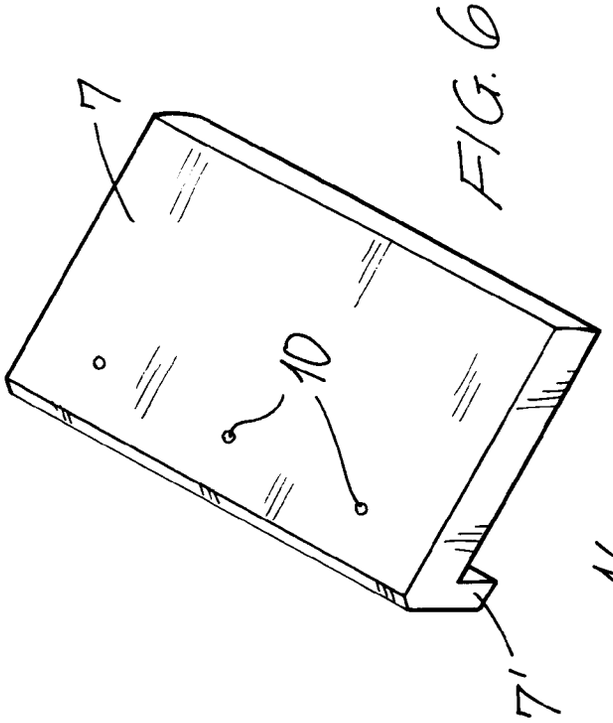

FIG. 6

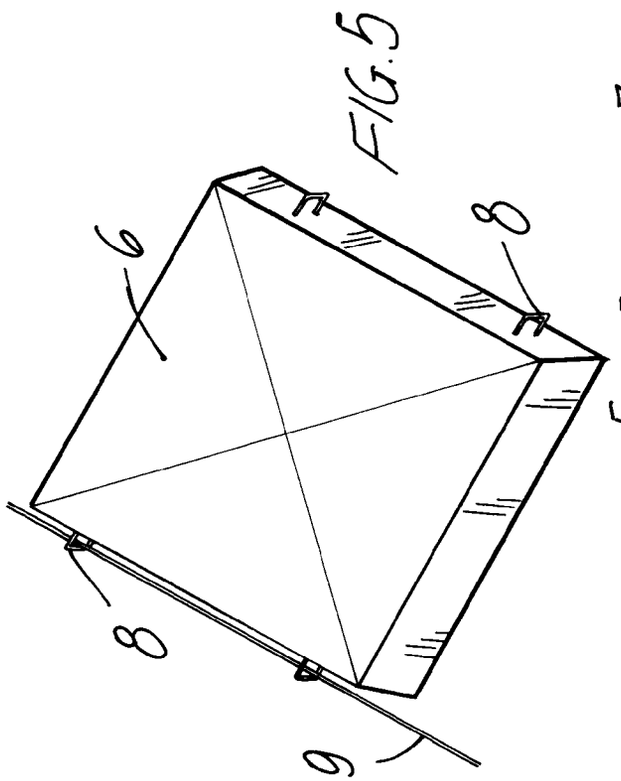

FIG. 5

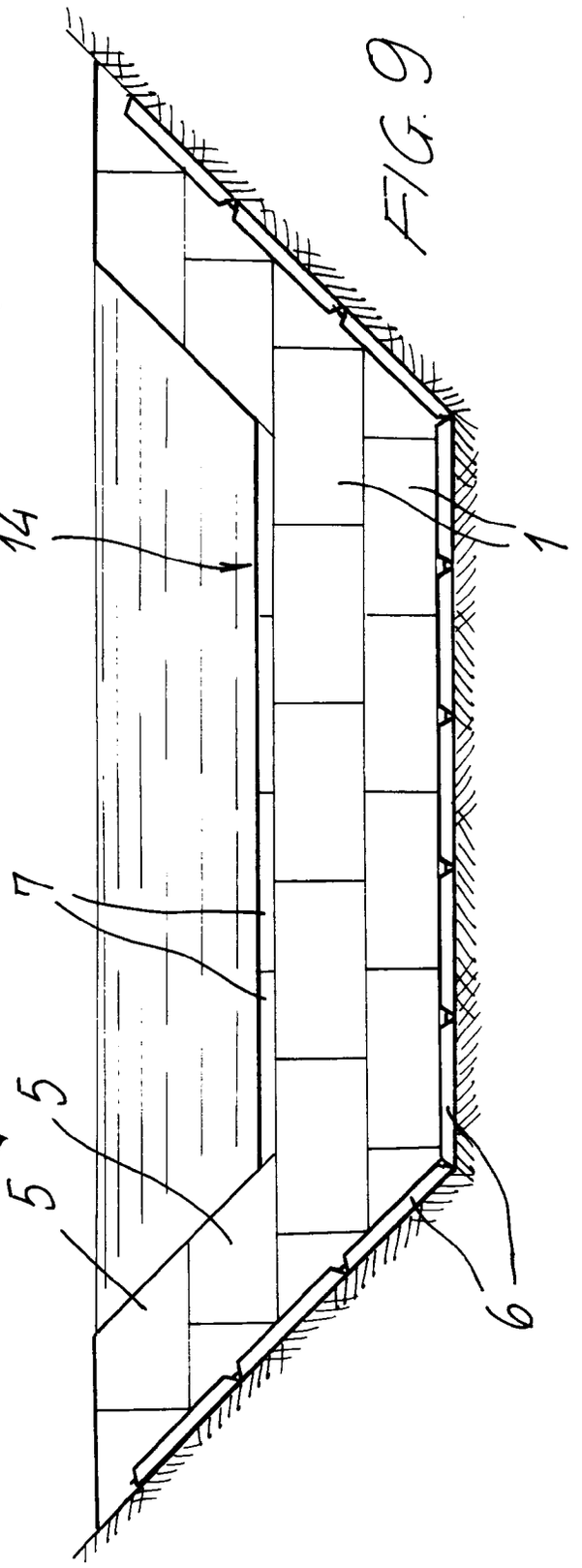

FIG. 9