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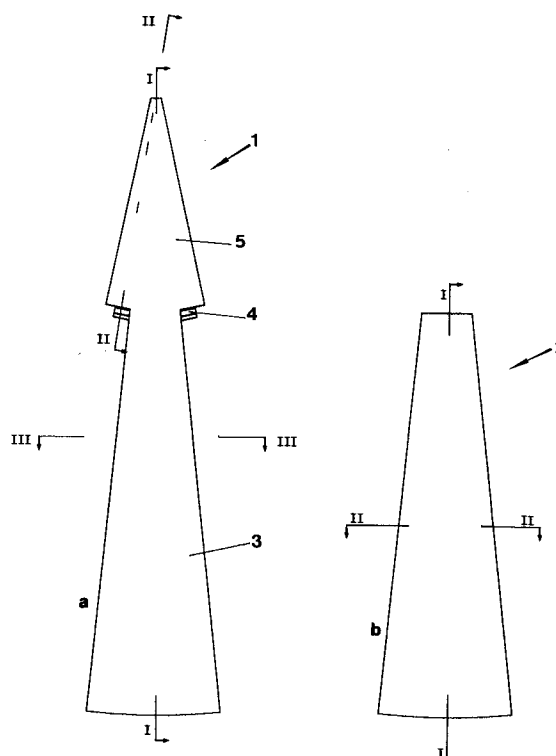
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**I-20122 Milan(IT)**(54) **Covering elements for circular structures, in particular for circular basins above ground.**

(57) Elements for the covering of circular basins, providing first wedge-shaped panels (1) to be rested on one side of the basin wall and at the top of a support plate provided in the same basin, said wedge-shaped panels (1) having their front part (4) increased in width, and second complementary panels (2), having the form of part of a circle ring, to be inserted between the said first panels (1) when these are arranged side by side to form the covering.

**Fig.2****EP 0 517 948 A1**

The present invention relates to manufactured items and, more precisely, covering panels for circular structures, in particular panels for realising a covering for circular basins above ground. The invention features a particular conformation of panels, which allows rapid and simple assembly to achieve the covering and which facilitates transport operations.

The problem it is intended to solve is that of covering the circular basins above ground, in particular the type used in agriculture to contain sewage or in various industrial sectors for the construction of scrubbers etc.

To meet environmental needs it is necessary that these basins be covered, in order to avoid the diffusion into the atmosphere of ammonia fumes or other gases which are developed from products contained in the basin.

To this end different solutions are well known, from the realisation of a covering slab in reinforced concrete cast on site, to the production of coverings with metallic structures, or in plastic reinforced by fibre glass etc.

All the known solutions have however, one or more inconvenience factors.

For example the metallic structures are subject to corrosion and involve high assembly costs.

Coverings in plastic reinforced with fibre glass require the preparation of specific molds, are very expensive and, due to their sizes, they involve serious problems in terms of transport. Covering panels have also been considered, having the form of a sector of a circle, but this solution, too involves certain difficulties.

Indeed it would be necessary for each panel to have, to meet transport requirements, a width no greater than approximately 2 metres.

This means that in the case of covering panels for basins of large diameter and therefore very long, the panels would be somewhat thin at the top, with the consequent need to increase their height significantly and with serious problems of inconvenience and transport difficulties.

The above-mentioned problems are solved by the covering elements for circular structures according with the characterizing part of the appended claims.

In particular the covering panels for circular structures of the invention have a wedge-shaped form but, in relation to the front zone (by front is meant the part near the point) are enlarged, so as to obtain a greater resistance in relation to the support without any need for an increase in height.

These panels are arranged side by side and coupled to complementary panels which are inserted between them, to complete the covering.

The present invention will now be described in detail, simply as an example, with particular refer-

ence to the figures enclosed where:

- figures from 1a to 1d show the various components which make up the central element of the covering support;
- figures 2a and 2b show the view from above of the elements which form the covering;
- figures 3a and 3b show the view from below the same elements in figure 2;
- figures 4a, 4b and 4c are respectively the section along the lines 1-1, 2-2 and 3-3 of the element in figure 2a;
- figures 5a and 5b are sections taken respectively along the lines 1-1 and 2-2 of figure 2;
- figure 6 is a vertical section of a basin with the covering assembled;
- figure 7 is a plan view of a covering made with the elements in accordance with the innovation;
- figure 8 shows, in section, a detail of the wall of the basin with the covering in accordance with the innovation.

With reference to figures 2 and 3, the elements for realising the covering in accordance with the innovation include in essence two types of panels, 1 and 2, which will be indicated in the following as "main panels" (1) and "finishing panels" (2), respectively.

The panels of type 1 include a wedge-shaped body 3 which has its front part 4 enlarged, so as to resemble, in plan view, an arrow-like shape.

In the joint area between the body 3 and the front part 4 there is a canal 5 used to support the completion panels 2, as will be shown below.

Each panel is provided, on its lower side, with a couple of stiffening ribs 7 which join with the front end 6 and rear end 7 of the panel.

As can be more clearly seen in the sections in figure 4, the ends 6 and 6' are enlarged, to obtain a greater resistance in the support zones, and in relation to the front part the panels have a serration projecting on the underside.

The panels 2, to be inserted between the previous ones, have a form, in plane view, with a circular crown sector and are also provided, below, with stiffening ribs 7, have the rear end 8 enlarged for resting on the edge of the basin and the front end 9 shaped so as to define a serration bent downwards, so as to be inserted into the canal 5 of panels 1.

The latter, as can be better seen in the section in figure 6, are supported on one side by the wall 10 of the basin and, on the other, by a central support element comprising a column 11 with a base 12 and on which there is mounted, on the upper part, a circular support plate 13.

The plate is provided, around the perimeter, with an upper groove 14.

These details are better shown in the figures

from 1a to 1d which show, respectively, the view of the column 11, the base 12 seen in plan, and the plate 13 in plan and in section.

For the assembly, first of all the main panels 1 are placed with the rear edge 6' resting on the wall of the basin and with the front edge 6 on the support plate 13, with the tooth which is inserted into the groove 14.

These panels are arranged side by side with the front parts 4 in contact with each other while in relation to the lower part 3 a gap remains free between two panels side by side, a gap which can be closed by inserting panels 2.

These rest on the wall of the basin with the rear edge 8, while the serration found in the front part inserts into the groove 5 of the panels 1.

In this way a covering is obtained like that shown in plan in figure 7, which can be completed by applying a layer of sealing substance between the panels placed side by side.

This system has numerous advantages, in so far as with significantly long panels it is possible to obtain at the top a width capable of guaranteeing the distribution of forces over a quite wide surface.

Similarly facilitated are the transport operations both because the panels, not having parts that are excessively thin, are more resistant to stresses, and also because, due to the reduction in height, it is possible to transport a greater number of panels with clear cost savings.

The panels in accordance with the invention can then be produced in different lengths, to be suitable for basins of different diameters, simply modifying the length of of the die presses with the addition, at one end of the same, of extension walls.

In figure 8 there is a schematic diagram of a detail in the support zone of the panels on the basin wall, for basins of different diameters.

## Claims

1. Elements for the covering of structures and circular basins characterised by providing first wedge-shaped panels (1) to be rested on one side of the basin wall and at the top of a support plate (13) provided in the same basin, in which the said wedge-shaped panels have their front part increased in width, and second complementary panels (2), having the form of part of a circle ring, to be inserted between the said first panels when these are arranged side by side to form the covering.
2. Covering elements in accordance with claim 1, characterised in that the said first panels (1) are provided, on their lower parts, with rigidity ribbing (7) and have, in the union zone be-

tween the said front enlarged part and the said rear part, a channel (4) designed to accept a serration (9) on the front part of the said second complementary panels.

3. Covering elements according with the preceding claims, characterised in that the said panels have enlarged front and rear edges , a serration or a projecting element (6) being provided at the front edges, designed to be inserted in a groove in the respective support means.
4. Covering elements according with the preceding claims, characterised by that of providing, in the central zone of the basin, a support element made up of a column (11) with an upper plate (13) provided with a groove (14) around its perimeter.
5. Covering for circular basins made with elements in accordance with the previous claims.

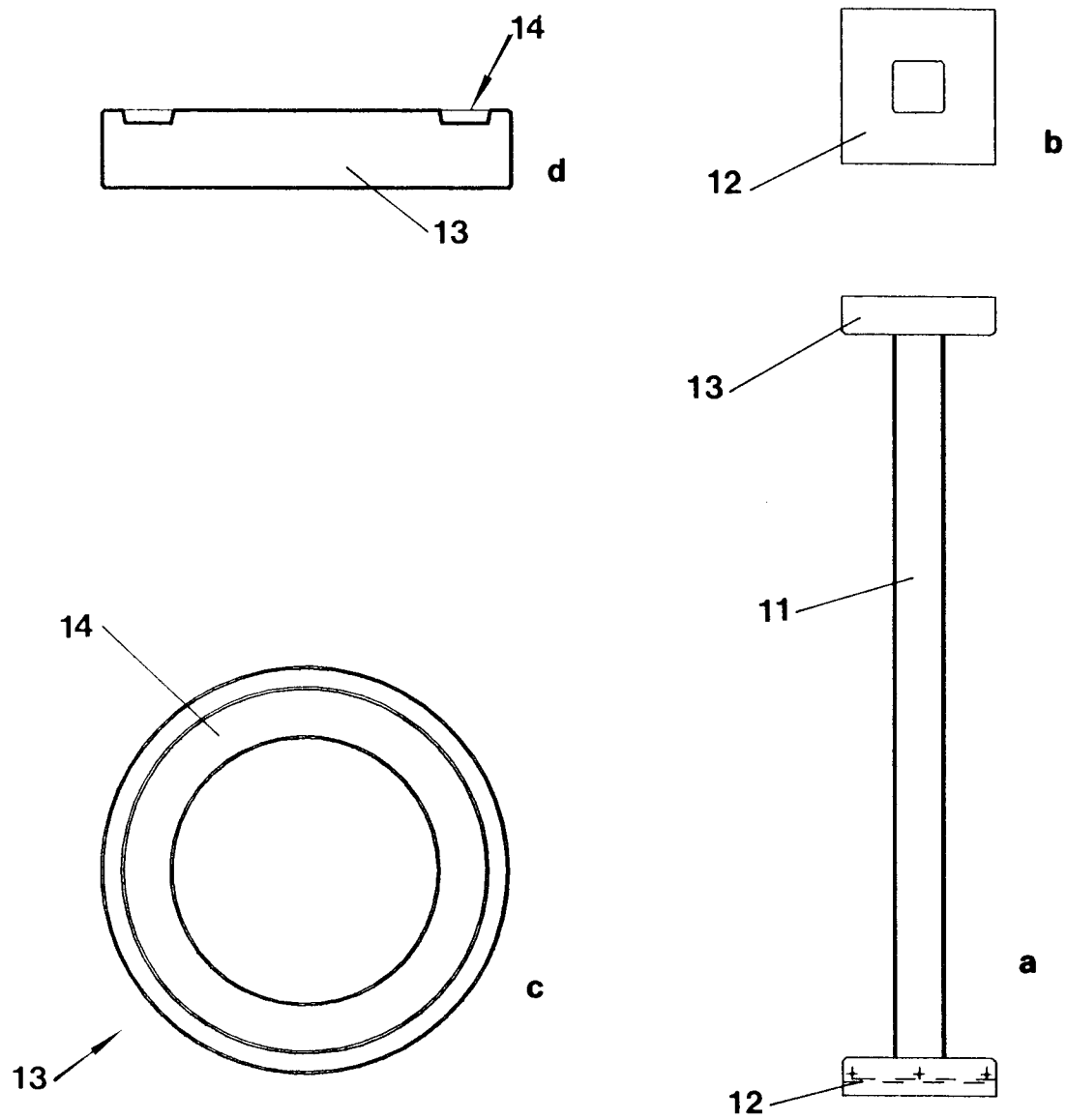


Fig. 1

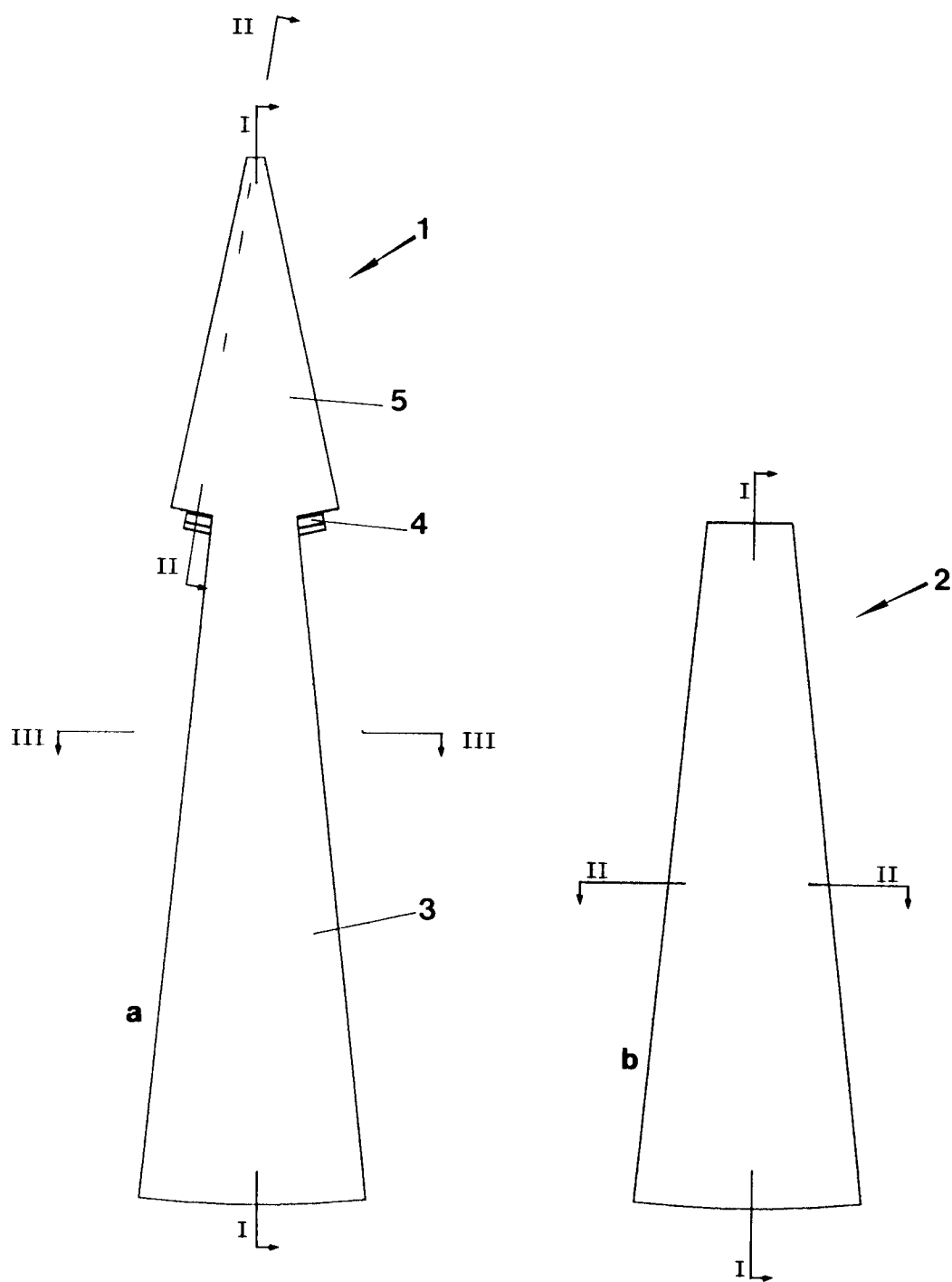


Fig.2

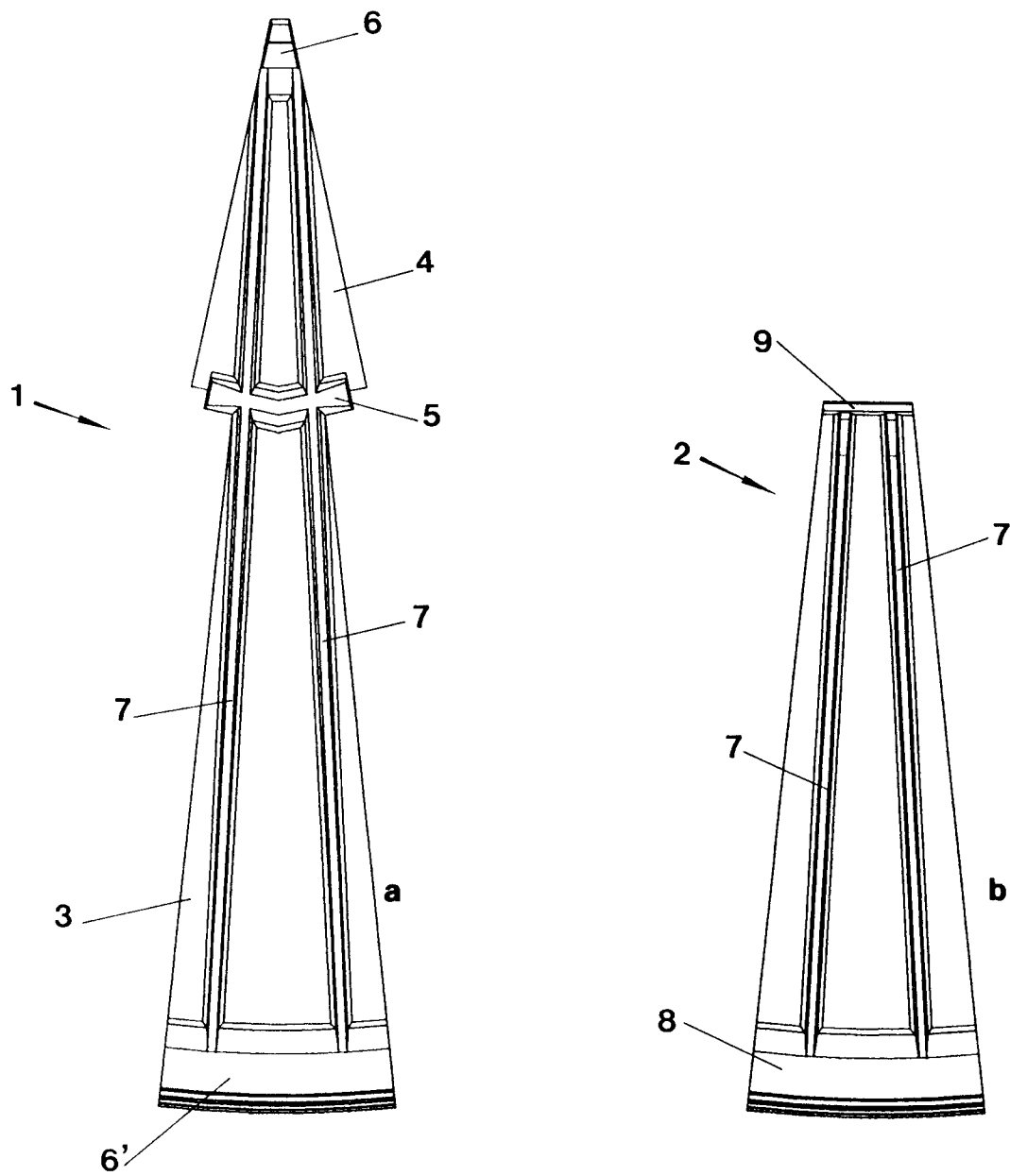


Fig.3

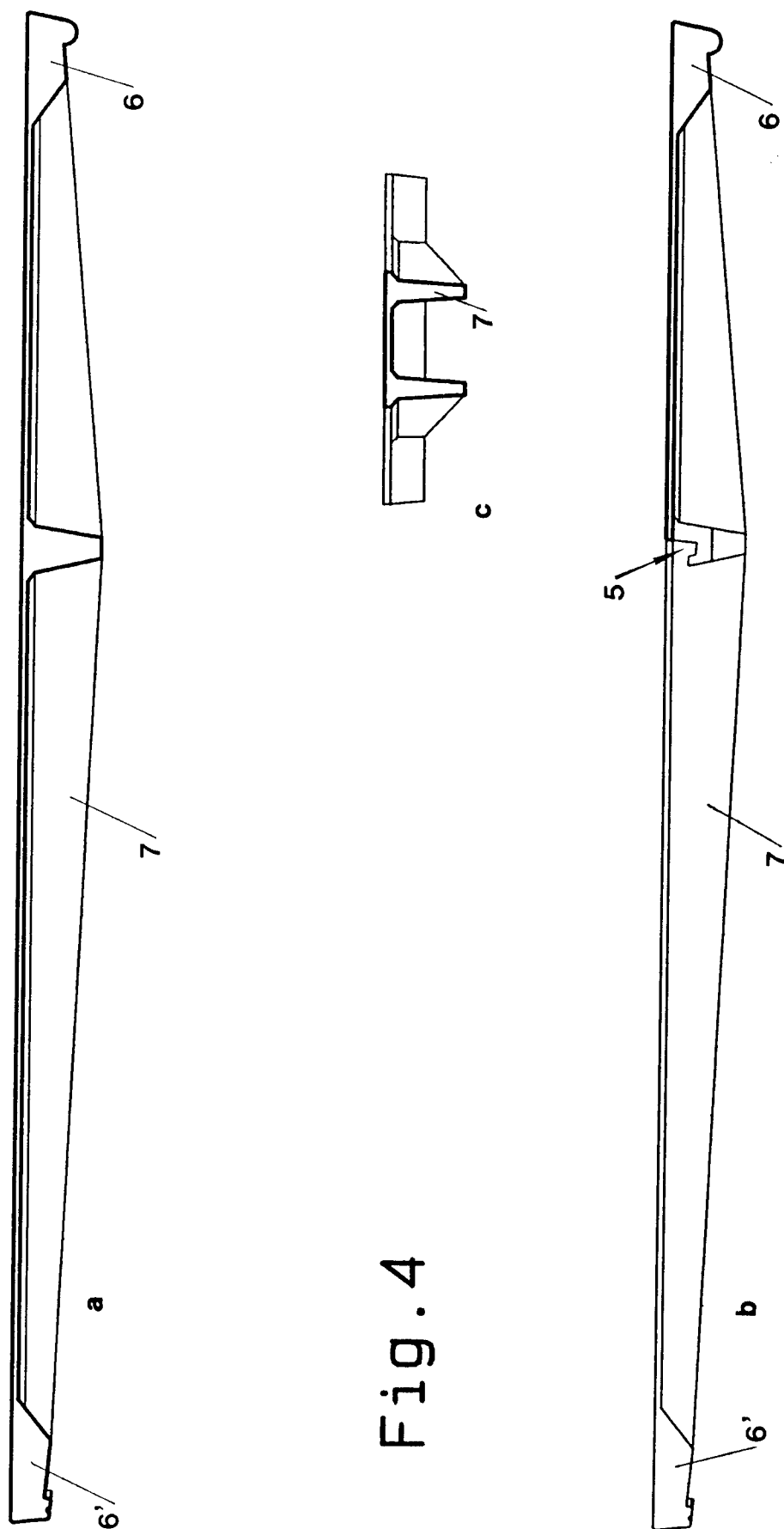


Fig. 4

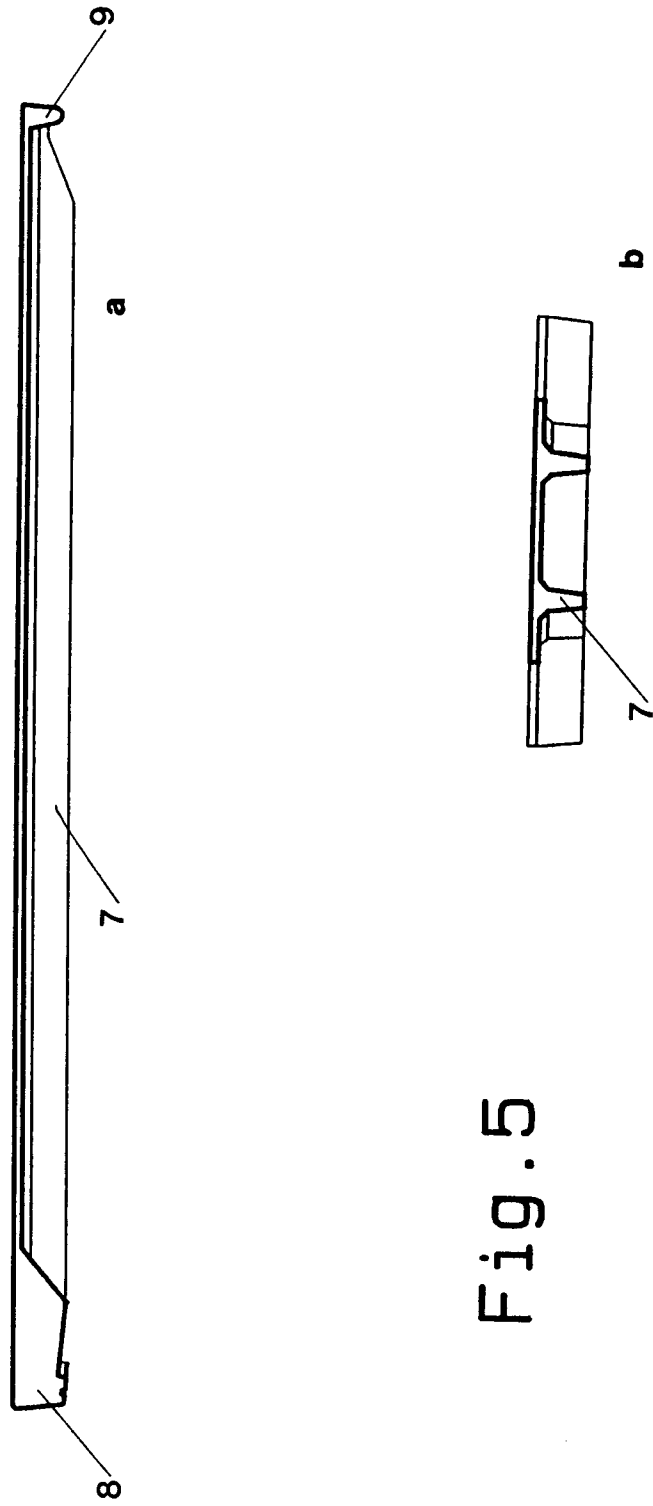


Fig. 5



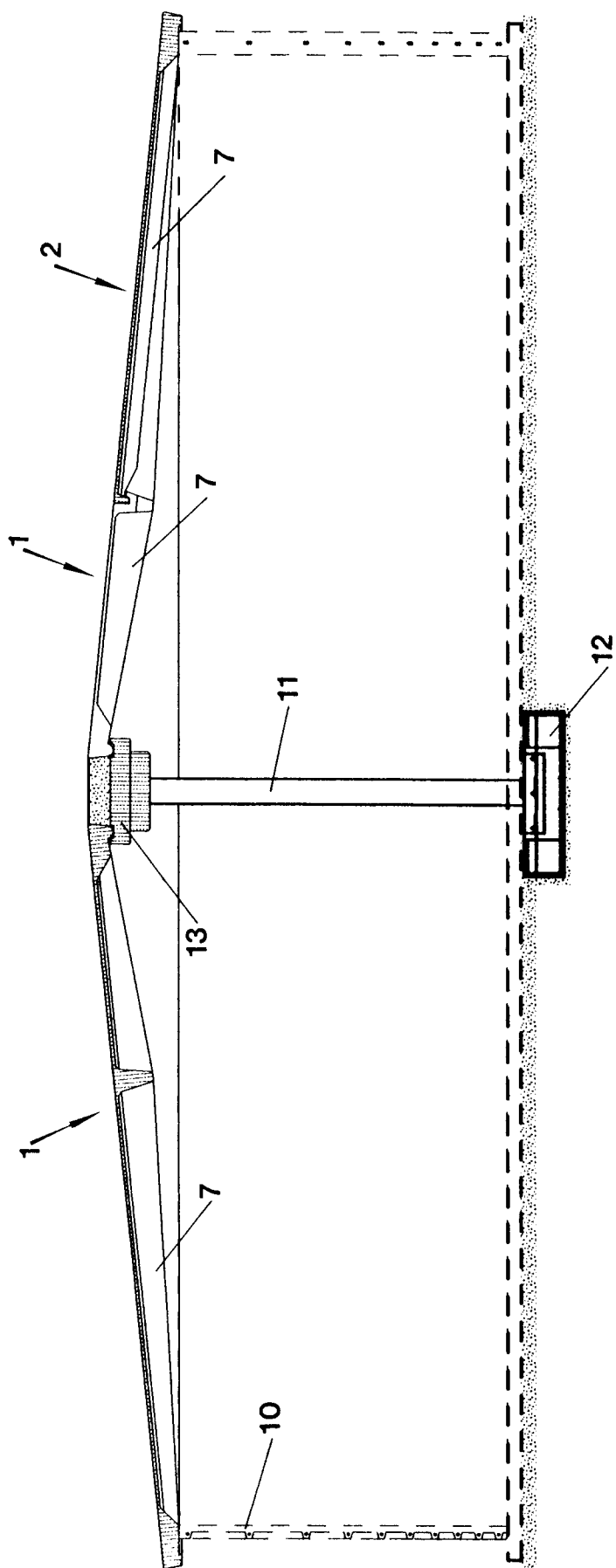


Fig. 6

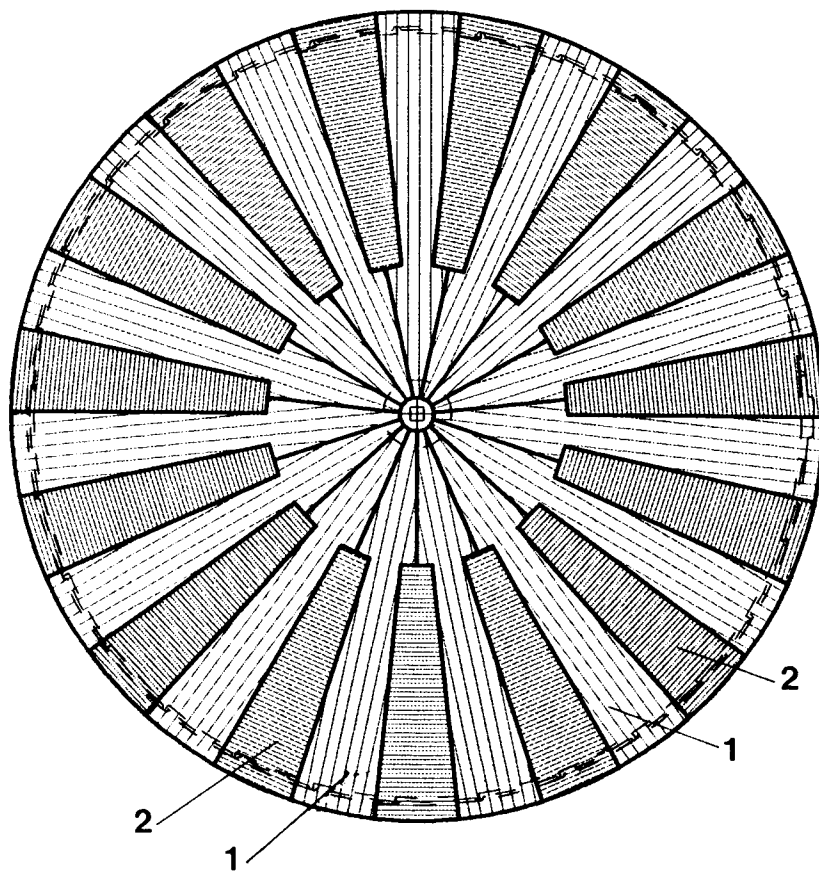


Fig.7

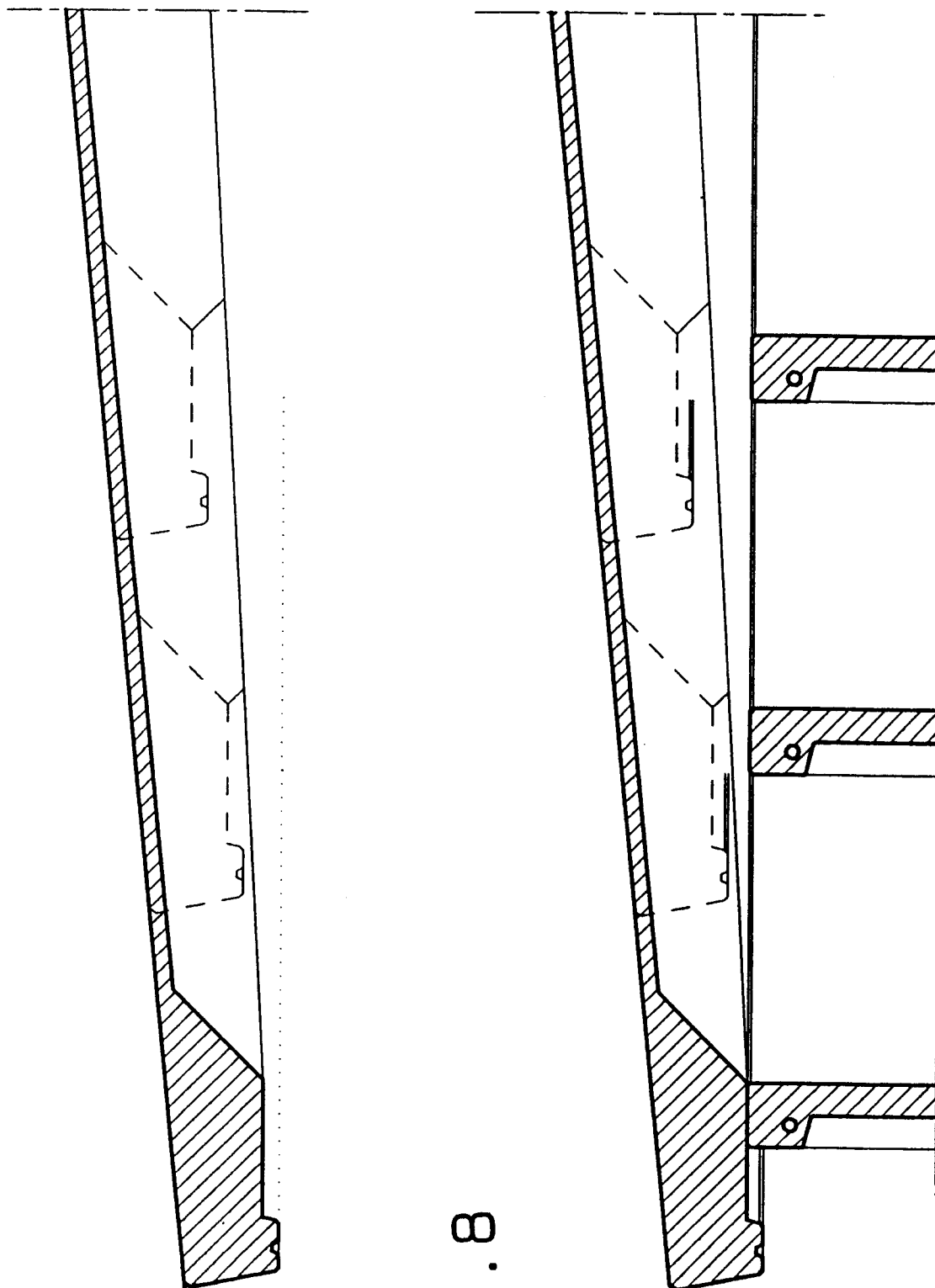


Fig. 8



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## EUROPEAN SEARCH REPORT

Application Number

EP 91 11 2759

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)
A	US-A-4 332 116 (BUCHANAN) * claim 1; figures 1-3 * ---	1, 4, 5	E04B7/02 E04B1/34 E04B7/20
A	US-A-4 276 733 (CASPER) * column 3, line 1 - column 3, line 18 * * column 3, line 36 - column 3, line 39 * * column 4, line 21 - column 4, line 34; figures 1,2 * ---	1	
A	US-A-4 541 210 (COOK) * figure 1 * ---	1, 3, 4	
A	US-A-4 158 941 (DIANA) * figures 1-4,8,12 * -----	1,2,3	
			TECHNICAL FIELDS SEARCHED (Int. Cl.5)
			E04B E04H
The present search report has been drawn up for all claims			
Place of search THE HAGUE		Date of completion of the search 20 AUGUST 1992	Examiner HENDRICKX X.
<b>CATEGORY OF CITED DOCUMENTS</b> X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ..... & : member of the same patent family, corresponding document			