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(54) **Modular play structure**

(57) A modular play structure comprises a plurality of square tiles (2) that can be placed next to one another to form a plastic model in which a track (3), capable of being traversed by a mobile element (M), is formed. Each tile comprises two railway lines (6) capable of forming a

respective portion of said track (3) and further segments of railway track (5) positioned in proximity to each vertex and inclined at 45° with respect to the bisector of the vertex at a distance equal to half the distance between centres (I) between the two railway lines (6).

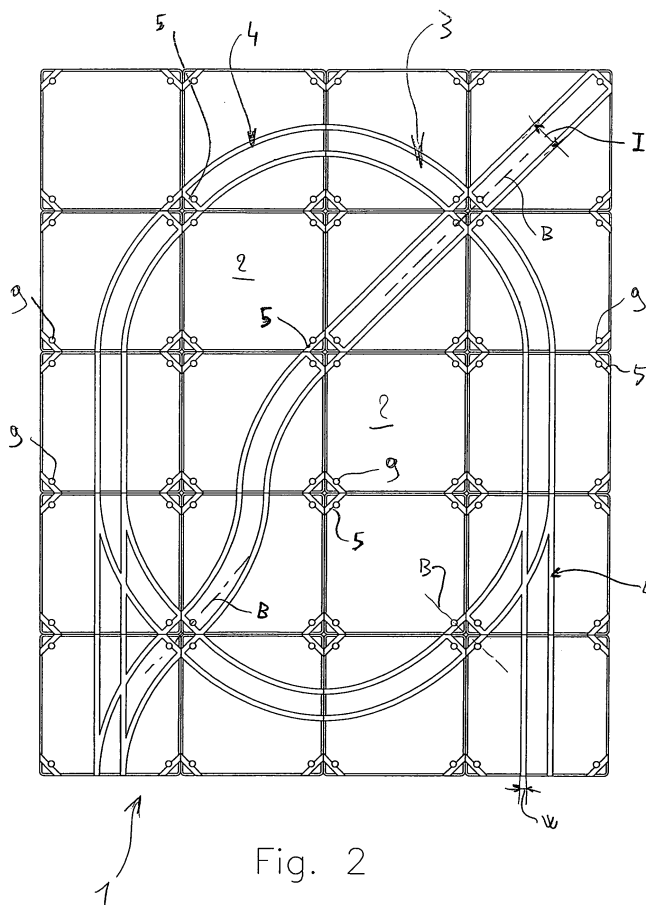


Fig. 2

Description

[0001] The present invention relates to a modular play structure according to the preamble of claim 1, comprising a plurality of tiles that can be placed next to one another to form a plastic model in which a track capable for being traversed by a mobile element is formed.

[0002] For the sake of simplicity of explanation, the present description is provided on a non-limiting basis with particular reference to a plastic model of the railway type, in which the aforesaid track is capable of being engaged by and traversed by a mobile element of a toy train, such as a carriage or a locomotive. In short, between the track and the wheels of the mobile element of the toy train an engagement of the track/wheel type will be established.

[0003] In the field of modular play structures of the aforesaid type, particularly those intended for children, there is a great need to allow the user the maximum freedom to combine the different tiles, so as to permit the production of plastic models in which the tracks extend in different shapes as desired.

[0004] Since for obvious reasons the number of tiles with which each play structure is equipped can certainly not be infinite, it is clear that the greatest limitation in the variability of the tracks obtainable by placing the available tiles next to one another in different ways is determined by the difficulty of succeeding in producing the connections between the different curved sections of the track.

[0005] In particular, 90° curves are generally obtained by imposing such a curve on the section of track belonging to a single tile. It is obvious that by so doing, the radius of curvature is closely correlated with the dimensions of the tiles, such that, in order to avoid the presence of excessively small radii of curvature in the track, it is not possible to use tiles of contained dimensions. On the other hand, with the tiles known at present, the possibility of producing a 90° curve by dividing the curve over several tiles, inevitably involves the presence of a plurality of dedicated tiles, that is to say, capable of being used only for that specific type of curve, to the detriment, obviously, of the number of tiles available for other positions and, consequently, of the variability of the tracks obtainable with the available tiles.

[0006] The problem underlying the present invention is that of devising and making available a modular play structure which has structural and functional characteristics such as to fulfil the aforesaid requirement, at the same time remedying the drawbacks mentioned with reference to the prior art. In particular, the tiles of such a structure must allow the maximum freedom and interchangeability in the composition of tracks (with 45° and 90° curves and/or diagonal sections), while having contained dimensions and avoiding having excessively small radii of curvature.

[0007] This problem is solved by a modular play structure according to the characteristics of claim 1.

[0008] The idea on which the present invention is

based is that of providing the tiles of the play structure with suitable segments of track, substantially inclined at 45°, at one or more of the corners, or other ends or appendages, of the tiles themselves, said track segments serving to connect the first guide means of two contiguous tiles at a curved section of the track.

[0009] Further characteristics and advantages of the modular play structure according to the present invention will become clearer from the following description of some preferred exemplary embodiments thereof, provided by way of non-limiting example with reference to the appended drawings, in which:

- Figure 1 is a simplified perspective view of a play structure according to the invention in a configuration of use;
- Figure 2 is a plan view of the play structure of Figure 1;
- Figures 3a-3m are plan views of the different types of tiles of the play structure of Figure 2;
- Figure 4a is a plan view of a four-tile portion of a play structure of the invention according to a second embodiment;
- Figure 4b is a side view of the lower side of the play structure of Figure 4a;
- Figures 5a-5d show the tiles of Figure 4a in an exploded view;
- Figure 6 is a plan view of a four-tile portion of a play structure of the invention according to a third embodiment;
- Figures 7a-7d show the tiles of Figure 6 in an exploded view;
- Figure 8a is a plan view of a four-tile portion of a play structure of the invention according to a fourth embodiment;
- Figure 8b is a side view of the lower side of the play structure of Figure 8a;
- Figures 9a-9d show the tiles of Figure 8a in an exploded view.

[0010] With reference to the appended drawings, the reference 1 indicates as a whole a modular play structure according to the invention.

[0011] In particular, the play structure 1 comprises a plurality of tiles 2 that can be placed next to one another to form a plastic model in which a track 3, capable of being traversed by a mobile element M, is formed.

[0012] In the exemplary embodiments illustrated, the tiles 2 are placed next to one another to form a plastic model railway, in which the aforesaid track 3 is capable of being engaged and traversed by elements of a toy train such as a carriage or a locomotive. Preferably, the tiles 2 extend substantially in one plane and are shaped in such a way as to assume the shape of a regular polygon, for example a quadrilateral. In the examples illustrated, the tiles 2 are squares of predetermined thickness.

[0013] According to the invention, first tiles of the aforesaid tiles 2 comprise, at a face thereof which extends in

the aforesaid plane A, first guide means 4 capable of forming a respective portion of said track 3, said first tiles 2a being disposed in such a way that the respective first guide means 4 are consecutive one with another along said track 3.

[0014] Advantageously:

- at least one tile of said tiles 2 comprises second guide means 5 extending only at a limited peripheral portion and
- the continuity of the track between the first guide means, facing one another, aligned and spaced from one another, of two neighbouring tiles 2 of said first tiles, is ensured by the second guide means 5 of said at least one tile 2.

[0015] According to preferred aspects of embodiment:

- two or more, preferably all, tiles 2 comprise one or more of the aforesaid second guide means 5 extending only at respective peripheral end portions of the tiles 2 and
- two or more, preferably all, tiles 2 comprise the aforesaid first guide means 4 and the second guide means 5.

[0016] The tiles 2 extend in the aforesaid plane, assuming the shape of a regular polygon in which at least one principal plane of symmetry can be identified, perpendicular to the aforesaid plane which sub-divides the tiles into two halves, so that the first guide means 4 extend in both the aforesaid halves of the respective tile 2, while each of the second guide means 5 extends only within one of the two halves of the respective tile 2.

[0017] According to a preferred embodiment, the second guide means 5 extend between two consecutive sides of the regular polygon formed by the profile of the tiles 2, in proximity to the vertex V formed by the aforesaid two consecutive sides. More precisely, the second guide means 5 extend perpendicularly to the bisector B emerging from the vertex V formed by the aforesaid two consecutive sides.

[0018] The first guide means 4 comprise one or more railway lines 6 or other substantially equivalent guide elements. In relation to the railway lines 6 it should be stated that these may be of any type and configuration. In the examples in the drawings, each railway line 6 assumes the configuration of a groove of predetermined width W provided in the thickness of the tiles 2, it being understood that such a railway line could for example be a rail projecting from the respective tile.

[0019] The second guide means 5 are on the other hand configured in such a way as to conform to the first guide means 5, or rather to the railway lines 6, so as to be able to ensure the continuity of the track 3 between the railway lines 6 facing one another, aligned and spaced from one another, of two neighbouring tiles 2, preferably in contact as in the examples illustrated.

Embodiment A

[0020] With particular reference to the embodiment illustrated in Figures 1, 2 and from 3a to 3m, the tiles 2 are square and the first guide means 4 are in the form of two railway lines 6a, parallel to and spaced from each other with a predetermined distance between centres. At the curved sections of the track 3, the railway lines 6a of the tiles 2a have an end portion positioned straddling the bisector B of a respective vertex. Correspondingly, the second guide means 5 of the tiles 2 are in the form of a section of railway track 5a which is:

- the same as the railway lines 6,
- extends perpendicularly to the bisector B issuing from the respective vertex V and
- spaced from the respective vertex V by a distance equal to half the aforesaid distance between centres I between the two railway lines 6.

[0021] In more detail, each tile 2 is provided, at any one of its four vertices V, with a respective section of railway track 5a, that is to say, with a segment of railway track 6 disposed at 45° at each vertex V.

[0022] Each of the aforesaid sections of railway track 5a with which the tiles are equipped may advantageously be used, according to the mode illustrated in Figure 2, as a connecting section for ensuring the continuity of the track 3 between the railway lines 6a of two neighbouring tiles 2a. In this embodiment, the railway lines 6a of the tiles 2a to be connected are disposed in such a way as to be positioned straddling the bisector B and, consequently, also the vertex V (Figures 3c-3i). Consequently, it is necessary to use the sections of railway track 5a of two separate and further tiles 2 to ensure the continuity between both the railway lines 6a of the two tiles 2a.

Embodiment B

[0023] With particular reference to the embodiment illustrated in Figures 4a to 5d, the tiles 2 are square and the first guide means 4 are in the form of two railway lines 6b parallel to and spaced from each other with a predetermined distance between centres I. At the curved sections of the track 3, the railway lines 6b of the tiles 2b are positioned in such a way that one railway line 6b passes through the vertex V of the tile 2b and the other railway line 6b is spaced from the vertex V by a distance equal to the distance between centres I (Figures 5b and 5c). Correspondingly, the second guide means 5 comprise two sections of railway track 5b equal to said two railway lines 6b and spaced by an equal distance between centres I, wherein one section of railway line 5b passes through the respective vertex V of the tile, while the other section of railway line 5b is spaced from the vertex by a distance equal to the distance between centres I. In this embodiment, in order to ensure the continuity between both the railway lines 6b of two neighbouring tiles it is

therefore sufficient to provide for the use of the two sections of railway line 5b of a further tile 2.

Embodiment C

[0024] With particular reference to the embodiment illustrated in Figures 6 to 7d, the tiles 2 are square and the first guide means 4 are in the form of a single railway track 6c of predetermined width W.

[0025] At the curved sections of the track 3, the railway track 6c has one end positioned straddling the bisector B issuing from a vertex. Correspondingly, the second guide means 5 of the tiles 2 comprise a section of half-track 5c extending at the vertices V of the respective tiles perpendicularly to the bisector B and having a width measured along said bisector from said vertex equal to half the predetermined width W of the railway track 6c. It is therefore necessary to use the sections of half-track 5c of two separate and further tiles 2c to ensure the continuity of the track 3 between the railway tracks 6c of two tiles 2c at a curved section of the track 3.

Embodiment D

[0026] With particular reference to the embodiment illustrated in Figures 8a to 9d, the tiles 2 are square and the first guide means 4 are in the form of a single railway track 6d of predetermined width W. At the curved sections of the track 3, the railway track 6d has one end which passes through a vertex V in such a way as not to pass beyond the bisector B (Figures 9b and 9c). Correspondingly, the second guide means 5 of the tiles 2d comprise a section of railway track 5d extending at the vertices V perpendicularly to the bisector B, starting from the respective vertex and for a width measured along said bisector B equal to said predetermined width W. It is therefore sufficient to use the section of railway track 5c of a further tile 2d to ensure the continuity of the track 3 between the railway lines 6d of two tiles 2c at a curved section of the track 3.

[0027] According to a preferred aspect, the tiles 2 have both the first guide means 4 and the second guide means 5 at two opposed faces. This makes it possible to increase the variability of the tracks obtainable on a par with the number of tiles available.

[0028] Preferably, the tiles 2 have a plurality of seats 9 positioned in such a way as not to interfere with said first guide means 4 and/or with said second guide means 5, and the play structure comprises a plurality of fixing means (not illustrated for the sake of simplicity of representation) that are capable of engaging two tiles side by side at their respective seats. According to a preferred embodiment, the fixing means comprise a crossmember at the end of which there extend two opposed end pegs capable of being forcibly inserted into said seats 9.

[0029] Advantageously, the seats 9 not engaged by the aforesaid fixing means may be used for receiving corresponding engagement means of tiles that are dec-

orative and/or with topical scenery to be applied to the tiles to cover them. As may be appreciated from what has been described, the modular play structure according to the present invention makes it possible to fulfil the aforesaid requirement and at the same time to remedy the drawbacks referred to in the introduction of the present description with reference to the prior art. In fact, the presence of the second guide means makes it possible to combine the tiles with one another, ensuring the continuity of the track in the curved sections of same. This makes it possible to sub-divide the 90° curves over two tiles of contained dimensions, with an obviously greater freedom in the composition of the tracks.

[0030] An expert in the field, for the purpose of fulfilling contingent and specific requirements, may of course apply numerous modifications and variants to the modular play structure described above, all however contained within the scope of protection of the invention as defined by the following claims.

Claims

1. A modular play structure comprising a plurality of tiles (2) that can be placed next to one another to form a plastic model in which a track (3) is formed, said track (3) being capable to be traversed by a mobile element (M), wherein:

- first tiles (2) of said plurality of tiles (2) comprise respective first guide means (4) capable of forming a respective portion of said track (3) and
- said first tiles (2) being disposed in such a way that the respective first guide means (4) are consecutive one with another along said track (3),
characterized in that:

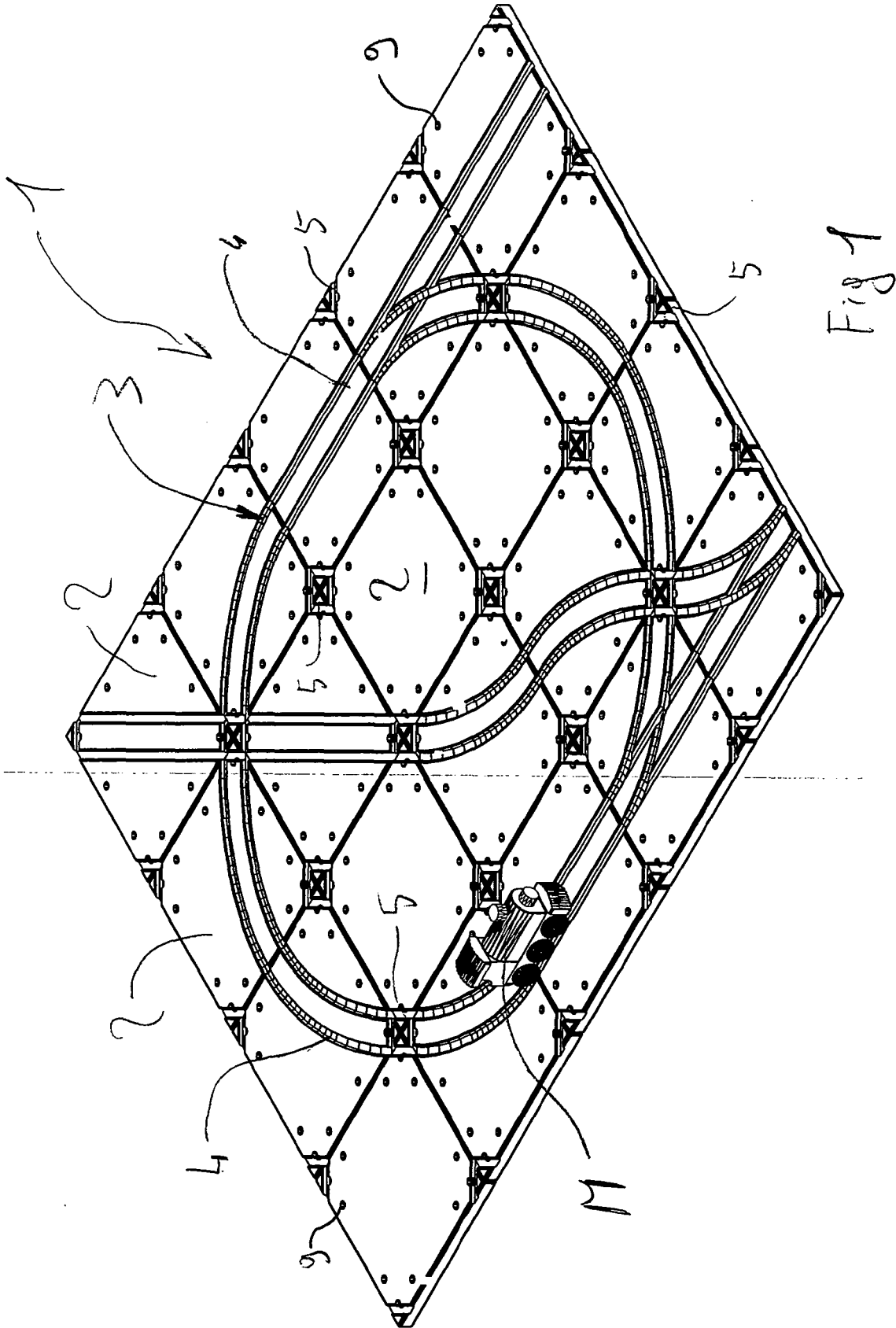
- at least one tile of said plurality of tiles (2) comprises second guide means (5) extending only at a limited peripheral portion thereof and
- the continuity of said track (3) between the first guide means (4), facing one another, aligned and spaced from one another, of two neighbouring tiles (2) of said first tiles (2), is ensured by said second guide means (5) of said at least one tile of said plurality of tiles (2).

2. A play structure according to claim 1, wherein two or more tiles (2) comprise said second guide means (5).

3. A play structure according to claim 1 or 2, wherein two or more tiles (2) comprise a plurality of said second guide means (5).

4. A play structure according to any one of claims 1 to

- 3, wherein at least one tile comprises said first guide means (4) and said second guide means (5).
5. A play structure according to any one of claims 1 to 4, wherein:
- said tiles (2) extend substantially in a first plane (A),
 - in said tile (2) at least one principal plane of symmetry (X-X) can be identified, perpendicular to said plane (A) which sub-divides the tiles (2) into two halves,
 - said first guide means (4) extend in both the aforesaid halves of the respective tile (2) and
 - each of said second guide means (5) extends only within one of said two halves of the respective tile (2).
6. A play structure according to any one of claims 1 to 5, wherein said tiles (2) have a polygonal shape and said second guide means (5) extend between two consecutive sides in proximity to the vertex (V) formed by said two consecutive sides.
7. A play structure according to claim 6, wherein said second guide means (5) extend perpendicularly to the bisector (B) issuing from the vertex (V) formed by said two consecutive sides.
8. A play structure according to any one of claims 1 to 7, wherein said first guide means (4) comprise two railway lines (6a; 6b) parallel to and spaced from each other with a predetermined distance between centres (I).
9. A play structure according to claims 7 and 8, wherein said second guide means (5) comprise a section of railway track (5a) equal to said two railway lines (6a), said section of railway track (5a) extending perpendicularly to said bisector (B) at a distance from said vertex (V) equal to half said distance between centres (I) between said two railway lines (6a).
10. A play structure according to claims 7 and 8, wherein said second guide means (5) comprise two sections of railway line (5b) equal to said two railway lines (6b) and spaced by an equal distance between centres (I), wherein one of said two sections of railway line (5b) passes through said vertex (V).
11. A play structure according to any one of claims 1 to 7, wherein said first guide means (4) comprise a single railway track (6c; 6d) of predetermined width (W).
12. A play structure according to claims 8 and 11, wherein said second guide means (5) comprise a section of half-track (5c) extending perpendicularly to said bisector (B) and having a width measured along said bisector (B) equal to half said predetermined width (W) of said railway track (6c).
13. A play structure according to claims 7 and 11, wherein said second guide means (5) comprise a section of railway track (5d) extending perpendicularly to said bisector (B) starting from the vertex (V) for a width measured along said bisector (B) equal to said predetermined width (W) of the railway track (6d).
14. A play structure according to any one of claims 1 to 13, wherein said tiles (2) have a regular quadrilateral shape.
15. A play structure according to claim 14, wherein said tiles (2) have a square regular shape.
16. A play structure according to any one of claims 1 to 15, wherein:
- said tiles (2) comprise a plurality of seats (9) positioned in such a way as not to interfere with said first guide means (4) and/or with said second guide means (5) and
 - said play structure comprises a plurality of fixing means capable of engaging two tiles (2) side by side at their respective seats.
17. A play structure according to claim 16, wherein said tiles (2) are capable of receiving corresponding engagement means of decorative panels.



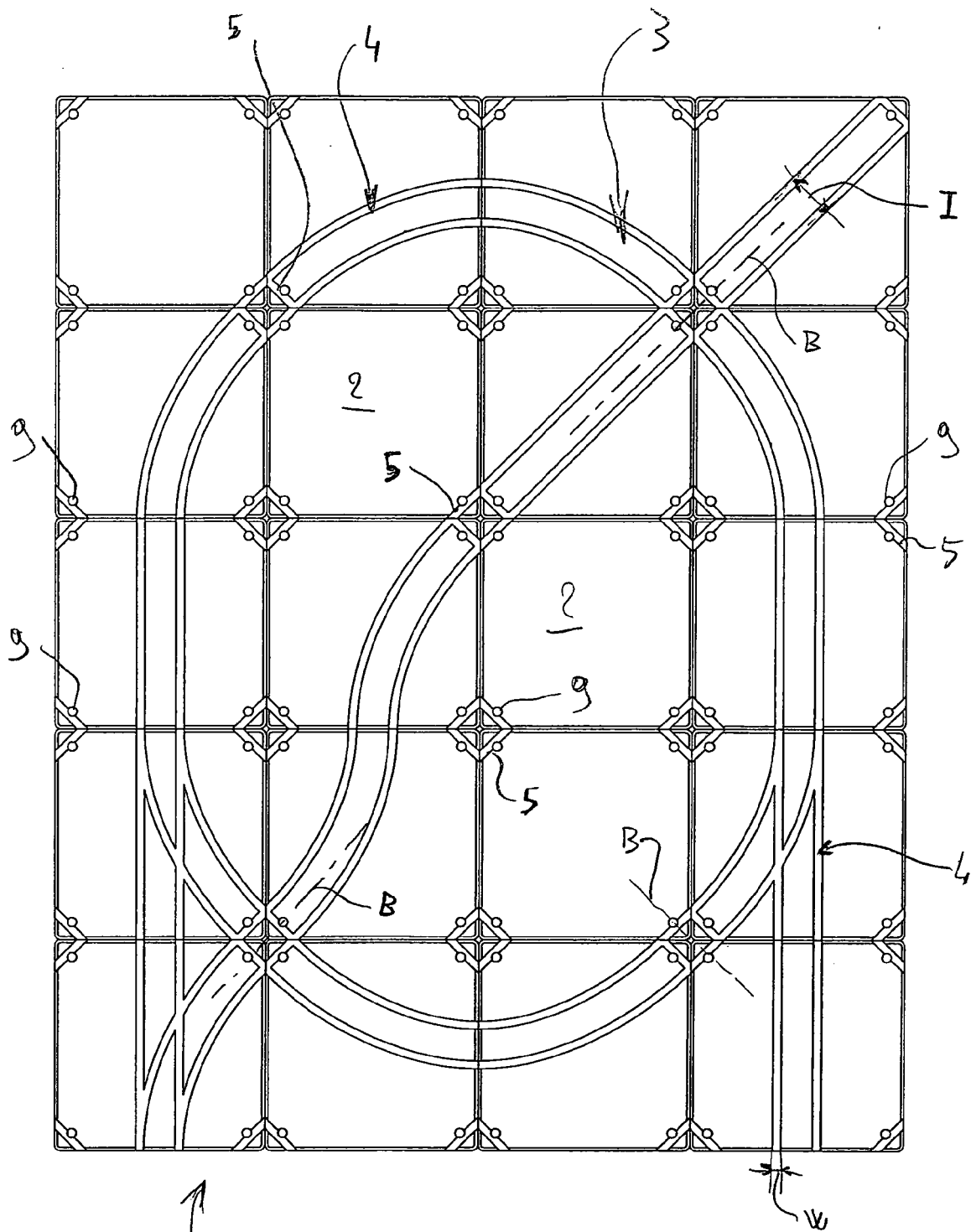


Fig. 2

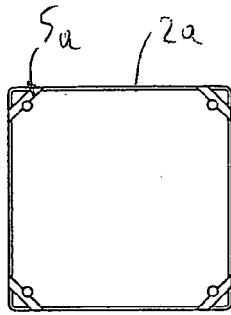


FIG. 3a

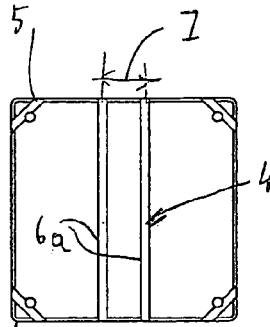


FIG. 3b

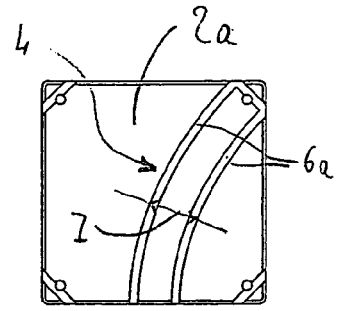


FIG. 3c

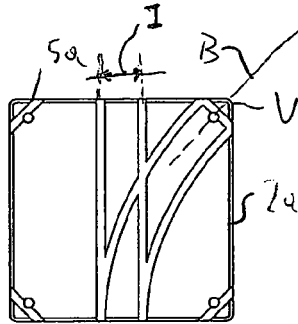


FIG. 3d

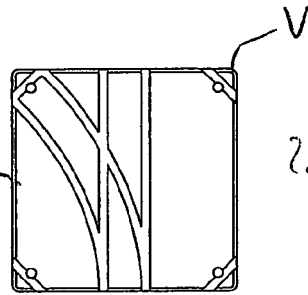


FIG. 3e

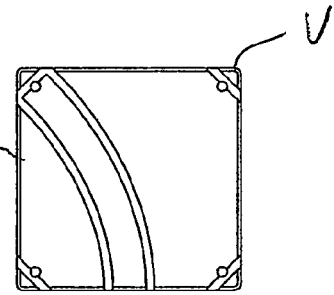


FIG. 3f

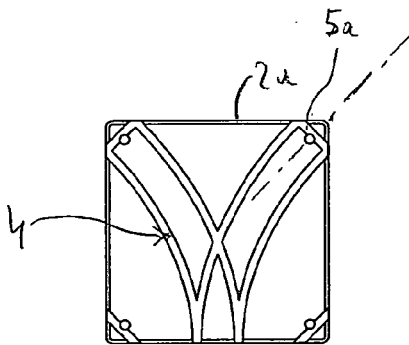


FIG. 3g

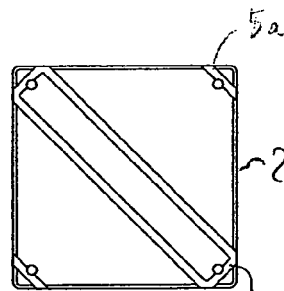


FIG. 3h

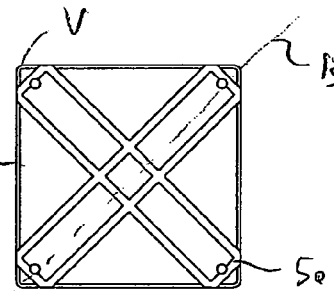


FIG. 3i

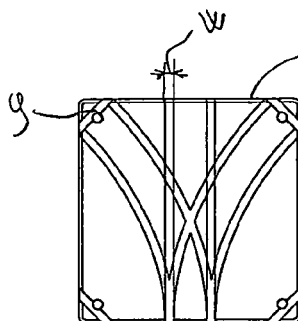


FIG. 3l

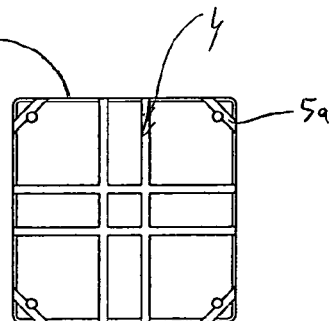


FIG. 3m

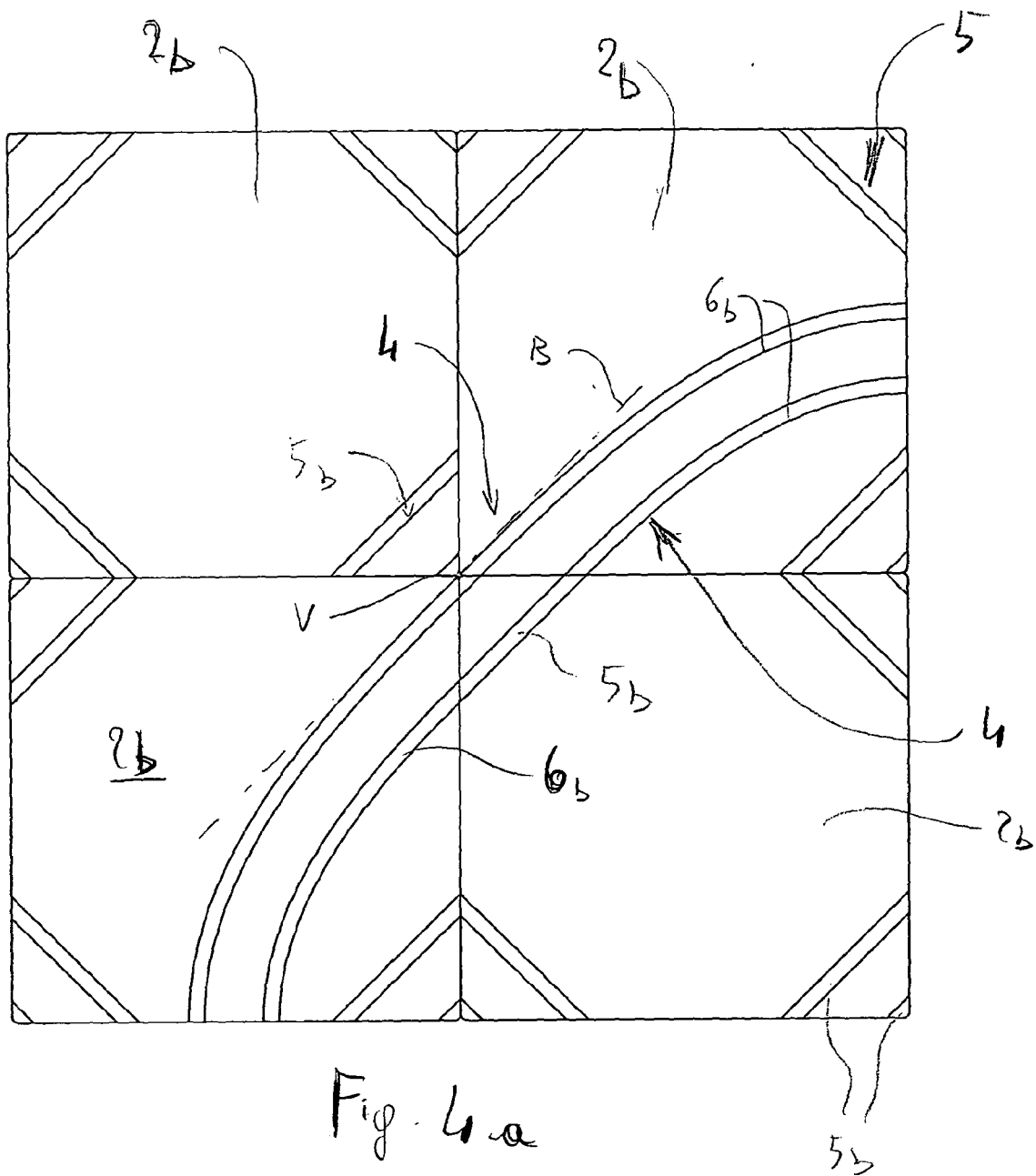


Fig. 4a

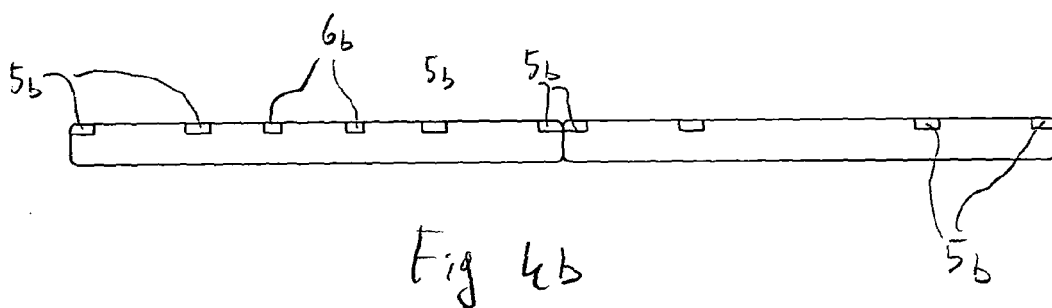


Fig. 4b

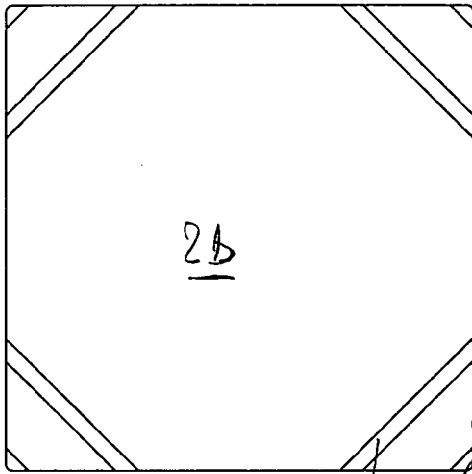


Fig 5a

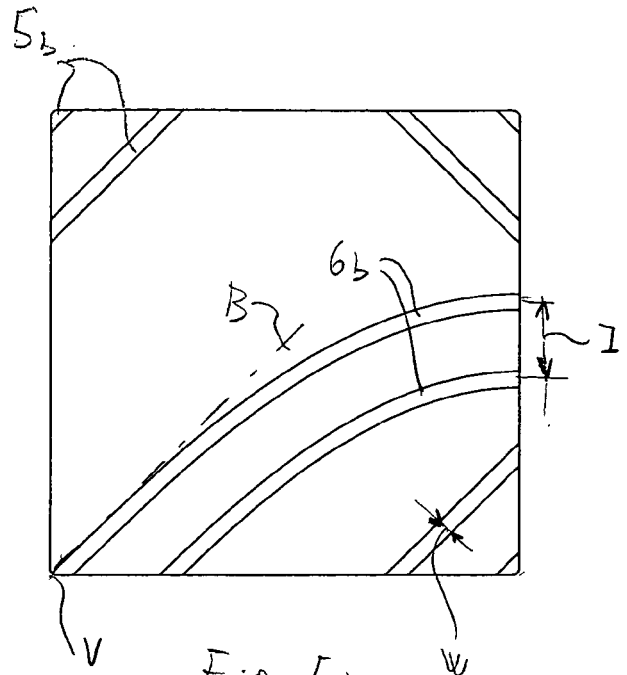


Fig 5b

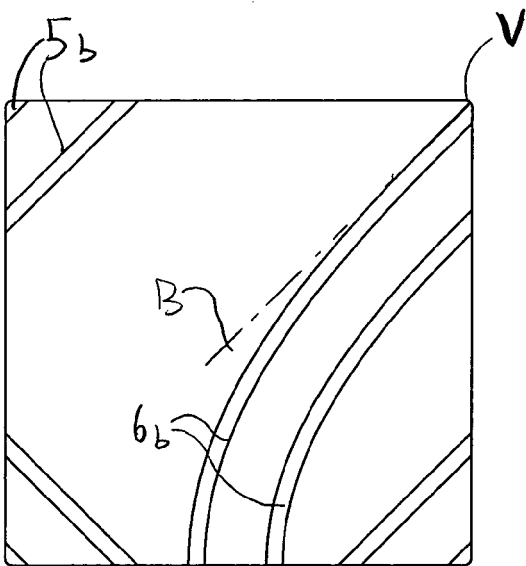


Fig 5c

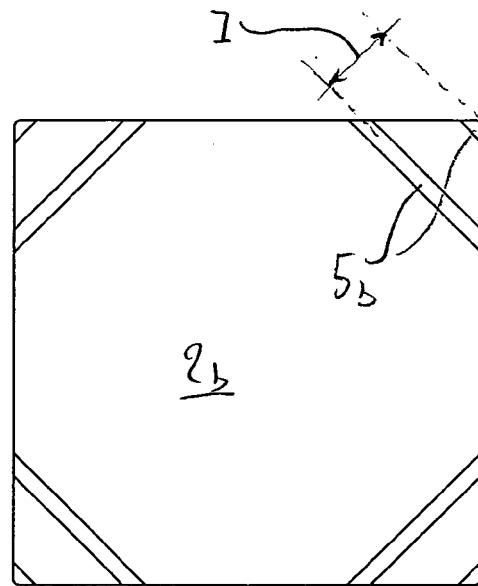


Fig 5d

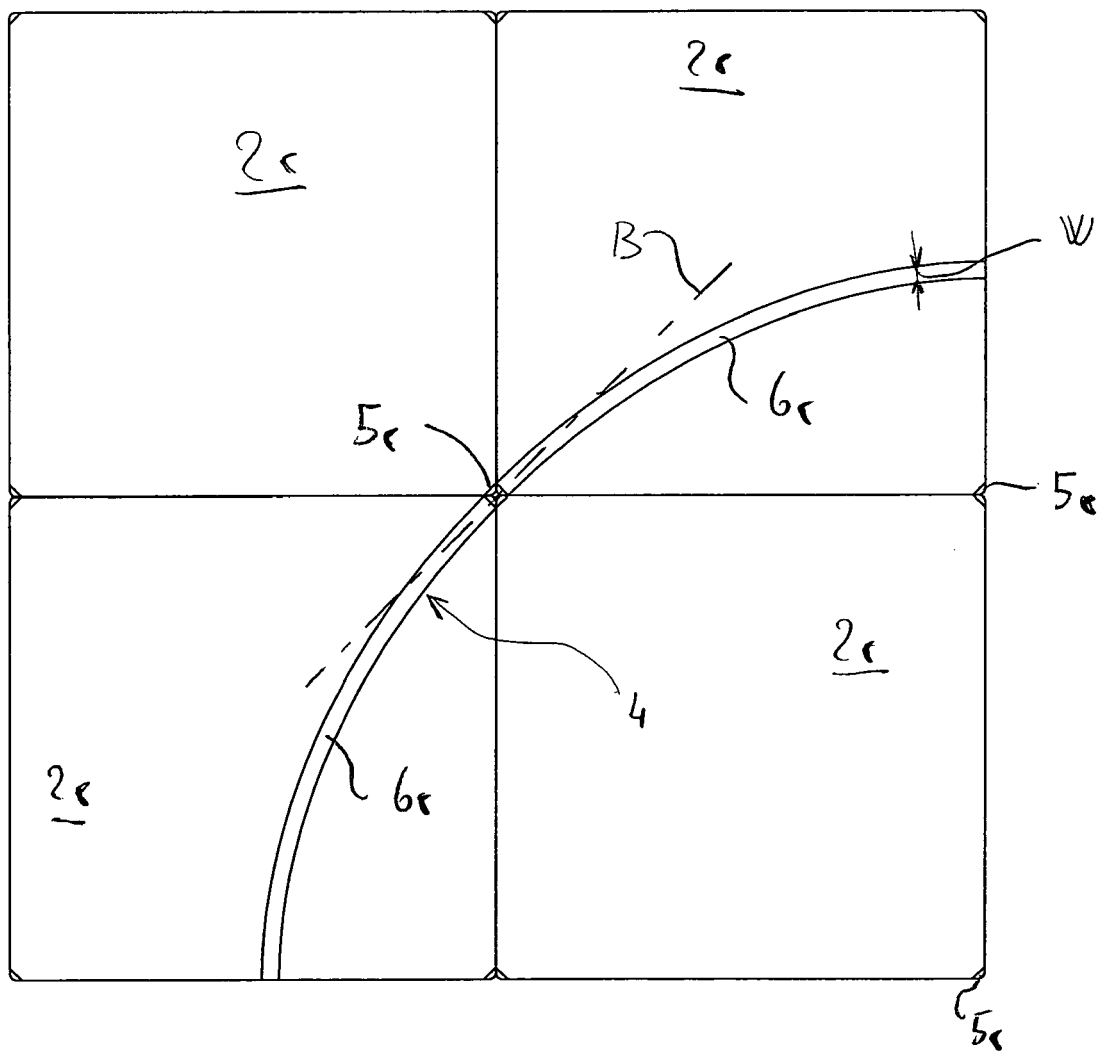
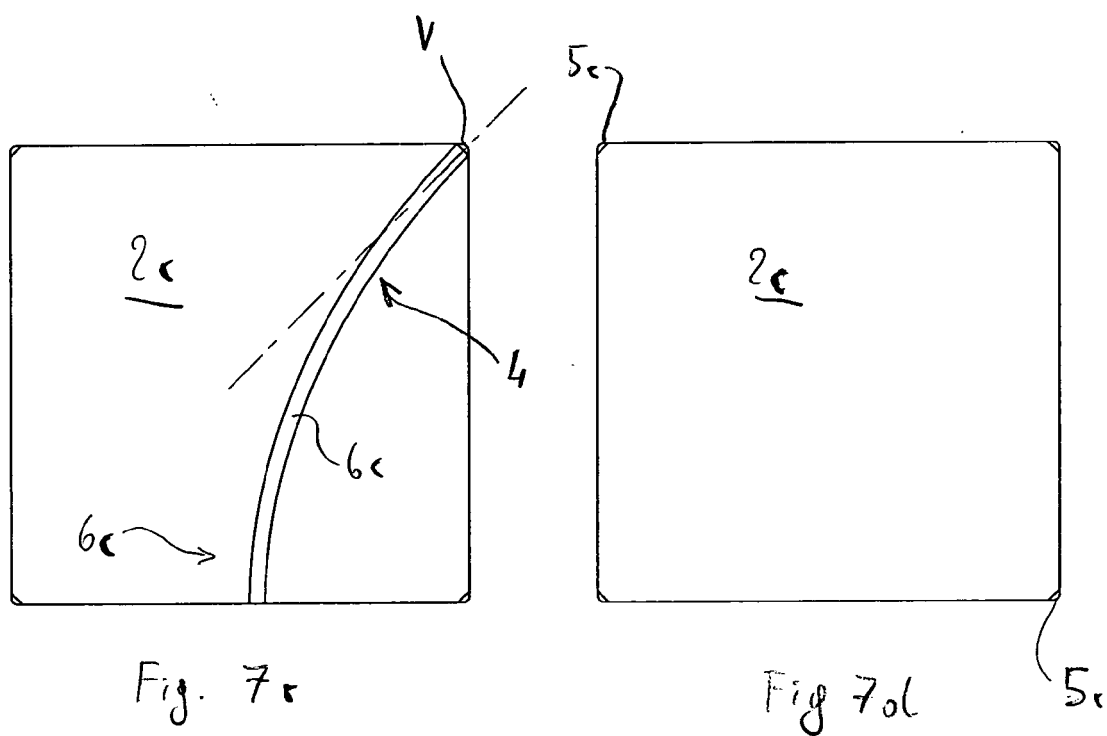
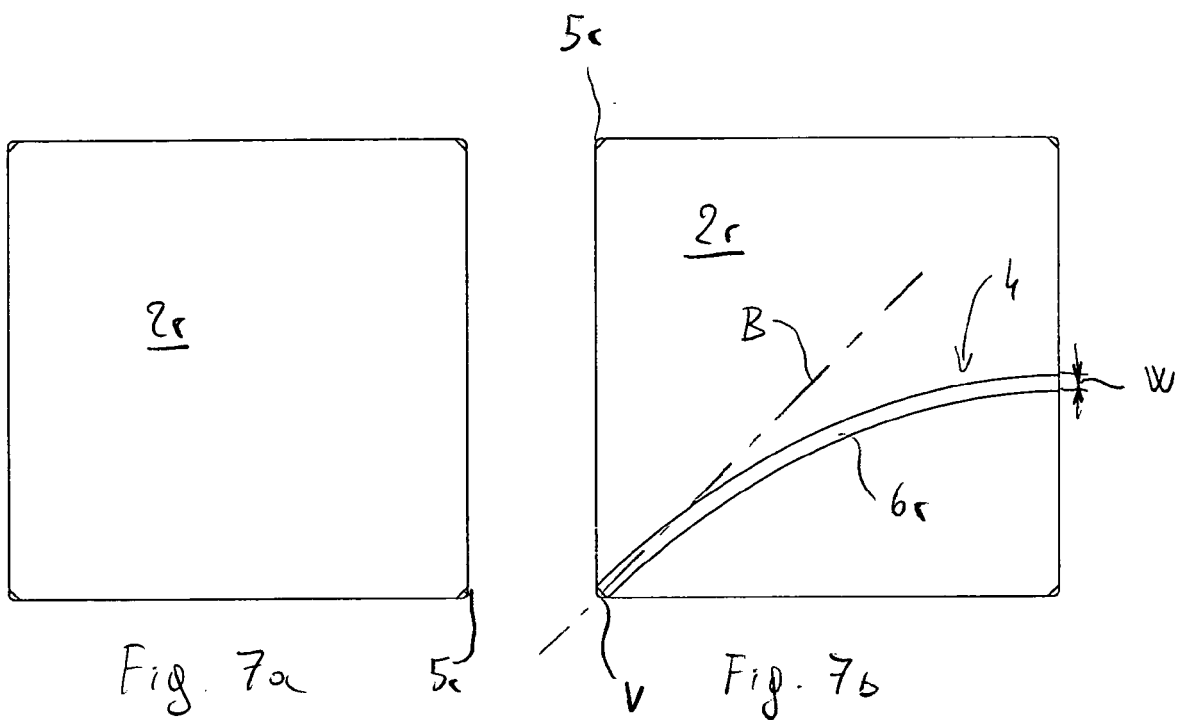
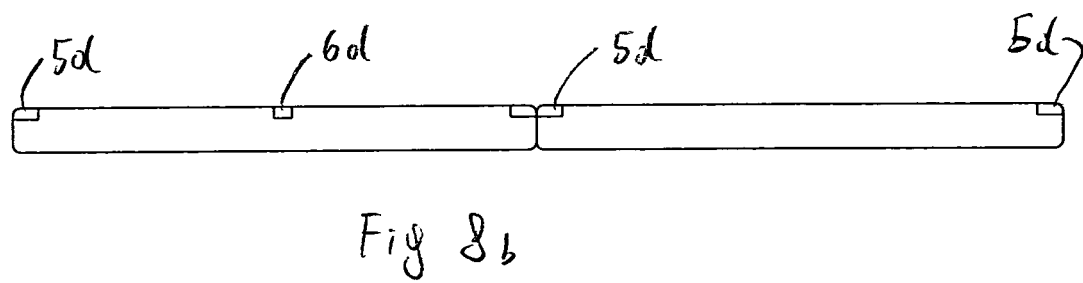
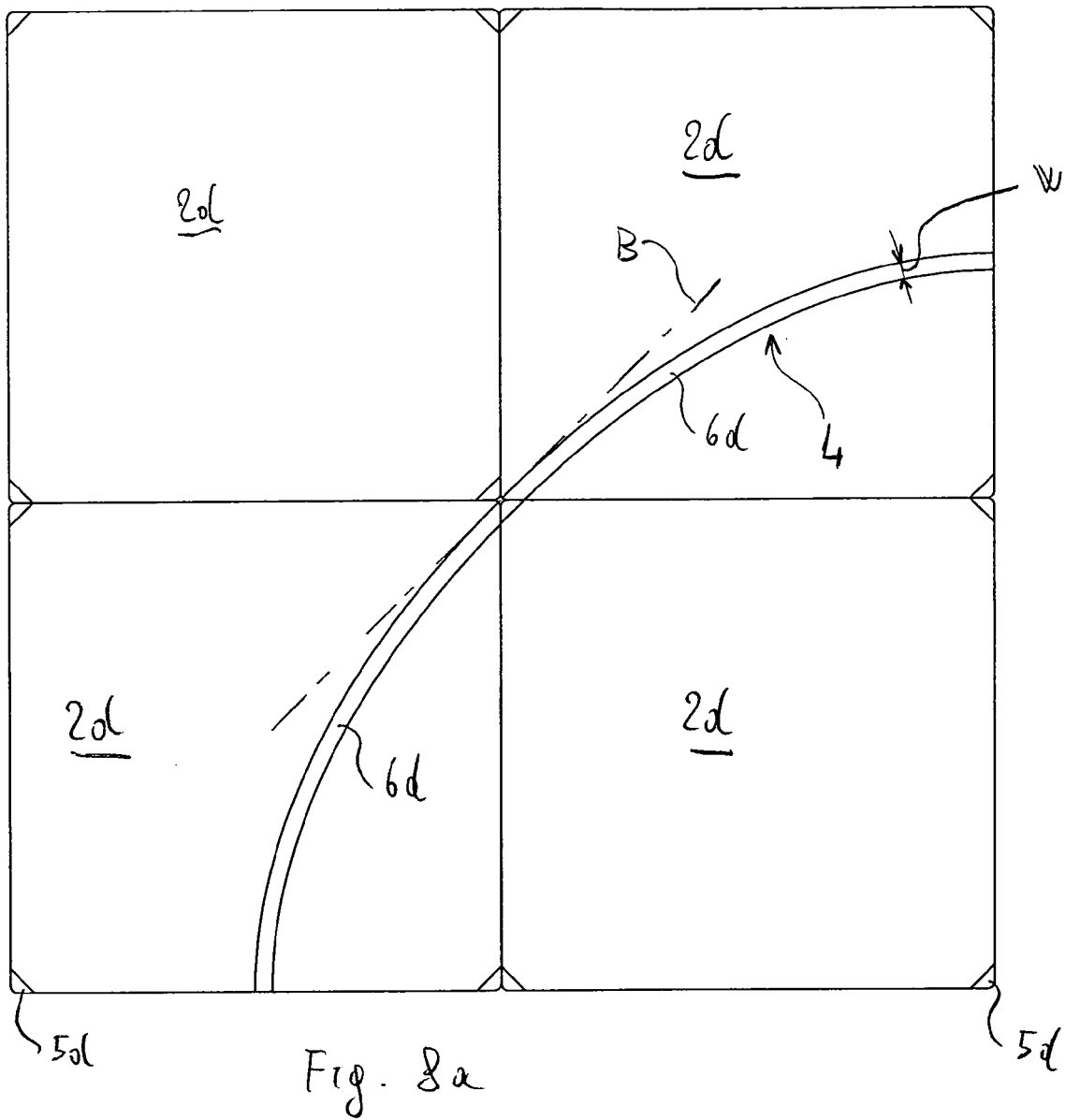


Fig. 6





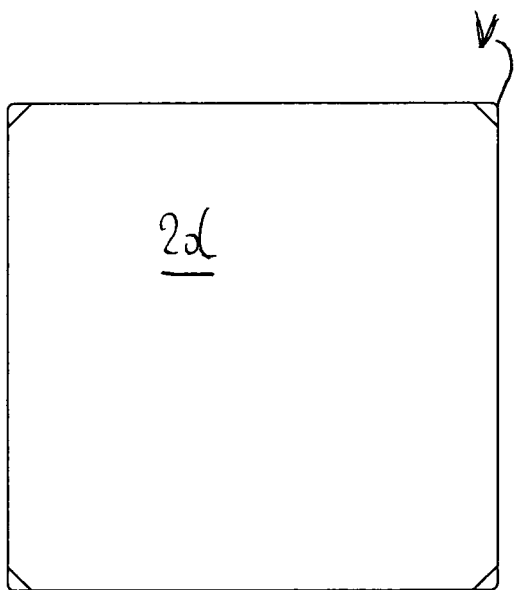


Fig. 3a

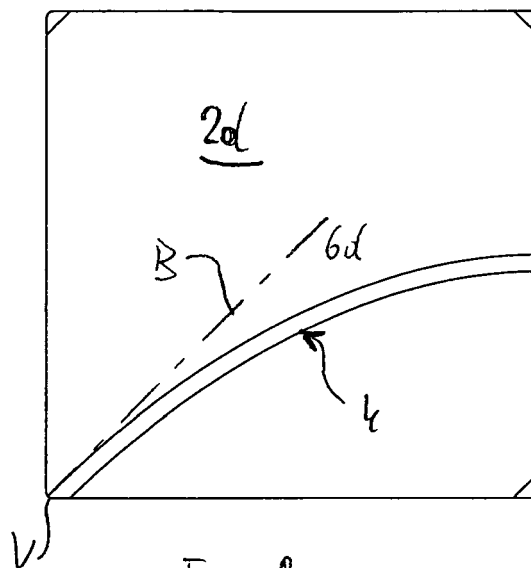


Fig. 3b

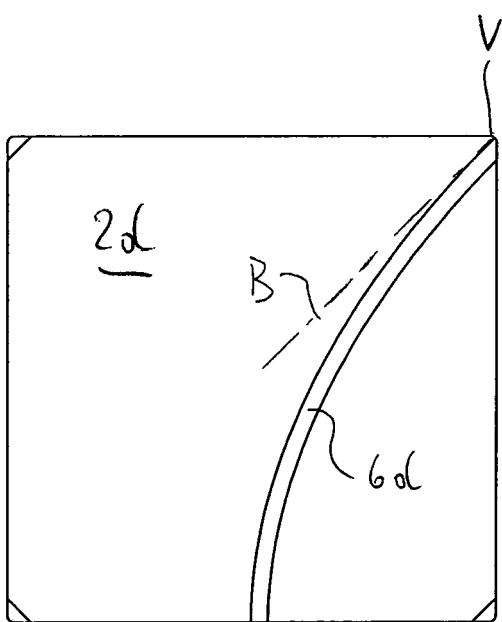


Fig. 3c

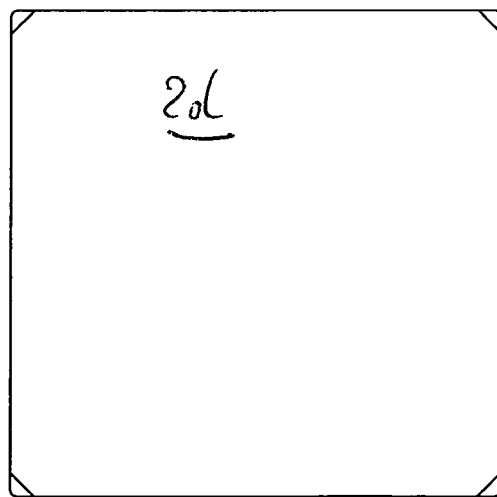


Fig. 3d



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 42 5380

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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Place of search		Date of completion of the search	Examiner
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EP 06 42 5380

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