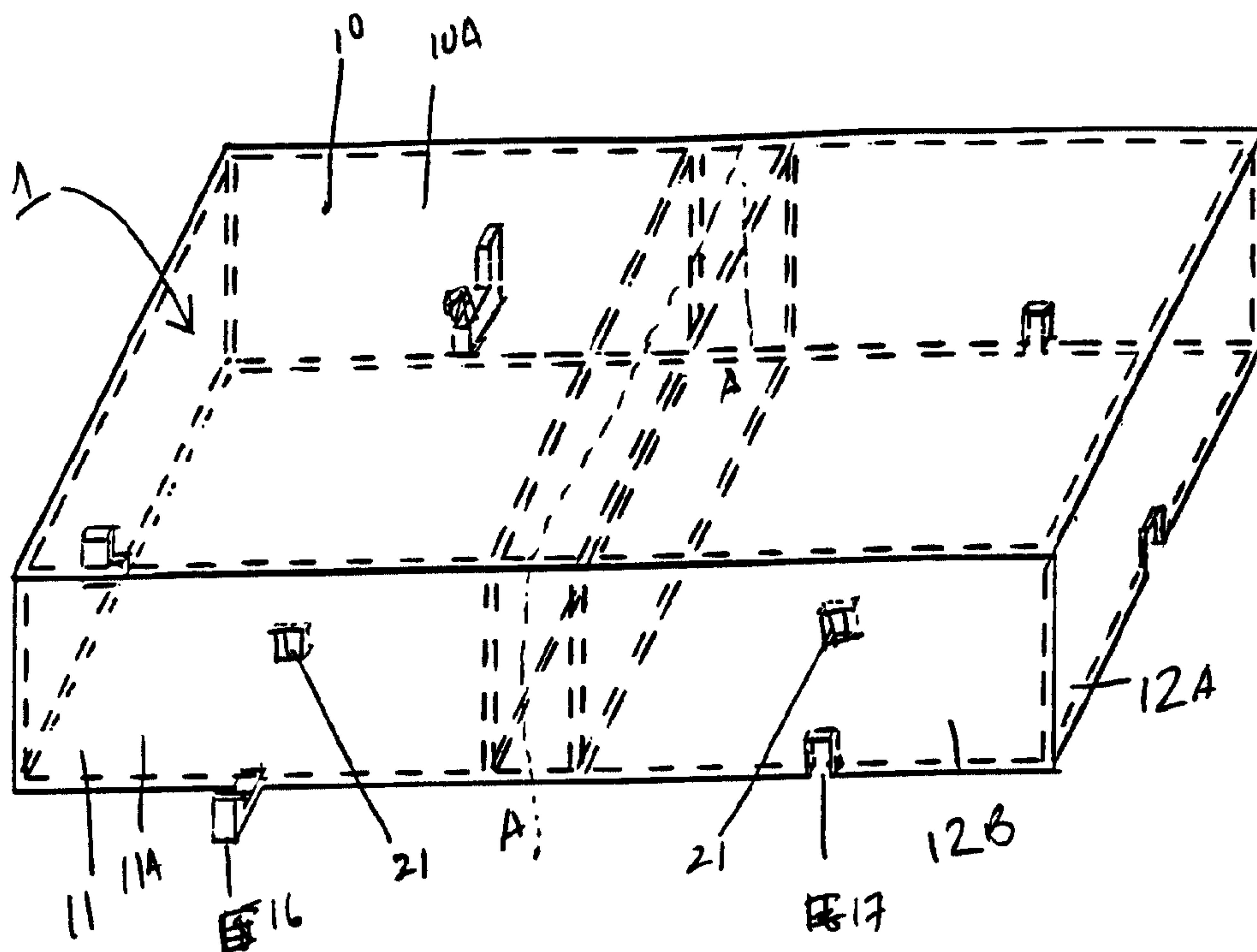




(22) Date de dépôt/Filing Date: 2001/06/28  
(41) Mise à la disp. pub./Open to Public Insp.: 2002/12/28

(51) Cl.Int.<sup>7</sup>/Int.Cl.<sup>7</sup> E01C 5/20  
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(54) Title: INTERCONNECTING PAVING BLOCKS



(57) Abrégé/Abstract:

A hollow paving block, as well as interconnected arrays of such blocks, formed from plastic material, having two internal cavities and having interconnecting means facilitating the interconnecting of like blocks as disclosed. The novel paving block provides a lightweight, easily severable and interconnectable alternative to traditional paving blocks. The novel paving block includes a rectangular top section, four sidewalls depending downwardly from the rectangular top section, and reinforcing means extending centrally between two opposed sidewalls to thereby define two equally dimensioned interior cavities. The interconnecting means in each block include projection means extending outwardly from each sidewall of one cavity and projection receiving means in corresponding locations in the sidewalls of the other cavity, thereby facilitating the interconnection of like blocks one to another.

Abstract

A hollow paving block, as well as interconnected arrays of such blocks, formed from plastic material, having two internal cavities and having interconnecting means facilitating the interconnecting of like blocks as disclosed. The novel paving block provides a lightweight, easily severable and interconnectable alternative to traditional paving blocks. The novel paving block includes a rectangular top section, four sidewalls depending downwardly from the rectangular top section, and reinforcing means extending centrally between two opposed sidewalls to thereby define two equally dimensioned interior cavities. The interconnecting means in each block include projection means extending outwardly from each sidewall of one cavity and projection receiving means in corresponding locations in the sidewalls of the other cavity, thereby facilitating the interconnection of like blocks one to another.

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Title of the Invention

## INTERCONNECTING PAVING BLOCKS

Field of the Invention

5 The present invention relates to a hollow paving block formed from plastic material which is capable of interconnecting with other like blocks. The invention also relates to an array made up of any number of such blocks.

Background of the Invention

10 The use of rectangular paving blocks is well known in the paving of walkways, pathways, sidewalks, swimming pool areas, and patios. Such blocks typically do not possess integral means for interconnecting like blocks together, but are simply placed adjacent to one another during their installation. While this allows for a multiplicity of  
15 arrays of blocks, the lack of integral interconnecting means allows the blocks to shift and be displaced relative to one another under loading or due to underlying soil movement.

20 One attempted solution to the problem of shifting has been to fill spaces between blocks with sand. However, an undesirable consequence of this use of sand is that it is often washed away by rain over time.

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Paving blocks of the type to which the present invention relates are typically formed from stone, brick or concrete. Such blocks are heavy and therefore pose transportation difficulties for manufacturers and the ultimate consumer. Another disadvantage of the weight of such blocks is increased costs of transportation. Being made from stone, brick or concrete also necessitates that such blocks be cut with expensive, relatively dangerous and purpose-built tools. Another undesirable consequence of stone, brick or concrete construction is chipping of the block during transport and installation.

One attempt to address the problems caused by the weight of such blocks has been to produce thinner stone, brick or concrete blocks. This approach, however, results in a more fragile paving block. Moreover, this solution does not address the problems of chipping and the need for special cutting tools.

Paving blocks formed from plastic material are known, for example as disclosed in my Canadian Patents No.s 2173170 and 2120553, issued on July 22, 1997 and August 19, 1997 respectively, and are generally used for light load applications. While such plastic paving blocks may solve those problems related to the heavy weight, chipping tendencies and cutting tool requirements of stone, brick or

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concrete blocks, a characteristic disadvantage of such plastic blocks is that, being relatively light, they are more prone to shifting and displacement than stone, brick or concrete blocks. Such shifting and displacement is especially likely when such plastic blocks are placed in arrays composed of other such plastic blocks. The existing currently known plastic blocks do not provide for a means of interconnecting like blocks, much less such a means which allows for a multiplicity of possible arrays of interconnected like blocks with uniform spacing between blocks. Further, the currently known plastic blocks are not adapted to being cut in half to provide half blocks when half blocks as may be desired in installing arrays of blocks. Moreover, another problem sometimes encountered with hollow plastic blocks is their tendency to float when the surrounding soil is flooded and water cannot enter the block's inner cavity or cavities.

I have retained all of the benefits of a hollow plastic paving block and additionally devised a block that has interconnecting means and spacing means which facilitate installation of arrays of such blocks with decreased shifting and displacement tendencies and uniform spacing between like blocks. My novel plastic block also provides means to allow for the passage there through of ground water

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as well as means facilitating the cutting in half of such blocks to produce useful half blocks.

#### Summary of the Invention

5 The paving block of my invention is of the known type of hollow paving block formed from plastic material. In accordance with this invention, my hollow plastic paving block comprises: a rectangular top section having an exterior face and an interior face; four sidewalls integral with and depending downwardly from the rectangular top section, each sidewall having an exterior face, an interior face and a lower edge. My novel block is further characterized by reinforcing means extending centrally between two opposed sidewalls to thereby define equally dimensioned first and second interior cavities, as well as interconnection means comprising projection means and projection receiving means for interconnecting a block to other blocks of like construction. The projection means of my block comprise at least one projection member extending outwardly from the exterior face of each sidewall in the first cavity. The projection receiving means comprise at least one projection member receiving opening in corresponding locations to said projection members in each sidewall of the second cavity.

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In accordance with another aspect of my invention, said reinforcing means comprises two spaced apart and parallel reinforcing ribs. This provides the block with the ability to be cut in half transversely across its longitudinal extent such that the first and second cavities are severed one from the other between said parallel reinforcing ribs. Cutting the block produces two half blocks which can be used, if desired, in the installation of a multiplicity of arrays of my novel block. Preferably, these reinforcing means are aligned perpendicular to the longitudinal extent of the hollow paving block.

Additionally, while the projection means can be a simple, straight member such as a rod, the projection means preferably extends outwardly and upwardly from the lower edge of said sidewalls and the projection member receiving opening comprises a notch in the lower edge of said sidewalls. This preferred form ensures that the blocks remain mechanically locked together since the upward extent of the projection member will, after passing through the projection receiving means, be held in place by the portion of the sidewall directly above the projection receiving means. Further, having the projection receiving means manifested in the form of a notch in the lower edge of the

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sidewall facilitates simpler and cheaper construction of such blocks.

5 In a preferred form of my invention, a spacing means extends outwardly from the exterior face of each sidewall in one cavity to maintain even spacing between adjacent interconnected blocks by a predetermined distance. In a further preferred form of my invention, the spacing means comprises a shoulder located adjacent said external sidewall and on the projection means. Such an arrangement simplifies  
10 the construction and lowers the cost of my novel block.

A further preferred form of the present invention utilizes apertures in at least some of the sidewalls to permit the passage of water there through. It will be recognized that a projection receiving means, if manifested  
15 in such a way as to create an aperture in a sidewall, can perform the function of allowing water and air to pass through a sidewall, thereby simplifying construction and lowering the cost of my novel block.

20 The plastic material in the novel block can be constructed from any suitable material such as one or more of polypropylene, PVC, nylon, polycarbonate, polyurethane or recycled plastic, and can be constructed using well known forming or moulding techniques. The block can be produced in a variety of colours and textures to address aesthetic

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concerns. Further, the block is not easily chipped and can be easily cut using ordinary tools commonly owned by the average person, such as a typical wood saw.

5 It will also be recognized that the novel paving block of the present invention can be arranged in an array of interconnected like blocks wherein the opposed portions of the exterior sidewall faces of adjacent blocks are interconnected by at least one of said projection means on one of the adjacent blocks and a projection receiving means 10 on the other said adjacent block.

The blocks comprising such an array may, preferably, incorporate: reinforcing means comprised of two spaced apart and parallel reinforcing ribs; first and second cavities which are severable one from the other between said parallel 15 reinforcing ribs; reinforcing means aligned perpendicular to the longitudinal sidewalls of the hollow paving block; projection members extending outwardly and upwardly from the lower edge of said sidewalls and the projection member receiving openings comprising a notch in the lower edge of 20 said sidewalls; apertures in at least some of the sidewalls to permit the passage of water there through; spacing means extending outwardly from the exterior face of at least one sidewall to maintain even spacing between adjacent interconnected blocks by a predetermined distance; spacing

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means being comprised of a shoulder located adjacent said external sidewall and on said projection means; a plastic material selected from the group consisting of at least one of the group consisting of polypropylene, PVC, nylon, polycarbonate, polyurethane or recycled plastic.

It will be noted that half blocks produced by severing a block, preferably between the two spaced apart and parallel reinforcing ribs can, if desired, be interconnectingly employed as elements of an array of blocks.

#### Brief Description of the Drawings

In the accompanying drawings:

Figure 1 is a top and side perspective view of an interconnecting paving block which illustrates the rectangular top surface, sidewalls, projection means and projection receiving means.

Figure 2 is a bottom and side perspective view of the same type of block which illustrates the interior faces of the rectangular top surface and sidewalls, the reinforcing means, sidewall lower edges, and interior cavities.

Figure 3 is cutaway section side view of a projection means which includes a spacing means located thereupon, and which is interconnected with a projection receiving means.

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Figures 4a and 4b are top plan views of several interconnecting blocks which have been interconnected in accordance with the invention and which illustrate different possible arrays of interconnected like blocks, the interconnecting relationship of projection means and projection receiving means and also the use of half blocks in such arrays.

#### Detailed Description of the Drawings

In the Figures, the hollow paving block 1 is formed from plastic using known forming or moulding techniques.

The block's rectangular top section 10 has an exterior face 10A and an interior face 10B. The block's sidewalls 11 are integral with and depend downwardly from rectangular top section 10. The sidewalls have exterior faces 11A and interior faces 11B. The sidewalls can be characterized relative to the overall structure of the block as two end sidewalls 12A and two longitudinally extending sidewalls 12B.

While the reinforcing means may take the form of a single rib extending centrally between two opposed sidewalls, the reinforcing means as illustrated in Figures 1 and 2 comprise two spaced apart and parallel reinforcing ribs 13A and 13B. The reinforcing means define equally

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dimensioned first and second cavities 14A and 14B,  
respectively.

It will be seen that block 1 can be severed into two  
half blocks 15 by severing the block along a centrally  
located line perpendicular to the rectangular top section 10  
and two sidewalls, shown in the Figures 1 and 2 as dotted  
line A. Preferably, this cut is made along a plane parallel  
to and between reinforcing ribs 13A and 13B extending  
between longitudinally extending sidewalls 12B, severing  
longitudinally extending sidewalls 12B and the top  
rectangular section 10 along dotted line A as shown.

As illustrated, the interconnecting means comprise  
projection means 16 and projection receiving means 17.  
Projection means 16 are located at each exterior face of a  
sidewall which sidewall corresponds to one of the two  
cavities, and shown in Figures 1 and 2 as the first cavity  
14A. The projection receiving means 17 comprise projection  
means receiving openings in corresponding locations to the  
projection means 16, as illustrated, located at the other of  
the two cavities, shown in Figures 1 and 2 as the second  
cavity 14B. Projection means and projection receiving means  
are preferably located at the lower edge of sidewalls 13.  
Projection means 16 preferably extends upwardly in addition  
to extending outwardly from each exterior sidewall face 11A.

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This is clearly seen in Figure 3 where it will be noted that in addition to having a first limb 19 that projects outwardly from a sidewall exterior face, the projection means also has a second limb 20 that projects upward, and facilitates not just the interconnection with like blocks, but also the interlocking of like blocks.

The projection receiving means 17, as illustrated, comprises a notch in a lower sidewall edge at locations allowing for the interconnecting and interlocking with corresponding projection means on like blocks, facilitating the simpler and cheaper construction of the block.

Apertures 21 are located in at least one of the sidewalls 11. These apertures allow water and air to freely pass in to and out of a block and thus minimize the tendency of a block or of some or all of the blocks in an array to float when the surrounding soil becomes flooded.

To facilitate the uniform spacing and alignment of blocks installed in an array, spacing means 22 extend outwardly from the exterior face at least one of the sidewalls 11. As illustrated in Figure 3, the spacing means comprise a shoulder located on a projection means 16, to simplify construction of the block.

An unlimited number of different arrays of interconnected blocks can be formed using the novel

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interconnecting block of this invention. Two such arrays are illustrated in top plan views in Figures 4A and 4B as examples. For illustrative purposes, the location of projection means are indicated by solid arcs 23 and the location of projection receiving means are shown as larger broken line arcs 24. The interconnecting relationship of like blocks in an array is thus illustrated. The use of half blocks 15, formed by severing the novel block of this invention along dotted line A, is also apparent in both Figures 4a and 4b.

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-13-

I claim:

1. A hollow paving block formed from plastic material and comprising:

5 (a) a rectangular top section having an exterior face and an interior face;

(b) four sidewalls integral with and depending downwardly from said rectangular top section, each sidewall having an exterior face, an interior face and a lower edge;

10 (c) reinforcing means extending centrally between two opposed sidewalls to thereby define equally dimensioned first and second interior cavities;

(d) interconnection means comprising projection means and projection receiving means for interconnecting said block to blocks of like construction;

15 (e) said projection means comprising at least one projection member extending outwardly from the exterior face of each sidewall in said first cavity; and

20 (f) said projection receiving means comprising at least one projection member receiving opening in corresponding locations to said projection members in each sidewall of said second cavity.

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2. A hollow paving block as claimed in Claim 1 wherein said reinforcing means comprises two spaced apart and parallel reinforcing ribs.

3. A hollow paving block as claimed in Claim 2 wherein said first and second cavities can be severed one from the other between said parallel reinforcing ribs.

4. A hollow paving block as claimed in Claim 1, 2 or 3 wherein said reinforcing means are aligned perpendicular to the longitudinal extent of the hollow paving block.

5. A hollow paving block as claimed in Claim 1, 2, 3 or 4 wherein each said projection member extends outwardly and upwardly from the lower edge of said sidewalls and the projection member receiving opening comprises a notch in the lower edge of said sidewalls.

6. A hollow paving block as claimed in Claim 1, 2, 3, 4 or 5 including apertures in at least some of the sidewalls to permit the passage of water there through.

7. A hollow paving block as claimed in Claim 1, 2, 3, 4, 5 or 6 including a spacing means extending outwardly from the

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exterior face of at least one sidewall to maintain even spacing between adjacent interconnected blocks by a predetermined distance.

5 8. A hollow paving block as claimed in Claim 7 wherein said spacing means comprises a shoulder adjacent said external sidewall and located on said projection means.

10 9. A hollow paving block as claimed in Claim 1, 2, 3, 4, 5, 6, 7 or 8 wherein said plastic material is selected from the group consisting of at least one of the group consisting of polypropylene, PVC, nylon, polycarbonate, polyurethane or recycled plastic.

10. An array of interconnected blocks, each block comprising a hollow paving block formed from plastic material and having:

15 (a) a rectangular top section having an exterior face and an interior face;

(b) four sidewalls integral with and depending downwardly from said rectangular top section, each sidewall having an exterior face, an interior face and a lower edge;

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(c) reinforcing means extending centrally between two opposed sidewalls to thereby define equally dimensioned first and second interior cavities; and

(d) interconnection means comprising projection means and projection receiving means for interconnecting said block to blocks of like construction;

(e) said projection means comprising at least one projection member extending outwardly from the exterior face of each sidewall in said first cavity; and

(f) said projection receiving means comprising at least one projection member receiving opening in corresponding locations to said projection members in each sidewall of said second cavity;

and wherein the opposed portions of the exterior sidewall faces of adjacent blocks are interconnected by at least one of said projection means on one of the adjacent blocks and a projection receiving means on the other said adjacent block.

11. The array of interconnected blocks claimed in Claim 10, wherein said reinforcing means comprises two spaced apart and parallel reinforcing ribs.

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12. The array of interconnected blocks claimed in Claim 11, wherein said first and second cavities can be severed one from the other between said parallel reinforcing ribs.

5 13. The array of interconnected blocks claimed in Claim 10, 11 or 12 wherein said reinforcing means are aligned perpendicular to the longitudinal extent of the hollow paving block.

10 14. The array of interconnected blocks claimed in Claim 10, 11, 12 or 13, wherein each said projection member extends outwardly and upwardly from the lower edge of said sidewalls and the projection member receiving opening comprises notch in the lower edge of said sidewalls.

15 15. The array of interconnected blocks claimed in Claim 10, 11, 12, 13 or 14 including apertures in at least some of the sidewalls to permit the passage of water there through.

20 16. The array of interconnected blocks as claimed in Claim 10, 11, 12, 13, 14 or 15 including a spacing means extending outwardly from the exterior face of at least one sidewall to maintain even spacing between adjacent interconnected blocks by a predetermined distance.

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17. The array of interconnected blocks as claimed in Claim 16 wherein said spacing means comprises a shoulder located adjacent said external sidewall and on said projection means.

5 18. The array of interconnected blocks claimed in Claim 10, 11, 12, 13, 14, 15, 16 or 17 wherein said plastic material is selected from the group consisting of at least one of the group consisting of polypropylene, PVC, nylon, polycarbonate, polyurethane or recycled plastic.

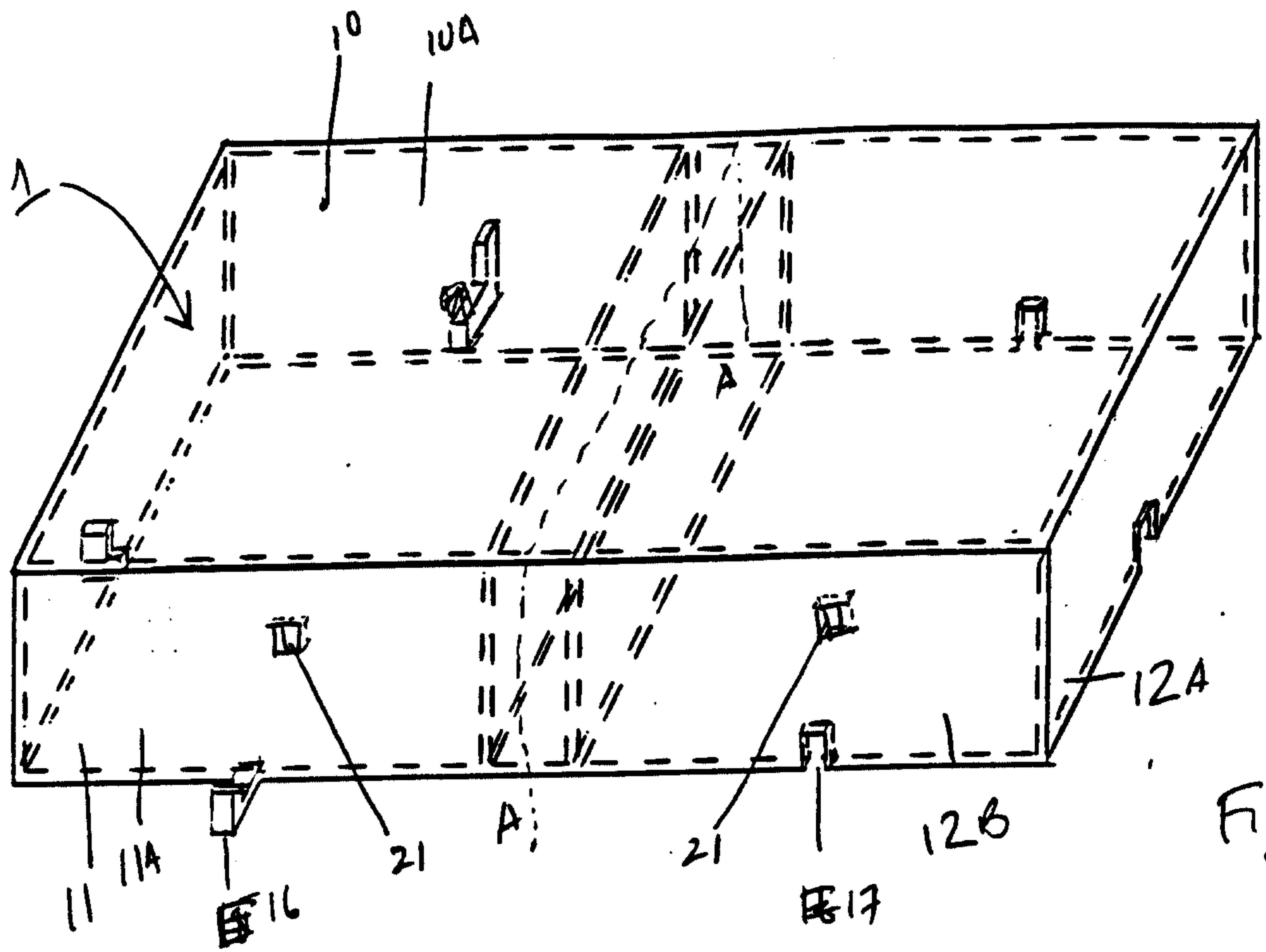


Fig 1

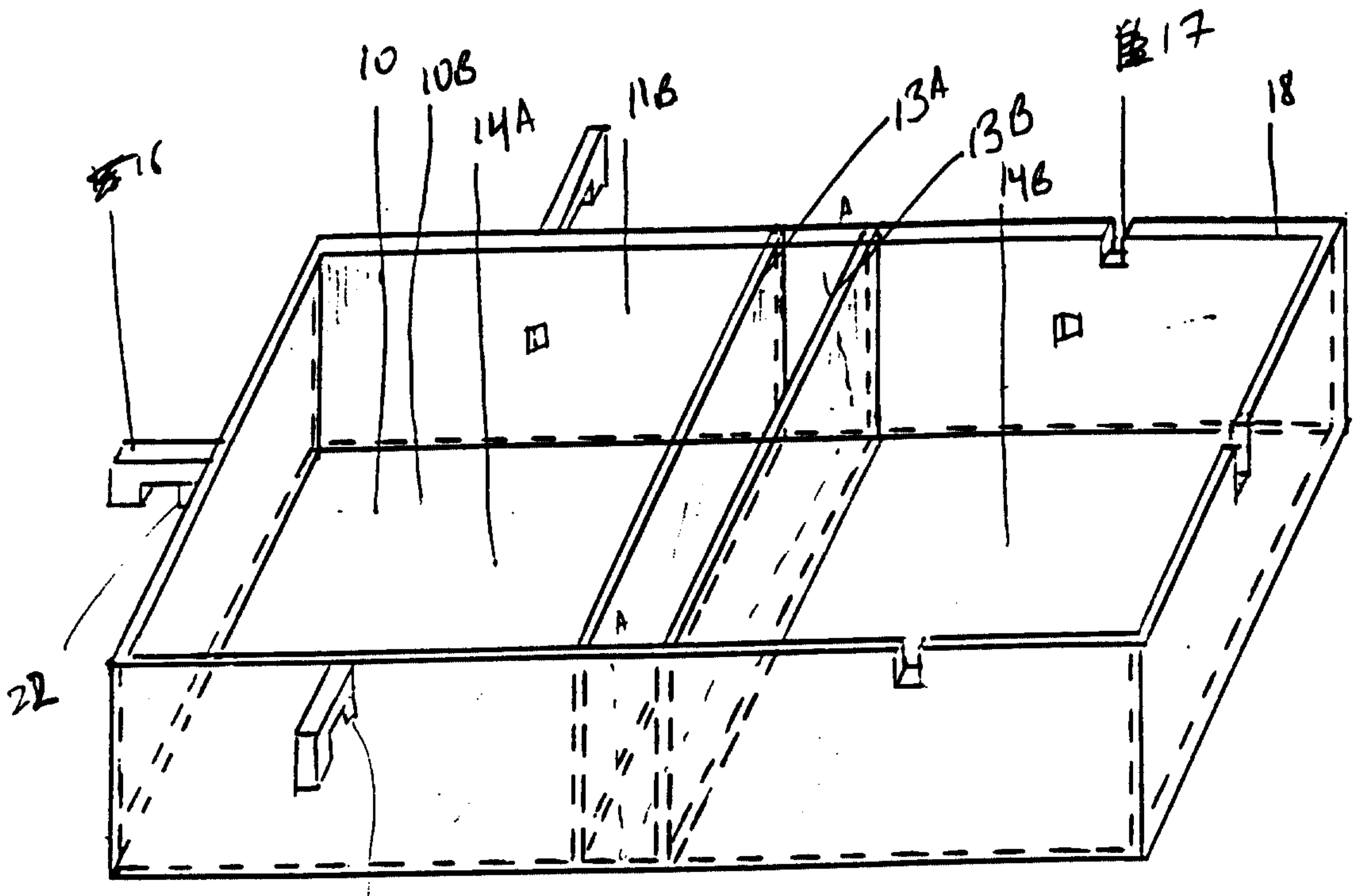


Fig 2

~~22~~ 22

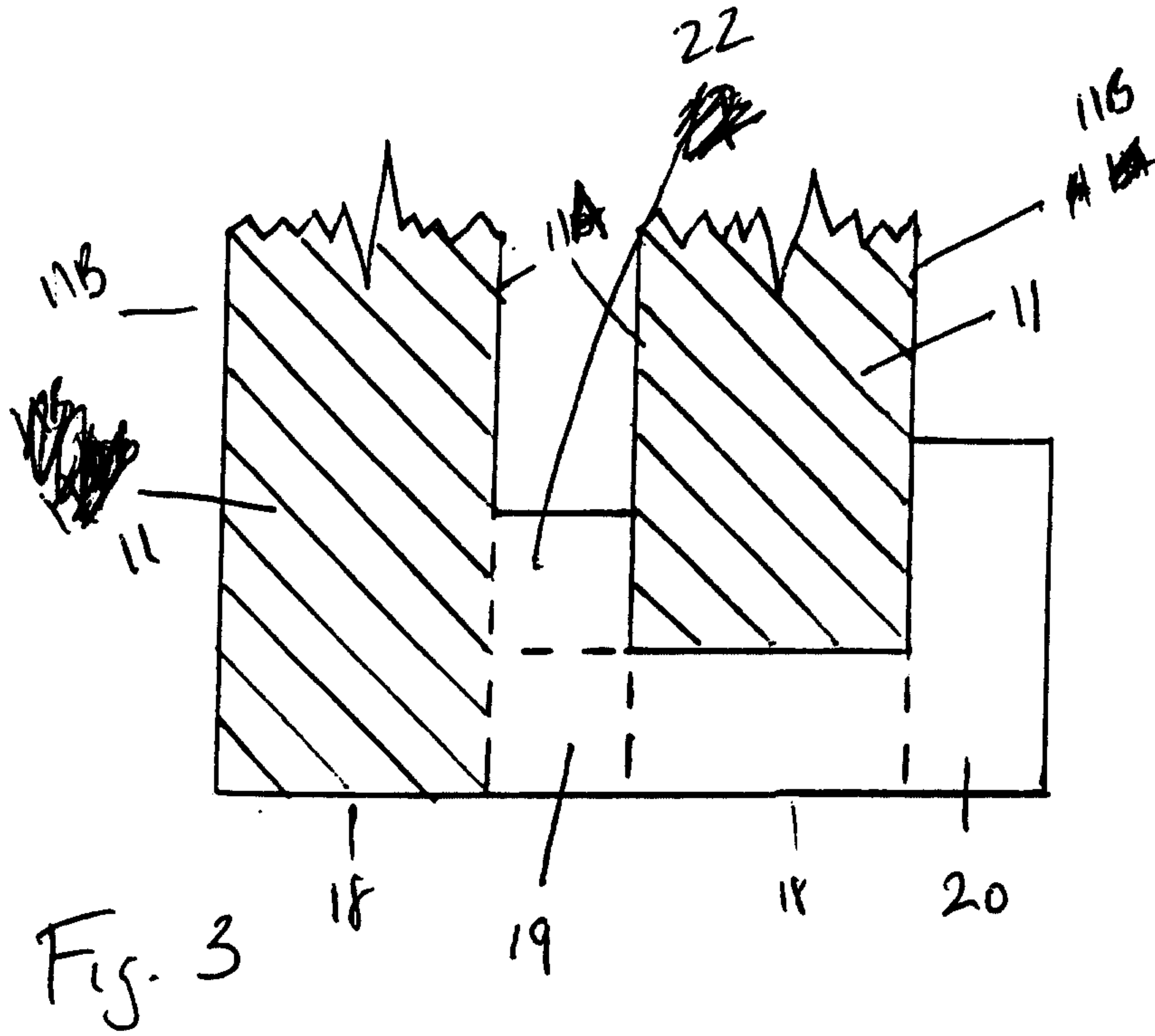


Fig. 3

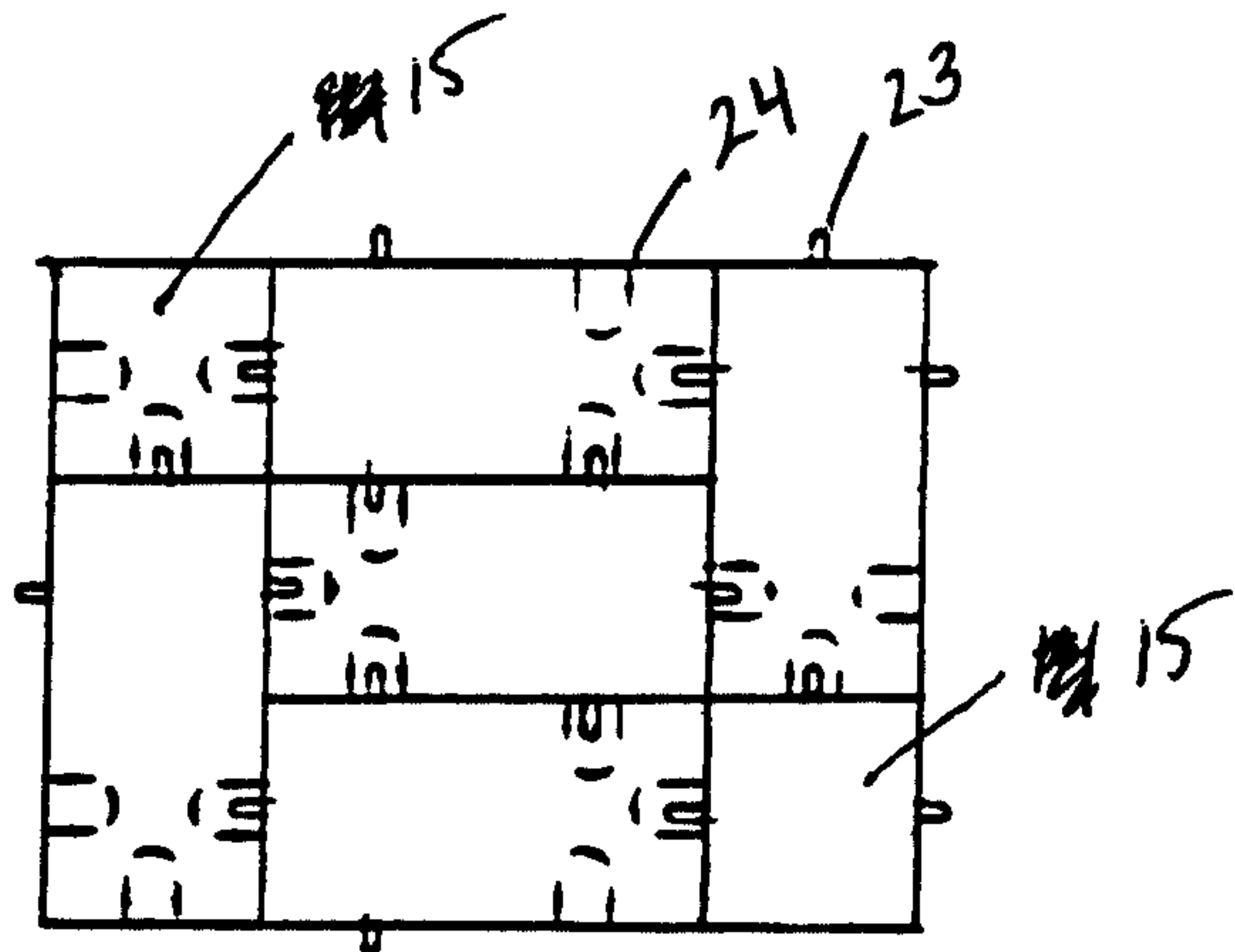


Fig. 4a

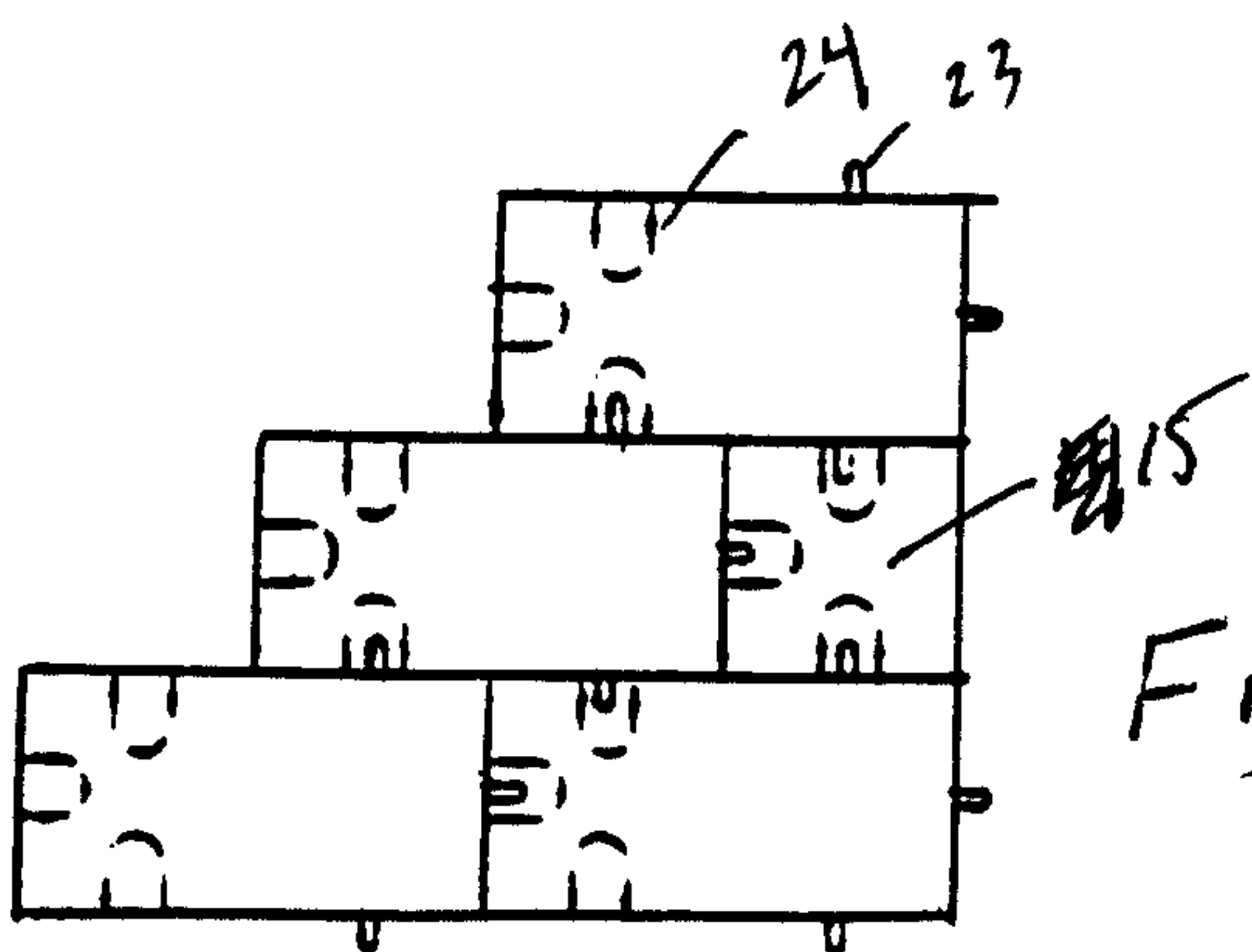


Fig 4b

