



(22) Date de dépôt/Filing Date: 2006/03/29

(41) Mise à la disp. pub./Open to Public Insp.: 2007/06/27

(30) Priorité/Priority: 2005/12/27 (US60/754,113)

(51) Cl.Int./Int.Cl. *E04F 15/00* (2006.01),
E04B 5/00 (2006.01)

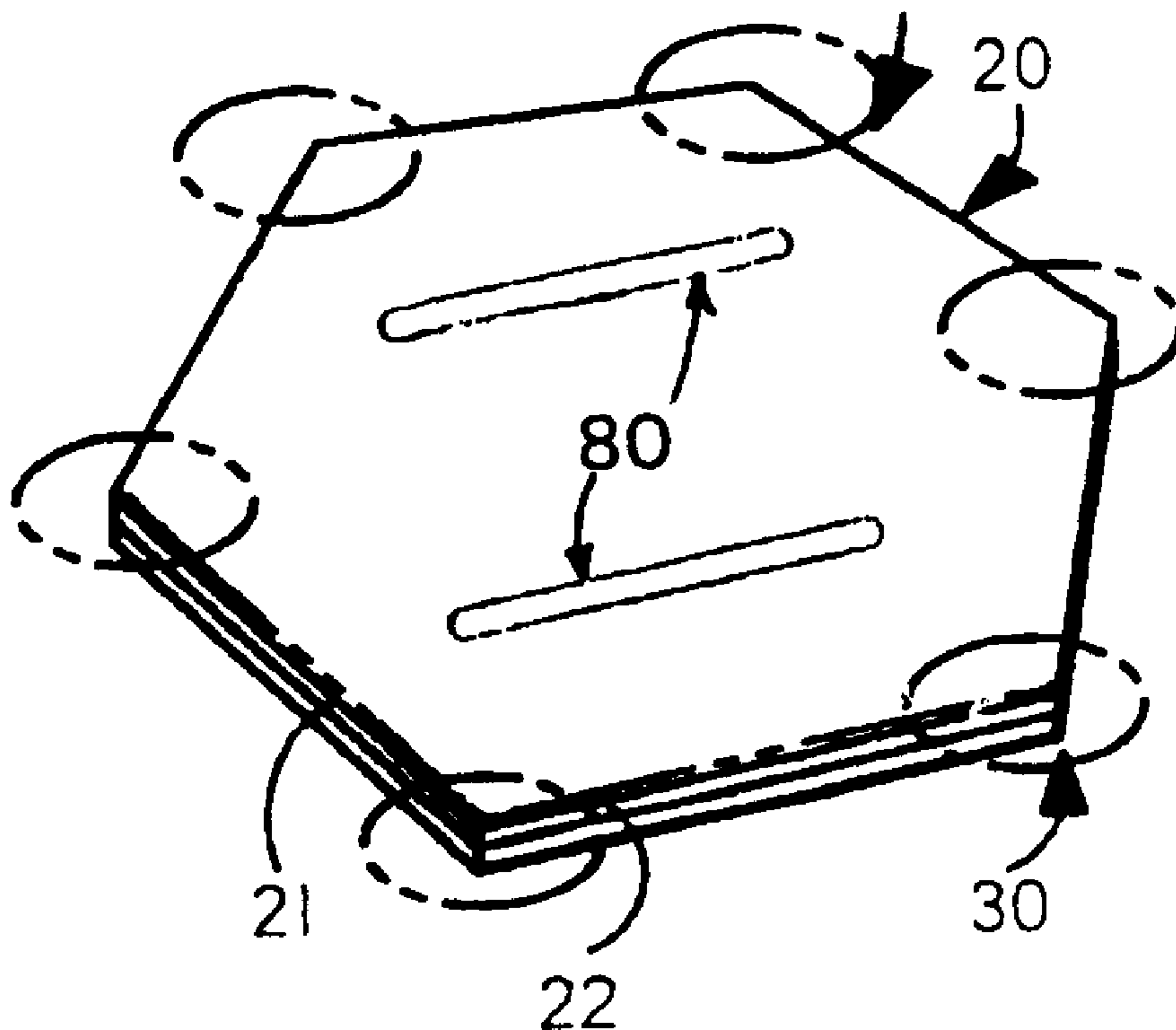
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(54) Titre : TABLIER EXTERIEUR

(54) Title: OUTDOOR DECKING MATERIAL



(57) Abrégé/Abstract:

An outdoor deck surface unit comprising a substrate support member and a plurality of separate boards, with the plurality of boards being unitized by being secured to the substrate in a desired pattern. The deck surface unit is sufficiently large that an entire deck surface is created relatively quickly, but being sufficiently small that a deck surface unit is capable of being readily lifted, moved, placed and handled by a single individual. The substrate support member comprises plastic coated polyester and is stapled to the separate boards.

ABSTRACT

An outdoor deck surface unit comprising a substrate support member and a plurality of separate boards, with the plurality of boards being unitized by being secured to the substrate in a desired pattern. The deck surface unit is sufficiently large that an entire deck surface is created relatively quickly, but being sufficiently small that a deck surface unit is capable of being readily lifted, moved, placed and handled by a single individual. The substrate support member comprises plastic coated polyester and is stapled to the separate boards.

OUTDOOR DECKING MATERIAL BACKGROUND OF THE INVENTION

[0001] The present invention relates to outdoor decks. It has become popular to build attractive, outdoor wooden decks. Often they are attached to a home, but sometimes they are built to stand alone. They are typically made from lumber which has been treated to resist weathering.

[0002] While such decks are attractive, they are expensive to build. One typically must build a supporting framework, and then nail top boards to the framework. Even a relatively small deck may cost \$1,500-\$2,500 to add to a home, if the work is done professionally. If the work is done as a "do-it-yourself" project, the lumber is still quite expensive, and the process of building the deck is very time-consuming.

SUMMARY OF THE PRESENT INVENTION

[0003] The present invention comprises relatively small outdoor deck surface units, which can be easily handled by a "do-it-yourselfer," and which can be easily placed on a cement slab, some other support or even directly on the ground, to create an attractive outdoor deck, quickly and easily. Each unit comprises a plurality of boards arranged in a desired pattern and secured to an underlying substrate. Each unit is sufficiently large that an entire deck surface can be created relatively quickly, but is sufficiently small that each unit can readily be handled by a "do-it-yourself" deck builder without undue hardship.

[0004] As a result of this invention, an unsightly concrete slab, a prepared layer of sand or dirt or even an old unsightly wooden deck can instantly be converted into an attractive deck by one simply placing a plurality of individual decking surface units in an adjacent fashion onto the unsightly surface.

[0005] These and other objects, advantages and features of the invention will be more fully understood and appreciated by reference to the written specification and appended drawings.

BRIEF DESCRIPTION OF DRAWINGS

[0006] FIG. 1 comprises a perspective view of a deck surface unit made in accordance with the present invention.

[0007] FIG. 2 is a perspective view of the reverse side of the surface unit from the side shown in FIG. 1 with a single joining unit also being shown at one corner of the deck surface unit.

- [0008] FIG. 3 is a side elevational view of the deck surface unit.
- [0009] FIG. 4 is a perspective view of an assembled deck, bounded by an edging trim strip.
- [0010] FIG. 5 is a perspective view of an alternative embodiment deck with the individual surface units arranged in a different manner.
- [0011] FIG. 6 is a top perspective view of an alternative embodiment individual decking unit of a different pattern.
- [0012] FIG. 7 is a plan view of yet another alternative embodiment deck surface unit.
- [0013] FIG. 8 is a top plan view of an alternative embodiment deck surface unit, with fragmentary portions of several adjacent units also being shown in plan view, and with substrate members shown in phantom.
- [0014] FIG. 9 is a perspective view of an alternative embodiment joining member.
- [0015] FIG. 10 is a bottom plan view of an alternative embodiment deck surface unit, utilizing a different type of substrate member.
- [0016] FIG. 11 is a cross-sectional, fragmentary view of the substrate member, taken along plane XI--XI of FIG. 10.
- [0017] FIG. 12 is a rear view of a further alternative embodiment of the deck surface unit.
- [0018] FIG. 13 is a close up view of the substrate used with the further alternative embodiment of the deck surface unit.

DETAILED DESCRIPTION OF PREFERRED EMBODIMENTS

- [0019] For purposes of description herein, the terms “upper,” “lower,” “right,” “left,” “rear,” “front,” “vertical,” “horizontal,” and derivatives thereof shall relate to the invention as orientated in FIG. 1. However, it is to be understood that the invention may assume various alternative orientations, except where expressly specified to the contrary. It is also to be understood that the specific devices and processes illustrated in the attached drawings, and described in the following specification are simply exemplary embodiments of the inventive concepts defined in the appended claims. Hence, specific dimensions and other physical characteristics relating to the embodiments disclosed herein are not to be considered as limiting, unless the claims expressly state otherwise.
- [0020] In one embodiment, a plurality of individual weather-treated boards 11-14, arranged in a predetermined pattern, are secured to an underlying substrate member 20 to form a unit 1. By arranging units 1 in a side-by-side fashion, one can create an entire deck surface as shown in FIG. 4. Preferably, adjacent deck units 1 are kept from moving apart either by

tacking a trim strip 40 around the perimeter of the arranged units 1 (FIG. 4), or by underlying each of the adjacent units along adjacent side edges or corners with a small joining pad or unit 30 (FIGS. 2 and 3), or by underlying several or all of the units with one or more pieces of double-faced adhesive 80 (FIG. 2) or some combination of the foregoing. Another option is to underlie at least the perimeter units with double-faced tape 80. Units, similarly made, of different configurations, e.g. units 2 and 3 in FIG. 4, are used to fill in small spaces left by the arrangement of adjacent decking units.

[0021] Each of the boards 11-14 is preferably weather treated lumber to be resistant to outdoor conditions. The boards can be treated during manufacture, but units 1 can also be sold without treatment, leaving treatment to the purchaser. It is preferably of sufficient thickness to resist warpage. Each of the individual boards 11-14 are preferably of sufficiently small area that the effects of any warpage on individual boards are less likely to be noticed. Most preferably, the individual boards, other than center piece 11, are cut from 5/4 inch by 4 inch boards, which, in other words, have a thickness of about 1 inch and a width of about 3 1/2 inches. In the pattern shown in deck surface unit 1, center piece 11 has to be cut from a somewhat wider board, but also of 5/4 inch nominal thickness. If 1 inch thick boards are used, the final thickness of the boards is about 3/4 of an inch.

[0022] In an alternative embodiment, the individual boards 11-14 (and 15 as illustrated in FIGS. 6-7) can be molded of a weather resistant polymeric material. Structural foam polyethylene or polypropylene might be used. UV stabilizers would be incorporated. ABS and glass fiber reinforced urethanes and/or polyisocyanurates might also be used. The relatively small size of the individual boards 11-15 helps to minimize heat shrink and weather warpage problems. Ceramic or regular or foam concrete might also be used to make boards 11-15.

[0023] Each deck surface unit 1 is sufficiently large that it covers a significant area, but is sufficiently small that a unit can readily be lifted, moved, placed and handled by a single individual. Preferably, each unit covers an area of at least about 2 square feet and no more than about 6 feet. More preferably, the area covered by each unit is between 3 and 5 feet. Unit 1 as shown in FIGS. 1-4 is a hexagon which is 15.5 inches on each side, and therefore covers approximately 4.36 square feet. Preferred embodiment unit 1 comprises a hexagonally-shaped center piece 11, having a trapezoidally-shaped board 12 adjacent each edge of hexagon 11. Each board 12 has a larger trapezoidally-shaped board 13 adjacent it, and each board 13 has a larger trapezoidally-shaped board 14 adjacent it.

[0024] The illustrated substrate member 20 is preferably flexible and, in one embodiment, slightly cushiony to absorb irregularities in an underlying surface. It also preferably has a floor engaging surface which affords some frictional resistance against deck surface unit slippage during use. In preferred embodiment unit 1, substrate 20 comprises a hexagonally-shaped piece of outdoor carpeting having a polymeric backing surface 21 with a nap layer 22 projecting therefrom. The polymeric backing is preferably a rubbery polymer backing. Boards 11-15 are preferably glued to the polymeric, preferably rubbery, backing surface 21, with nap 22 facing away from the boards. Any adhesive which will resist the conditions of outdoor use and adhere wood to a rubbery polymeric material may be used. It has been found that a polyethylene hot-melt is a satisfactory adhesive, though a preferred adhesive is a moisture cured polyurethane adhesive.

[0025] An alternative to using outdoor carpeting for substrate member 20 is to use "geo fabric" that includes a "fuzzy surface" on one side. While less cushiony than outdoor carpet, it is economically less expensive and easier to cut so that individual units 1 can be cut. Geo fabric is woven from a very strong, polymeric, narrow ribbon. Some geo fabric is available with a "fuzzy surface" on one side. This is the type of geo fabric that is preferred for use as substrate 20 in the present invention. The individual boards 11-14 are adhered to the smooth side of the geo fabric, such that the fuzzy surface acts as a friction surface to prevent the individual decking units 1 from sliding, or at least to minimize such slippage. A jute mat, polyester mat, polyethylene mat, polypropylene mat or other flexible weather resistant substrate, for example of the type used in quality indoor-outdoor carpet backings might be used. Materials which deteriorate relatively quickly in the elements, including some foam rubber carpet backing materials, are preferably avoided, in order to have a quality product.

[0026] The illustrated joining units 30 are simply small area circles of a soft, fairly high friction, rubbery material. Each circle is very thin, and has a relatively small area, just sufficient to engage a portion of each of two or three adjacent units 1. Double-faced tape or a bead of adhesive 80 (FIG. 2) can be used in addition to or in place of units 30. A preferred double-faced adhesive material is the tacky polyvinylbutyrate bead material used in the auto industry to seal the perimeter of windshields. This material comes in a 3/16 inch diameter bead, rolled up with a silicone release paper tape. It could be applied at the point of manufacture, but is preferably sold with units 1 for application in situ by the installer. That way the bead compresses under unit 1 in conformity with irregularities in the underlying surface.

[0027] As illustrated in FIG. 4, each deck unit 1 abuts an adjacent deck unit 1 along a side edge. This leaves two different types of gaps at the perimeter of an assembled deck surface, as shown in FIG. 4. One is of a trapezoidal configuration, which can be filled by a trapezoidally-shaped unit 2. The other is triangular, and can be filled by a triangular-shaped unit 3. As mentioned above, a trim strip 40 is then tacked to the perimeter of the assembled deck surface to help hold it all together. In addition, joining members 30 are located at each corner of the adjacent units 1. The specially shaped perimeter units 2 and 3 may also be adhered to a rather stiff, thin plastic substrate which projects from the inside edge of the perimeter unit underneath adjacent larger units. This helps prevent the perimeter units from flipping if a person steps on the outside edge, it also helps to hold the smaller perimeter units in place.

[0028] FIG. 5 shows an alternative arrangement of units 1, wherein some are arranged side-by-side, while others are arranged point-to-point. This leaves diamond-shaped openings in the interior of the deck surface, and triangular-shaped openings along each edge. By providing a plurality of triangular-shaped or "half diamond" shaped units 4, a pair of such units arranged back-to-back can take care of the gaps left in the interior of the deck surface, while one of such units can take care of a triangular opening along the edge.

[0029] FIG. 6 shows an alternative embodiment hexagonal-shaped surface unit 1' made up of boards 15 which are all of the same size and shape. Each board 15 is cut as a trapezoid. When cut from board which is 3 1/2 inches wide, each trapezoid can have a top edge which is 4 inches long and a bottom edge which is 8 inches long. The diagonal edges are also 4 inches long. A deck surface unit 1' is comprised of six sections, with three boards 15 in each section. When each board is 3 1/2 inches wide, the length of each side of the resulting hexagon is 12 inches, and the area covered by deck unit 1' is about 2.6 square feet. FIG. 7 shows an alternative embodiment deck surface unit 1" which is made out of precisely the same trapezoidally-shaped units 15 as is deck surface unit 1' of FIG. 6. The boards 15 are arranged in a slightly different pattern, however. Yet, the length of each of the hexagonal edges and the area covered by deck unit 1" are the same as for deck unit 1'.

[0030] One advantage to the alternative embodiment deck units 1' and 1" is that they can be made from individual boards which have identical dimensions. This makes the job of cutting and handling during manufacturing much easier. A second important advantage is that individual deck units 1' and 1" can be cut in half, or even in individual triangular-shaped sections, by simply cutting through substrate member 20 with a knife (this can also be done

with embodiment 1, if center board 11 is made in two equal halves). This will be useful when arranging perimeter pieces. Yet another advantage to deck surface units 1' and 1" is that their overall dimensions are such that four of them fit on a standard 36x48 inch pallet.

[0031] In an alternative embodiment deck surface unit 1''' (FIG. 8), the individual boards 11-14 are secured to a plurality of separate substrate members 50, each comprising a separate molded plastic rib. Each of boards 11-14 are tacked or glued to the ribs 50. In the hexagon shown in FIG. 8, each rib extends radially outwardly from the center, along the seam between adjacent hex segments. Each rib 50 includes an open socket 51 at each end, which receives the upwardly extending post 61 of a triangular-shaped joining member 60 (FIG. 9). Joining member 60 is preferably molded of plastic, preferably the same type of plastic used to make molded ribs 50.

[0032] The illustrated ribs 50 required for a deck surface unit 1''' can also be molded as a single integral unit, rather than as separate units. FIG. 10 shows an alternative embodiment deck unit 1''' in which the individual boards 11-14 are adhered to an integrally molded substrate 70. Substrate 70 is vacuum formed or injection molded of plastic, and includes a center 71, outwardly radiating arms 72, a joining member receiving aperture 73 at the end of each arm 72, and a pair of downwardly projecting ribs 74 on the bottom of each arm 72. The ribs 74 reinforce arms 72 and also provide a support for deck unit 1''' (FIG. 11).

[0033] FIG. 12 illustrates another substrate 102 used with the boards 11-15 to form a unit 100. The substrate 102 (FIG. 13) is preferably formed of strands of polyester scrim 104 coated with crossing and orthogonal strips of plastic 106 (e.g., vinyl or PVC). The substrate 102 as described in this application is commercially available from Markers, Inc. in Avon Lake, Ohio, under the name Polyester Wind Screen. The substrate 102 is easy to cut, easy to manufacture and is lighter than the other substrates described above. Furthermore, the substrate 102 is thin and at least two layers of material made of the strands of polyester scrim 104 coated with crossing and orthogonal strips of plastic 106 can be cut on a single cutting step to form two substrates 102. Moreover, a back lit template allows a person cutting the substrate 102 to see through the substrate 102 for ease of cutting. Furthermore, since the substrate 102 is light, the units 100 are easy to handle. Preferably, the substrate 102 is stapled to the boards 11-15 using staples 110 to connect the substrate 102 to the boards 11-15 to form the units 100. In the illustrated embodiment, three staples 110 are used to connect the substrate 102 to each board 11-15.

[0034] Using the deck system of the present invention, any individual can make a lovely wood surfaced deck in an afternoon. A plurality of individual surface units can be placed on a concrete slab. Alternatively, one can dig up a patch of grass and smooth a dirt or sand surface to which individual deck surface units 1, 1', 1", 1"', 1''', or 100 can be placed. One could also build a plywood surfaced deck, and then cover the plywood with a plurality of deck surface units. Joining members 30 or 60 are used to help keep adjacent deck units from slipping relative to one another. In addition, a perimeter trim strip can be tacked around the perimeter of the assembled units to help hold them in place. Nails can be nailed directly into the exposed side edges of the perimeter deck units. When outdoor carpet substrate 20 is used, the surface units can be reversed to provide an outdoor carpet surface instead of the wood deck surface appearance. Using a flexible substrate, especially a relatively thin material such as geo fabric or strands of polyester scrim coated with a plastic, allows the units 1, 1', 1", or 100 to conform somewhat to surface irregularities, and allows the units to be cut into partial units with a knife or the like.

[0035] It is to be understood that variations and modifications can be made on the aforementioned structure without departing from the concepts of the present invention, and further it is to be understood that such concepts are intended to be covered by the following claims unless these claims by their language expressly state otherwise.

We claim:

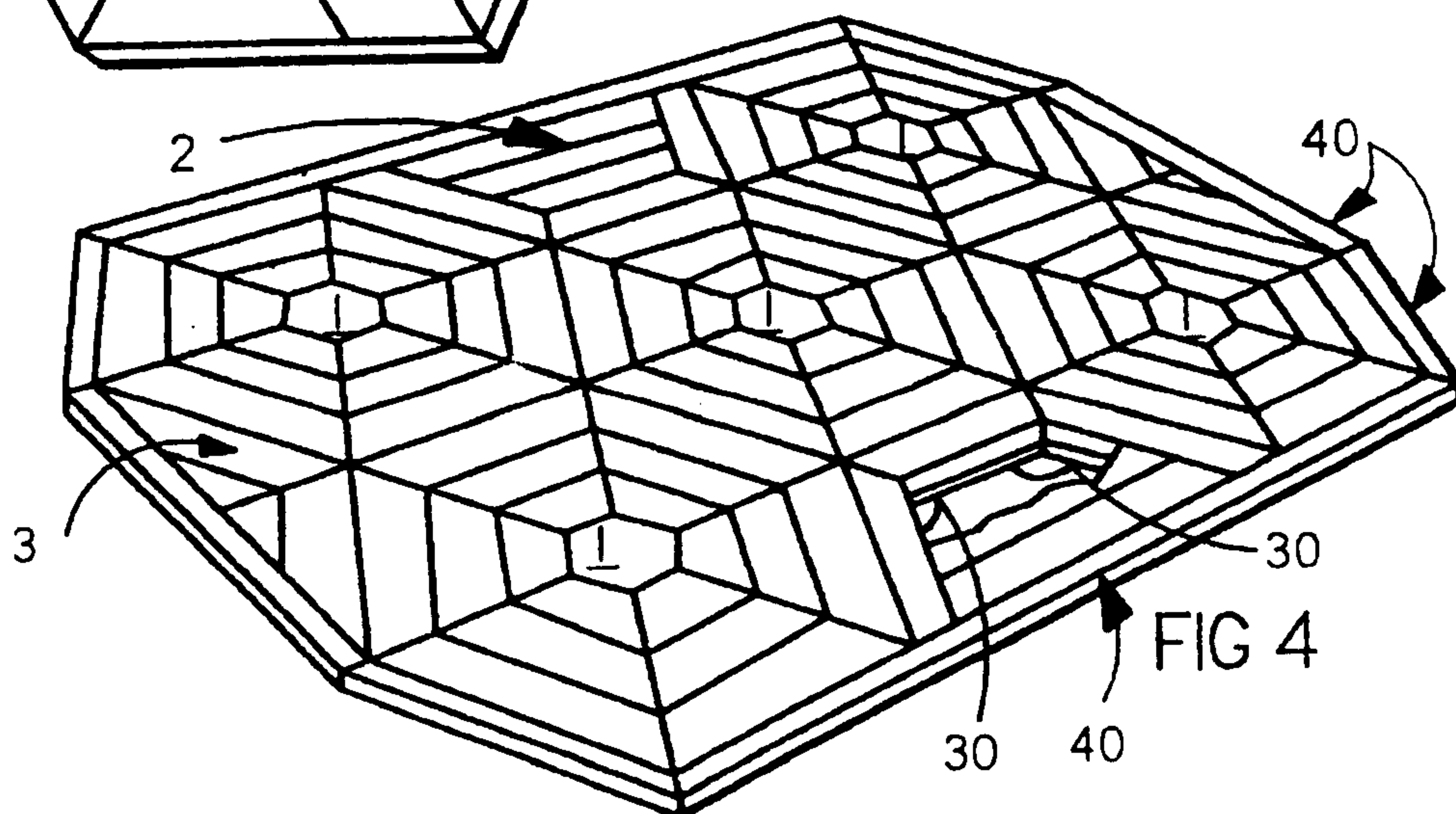
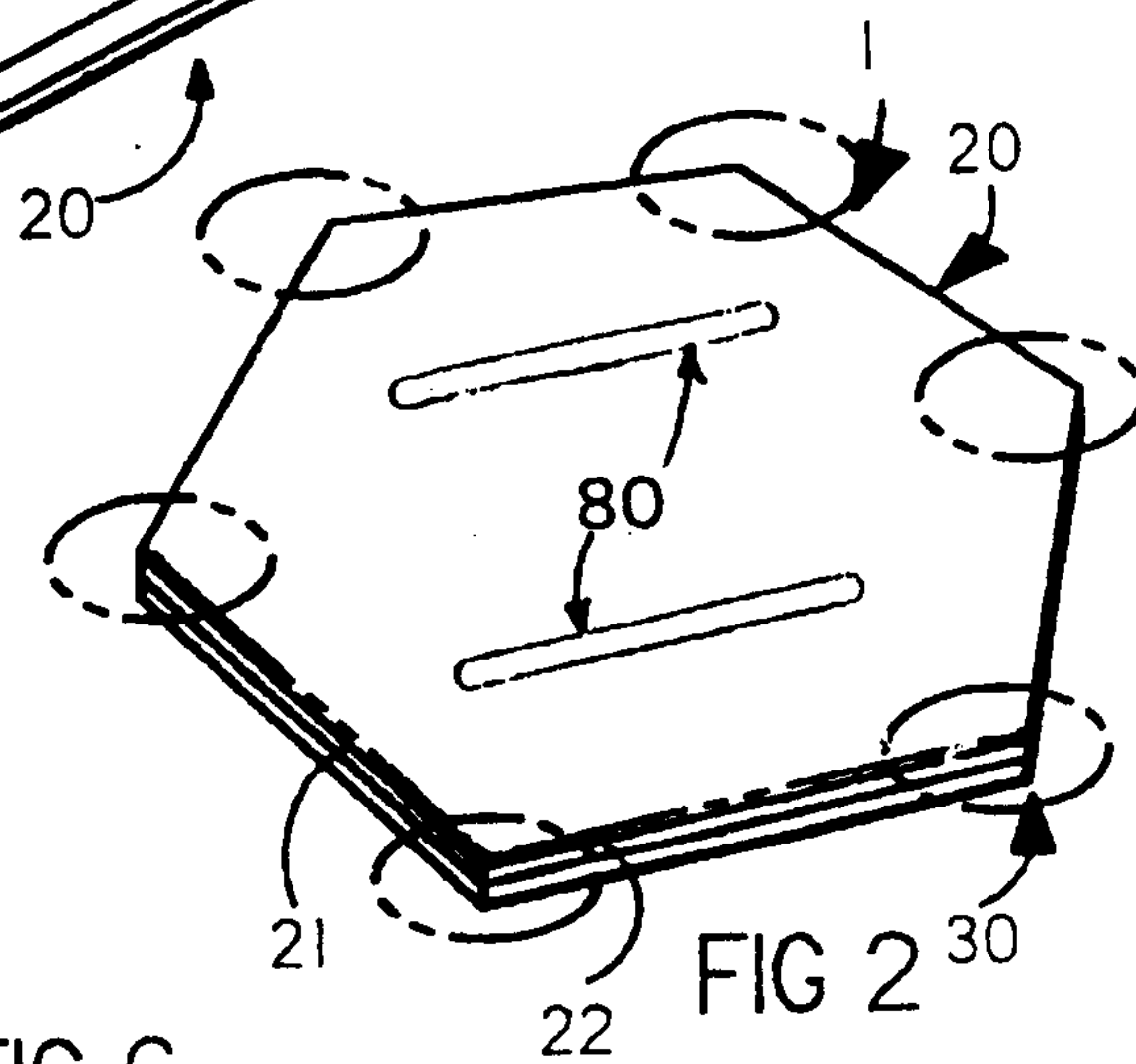
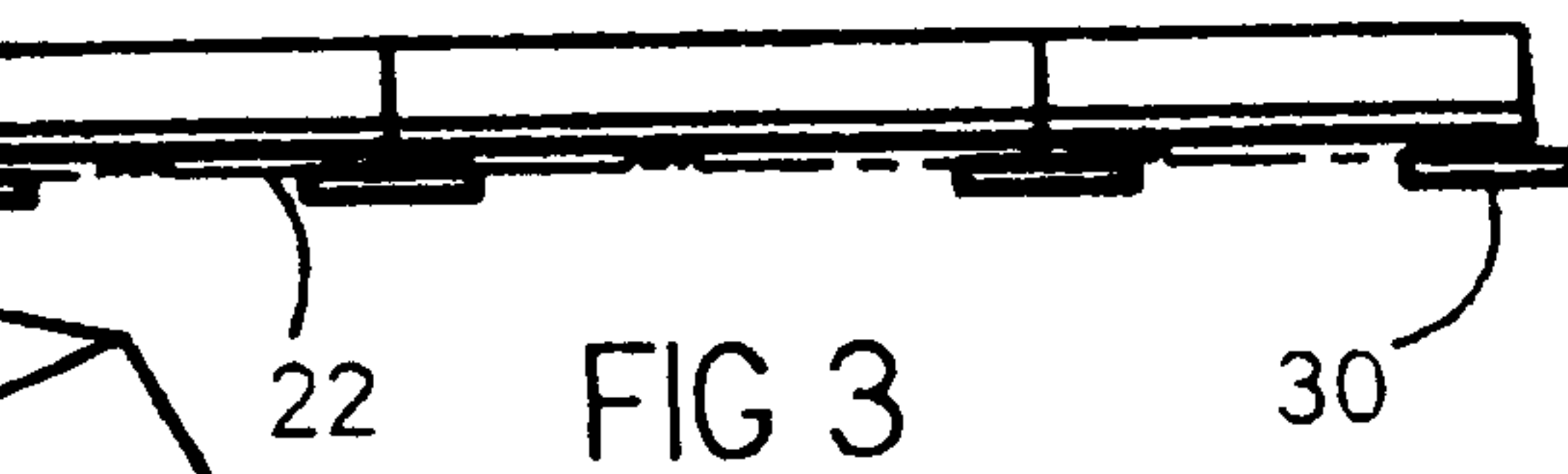
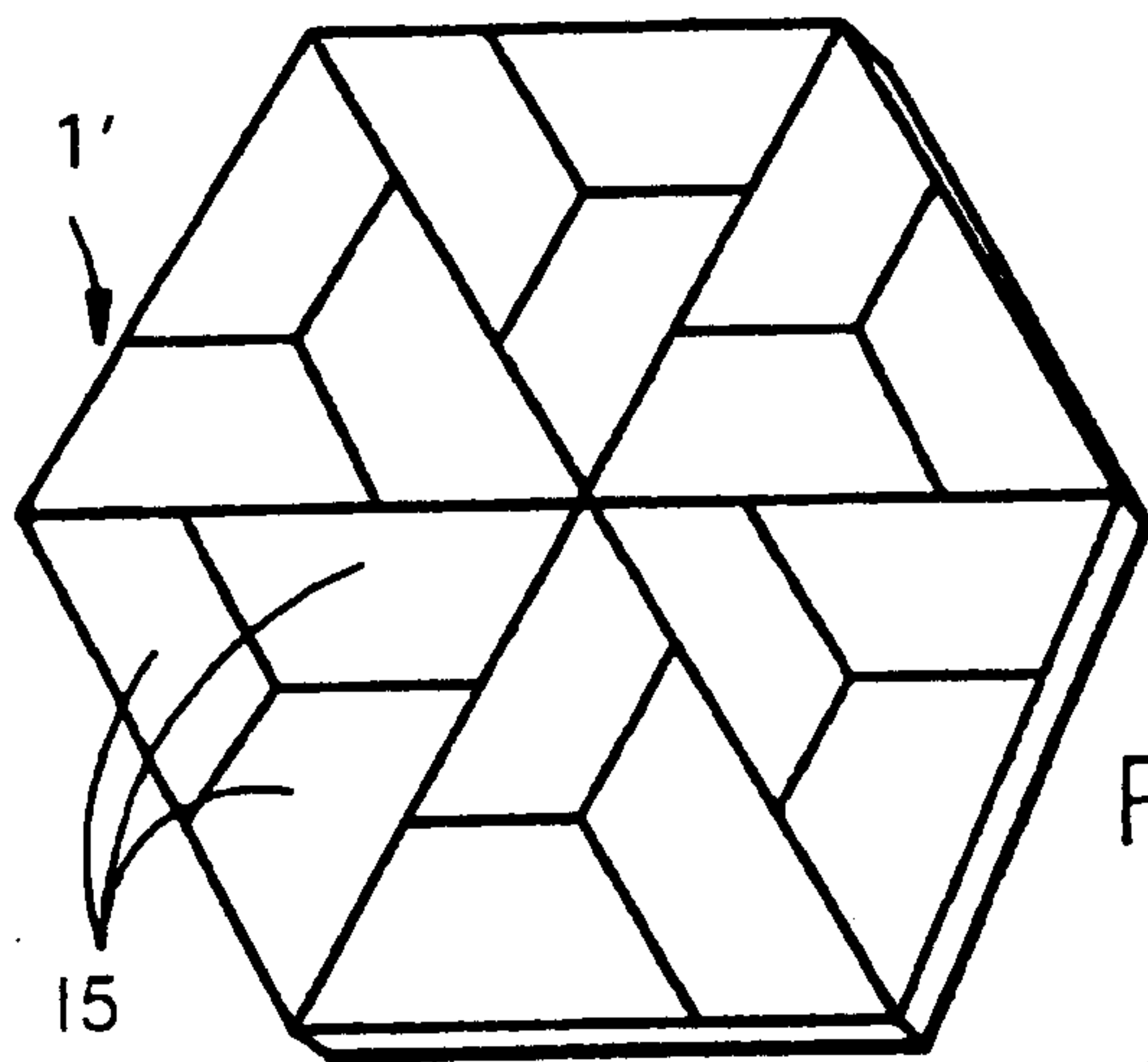
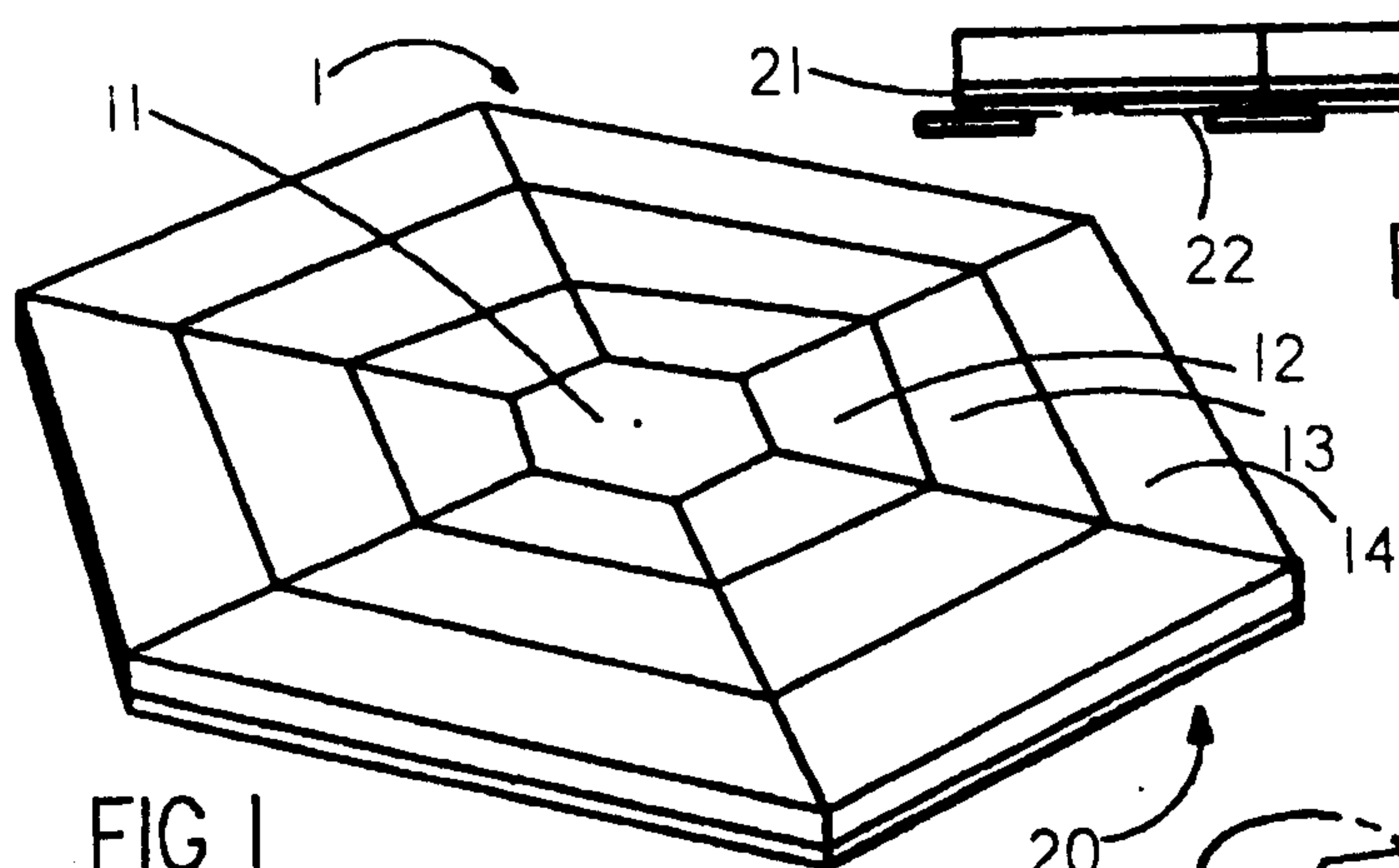
1. An outdoor deck surface unit comprising:
a substrate support member; and
a plurality of separate boards, the plurality of boards being unitized by being secured to the substrate in a desired pattern;
the deck surface unit being sufficiently large that an entire deck surface is created relatively quickly, but being sufficiently small that a deck surface unit is capable of being readily lifted, moved, placed and handled by a single individual;
the substrate support member is stapled to the separate boards.
2. The deck surface unit of claim 1, wherein:
the plurality of separate boards are sufficiently small in area to minimize the effects of warpage on any individual board.
3. The deck surface unit of claim 2, wherein:
the plurality of separate boards are made of lumber of sufficient thickness to resist warpage.
4. The deck surface unit of claim 3, wherein:
the lumber is treated to be resistant to outdoor conditions.
5. The deck surface unit of claim 1, wherein:
the unit has the shape of a hexagon.
6. The deck surface unit of claim 5, wherein:
the boards include a hexagonally-shaped center piece and trapezoidally-shaped boards arranged in rows and extending parallel to the side edges of the center piece.
7. The deck surface unit of claim 5, wherein:
the boards are shaped to define trapezoids of equal dimensions.

8. The deck surface unit of claim 7, wherein:
the unit comprises six sections, with three trapezoidally-shaped boards per section.
9. The deck surface unit of claim 1, wherein:
the substrate support member is a flexible member.
10. The deck surface unit of claim 9, wherein:
the substrate support member is plastic coated polyester.
11. The deck surface unit of claim 1 which covers an area of from about 2 square feet to about 6 square feet.
12. The deck surface unit of claim 11, wherein:
each of the boards is at least about 3/4 inch thick.
13. A deck system comprising a plurality of deck surface units in accordance with claim 1.
14. The deck system of claim 13, wherein:
the plurality of deck surface units are held in position by a trim member extending around the perimeter edge of the plurality of units.
15. An outdoor deck surface unit comprising:
a substrate support member; and
a plurality of separate boards, the plurality of boards being unitized by being secured to the substrate in a desired pattern;
the deck surface unit being sufficiently large that an entire deck surface is created relatively quickly, but being sufficiently small that a deck surface unit is capable of being readily lifted, moved, placed and handled by a single individual;
the substrate support member comprises plastic coated polyester.

16. The deck surface unit of claim 15, wherein:
the plurality of separate boards are sufficiently small in area to minimize the effects of warpage on any individual board.
17. The deck surface unit of claim 16, wherein:
the plurality of separate boards are made of lumber of sufficient thickness to resist warpage.
18. The deck surface unit of claim 17, wherein:
the lumber is treated to be resistant to outdoor conditions.
19. The deck surface unit of claim 15, wherein:
the unit has the shape of a hexagon.
20. The deck surface unit of claim 19, wherein:
the boards include a hexagonally-shaped center piece and trapezoidally-shaped boards arranged in rows and extending parallel to the side edges of the center piece.
21. The deck surface unit of claim 19, wherein:
the boards are shaped to define trapezoids of equal dimensions.
22. The deck surface unit of claim 21 comprising six sections, and three trapezoidally-shaped boards per section.
23. The deck surface unit of claim 15 which covers an area of from about 2 square feet to about 6 square feet.
24. The deck surface unit of claim 23, wherein:
each of the boards is at least about 3/4 inch thick.
25. A deck system comprising a plurality of deck surface units in accordance with claim 15.

26. The deck surface unit of claim 25 which covers an area of from about 2 square feet to about 6 square feet.
27. The deck surface unit of claim 15, wherein:
the substrate support member is stapled to the separate boards.
28. A deck system comprising a plurality of deck surface units in accordance with claim 27.

1/5



2/5

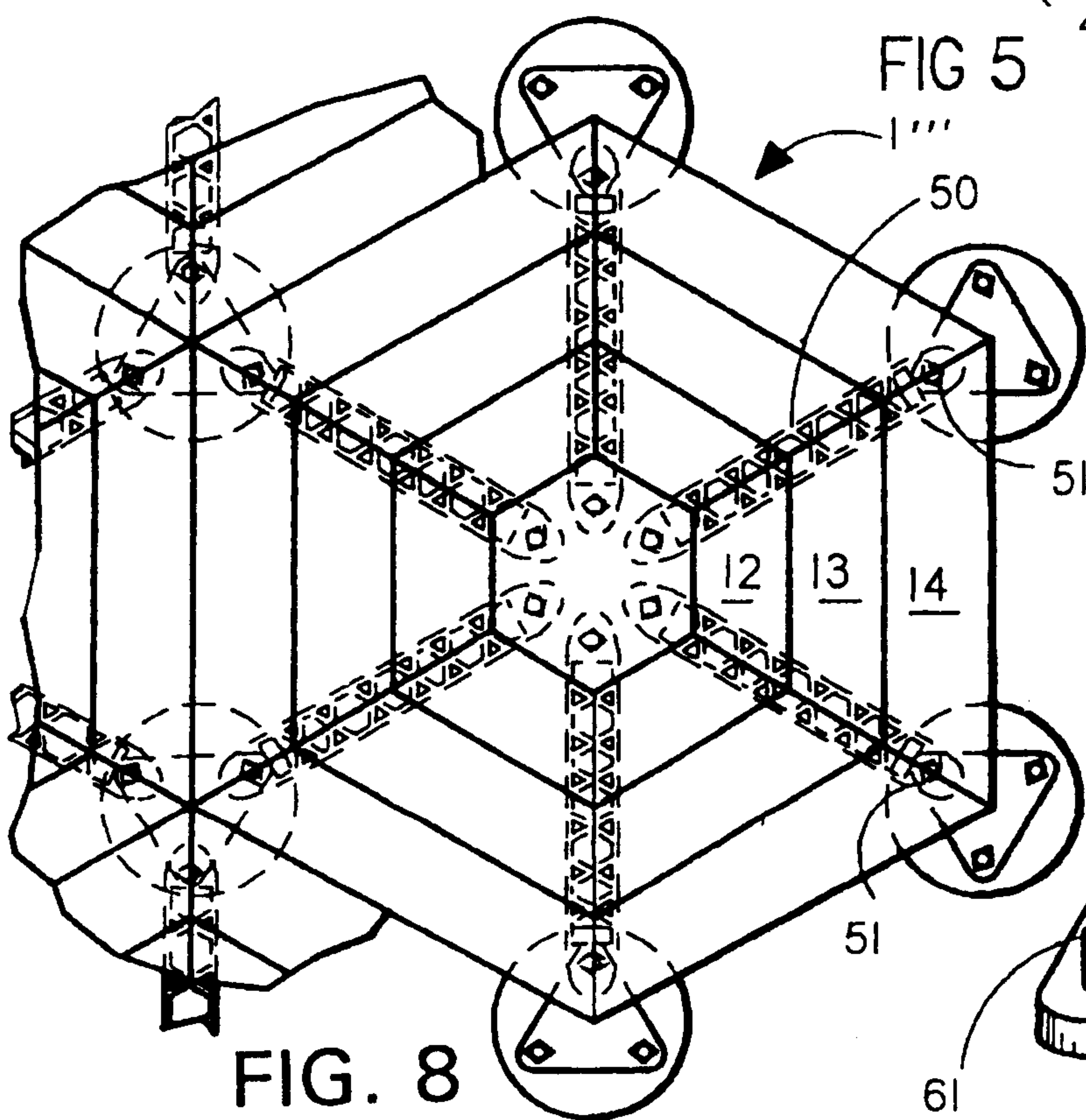
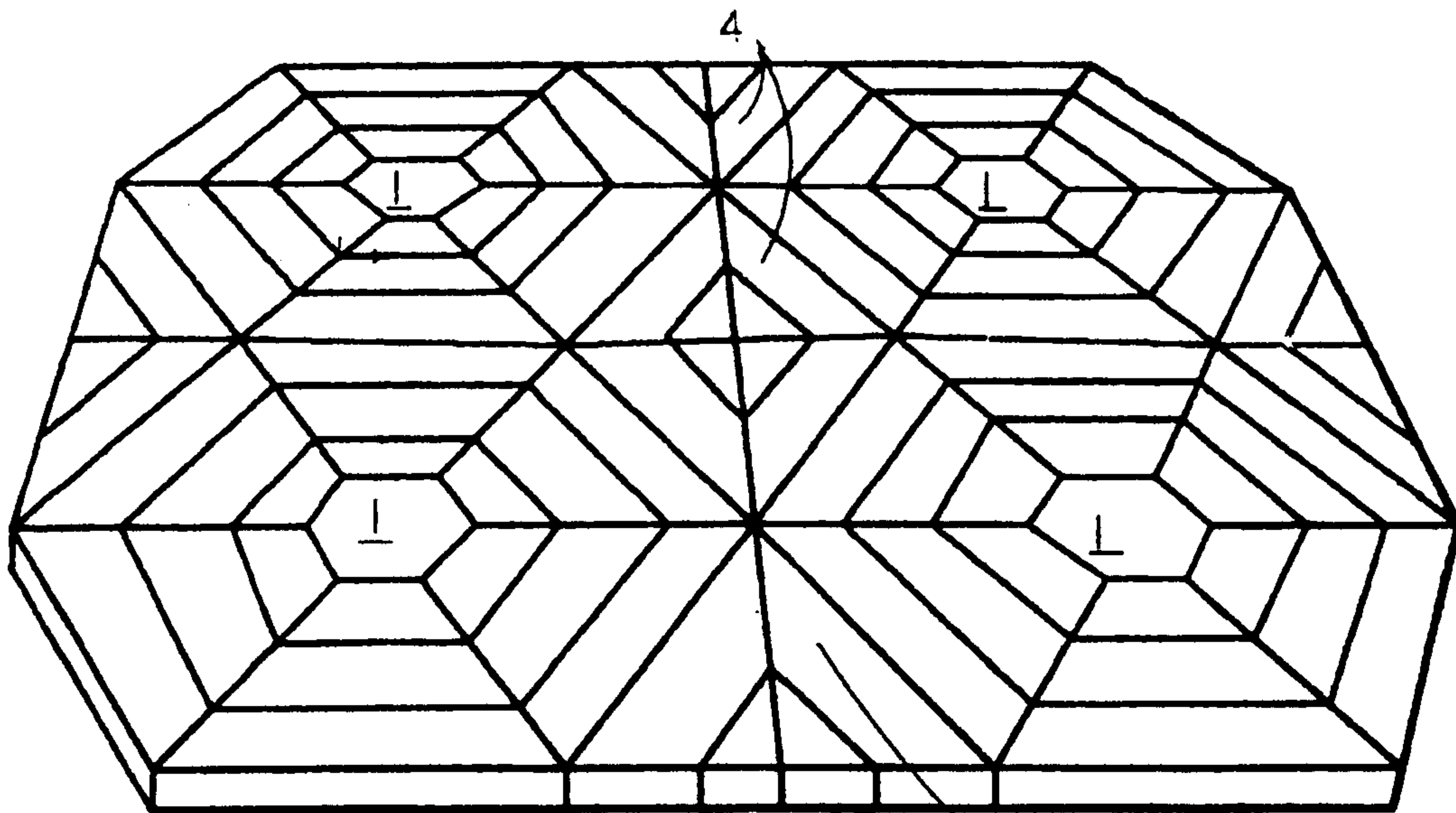


FIG. 8

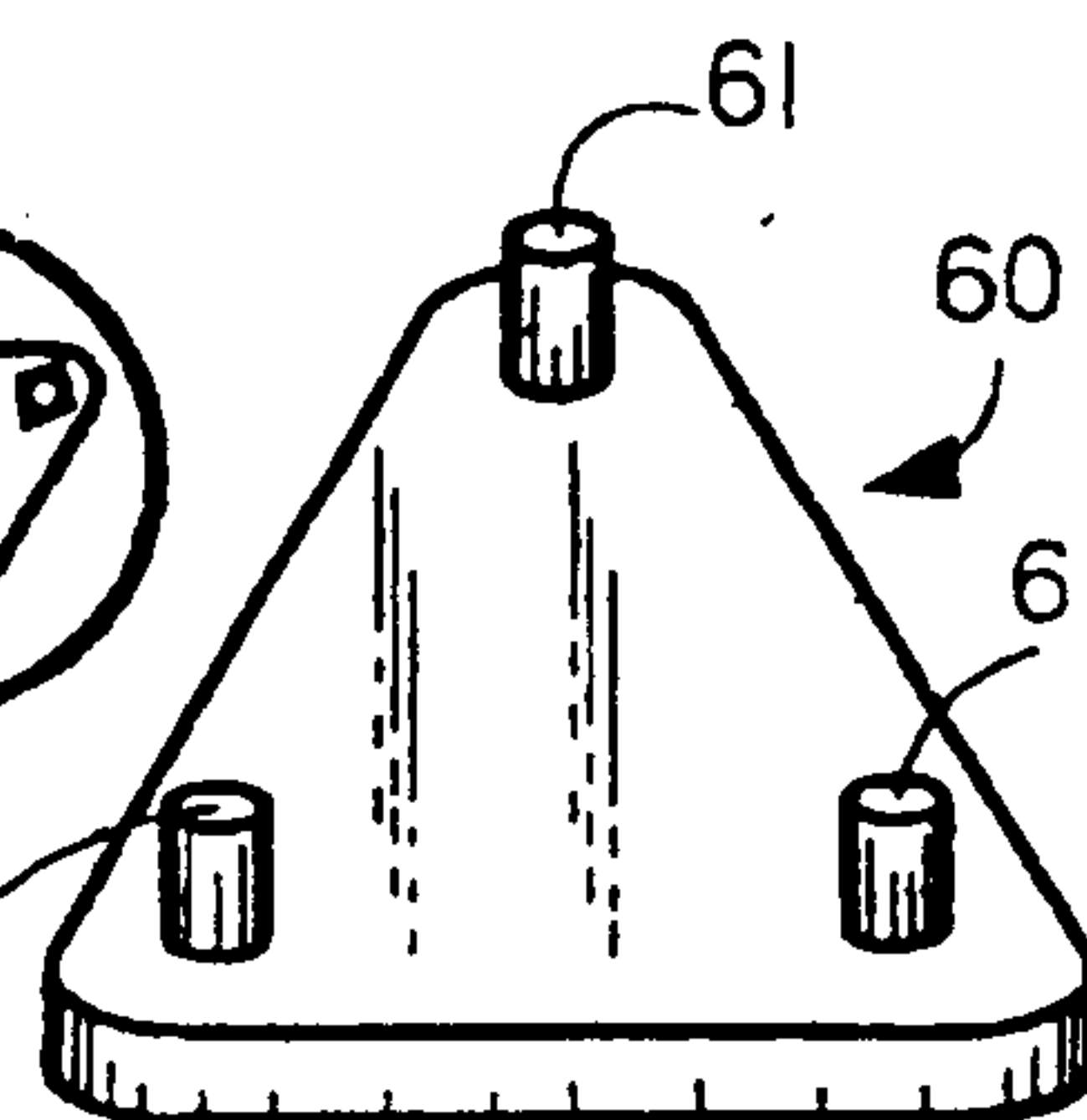


FIG. 9

3/5

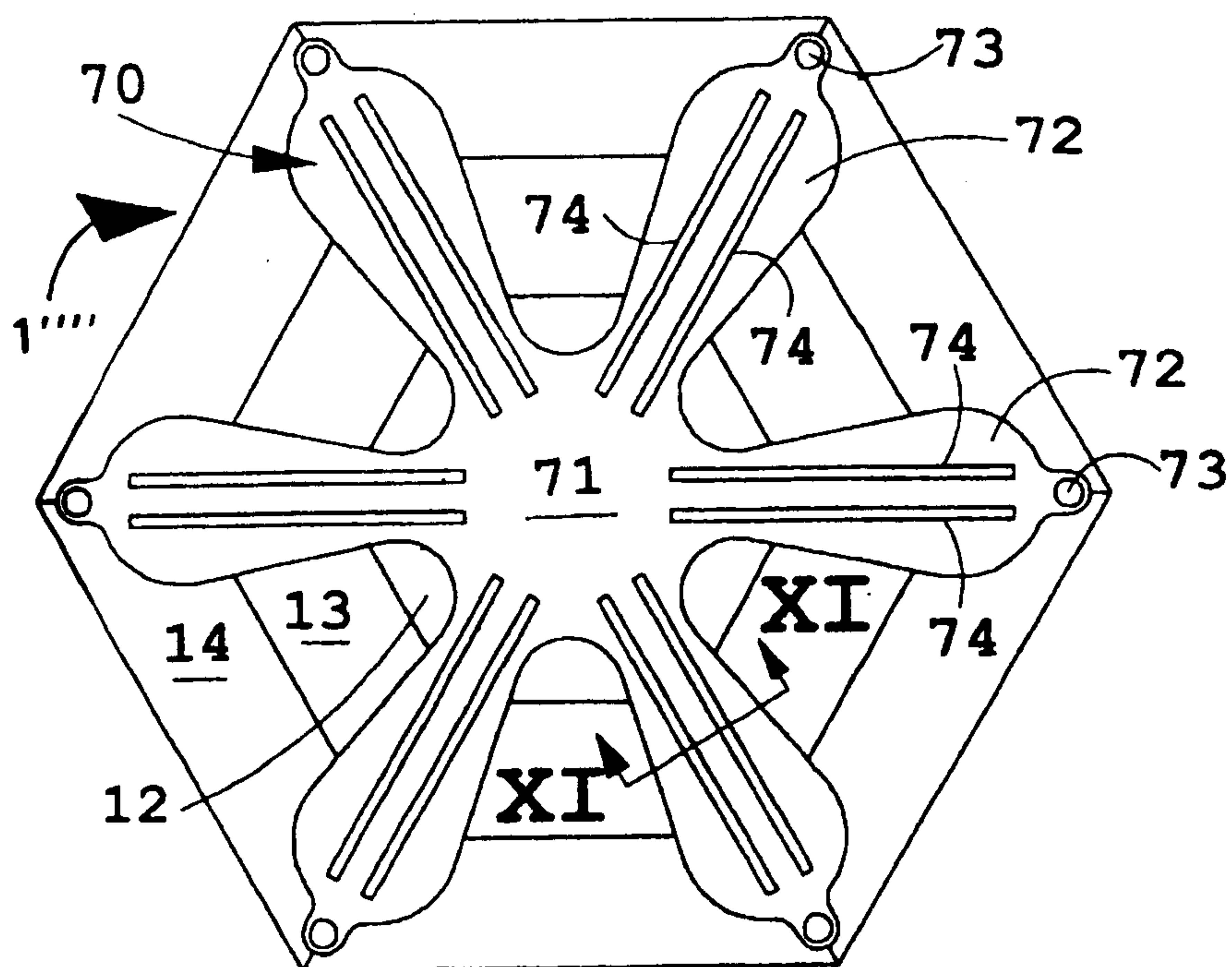


FIG. 10

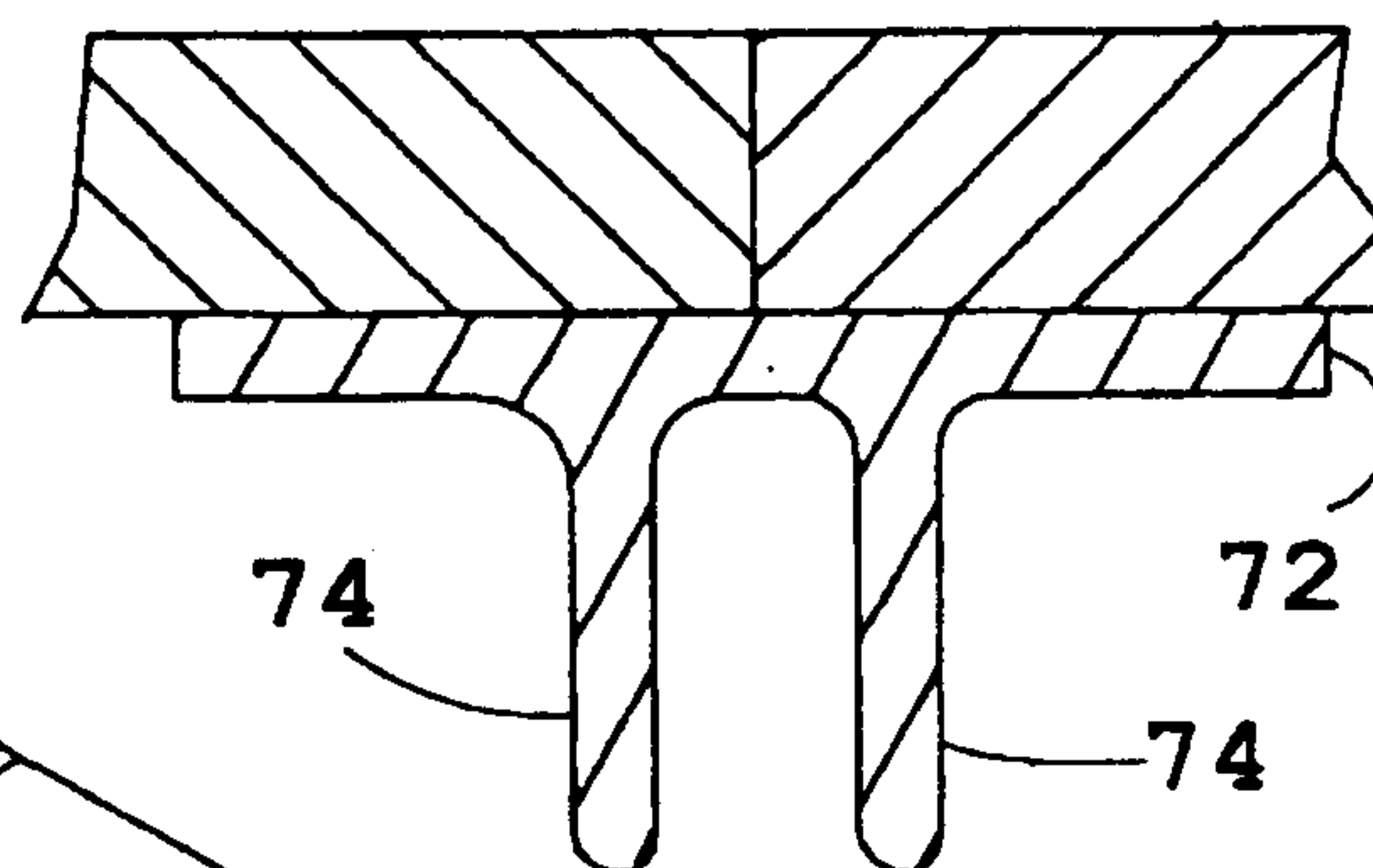


FIG. 11

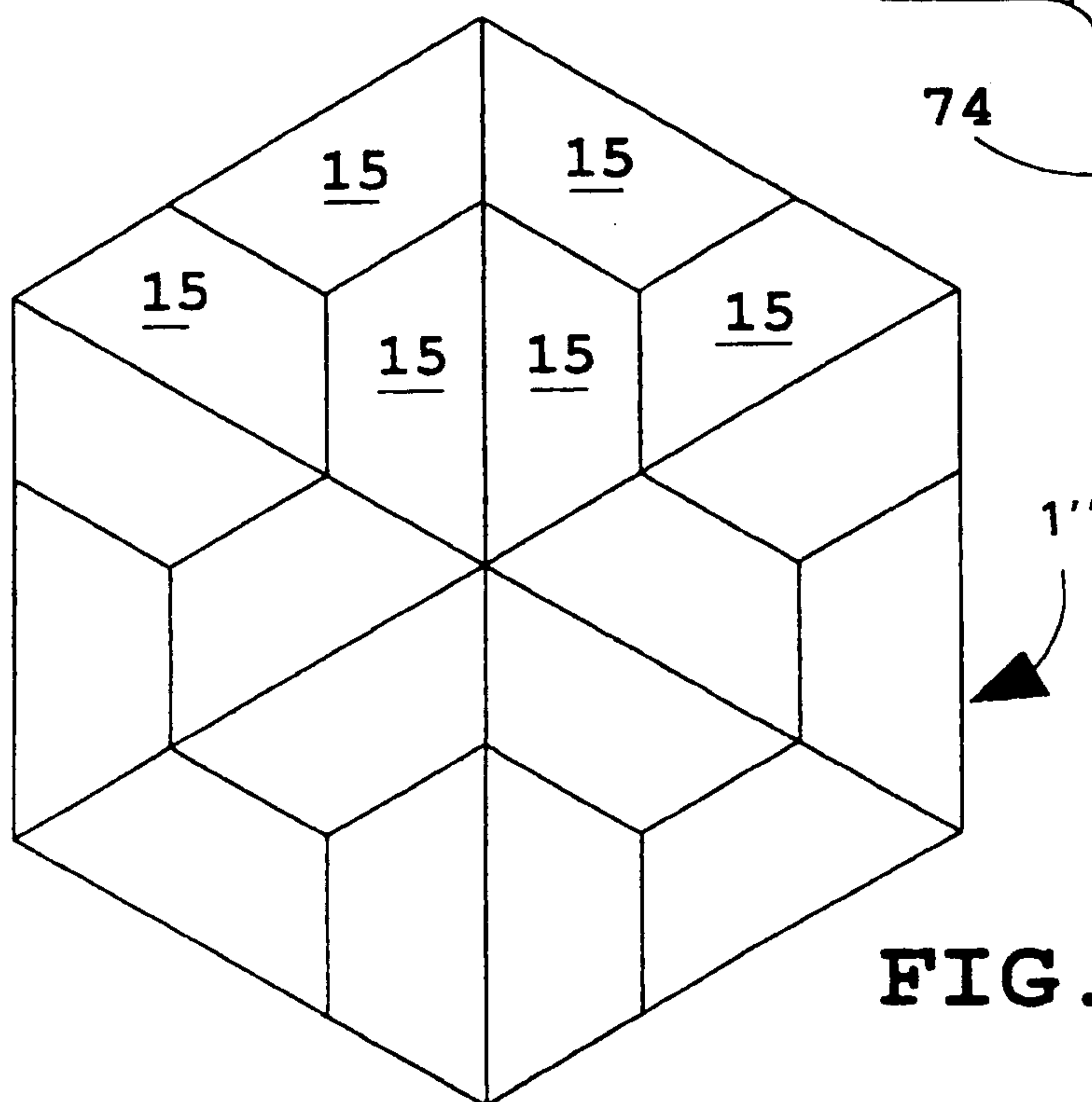


FIG. 7

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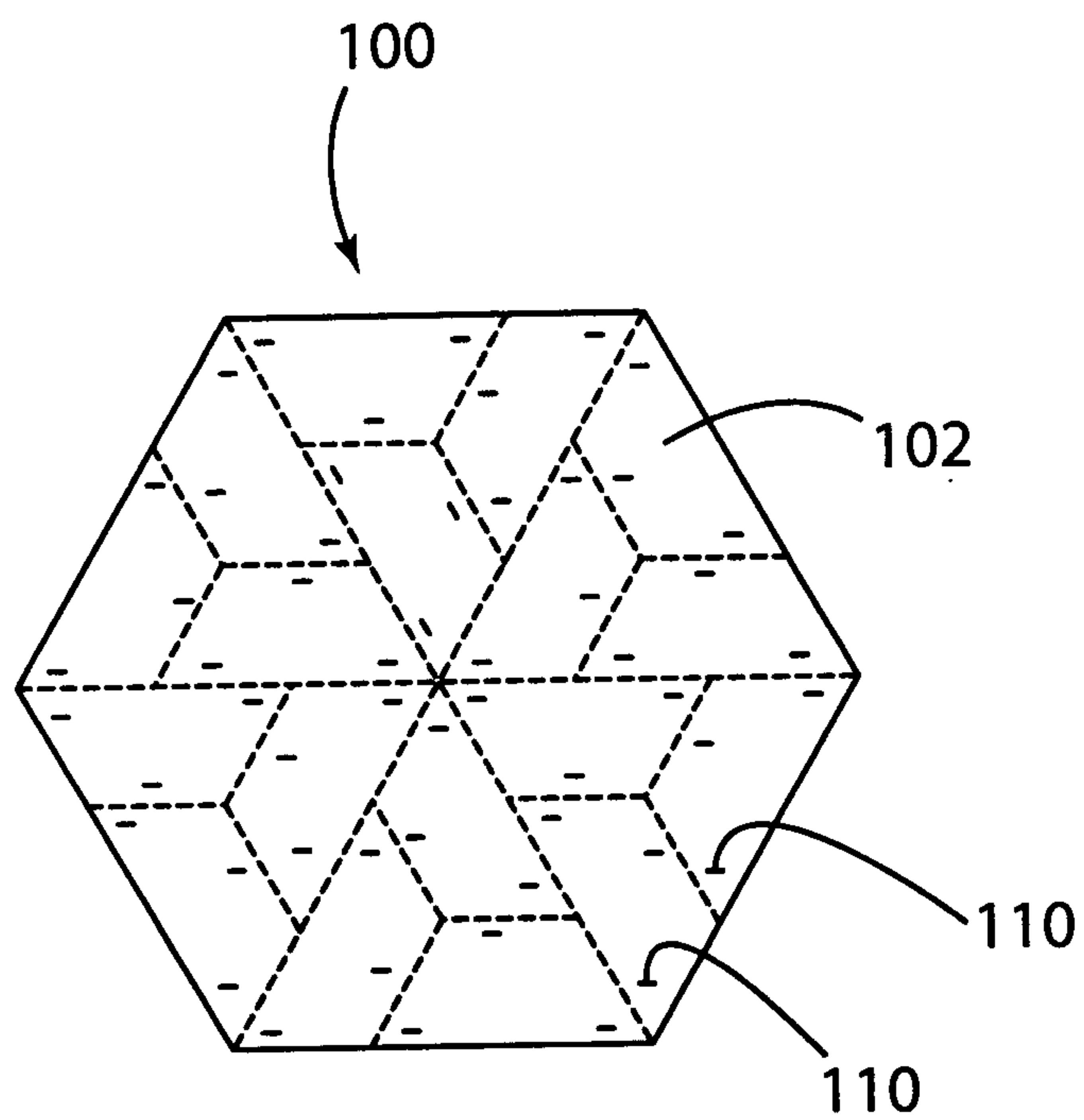


FIG. 12

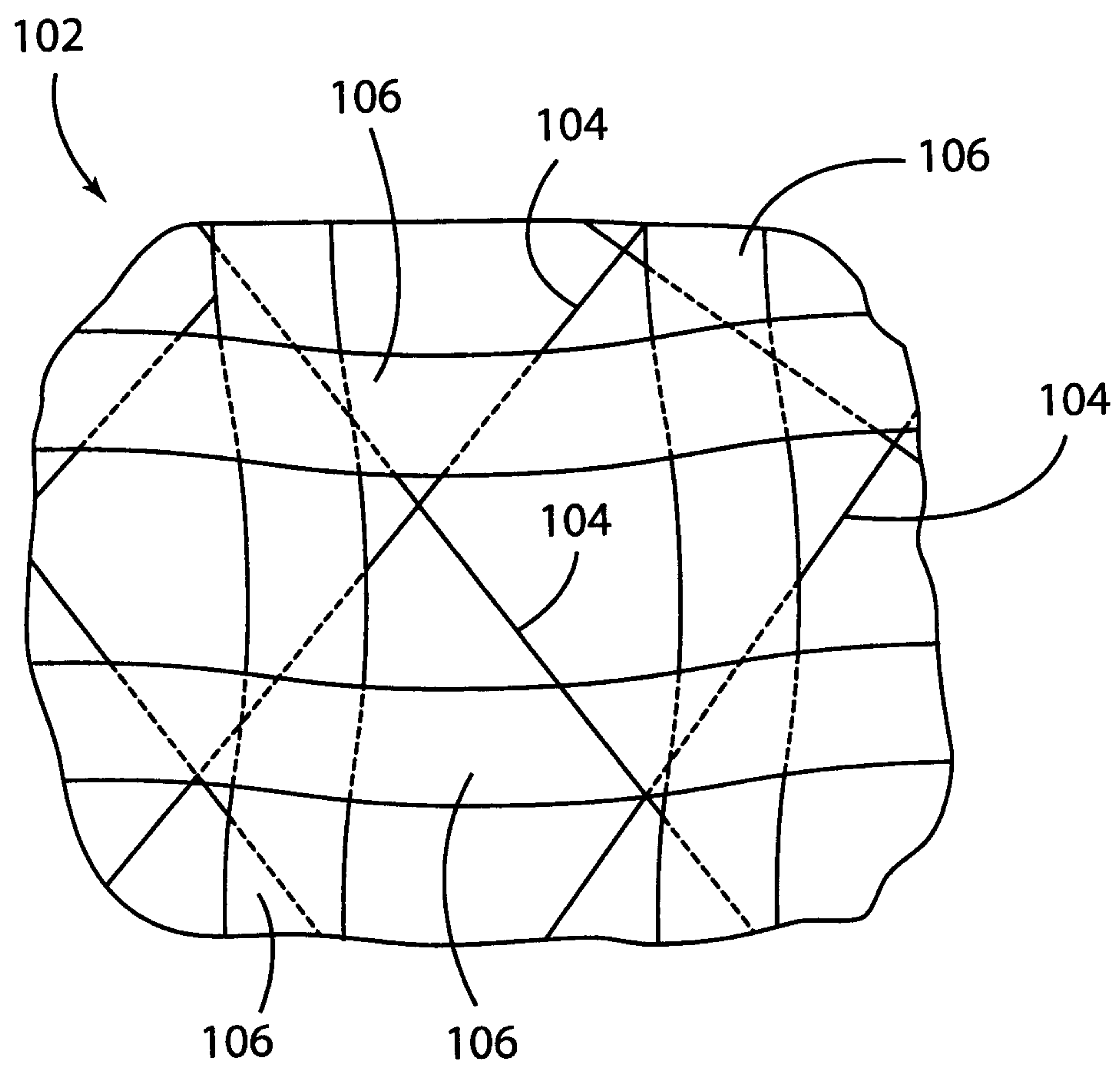


FIG. 13

