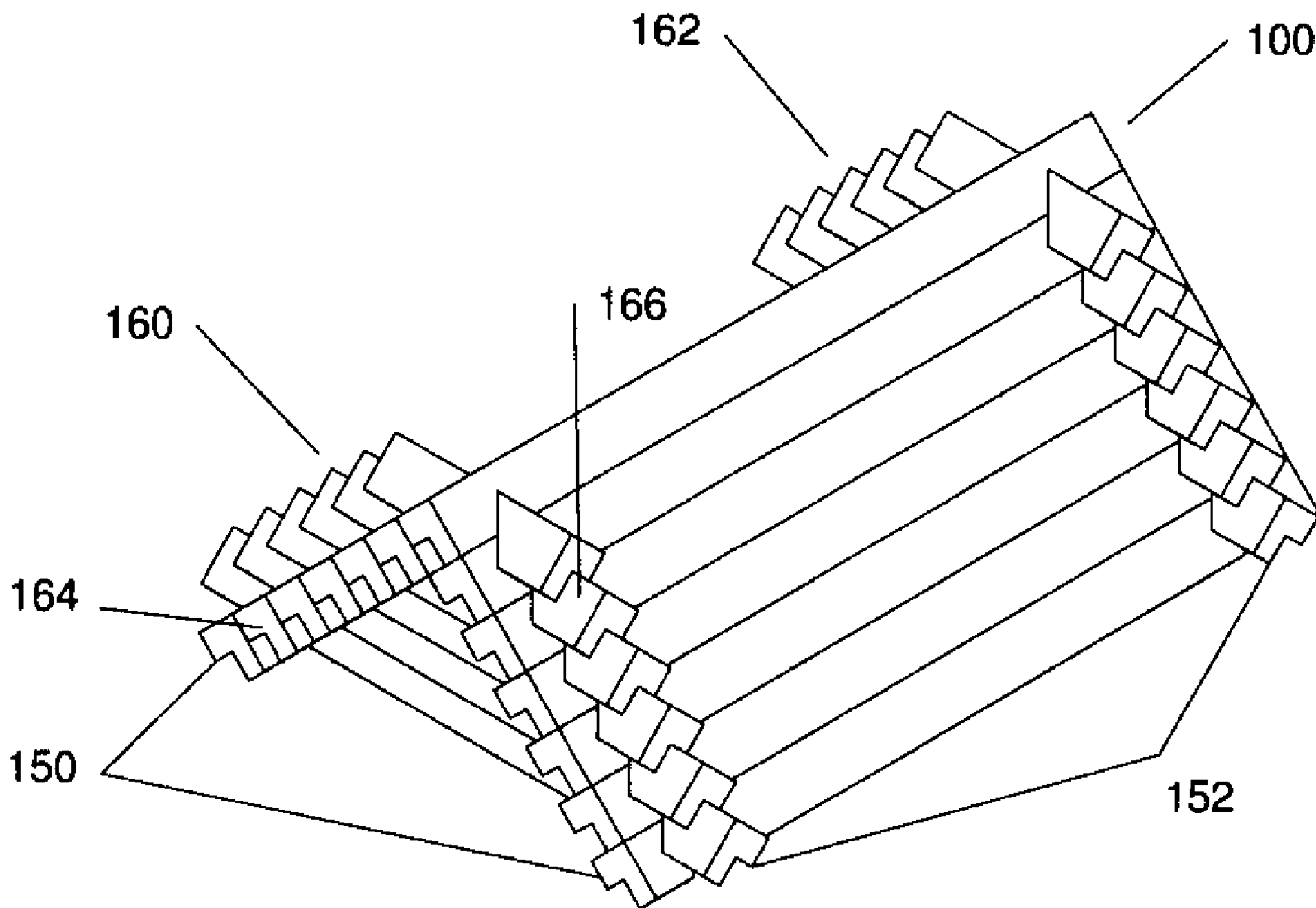




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(54) Titre : METHODE DE CONSTRUCTION DE TOIT  
(54) Title: MOUNTING METHOD FOR A ROOF



(57) Abrégé/Abstract:

The present invention discloses a method for mounting a roof using a log-like structural element. The structural element used herein comprises a top surface and a bottom surface that are complementary to each other. The structural element comprises at

(57) **Abrégé(suite)/Abstract(continued):**

least two notches on the bottom surface that have a shape complementary to the shape of the top surface. To mount the roof according to the method of the present invention, pairs of structural elements are disposed generally perpendicularly on each other. For a portion of the structural elements, the distance between the notches is decreasing from bottom to top.

File number: 11357-004  
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## **MOUNTING METHOD FOR A ROOF**

### **Abstract**

5

The present invention discloses a method for mounting a roof using a log-like structural element. The structural element used herein comprises a top surface and a bottom surface that are complementary to each other. The structural element comprises at least two notches on the bottom surface that have a shape complementary to the shape of the top surface. To mount the roof according to the method of the present invention, pairs of structural elements are disposed generally perpendicularly on each other. For a portion of the structural elements, the distance between the notches is decreasing from bottom to top.

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File number: 11357-004  
Revision: as filed  
Date: 2008-05-20

**Title of the Invention**

[0001] Mounting method for a roof

5 **Cross-Reference to Related Applications**

[0002] There are no cross-related applications.

**Field of the Invention**

10

[0003] This invention relates to a method for mounting a roof using log-like structural elements.

**Background of the Invention**

15

[0004] Conventional building techniques, featuring, for example, wood frame, precast and/or concrete block construction are relatively complicated and labor intensive. As a result, construction costs are expansive. Furthermore, the conventional building techniques necessitate persons having specialized skills in a plurality of fields.

20

[0005] Traditional log homes remain popular as an alternative to more common building techniques. Nonetheless, wood log construction can also be intricate and time consuming. The individual logs must be precisely cut and shaped. Often a considerable amount of material is wasted in the construction process. The configurations and layouts available using log construction are also quite limited.

25

[0006] Log homes have been in existence and common use for centuries. Originally, log cabins were built in wooded areas where there was a large supply of wooden logs from trees. Because log homes are still considered versatile, energy efficient structures, many modern improvements have been made to the log home. The majority of the

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File number: 11357-004  
Revision: as filed  
Date: 2008-05-20

improvements attempt to minimize the amount of labor involved in erecting a log home while improving the overall integrity of the structure.

5 [0007] A problem with the log homes is that most of them require a great deal of on-site construction and labor. In the areas where log homes are very popular, the weather tends to limit the amount of building time available in a given year.

10 [0008] The construction of log structures by the method of notching logs so that they interfit with each other is well known. Logs have long been notched transversely near their ends so as to allow such logs to be interfitted at corners, thus allowing the longitudinal span of consecutive logs, on progressively elevated courses, to lie in closer proximity to each other. Logs have also been grooved longitudinally to allow logs resting directly on top of each other to be more closely interfitted.

15 [0009] The prior art does not show, however, a method to mount roof in a log-like manner which is simple and accessible even to persons that do not have particular skills in the related art.

### **Objects of the Invention**

20

[0010] A first object of the present invention is to provide a method to mount a roof using log-like structural elements.

25 [0011] A second object of the present invention is to provide a method to mount a roof which is simple and accessible for persons having no particular skills in the related art.

[0012] Other and further objects and advantages of the present invention will be obvious upon an understanding of the illustrative embodiments about to be described or will be indicated in the appended claims, and various advantages not referred to herein will occur  
30 to one skilled in the art upon employment of the invention in practice.

File number: 11357-004  
Revision: as filed  
Date: 2008-05-20

### Summary of the Invention

- [0013] The aforesaid and other objectives of the present invention are realized by generally providing a method to mount a roof using a longitudinal structural element having a top surface and a bottom surface, the structural element having at least two transversal notches on the bottom surface, the notches having a shape complementary to the shape of the top surface, the method comprising the steps of disposing a first pair of structural elements in a parallel manner, the notches of the first pair being disposed at a first predetermined distance; disposing a second pair of structural elements in a generally parallel manner on the top of the first pair of structural elements, the notches of the second pair being disposed at a second predetermined distance; disposing a third pair of structural elements in a generally parallel manner on the top of the second pair of structural elements, the notches of the third pair being disposed at the first predetermined distance; disposing a fourth pair of structural elements in a generally parallel manner on the top of the third pair of said structural elements, the notches of the fourth pair being disposed at a third predetermined distance, the third predetermined distance being smaller than the second predetermined distance; and repeating previous steps until the roof is completed.
- [0014] The structural element referred to in the present invention is used to mount roofs of log houses or the like. As used herein, the word 'log' refers to any structural element having a general configuration which is log like and not limited to logs made of wood. The structural elements are disposed in a vertical manner as usually seen in log houses.
- [0015] The structural element referred to in the present invention has a top surface and a bottom surface that are complementary to each other. The top surface and the bottom surface may have a variety of shapes, as long as they are complementary. The notches that are located on the bottom surface have a shape complementary to the top surface of the structural element. The top surface and the bottom surface may have sharp edges or smooth edges.

File number: 11357-004  
Revision: as filed  
Date: 2008-05-20

[0016] To thermically insulate the roof, means known in the related art is used depending of the local climate. The insulation is typically a layer or a plurality of layers of insulating material on which roof covering material is applied. The insulating material may be wood, insulating foam (for example urethane) but are not limited to these examples. The  
5 roof covering material may be asphalt shingles, wood shingles or any other covering material used for roofs.

[0017] The junction between the structural elements may be sealed individually by means of weather-strips, for example. The term “weather-strips” in the present document refers  
10 to a strip of material to cover the joint of adjacent structural elements so as to exclude rain, snow, and cold air to penetrate between adjacent structural elements.

[0018] It is to be understood that many configurations of roofs may be obtained by using the method of the present invention. For example, it is possible to have a plurality of  
15 gables on the same side of a roof. Indeed, the structural elements may comprise a plurality of pairs of notches so that a plurality of pairs of transversal structural elements may intersect the structural elements having a plurality of pairs of notches.

[0019] Furthermore, it could be possible to mount a roof having more than four walls. In  
20 this case, the notches are not perpendicular to the structural element but have a shape adapted to the particular number of the walls of the roof.

[0020] The features of the present invention which are believed to be novel are set forth with particularity in the appended claims.  
25

### **Brief Description of the Drawings**

[0021] The above and other objects, features and advantages of the invention will become more readily apparent from the following description, reference being made to  
30 the accompanying drawings in which:

File number: 11357-004  
Revision: as filed  
Date: 2008-05-20

[0022] Figure 1 is a perspective view of a first embodiment of a roof constructed according to the method of the present invention.

[0023] Figure 2 is a top view of the first embodiment of the roof shown in Figure 1.

5

[0024] Figure 3 is a side view of the first embodiment of the roof shown in Figure 1.

[0025] Figure 4 is a front view of the first embodiment of the roof shown in Figure 1.

10 [0026] Figures 5a to 5f are front views showing structural elements used to construct the first embodiment of the roof of Figure 1.

[0027] Figure 6 is a front view a showing structural element used to construct the first embodiment of the roof of Figure 1.

15

[0028] Figure 7 is a perspective view of a second embodiment of a roof constructed according to the method of the present invention.

[0029] Figure 8 is a top view of the second embodiment of the roof shown in Figure 7.

20

[0030] Figure 9 is a side view of the second embodiment of the roof shown in Figure 7.

[0031] Figure 10 is a front view of the second embodiment of the roof shown in Figure 7.

25 [0032] Figures 11a to 11g are front views showing structural elements used to construct the second embodiment of the roof of Figure 7.

[0033] Figures 12a to 12h are front views showing structural elements used to construct the second embodiment of the roof of Figure 7.

30



File number: 11357-004  
Revision: as filed  
Date: 2008-05-20

[0034] Figure 13 is a perspective view showing another embodiment of the present invention.

[0035] Figure 14 is a perspective view of the roof of the present invention comprising  
5 shingles.

[0036] Figure 15 is a side view showing structural elements comprising a clapboard.

[0037] Figure 16 is a schematic view illustrating the thermal insulation of the roof.  
10

[0038] Figure 17 is a perspective view showing some of the locations where sealing means are applied.

#### **Detailed Description of the Preferred Embodiment**

15 [0039] A novel mounting method for a roof will be described hereinafter. Although the invention is described in terms of specific illustrative embodiment(s), it is to be understood that the embodiment(s) described herein are by way of example only and that the scope of the invention is not intended to be limited thereby.

20 [0040] As seen in Figures 1 to 6, the roof 100 is made with a plurality of structural elements. The structural elements used to mount the roof 100 are shown in Figure 5 and Figure 6. As seen in Figure 3 and Figure 5, the structural elements 108 to 118 have a decreasing length from bottom to top. The distance between the notches of the structural  
25 elements 108 to 118 is also decreasing from bottom to top. The structural elements 108 to 118 are used to mount the walls 160 and 162 of the roof 100.

[0041] The structural elements used to mount the walls 164 and 166 have a uniform length. The distance between the notches 104 and 106 is also uniform as illustrated in  
30 Figure 6.

File number: 11682-003  
Revision: as amended  
Date: July 20, 2012

[0042] Referring now to Figure 1, to mount the roof 100, a first pair 150 of structural elements 102 is parallelly disposed on a plane. A second pair 152 of structural elements 118 is disposed perpendicularly on the top of the first pair 150, the notches 120 and 122 engaging with the top surface of the first pair 150 of structural elements 102. The others  
5 structural elements 116 to 108 are then disposed with a structural element 102 between each of them to form the roof 100.

[0043] In the present embodiment, referring to Figure 15, the structural elements are shaped to form a substantially plane surface when installed on top of another. As a result,  
10 the assembly of several longitudinal structural elements placed to build a roof structure results in a substantially plane surface allowing the installation of any type of sealing means or coating such as, but not limited, to clapboard or shingles.

[0044] The roof 200 of Figure 7 is mounted in a similar way than explained for the roof  
15 100 of the Figure 1 with pairs of structural elements successively disposed one on the others. For the roof 200, as illustrated in Figures 11 and 12, the distance between the notches of each structural element is decreasing from bottom to top. The length of the structural elements of Figure 11 and 12 are uniform, creating gables 202 and 204 when the roof is assembled. However, the length of each of the structural element could be  
20 decreasing from bottom to top.

[0045] It is possible to close the gables 202 and 204 with panels 302 and 304 as shown in Figure 13. It is to be understood that the panels 302 and 304 have only an aesthetical goal so they may be replaced with other structures.

25

[0046] To thermically insulate the roof, means known in the art are used, such as a plurality of wood beams 330 fixed on the roof and spaced from each other, and covered with a board 332 as seen in Figure 16. The board 332 is preferably covered with roof covering material such as shingles 360 as shown in Figure 14. Insulation material (not

File number: 11682-003  
Revision: as amended  
Date: July 20, 2012

shown) may be added in the space between each of the wood beams and between the top surface 334 and the board 332, depending of the insulating factor needed.

5 [0047] To protect the roof against the weather elements such as rain, snow and humidity, sealing means are preferably applied at the junction of the structural elements. Some of these junctions (320 and 322) being shown in Figure 17. This type of sealing is widely known in the related art, it may be, for example, weather-strips (Check Mate 2<sup>TM</sup>, closed cell polyethylene rope, extruded closed cell polyethylene strip ...). Sealing means such as caulking may also be used, such as Perma-Chink<sup>TM</sup> and Energy Seal<sup>TM</sup> that are designed  
10 to seal the gap between adjacent wood logs to eliminate heat loss and air infiltration.

[0048] In Figure 15, the structural elements 350, 352 and 354 shown comprise integrated clapboard elements 360, 362 and 364 that are covering the junctions between adjacent structural elements.

15

[0049] The roofs shown in the present document are symmetrical as it is usually a desired feature for roofs but it is possible to obtain roofs that are not symmetrical. It is possible to mount an asymmetrical roof by using structural element having notches that are not centered on the structural element and by varying the length of the structural elements.

20

[0050] While illustrative and presently preferred embodiment(s) of the invention have been described in detail hereinabove, it is to be understood that the inventive concepts may be otherwise variously embodied and employed and that the appended claims are intended to be construed to include such variations except insofar as limited by the prior  
25 art.

File number: 11682-003  
Revision: as amended  
Date: July 20, 2012

## Claims

- 1) A method to build a roof structure using a plurality of longitudinal structural elements having a top surface and a bottom surface, the longitudinal structural elements having at least two transversal notches on the bottom surface, the at least two notches having a shape complementary to the shape of the top surface, the method comprising the steps of:
- 5
- 10
- 15
- 20
- 25
- a) disposing a pair of the longitudinal structural elements in a generally parallel manner, said notches of the pair being disposed at a first predetermined distance;
  - b) disposing a pair of the transverse longitudinal structural elements in a generally parallel manner on the top of and at an angle to the pair of longitudinal structural elements, the at least two notches of the pair of the transverse longitudinal structural elements being disposed at a second predetermined distance;
  - c) disposing an additional pair of the longitudinal structural elements in a generally parallel manner on the top of and at an angle to the pair of transverse longitudinal structural elements, the at least two notches of the additional pair of longitudinal transverse elements being disposed at the first predetermined distance;
  - d) repeating step b) and, if the roof structure is not completed by step b), step c) wherein the second predetermined distance between the at least two notches is decreased at each repetition until said roof structure is built;
- wherein the plurality of longitudinal structural elements are shaped to form a substantially plane surface when installed on top of another.
- 2) The method as claimed in claim 1, further comprising the step of adding a gable on top of the last pair of longitudinal structural elements.

File number: 11682-003  
Revision: as amended  
Date: July 20, 2012

- 3) The method as claimed in any of claims 1 and 2, further comprising the step of sealing said roof.
- 4) The method as claimed in claim 3, further comprising the step of applying shingles on top surface of said roof.
- 5) The method as claimed in claim 3, further comprising the step of applying sealing means at a junction between adjacent structural elements.
- 6) The method as claimed in claim 5, wherein said sealing means is a weatherstrip.
- 7) The method as claimed in claim 2, further comprising the step of insulating said roof.
- 8) The method as claimed in claim 7, further comprising the step of fixing beams on the top surface of said roof, said beams being spaced from each other.
- 9) The method as claimed in claim 8, further comprising the step of disposing insulating material between each of said beams.
- 10) A method to mount a roof using a plurality of longitudinal structural elements having a top surface and a bottom surface, the longitudinal structural elements having at least two transversal notches on the bottom surface, the at least two notches having a shape complementary to the shape of the top surface, the method comprising the steps of:
- a) disposing a pair of the longitudinal structural elements in a generally parallel manner, the at least two notches of the pair being disposed at a first predetermined distance;
  - b) disposing a pair of transverse longitudinal structural elements in a generally parallel manner on the top of and at an angle to the pair of

File number: 11682-003  
Revision: as amended  
Date: July 20, 2012

- longitudinal structural elements, the at least two notches of the pair of the longitudinal transverse structural elements being disposed at a second predetermined distance;
- 5 c) disposing an additional pair of the longitudinal structural elements in a generally parallel manner on the top of and at an angle to the pair of transverse longitudinal structural elements, the at least two notches of the additional pair of longitudinal transverse structural elements being disposed at a third predetermined distance, the third predetermined distance being smaller than the first predetermined distance;
- 10 repeating step b) and, if the roof structure is not completed by step b), step c) wherein the second and third predetermined distance between the at least two notches are decreased until said roof structure is built.
- 11) The method as claimed in claim 10, further comprising the step of
- 15 a) adding a first gable on top of the last pair of longitudinal structural elements;
- b) adding a second gable on top of and at an angle to the first gable.
- 12) The method as claimed in any of claims 10 and 11, further comprising the step of
- 20 sealing said roof.
- 13) The method as claimed in claim 12, further comprising the step of applying shingles on top surface of said roof.
- 25 14) The method as claimed in claim 12, further comprising the step of applying sealing means at a junction between adjacent structural elements.
- 15) The method as claimed in claim 14, wherein said sealing means is a weatherstrip.

File number: 11682-003  
Revision: as amended  
Date: July 20, 2012

16) The method as claimed in claim 10, further comprising the step of insulating said roof.

5 17) The method as claimed in claim 16, further comprising the step of fixing beams on the top surface of said roof, said beams being spaced from each other.

18) The method as claimed in claim 17 further comprising the step of disposing insulating material between each of said beams.

10

\* \* \*

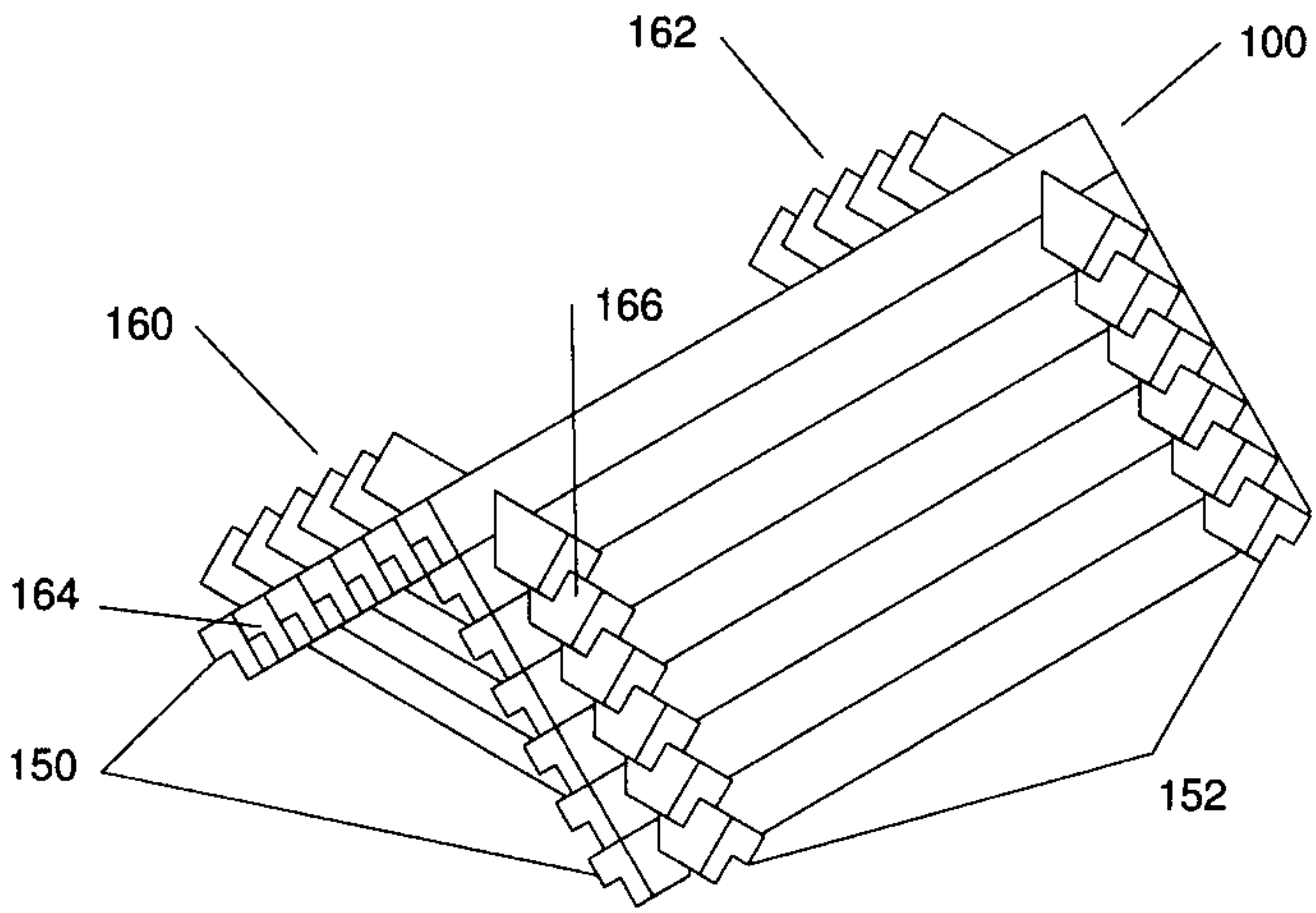


FIGURE 1

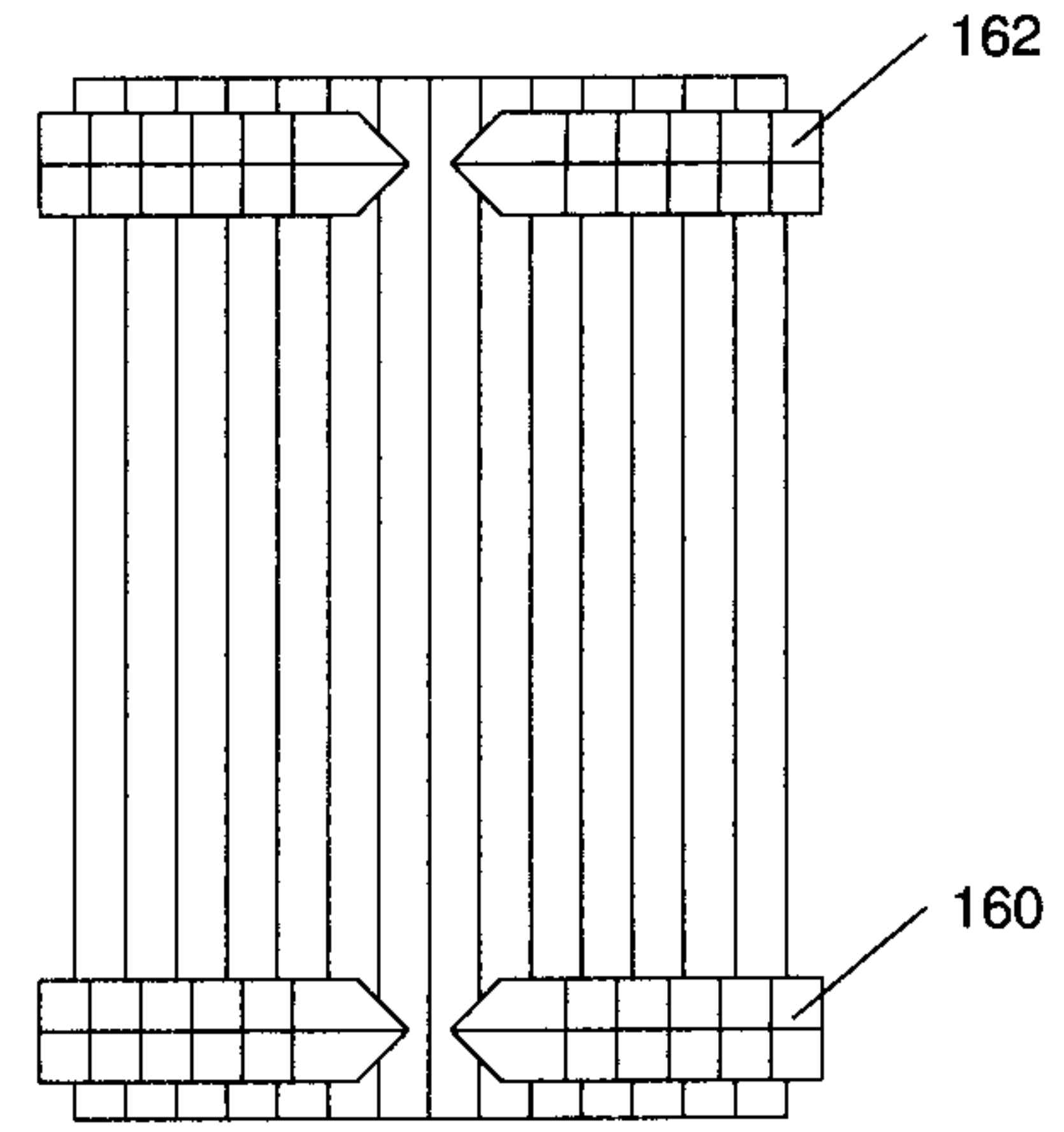


FIGURE 2

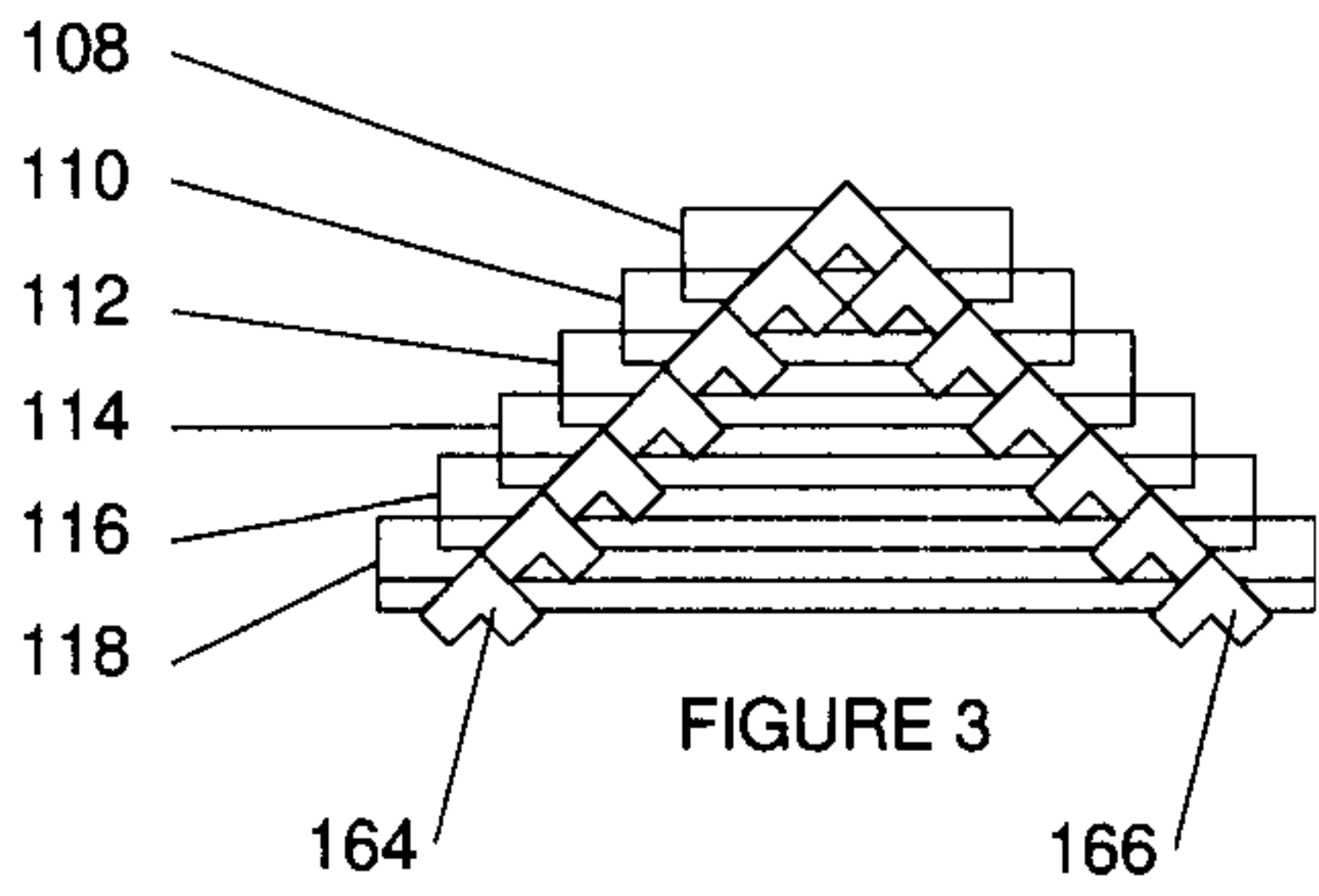


FIGURE 3

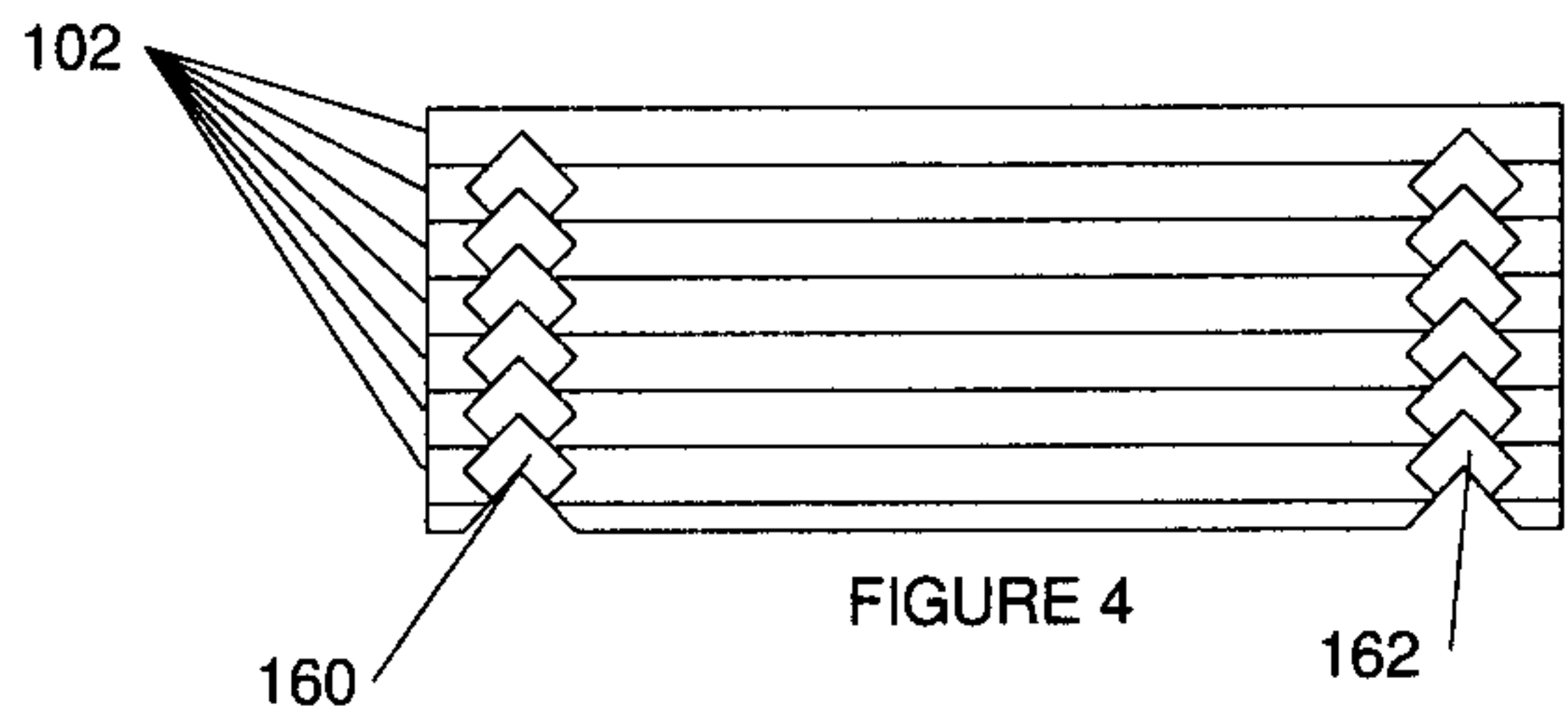


FIGURE 4

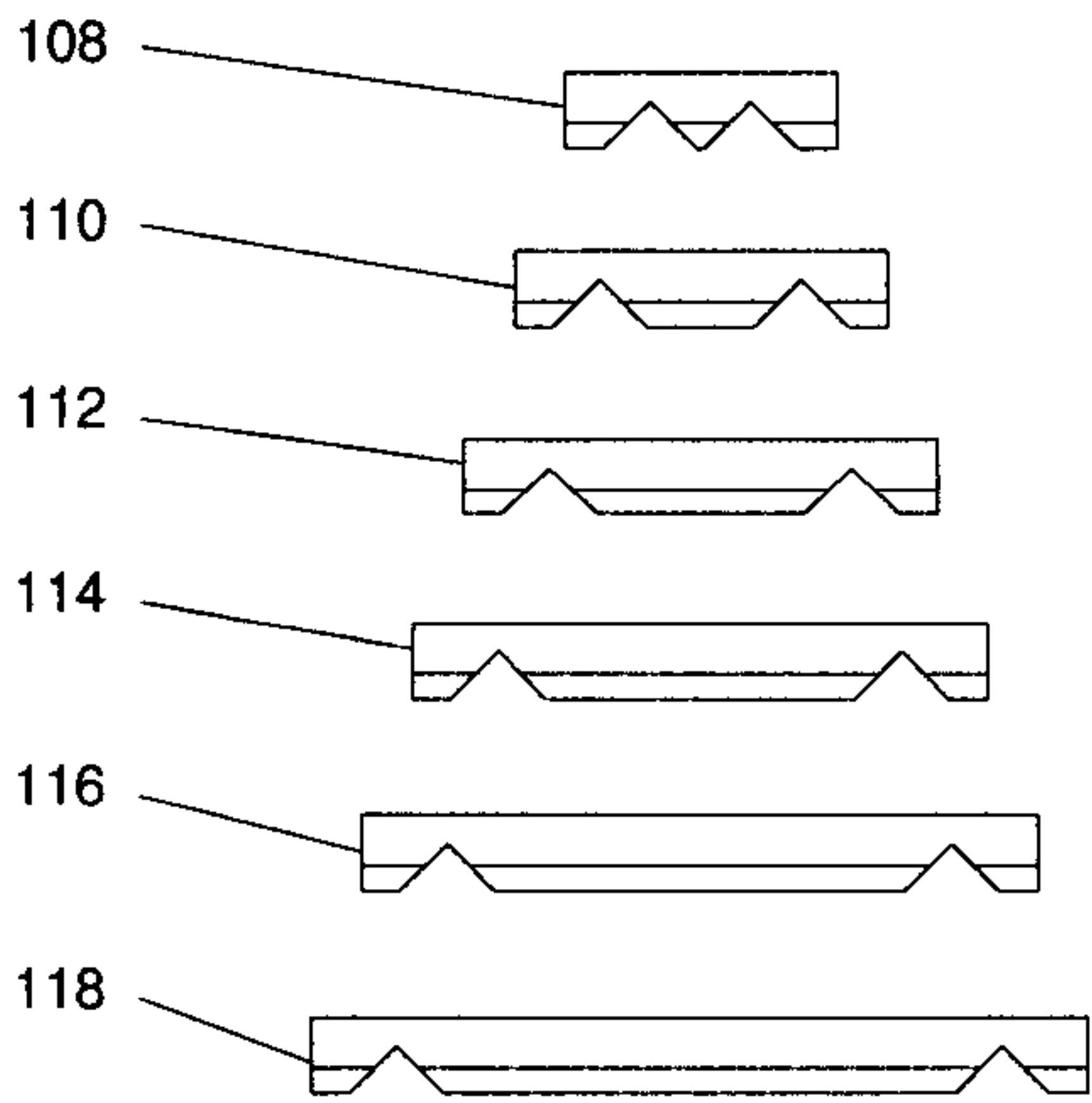


FIG. 5A

FIG. 5B

FIG. 5C

FIG. 5D

FIG. 5E

FIG. 5F

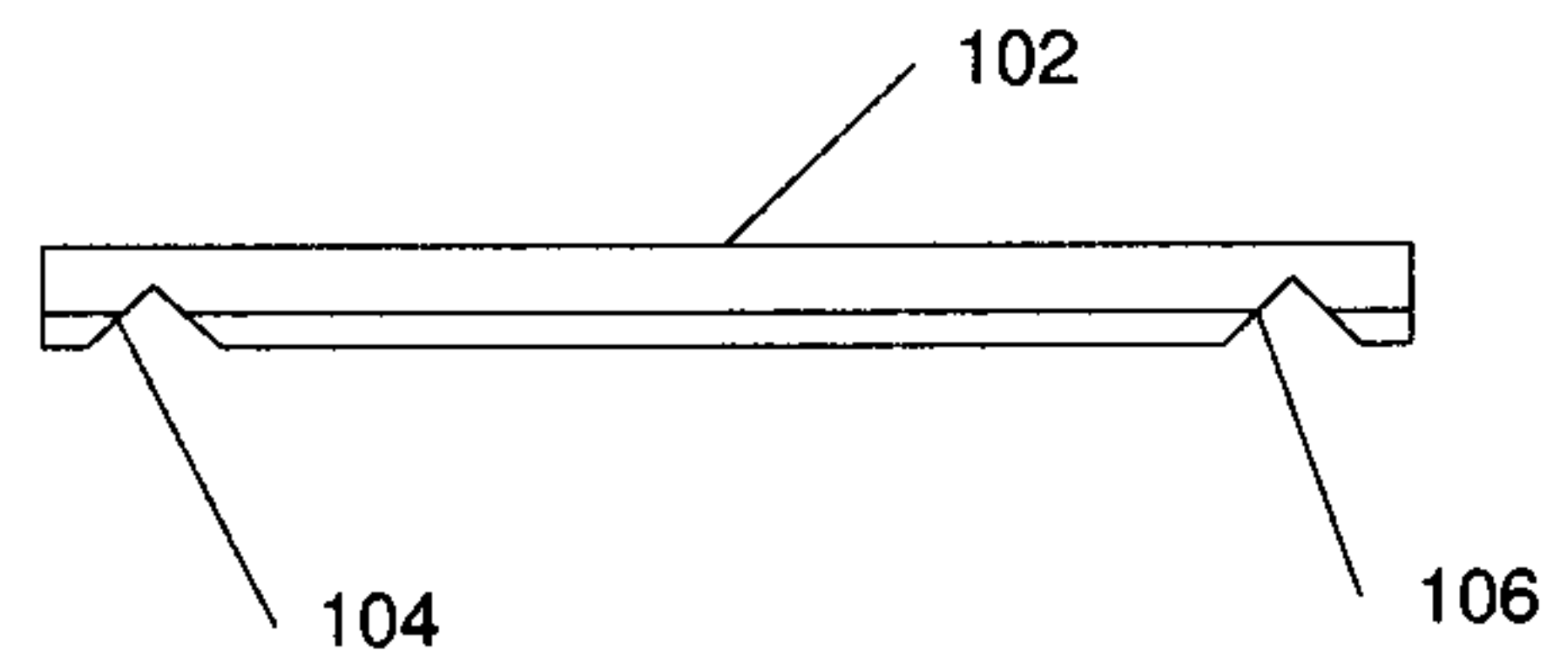


FIG. 6



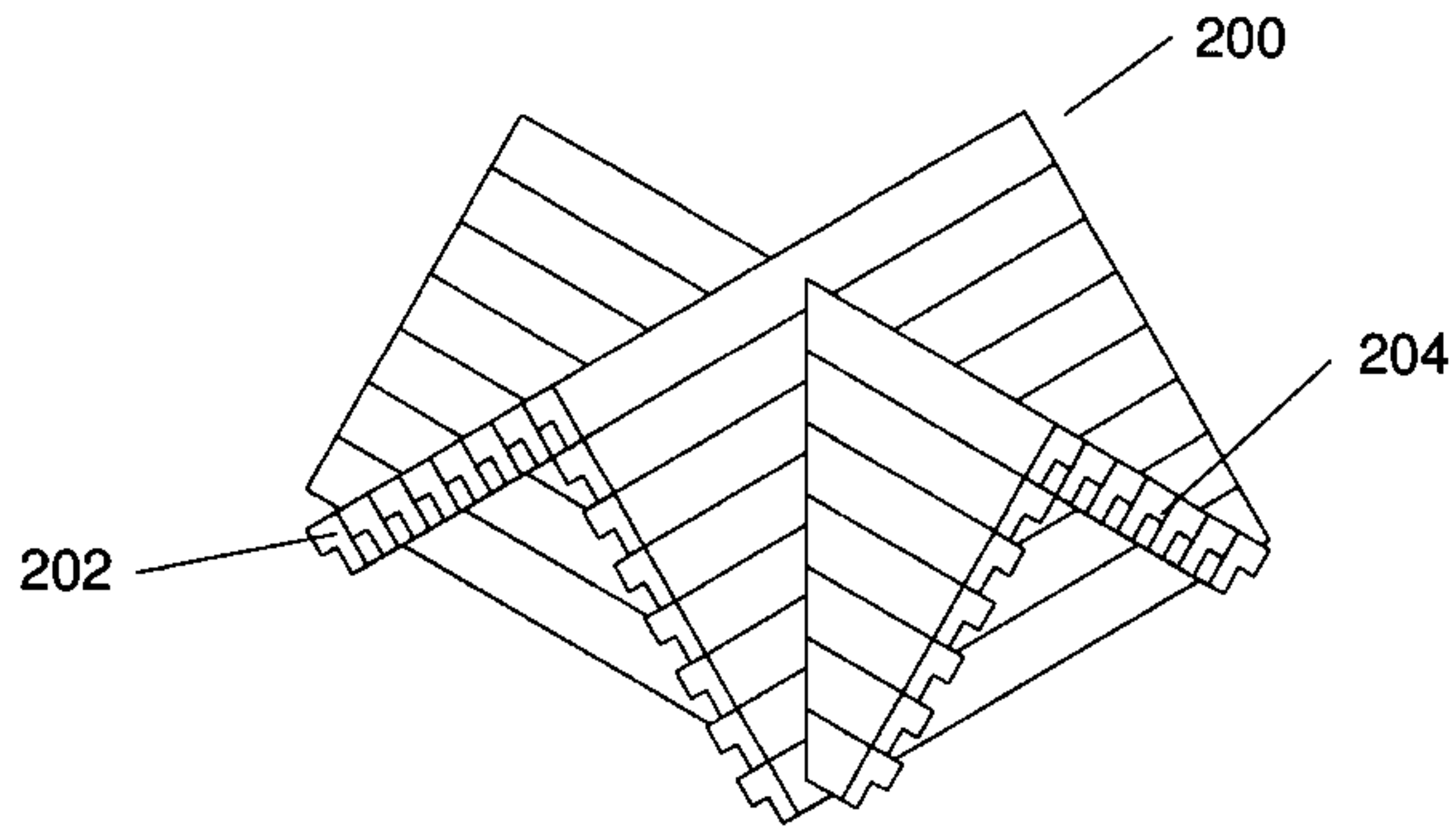


FIGURE 7

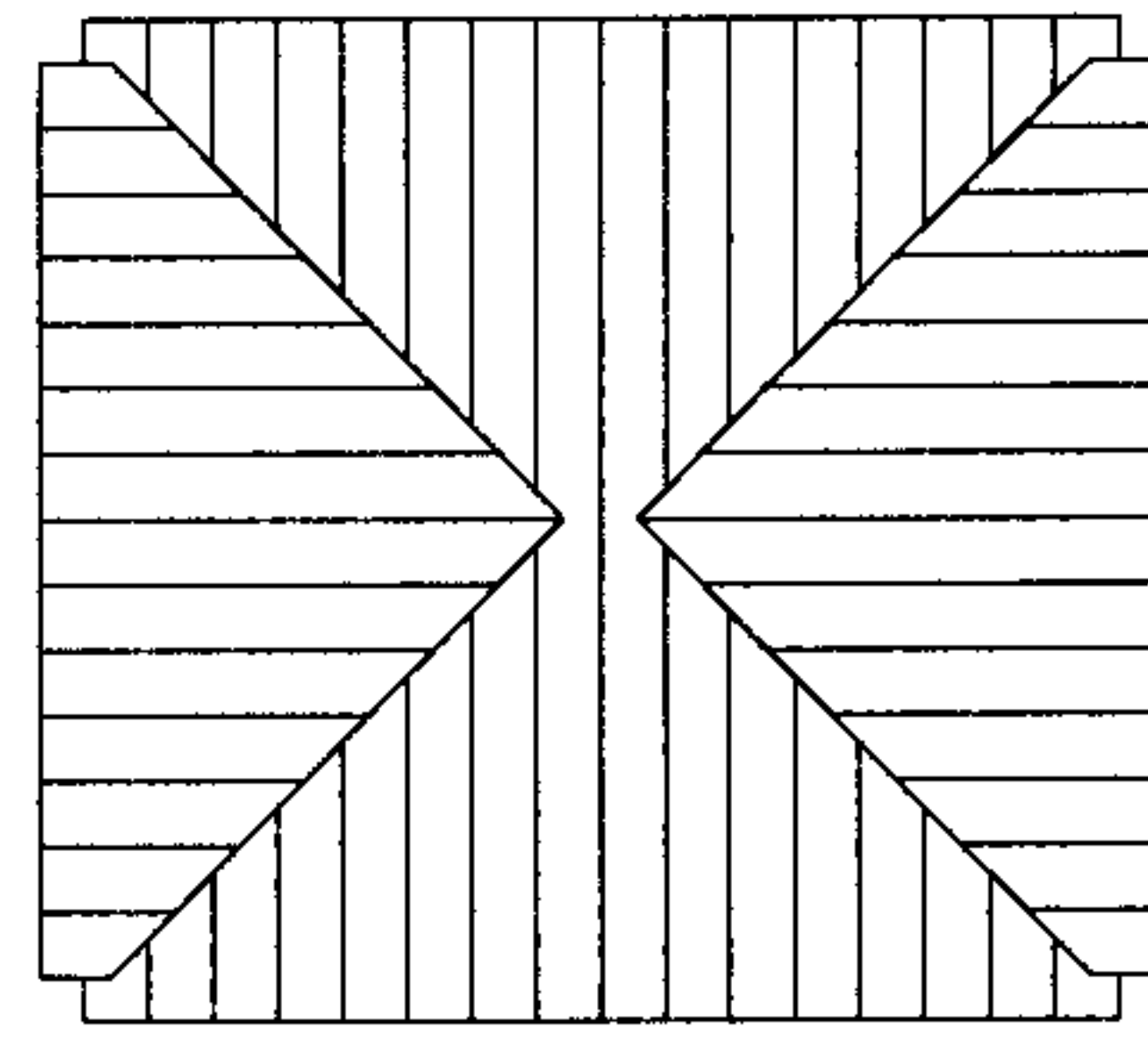


FIGURE 8

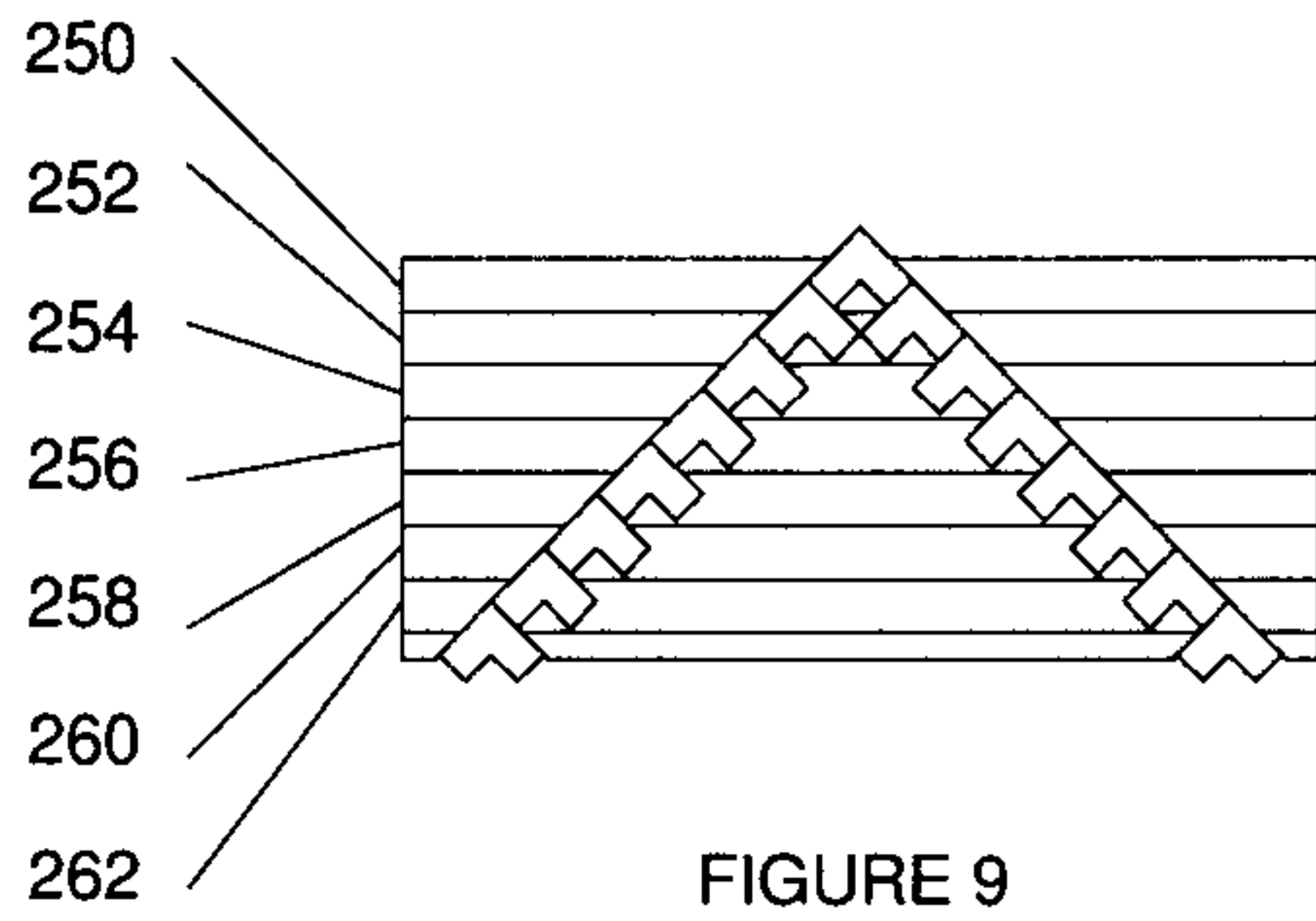


FIGURE 9

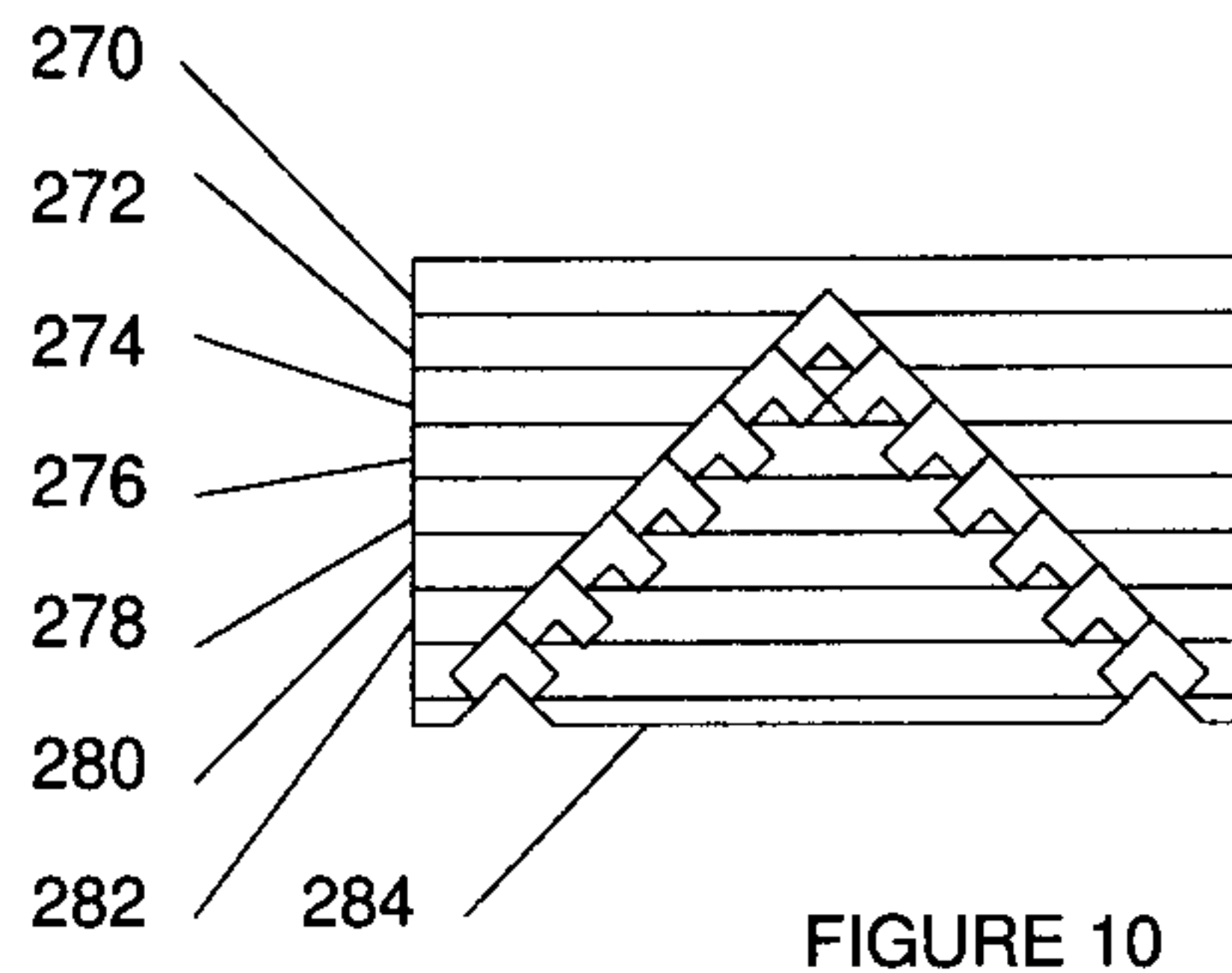


FIGURE 10

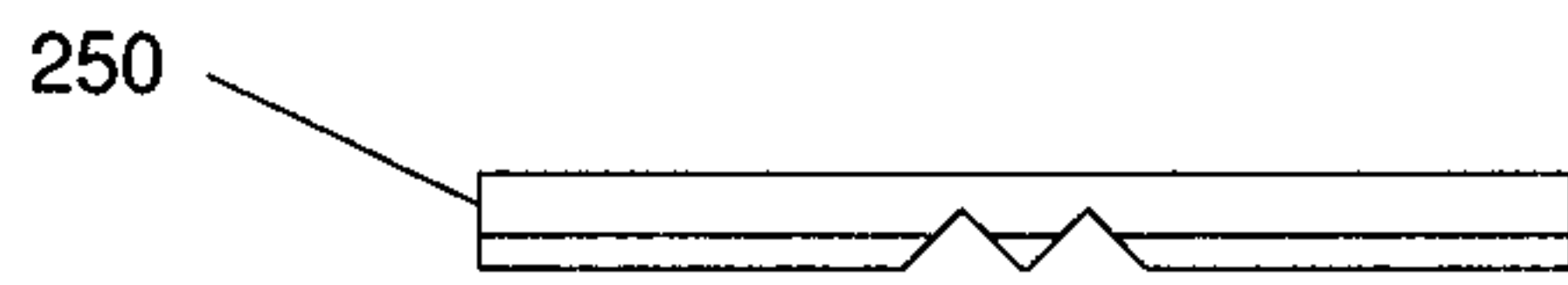


FIG. 11A

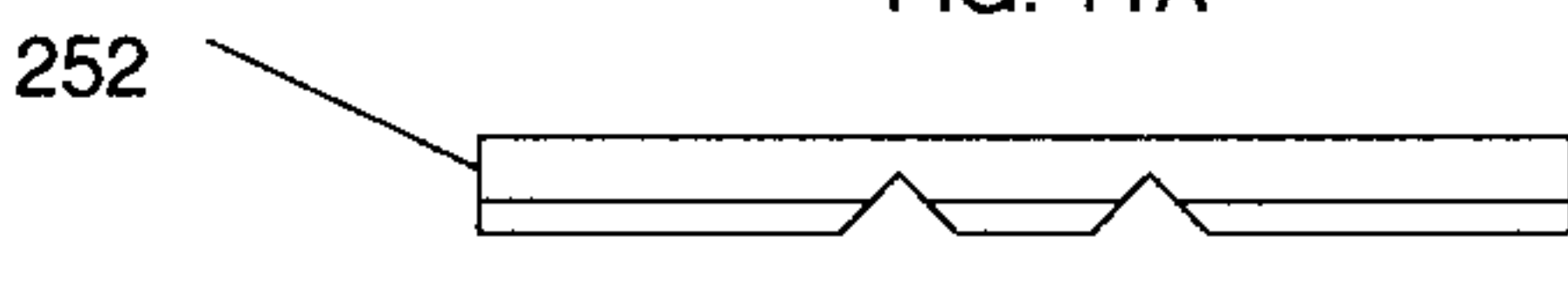


FIG. 11B



FIG. 11C



FIG. 11D



FIG. 11E



FIG. 11F



FIG. 11G

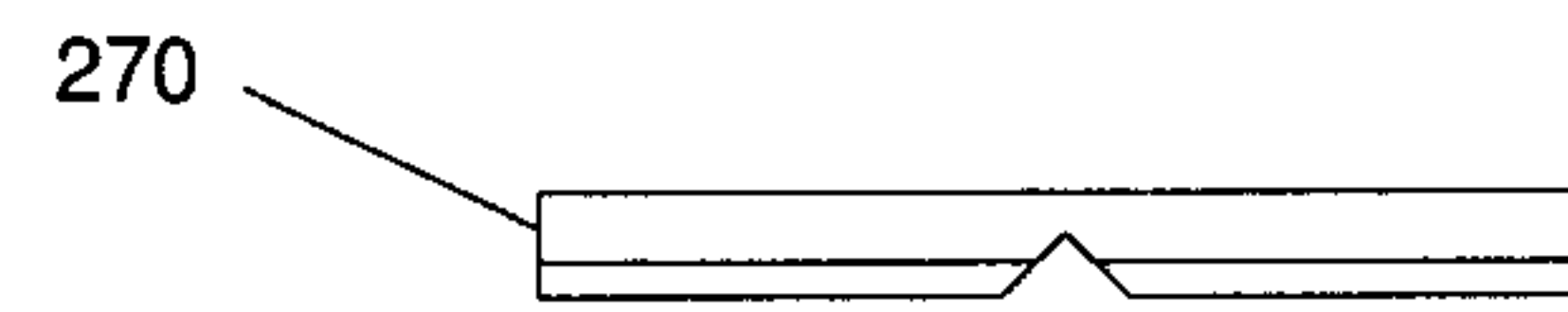


FIG. 12A

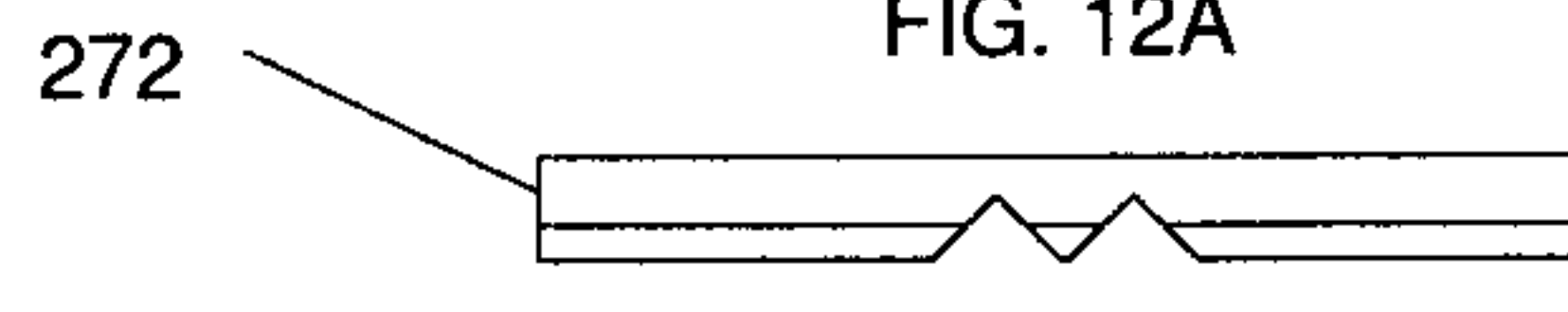


FIG. 12B

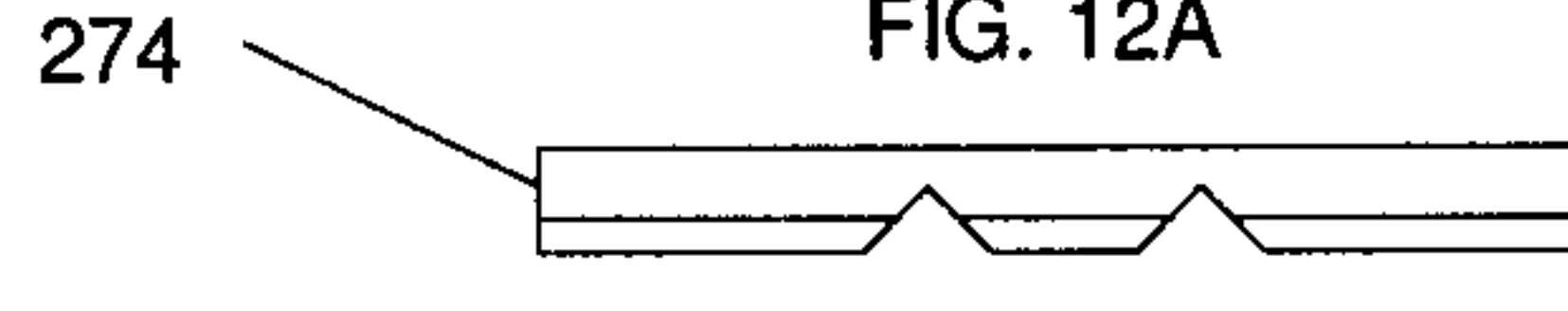


FIG. 12C



FIG. 12D



FIG. 12E



FIG. 12F

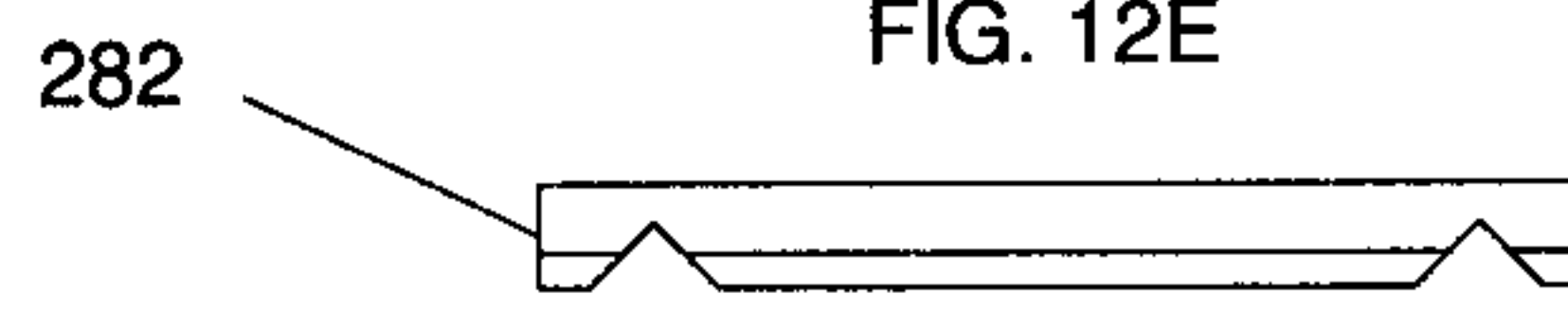


FIG. 12G

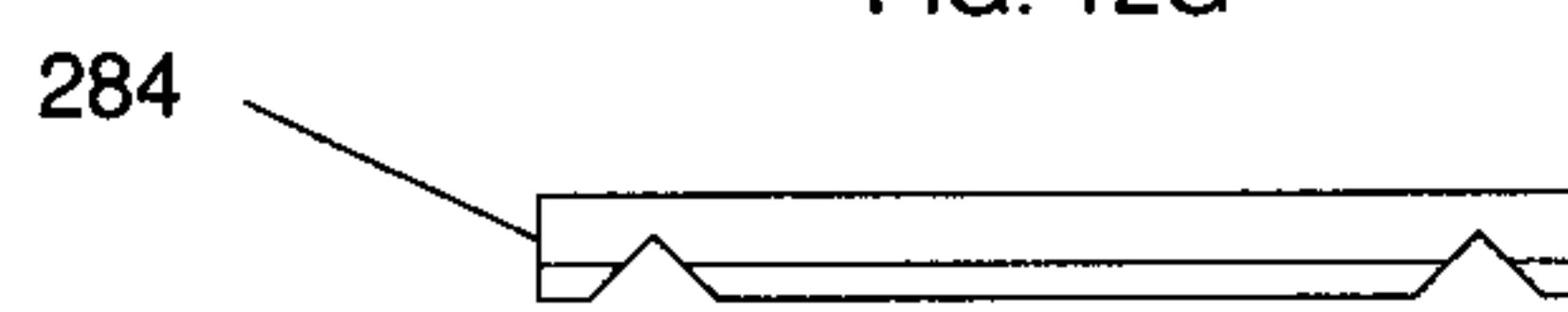


FIG. 12H

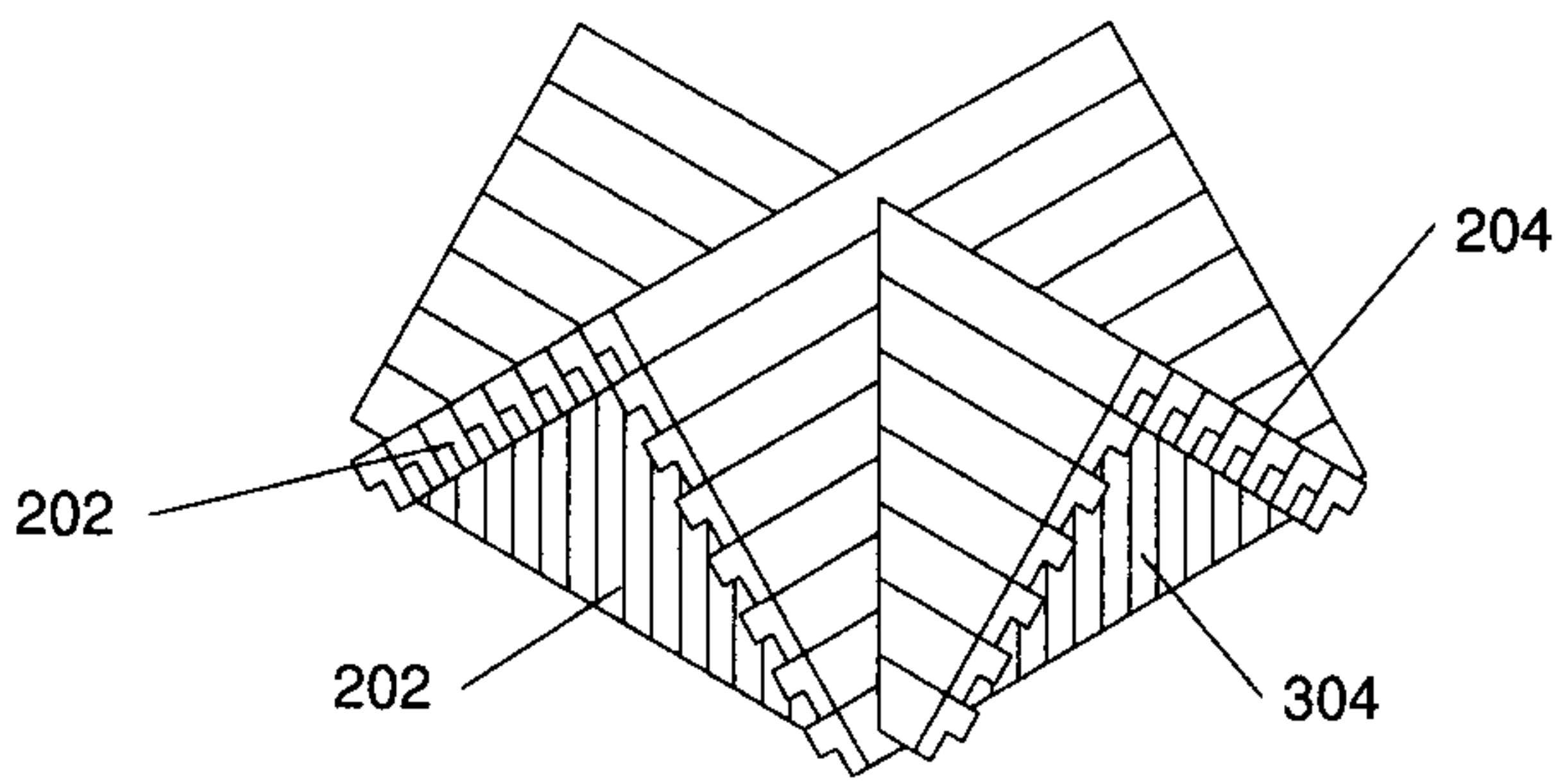


FIGURE 13

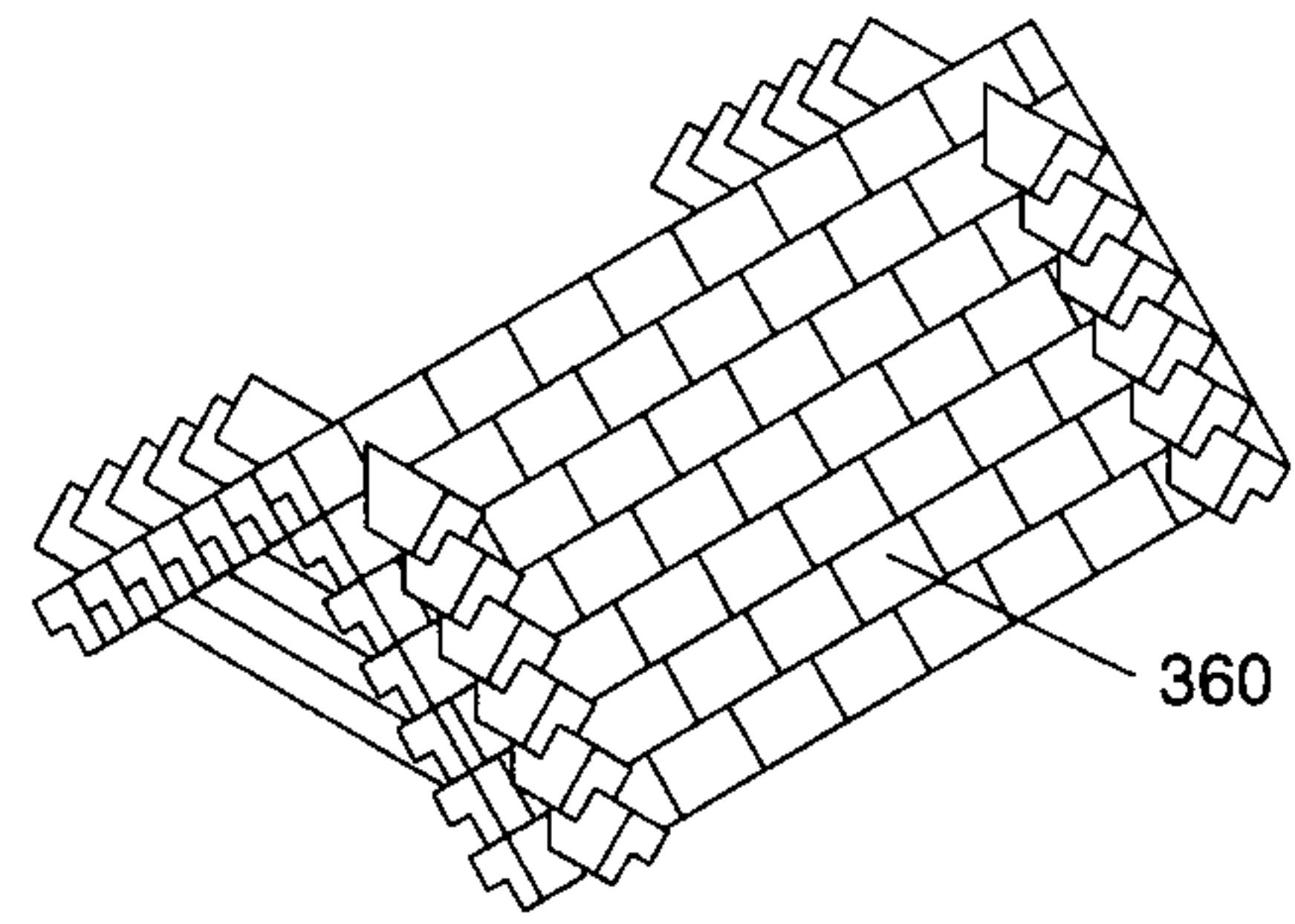


FIGURE 14

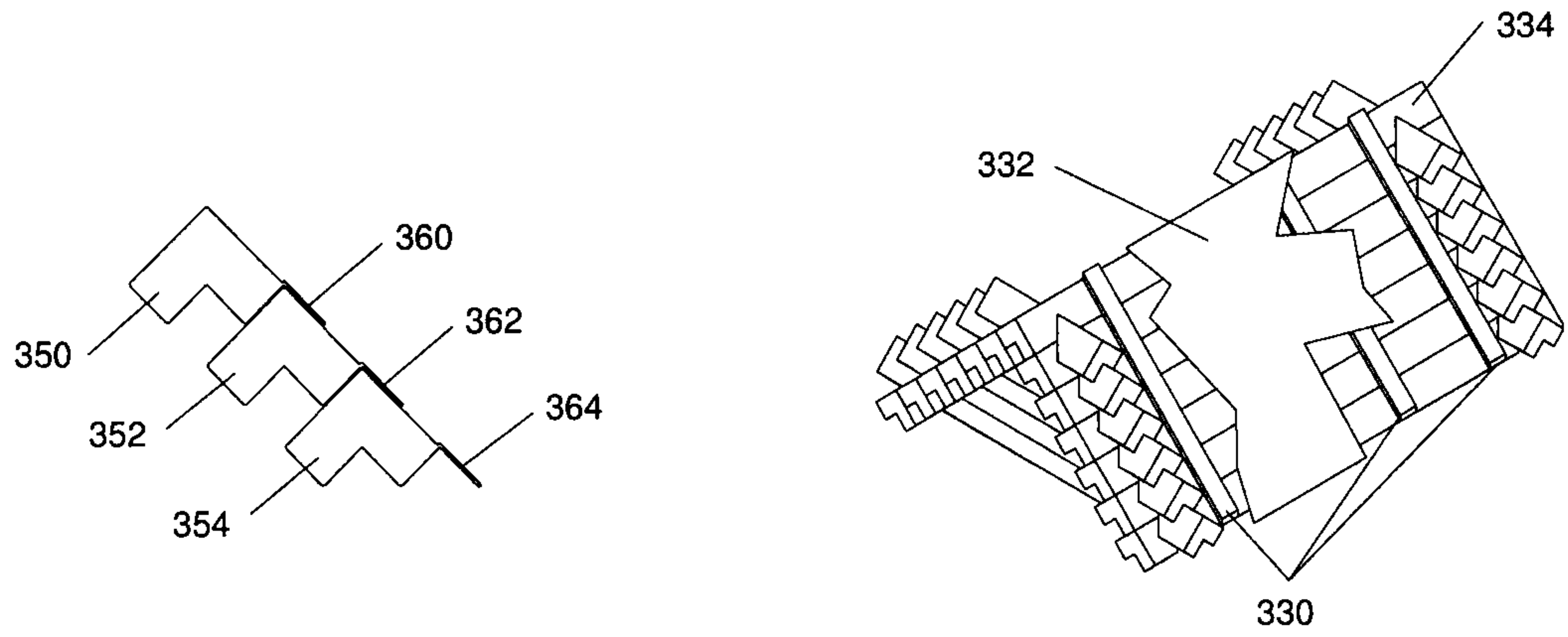


FIGURE 15

FIGURE 16

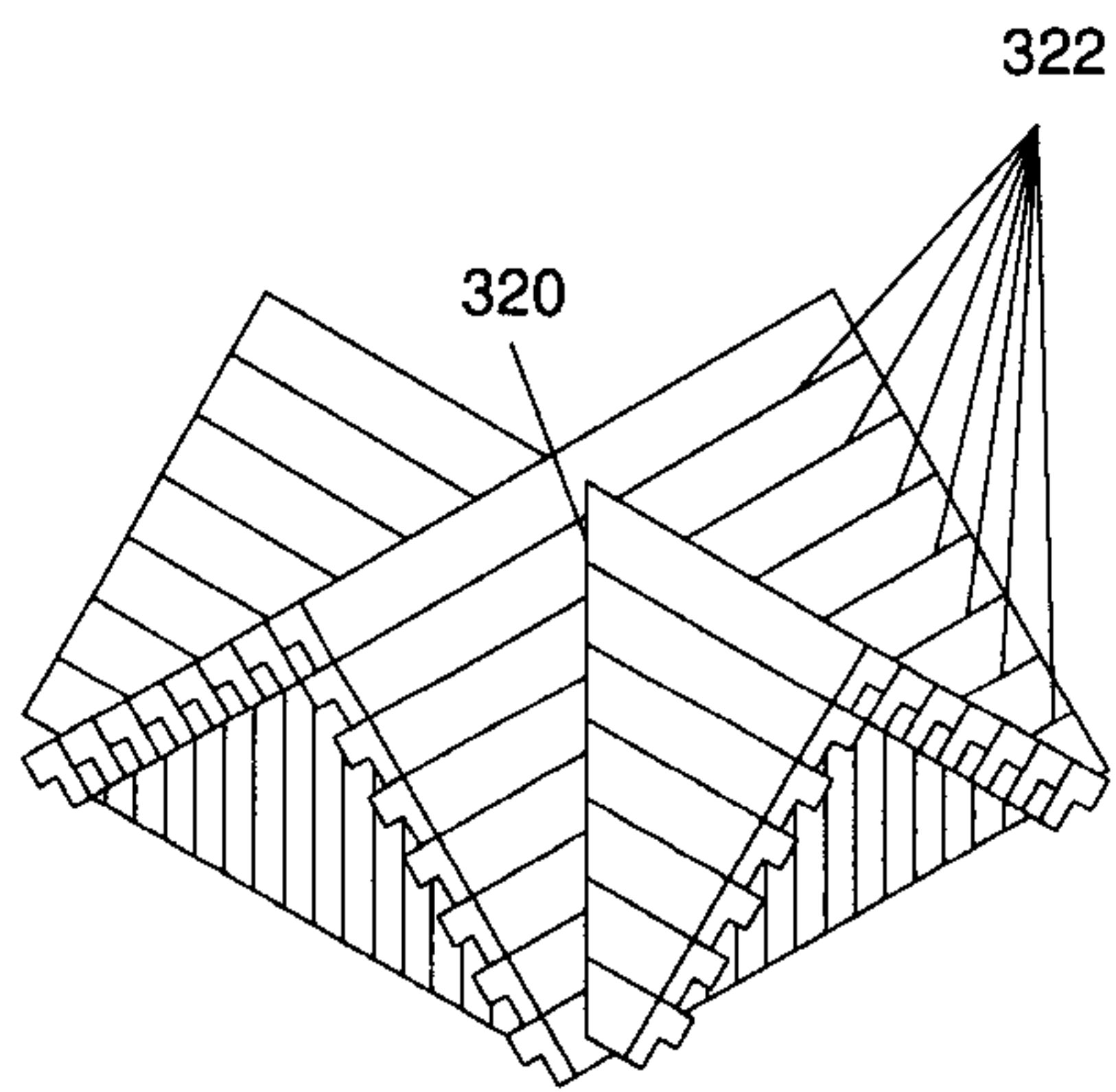


FIGURE 17

