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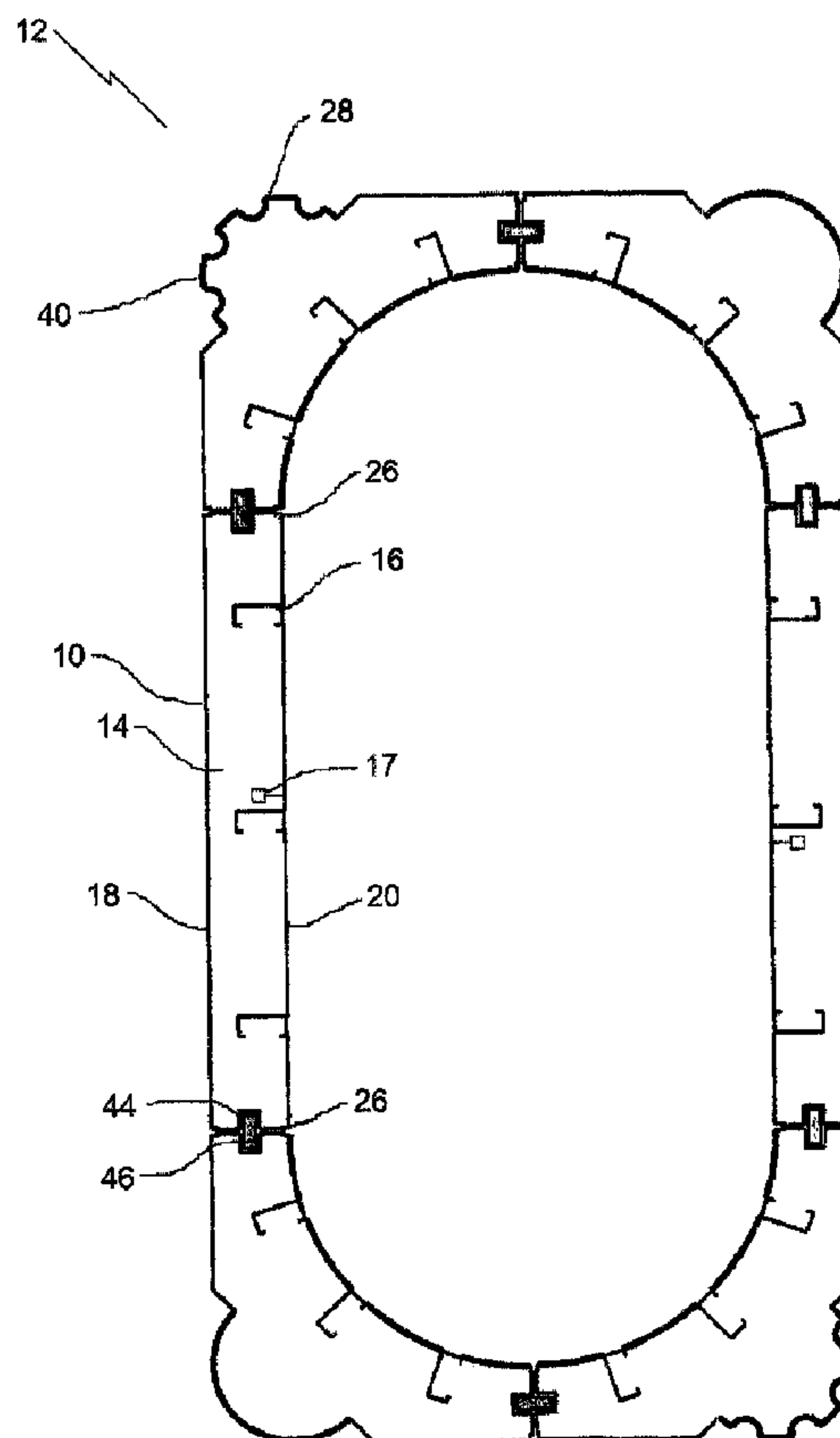
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(54) Titre : PANNEAU DE CONSTRUCTION EN MOUSSE RIGIDE

(54) Title: RIGID FOAM BUILDING PANEL



(57) Abrégé/Abstract:

A rigid foam building panel includes a rigid foam body with elongate reinforcing studs. The rigid foam body has a first face, a second face, a top edge, a bottom edge and opposed side edges. Integrally formed non-planar architectural features are positioned on at least one of the first face or the second face.



**ABSTRACT OF THE DISCLOSURE**

A rigid foam building panel includes a rigid foam body with elongate reinforcing studs. The rigid foam body has a first face, a second face, a top edge, a bottom edge and  
5 opposed side edges. Integrally formed non-planar architectural features are positioned on at least one of the first face or the second face.

**TITLE OF THE INVENTION:**

Rigid foam building panel

**FIELD OF THE INVENTION**

5           The present invention relates to a rigid foam building panel for use in a building system that utilizes panels made from rigid foam, which are reinforced by studs inserts.

**BACKGROUND OF THE INVENTION**

10           The following patents disclose the use of rigid foam with reinforcing stud inserts: US 4,633,634 (Nemmer et al from 1987), US 5,722,198 (Bader from 1998) and CA 2,363,216 (Ritchie from 2001). The systems disclosed use parallel-piped panels, which are only suitable for making box-like structures.

**SUMMARY OF THE INVENTION**

15           What is required is a rigid foam building panel, which will make rigid foam building systems more versatile.

20           According to the present invention there is provided a rigid foam building panel which includes a rigid foam body with elongate reinforcing studs. The rigid foam body has a first face, a second face, a top edge, a bottom edge and opposed side edges. Integrally formed non-planar architectural features are positioned on at least one of the first face or the second face.

25           The rigid foam building panel, as described above, can be made with selected non-planar architectural features, such as a concave curvature, a convex curvature, or an architectural moulding. Examples of architectural mouldings include: crown mouldings, chair rails, baseboard mouldings and columns.

30           According to another aspect of the present invention, the building panel is divided into modular sections, which are arranged one above the other. This enables a stock of crown moulding variations, chair moulding variations and baseboard moulding variations to be provided. The consumer selects the desired crown moulding variation, chair moulding



variation and baseboard moulding variation. The building panel is then assembled from modular sections using the crown moulding variation, chair moulding variation and baseboard moulding variation selected by the consumer.

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### **BRIEF DESCRIPTION OF THE DRAWINGS**

These and other features of the invention will become more apparent from the following description in which reference is made to the appended drawings, the drawings are for the purpose of illustration only and are not intended to in any way limit the scope of the invention to the particular embodiment or embodiments shown, wherein:

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**FIGURE 1** is a top plan view of a building panel constructed in accordance with the teachings of the present invention, having curvatures and columns.

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**FIGURE 2** is a side elevation view, in section, of a building panel constructed in accordance with the teachings of the present invention, having crown mouldings, baseboard mouldings and chair mouldings.

**FIGURE 3** is a side elevation view of another embodiment of a building panel having chair mouldings.

**FIGURE 4** is a rear elevation view of the building panel illustrated in **FIGURE 2**.

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**FIGURE 5** is a exploded top plan view of the connections between adjacent building panels of the building panel illustrated in **FIGURE 1**.

### **DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT**

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The preferred embodiment, a rigid foam building panel generally identified by reference numeral 10, will now be described with reference to **FIGURES 1** through **5**.

#### **Structure and Relationship of Parts:**

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Referring now to **FIGURE 1**, there is shown a structure 12 formed of rigid foam building panels 10. Rigid foam building panels 10 include a rigid foam body 14 with elongate reinforcing studs 16 and electrical conduits 17. Referring now to **FIGURES 2** and **5**, rigid foam body 14 has a first face 18, a second face 20, a top edge 22, a bottom edge 24 and opposed side edges 26. There are integrally formed non-planar architectural features 28 on either first face 18 or second face 20. Referring now to **FIGURES 1** through **4**, non-

planar architectural feature 28 may be either a concave curvature 30, a convex curvature 32, or an architectural moulding such as a crown moulding 36, a chair rail 38, a column 40, or a base board moulding 42.

5 Referring now to **FIGURE 5**, opposed side edges 26 of body 14 have grooves 44 extending between top edge 22 and bottom edge 24. Grooves 44 are adapted to receive a connecting spline 46, which allows bodies 14 to be connected together. Referring to **FIGURES 2** and **3**, body 14 is divided longitudinally into multiple modular sections 48 of upper and lower sections positioned one above the other. Modular sections 48 therefore allow  
10 for crown mouldings 36, baseboard mouldings 42, and chair rail mouldings 38 to be inserted. More than one upper and lower modular section 48 may be provided, each having a different crown moulding 26 or a different baseboard moulding 42, respectively. Referring now to **FIGURE 4**, modular sections 48 are connected by using elongate vertical connectors 50 to connect them. Referring to **FIGURE 2**, modular sections 48 fit together and are connected  
15 using a lap joint 52, where one section 48 has a depending tongue 54 which overlaps another modular section 48 positioned immediately below. Referring now to **FIGURE 3**, lap joint 52 may also include a recess 58 that receives tongue 54. Referring to **FIGURE 5**, sealing grooves 56 are positioned in opposed side edges 26 immediately adjacent to first face 18 or second face 20, such that abutting bodies 14 are sealed by placing a sealant in sealing grooves  
20 56.

#### Operation:

The use of rigid foam building panel 10 will now be discussed with reference to **FIGURES 1** through **5**. Referring now to **FIGURE 2** and **3**, modular sections 48 are  
25 chosen according to the desired use and design of building panel 10, and may include architectural features 28 such as concave curvature 30, convex curvature 32, or an architectural moulding such as a crown moulding 36, a chair rail 38, or a base board moulding 42. The selected modular sections 48 are connected by lap joints 54, where tongue 54 either extends over the modular section 48 below, or fits into a recess 58. The sections are held  
30 together by vertical connectors 50. Once rigid foam building panels 10 have been assembled as desired, they are fit together to form the desired structure, such as that shown in **FIGURE 1**. Referring to **FIGURE 5**, rigid foam building panels 10 are held together by connecting



spline 46 that is adapted to fit in grooves 44 formed in opposed side edges 26. Sealing grooves 56 are formed at the connection point of opposed side edges 26 and first or second face 18 or 20 such that abutting bodies 14 are sealed by placing a sealant in sealing grooves 56. Referring again to **FIGURE 1**, bodies 14 need not be rectangular, and may include  
5 curved bodies 14 to allow for corners and other architectural features, such as columns 40.

It will be noted that a "C" channel is commonly used to support and install sectional walls. When working with curved and angled sections, however, this is no longer practical. What is preferred is an "L" shaped channel that may be installed on each side of the wall, if  
10 required. The vertical face attached to the wall, and the horizontal face may be cut to allow the vertical face to be bent around curves or corners.

In this patent document, the word "comprising" is used in its non-limiting sense to mean that items following the word are included, but items not specifically mentioned are not  
15 excluded. A reference to an element by the indefinite article "a" does not exclude the possibility that more than one of the element is present, unless the context clearly requires that there be one and only one of the elements.

It will be apparent to one skilled in the art that modifications may be made to the  
20 illustrated embodiment without departing from the spirit and scope of the invention as hereinafter defined in the Claims.

**THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE  
PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:**

1. A rigid foam building panel, comprising:
  - 5 a rigid foam body with elongate reinforcing studs, the rigid foam body having a first face, a second face, a top edge, a bottom edge and opposed side edges; and  
integrally formed non-planar architectural features on at least one of the first face or the second face.
- 10 2. The rigid foam building panel as defined in Claim 1, wherein the non-planar architectural feature is a concave curvature on one of the first face or the second face.
3. The rigid foam building panel as defined in Claim 1, wherein the non-planar architectural feature is a convex curvature on one of the first face or the second face.
- 15 4. The rigid foam building panel as defined in Claim 1, wherein the non-planar architectural feature is an architectural moulding on one of the first face or the second face.
5. The rigid foam building panel as defined in Claim 4, wherein the architectural  
20 moulding is a crown moulding.
6. The rigid foam building panel as defined in Claim 4, wherein the architectural moulding is a chair rail.
- 25 7. The rigid foam building panel as defined in Claim 4, wherein the architectural moulding is a column.
8. The rigid foam building panel as defined in Claim 4, wherein the architectural moulding is a baseboard moulding.
- 30 9. The rigid foam building panel as defined in Claim 1, wherein the opposed side edges of the body has grooves extending between the top edge and the bottom edge, the grooves



being adapted to receive a connecting spline.

10. The rigid foam building panel as defined in Claim 1, wherein the body is divided longitudinally into at least two modular sections positioned one above the other.

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11. The rigid foam building panel as defined in Claim 1 wherein the at least two modular sections include an upper modular section and a lower modular section.

12. The rigid foam building panel as defined in Claim 11, wherein more than one upper modular section is provided each having a different crown moulding and more than one lower modular section is provided each having a different baseboard moulding.

13. The rigid foam building panel as defined in Claim 11, wherein more than one upper modular section is provided each having a different crown moulding and more than one lower modular section is provided each having a different chair rail moulding.

14. The rigid foam building panel as defined in Claim 10, wherein elongate vertical connectors connect the at least two modular sections.

15. The rigid foam building panel as defined in Claim 10, wherein the at least two modular sections are connected by a lap joint in which one of the at least two modular sections has a depending tongue which overlaps a modular section positioned immediately below.

16. The rigid foam building panel as defined in Claim 1, wherein sealing grooves are positioned in the opposed sides edges immediately adjacent at least one of the first face or the second face, such that abutting bodies are sealed by placing a sealant in the sealing grooves.



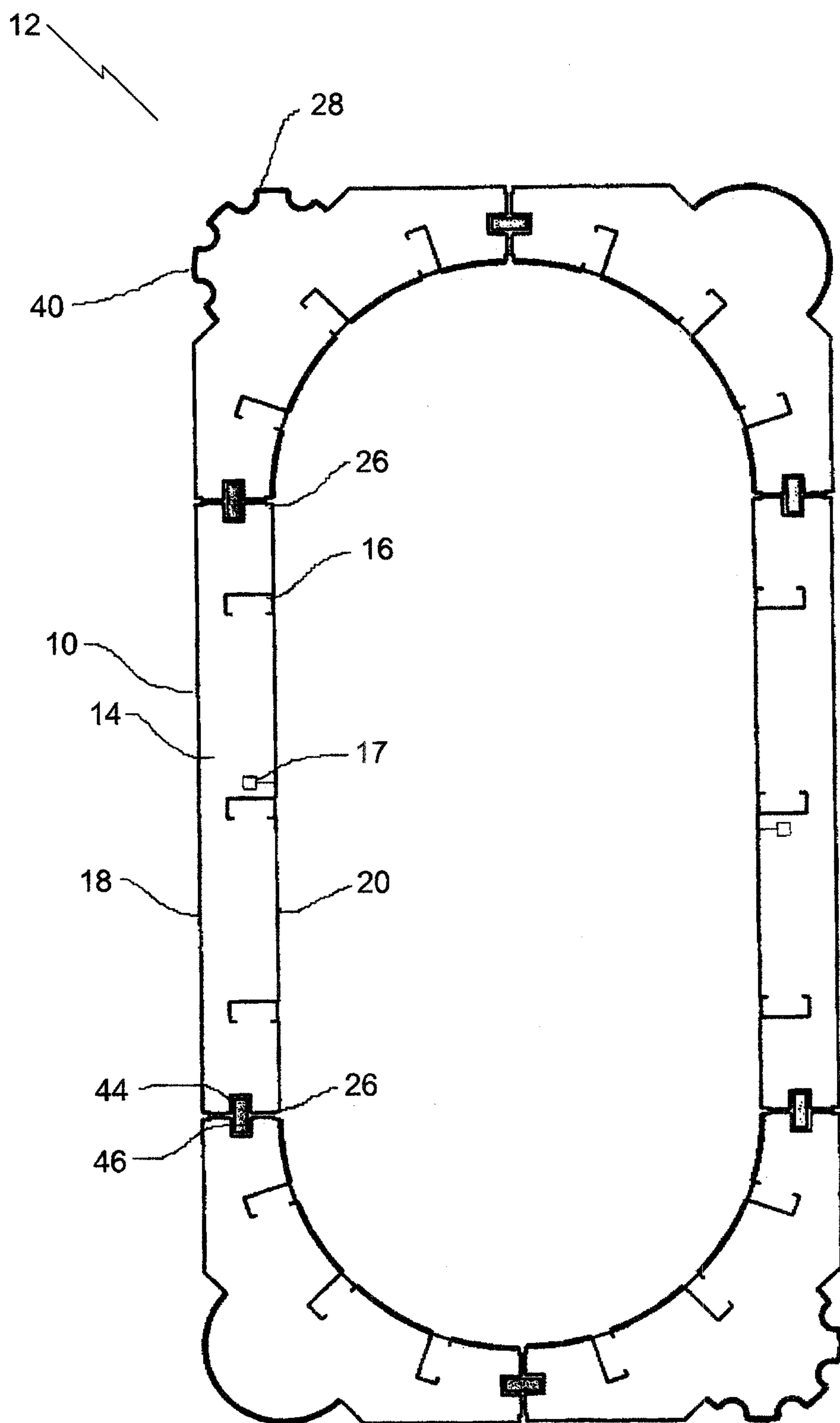


FIG. 1

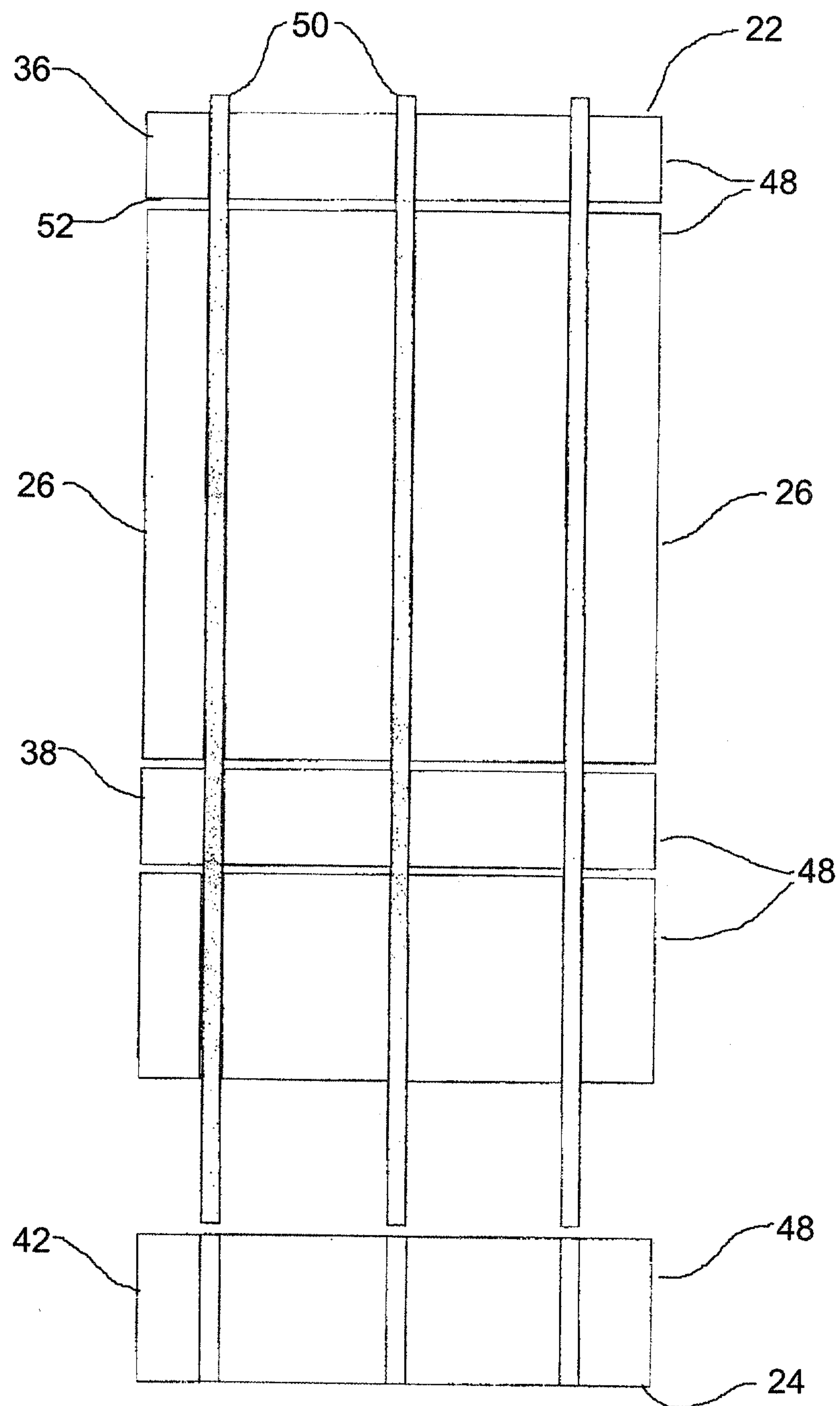
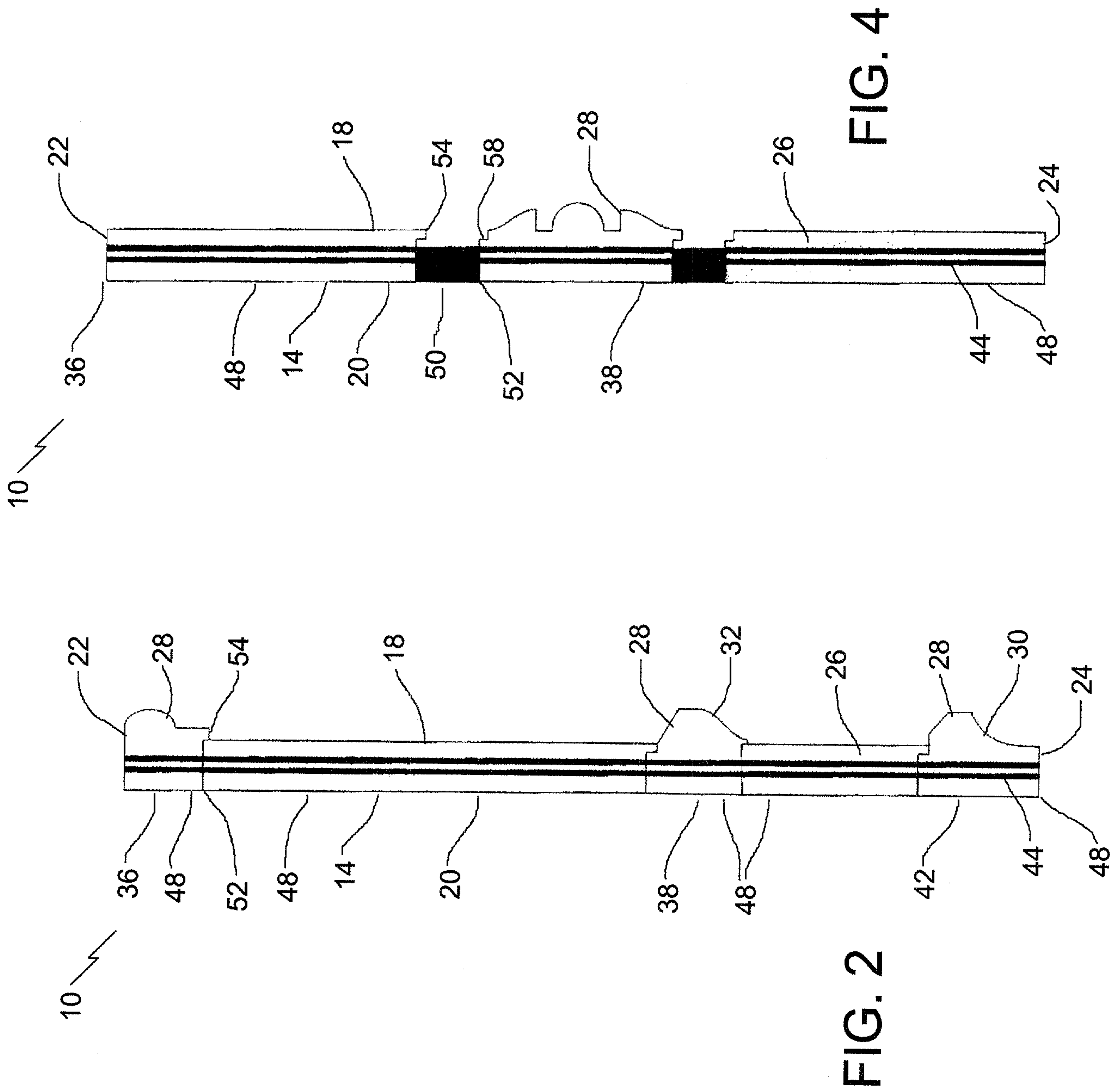


FIG. 3





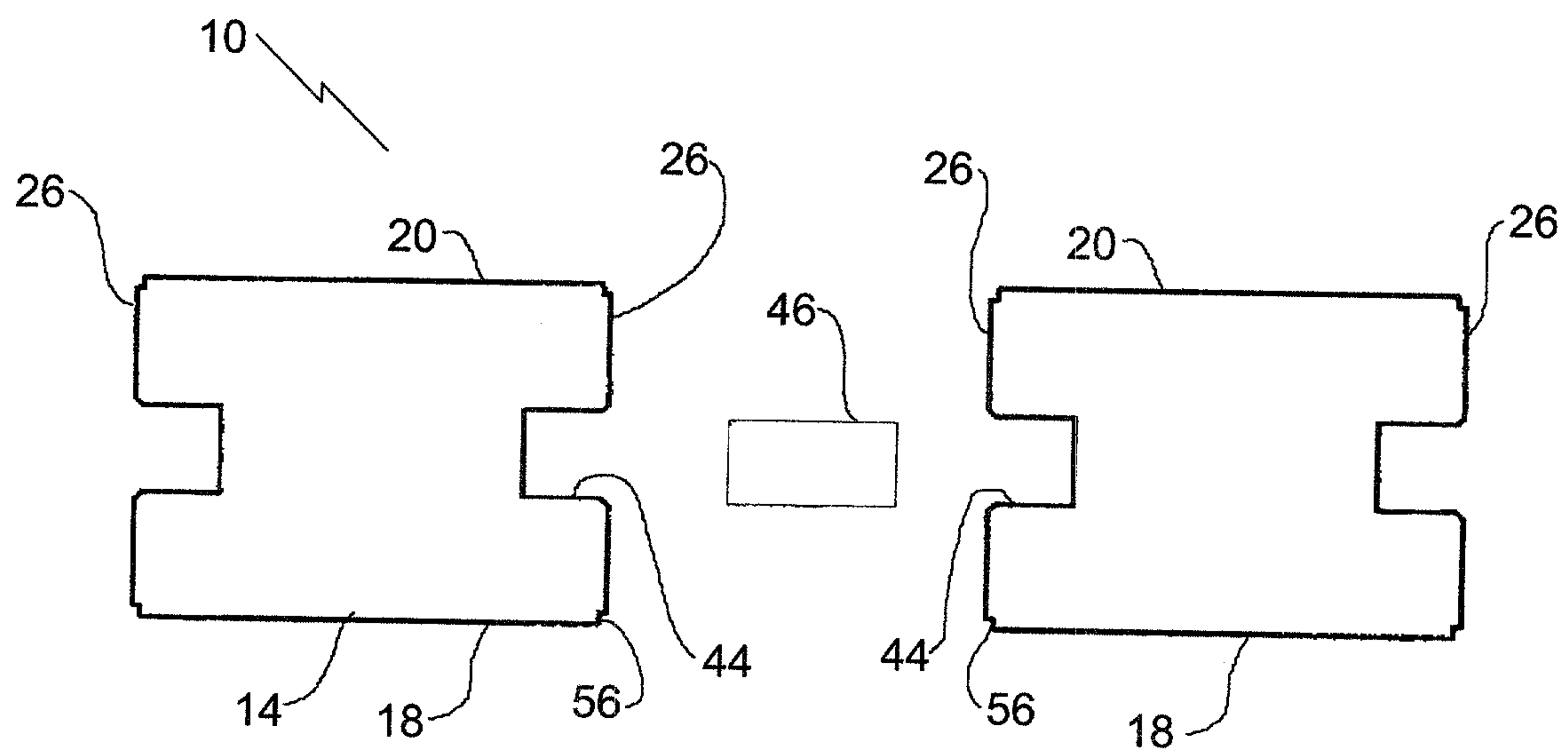


FIG. 5



