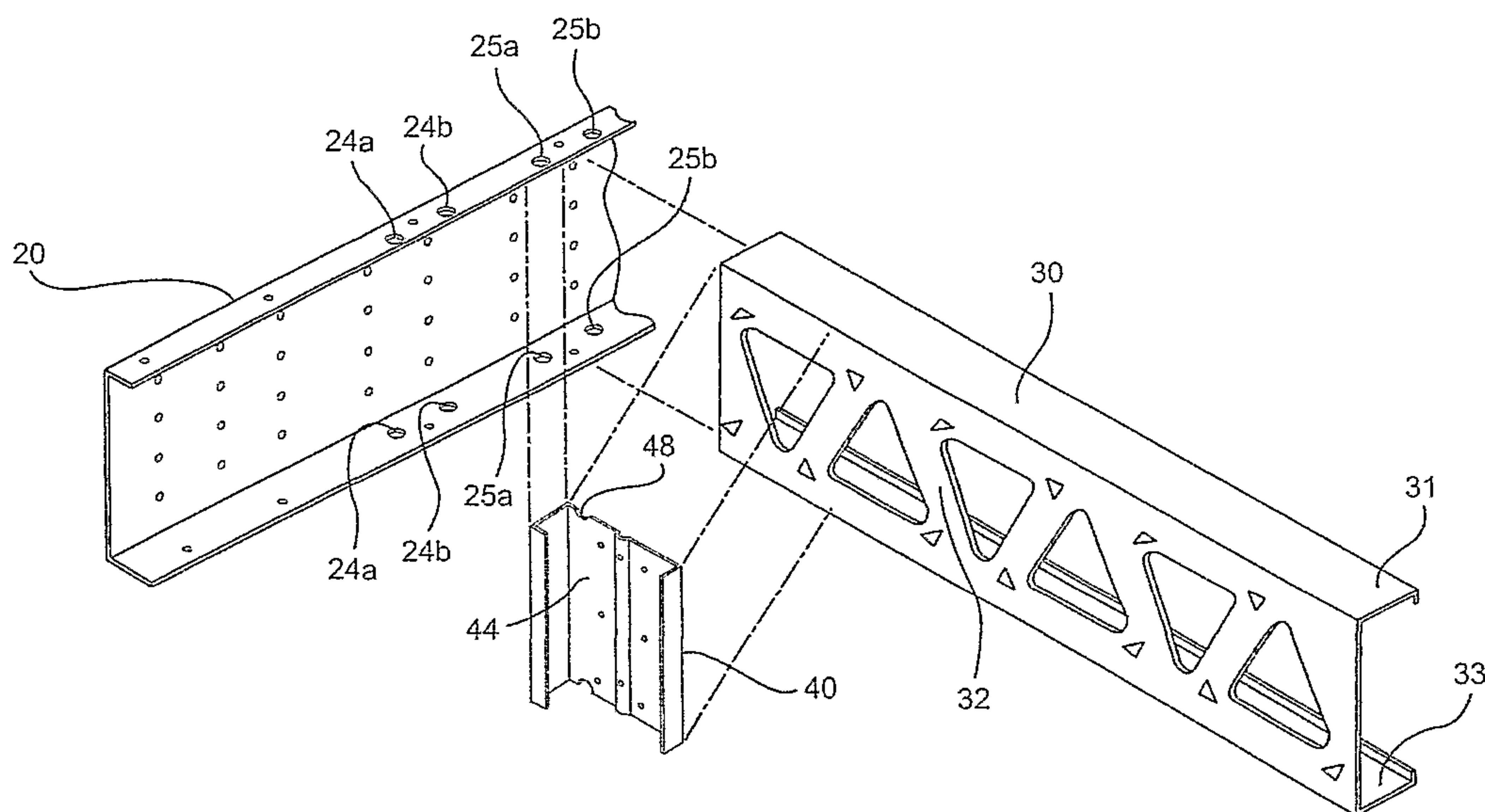




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(54) Titre : **SYSTEME DE CHARPENTERIE STRUCTURALE ET COMPOSANTS DE CE SYSTEME**
(54) Title: **STRUCTURAL FRAMING SYSTEM AND COMPONENTS THEREOF**



(57) **Abrégé/Abstract:**

A structural framing system is provided that includes at least one first framing component having upper and lower flange elements separated by a web element having a depth measured between the upper and lower flange elements, the upper and lower flange elements having upper and lower positioning dimples spaced therealong. The dimples protrude in such manner that a distance between the upper and lower dimples is less than the depth of the web.



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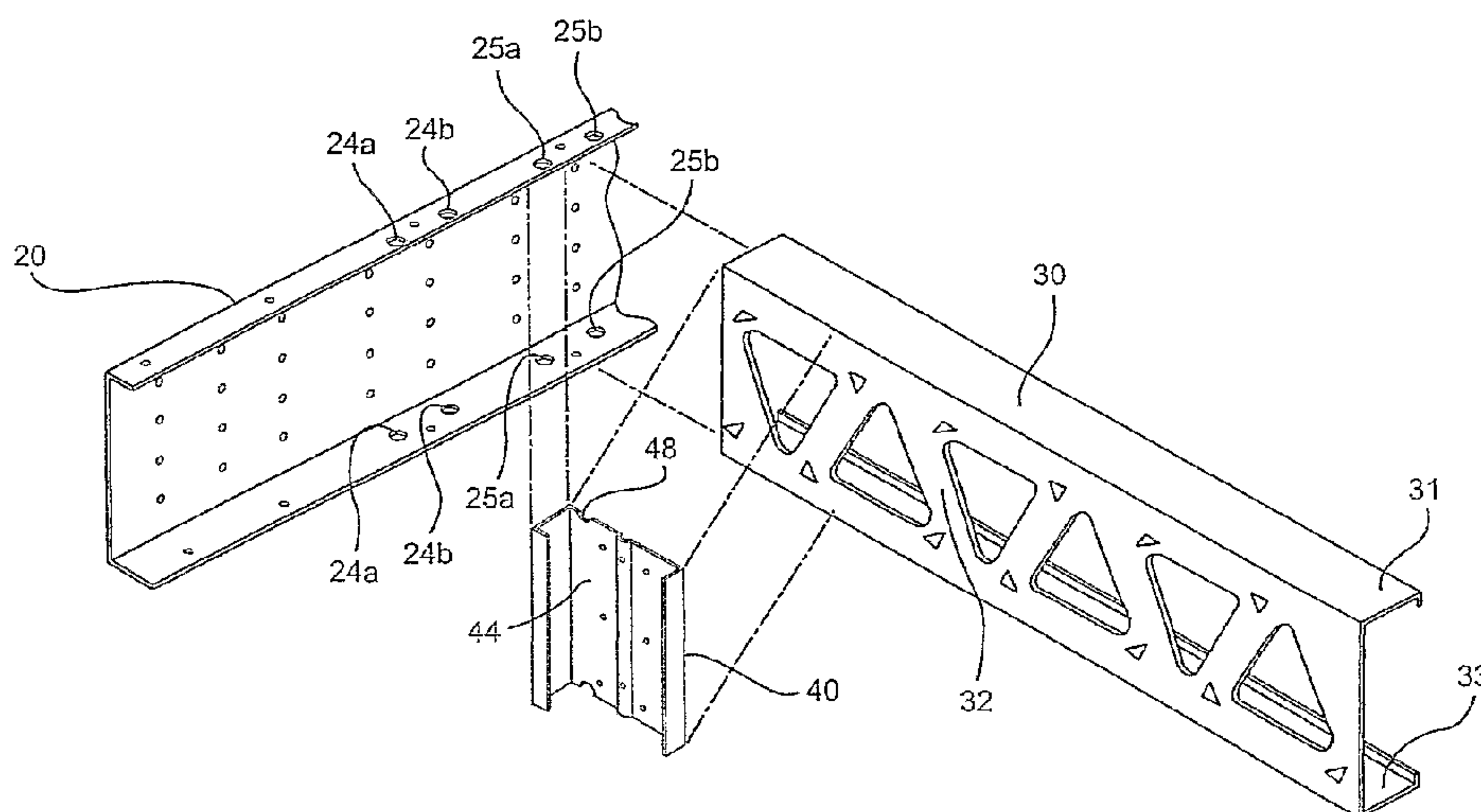
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(54) Title: STRUCTURAL FRAMING SYSTEM AND COMPONENTS THEREOF



(57) Abstract: A structural framing system is provided that includes at least one first framing component having upper and lower flange elements separated by a web element having a depth measured between the upper and lower flange elements, the upper and lower flange elements having upper and lower positioning dimples spaced therealong. The dimples protrude in such manner that a distance between the upper and lower dimples is less than the depth of the web.

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For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

STRUCTURAL FRAMING SYSTEM AND COMPONENTS THEREOF

5 BACKGROUND OF THE INVENTION

This invention relates to a structural framing system and components thereof, preferably for use in buildings and other such structures. Buildings have long been constructed of structural framing systems. For example, most homes are constructed
10 of an all wood frame consisting of 2x4s, 2x6s, etc. and plywood to create the overall frame of the outside of the house and the interior walls. Obviously, other materials and equipment are also used, but the essential framing of the structure is of wood. In recent times, and usually, but not always, for use in commercial real estate structures, steel and/or other metal alloy structural components have been created to replace the
15 wood framing components.

An improved steel or other metal alloy structural framing component and component system is the subject hereof.

20 SUMMARY OF THE INVENTION

A structural framing system is provided. The system comprises at least one first framing component having upper and lower flange elements separated by a web element, the web having a depth as measured between the upper and lower flange
25 elements, the upper and lower flange elements having corresponding upper and lower positioning dimples spaced therealong, the dimples protruding from the upper flange element toward the lower flange element and the lower dimples protruding from the lower flange element toward the upper flange element in such manner that a distance between a lower most surface of the upper dimples and an upper most surface of the
30 lower dimples is less than the depth of the web, at least one second framing component having a depth adapted to fit between the upper and lower flange elements

of the first framing component, the second framing component further adapted to extend from positions along the first framing component substantially corresponding to a pair of the corresponding upper and lower positioning dimples, and at least one third framing component for securing together the first and second framing
5 components, the third framing component comprising a first plate member adapted to be secured to the web of the first framing component and having a height substantially equal to the depth of the web of the first framing component, a second plate member adapted to be secured to a surface of the second framing component, a portion of the second plate member having a height less than the distance between the surfaces of the
10 dimples so as to avoid interference with the dimples during attachment of the third framing component to the first and second framing components.

Other objects of the invention will impart the obvious and will impart the apparent from the following description.

15 The invention accordingly comprises assemblies and components possessing the features, properties and the relation of components which will be exemplified in the products hereinafter described, and the scope of the invention will be indicated in the claims.

20

BRIEF DESCRIPTION OF THE DRAWINGS

For a fuller understanding of the invention, reference is made to the following description, taken in connection with the accompanying drawings, in which:

25

FIG. 1 is an exploded perspective view of a structural framing system encompassed by the scope of the invention;

FIG. 2 is a perspective view of a joist track component;

FIG. 3 is a cross sectional view taken along line 3-3 of FIG. 2;

FIG. 4 is a perspective view of web stiffener structural framing components;

5

FIG. 5 is a perspective view of a blocking structural framing component; and

FIG. 6 is a perspective view showing connection of the blocking structural framing component of FIG. 5 to adjacent joists of a structural framing system.

10

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

A structural framing system is shown in FIG. 1. This system includes at least framing components **20**, **30** and **40**. As shown in FIG. 6, the system may also include framing component **60**, used between two of components **30** to help stabilize the system. Usually the system will include a plurality of components **20**, **30**, **40** and **60**.

Directing attention to FIGS. 2 and 3, track component **20** is seen to have a web **22** and first and second flange members **21** and **23** separated from each other by a depth "D" of web **22**. Spaced along flanges **21** and **23** are dimples **24a**, **24b**, **25a**, **25b**, **26a**, **26b**, etc. In a preferred, but not mandatory, embodiment the dimples are paired together along first and second flanges **21** and **23** in such a way that dimples **24a** and **b** on first flange **21** are essentially vertically in line with dimples **24a** and **b** of flange **23**, and the space between dimples **24a** and **24b** along both flanges **21** and **23** are designed to snugly hold the thickness of flange elements **31** and **33** of frame components **30** (as best seen in FIG. 1). However, use of a single dimple on the first flange and a corresponding single dimple on the lower, second flange for easy alignment purposes of components **30**, is also anticipated.

As seen in FIG. 2, dimples 24, 25, 26, etc. of first flange 21 extend in a direction toward second flange 23, while dimples 24, 25, 26, etc. of lower flange 23 extend in an upward direction toward flange 21. Track components 20 are designed to correspond to and fit with components 30, so that the depth of components 30 (as
5 measured between flanges 31 and 33), fit between flanges 21 and 23 of components 20. The height "H" of dimples 24, 25 and 26, etc. must at least be such that when second flange 33 of component 30 is resting on flange 23 of component 20 the dimples extending downward from flange 21 far enough so as to retain component 30 in an upright position prior to securing the components together.

10

Turning now to a discussion of FIG. 4, in a preferred embodiment component 40 is seen to have a first plate member 42 and a second plate member 44. First plate member 42, as seen in FIG. 1, abuts against web 22 of component 20, while second plate member 44, as also seen in FIG. 1, abuts against web 32 of component 30. There
15 are predrilled holes 45 in second plate member 44 for aiding securement to web 32. It is shown in FIG. 4 that the preferred angle between plates 42 and 44 of component 40 is ninety degrees, as the usual case will be for component 30 to be extending perpendicularly from component 20 of system 10. However, it is anticipated herein that angles ranging between 0 and 180 degrees are possible for the angle of connection
20 between components 30 and 20, and therefore between first and second plates 42 and 44 of components 40. Such construction angles are typically determined with regard to aesthetics and strength considerations.

In order for component 40 to be easily and quickly secured onto webs 22 and 32 of
25 components 20 and 30, respectively, with minimization of interference with the placement thereof by the dimples extending downward and upward from flanges 21 and 23 of component 20, FIG. 4 shows a non-continuous notch 48 in the top and bottom edges of plate 44; i.e., after notch 48 the length of plate 44 increases back to its original length.

- Finally, turning to FIGS. 5 and 6, blocking component **60** is seen to have web **62**, upper flange **61**, lower flange **63** and securing tabs **65a, b, c** and **d**. Appearing in cross section, component **60** may either be a "C" shaped channel or an "I" shaped channel.
- 5 In addition, securing tabs **65a-d** can either be separate structures attached to flanges **61** and **63**, or may be formed integrally therewith, so long as tabs **65a-d** extend past the ends of web **62** so that they can be attached between adjacent components **30**, as seen in FIG. 6 through predrilled holes **67**.
- 10 Unless otherwise expressly indicated, when used throughout this document the term "substantially" shall have the meaning of "approximation", not "magnitude"; i.e., it shall have the meaning, "being largely but not wholly that which is specified." See, Webster's Ninth New Collegiate Dictionary, Merriam-Webster Inc., 1989. Hence, applicant is not using the term "substantially" to denote "considerable quantity" or
- 15 "significantly large," but is instead using the term as a qualifier/minimizer of a term. For example, in the fictitious phrase "the head portion is substantially above the body portion," using the above intended definition, the phrase "substantially above" is meant to indicate that while most of the head portion can be located above the body portion, there is certainly at least some of the head portion located in planes with the
- 20 body portion, or even below parts of the body portion. As a further example, as used in the fictitious phrase "substantially hollow," using the above intended definition, the phrase "substantially" is meant to indicate that there are areas where the item is not hollow, without regard to a quantity of hollow verses non-hollow areas. These examples are meant to be illustrative of the meaning to be attributed to the term
- 25 "substantially" as used throughout this document, even if these particular phrases are not found herein.

It will thus be seen that the objects set forth above, among those made apparent from the preceding description, are efficiently attained, and since certain changes may be

made in the above constructions without departing from the spirit and scope of the invention, it is intended that all matter contained in the above description and shown in the accompanying drawings shall be interpreted as illustrative and not in a limiting sense.

5

It is also to be understood that the following claims are intended to cover all of the generic and specific features of the inventions herein described and all statements of the scope of the inventions, which, as a matter of language, might be said to fall therebetween.

What is claimed is:

1. A structural framing system, comprising:
 - at least one first component having upper and lower flange elements separated
5 by a web element, said web having a depth as measured between said upper and lower
flange elements, said upper and lower flange elements having corresponding upper
and lower positioning dimples spaced therealong, said dimples protruding from said
upper flange element toward said lower flange element and said lower dimples
protruding from said lower flange element toward said upper flange element in such
10 manner that a distance between a lower most surface of said upper dimples and an
upper most surface of said lower dimples is less than said depth;
 - at least one second framing component having a depth adapted to fit between
said upper and lower flange elements of said first framing component, said second
framing component further adapted to extend from positions along said first framing
15 component substantially corresponding to said corresponding upper and lower
positioning dimples; and
 - at least one third framing component for securing together said first and second
framing components, said third framing component comprising:
 - a first plate member adapted to be secured to said web of said first
20 framing component and having a height substantially equal to said depth of said web
of said first framing component; and
 - a second plate member adapted to be secured to a surface of said
second framing component, a portion of said second plate member having a height
less than said distance between said surfaces of said dimples so as to avoid
25 interference with said dimples during attachment of said third framing component to
said first and second framing components.

2. A structural framing system as recited in claim 1, said corresponding upper and lower positioning dimples comprising at least two dimples located on said upper flange and at least two dimples located on said lower flange.
- 5 3. A structural framing system as recited in claim 2, said at least two dimples of said upper flange being separated from each other by a distance along said upper flange sufficient to loosely hold therebetween a thickness of an upper portion of said second framing component and said at least two dimples of said lower flange being separated from each other by a distance along said lower flange sufficient to loosely
10 hold therebetween a thickness of a lower portion of said second framing component.
4. A structural framing system as recited in claim 3, said second framing component able to freely stand when said respective thicknesses thereof are seated between said at least two upper and at least two lower dimples, without securing said
15 third framing component between said first and second framing components.
5. A structural framing system as recited in claim 1, said first and second plate members of said at least one second framing component substantially perpendicular to each other.
20
6. A structural framing system as recited in claim 1, further comprising at least another second framing component in spaced apart relation along said at least one first framing component to said at least one second framing component.
- 25 7. A structural framing system as recited in claim 1, wherein said at least one second framing component is a plurality of second framing components corresponding in locations along said at least one first framing component to locations of said positioning dimples.

8. A structural framing system as recited in claim 7, wherein adjacent second framing components of said plurality of second framing components are braced together along lengths thereof by at least one fourth framing component.
- 5 9. A structural framing system as recited in claim 8, said at least one fourth framing component, comprising:
a web element having a length allowing it to fit between said adjacent second framing components;
upper and lower flange elements, each having first and second ends; and
10 securing tabs extending from said first and second ends of said upper and lower flange elements, said securing tabs for attaching said at least one fourth framing components to said adjacent second framing components.
- 15 10. A structural framing system as recited in claim 9, said securing tabs extending integrally from said ends of said upper and lower flange elements of said at least one fourth framing component beyond said length of said web element on either side of said length of said web element.
- 20 11. A structural framing component as recited in claim 9, being "C" shaped in cross-section.
12. A structural framing component as recited in claim 9, being "I" shaped in cross-section.
- 25 13. A structural framing component, comprising first and second plate members extending from each other at a predetermined angle, said first plate member having a length defining surface and a width defined from said second plate member, said second plate having a width defined from said first plate member, a first length defining surface proximate said first plate member and extending from said first plate

member along said width for a distance smaller in length than said width and a second length defining surface uniformly extending from said first length defining surface for the remainder of said width, said second length defining surface being smaller than said first length defining surface.

5

14. A structural framing component as recited in claim 13, wherein said second length defining surface of said second plate member is defined on both sides of said length by an upper edge and a lower edge, each such edge being offset from, and not uniformly extending from, respective upper and lower edges of said first length

10 defining surface of said second plate member.

15

15. A structural framing component as recited in claim 15, said lower edge of said second plate member having a notch therealong, which notch extends in a direction toward said upper edge surface.

16

16. A structural framing component, comprising:
a web element having first and second ends and a length defined therebetween;
upper and lower flange elements, each having first and second ends
substantially proximate said ends of said web; and

20 securing tabs extending from said first and second ends of said upper and lower flange elements beyond said ends of said web, said securing tabs for attaching said framing component between two other adjacent-running framing components of a larger structural framing system.

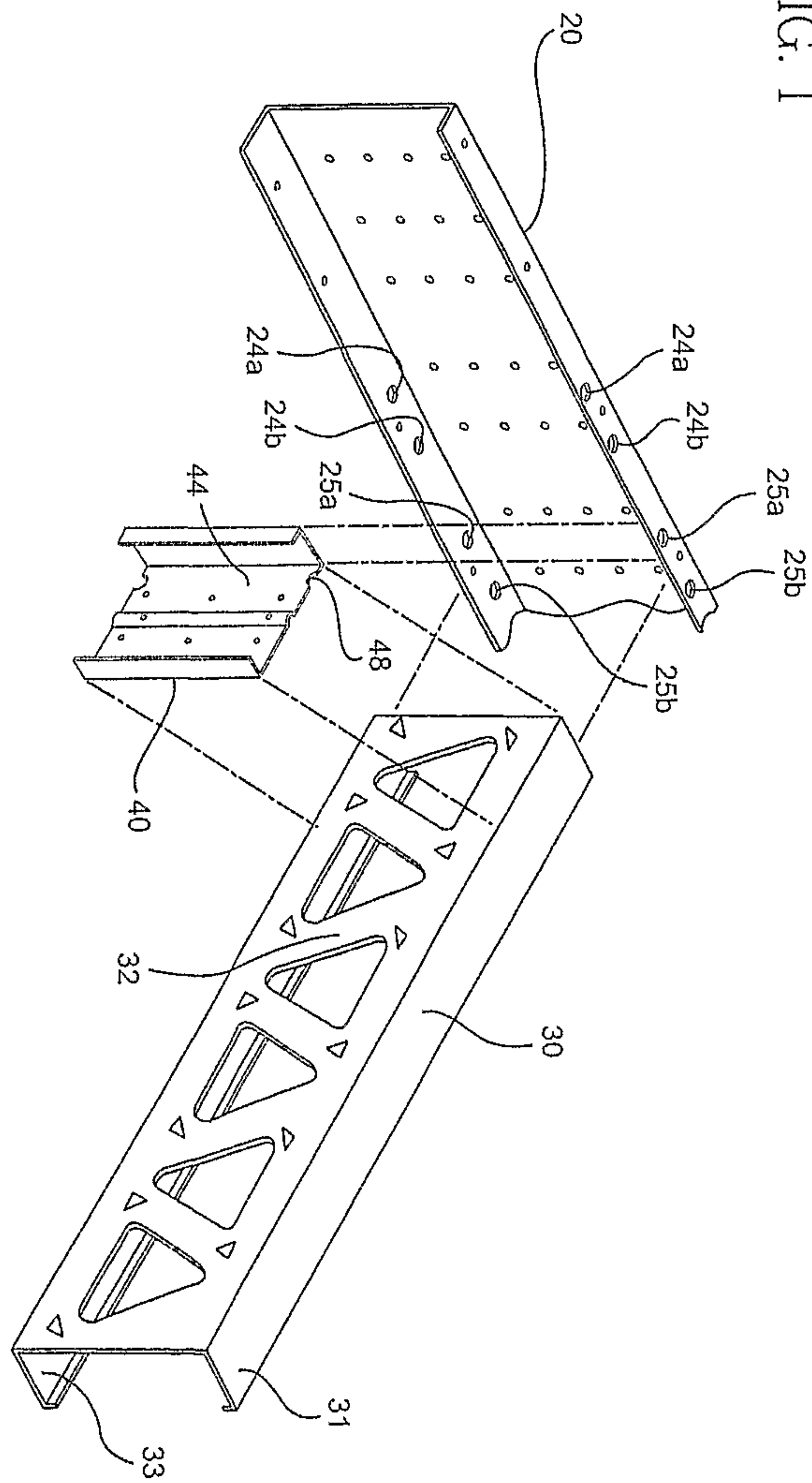
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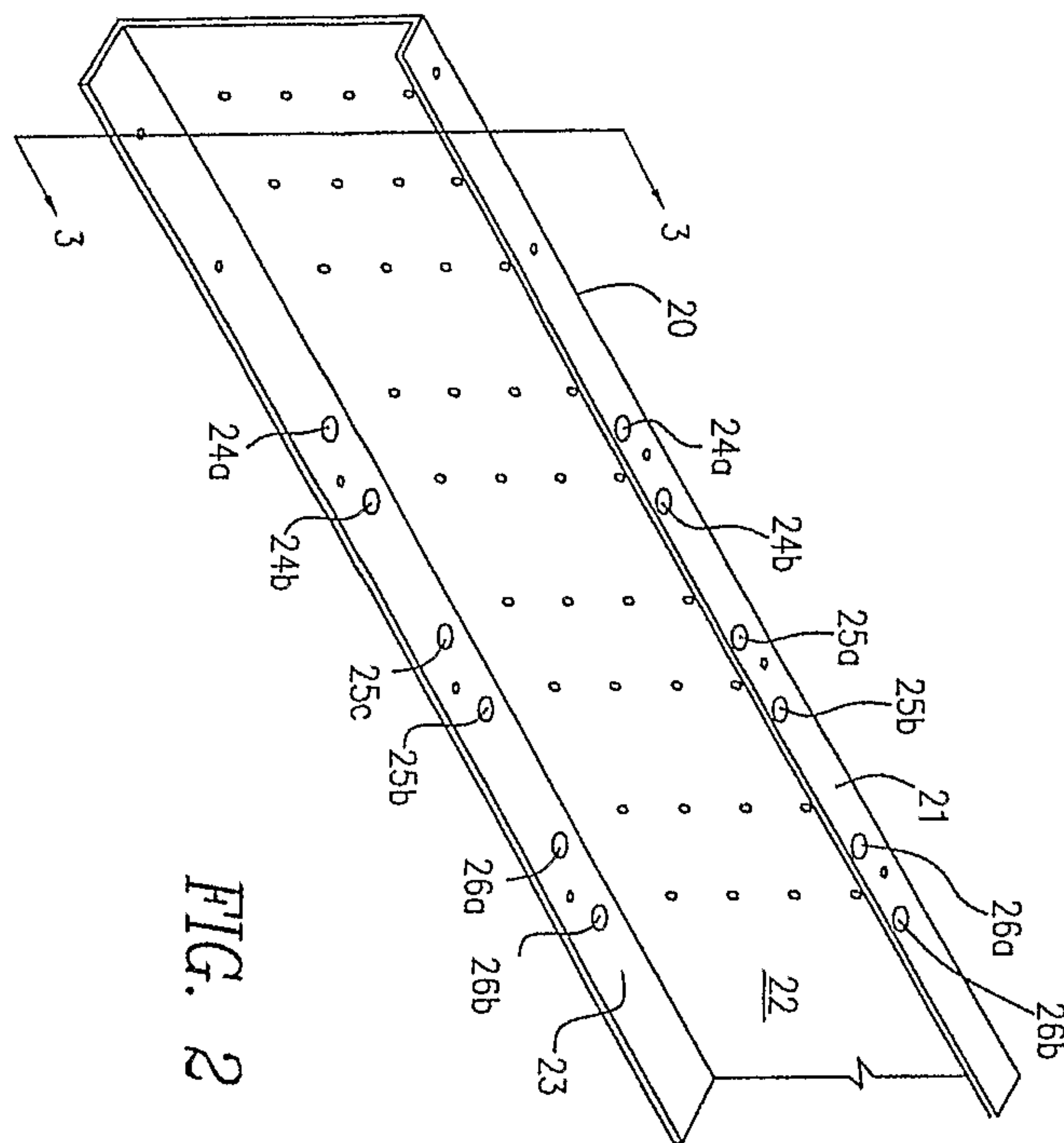
17. A structural framing component as recited in claim 16, wherein said securing tabs are integrally formed with said flange elements.

18. A structural framing component as recited in claim 16, being "C" shaped in cross-section.

19. A structural framing component as recited in claim 16, being "I" shaped in cross-section.

FIG. 1





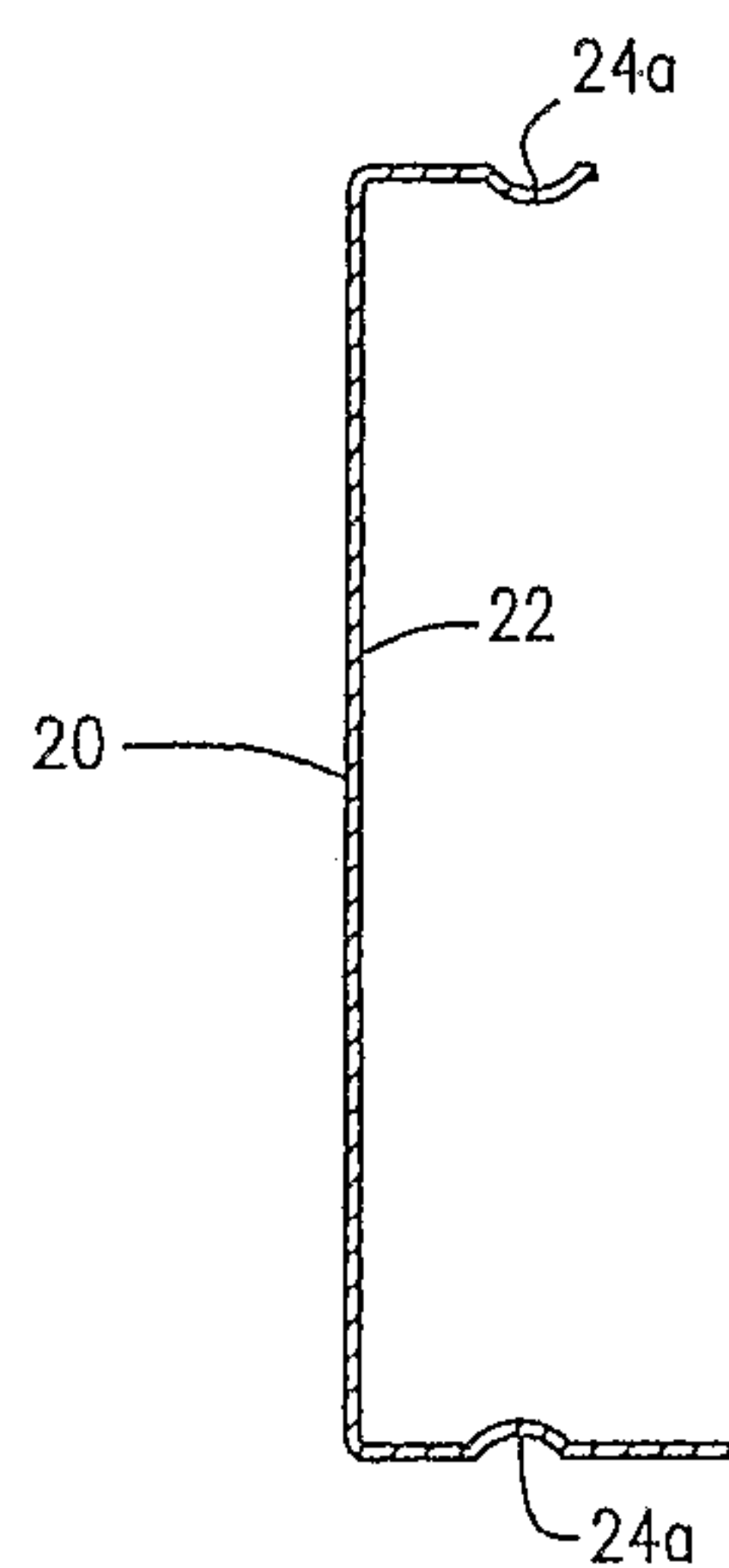


FIG. 3

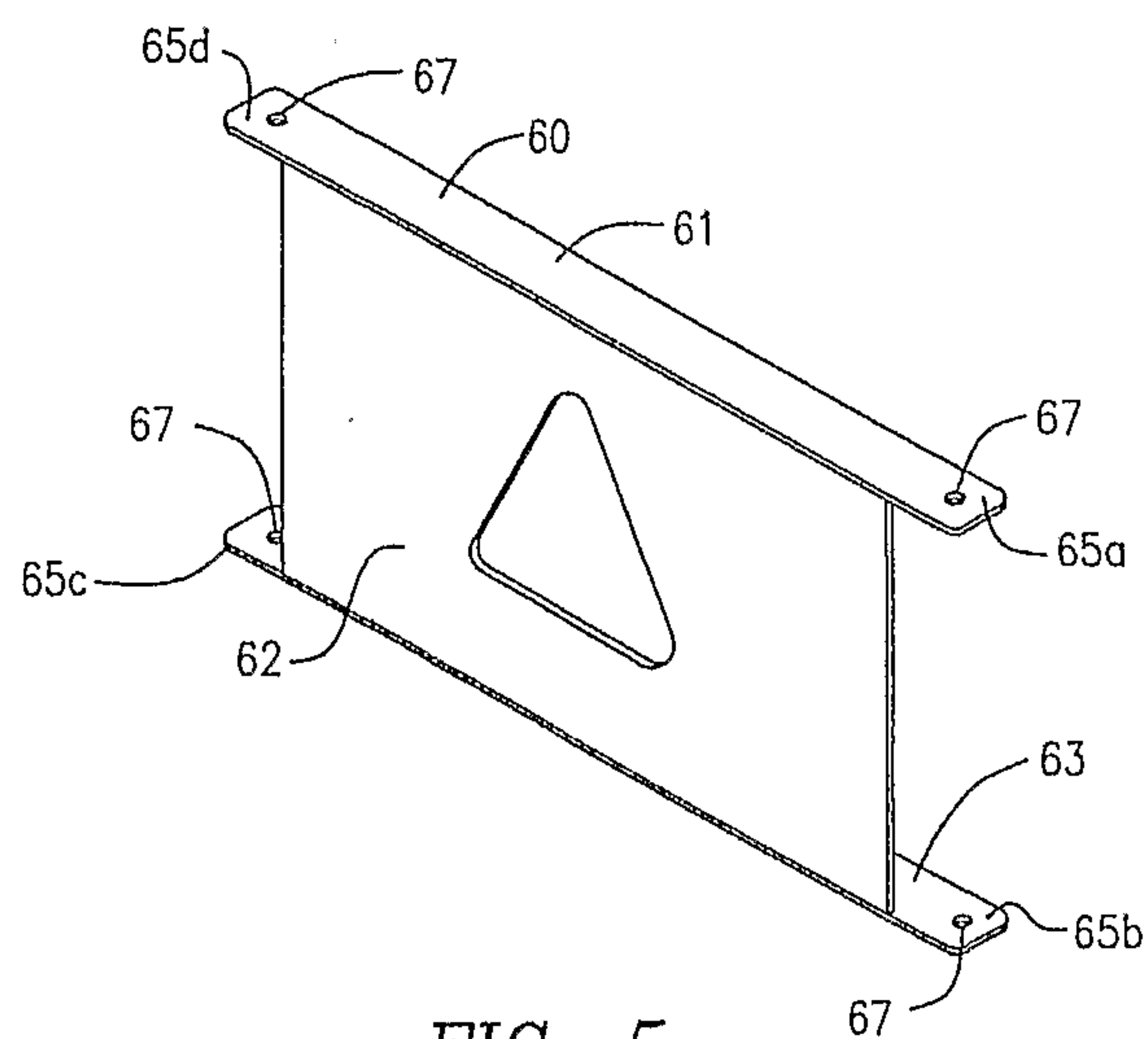
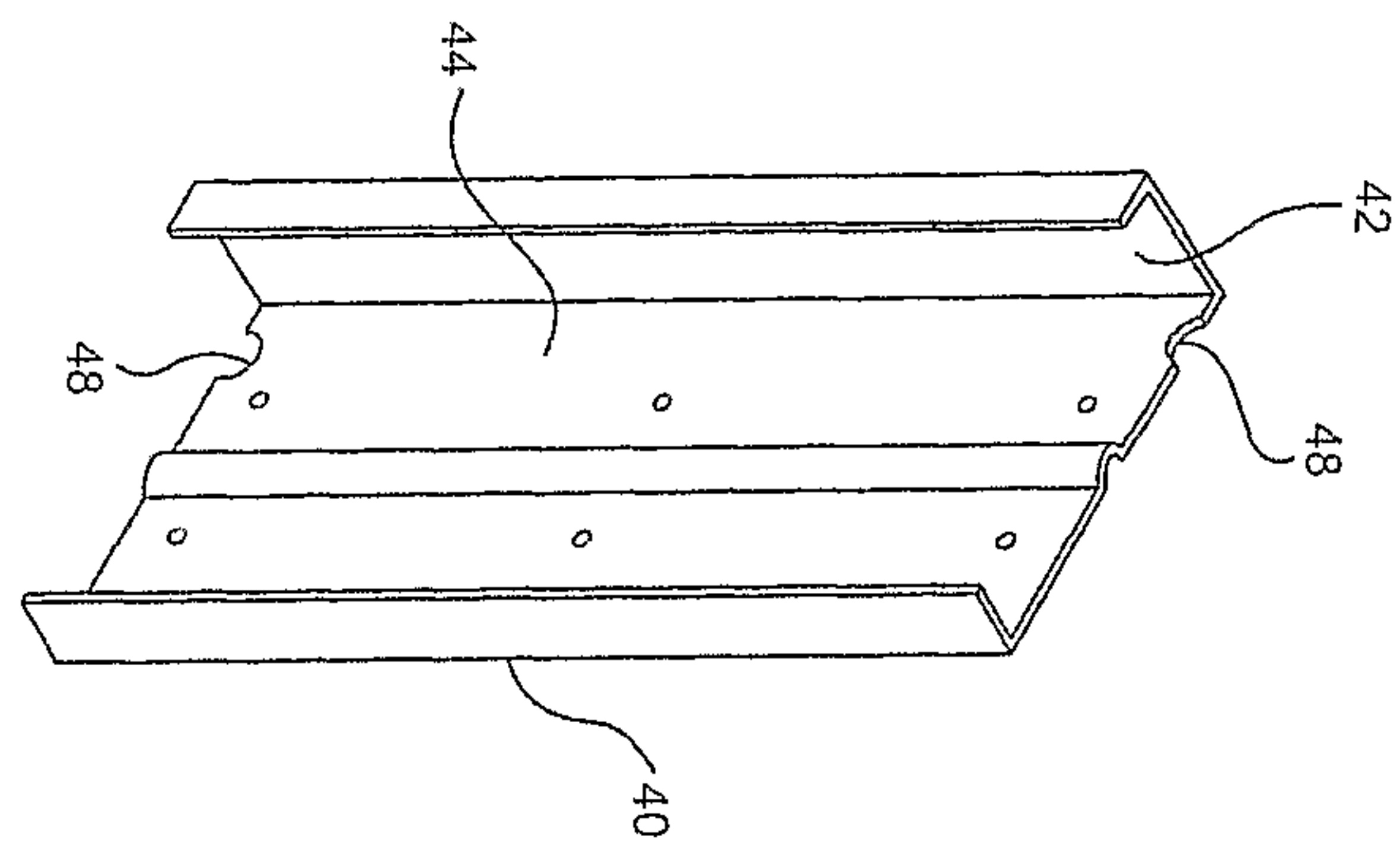


FIG. 5

FIG. 4



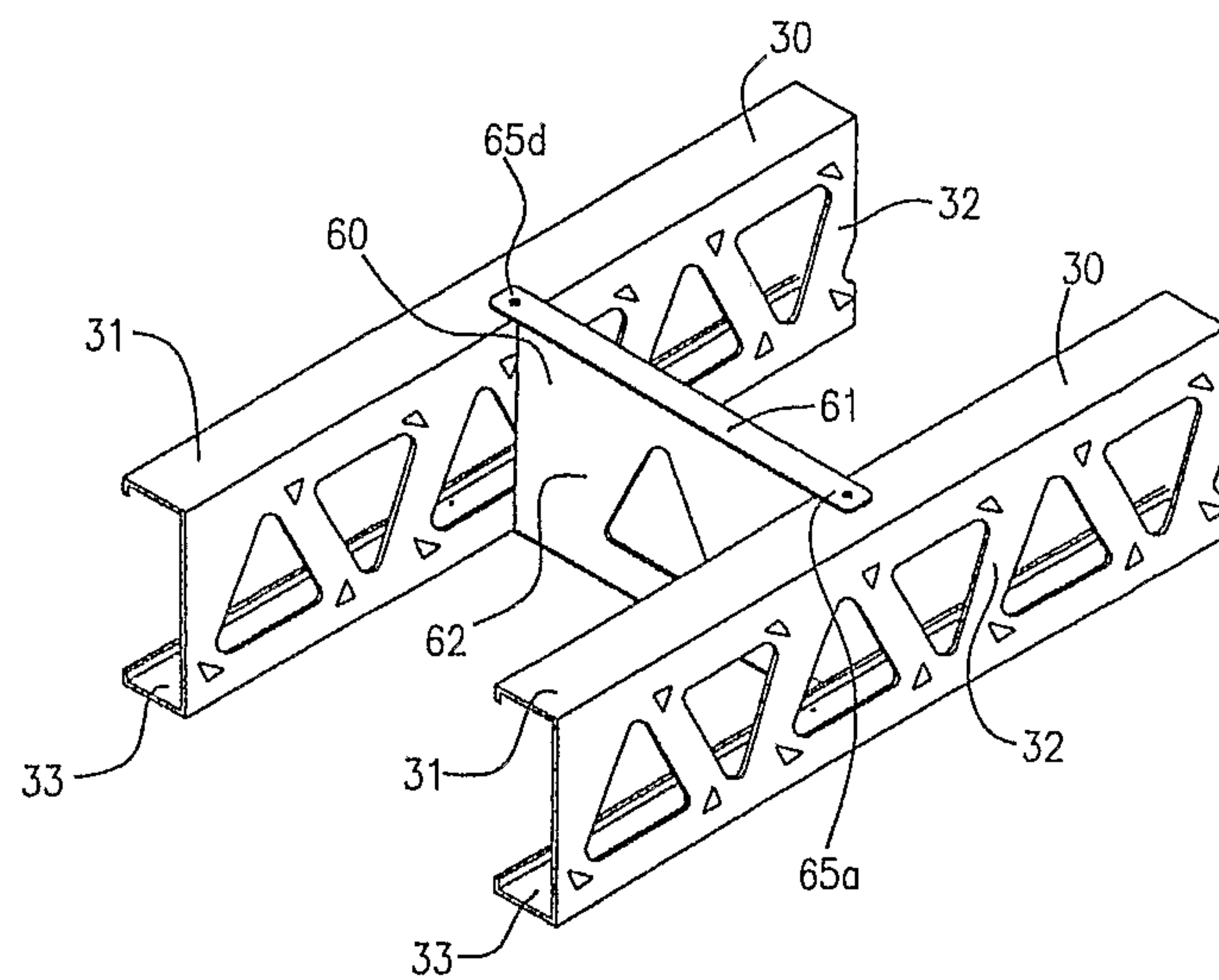


FIG. 6

