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Olah

(54) **PREASSEMBLED ROOF AND FLOOR DECK PANEL SYSTEM**

(76) Inventor: **Timothy J. Olah**, Kansas City, MO (US)

Correspondence Address:
SHUGHART THOMSON & KILROY, PC
120 WEST 12TH STREET
KANSAS CITY, MO 64105 (US)

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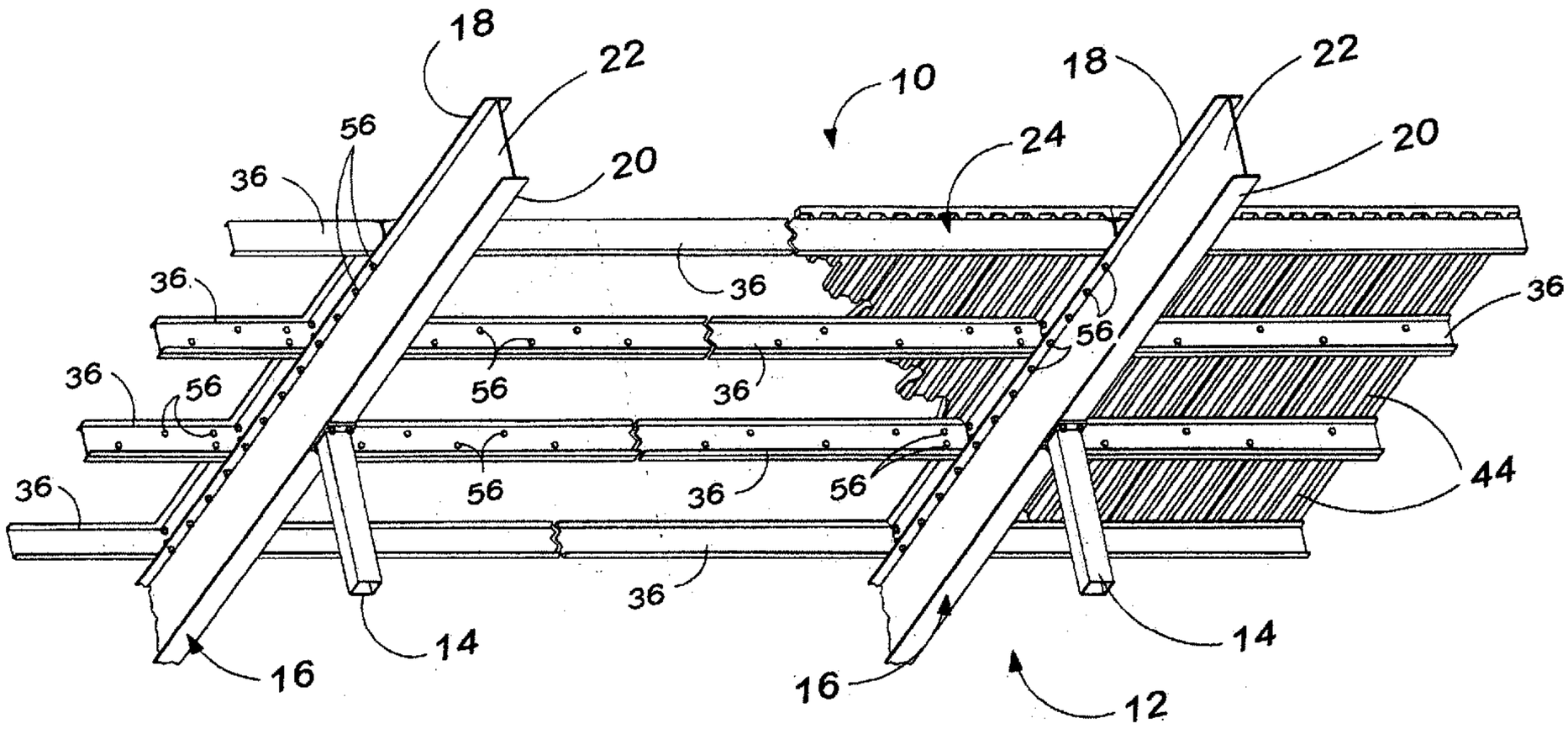
(57) **ABSTRACT**

An improved roof and floor deck system uses conventional steel shapes and sizes to form a preassembled panel that can be installed and fastened in place without the need for welding or other fastening from above. The roof and floor panel assembly has a frame of generally C-shaped structural members, including a pair of side members and a pair of end members. Each member has a substantially planar outer perimeter surface for coupling with an adjacent panel frame member. A deck is secured to enclose the top side of the frame. The panels are prefabricated, hoisted into place on existing supporting girders, connected together and secured to the girders by workers positioned below the panel assembly.



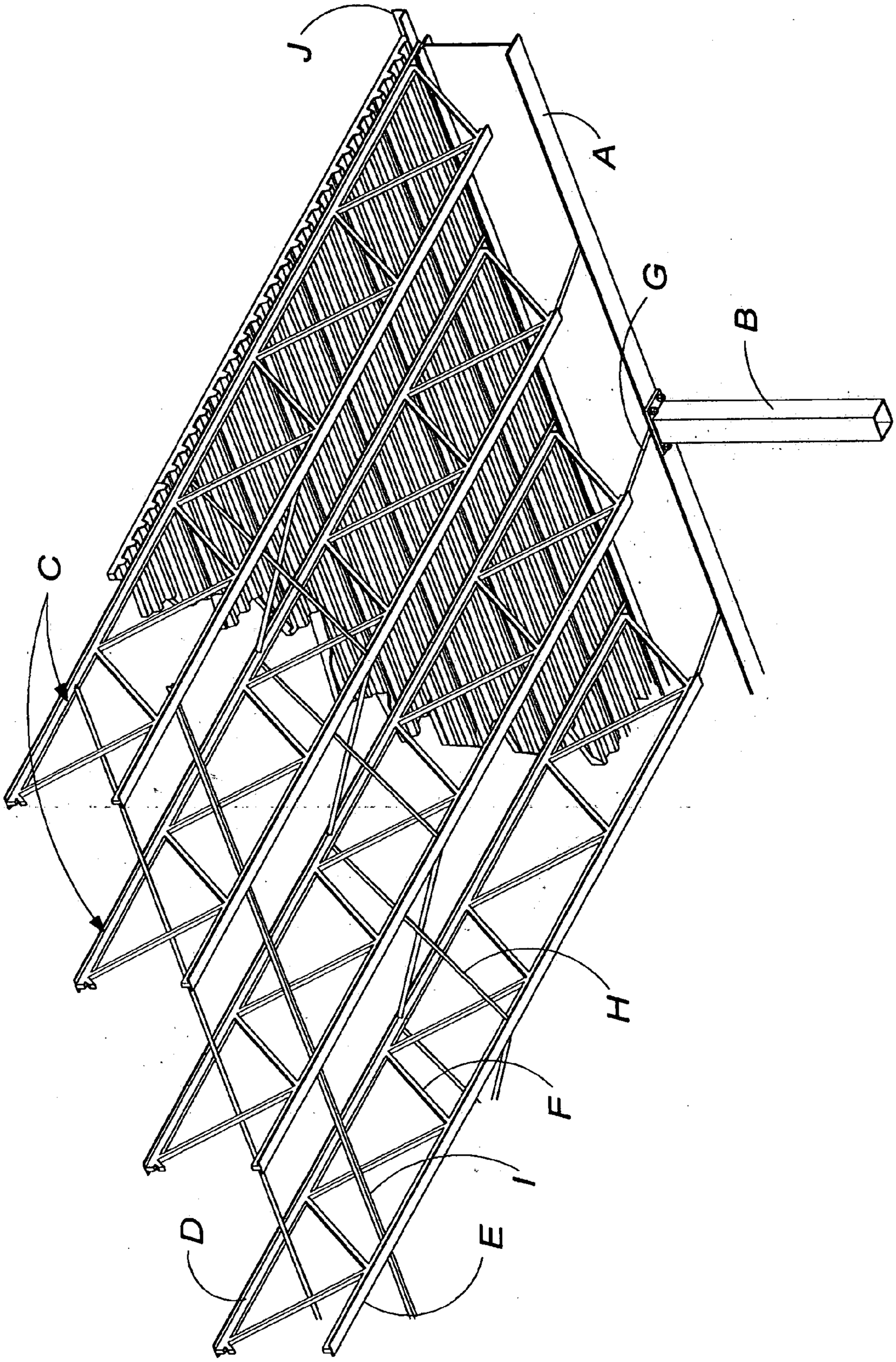


FIG. 1 PRIOR ART

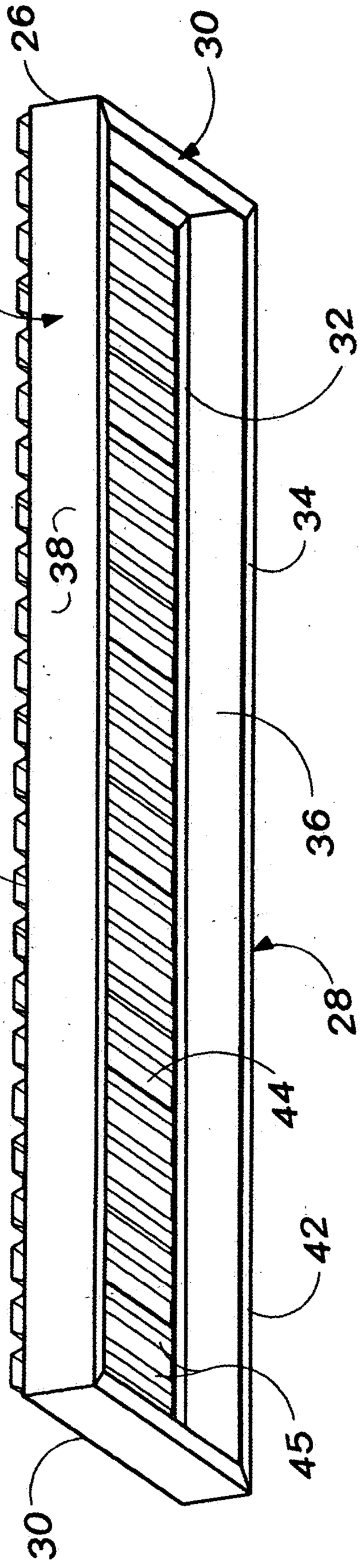


FIG. 2

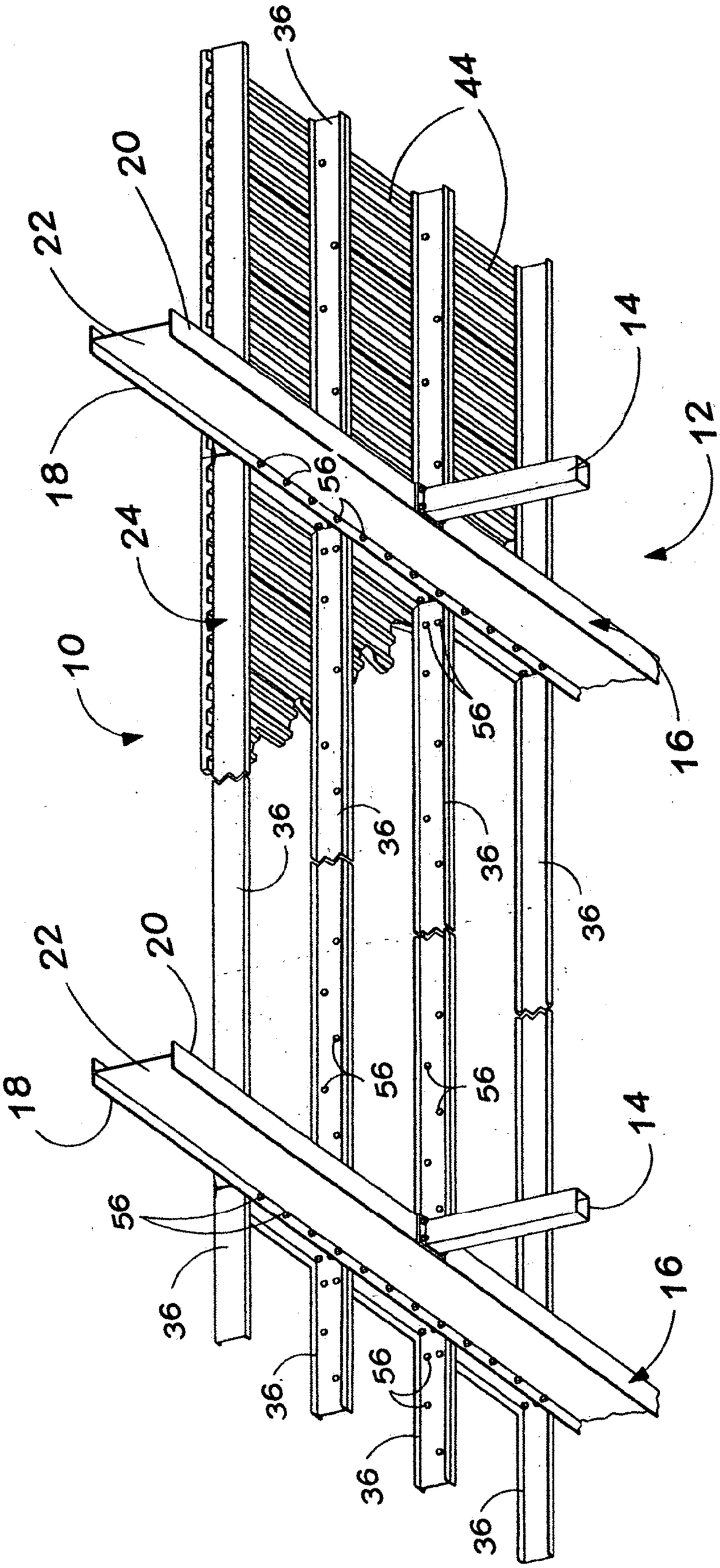

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FIG. 3

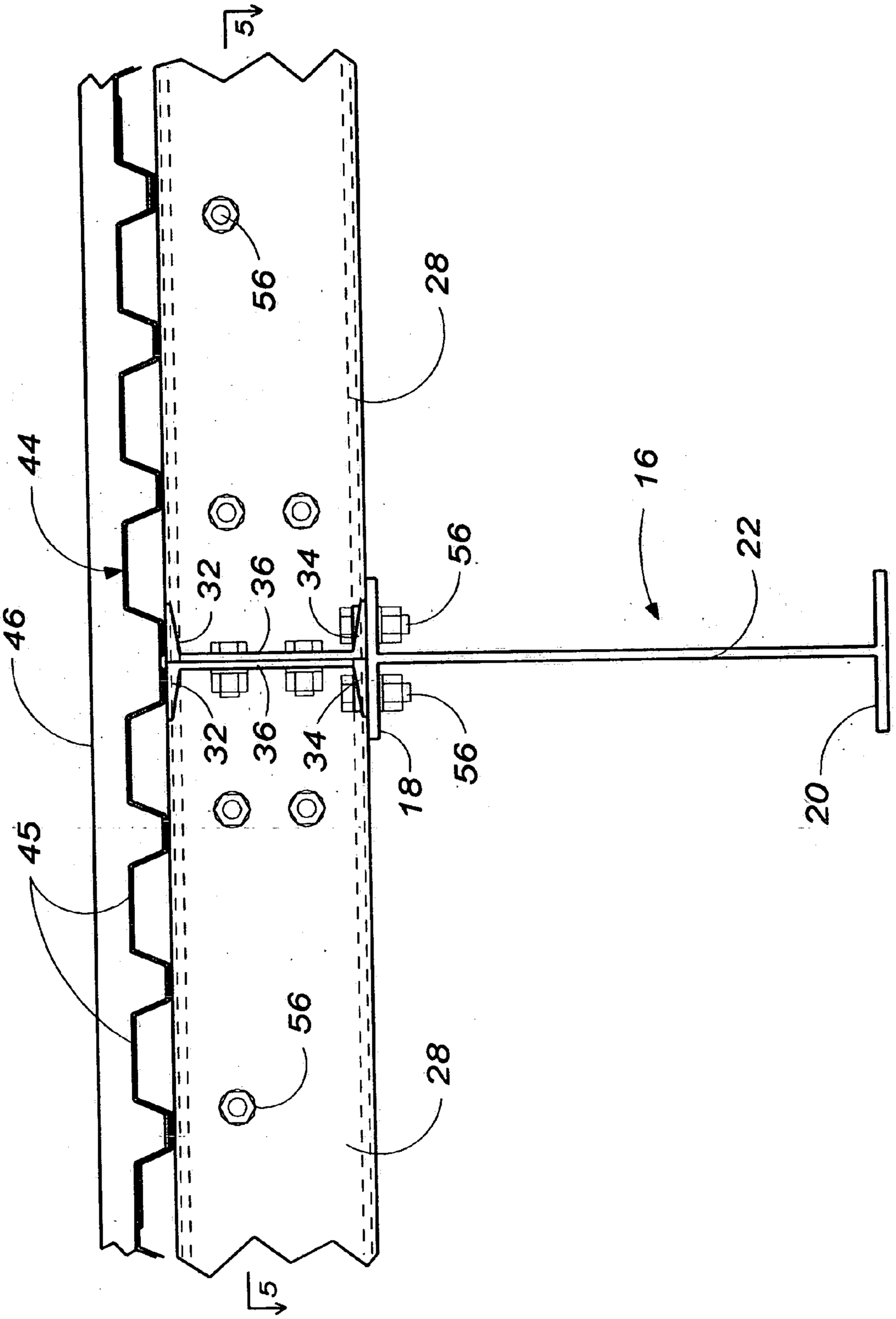

FIG. 4

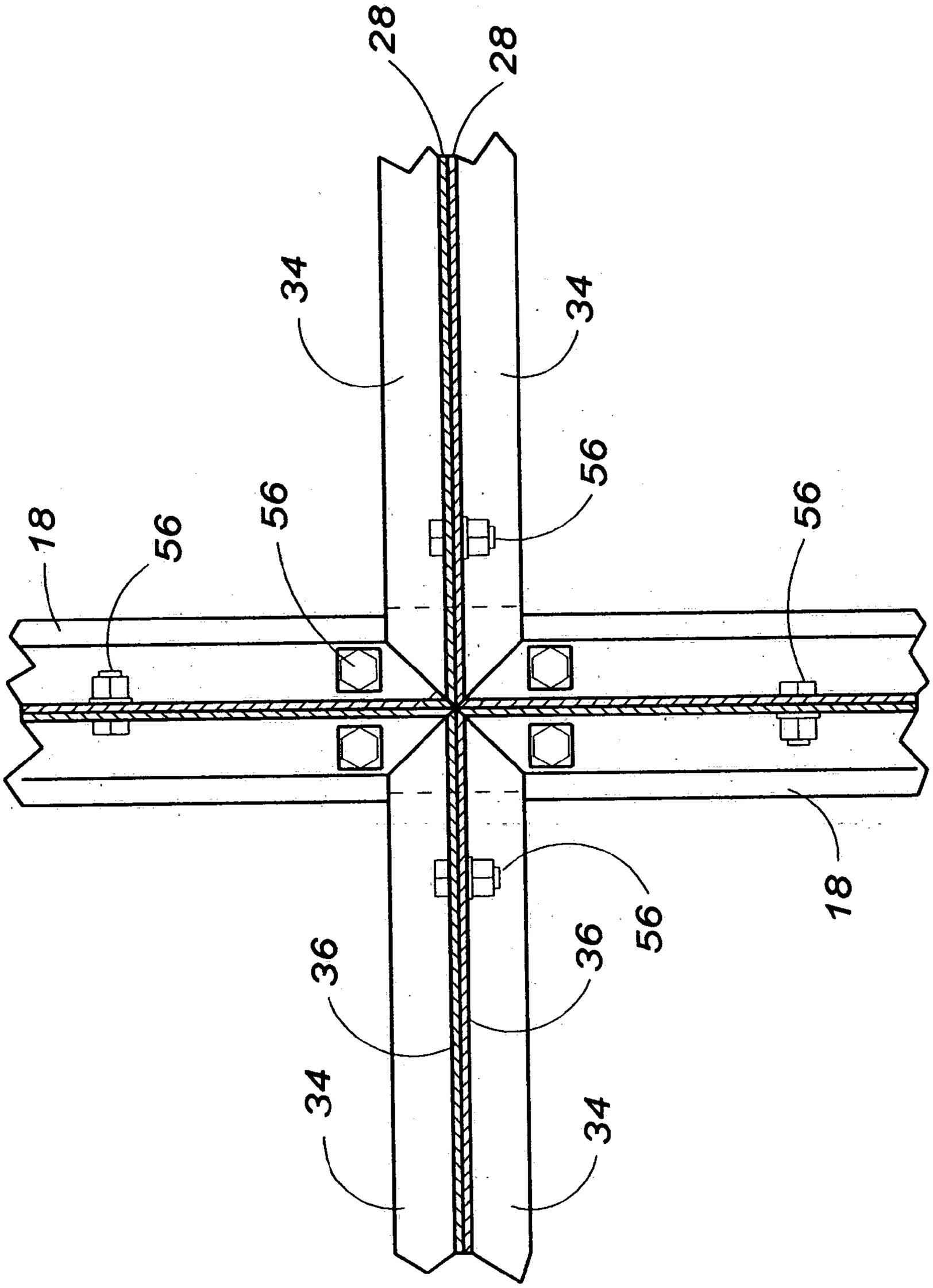

FIG. 5

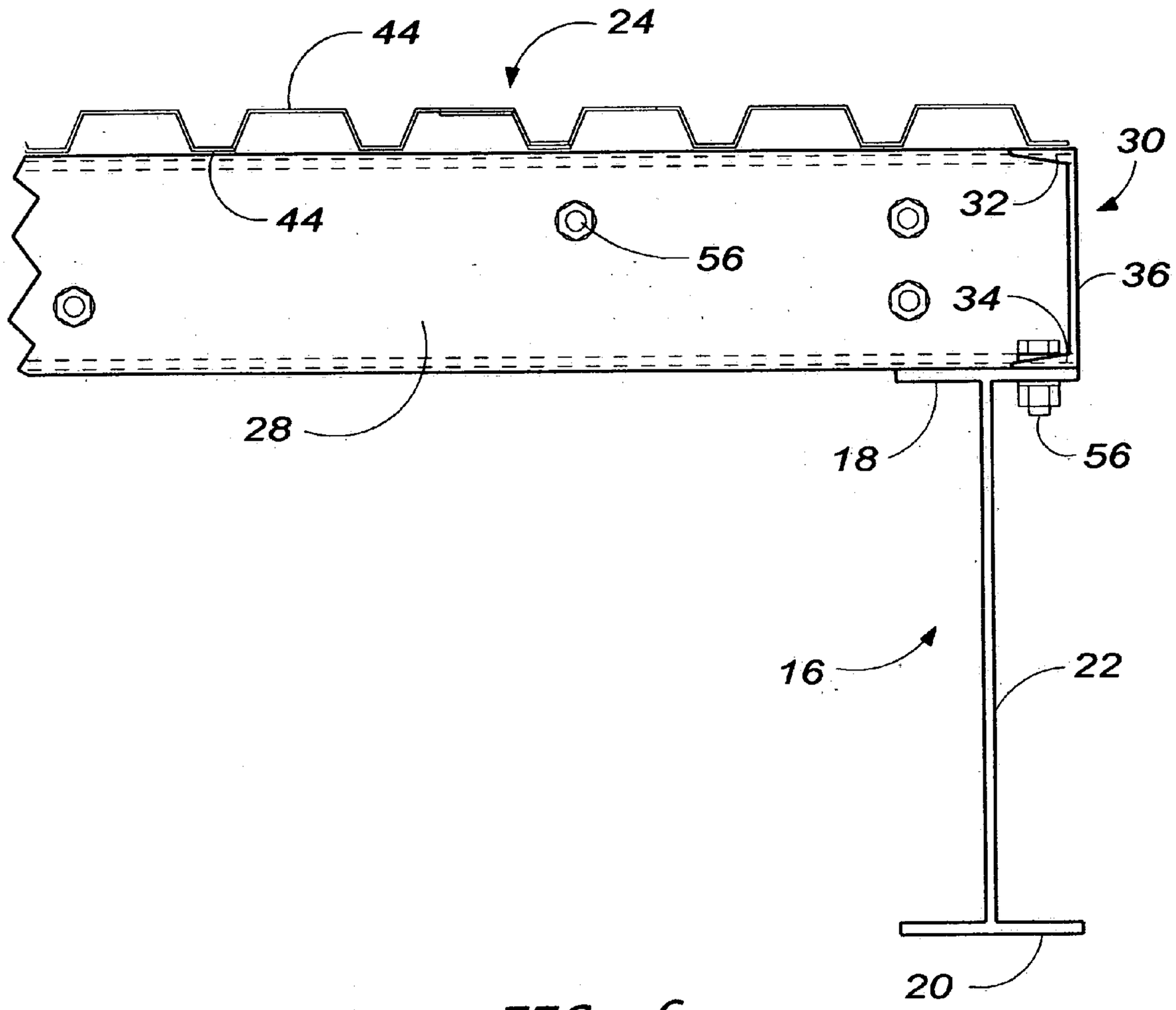

FIG. 6

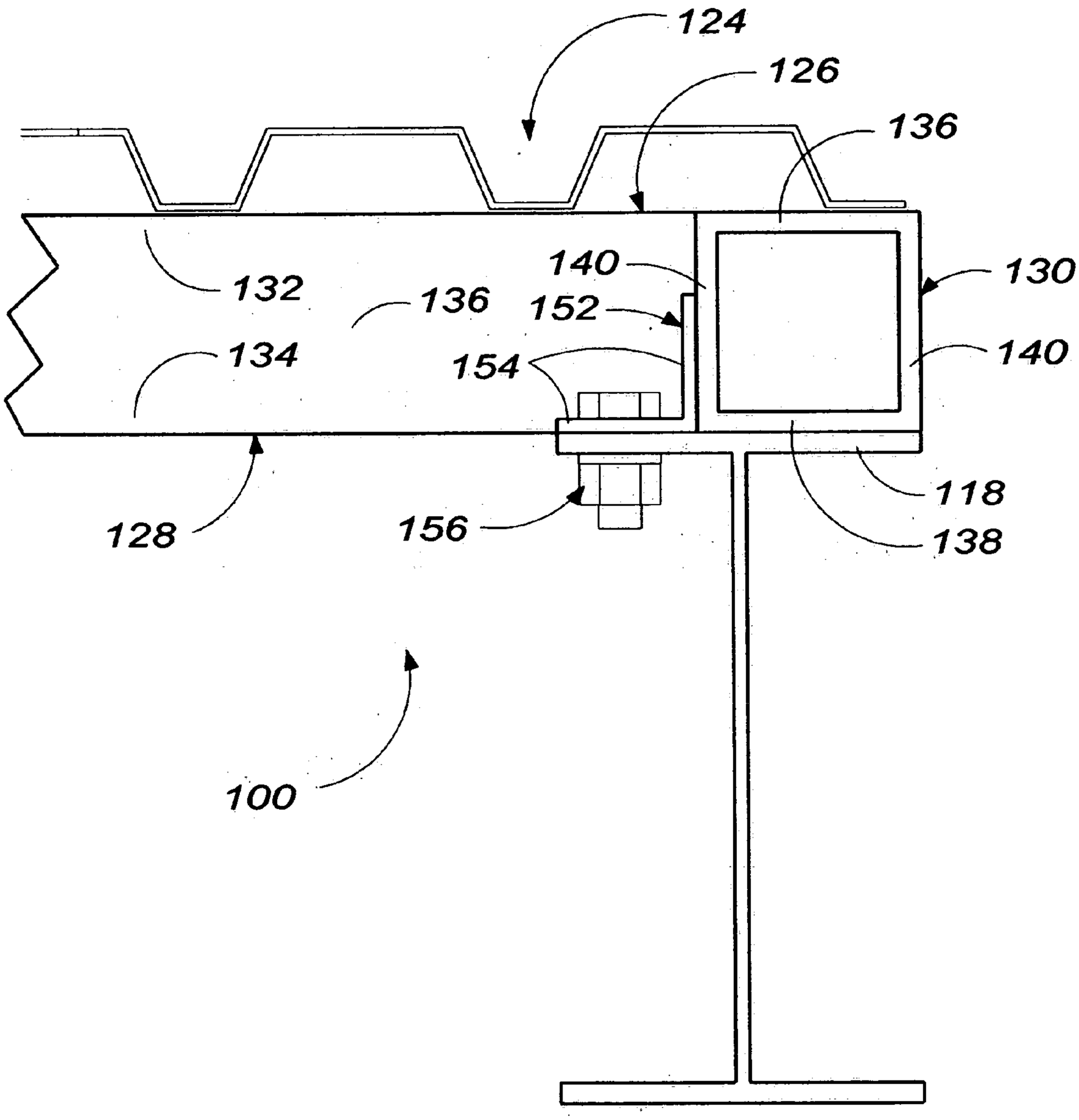

FIG. 7

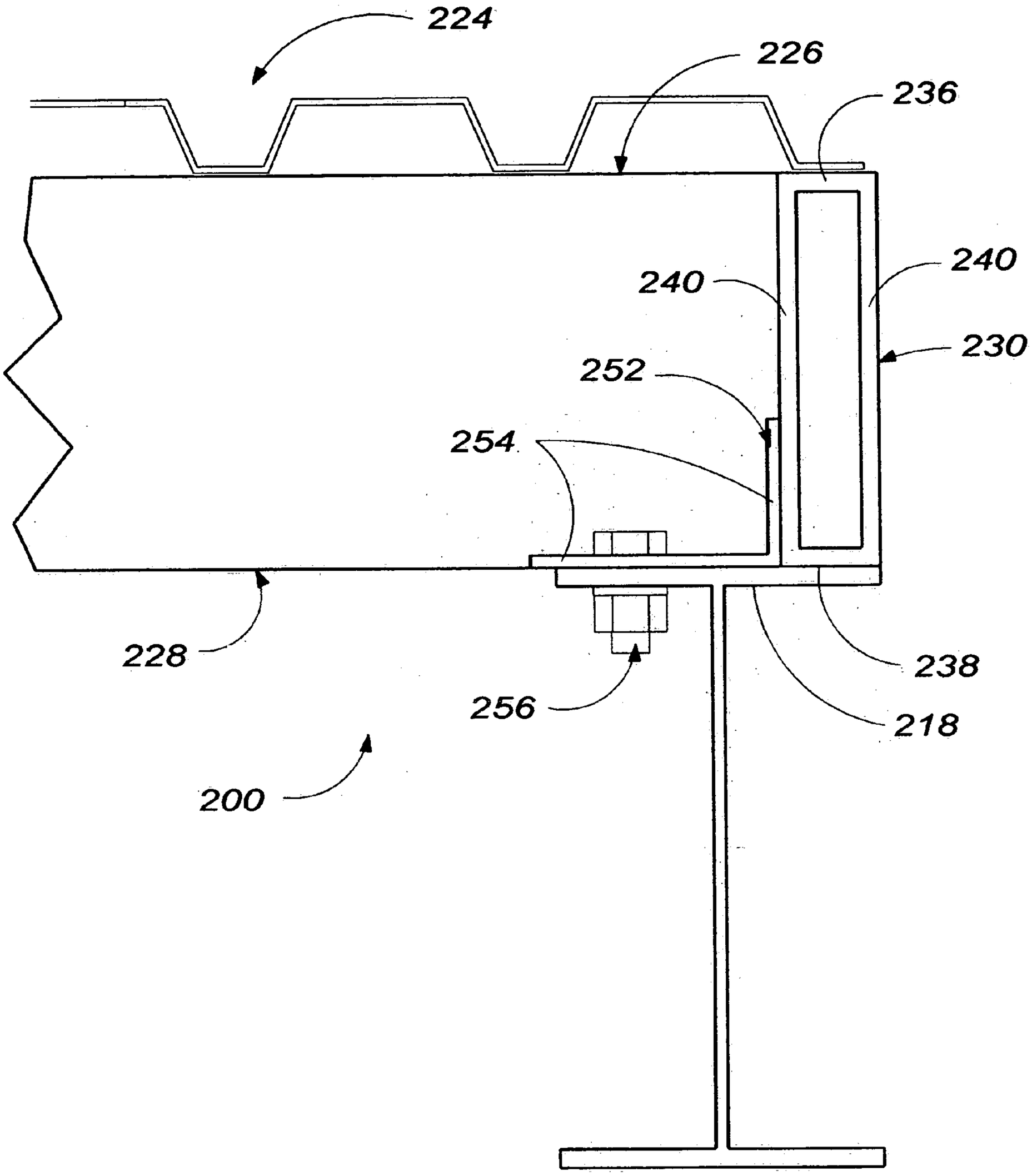

FIG. 8

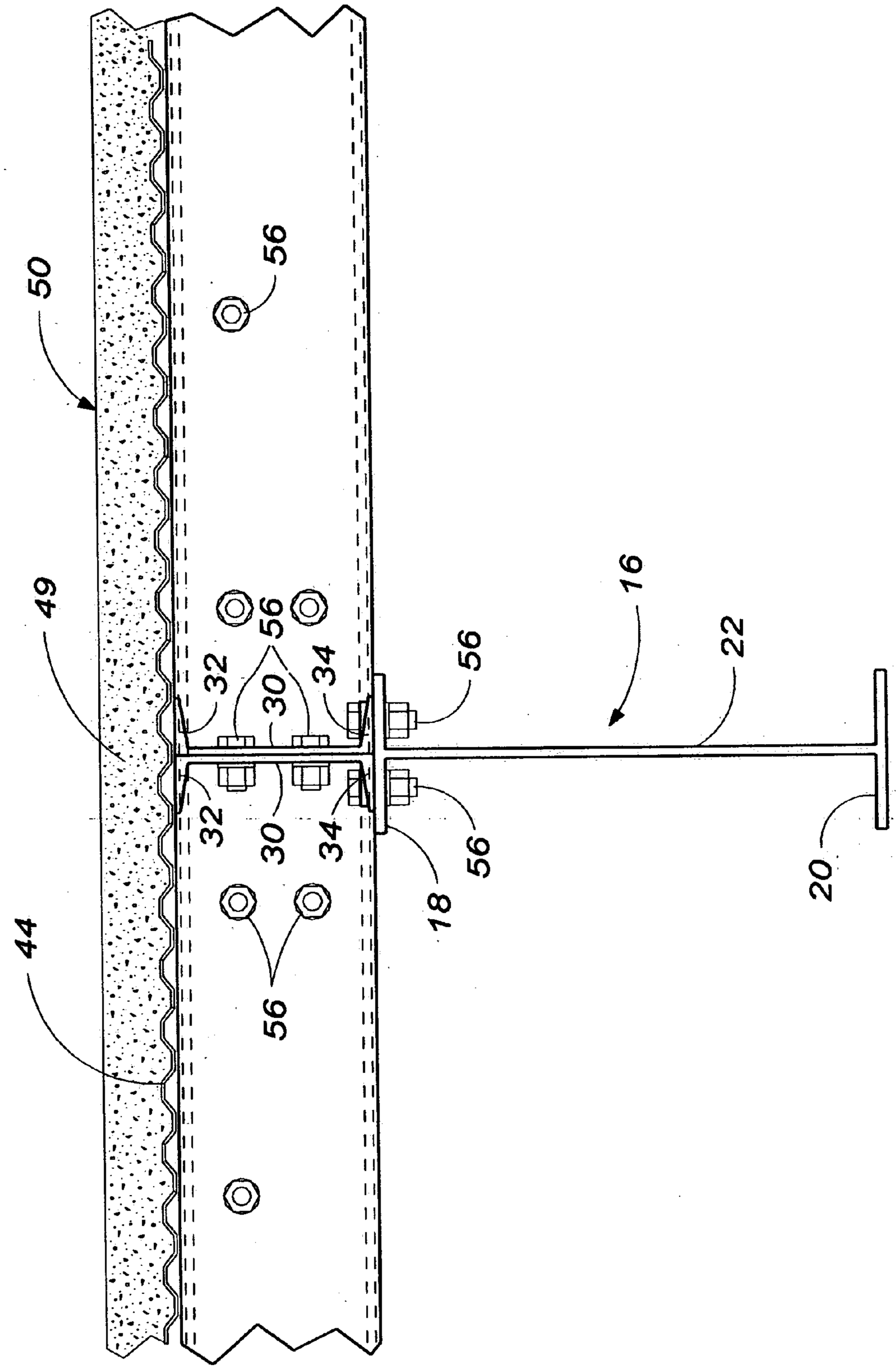

FIG. 9

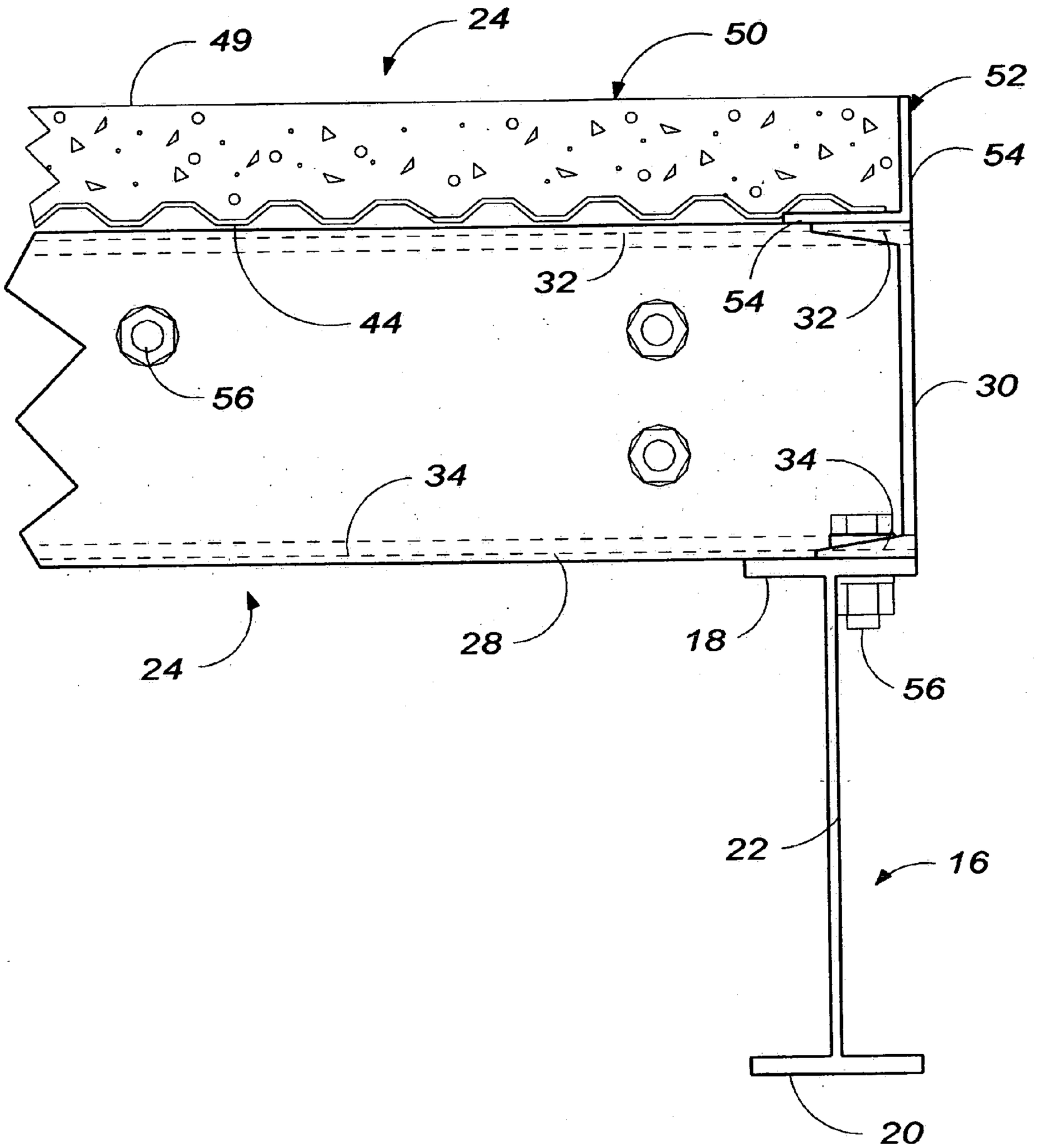

FIG. 10

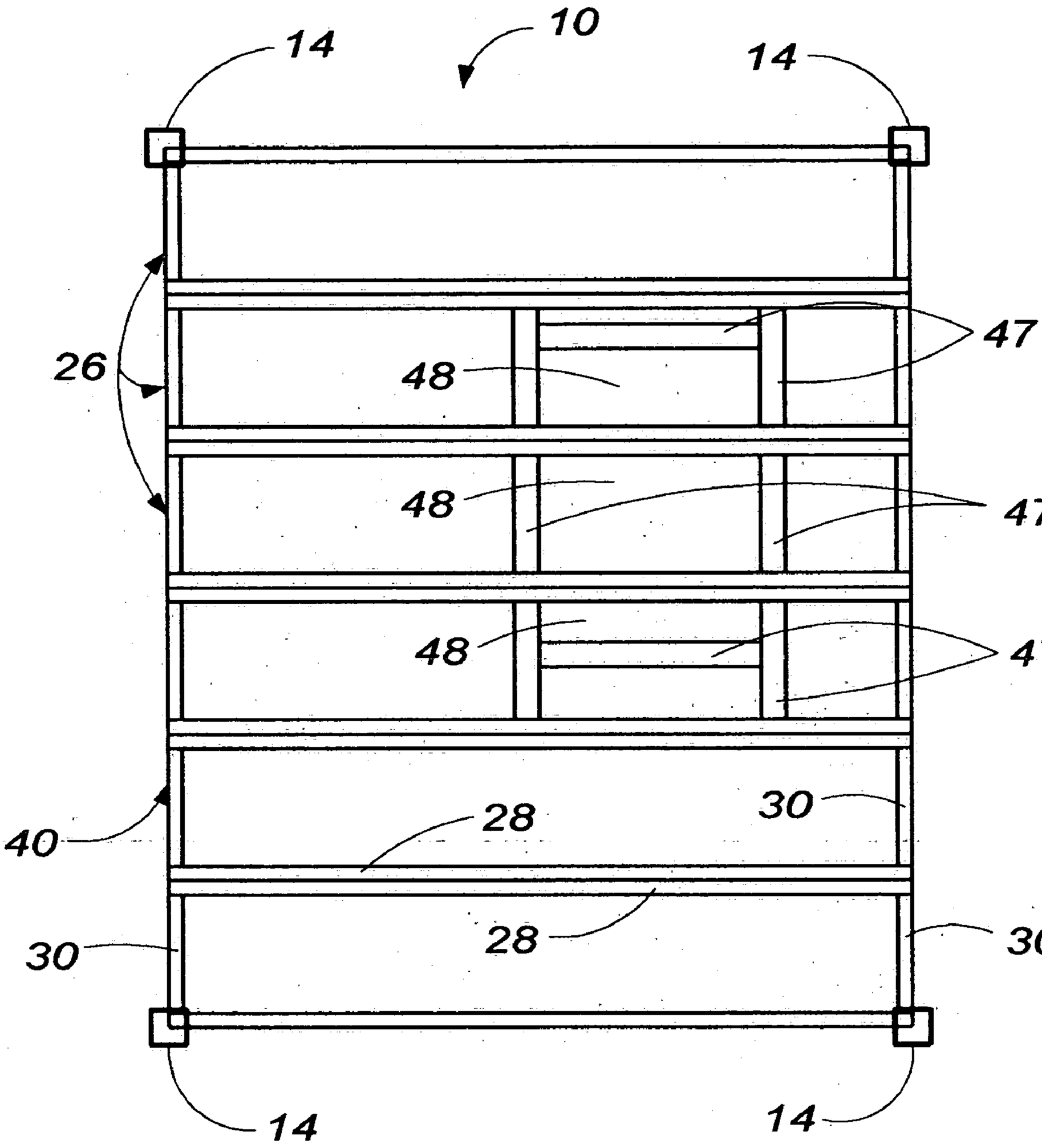

FIG. 11

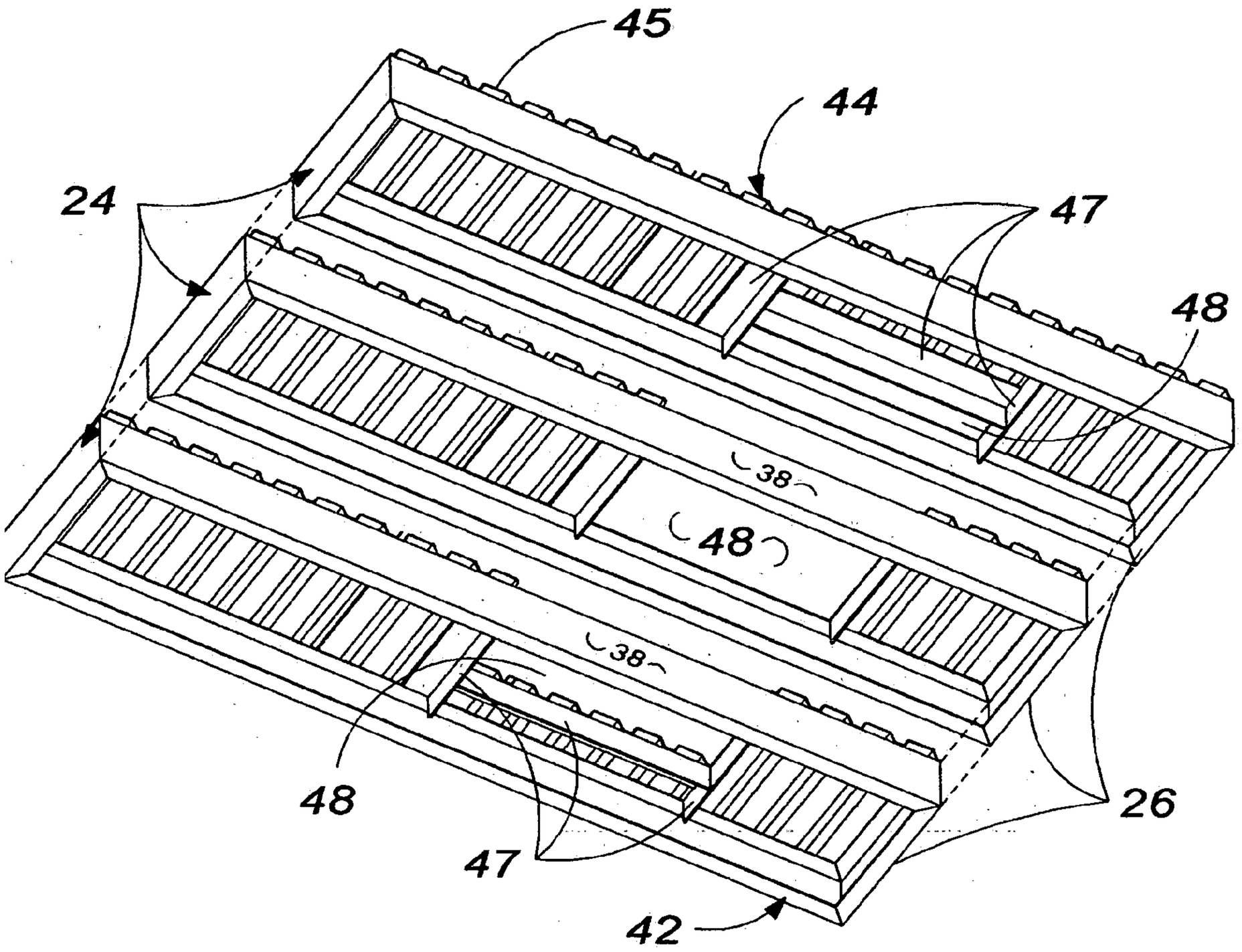

FIG. 12

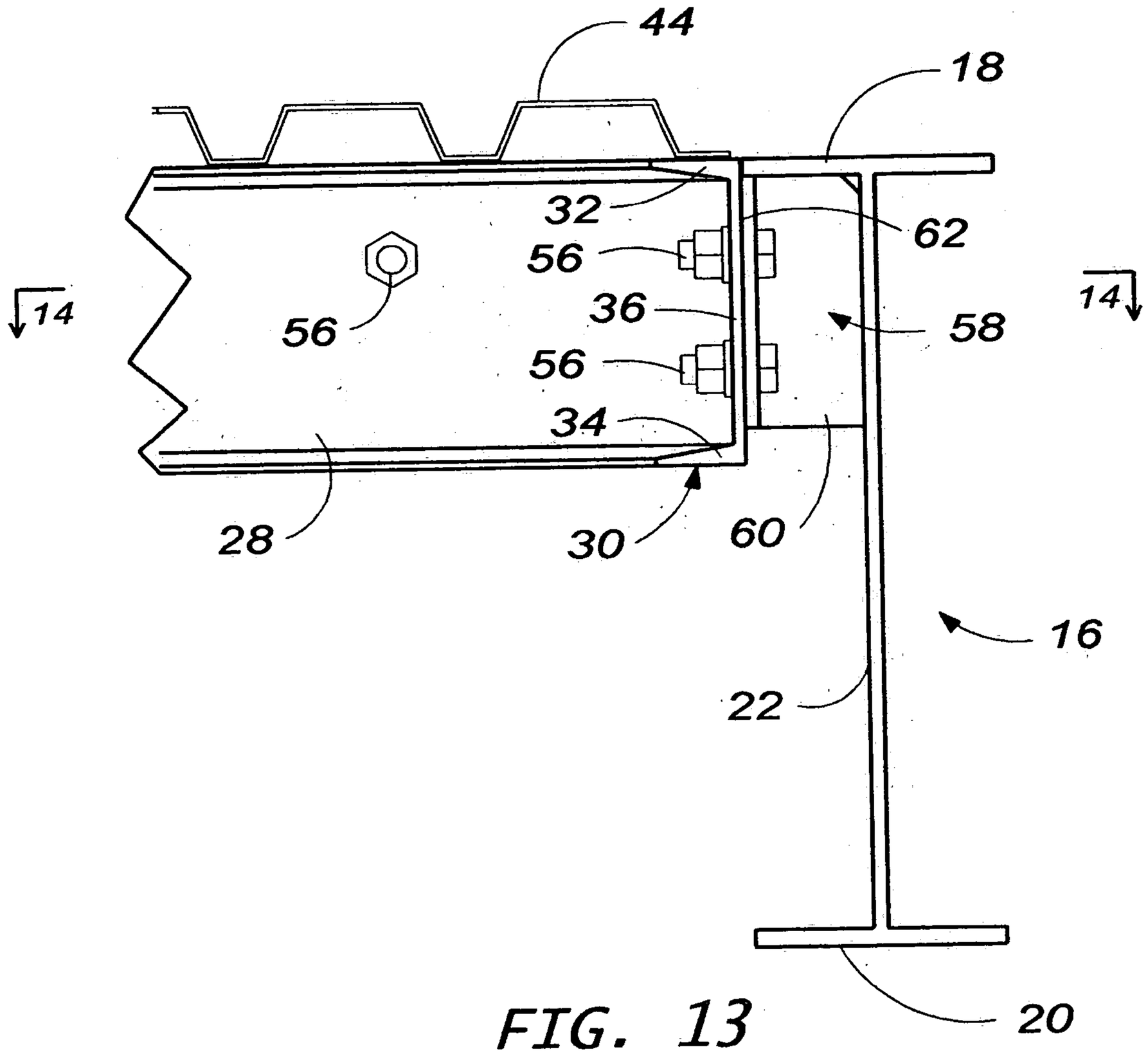

FIG. 13

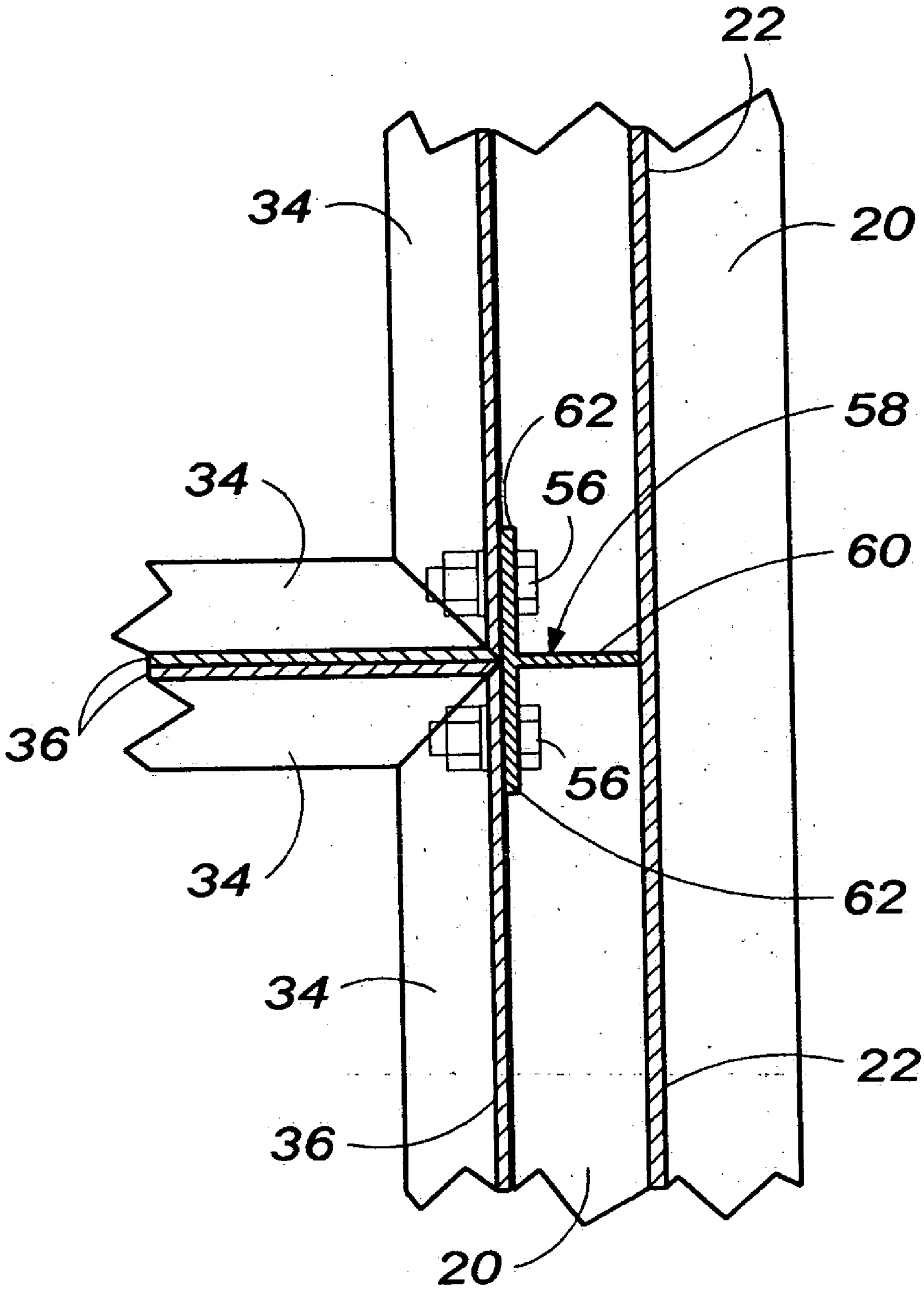

FIG. 14

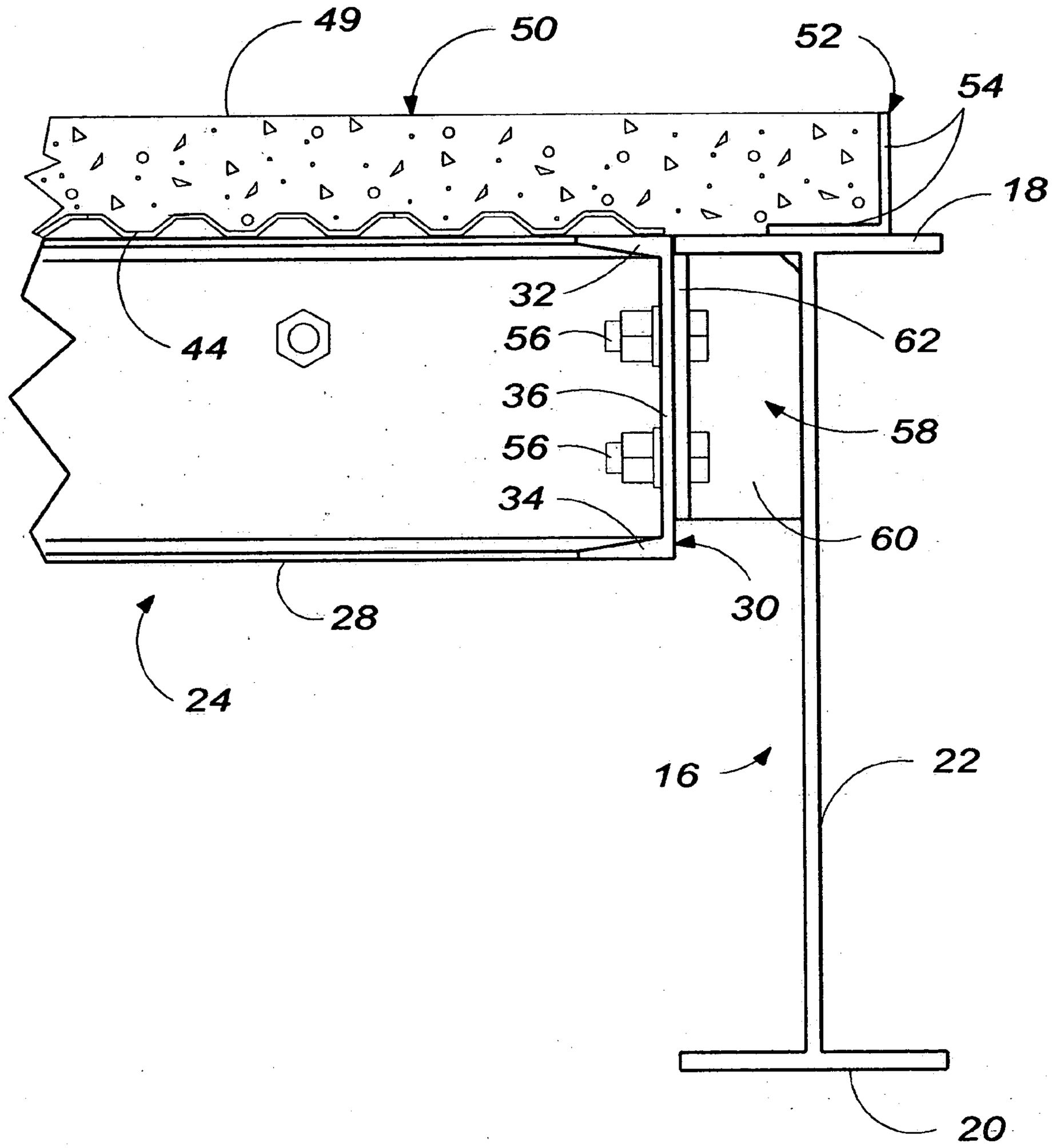

FIG. 15

PREASSEMBLED ROOF AND FLOOR DECK PANEL SYSTEM

BACKGROUND OF THE INVENTION

[0001] The present invention is broadly concerned with an improved commercial roof and deck system. More particularly, it is concerned with a modular deck system having prefabricated panels that can be fastened to primary support members from below without the need for field-welding.

[0002] A portion of a structure erected using conventional commercial building construction practice is depicted in **FIG. 1** and employs a framework of columns or bearing walls, girders, and open web steel joists to support steel decking. In the case of a floor system, the joists are topped with cast-in-place concrete. This manner of construction is favored because it provides large interior clear spans that allow flexible configuration of the interior space. In practice, open web joists are designed and fabricated for the structure based on approved shop drawings. The fabrication process typically requires a lead time of about four weeks for joist shop drawing submissions and approval and additional joist fabrication time of four to six weeks to delivery of the finished open web joists.

[0003] A supporting structure is set by installing horizontal steel beams or girders (A) on columns (B) or bearing walls. A series of open web steel joists (C) are rigged, hoisted and set between the beams. Bar joists, each having a top chord joist (D) and a bottom chord joist (E) with an intermediate open web (F) are depicted in **FIG. 1** and are commonly employed for this purpose. Generally the top chord joist is somewhat longer than the bottom chord joist to form a bearing end, and the joist is installed so that each of the bearing ends rests on an underlying support beam or girder and is welded to the upper surface. Bracing (G) is bolted to the perimeter of the bar joists and interior cross bracing (H) is bolted or welded in place. Horizontal bracing (I) is next bolted or welded in place between the parallel bar joists, and deck bearing angle (J) is installed around the perimeter. A bundle of decking is then hoisted to the area and "shaken out" by a worker by hand. The decking is laid out to cover the bar joists and is welded down. Screws are installed at each overlap between adjacent decking panels. These operations are necessary steps in conventional building construction and are labor-intensive, time consuming and dangerous. They require an erection crew to work on top of the decking, often at great heights. Field-welding of the bar joists to the support beams is particularly hazardous because the workers gain access by walking along the bar joists before they are welded in place on the underlying support structure. The welding operation is performed from above the panel. In the past, such commercial construction practices have been associated with injuries and fatalities.

[0004] In order to reduce the incidence of such accidents, the U.S. Department of Labor Occupational Safety and Health Administration has established steel erection standards for the construction industry. These standards require those engaged in structural steel assembly to adopt specific work practices. Notably, they require that workers be protected with fall arrest or restraint equipment when working at heights greater than fifteen feet or two stories. They also specify that hoisting cables may not be released until structural members have been secured in place. While these steel erection standards serve to enhance the safety of workers involved in commercial structural steel assembly, the additional labor and compliance activities required by these standards also serve to increase the cost of commercial construction.

[0005] Conventional bar joist construction methods are also costly because they incorporate wasted space which is attributable to the height of the open web that extends between the top and bottom chord joists. This so-called "above ceiling" interference requires augmentation of floor-to-ceiling dimensions in order to accommodate-mechanical, electrical and plumbing rough-in items such as ductwork and piping, and also makes the installation of such items more difficult. The depth of the bar joists may also cause problems in correspondence of the dimensions where the construction involves addition of new space to an existing older structure having limited floor-to-ceiling clearances and a requirement for matching existing multi-floor elevations.

[0006] Conventional construction methods also require custom installation of roof penetrations and their associated structural reinforcement members, and on-site installation of hatches and other roof accessories.

[0007] Previous attempts to fabricate roof and floor deck assemblies in the shop have utilized open web bar joists with steel decking as the top chord of the joist. Such systems do not address most of the problems previously described, in that they still require the erection crew to field-weld above the decking and do not reduce the depth of the exterior perimeter wall height attributable to the depth of the bar joists or the required interior floor-to-ceiling clearances. Accordingly, there is a need for a prefabricated roof and floor panel system that is economical, adaptable and provides a reduced-depth panel that can be installed quickly and safely, without the need for field-welding from a position above the support structure.

SUMMARY OF THE INVENTION

[0008] The present invention is directed to an improved roof and floor deck system using conventional steel shapes and sizes to form a preassembled panel that can be installed and fastened in place without the need for performing welding or other fastening operations from a position above the deck. The roof and floor panel assembly has a rectangular frame of structural members, including a pair of side members and a pair of end members. Each member has a substantially planar outer perimeter surface for fastening to an adjacent panel frame member, as by sets of bolts and nuts, rivets, or the like. A deck is secured to enclose the top side of the frame. The panels are prefabricated, hoisted into place on existing supporting girders; joined together and connected to the girders by workers positioned below the panel assembly.

[0009] The preassembled deck panels are formed of a length equal approximately to the span between the girders which will support them. Generally, when supported by exterior girders, a panel is sized so that the end extends flush with the edge of the upper flange of the supporting girder. For an interior girder, the end of the panel extends halfway across the upper flange of the girder so that the girder can also support another panel butted against the first. The end members of abutting panels supported by a common girder are connected by fasteners, similar to the side members of the panels.

[0010] Objects and advantages of this invention will become apparent from the following description taken in conjunction with the accompanying drawings wherein are set forth, by way of illustration and example, certain embodiments of this invention. The drawings constitute a part of this specification and include exemplary embodiments of the present invention and illustrate various objects and features thereof.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] **FIG. 1** is a fragmentary perspective view of a prior art bar joist roofing system with parts broken away for clarity and taken from a position below the prior art system.

[0012] **FIG. 2** is a perspective view of a roof or deck panel constructed in accordance with the present invention and taken from a position below the panel.

[0013] **FIG. 3** is a fragmentary perspective view of a roof or deck system constructed in accordance with the present invention with parts broken away for clarity, and taken from a position below the system.

[0014] **FIG. 4** is an enlarged fragmentary elevational view of a roof or deck system similar to that shown in **FIG. 3**, showing two panels joined end-to-end and secured to an underlying support girder.

[0015] **FIG. 5** is a fragmentary cross sectional view taken along Line **5-5** of **FIG. 4** and showing side and end member joint construction details.

[0016] **FIG. 6** is an enlarged fragmentary elevational view of an end panel in accordance with the present invention and showing connection of the panel to a support girder.

[0017] **FIG. 7** is an enlarged fragmentary elevational view of a first alternate; perimeter panel having a box-shaped end member.

[0018] **FIG. 8** is an enlarged fragmentary elevational view of a second alternate perimeter panel having a rectangular-shaped end member.

[0019] **FIG. 9** is an enlarged fragmentary elevational view of a floor deck system constructed in accordance with the present invention, showing two panels fastened end-to-end and secured to a support girder, with a concrete floor poured atop the decking.

[0020] **FIG. 10** is a greatly enlarged fragmentary elevational view of a perimeter panel of the system shown in **FIG. 9**.

[0021] **FIG. 11** is a top plan view of a roof deck system similar to that shown in **FIG. 3**, including a roof top unit frame, and with the decking removed for clarity.

[0022] **FIG. 12** is an exploded fragmentary bottom elevational view of a portion of the roof deck system shown in **FIG. 11**, showing openings framed in the decking to accommodate a roof top unit.

[0023] **FIG. 13** is an enlarged fragmentary elevational view of an alternate method of connecting a roof deck panel to the side of a support girder by a flange.

[0024] **FIG. 14** is a fragmentary cross sectional view taken along Line **14-14** of **FIG. 13** showing details of connecting the flange to the end of the panel frame.

[0025] **FIG. 15** is an enlarged fragmentary elevational view similar to that shown in **FIG. 13** but adapted for use as a floor deck.

DETAILED DESCRIPTION OF THE INVENTION

[0026] As required, detailed embodiments of the present invention are disclosed herein; however, it is to be understood that the disclosed embodiments are merely exemplary of the invention; which may be embodied in various forms. Therefore, specific structural and functional details disclosed herein are not to be interpreted as limiting, but merely as a basis for the claims and as a representative basis for teaching one skilled in the art to variously employ the present invention in virtually any appropriately detailed structure.

[0027] A commercial roof and floor deck system in accordance with the present invention is generally designated by the reference numeral **10** and is illustrated in **FIG. 3** in an exemplary installation in association with a support structure **12**. The support structure **12** includes a plurality of vertical columns **14** supporting a plurality of primary horizontal support members or girders **16**, each having a top flange **18**, bottom flange **20** and an interconnecting web **22**. While the drawing figures depict a framework constructed of wide flange columns and American Standard I-beams, those skilled in the art will appreciate that the inventive roof and deck system may be employed in association with any suitable support structure, including, for example, bearing walls supporting horizontal girders which in turn support a plurality of lighter weight horizontal beams.

[0028] As shown in **FIGS. 2, 3, 11** and **12**, the system **10** broadly includes a plurality of generally rectangular panels **24**, each having an open frame **26** including a pair of side beam members **28** orthogonally joined with a pair of end beam members **30**. Each of the illustrated support members **28** and **30** is an elongated, generally C-shaped structural steel member such as an American Standard channel, having a top flange **32** (**FIG. 4**), a bottom flange **34** and a web **36** therebetween. The ends of the support members **28** and **30** are orthogonally connected by welding or other suitable means to form the panel frame **26**. The supports **28** and **30** are oriented so that the top and bottom flanges **32** and **34** extend inwardly and the unflanged sides of the webs **36** face outwardly so that the panel frame **26** has a substantially planar outer perimeter surface **38**. The ends of the illustrated members **28** and **30** are mitered so that the webs **36** of the joined members form the outer perimeter surface **38**. The upward and downward-facing surfaces of the top and bottom flanges **32** and **34** cooperatively form respective top and bottom perimeter surfaces or sides **40** and **42** of the panel frame **26**. The top surface **40** supports a metal deck member **44**. The deck **44** is secured to the top surface **40** by welding or the use of fasteners (not shown) to enclose the frame **26**. The illustrated deck member **44** includes a series of parallel corrugations **45** and is preferably installed so that the corrugations **45** run perpendicular to the elongated side support members **28**. This construction stiffens the panel **24** and obviates the need for additional lateral support members. While the panels **24** are generally rectangular in shape when installed in the interior or field of a roof or deck, it is foreseen that they may also be equilateral or square in shape. Panels **24** used at the perimeter of a roof or deck may be

constructed to have irregular quadrilateral or multilateral shapes in accordance with the specific architectural design features of the perimeter of the structure.

[0029] Advantageously, the prefabricated panels **24** may be employed to form both roof and floor deck structures. When the prefabricated panels are used as roof deck panels **24**, a roof **46** is installed in covering relationship over the decking **44** (**FIG. 4**). As best shown in **FIGS. 11 and 12**, when employed as roof deck panels **24**, they may be prefabricated to include additional framing or support members **47** defining apertures or roof penetrations **48** enabling Roof Top Units (RTU's) such as heating and air conditioning units (not shown) to be supported by an adjacent girder **16**. The illustrated support members **47** are constructed of elongated structural steel angle stock, such as 4" by 4" equal-leg angle stock, which is joined with respective side or end support members **28** or **30** by welding. Alternatively, other types of steel stock could be employed for the support members **47**.

[0030] When the prefabricated panels are used as floor deck panels **24**, a layer of concrete **49** is poured over the deck **44** to form a floor structure **50** as shown in **FIG. 9**. A lighter gauge decking is generally employed for floor applications and a heavier gauge decking is employed for roof applications.

[0031] As shown in **FIGS. 10 and 15**, preselected floor deck panels **24** are constructed to include a perimeter support member **52** joined with the top flanges **32** of preselected side and end support members **28** and **30** which will form the perimeter of the finished floor **50**. The support member **52** is constructed of structural steel angle stock, having a pair of generally perpendicular legs **54**. Equal-leg angle stock is preferred, although unequal-leg angle stock or any other suitable steel support may also be employed.

[0032] In use, the system **10** can be quickly designed in accordance with structural requirements of the job and the panels **24** quickly fabricated in a shop using standard steel stock. Because their generally planar or flat profile permits stacking, the prefabricated panels **24** can be cost-effectively transported to a job site in quantity by rail or by truck. Once delivered to a job site, the preassembled panels **24** are rigged and hoisted into place on a support structure **12** using a crane or the like.

[0033] As shown in **FIGS. 3, 11** and **12**, the panels **24** are installed with their respective planar perimeter surfaces **38** in side-by-side or end-to-end adjacent relationship and the webs **36** connected with fasteners **56**, such as sets of bolts and nuts. In this manner, the outward-facing webs **36** of adjacent C-channel support members **28** or **30** are connected together to form an intermediate structural member that is similar in cross section to the American Standard I-beam. The bolts **56** are generally installed in a staggered pattern, with a pair of bolts vertically aligned adjacent each end of the side support member **28**. The webs **36** of the end support members **30** of corresponding panels **24** are bolted together using a pair vertically aligned bolts **56** adjacent each end. All of the fasteners **56** can be installed by workers from a position below the panels **24**, so that fall arrest or restraint equipment is not required, and it is not necessary to install erection bridging between panels or beams. Holes for the fasteners **56** can be drilled on site or, preferably, are predrilled during assembly of the panels **24**.

[0034] As shown in **FIGS. 4 and 9**, pairs of roof and floor deck panels **24** may be installed so that the end support members **30** of adjacent panels **24** rest on the top flange **18** of a girder **16**. Each support member bottom flange **34** is secured to a portion of the girder top flange **18** with bolts **56**. As shown in **FIGS. 6 and 10**, perimeter roof and floor panels **24** may be installed in covering relationship to the girder top flange **18**. The support member bottom flange **34** is installed on the outward-facing portion of the girder top flange **18**. Interior girders **16** (**FIGS. 4 and 9**) thus provide underlying support for pairs of intercoupled end support members **30**, while perimeter girders **16** (**FIG. 10**) provide underlying support for end support members **30** which are coupled in flush relation over the perimeter edge of the top flange **18** of the girder **16**.

[0035] Alternatively, as shown in **FIGS. 13, 14** and **15**, perimeter roof and floor panels **24** may be installed in a flush relationship between the girder top flanges **18** and the top flange **32** of the panel side or end support member **28** or **30** aligned. The panels **24** are connected with a generally T-shaped member or bracket **58** having a web **60** welded to the I-beam girder (**FIG. 14**) and a pair of outstanding flanges **62** parallel to the girder web **22**. The webs **36** of a pair of adjacent end support members **28** or **30** are bolted to the flanges **62** by a pair of vertically aligned fasteners **56**. Where the panels **24** are to be used as roof panels, an angle support **52** may be installed on the girder top flange **18**, and concrete **48** may be poured over the deck **44** to form a floor **50** as is shown in **FIG. 15**.

[0036] A first alternate embodiment of a roof or floor deck system **100** is depicted in **FIG. 7** to be of substantially similar construction to that previously described. The system **100** includes a plurality of panels **124** (a portion of one panel is shown), each having a frame **126** formed by side and end support members **128** and **130**. While the side support members **128** include generally C-shaped channel construction including top and bottom flanges **132** and **134** with a web **136** therebetween, the end support members **130** are of tubular steel or box-type construction, having a generally square cross section. The end support members include a top wall, **136**, bottom wall **138** and a pair of sidewalls **140**, all of generally equal length. An end support member **152** is provided, having a pair of generally perpendicular legs **154**. The installation of these panels **124** is similar to that previously described, except that the end support members are fastened to the outwardly extending portion of the girder top flange **118** by welding from below. One leg **154** of the support member **152** is fastened to the inwardly extending portion of the girder top flange **118** by means of a fastener **156**. The other, upstanding leg **154** of the support member **152** is fastened to the interior sidewall **140** of the end support member **130** by welding or other suitable means.

[0037] A second alternate embodiment of a roof or floor deck system **200** is depicted in **FIG. 8** and is also substantially similar to that previously described. The system **200** also includes a plurality of panels **224** (a portion of one panel is shown), with a frame **226** formed by side and end support members **228** and **230**. The side support members **228** are of generally C-shaped channel construction and the end support members **230** are of tubular steel having a generally rectangular cross section. The end support members have top and bottom walls **236** and **238** and a pair of sidewalls **240**. The length of the sidewalls **240** exceeds the length of

the top and bottom walls **236** and **238**. An end support member **252** is provided, having a pair of generally perpendicular legs **154**. The installation of these panels **124** is similar to that previously described, with the end support members fastened to the outwardly extending portion of the girder top flange **218** by welding from below. One leg **254** of the support member **252** is fastened to the inwardly extending portion of the girder top flange **218** by means of a fastener **256**. The remaining, upstanding leg **254** of the support member **252** is fastened to the interior sidewall **240** of the end support member **230** by welding or other suitable means.

[**0038**] It is to be understood that while certain forms of the present invention have been illustrated and described herein, it is not to be limited to the specific forms or arrangement of parts described and shown.

What is claimed and desired to be secured by Letters Patent is as follows:

1. A modular roof and floor panel assembly for connection with and spanning a pair of horizontally extending girders and comprising:

(a) a plurality of structural members including a pair of elongated frame side members and a pair of elongated frame end members, each of said members having a planar side surface;

(b) said side members and said end members being joined at their ends to form a rectangular panel frame having substantially planar outer perimeter surfaces formed by said planar side surfaces of said members, said panel frame having a top side and a bottom side; and;

(c) a deck member secured to said top side and enclosing said frame.

2. The modular roof and panel assembly as set forth in claim 1, and including:

(a) fasteners enabling attachment of said frame end members to said girders.

3. The modular roof and panel assembly as set forth in claim 1, and including:

(a) a bracket member connecting an end member of said panel frame to one of said girders.

4. The modular roof and panel assembly as set forth in claim 1 and including:

(a) a T-shaped bracket formed by a bracket web having a first end and a second end and a pair of bracket flanges extend from said first end of said bracket web;

(b) said bracket having said second end of said bracket web joined to one of said girders; and

(c) said bracket flanges being fastened to one of said end members of said panel frame to thereby join said end member to one of said girders.

5. The modular roof and floor panel assembly as set forth in claim 1, wherein:

(a) said frame end members are adapted to enable connection with said girders; and

(b) said frame side members are adapted to enable connection with frame side members of additional panel assemblies.

6. The modular roof and floor panel assembly as set forth in claim 1 wherein:

(a) said frame end members are adapted to enable connection with said girders; and

(b) said frame end members are further adapted to enable connection with frame end members of additional panel assemblies.

7. The modular roof and floor panel assembly as set forth in claim 1, wherein:

(a) said frame structural members have a generally C-shaped cross section, including an upper flange and a lower flange joined by a closed web; and

(b) each of said structural members is oriented and positioned on said frame to enable said web to form a portion of said substantially planar outer perimeter surface of said frame.

8. The modular roof and floor; panel assembly as set forth in claim 1, wherein:

(a) at least one of said frame structural members of a panel assembly has a tubular, rectangular cross section, including an upper wall and a lower wall jointed by a pair of spaced apart side walls.

9. The modular roof and floor panel assembly as set forth in claim 1, wherein:

(a) a plurality of said panels are joined together in side-by-side relation.

10. The modular roof and floor panel assembly as set forth in claim 1 wherein:

(a) a plurality of said panels are joined together in end-to-end relation.

11. The modular roof and floor panel assembly as set forth in claim 1 wherein:

(a) a plurality of said panels are joined together in side-to-side and end-to-end relation.

12. The modular roof and floor panel assembly as set forth in claim 1, wherein:

(a) a generally rectangular framework is connected with a plurality of said side members in spanning relationship for supporting a roof top unit.

13. Modular roof and floor panel assemblies for connection with and spanning a pair of parallel, horizontally extending girders, each assembly comprising:

(a) a plurality of structural members including a pair of elongated frame side members and a pair of elongated frame end members, each of said members having a planar side surface;

(b) said panel frame side members and said end members being joined at their ends tor form a rectangular panel frame having substantially planar outer perimeter surfaces formed by said planar side surfaces of said members, said panel frames each having a top side and a bottom side; and

(c) a deck member secured to each of said top sides and enclosing each of said frames.

14. The assemblies as set forth in claim 13, wherein:

(a) said panel assemblies are connected together in side-by-side and end-to-end relationship.

15. The assemblies as set forth in claim 13, wherein:

(a) said frame end members further include structure enabling attachment to said girders.

16. The assemblies as set forth in claim 13, wherein:

(a) said frame end members are adapted to enable connection with said girders; and

(c) said frame side members are adapted to enable connection with frame side members of adjacent panel assemblies.

17. The assemblies as set forth in claim 13, wherein:

(a) said frame structural members have a generally C-shaped cross section, including ah upper flange and a lower flange joined by a web; and

(b) said webs are positioned on said frames to form said substantially planar outer perimeter surfaces of said frames.

18. The assemblies as set forth in claim 13, wherein:

(a) at least one of said frame structural members have a tubular, rectangular cross section, including an upper wall and a lower wall jointed by a pair of spaced apart, side walls.

19. The assemblies as set forth in claim 13, wherein:

(a) a generally rectangular framework is connected with a plurality of said side members in spanning relationship for supporting a roof top unit.

20. A modular roof and floor panel system for connection with and spanning a pair of parallel, horizontally extending girders and comprising:

(a) a plurality of rectangular panel frames, each frame including:

(1) a plurality of structural members including a pair of elongated frame side members and a pair of elongated frame end members, each of said members having a planar side surface;

(2) said side members and said end members being joined at their ends to form a rectangular panel frame having substantially planar outer perimeter surfaces formed by said planar side surfaces of said members, said panel frame having a top side and a bottom side;

(b) a deck member secured to said top side and enclosing said frame;

(c) said panels being joined to said girders by connection of end members of each panel respectively to said girders; and

(d) said panels being joined in side-by-side relation by mutual connection of facing side members of adjacent panels.

21. The assemblies as set forth in claim 20, wherein:

(a) said frame structural members have a generally C-shaped cross section, including an upper flange and a lower flange joined by a closed web; and

(b) each of said structural members is oriented and positioned on said frames to enable the webs of said structural members to form said substantially planar outer perimeter surface of each of said frames.

22. A method of assembling a roof and floor deck on a pair of parallel, horizontally extending girders and comprising the steps of:

(a) providing a plurality of prefabricated roof and floor panel assemblies, each assembly including:

(1) a plurality of structural members including a pair of elongated frame side members and a pair of elongated frame end members, each of said members having a planar side surface;

(2) said side members and said end members being joined at their ends to form a rectangular panel assembly having substantially planar outer perimeter surfaces formed by said planar side surfaces of said members, said assembly having a top side and a bottom side; and

(3) a deck member secured to said top side and enclosing said assembly;

(b) lifting each prefabricated roof and floor deck assembly onto said pair of girder and positioning said assembly in spanning relation between said girders,

(c) connecting end members of each assembly with a respective one of said girders;

(d) positioning adjacent assemblies in side-by-side relation; and

(e) interconnecting facing side members of adjacent assemblies.

23. The method of assembly as set forth in claim 22, wherein:

(a) said step of coupling said assembly end members is performed from a position below said roof and deck assembly.

24. A method of assembling a roof and floor deck using a plurality of prefabricated roof and floor deck assemblies, comprising the steps of:

(a) providing a plurality of prefabricated roof and floor panel assemblies, each assembly including a rectangular frame of elongated structural members, said frame including a pair of side members and a pair of end members and having a top side and a bottom side; said frame side members and end members each including a substantially planar outer perimeter surface; and a deck member secured to said top side and enclosing said frame;

(b) lifting and positioning a first prefabricated roof and floor deck assembly on and spanning between a pair of existing girders;

(c) fastening each of said first assembly end members to a respective one of said pair of girders;

(d) lifting and positioning a second prefabricated roof and floor deck assembly on and spanning between said pair of existing girders in side-by-side relationship with said first assembly;

(e) fastening each of said second assembly end members with a respective one of said girders; and

(f) fastening one of said first assembly side members with an adjacent one of said second assembly frame side members.

25. The method of assembly as set forth in claim 24, wherein:

(a) said fastening steps of said first and second assembly end members and side members are performed from a position below said roof and deck assembly.

26. The method of assembly as set forth in claim 24, wherein said step of lifting and positioning further includes:

(a) positioning a second prefabricated roof and floor deck assembly on and spanning between said pair of existing girders in end-to end relationship with said first assembly.

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