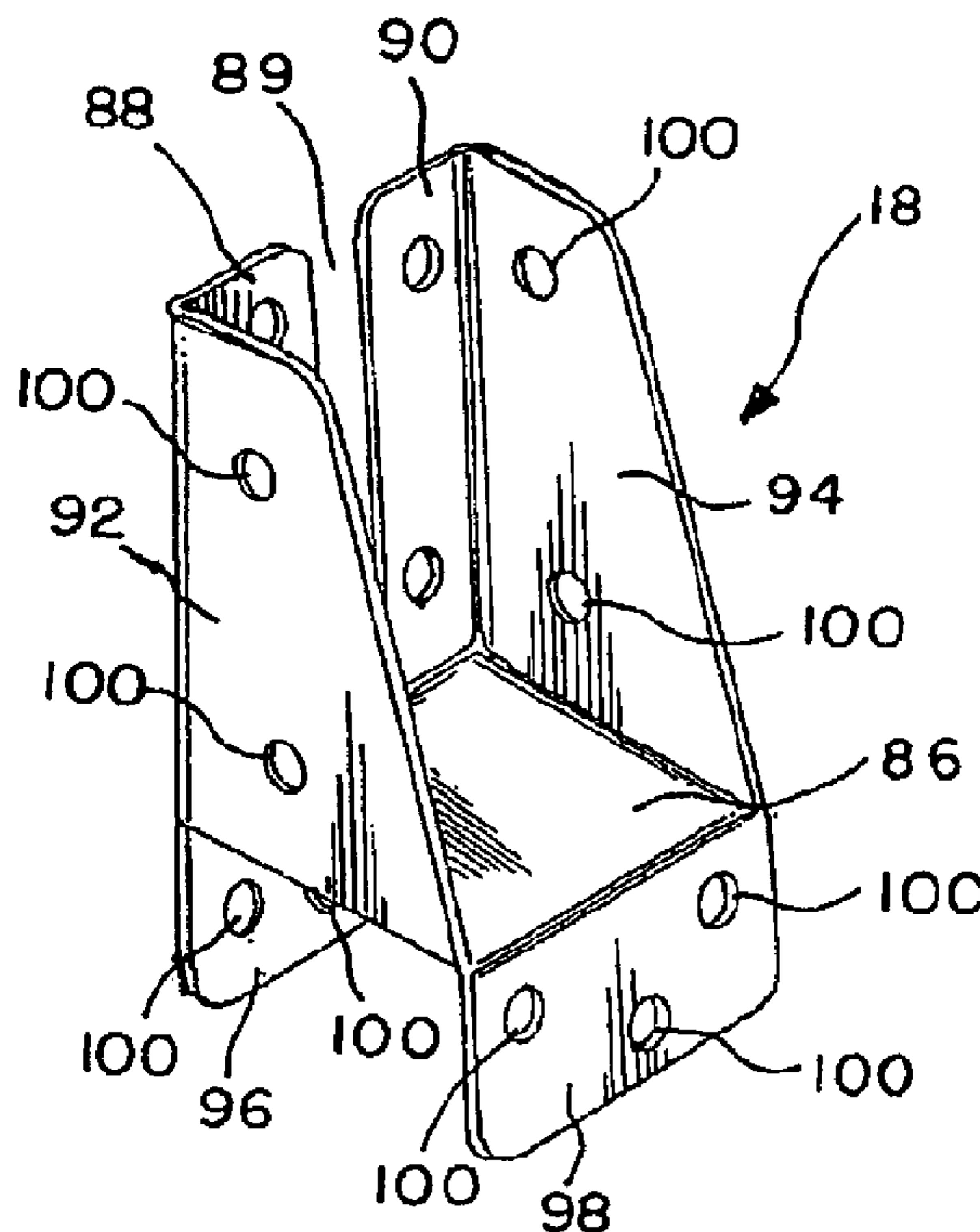




(22) Date de dépôt/Filing Date: 2005/12/22
 (41) Mise à la disp. pub./Open to Public Insp.: 2006/08/28
 (62) Demande originale/Original Application: 2 531 402
 (30) Priorité/Priority: 2005/02/28 (US11/068,608)

(51) Cl.Int./Int.Cl. *E04B 1/38* (2006.01),
A63B 9/00 (2006.01), *A63G 31/00* (2006.01),
F16B 1/00 (2006.01), *F16B 7/00* (2006.01)
 (71) Demandeur/Applicant:
 PLAYCORE WISCONSIN, INC., US
 (72) Inventeurs/Inventors:
 GADD, SCOTT, US;
 PICCIONE, GIOVANNI, US
 (74) Agent: NEXUS LAW GROUP LLP

(54) Titre : SUPPORTS ET SYSTEMES DE SUPPORTS POUR L'ASSEMBLAGE DE MATERIEL DE TERRAIN DE JEUX
 (54) Title: BRACKETS AND BRACKET SYSTEM FOR ASSEMBLING PLAYGROUND EQUIPMENT



(57) **Abrégé/Abstract:**

A bracket system for assembling playground equipment includes a plurality of deck support brackets, at least two vertical frame brackets, at least two horizontal frame brackets, a swing bracket, and at least two ladder brackets. The deck support brackets secure horizontal deck support beams to vertical frame beams at first points along the vertical frame beams. The vertical frame brackets attach to at least two adjacent vertical frame beams at second points above the first points. The at least two horizontal frame brackets fix at least one horizontal frame beam to the at least two adjacent vertical frame beams at the second points; the horizontal frame brackets and the vertical frame brackets interconnect. The swing bracket fastens a swing support beam to the at least one horizontal frame beam at a third point along the at least one horizontal frame beam. The at least two ladder brackets connect a ladder to one of the horizontal deck support beams.

ABSTRACT OF THE DISCLOSURE

A bracket system for assembling playground equipment includes a plurality of deck support brackets, at least two vertical frame brackets, at least two horizontal frame brackets, a swing bracket, and at least two ladder brackets. The deck support brackets secure horizontal deck support beams to vertical frame beams at first points along the vertical frame beams. The vertical frame brackets attach to at least two adjacent vertical frame beams at second points above the first points. The at least two horizontal frame brackets fix at least one horizontal frame beam to the at least two adjacent vertical frame beams at the second points; the horizontal frame brackets and the vertical frame brackets interconnect. The swing bracket fastens a swing support beam to the at least one horizontal frame beam at a third point along the at least one horizontal frame beam. The at least two ladder brackets connect a ladder to one of the horizontal deck support beams.

TITLE OF THE INVENTION

BRACKETS AND BRACKET SYSTEM FOR ASSEMBLING PLAYGROUND EQUIPMENT

BACKGROUND OF THE INVENTION

[0001] The present invention is directed to a bracket system and brackets for assembling playground equipment, and a method for assembling playground equipment using the bracket system. More particularly, the present invention pertains to a bracket system and method of use thereof including several different types of brackets for assembling playground equipment comprising upright posts to which elements such as platforms, ladders, swing beams and the like are secured.

[0002] Many different configurations of playground equipment are well known in the art. In many constructions, vertical frame beams or posts provide support for the equipment's individual play units, which may include mounted platforms, towers, ladders, slides, overhead bars, firepoles, ropes, climbing walls, or swing beams. Several of these distinct play units may be interconnected by a single deck, so that a child may reach all of the play units from the same platform. Other units also may be added, including other decks, to enlarge the equipment.

[0003] Most known playground equipment is constructed of multiple components, which must be assembled by a user. In all such configurations, many of the components must be attached by hardware or mechanical fasteners such as bolts, screws, or the like. Many types of prior art playground equipment must be pre-assembled during construction, resulting in bulky pieces that are difficult to store and transport. Other types of prior art playground equipment have very complex constructions and connections, requiring the services of a professional with a variety of tools to put it together. Even if a user is supposed to be able to assemble a piece of playground equipment himself, in his own backyard, the means of connecting prior art components to one

another frequently is confusing and unclear, with every connector looking the same. Further, owner-assembled playground equipment frequently is not nearly as sturdy or secure as institutional playground equipment, because of sub-par assembly or connecting means.

[0004] Accordingly, there exists a need for a rigid, strong, and stable bracket system for assembling modular playground equipment that is simple and straightforward to use. Such a bracket system and method of use thereof allows the playground equipment components together with their brackets to be efficiently and compactly stacked for easy transport and lower shipping costs. Desirably, such a bracket system includes brackets of several different styles, wherein each style is designed to safely and securely connect different types of playground equipment components. Most desirably, such a bracket system and method of use thereof allows users to quickly and easily understand how to assemble their playground equipment; unlike other, prior art means of constructing playground equipment, no professional assistance is required to use the bracket system of the present invention.

BRIEF SUMMARY OF THE INVENTION

[0005] A bracket system for assembling playground equipment includes a plurality of deck support brackets, at least two vertical frame brackets, at least two horizontal frame brackets, a swing bracket, and at least two ladder brackets. The deck support brackets secure a plurality of horizontal deck support beams to a plurality of vertical frame beams at first points along the vertical frame beams. The vertical frame brackets attach to at least two adjacent vertical frame beams at second points above the first points. The at least two horizontal frame brackets fix at least one horizontal frame beam to the at least two adjacent vertical frame beams at the second points; the horizontal frame brackets and the vertical frame brackets interconnect.

[0006] The swing bracket fastens a swing support beam to the at least one horizontal frame beam at a third point along the at least one horizontal frame beam. The at least two ladder

brackets connect a ladder to one of the horizontal deck support beams. Desirably, at least two additional ladder brackets are included, to connect a climbing wall to one of the plurality of horizontal deck support beams.

[0007] In a preferred embodiment, the first points are located approximately at a midpoint between a bottom and a top of the vertical frame beams. The second points may be located approximately at a midpoint between the first points and a top of the vertical frame beams. The third point may be located approximately at a midpoint between the at least two horizontal frame brackets.

[0008] Preferably, each of the brackets comprising the bracket system comprises a single piece of folded or bent material and creates each individual bracket style. This material may include durable metals and/or plastics. The deck support brackets include a base, a back perpendicularly oriented to the base, and left and right sloping sides. Outer portions of the left and right sides are substantially perpendicular to both the base and the back, but inner portions of the left and right sides fold perpendicularly to the outer portions, overlapping the forming a channel flaps which are separated by a slot above the back. The slot is useful to cooperate with other brackets as will be described below. The base, back, and left and right sides all include holes for receiving fasteners.

[0009] The second frame brackets include a back, left and right side walls perpendicular to the back, and short upper and lower front walls perpendicular to the side walls. The upper front wall extends toward the lower front wall spaced by a channel gap, and the lower front wall extends away from the upper front wall. The back and upper and lower front walls as well as the side walls preferably include holes for receiving fasteners.

[00010] The second frame brackets include a back, left and lower sidewalls perpendicular to the back, and short lower front walls perpendicular to the side walls. The upper front wall extends toward the lower front wall and the lower front wall extends towards the upper front wall. The back and upper lower front walls as well as the side walls include walls for receiving fasteners.

[00011] The swing bracket preferably includes a base, left and right upper back walls extending towards each other and perpendicular to the base, left and right side walls perpendicular to the left and right upper back walls, a lower back wall perpendicular to the base, and a lower front wall perpendicular to the base. The left and right upper back walls, the left and right sloping side walls, the lower back wall, and the lower front wall all include holes for receiving fasteners.

[00012] Finally, the ladder brackets include a back, a sloping side wall perpendicular to the back, and a top wall at an obtuse angle to the back. The back, the side wall, and the top wall all include holes for receiving fasteners. A piece of playground equipment assembled with the bracket system and a method for assembling playground equipment also are disclosed. The method preferably includes the steps of securing horizontal deck beams to vertical frame beams with deck support brackets; attaching vertical frame brackets to adjacent vertical frame beams; fixing a horizontal frame beam to the adjacent vertical frame beams; interconnecting the horizontal frame brackets and the vertical frame brackets; fastening a swing support beam to the horizontal frame beam with a swing bracket; and connecting a ladder to one of the horizontal deck support beams with ladder brackets. Most desirably, the method further includes the step of connecting a climbing wall to one of the horizontal deck support beams with additional ladder brackets.

[00013] The first and second frame brackets are not only usable separately but are also utilized together with overlapping wall portions such as side walls which overlap thereby allowing beams

to be placed therethrough which secures the beams together and prevents rotation of one beam relative to the other. Holes for receiving fasteners through the brackets are useful to secure the beams to the brackets so that the brackets do not move relative to the beams.

[00014] Similarly, deck support brackets are useful together with either the first and second frame brackets. By providing the slot over one of the wall portions of either the first and second brackets beams can be constrained by the brackets. Using these brackets overlap bracket wall portions are located intermediate adjacent beams.

[00015] The swing support bracket can function somewhat similarly by itself in that its base functions as the panel intermediate adjacent beams. When beams are installed with this bracket the beams are securely held in position relative to one another. Using these brackets at least some of the stresses on the brackets are carried by shear load on the fasteners through the holes in the brackets, if at all.

[00016] These and other features and advantages of the present invention will be apparent from the following detailed description, in conjunction with the appended claims.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

[00017] The benefits and advantages of the present invention will become more readily apparent to those of ordinary skill in the relevant art after reviewing the following detailed description and accompanying drawings, wherein:

Figure 1 is a perspective view of a piece of playground equipment assembled with a bracket system and brackets according to the preferred embodiment of the present invention;

Figure 2 shows a perspective view of a deck support bracket used in the bracket system of the present invention;

Figure 3 illustrates a perspective view of a vertical frame bracket used in the bracket system of the present invention;

Figure 4 depicts a perspective view of a horizontal frame bracket used in the bracket system of the present invention;

Figure 5 is a perspective view of a swing bracket used in the bracket system of the present invention; and

Figure 6 shows a perspective view of a ladder bracket used in the bracket system of the present invention;

Figure 7 shows a perspective view of a deck support bracket connected to a second frame bracket;

Figure 8 shows a detailed side view of a portions of the bracket shown in Figure 7 showing the installation of the deck bracket relative to the second frame bracket; and

Figure 9 shows the first and second frame brackets connected together with the inserted beams removed.

DETAILED DESCRIPTION OF THE INVENTION

[00018] While the present invention is susceptible of embodiment in various forms, there is shown in the drawings and will hereinafter be described a presently preferred embodiment with the understanding that the present disclosure is to be considered an exemplification of the invention and is not intended to limit the invention to the specific embodiment illustrated.

[00019] Referring to the figures, and in particular Figure 1, there is shown a piece of playground equipment **10**, assembled with the bracket system of the present invention. The bracket system includes deck support brackets **12**, vertical frame brackets **14**, horizontal frame brackets **16**, swing brackets **18**, and ladder brackets **20**. The plurality of deck support brackets **12** secure a plurality of horizontal deck support beams **22** to a plurality of vertical frame beams **24** at first points **26** along the vertical frame beams. Preferably, the first point **26** is located approximately

at a midpoint between a bottom **28** and a top **30** of the vertical frame beams **24**. The vertical frame beams **24** provide stability in addition to holding up the playground equipment **10**. At least one middle support beam **23** connected to opposing deck support beams **22** with at least two deck support brackets further stabilizes the equipment **10**. A deck **32** attaches to and is mounted on the horizontal deck support beams **22** and the middle support beam **23**.

[00020] Most preferably, the bracket system uses a total of ten deck support brackets **12**. Eight of the deck support brackets **12** secure four deck support beams **22** to four vertical frame beams **24**, so that two deck support brackets are fixed to each deck support beam **22**. The remaining two deck support brackets secure a middle support beam **23** to two opposing deck support beams **22** underneath the deck **32** to further stabilize the equipment **10**. In this configuration, one deck support bracket **12** is attached to a left side of each deck support beam **22**, and one deck support bracket is attached to a right side **36** of each deck support beam. Two deck support bracket **12** then may be attached to adjacent sides of each of the four vertical frame beams **24**. As shown in Figure 1, the deck support brackets **12** may be connected to the first frame brackets **14** or the second frame brackets **16** in a similar manner.

[00021] Figure 2 depicts a deck support bracket **12** in accordance with the principles of the present invention. The deck support bracket **12** preferably is composed of a single piece of material, folded or bent to include a base **38**, a back **40** perpendicularly oriented to the base, and left and right sloping sides **42, 44**. Most preferably, the deck support bracket **12** is made of a durable metal and/or plastic material. Outer portions **46** of the left and right sides **42, 44** are substantially perpendicular to both the base **38** and the back **40**, but inner portions of the left and right sides fold perpendicularly to the outer portions, overlapping the back forming flaps **48,49**. The base **38**, back **40**, and left and right sides **42, 44** and flaps **48,49** include openings **50** for

receiving fasteners, such as screws, bolts, or the like. The flaps **48,49** are separated from the back **40** by slot **51**. The slot **51** is useful in connecting with one of the first and second frame brackets **14,16** as will be described in detail below.

[00022] Returning to Figure 1 and the bracket system, at least two vertical frame brackets **14** are attached to at least two adjacent vertical frame beams **24** at second points **54** along the vertical frame beams and above the first points **26**. Preferably, the second points **54** are located approximately at a midpoint between the first points **26** and a top **30** of the vertical frame beams **24**. Most preferably, the bracket system uses a total of two vertical frame brackets **14**, each attached to one of two separate and adjacent vertical frame beams **24** at the second points **54**.

[00023] Figure 3 illustrates a first or vertical frame bracket **14** in accordance with the principles of the present invention. The vertical frame bracket **14** preferably is composed of a single piece of material, folded or bent to include a back **56**, left and right side walls **58, 60** perpendicular to the back, and short left and right front walls **62, 64** perpendicular to the side walls and extending towards each other. Most preferably, the vertical frame bracket **14** is made of a durable metal and/or plastic material. The back **56**, side walls **58,60** and left and right front walls **62, 64** preferably include openings **66** for receiving fasteners **52**, such as screws, bolts, or the like.

[00024] Again returning to Figure 1 and the bracket system, at least two horizontal frame brackets **16** fix at least one horizontal frame beam **68** to the at least two vertical frame beams **24** at the second points **54**. The at least two horizontal frame brackets **16** and the at least two vertical frame brackets **14** interconnect as will be described below. Preferably, the bracket system uses a total of two horizontal frame brackets for fixing a single horizontal frame beam to both of two separate and adjacent vertical frame beams **24** at the second points **54**.

[00025] Figure 4 shows a second or horizontal frame bracket **16** in accordance with the principles of the present invention. The horizontal frame bracket **16** preferably is composed of a single piece of material, folded or bent to include a back **70**, upper and lower side walls **72, 74** perpendicular to the back, and short upper and lower front walls **76, 78** perpendicular to the side walls. Most preferably, the horizontal frame bracket **16** is made of a durable metal and/or plastic material. The upper front wall **76** extends toward the lower front wall **78** and depends from the upper side wall **72**, but the lower front wall extends away front the upper front wall and depends from the lower side wall **74**. The back **70**, side walls **72,74** and the upper and lower front walls **76, 78** include openings **80** for receiving fasteners **52** such as screws, bolts, or the like.

[00026] A swing bracket **18** fastens a swing support beam **82** to the at least one horizontal frame beam **68** at a third point **84** along the at least one horizontal frame beam, as seen in Figure 1. Preferably, the third point **84** is located approximately at a midpoint between the at least two horizontal frame brackets **16**. Most preferably, a single swing bracket **18** fastens the swing support beam **82** to a single horizontal frame beam **68** at the third point **84**.

[00027] Figure 5 depicts a swing bracket **18** in accordance with the principles of the present invention. The swing bracket **18** preferably is composed of a single piece of material, folded or bent to include a base **86**, left and right upper back walls **88, 90** extending toward each other and perpendicular to the base, defining channel **39** therebetween left and right sloping side walls **92, 94** perpendicular to the left and right upper back walls, a lower back wall **96** perpendicular to the base and depending therefrom, and a lower front wall **98** perpendicular to the base and depending therefrom. Most preferably, the swing bracket **18** is made of a durable metal and/or plastic material. The left and right upper back walls **88, 90**, the left and right sloping side walls

92, 94, the lower back wall **96**, and the lower front wall **98** include openings **100** for receiving fasteners **52** such as screws, bolts, or the like.

[00028] Turning again to Figure 1 and the bracket system, at least two ladder brackets **20** connect a ladder **102** to one of the plurality of horizontal deck support beams **22**. Preferably, the bracket system uses a total of two ladder brackets **20**, each attached to one of two legs **104, 106** of the ladder **102**, and to one of the four horizontal deck support beams **22**. In a preferred embodiment, additional ladder brackets **20** also may be used to connect a climbing wall **108** to one of the plurality of horizontal deck support beams **22**. Most preferably, the bracket system uses two additional ladder brackets **20**, each attached to the climbing wall **108**, and to one of the four horizontal deck support beams **22**. If both a ladder **102** and a climbing wall **108** are included with the piece of playground equipment **10**, the ladder and the climbing wall should be connected to separate horizontal deck support beams **22**. Such beams **22** may be adjacent, opposite, or unrelated to each other.

[00029] Figure 6 illustrates a ladder bracket **20** in accordance with the principles of the present invention. The ladder bracket **20** preferably is composed of a single piece of material, folded or bent to include a back **110**, a sloping side wall **112** perpendicular to the back, and a top wall **114** at an obtuse angle to the back. Most preferably, the ladder bracket **20** is made of a durable metal and/or plastic material. The back **110**, the side wall **112**, and the top wall **114** all include openings **116** for receiving fasteners **52** such as screws, bolts, or the like.

[00030] A method of assembling a piece of playground equipment **10** using the bracket system of the present invention also is disclosed. The method includes the steps of securing a plurality of horizontal deck support beams **22** to a plurality of vertical frame beams **24** at first points **26** along the vertical frame beams with a plurality of deck support brackets **12** and fasteners;

attaching at least two vertical frame brackets **14** to at least two adjacent vertical frame beams at second points **54** along the vertical frame beams above the first points with fasteners; fixing at least one horizontal frame beam **68** to the at least two adjacent vertical frame beams at the second points with at least two horizontal frame brackets **16** and fasteners; interconnecting the at least two horizontal frame brackets and the at least two vertical frame brackets; fastening a swing support beam **82** to the at least one horizontal frame beam at a third point **84** along the at least one horizontal frame beam with a swing bracket **18** and fasteners; and connecting a ladder **102** to one of the plurality of horizontal deck support beams with at least two ladder brackets **20** and fasteners.

[00031] Preferably, the first points **26** described in the above method are located approximately at a midpoint between a bottom **28** and a top **30** of the vertical frame beams **24**. The second points **54** preferably are located approximately at a midpoint between the first points **26** and a top **30** of the vertical frame beams **24**. The third point **84** preferably is located approximately at a midpoint between the at least two horizontal frame brackets **16**. Most preferably, the method of assembling a piece of playground equipment **10** using the bracket system of the present invention further includes the step of connecting a climbing wall **108** to one of the plurality of horizontal deck support beams **22** with at least two additional ladder brackets **20** and fasteners.

[00032] Figure 7 shows the interlocking nature of the deck support bracket **12** with the first frame support bracket **14**. The back **40** of the deck support bracket **12** is located on one side of the left side wall **58** while the flaps **48,49** are located on the other side of the left side wall **58**. This allows the left side wall **58** to be received within the slot **51** as shown in Figure 8. The holes **50** extend through both of the flaps **48,49**, and the back **40**. The holes **66** in the first frame

member **14** preferably coincide and/or overlap with the holes **50**. Accordingly, fasteners can be provided through any of the holes **50,66** into an appropriate beam.

[00033] Figure 9 shows first and second frame brackets **14,16** interconnected as could occur at a portion of a beam such as shown at position **54** in Figure 1 or elsewhere. Of course, any of the sides **58,60**, front walls **62,64**, or back **56** could interface with the side wall **72,74** back **70** or even front wall **76** as illustrated in Figure 1. Since the holes **80** as shown in Figure 4 overlap with the holes **66** as shown in Figure 3 with adjacent panels placed next to one another in overlapping context, it should be easy to see that the fastener such as screws or bolts **52** as shown in Figure 9 can be placed through the holes into beams such as illustrated beam **24** shown in phantom in Figure 9. One skilled in the art will see as shown in Figure 9 that the side wall **58** is in contacting engagement with the side wall **72** of the second bracket **16**. When another beam is inserted under the second bracket **16**, the brackets **14,16** resist rotation relative to one another due to the interlocking nature of the brackets **14,16**. In a similar manner, as the deck support brackets **12** cooperate with either of the first or second brackets **14,16** as described above with reference to Figures 7 and 8.

[00034] Although the swing support bracket **18** shown in Figure 5 does not have overlapping walls with one another, this bracket could be used with either of the frame brackets **14,15** shown in Figure 3 and Figure 4 or by itself as illustrated in Figure 1. By using the construction interlocking brackets or the swing support bracket **18**, the weight load on the bracket tends to be applied to through sheer stresses on fasteners instead of on threads of a bolt through a single bore as is experienced through prior art drilled of beams connected with bolts and nuts. In testing, it has been discovered that the brackets of the present invention can support 4600 pounds of load and are not the weak link. By utilizing these brackets, pre-drilling of holes in beams can be

eliminated in many instances. This can result in a significant savings for the purchaser since appropriate length lumber can be relatively quickly assembled utilizing the brackets as shown and described herein. Assembly tools can be reduced to a drill or screwdriver and possibly a saw.

[00035] Referring back to Figure 5, the positioning of the base **86** intermediate to beams as illustrated in Figure 1 with the side walls **92,94** connected to the swing support beam **82** and the low front and back walls **96,98** connected to the horizontal frame beam **62** as shown in Figure 1. Resistance to rotation of the swing support beam **82** is established by the use of the swing support bracket **18**.

[00036] Accordingly, the use of either cooperating brackets or the swing support bracket is useful in providing rotation of joining beams. This is believed to be a significant advantage over the use of bolts through single bores at the ends of beams as is commonly utilized in the art. Most manufacturers that provide pre-drilled beams instruct owners to regularly tighten the nuts on bolts. Failure to regularly tighten these nuts could result in a nut becoming loose over time thereby allowing rotation of one beam relative to another. Since the load on the brackets shown in the structure are primarily distributed as sheer stress on the fasteners extending through the respective holes, there is no ability for the adjacent beams to rotate relative to one another even if the fasteners begin to back out over time which is extremely unlikely since the stress acts on the sheer of the fasteners.

[00037] A preferable method of assembling playground equipment with a bracket system includes the steps of securing four horizontal deck support beams **22** to four vertical frame beams **24** at first points **26** along the vertical frame beams with eight deck support brackets **12** and fasteners **52**; connecting a middle support beam **23** to two opposing horizontal deck support

beams **22** underneath the deck **32** with two deck support brackets **12** and fasteners **52**; attaching two vertical frame brackets **14** to two adjacent vertical frame beams at second points **54** along the vertical frame beams above the first points; fixing a horizontal frame beam **68** to the two adjacent vertical frame beams at the second points with two horizontal frame brackets **16** and fasteners; interconnecting the two horizontal frame brackets and the two vertical frame brackets; fastening a swing support beam **82** to the horizontal frame beam at a third point **84** along the horizontal frame beam with a swing bracket **18** and fasteners; connecting a ladder **102** to one of the horizontal deck support beams with two ladder brackets **20** and fasteners; and connecting a climbing wall **108** to another of the horizontal deck support beams with two additional ladder brackets and fasteners.

[00038] A piece of playground equipment **10** designed to be assembled with the bracket system of the present invention includes at least the following pieces: horizontal deck support beams **22**, vertical frame beams **24**, a deck **32**, a horizontal frame beam **68**, a swing support beam **82**, a ladder **102**, and the bracket system, which includes a plurality of deck support brackets, at least two vertical frame brackets, at least two horizontal frame brackets, a swing bracket, and at least two ladder brackets. Optionally, the piece of playground equipment **10** also may include a climbing wall **108** and at least two additional ladder brackets. It is noted that the piece of playground equipment shown in Figure 1 is only one embodiment of playground equipment constructed with the present bracket system. Other styles of playground equipment **10** assembled with the subject bracket system could include other or additional play units, designs, or modules while still falling within the scope of the present invention. As an example, Figure 2 depicts an alternate piece of playground equipment **10** assembled with the subject bracket system.

[00039] The bracket system of the present invention allows a piece of playground equipment 10 to be assembled easily and quickly, without professional assistance. The modular nature of the various components and brackets of the present piece of playground equipment allows for easy transportation and storage.

[00040] All patents referred to herein, are hereby incorporated herein by reference, whether or not specifically done so within the text of this disclosure.

[00041] In the present disclosure, the words “a” or “an” are to be taken to include both the singular and the plural. Conversely, any reference to plural items shall, where appropriate, include the singular.

[00042] From the foregoing it will be observed that numerous modifications and variations can be effectuated without departing from the true spirit and scope of the novel concepts of the present invention. It is to be understood that no limitation with respect to the specific embodiments illustrated is intended or should be inferred. The disclosure is intended to cover by the appended claims all such modifications as fall within the scope of the claims.

CLAIMS

What is claimed is:

1. A bracket comprising:

a base connected to at least one back wall, the back wall extending perpendicularly in a first direction, said first direction from the base defined as extending upwardly and perpendicularly to the base above the base, and side walls integrally extending in the first direction perpendicularly to the base from side edges of the base with at least one of said side walls integrally connected to an edge of the at least one back wall, and said side walls located on opposite sides of said back wall;

a front wall extending in a second direction from a front edge of the base, said second direction defined as extending perpendicularly to the base and downwardly from the base; wherein said first direction is directed 180 degrees relative to the second direction and

a rear wall extending in the second direction perpendicularly to the base and below the base from the back edge of the base with the rear wall coplanar with the back wall and with said rear wall integrally connected to the base.

2. The bracket of claim 1 wherein the at least one back wall further comprises two back walls spaced apart by a channel extending from an upper surface of the base to an uppermost surface of the at least one back wall.

3. The bracket of claim 2 wherein the back walls respectively connect to the side walls.

4. The bracket of claim 3 wherein the side walls each have a front edge which extends integrally from the front edge of the base and rearwardly to a top of the side wall wherein the top of the side wall is coplanar with a top of the back walls.
5. The bracket of claim 3 wherein inward edges of the back walls defining the channel are perpendicular to the base.
6. The bracket of claim 3 formed from a single piece of material.
7. The bracket of claim 6 wherein the single piece of material is folded to provide the base, side walls, at least one back walls, front wall and rear walls.
8. The bracket of claim 1 wherein the front wall and the rear wall have openings for receiving fasteners therethrough.
9. The bracket of claim 8 wherein the side walls have openings for receiving fasteners therethrough.
10. The bracket of claim 9 wherein the rear wall has openings for receiving fasteners therethrough.
11. The bracket of claim 1 formed from a single piece of material.
12. The bracket of claim 11 wherein the single piece of material is folded to provide the base, side walls, and at least one of the back wall, front wall and rear walls.

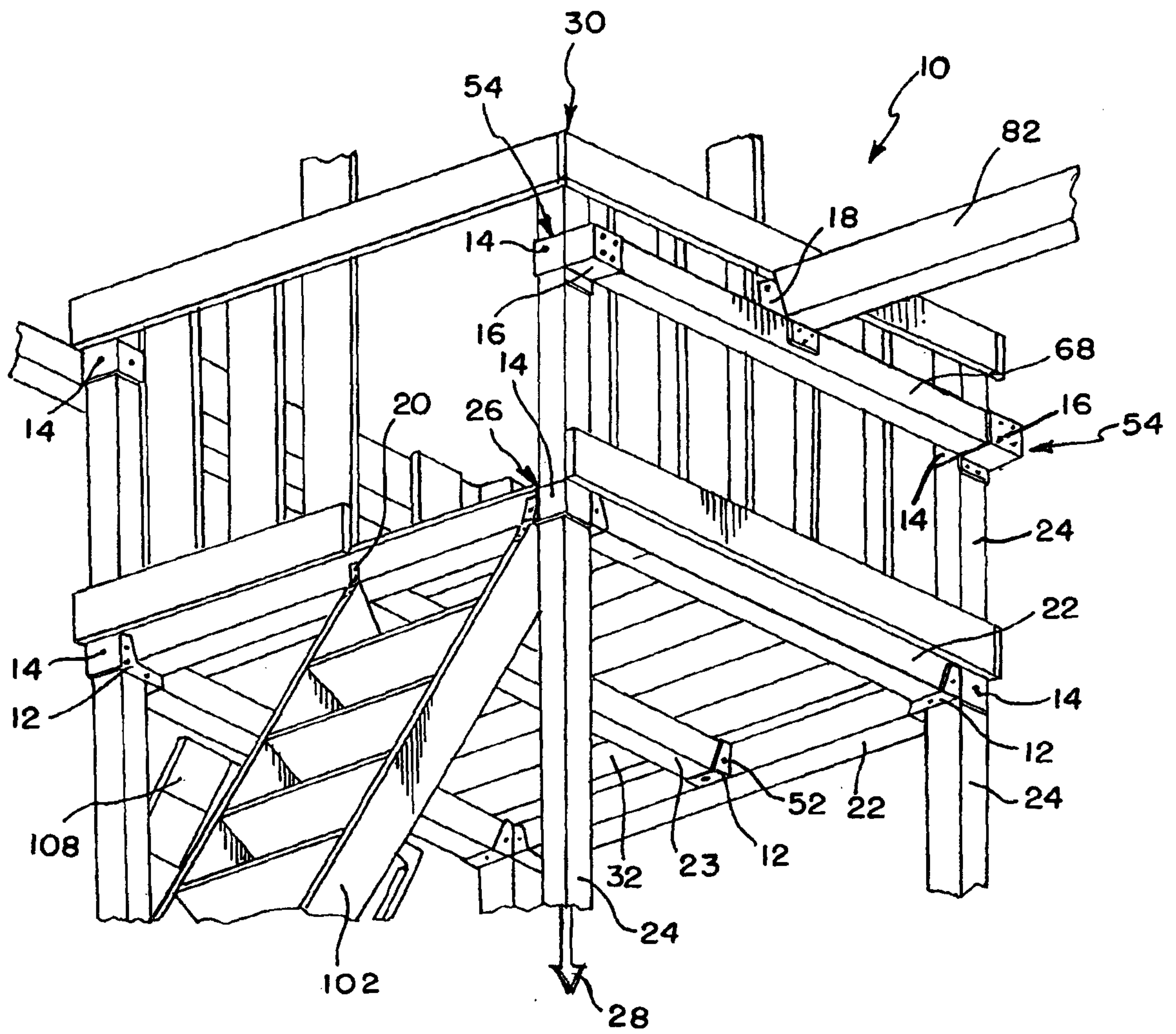


FIG. 1

FIG. 2

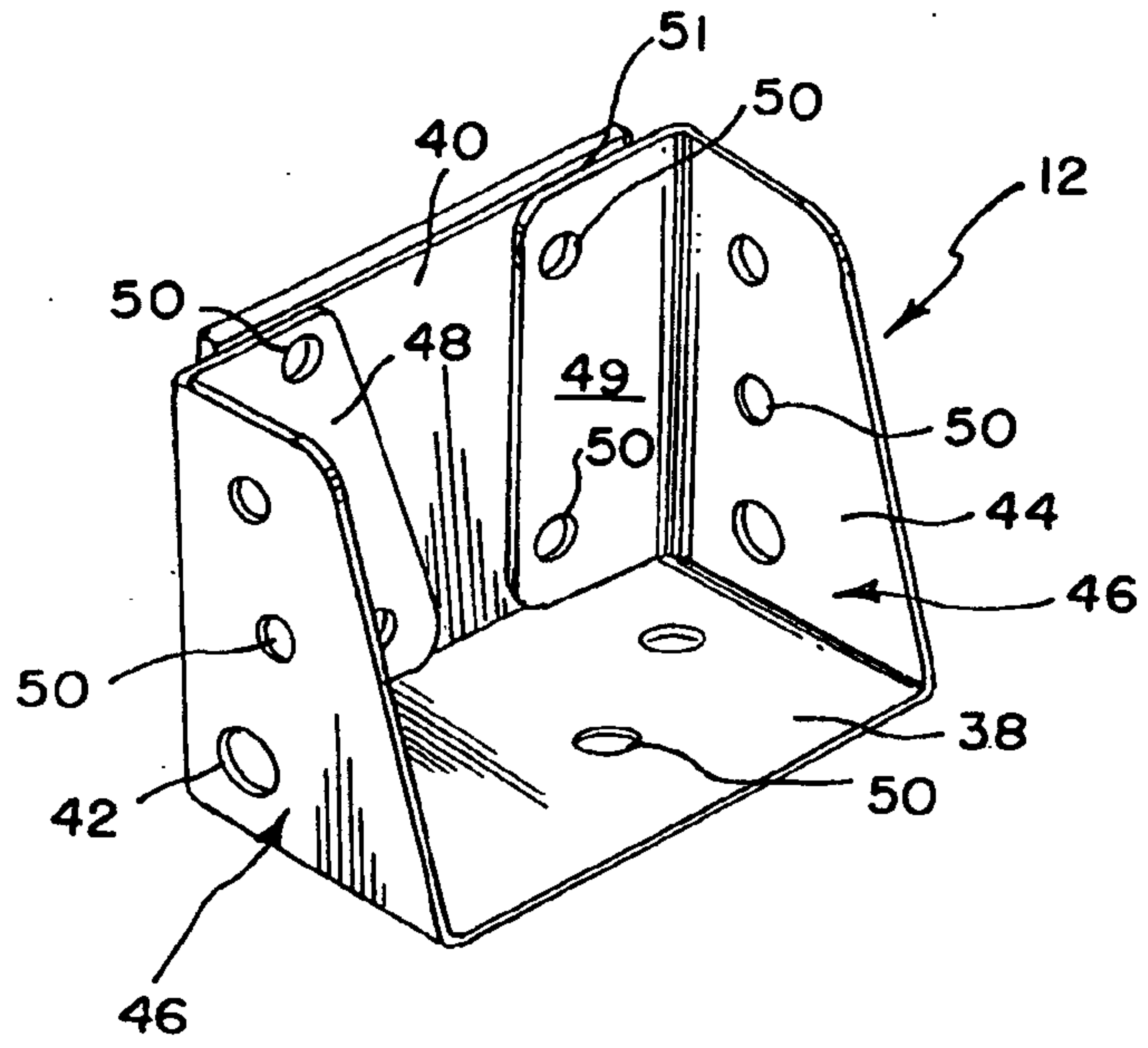


FIG. 3

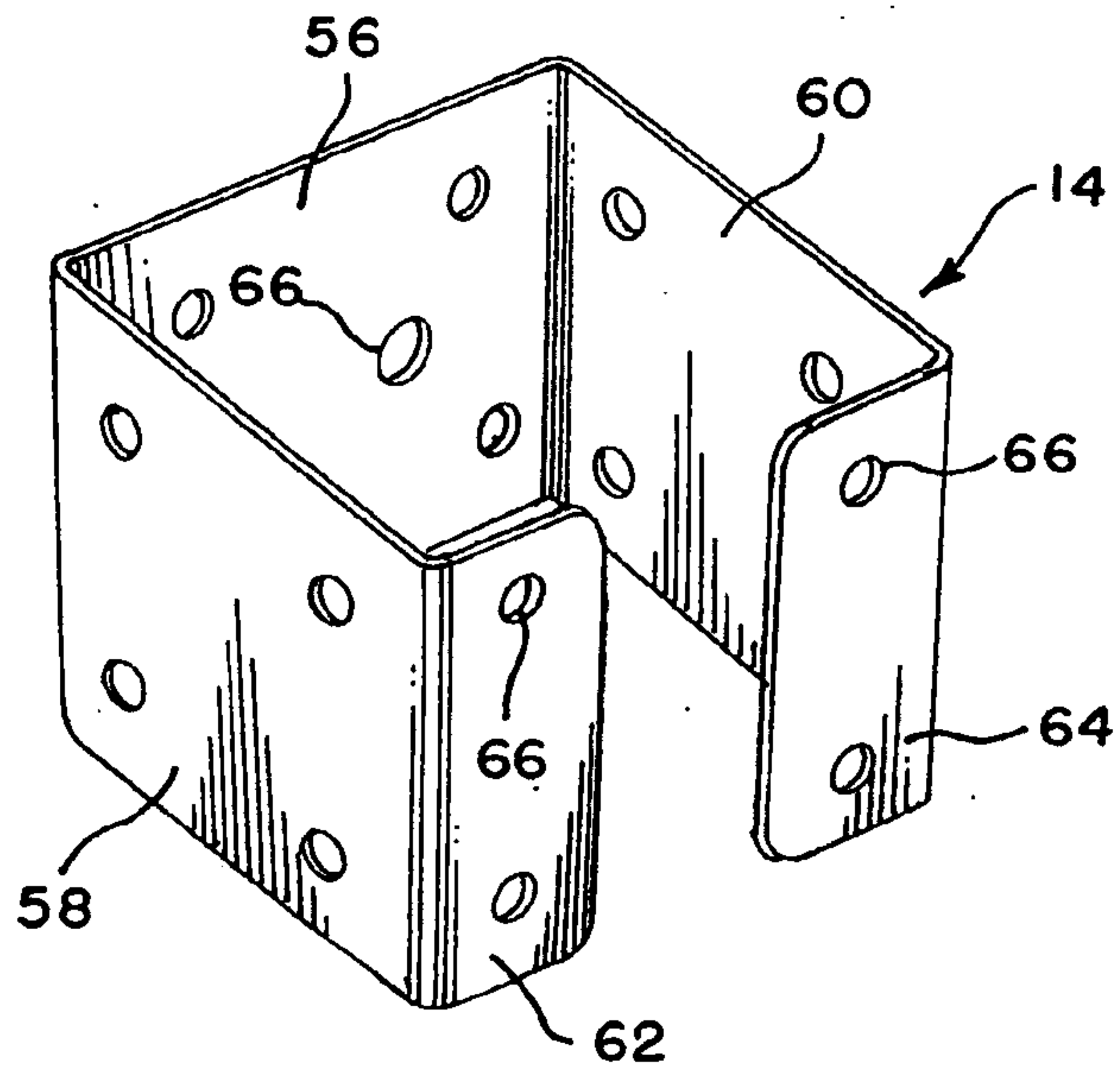
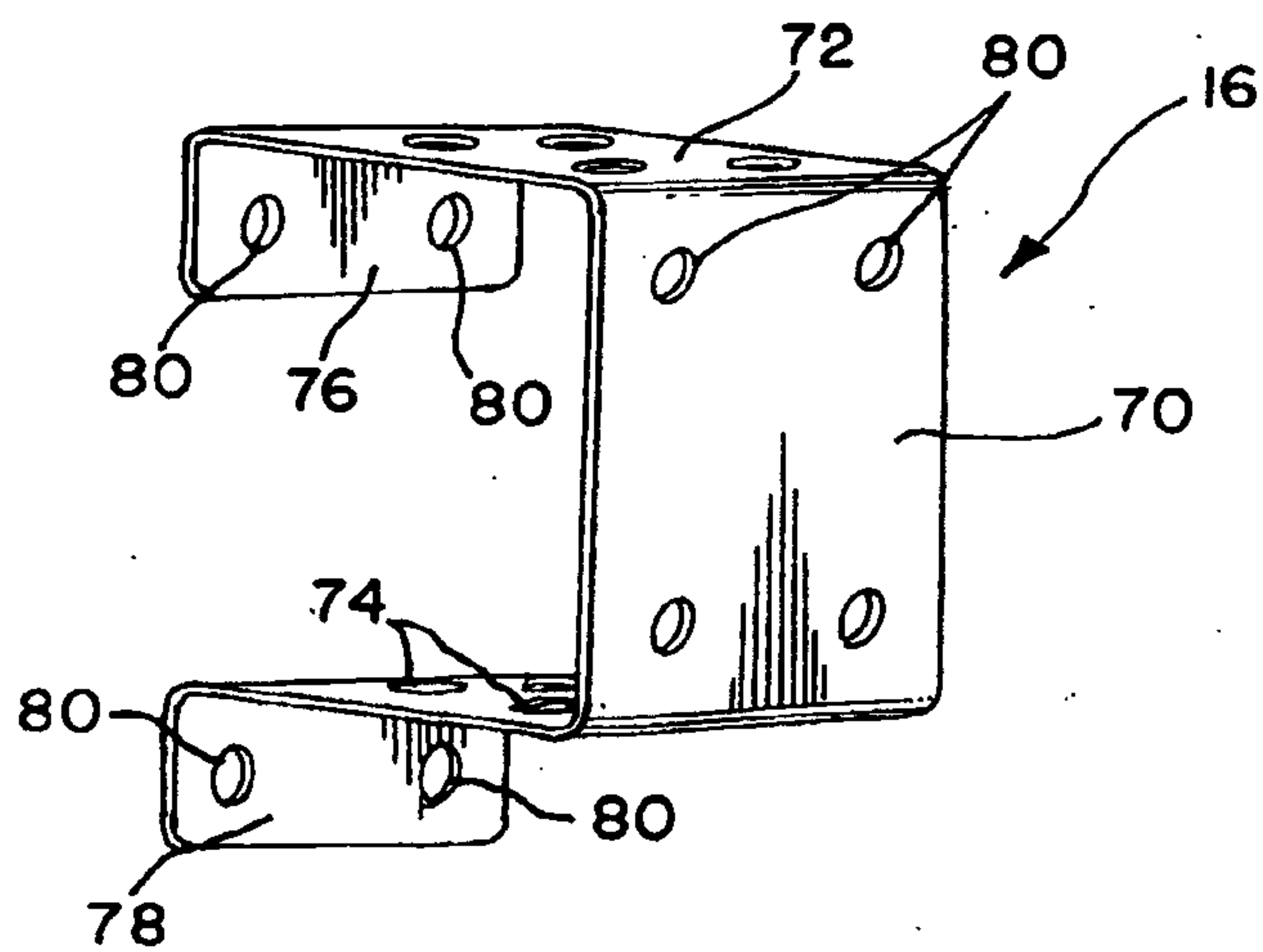


FIG. 4



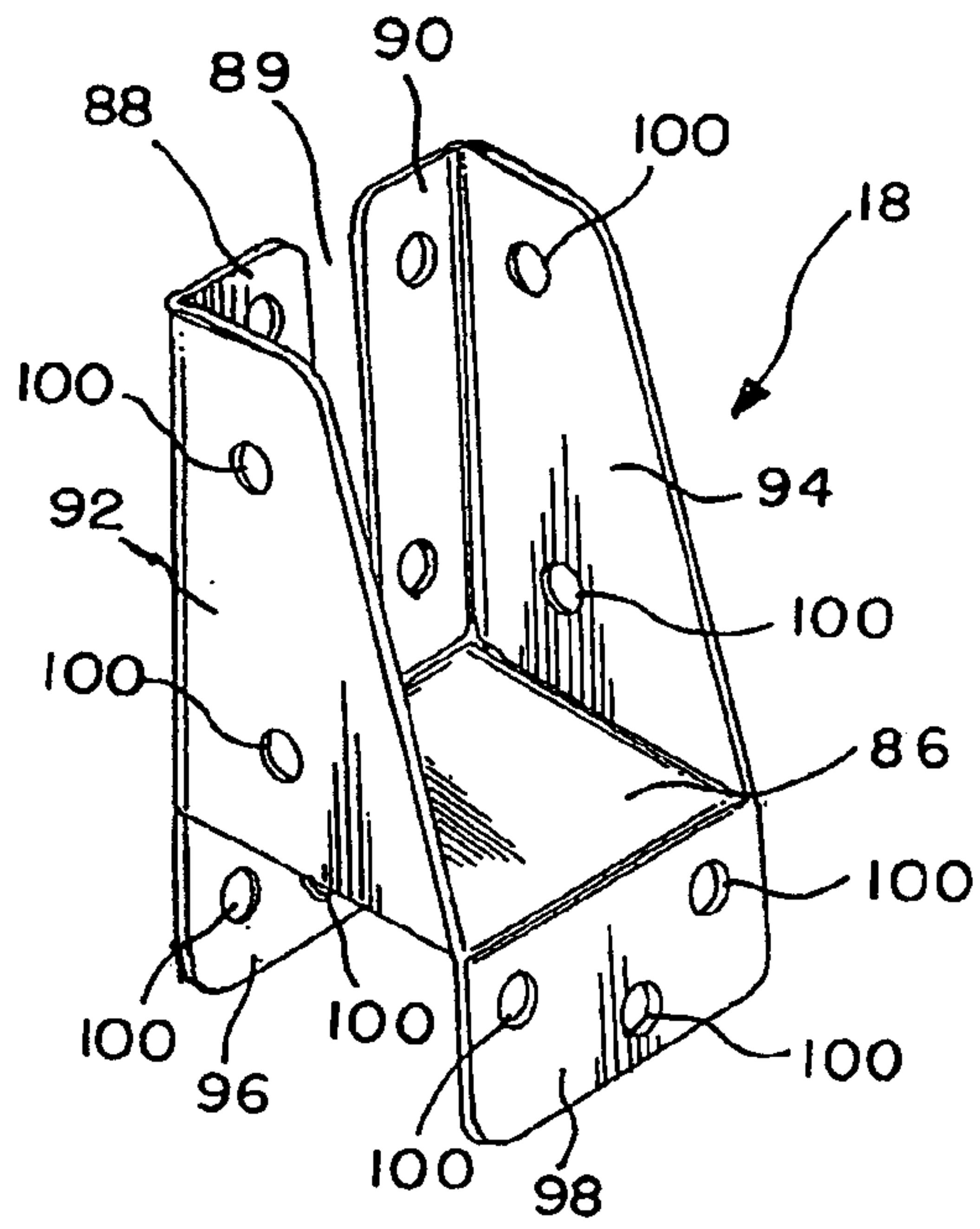


FIG. 5

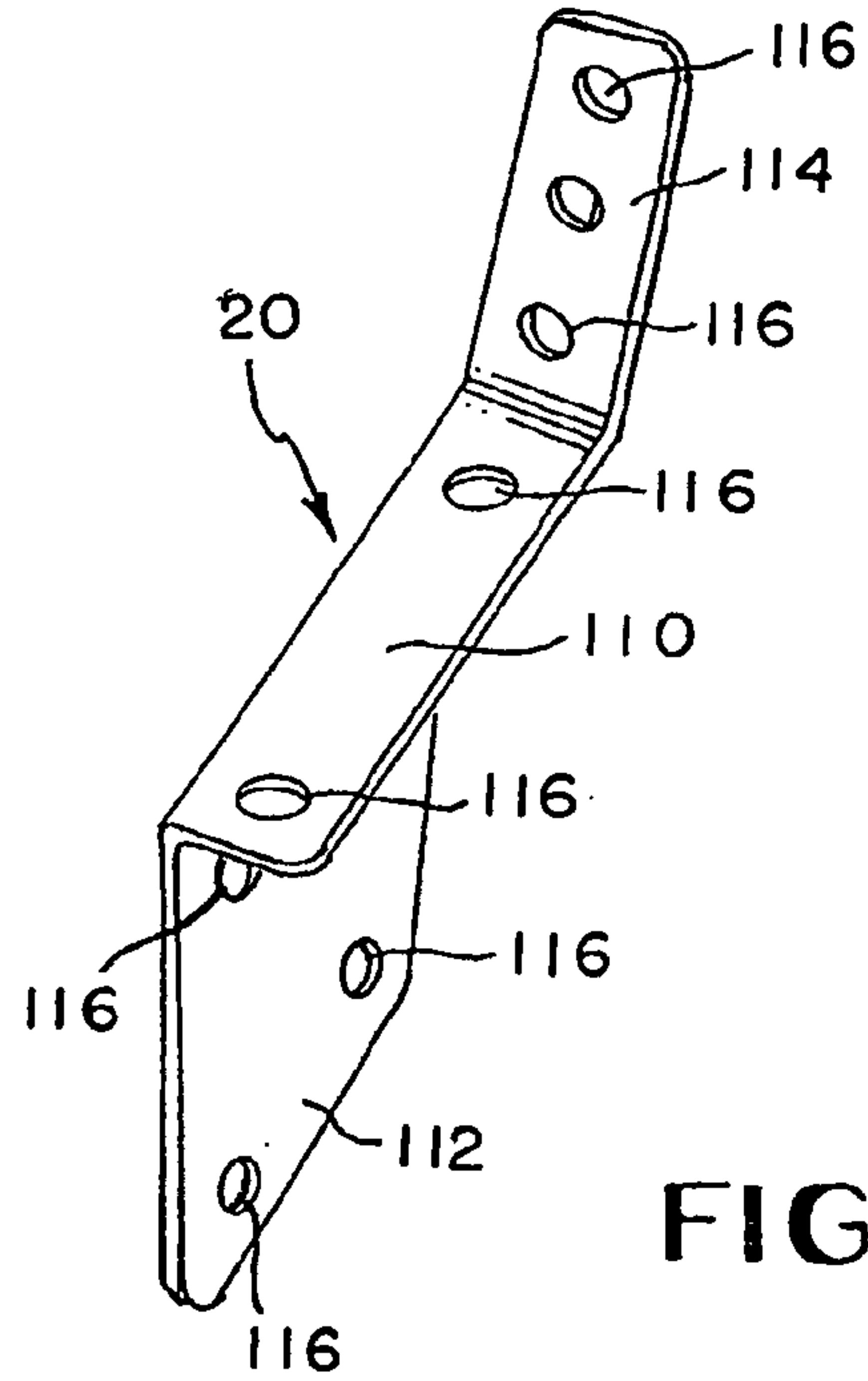


FIG. 6

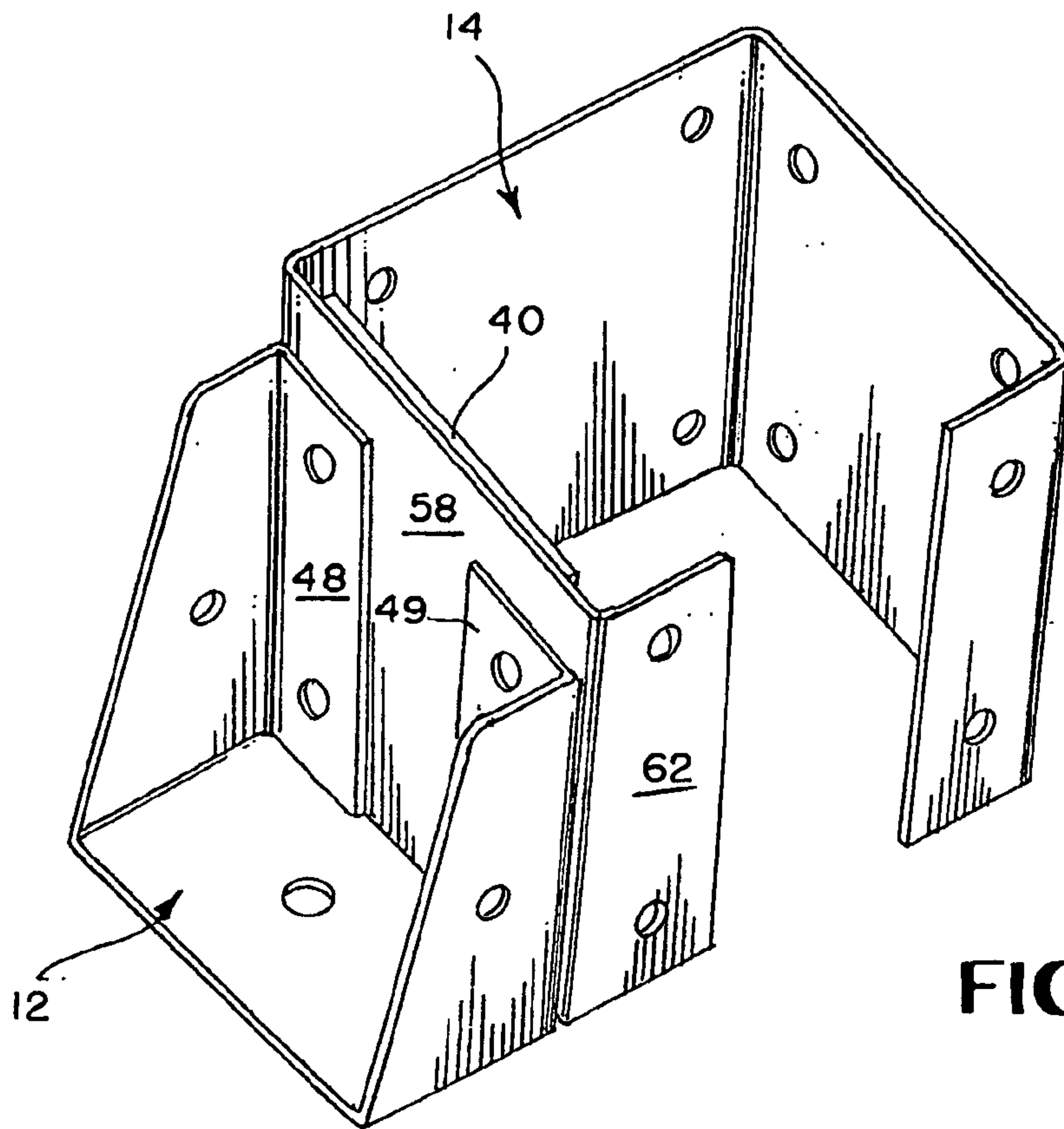


FIG. 7

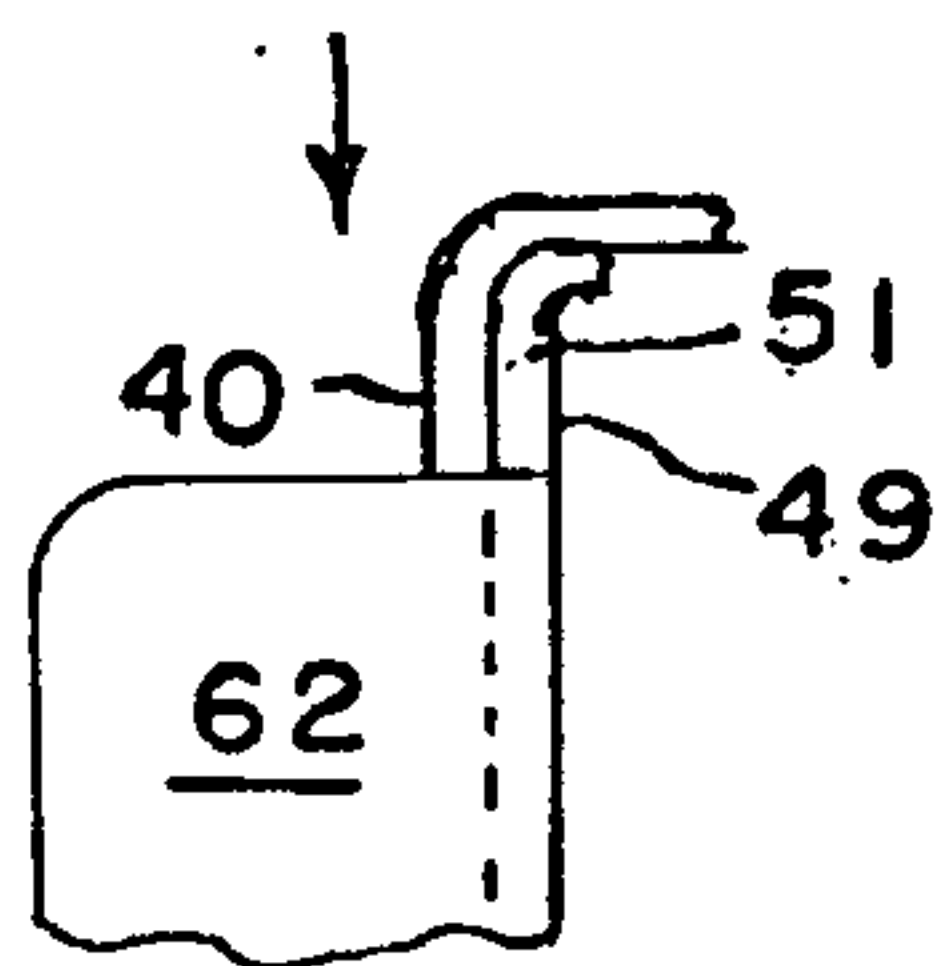


FIG. 8

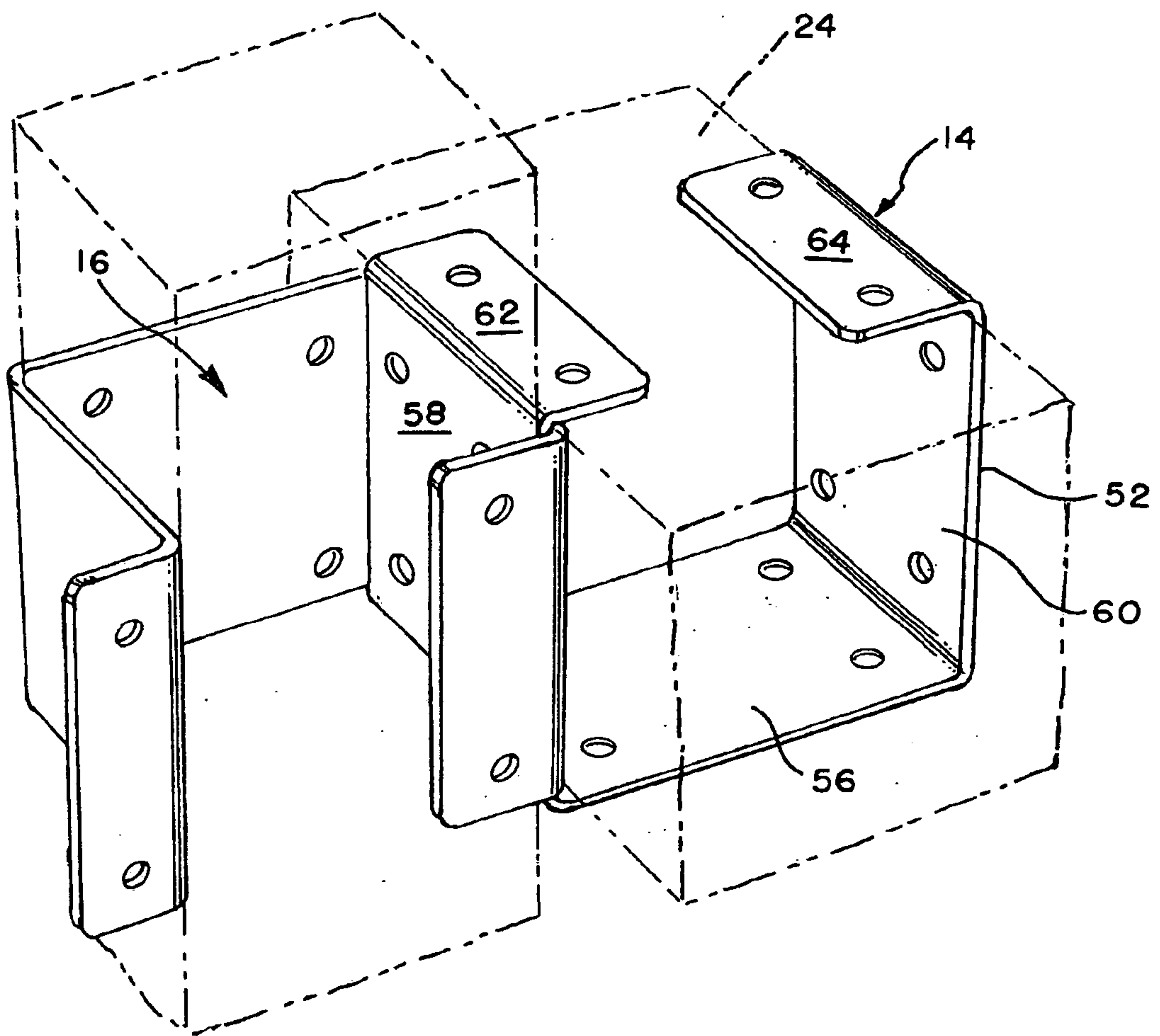


FIG. 9

