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CA 2209805 C 2009/10/27

(11)(21) 2 209 805

(12) BREVET CANADIEN
CANADIAN PATENT

(13) C

(22) Date de dépôt/Filing Date: 1997/08/12

(41) Mise à la disp. pub./Open to Public Insp.: 1999/02/12

(45) Date de délivrance/Issue Date: 2009/10/27

(51) Cl.Int./Int.Cl. *E04G 3/00* (2006.01),
E04G 21/32 (2006.01), *E04G 5/04* (2006.01),
E04G 5/06 (2006.01)

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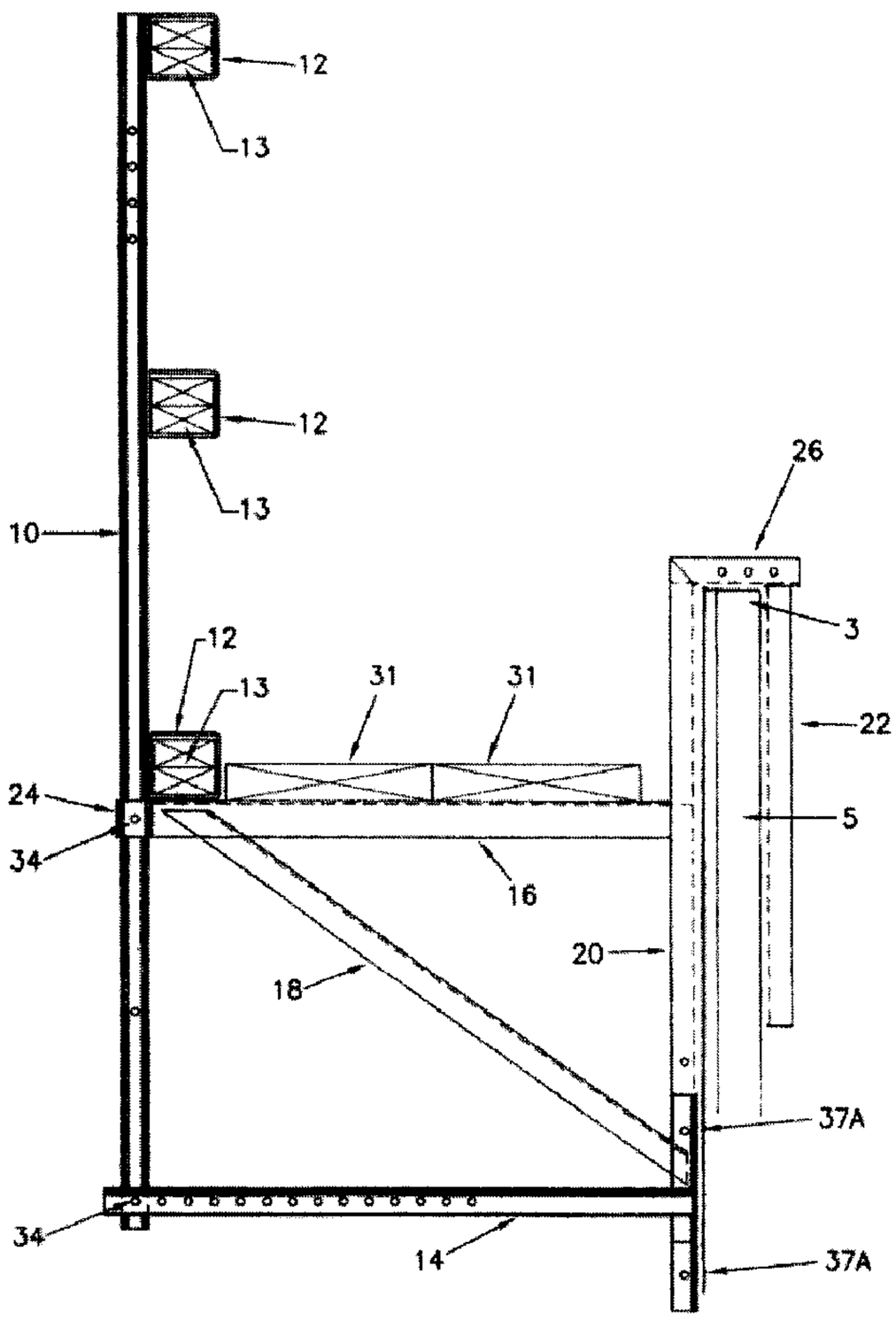
(54) Titre : DISPOSITIF DE SECURITE POUR LE SECTEUR DE LA CONSTRUCTION
(54) Title: CONSTRUCTION SAFETY SYSTEM



(57) Abrégé/Abstract:
A railing and support device for temporarily mounting on a wall of a building to protect a person from a fall, having at least two aluminum stanchion post assemblies, at least two upper support assemblies, means for temporarily and securely engaging each

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(57) Abrégé(suite)/Abstract(continued):
upper support assembly with an aluminum stanchion post assembly, means for temporarily and securely engaging the upper support assemblies with a top plate of the wall of the building, at least two lower support arms, means for temporarily and securely engaging the lower support arms with the aluminum stanchion post assemblies, means for temporarily and securely engaging the lower support arms with the wall of the building, means for supporting the person in temporary and secure engagement with the at least two upper support assemblies at least one safety rail and means for securely and temporarily attaching at least one safety rail to the at least two aluminum stanchion post assemblies.

ABSTRACT

A railing and support device for temporarily mounting on a wall of a building to protect a person from a fall, having at least two aluminum stanchion post assemblies, at least two upper support assemblies, means for temporarily and securely engaging each upper support assembly with an aluminum stanchion post assembly, means for temporarily and securely engaging the upper support assemblies with a top plate of the wall of the building, at least two lower support arms, means for temporarily and securely engaging the lower support arms with the aluminum stanchion post assemblies, means for temporarily and securely engaging the lower support arms with the wall of the building, means for supporting the person in temporary and secure engagement with the at least two upper support assemblies at least one safety rail and means for securely and temporarily attaching at least one safety rail to the at least two aluminum stanchion post assemblies.

CONSTRUCTION SAFETY SYSTEM

TECHNICAL FIELD OF THE INVENTION

The present invention relates to a railing and support device for use in the construction of residential and commercial buildings, and more particularly relates to a railing and support device to substantially protect a person from a fall during the construction or repair of a residential or commercial building.

BACKGROUND OF THE INVENTION

Working safely in the construction industry has become increasingly important. Increased fatality rates and injuries from workers falling from a roof or the side of a building during construction or repair has resulted in both government and private sector communities working together to reduce the risk of injury or fatality during such construction.

For example, fall protection may be used to reduce the risk of injury or fatality during construction. Current fall protection systems in use in construction include, for example, fall arrest devices, safety harnesses, various harnesses, shocked absorbers, scaffolding systems erected from the ground, and railing systems, have shortcomings, for example, scaffolding systems erected from the ground restrict access to work below the scaffolding, and are labor-intensive to install, particularly on uneven terrain.

It is desirable to provide an easy and inexpensive to install device which may be used during construction to reduce or substantially eliminate the risk of injury or fatality associated with falling from a roof or wall during the construction of a residential or commercial building.

It is desirable to provide devices the components of which may be used interchangeably to reduce the cost of ownership, maintenance and handling.

SUMMARY OF THE INVENTION

Accordingly, one object of the present invention is to provide an easy and inexpensive to install device which may be used during construction to reduce or substantially eliminate the risk of injury or fatality associated with falling from a roof or wall during the construction of a residential or commercial building.

Another object of the present invention is to provide devices the components of which may be used interchangeably to reduce the cost of ownership, maintenance and handling.

According to one aspect of the present invention, there is provided a railing and support device for temporarily mounting on a wall of a building to protect a person from a fall, comprising, at least two aluminum stanchion post assemblies; at least two upper support assemblies; means for temporarily and securely engaging each upper support assembly with an aluminum stanchion post assembly; means for temporarily and securely engaging the upper support assemblies with a top plate of the wall of the building; at least two lower support arms; means for temporarily and securely engaging the lower support arms with the aluminum stanchion post assemblies means for temporarily and securely engaging the lower support arms with the wall of the building; means for supporting the person in temporary and secure engagement with the at least two upper support assemblies; at least one safety rail; means for securely and temporarily attaching at least one safety rail to the at least two aluminum stanchion post assemblies.

According to another aspect of the present invention, there is provided a railing and support device for temporarily mounting on a wall of a building to protect a person from a fall, comprising at least two aluminum stanchion post assemblies; at least two upper support assemblies; means for temporarily and securely engaging each upper support assembly with an aluminum stanchion post assembly; means for temporarily and securely engaging the upper support assemblies with a stud of the wall of the building; at least two lower support arms; means for temporarily and securely engaging the lower support arms with the aluminum stanchion post assemblies means for temporarily and securely engaging the lower support arms with the wall of the building; means for supporting the person in temporary and secure engagement with the at

least two upper support assemblies; at least one safety rail; means for securely and temporarily attaching at least one safety rail to the at least two aluminum stanchion post assemblies.

According to another aspect of the present invention, there is provided a railing and support device for temporarily mounting on a wall and the roof of a building to protect a person from a fall, comprising, at least two aluminum stanchion post assemblies, at least two pivotable upper arm assemblies, means for temporarily and securely engaging each pivotable upper arm assembly with an aluminum stanchion post assembly, means for temporarily and securely engaging each pivotable upper arm assembly with the roof of the building, at least two pivotable lower arm assemblies, means for temporarily and securely engaging each pivotable lower arm assembly with an aluminum stanchion post assembly, means for temporarily and securely engaging each pivotable lower arm assembly with the roof of the building, at least two lower support arms, means for temporarily and securely engaging the lower support arms with the aluminum stanchion post assemblies, means for temporarily and securely engaging the lower support arms with the wall of the building; at least one safety rail; means for securely and temporarily attaching at least one safety rail to the at least two aluminum stanchion post assemblies.

An advantage of the present invention is that it provides an easy and inexpensive to install device which may be used during construction to reduce or substantially eliminate the risk of injury or fatality associated with falling from a roof or wall during the construction of a residential or commercial building.

A further advantage of the present invention is that it provides devices the components of which may be used interchangeably to reduce the cost of ownership, maintenance and handling.

BRIEF DESCRIPTION OF THE DRAWINGS

A preferred embodiment of the present invention is described below with reference to the accompanying drawings, in which:

Figure 1A is a side view of one embodiment of the present invention installed on a wall;

Figure 1B is a perspective view of the embodiment of the present invention illustrated in Figure 1A installed on a wall;

Figure 2 is a side view of the Stanchion Post Assembly of one embodiment of the present invention;

Figure 3A is a side view of a portion of an Upper Support Assembly of one embodiment of the present invention;

Figure 3B is a perspective view of a portion of an Upper Support Assembly of one embodiment of the present invention;

Figure 4A is a side view of an adjustable element portion of an Upper Support Assembly of one embodiment of the present invention;

Figure 4B is a perspective view of an adjustable element portion of an Upper Support Assembly of one embodiment of the present invention;

Figure 5A is a side view of a Lower Support Arm of one embodiment of the present invention;

Figure 5B is a perspective view of a Lower Support Arm of one embodiment of the present invention;

Figure 6A is a side view of an alternative embodiment of the present invention installed on a wall;

Figure 6B is a perspective view of the alternative embodiment of the present invention illustrated in Figure 6A installed on a wall;

Figure 7A is a side view of a portion of an Upper Support Assembly of an alternative embodiment of the present invention;

Figure 7B is a perspective view of a U-bolt plate used to mount the alternative embodiment of the present invention illustrated in Figure 6A;

Figure 7C is a top view of a U-bolt inserted into a U-bolt plate used to mount the alternative embodiment of the present invention illustrated in Figure 6A;

Figure 7D is a perspective view of a portion of an Upper Support Assembly illustrated in Figure 7A;

Figure 7E is a perspective view of a U-bolt inserted into a U-bolt plate as illustrated in Figure 7C;

Figure 8A is a side view of an alternative embodiment of the present invention installed

on a wall;

Figure 8B is a perspective view of the embodiment of the present invention illustrated in Figure 8A;

Figure 9A is a perspective view of a Pivotable Upper Arm Assembly in an embodiment of the present invention;

Figure 9B is a perspective view of a Pivotable Lower Arm Assembly in an embodiment of the present invention.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

In a preferred embodiment of the present invention, as illustrated in Figures 1A and 1B (the Top Plate Wall Bracket Assembly), 6A and 6B (Gable End Bracket Assembly), and 8A and 8B (Fascia Railing Assembly), a variety of sub-assemblies may be assembled in accordance with the present invention to form devices as hereinafter described for mounting on the wall of a residential or commercial building to substantially protect a person from a fall during the construction or repair of a residential or commercial building.

The Top Plate Wall Bracket Assembly

With reference to Figures 1A and 1B, which illustrate an embodiment of the present invention in the form of a Top Plate Wall Bracket Assembly mounted over the top plate 3 of the wood framed wall 5 of a building, the Top Plate Wall Bracket Assemblies comprise and are assembled from a Stanchion Post Assembly, an Upper Support Assembly, and a Lower Support Arm as hereinafter described.

The Stanchion Post Assembly 10 as illustrated in Figure 2 is preferably made of aluminum tube preferably having a square cross-section to which, as illustrated in Figures 1A and 1B, several and preferably three rail supports 12 have been welded or otherwise securely fastened, the rail supports preferably made of aluminum tube preferably having a square cross-section and each preferably sized to securely receive a pair of 2 X 4 safety rails 13 preferably made of 2 X 4 wooden boards or such other boards or rails as would be understood by a person skilled in the art.

A preferably aluminum Upper Support Assembly as illustrated in Figures 3A, 3B, 4A and 4B (in disassembled form) is securely fastened to the Stanchion Post Assembly as illustrated in Figure 1A, the Upper Support Assembly preferably made of lengths of aluminum angle elements, namely an aluminum horizontal support element 16, an aluminum vertical element 20, an aluminum diagonal element 18, all of which are welded or otherwise fastened together in a manner known to a person skilled in the art, the horizontal support element 16 preferably having welded or otherwise fastened to one thereof a short length of square tube 24 of interior dimension to allow it to securely and slidingly engage with exterior of the square tube portion of the Stanchion Post Assembly, both of which preferably have holes 34 therethrough to allow a bolt or other pin (not shown) to be temporarily positioned therein to temporarily secure the horizontal support element 16 to the square tube portion of the Stanchion Post Assembly. At the opposite end of the horizontal support element 16, a vertical support element 20 is welded or otherwise fastened to the horizontal support element 16, the vertical support element 20 having a horizontal extension element 21 welded or otherwise fastened thereto to which horizontal extension element 21 an adjustable element 22 may be attached, the horizontal extension element 21 and adjustable element 22 illustrated in Figures 4A and 4B, having multiple holes 25 therein so that the horizontal extension element 21 and adjustable element 22 may be joined to one another by multiple pins or bolts (not shown), the multiple holes 25 allowing the combined horizontal extension element 21 and adjustable element 22 to be adjusted and secured to fit snugly over the top plate in a manner known to a person skilled in the art as illustrated in Figures 1A and 1B.

A preferably aluminum Lower Support Arm as illustrated in Figures 1A, 1B, 5A and 5B is bolted, pinned or otherwise securely fastened at one end to the Stanchion Post Assembly as illustrated in Figure 1A and 1B, the Lower Support Arm having multiple holes 27 one of which is selected to bolt or pin the Lower Support Arm to the Stanchion Post Assembly by way of a corresponding hole therein, the multiple holes 27 allowing the Lower Support Arm to be adjustable in a manner known to a person skilled in the art. At the opposite end of the Lower Support Arm, a vertical Abutting Member 35 is welded or otherwise fastened to and forming part of the Lower Support Arm, the Abutting Member 35 being adapted to being positioned to abut

the wall of the building and having holes 37 therein so that the Lower Support Arm can be bolted or pinned to the vertical element 20 of the Upper Support Assembly, the vertical element 20 having corresponding holes 37A therein to receive the above-referenced bolts or pins 34A as illustrated in Figures 1A and 1B. As illustrated in Figure 1B, in the preferred embodiment of the present invention, holes 39 are provided in the Abutting Member 35 allowing the Abutting Member 35 to be nailed or otherwise securely engaged with the wall.

When two or more Top Plate Wall Bracket Assemblies are mounted on a wall as illustrated in Figure 1B, support planks 31 (for example two or more 2 X 12 inch planks) may be positioned on and securely fastened to the horizontal support elements 16 of the Upper Support Assemblies of the mounted Top Plate Wall Bracket Assemblies to support the weight of one or more workers and their equipment (the horizontal support elements having holes 16A therein to receive nails or screws which pass through the holes 16A and into the support planks to secure them to the horizontal support elements), and safety rails 13 positioned within the rail supports 12 and extending between the mounted Top Plate Wall Bracket Assemblies, the safety rails reducing the likelihood that a worker will fall from the device.

The Gable End Bracket Assembly

With reference to Figures 6A and 6B, which illustrate an embodiment of the present invention in the form of a Gable End Bracket Assembly mounted on a wood framed wall 5 of a building, the Gable End Bracket Assemblies comprise a Stanchion Post Assembly, Upper Support Assembly, Lower Support Arm and U-bolt as hereinafter described.

In this embodiment of the present invention, the Stanchion Post Assembly as illustrated in Figures 6A and 6B is preferably identical to the Stanchion Post Assembly as utilized in the Top Plate Wall Bracket Assembly described herein and illustrated in Figure 2, and similarly, the Lower Support Arm as illustrated in Figures 6A and 6B is preferably identical to the Lower Support Arm utilized in the Top Plate Wall Bracket Assembly described herein and illustrated in Figures 5A and 5B.

In this embodiment of the present invention, a preferably aluminum Upper Support Assembly as illustrated in Figures 7A and 7D is securely fastened to the Stanchion Post Assembly as illustrated in Figures 6A and 6B, the Upper Support Assembly preferably made of lengths of aluminum angle elements, namely an aluminum horizontal support element 16 (having holes 16A therein to secure the support planks as previously described), and an aluminum vertical element 20, an aluminum diagonal element 18, all welded or otherwise fastened together in a manner known to a person skilled in the art, the horizontal support element 16 preferably having welded or otherwise fastened to one thereof a short length of square tube 24 of interior dimension to allow it to securely and slidingly engage with exterior of the square tube portion of the Stanchion Post Assembly, both of which preferably have holes 34 therethrough to allow a bolt or other pin (not shown) to be temporarily positioned therein to temporarily secure the horizontal support element 16 to the square tube portion of the Stanchion Post Assembly. At the opposite end of the horizontal support element 16, a vertical support element 32 is welded or otherwise fastened to the horizontal support element 16.

As described previously, the Stanchion Post Assembly, the Upper Support Assembly and the Lower Support Arm are assembled to form the Gable End Bracket Assembly as illustrated in Figures 6A and 6B. Thereafter, a U-bolt as illustrated in Figures 7C and 7E is positioned to engage the Upper Support Assembly as illustrated in Figures 7A and 7D, and extend past a vertical wall stud 5 as illustrated in Figure 6A, a plate 30 as illustrated in Figure 7B having holes 30A therein through which the ends of the U-bolt pass, whereupon the U-bolt and plate is secured to the vertical wall stud by pins 51 inserted into holes 49 in the ends of the U-bolt as illustrated in Figure 7E (or where the ends of the U-bolt are threaded, by nuts (not shown), in the conventional manner), the Gable End Bracket Assembly being thereby securely and temporarily positioned on the wall.

When two or more Gable End Bracket Assemblies are mounted on a wall as illustrated in Figure 6B, support planks 31 (for example two or more 2 X 12 inch planks) may be positioned on and securely fastened (for example, nailed or screwed) to the horizontal support elements 16 of the Upper Support Assemblies of the mounted Gable End Bracket Assemblies to support the weight of one or more workers and their equipment, and safety rails 13 positioned within the rail

supports 12 and extending between the mounted Gable End Bracket Assemblies, the safety rails substantially reducing the likelihood that a worker will fall from the device.

The Fascia Railing Assembly

With reference to Figures 8A and 8B, which illustrate an embodiment of the present invention in the form of a Fascia Railing Assembly mounted on a wood framed wall 5 of a building, the Fascia Railing Assemblies comprise a Stanchion Post Assembly, a Lower Support Arm, a Pivotable Upper Arm Assembly, a Pivotable Lower Arm Assembly and a brace element as hereinafter described.

In this embodiment of the present invention, the Stanchion Post Assembly as illustrated in Figures 8A and 8B is preferably identical to the Stanchion Post Assembly as utilized in the Top Plate Wall Bracket Assembly described herein and as illustrated in Figure 2, and similarly, the Lower Support Arm as illustrated in Figures 8A and 8B is preferably identical to the Lower Support Arm utilized in the Top Plate Wall Bracket Assembly described herein and illustrated in Figures 5A and 5B.

As illustrated in Figures 8A and 8B, an Pivotable Upper Arm Assembly is provided as illustrated in Figure 9A, being pivotally bolted 91, pinned or otherwise securely fastened to the Stanchion Post Assembly by way of corresponding holes 91A in one end of the Pivotable Upper Arm Assembly and in the Stanchion Post Assembly (or in one embodiment of the present invention as illustrated in Figure 8B, one of the multiple holes 91B therein, which holes provide a range of positions on the Stanchion Post Assembly to which to attach the Pivotable Upper Arm Assembly to accommodate roofs of various different pitches), the Pivotable Upper Arm Assembly being pivotable about the above-referenced bolt 91 or pin to accommodate roofs of various different pitches, and in one embodiment as illustrated in Figures 8A and 8B, the Pivotable Upper Arm Assembly may be telescopic, having two parts 37 and 38 which "telescope" in relation to one another and which parts may be temporarily secured by bolting or pinning the two parts 37 and 38 by way of corresponding holes 37 in the two parts 37 and 38. On the distal end of the Pivotable Upper Arm Assembly, a hinged attachment plate 40 is providing as illustrated in

Figure 9A, the attachment plate 40 being hinged 46 to allow the angle of the attachment plate 40 to be varied as needed to accommodate roofs of various different pitches, the attachment plate 40 having holes 40A therethrough by way of which one may nail, screw or otherwise secure the attachment plate 40 to a roof 89 in a conventional manner.

As illustrated in Figures 8A, 8B and 9, a Pivotable Lower Arm Assembly is also provided which may be securely engaged with the Stanchion Post Assembly (in a manner similar to that of the manner of attachment of the Upper Support Assembly to the Stanchion Post Assembly in the context of the Top Plate Wall Bracket Assembly described above) as illustrated in Figures 8A and 8B which Lower Arm Assembly also having a hinged attachment plate 40 having holes 40A therethrough by way of which one may nail, screw or otherwise secure the attachment plate 40 to a roof in a conventional manner.

As illustrated in Figures 8A and 8B, in this embodiment of the invention, a brace element 44 may be bolted or otherwise securely fastened between the Stanchion Post Assembly and the Lower Support Arm to provide additional structural support for the device.

When two or more Fascia Railing Assemblies are mounted on a wall, safety rails 13 positioned within the rail supports 12 and extending between the mounted Fascia Railing Assemblies, the safety rails substantially reducing the likelihood that a worker will fall from the device.

The present invention has been described herein with regard to preferred embodiments. However, it will be obvious to persons skilled in the art that a number of variations and modifications can be made without departing from the scope of the invention as described herein.

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

1. A railing and support device for temporarily mounting on a wall of a building to protect a person from a fall, comprising:

a. at least two aluminum stanchion post assemblies;

b. at least two upper support assemblies;

c. means for temporarily and securely engaging each upper support assembly with an aluminum stanchion post assembly;

d. means for temporarily and securely engaging the upper support assemblies with a top plate of the wall of the building;

e. at least two lower support arms;

f. means for temporarily and securely engaging the lower support arms with the aluminum stanchion post assemblies

g. means for temporarily and securely engaging the lower support arms with the wall of the building;

h. means for supporting the person in temporary and secure engagement with the at least two upper support assemblies;

i. at least one safety rail;

j. means for securely and temporarily attaching at least one safety rail to the at least two aluminum stanchion post assemblies.

2. A railing and support device for temporarily mounting on a wall of a building to protect a person from a fall, comprising:

a. at least two aluminum stanchion post assemblies;

b. at least two upper support assemblies;

c. means for temporarily and securely engaging each upper support assembly with an aluminum stanchion post assembly;

d. means for temporarily and securely engaging the upper support assemblies with a stud of the wall of the building;

e. at least two lower support arms;

f. means for temporarily and securely engaging the lower support arms with the aluminum stanchion post assemblies

g. means for temporarily and securely engaging the lower support arms with the wall of the building;

h. means for supporting the person in temporary and secure engagement with the at least two upper support assemblies;

i. at least one safety rail;

j. means for securely and temporarily attaching at least one safety rail to the at least two aluminum stanchion post assemblies.

3. A railing and support device for temporarily mounting on a wall and the roof of a building to protect a person from a fall, comprising:

a. at least two aluminum stanchion post assemblies;

b. at least two pivotable upper arm assemblies;

c. means for temporarily and securely engaging each pivotable upper arm assembly with an aluminum stanchion post assembly;

d. means for temporarily and securely engaging each pivotable upper arm assembly with the roof of the building;

e. at least two pivotable lower arm assemblies;

f. means for temporarily and securely engaging each pivotable lower arm assembly with an aluminum stanchion post assembly;

g. means for temporarily and securely engaging each pivotable lower arm assembly with the roof of the building;

h. at least two lower support arms;

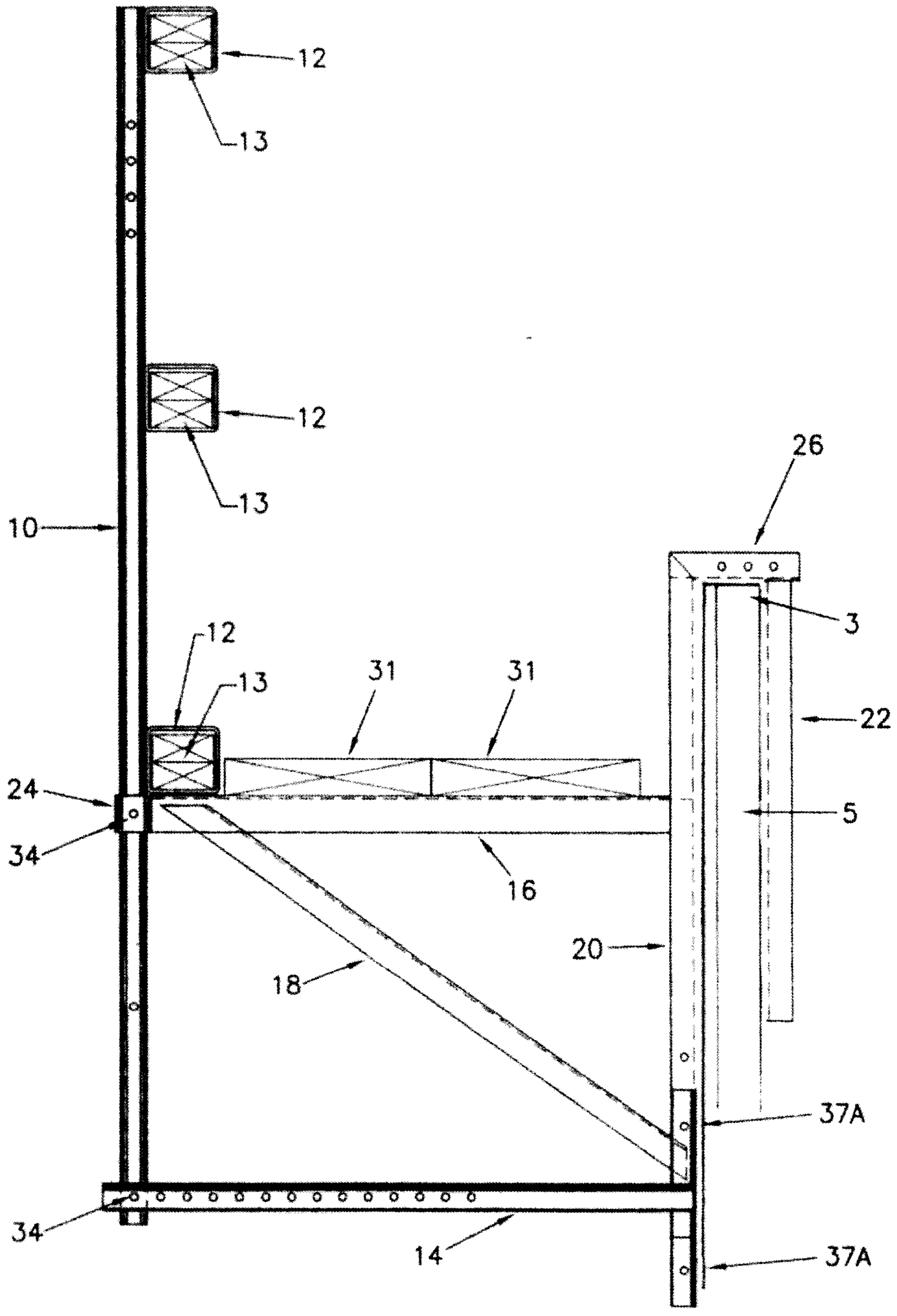
i. means for temporarily and securely engaging the lower support arms with the aluminum stanchion post assemblies

j. means for temporarily and securely engaging the lower support arms with the wall of the building;

k. at least one safety rail;

l. means for securely and temporarily attaching at least one safety rail to the at least two aluminum stanchion post assemblies.

Figure 1A



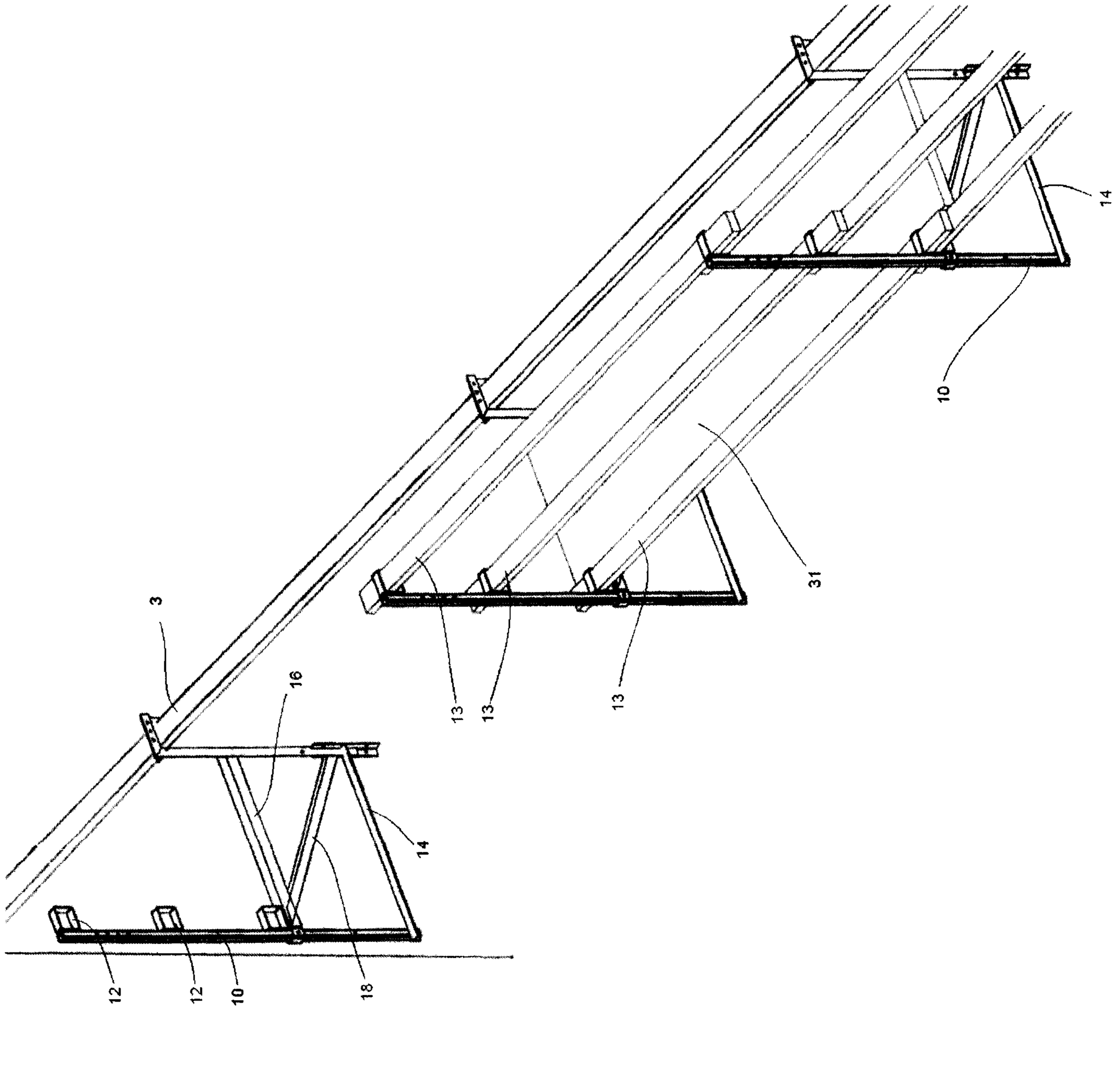


Figure 1B

Figure 2

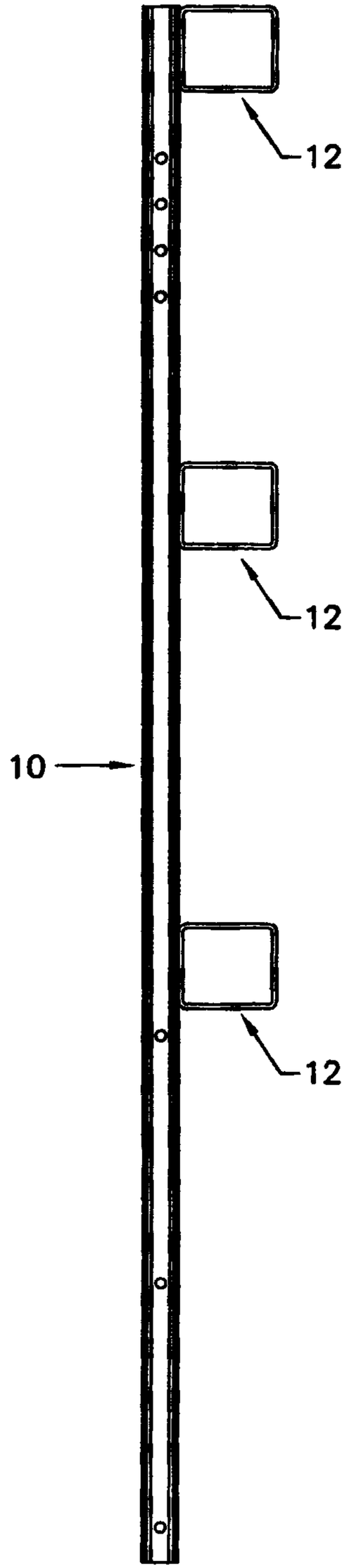


Figure 3A

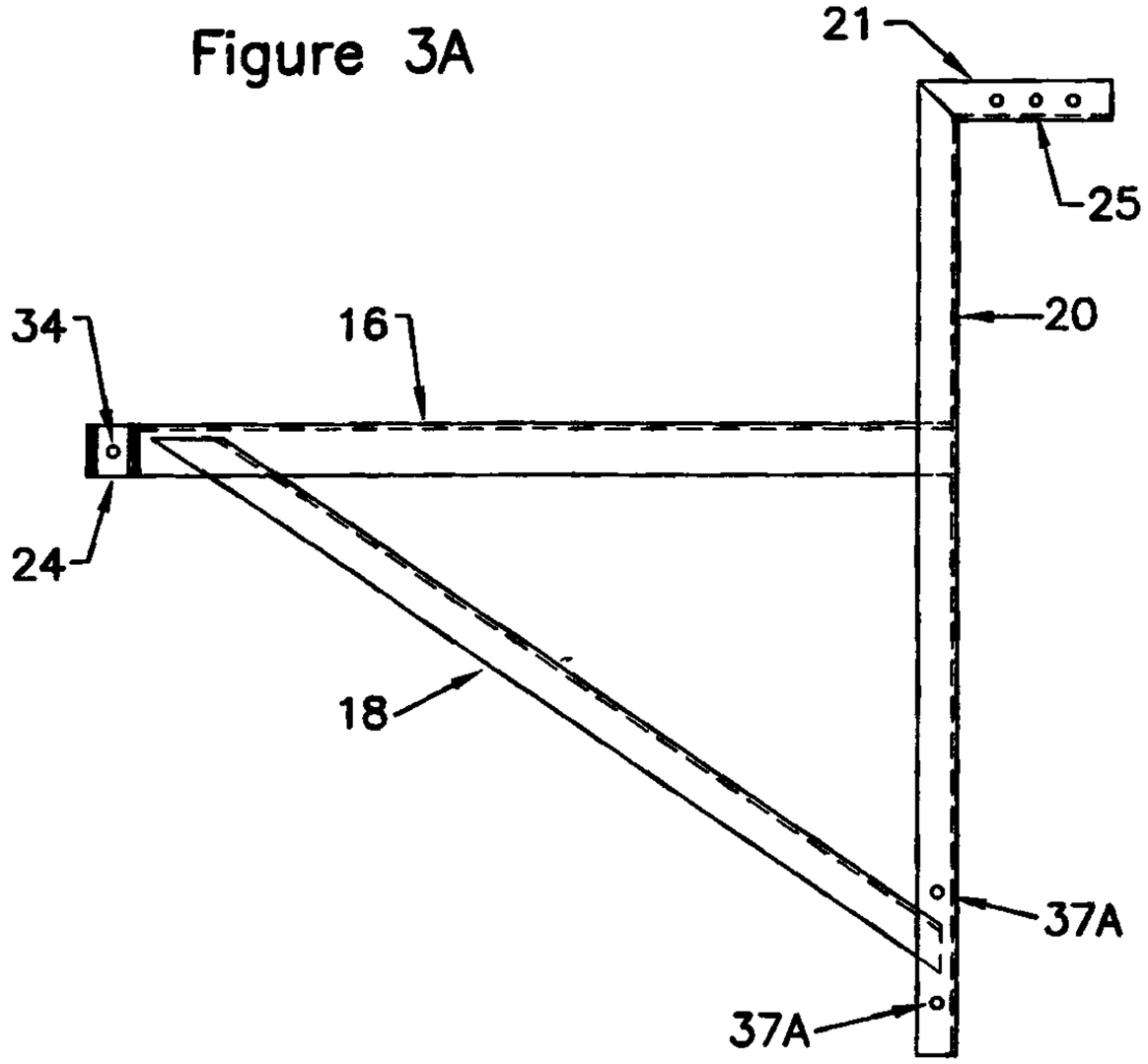


Figure 3B

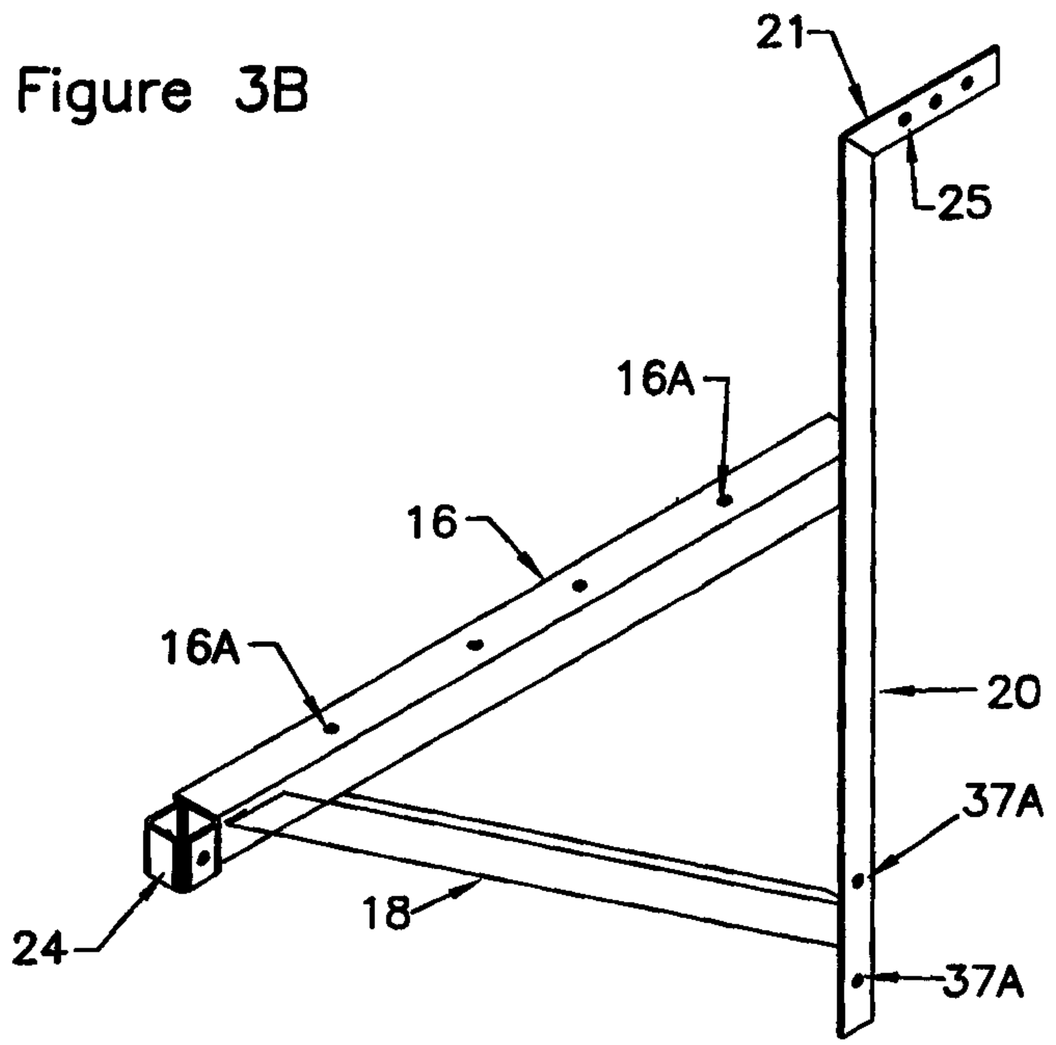


Figure 4A

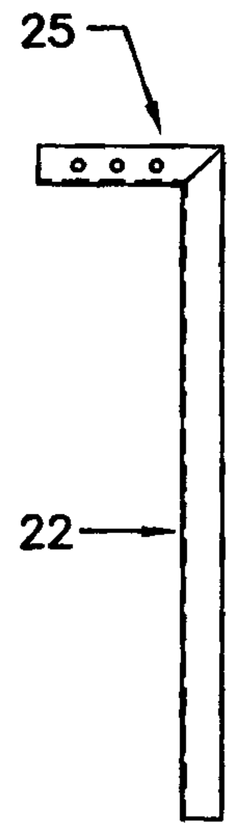
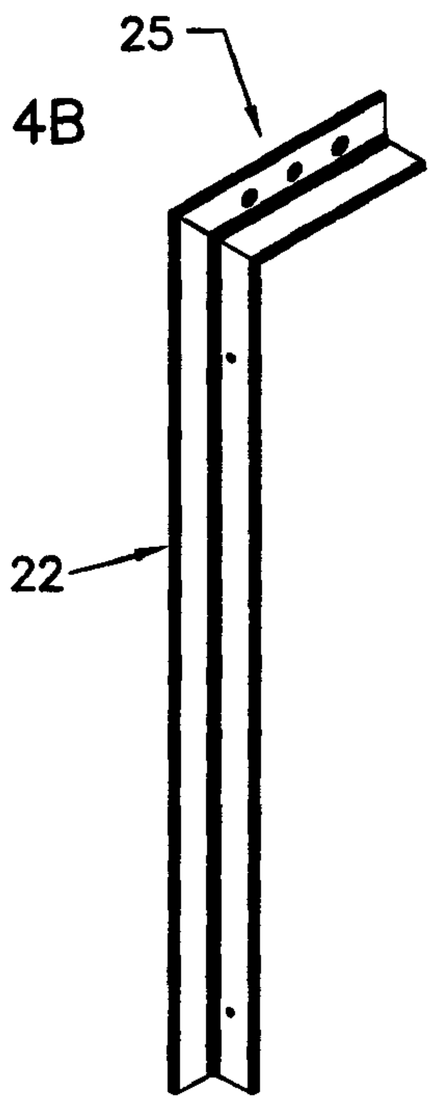


Figure 4B



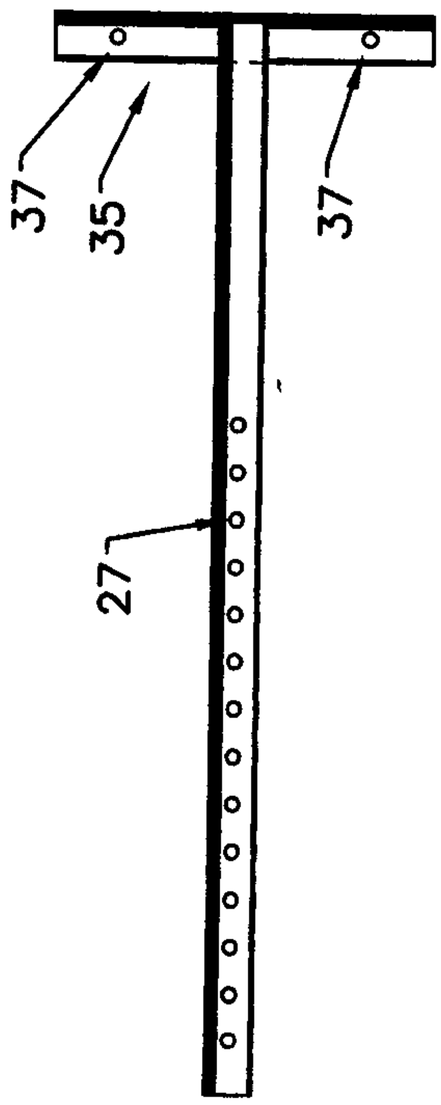


Figure 5A

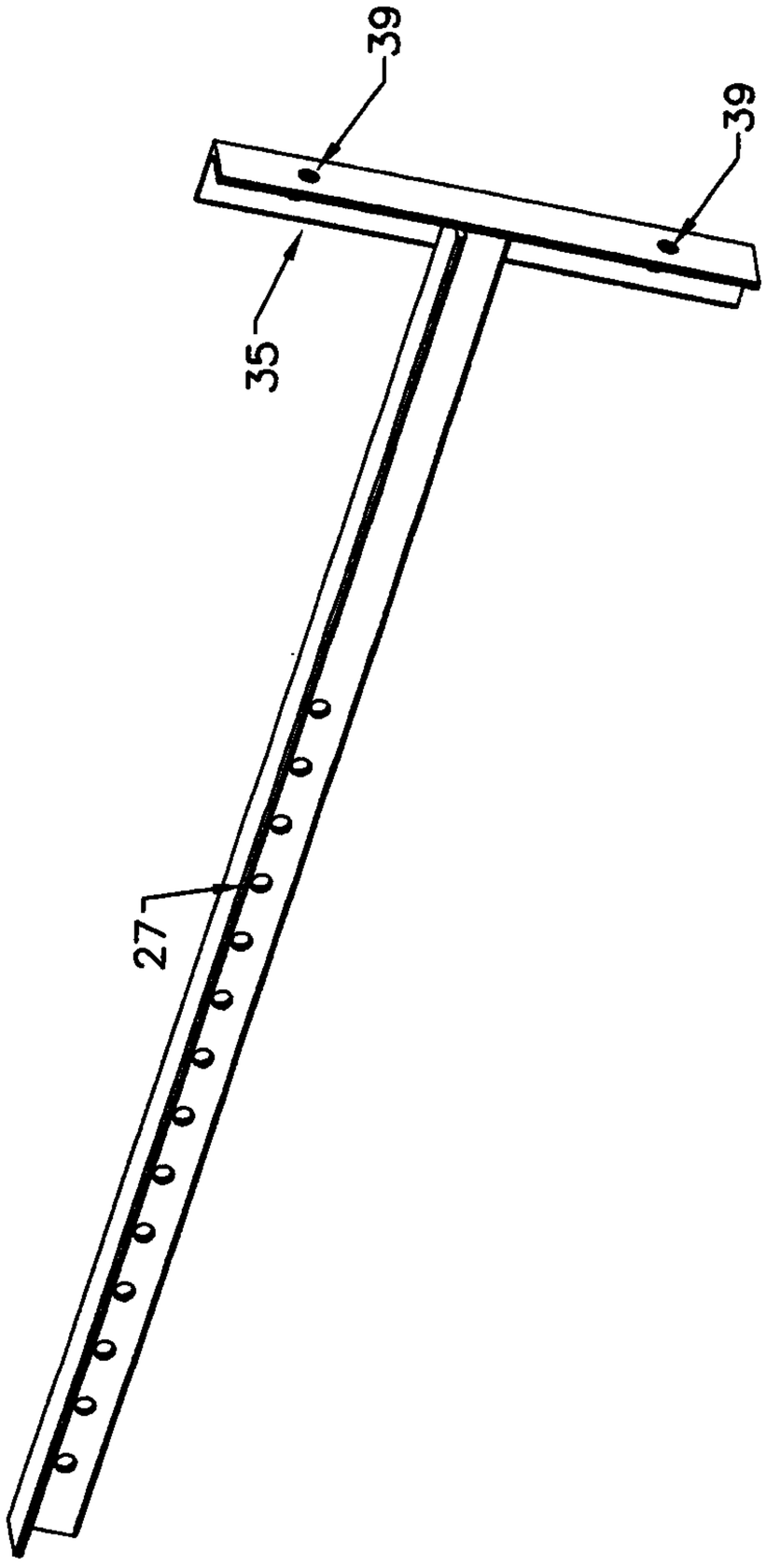


Figure 5B

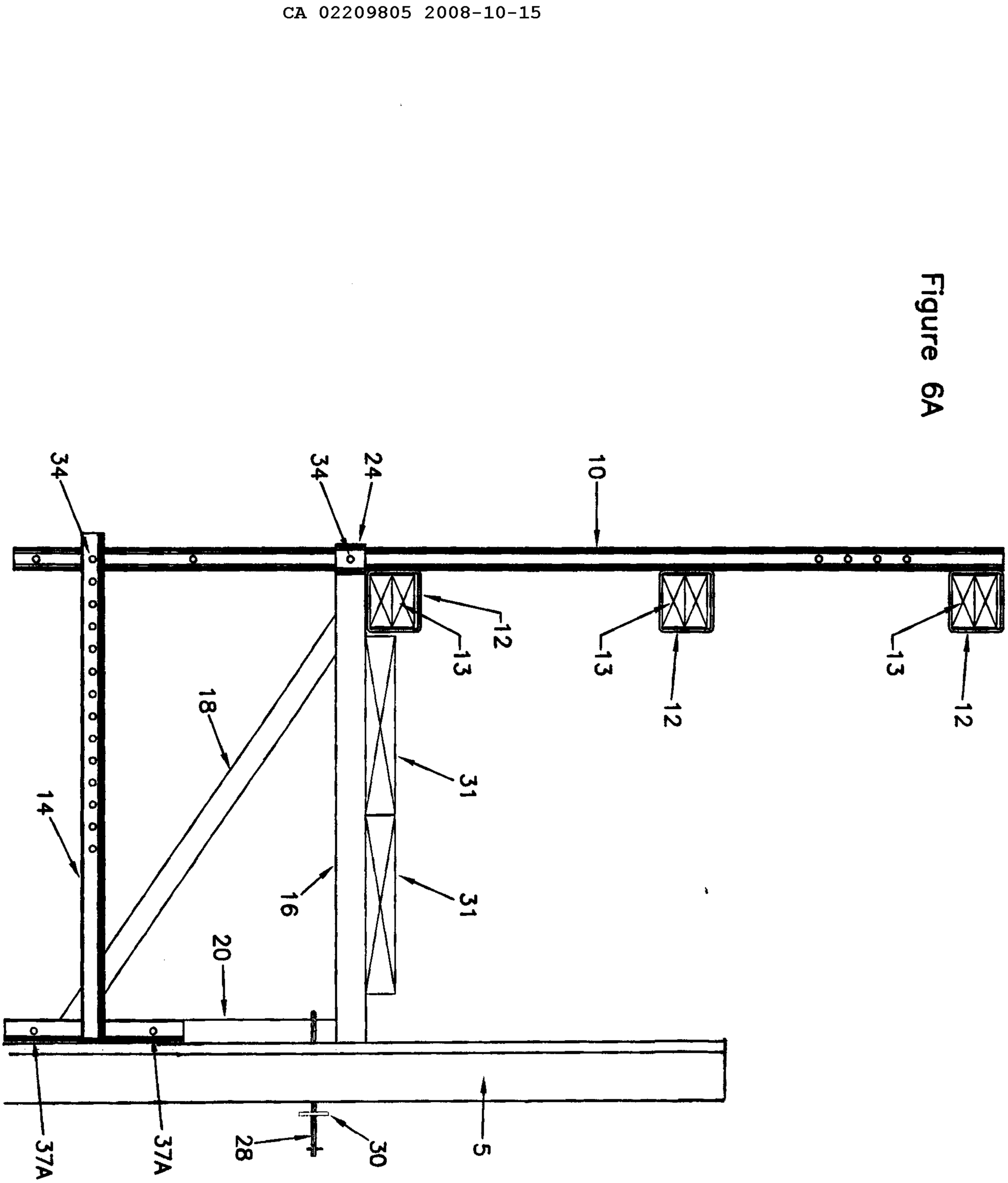


Figure 6A

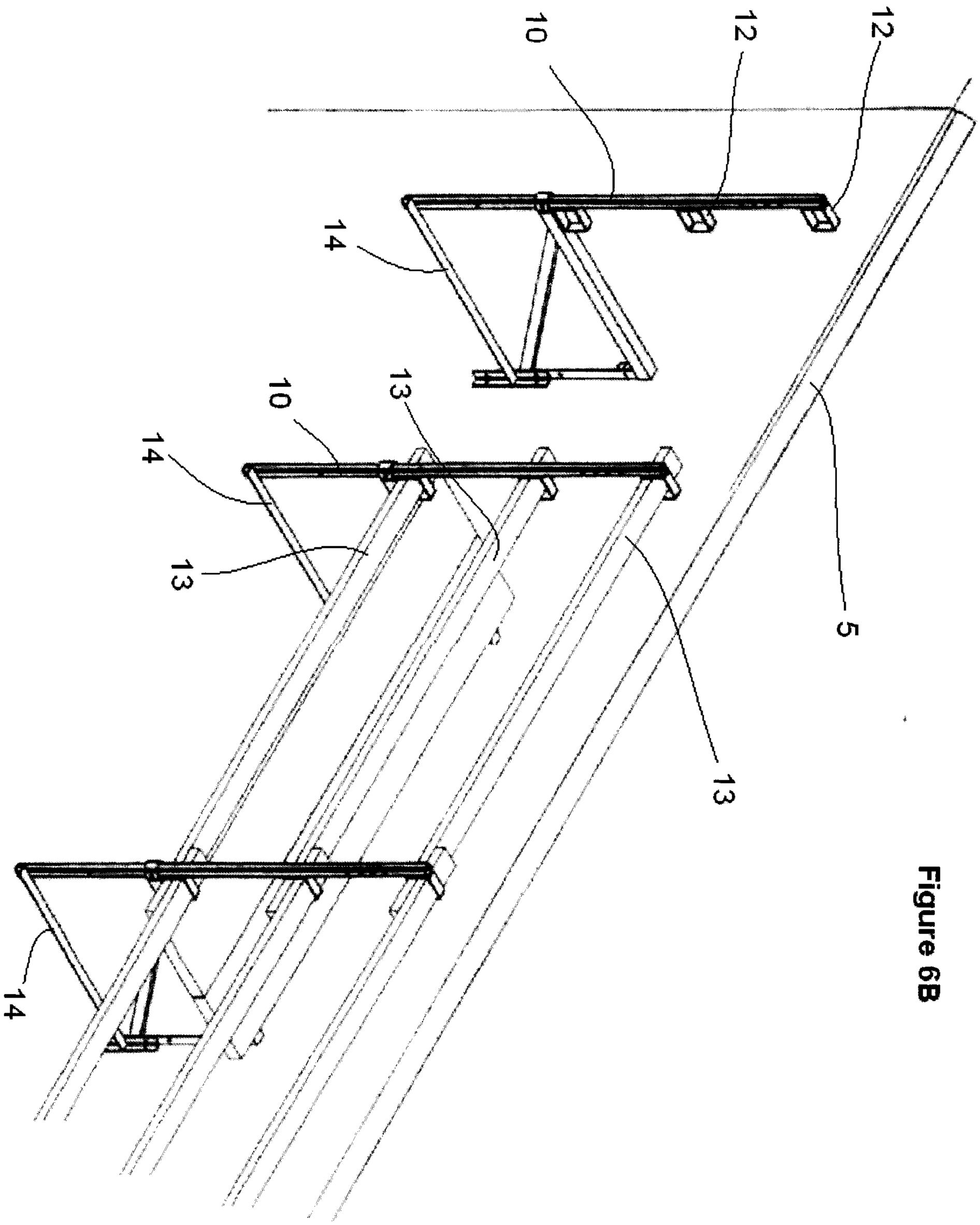


Figure 6B

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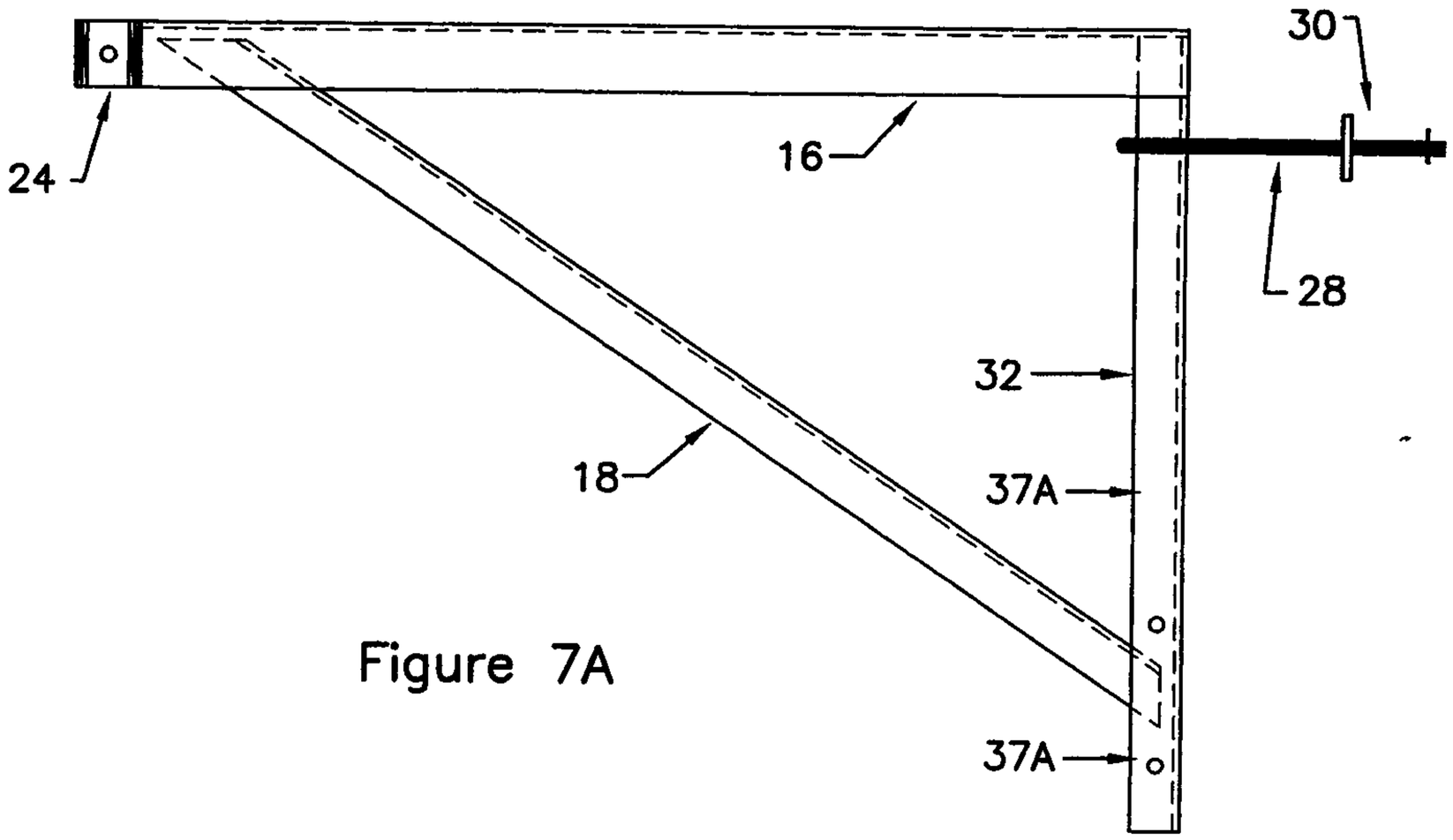


Figure 7A

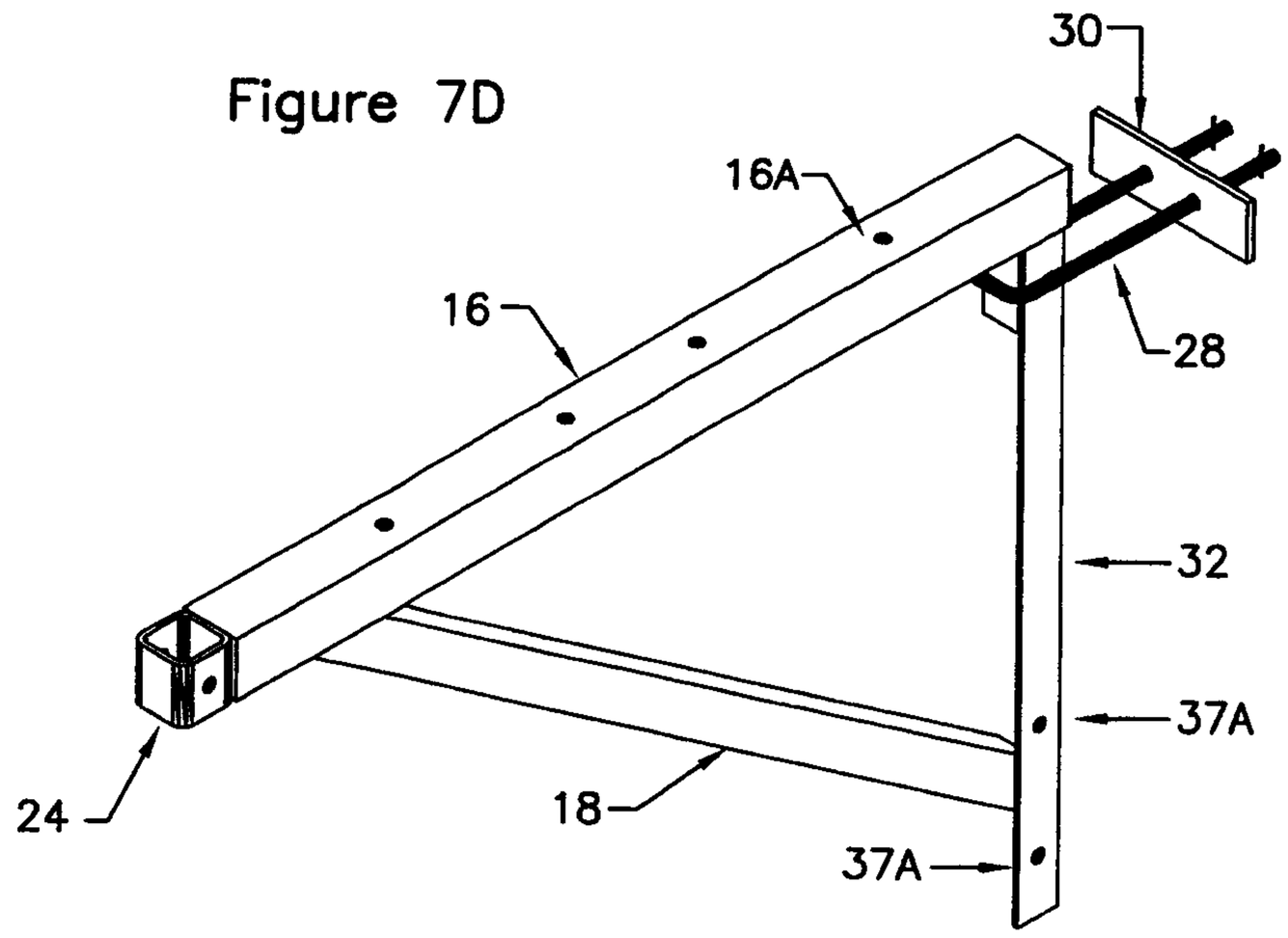


Figure 7D

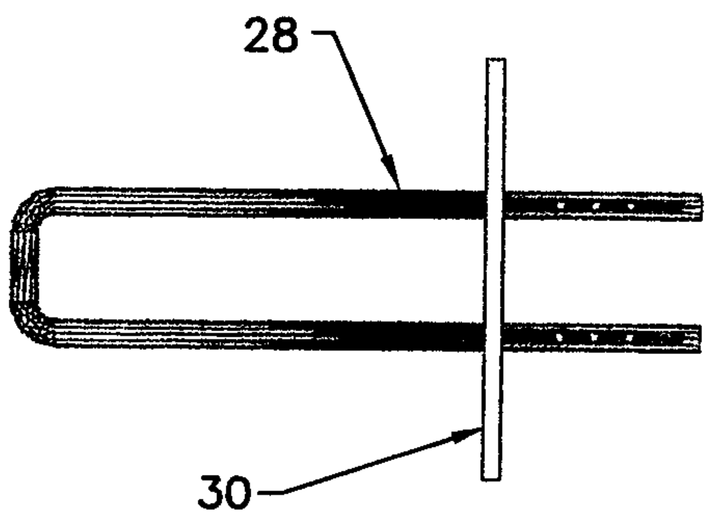


Figure 7C

Figure 7B

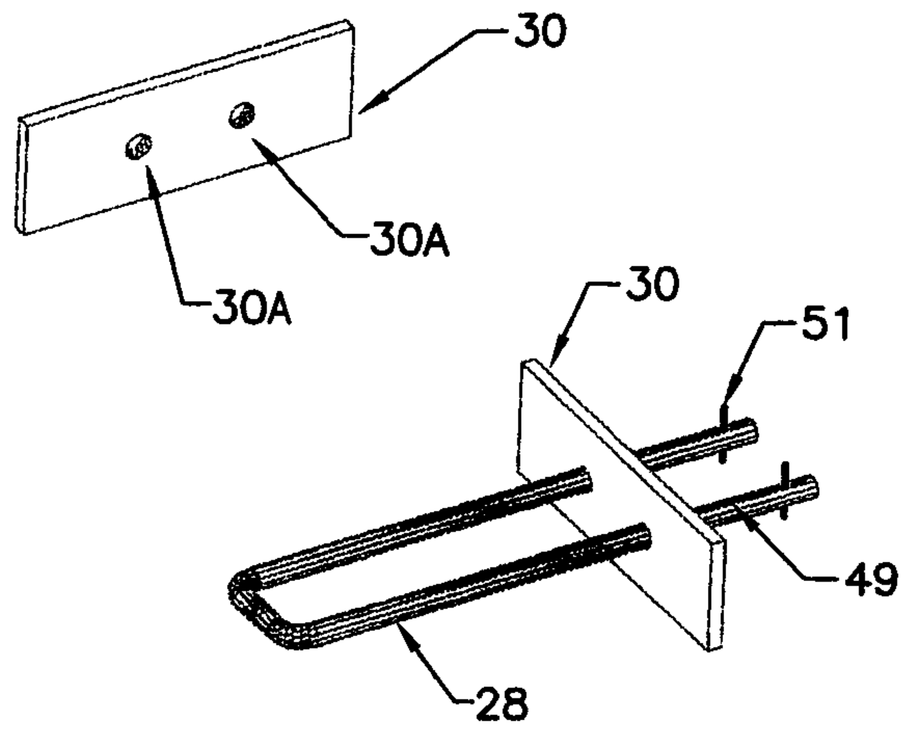
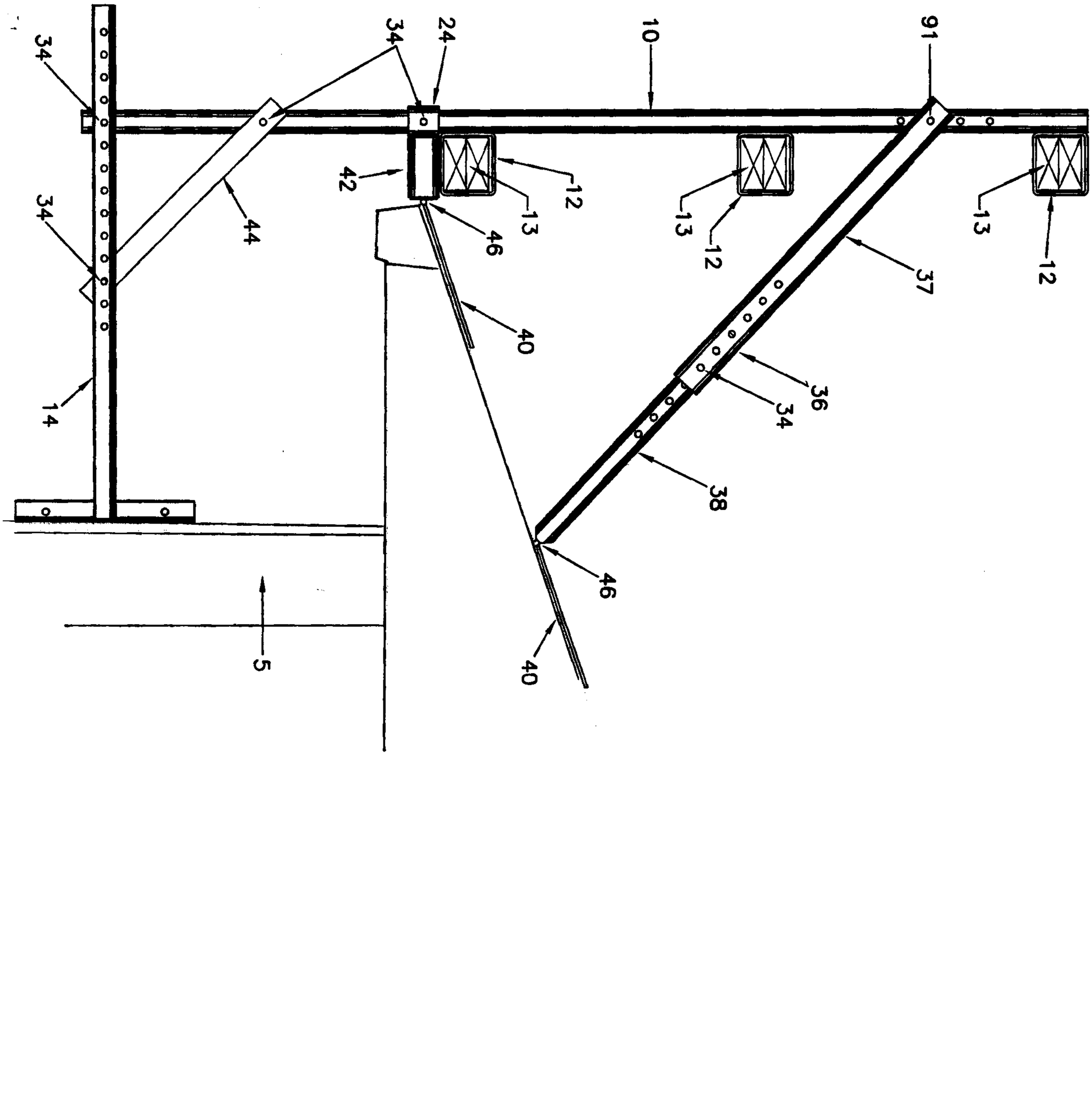


Figure 7E

Figure 8A



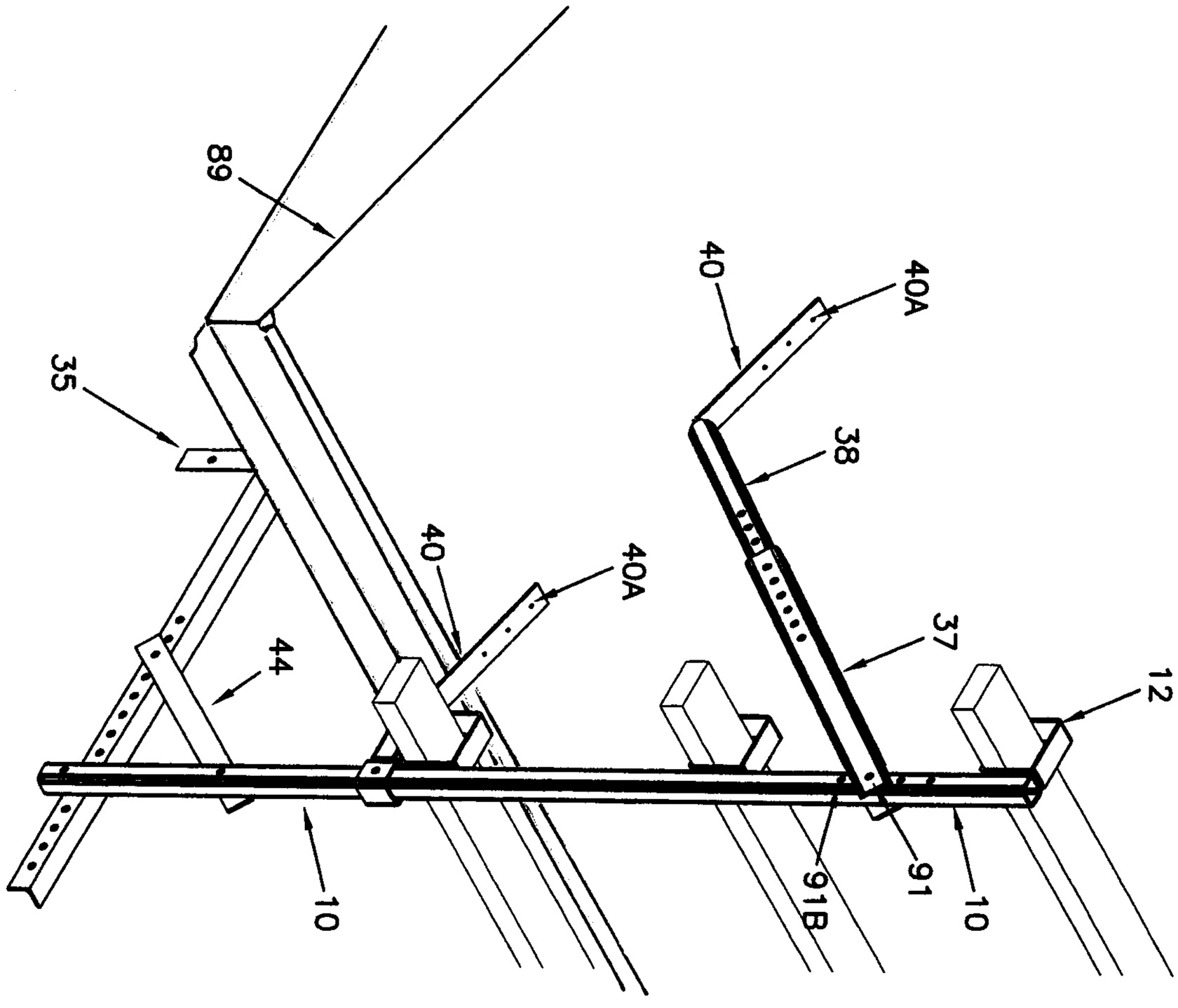


Figure 8B

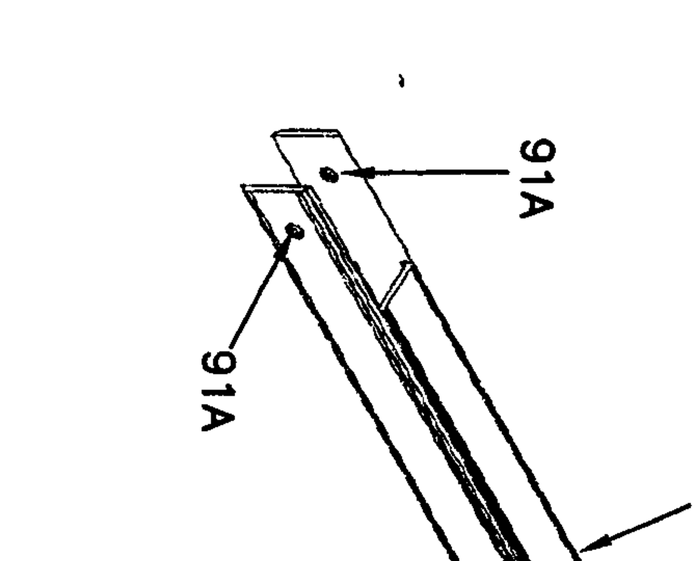


Figure 9A

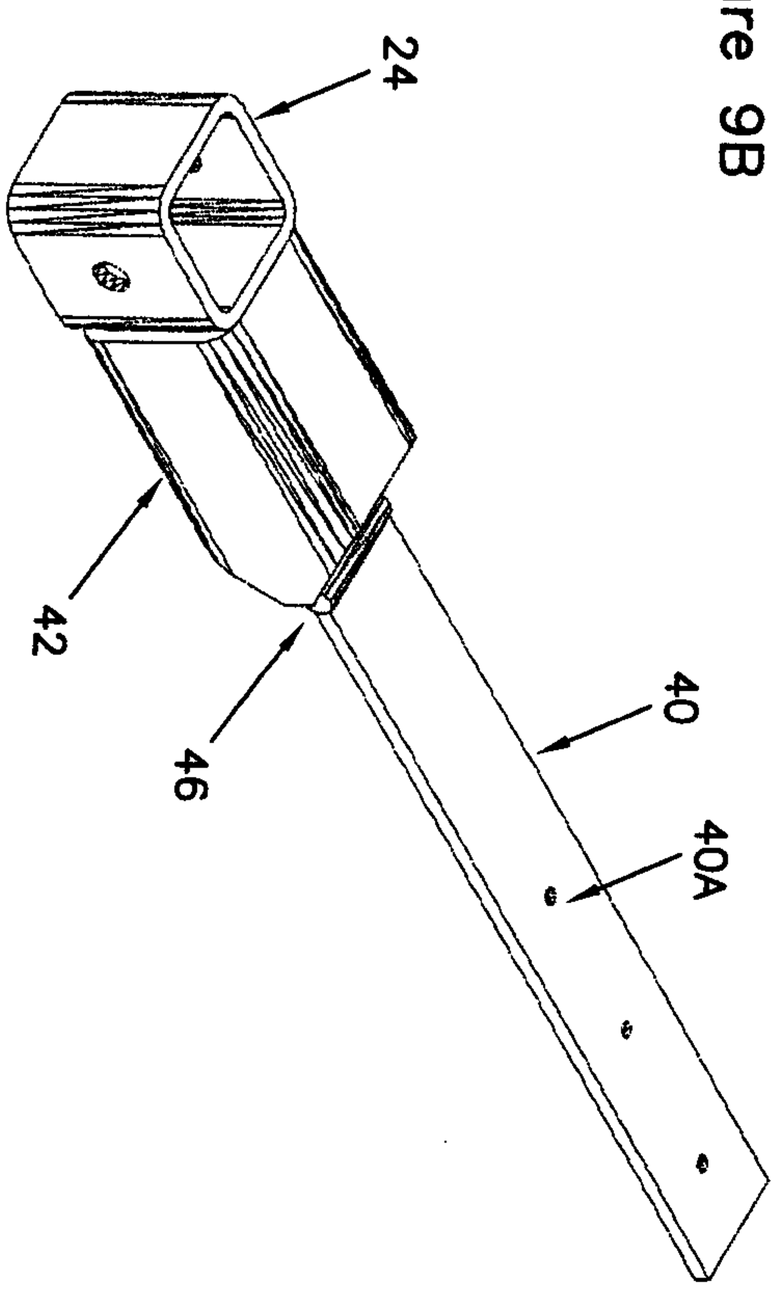
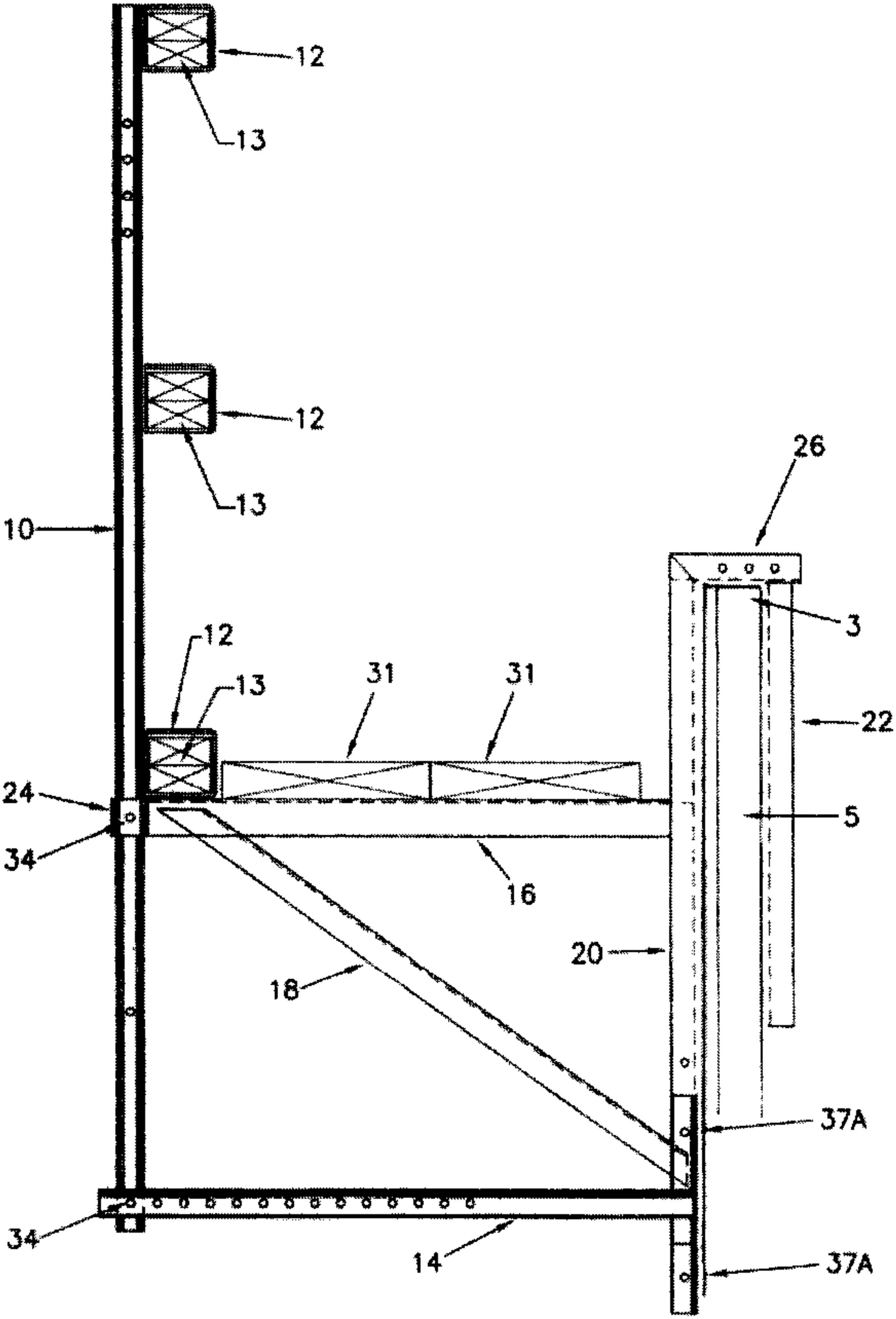


Figure 9B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