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(54) Dismountable modular container

(57) A "dismountable modular container"; modular because its submultiple sizes are proportional to the standardized sizes of known containers; dismountable to form a package with its structural components to be reshipped to origin; able to be coupled to form units of a greater capacity; and stackable.

The frame of the bottom (3) has four legs (6) on its corners which are extended along their upper part in T-sections (9) to assemble the corner pillars (8) from which other T-sections (10) project out to assemble the lid (4). The frame (18) of the lid has metallic parts on its comers in the shape of an inverted half frustum (2) to facilitate the seating of the uppermost container in the stack.

In its application to transport exhibitor panels, it has two reeds (21) on each front, formed by equal, parallel, coplanar and equidistant rods (22) amongst which said panels are placed.

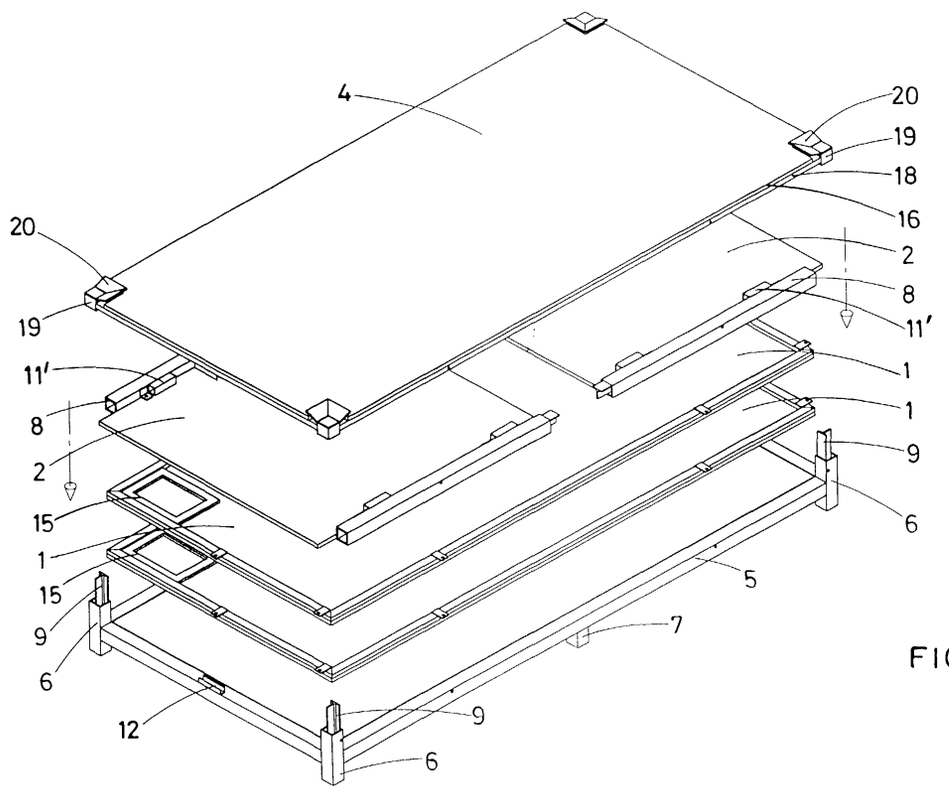

FIG.12

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Description

PURPOSE

[0001] The purpose to which the invention protected in this Patent refers is a "Dismountable modular container".

HISTORY

[0002] Containers are vessels for transporting goods and have the shape of straight-rectangular cell with a metallic structure and standardized sizes, which give rise to two standard capacities: 20 and 40 cubic feet.

[0003] The fast acceptance and extension of their use are justified in the fact that they facilitate intermodal transport, permitting convenient and fast transfer of loads from one type of transport to another: from land conveyance means (road or rail) to other sea or air transportation, or vice versa.

[0004] However, an inconvenience in its use arises when the empty container has to be returned to its origin once the goods it transported have been unloaded at their destination.

[0005] To avoid this to a certain extent there are large empty container parks in strategic locations where the containers are kept until requested with a load at their last destination or near it. It is understood that the advantage of these transportation opportunities require a careful and costly logistics and long periods of parking with lucrum cessans and material wear are practically unavoidable.

DESCRIPTION OF THE INVENTION

[0006] The aim of the invention constituting the purpose of this Patent is to eliminate the inconvenience of the above described conventional containers, with the result that the "Dismountable modular container" having been conceived and designed for this priority purpose.

[0007] In effect, the purpose of this Patent includes the following functional characteristics:

- It is modular in the sense that its sizes are submultiples of the standardized sizes for containers of 40 cubic feet, with the result that a certain number of the new modular containers fit exactly inside the former.
- It is dismountable and may be split up into the six elements that form its structure (two lateral panels, two front ends, bottom and lid or cover) which, in turn, can be superimposed forming a compact package, thus making it easy to return the dismounted container to its origin at a much lesser cost than mounted container, which pays an extra price for its volume although it transports nothing.
- It is able to be coupled, with two (or more) containers able to be juxtaposed along its sides or fronts to form a double capacity transport unit, thus eliminating the panels corresponding to the backed faces.
- It is stackable, as it permits two or more containers to be superimposed in height without the lower ones giving way and without loss of the whole set, as it has locking means on the ends of its structural elements that prevent relative, longitudinal or transversal sliding of the stacked containers.
- It is, therefore, versatile in its use (loaded or empty), in its capacity)simple or composed), in its parking (with one, two or more heights) and in its volume (mounted or dismounted).

[0008] The structure of the container is made up of the following elements:

The bottom is made up of a steel square tube rectangular frame, with three longitudinal and two transversal reinforcements suitably separated to insert the fork of the forklift trucks, forming a support grate of the bottom panel. The frame has plugs of the same tubular section on its four corners arranged orthogonally to the bottom plane, projecting out of it in short lower sections in order to constitute the container support legs. It also has two higher sections in the center of its longest sides in order to assemble the corner pillars.

These pillars are also made up of steel square tube with the same edge as the legs and are assembled with them through a short T-section where they fit in through their lower end. There is another T-section projecting out of their upper end to assemble the lid, whilst on their opposite inside faces there are four pairs of L-section lugs arranged in inverse symmetry, with respective screwed holes on their free wings to attach the panels of the fronts. These lugs have butts for said panels, formed by short sections of squared tube with a smaller edge than that of the pillars.

The panels of the fronts are placed with their inside face resting on the squared tube butts and on the lugs of the L-section of the comer pillars to which they are attached by screws, whilst their inferior sides rest and are attached to C-section parts arranged on the center of the smaller sides of the frame of the bottom, with their open faces upward to receive the panels of the fronts.

The sides of the container are mounted framed in metallic sections of sizes that fit tightly between the larger sides of the frame of the bottom on which they rest and the inside faces of the corner pillars. The structural elements are attached by means of screws through pairs of short flat parts arranged symmetrically on the outside faces of the side frame, so that when the butts work they help to form straight dihedrons between the fronts and sides and between the sides and the bottom. Each side is pro-

vided with a small superimposed and practicable frame to house the transport identification data (consignee, sender, issue, etc.).

The lid or cover of the container is formed by a panel the same size as the bottom, with rectangular notches on its four corners intended to outline respective metallic parts located on the corners of a metallic support frame, consisting of a lower squared tube section that fits into a T-section under pressure projecting out of the upper end of each comer pillar and an upper section shaped like an inverted half frustum. It is intended to serve as a guide for its seating on the legs of the container on top of the pile and to avoid relative, longitudinal or transversal sliding between the two upper and lower containers. The lid of the structural set is attached by screws passing through flat lugs projecting out of the frame of the corresponding sides.

[0009] Once the container is unloaded at its destination it can then be dismounted carrying out the procedure opposite to that of its assembly, forming a single compact package with its structural components arranged in the following order from top to bottom: the bottom supported on its legs, the two fronts arranged in coplanes and each one coupled to two comer pillars and, finally, closing the set, the lid or cover of the container with its corner parts tightly coupled to the T-sections projecting out of the upper ends of the bottom legs.

[0010] The compact package, with a much smaller volume that the assembled container, is ready to be reshipped to its origin in order to be assembled again with a view to being reused.

[0011] The juxtaposition of two containers, normally backings their fronts, permits the formation of a double capacity transportation unit, eliminating the panels corresponding to the backed faces and firmly joining (for example by welding) the corner pillars that delimit said faces.

[0012] As a special application of the container, it can be used for transporting ceramic product exhibitor panels or others and is complemented with reeds that separate and immobilize the merchandise, formed by equal, parallel, coplanar and equidistant tube or rod pieces attached by an end to a stiff horizontal support that has vertical prolongations on its ends. These are inserted into the squared tube butts of the fronts that the corner pillars carry near their ends so that said reeds are directed towards the inside of the container with the opposite rods prolonged two-by-two and the superimposed rods parallel on the same side, with each pair defining a vertical plane.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] To complete the description of the invention and facilitate the interpretation of its formal, structural and functional characteristics, attached are drawings in which the different aspects of a preferred performance of the "Dismountable modular container" constituting the object of this Patent.

[0014] In said drawings:

Figure 1 represents a perspective view of the arrangement of the bottom panel on its own support frame and in Figure 2 it is already seated. Both figures show the positioning of the corner pillars and Figure 4 shows them assembled by means of the device shown in Figure 3.

Figure 4 illustrates assembly of the fronts which rest on and are retained by the C-section open at the top and shows Figure 3 in detail.

Figure 5 shows the presentation of the container sides which appear already assembled in Figures 6 to 9.

Figure 10 shows the assembly on the sides of the practicable frame to house the transportation data. Said frame appears already assembled in Figure 9.

Figure 6 represents the divides arrangement or the container lid or cover that appears ready to be assembled in Figure 7 and already assembled in Figures 8 to 9.

Figure 11 is a detail of the structure and form of the lid frame corner parts which appears in their place of use in Figure 6 to 9.

Figure 12 shows the way in which the structural elements of the container are to be arranged, once dismounted, to make up the single, reshipment to origin package that appears in Figure 13.

Figure 14 shows the basic structure of a double container, formed by the juxtaposition of two simple containers, with their fronts backed, adopting the general arrangement shown in Figure 15.

Figure 16 shows the assembly of the reeds that separate and immobilize the exhibitor panels, which appear already packed for their transportation in Figure 17.

DESCRIPTION OF A PREFERRED PERFORMANCE

[0015] In order to clearly show the nature and scope of the advantageous application of the "Dismountable modular container", constituting the object of the invention, the following is a description of its application and structure, making reference to the drawings which, on representing a preferred performance of the device and its components for information purposes, must be considered in the widest sense and not limitative of the application and content of the claimed invention.

[0016] The dismountable container is of the type that adopts a general straight-rectangular cell configuration.

[0017] All its sizes are submultiples in the same proportion as the standardized sizes of containers of 40 cubic feet, so that a certain number of them fit exactly inside the latter. It can be split up into its six basic structural elements (two side panels (1), two fronts (2), bot-

tom (3) and lid (4)), which can be superimposed forming a compact package to be returned to origin and reused. It is able to be coupled by lateral or front juxtaposition with one or more equal containers, forming greater capacity transportation units.

[0018] Its bottom (3) is made up of a steel squared tube rectangular frame (5) with three longitudinal and two transversal reinforcements with suitable separation to insert the fork of the forklift trucks, forming a support grid of the bottom panel. The frame (5) has plugs (6) of the same tubular section on its four comers arranged orthogonally to the bottom plane, projecting out of it in short lower sections in order to constitute the container support legs. It also has two higher sections (7) in the center of its longest sides in order to assemble the corner pillars (8) (see Figures 1, 2 and 3).

[0019] The corner pillars (8) are also made up of steel square tube with the same edge as the legs (6) and are assembled with them through a short T-section (9) where they fit in under pressure through their lower end. There is another T-section (10) projecting out of their upper end to assemble the lid (4). On their opposite inside faces there are four pairs of L-section lugs (11) arranged in inverse symmetry, with respective screwed holes (12) on their free wings to attach the panels of the fronts (2). These lugs (11) have butts (11') for said panels, formed by short sections of squared tube with a smaller edge than that of the pillars (8) (see Figures 1, 2 and 4).

[0020] The panels of the fronts (2) are placed with their inside face resting on the squared tube butts (11') and on the lugs (11) of the L-section of the corner pillars (8) to which they are attached by screws, whilst their inferior sides rest and are attached to C-section parts (12) arranged on the center of the smaller sides of the frame (5) of the bottom, with their open faces upward to receive the panels of the fronts (2) (see Figures 3 and 4).

[0021] The sides (1) of the container are mounted framed in metallic sections (13) of sizes that fit tightly between the larger sides of the frame (5) of the bottom (3) on which they rest and the inside faces of the corner pillars (8) and are attached to the structural elements by means of screws through pairs of short flat parts (14) arranged symmetrically on the outside faces of the side frame (13), so that when the butts work they help to form straight dihedrons between the fronts (2) and sides (1) and between the sides and the bottom (3). Each side (1) is provided with a small superimposed and practicable frame (15) to house the transport identification data (see Figures 5, 9 and 10).

[0022] The lid (4) or cover of the container is formed by a panel (16) the same size as the bottom (3), with rectangular notches (17) on its four comers intended to outline respective metallic parts located on the comers of a metallic support frame (18), consisting of a lower squared tube section (18) that fits into a T-section (10) under pressure projecting out of the upper end of each corner pillar and an upper section shaped like an inverted half frustum (20). It is intended to serve as a guide for its seating on the legs (8) of the container on top of the pile and to avoid relative, longitudinal or transversal sliding between the two upper and lower containers. The lid of the structural set is attached by screws passing through flat lugs (14) projecting out of the frame (3) of the corresponding sides (1) (see Figures 6, 7, 8 and 11).

[0023] Once the container is unloaded at its destination it can then be dismounted carrying out the procedure opposite to that of its assembly, forming a single compact package with its structural components arranged in the following order from top to bottom: the bottom (3) supported on its legs, on top of these the two sides (1), one on top of the other, the two fronts (2) arranged in coplanes and each one coupled to two corner pillars (8) and, finally, closing the set, the lid or cover (4) of the container with its comer parts tightly coupled to the T-sections projecting out of the upper ends of the legs (6) of the bottom (3) (see Figures 12 and 13).

[0024] The juxtaposition of the containers, usually by their fronts, permits the formation of a double capacity transportation unit, eliminating the panels corresponding to the backed faces and firmly joining the corner pillars (8) that delimit said faces (see Figures 14 and 15).

[0025] In a special application, it can be used for transporting ceramic product exhibitor panels or others and is complemented with reeds (21) that separate and immobilize the merchandise, formed by equal, parallel, coplanar and equidistant tube or rod pieces (22) attached by an end to a stiff horizontal support (23) that has vertical prolongations (24) on its ends. These are inserted into the squared tube butts (11) of the fronts that the comer pillars (8) carry near their ends so that said reeds (21) are directed towards the inside of the container with the opposite rods (22) prolonged two-by-two and the superimposed rods parallel on the same side, with each pair defining a vertical plane (see Figures 16 and 17).

Claims

1. Dismountable modular container of the type that has a general straight-rectangular cell shape, **characterized by** the fact that all its sizes are submultiples in the same proportion as the standardized sizes of containers of 40 cubic feet, so that a certain number of them fit exactly inside the latter. It can be split up into its six basic structural elements (two side panels (1), two fronts (2), bottom (3) and lid (4)), which can be superimposed forming a compact package to be returned to origin and reused; and because it is able to be coupled by lateral or front juxtaposition with one or more equal containers, forming greater capacity transportation units.

2. Dismountable modular container, according to claim 1, **characterized by** the fact that its bottom

(3) consists of a steel squared tube rectangular frame (5), with three longitudinal and two transversal reinforcements with suitable separation to insert the fork of the forklift trucks, forming a support grid of the bottom panel. The frame (5) has plugs (6) of the same tubular section on its four corners arranged orthogonally to the bottom plane, projecting out of it in short lower sections in order to constitute the container support legs. It also has two higher sections (7) in the center of its longest sides in order to assemble the corner pillars (8) (see Figures 1, 2 and 3).

3. Dismountable modular container, according to claim 1, **characterized by** the fact that the comer pillars (8) are also made of steel squared tube with the same edge as the legs (6) and are assembled with them through a short T-section (9) where they fit in under pressure through their lower end. There is another T-section (10) projecting out of their upper end to assemble the lid (4). On their opposite inside faces there are four pairs of L-section lugs (11) arranged in inverse symmetry, with respective screwed holes (12) on their free wings to attach the panels of the fronts (2). These lugs (11) have butts (11') for said panels, formed by short sections of squared tube with a smaller edge than that of the pillars (8) (see Figures 1, 2 and 4).

4. Dismountable modular container, according to claim 1, **characterized by** the fact that the panels of the fronts (2) are placed with their inside face resting on the squared tube butts (11') and on the lugs (11) of the L-section of the corner pillars (8) to which they are attached by screws, whilst their inferior sides rest and are attached to C-section parts (12) arranged on the center of the smaller sides of the frame (5) of the bottom, with their open faces upward to receive the panels of the fronts (2) (see Figures 3 and 4).

5. Dismountable modular container, according to claim 1, **characterized by** the fact that the sides (1) of the container are mounted framed in metallic sections (13) of sizes that fit tightly between the larger sides of the frame (5) of the bottom (3) on which they rest and the inside faces of the corner pillars (8) and are attached to the structural elements by means of screws through pairs of short flat parts (14) arranged symmetrically on the outside faces of the side frame (13), so that when the butts work they help to form straight dihedrons between the fronts (2) and sides (1) and between the sides and the bottom (3). Each side (1) is provided with a small superimposed and practicable frame (15) to house the transport identification data (see Figures 5, 9 and 10).

6. Dismountable modular container, according to claim 1, **characterized by** the fact that the lid (4) or cover of the container is formed by a panel (16) the same size as the bottom (3), with rectangular notches (17) on its four comers intended to outline respective metallic parts located on the comers of a metallic support frame (18), consisting of a lower squared tube section (18) that fits into a T-section (10) under pressure projecting out of the upper end of each corner pillar and an upper section shaped like an inverted half frustum (20). It is intended to serve as a guide for its seating on the legs (8) of the container on top of the pile and to avoid relative, longitudinal or transversal sliding between the two upper and lower containers. The lid of the structural set is attached by screws passing through flat lugs (14) projecting out of the frame (3) of the corresponding sides (1) (see Figures 6, 7, 8 and 11).

7. Dismountable modular container, according to claim 1, **characterized by** the fact that once the container is unloaded at its destination it can then be dismounted carrying out the procedure opposite to that of its assembly, forming a single compact package with its structural components arranged in the following order from top to bottom: the bottom (3) supported on its legs, on top of these the two sides (1), one on top of the other, the two fronts (2) arranged in coplanes and each one coupled to two corner pillars (8) and, finally, closing the set, the lid or cover (4) of the container with its comer parts tightly coupled to the T-sections projecting out of the upper ends of the legs (6) of the bottom (3) (see Figures 12 and 13).

8. Dismountable modular container, according to claim 1, **characterized by** the fact that the juxtaposition of the containers, usually by their fronts, permits the formation of a double capacity transportation unit, eliminating the panels corresponding to the backed faces and firmly joining the corner pillars (8) that delimit said faces (see Figures 14 and 15).

9. Dismountable modular container, according to claim 1, **characterized by** the fact that in a special application, it can be used for transporting ceramic product exhibitor panels or others and is complemented with reeds (21) that separate and immobilize the merchandise, formed by equal, parallel, coplanar and equidistant tube or rod pieces (22) attached by an end to a stiff horizontal support (23) that has vertical prolongations (24) on its ends. These are inserted into the squared tube butts (11) of the fronts that the comer pillars (8) carry near their ends so that said reeds (21) are directed towards the inside of the container with the opposite rods (22) prolonged two-by-two and the superimposed rods parallel on the same side, with each pair defining a vertical plane (see Figures 16 and 17).

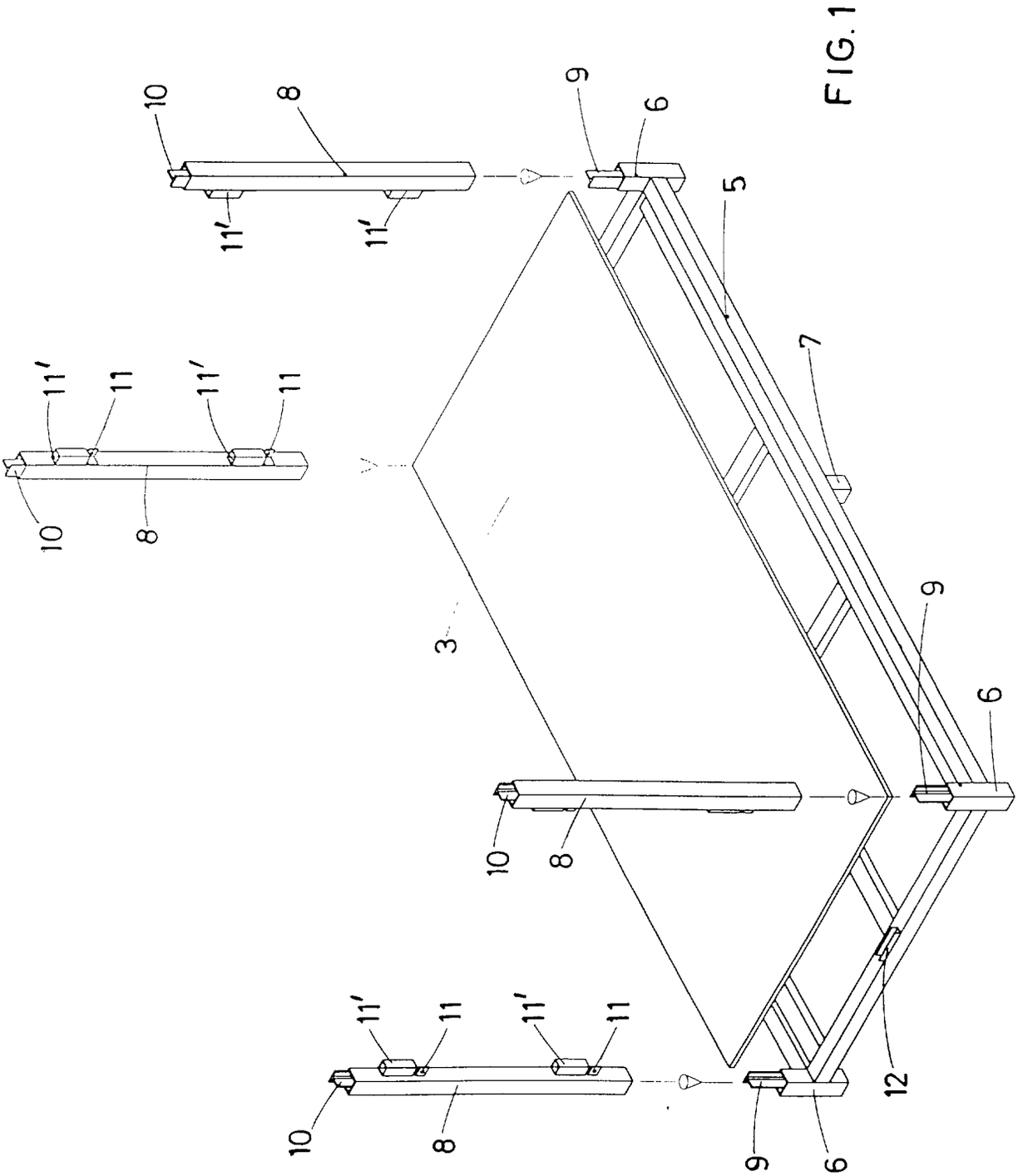


FIG. 1

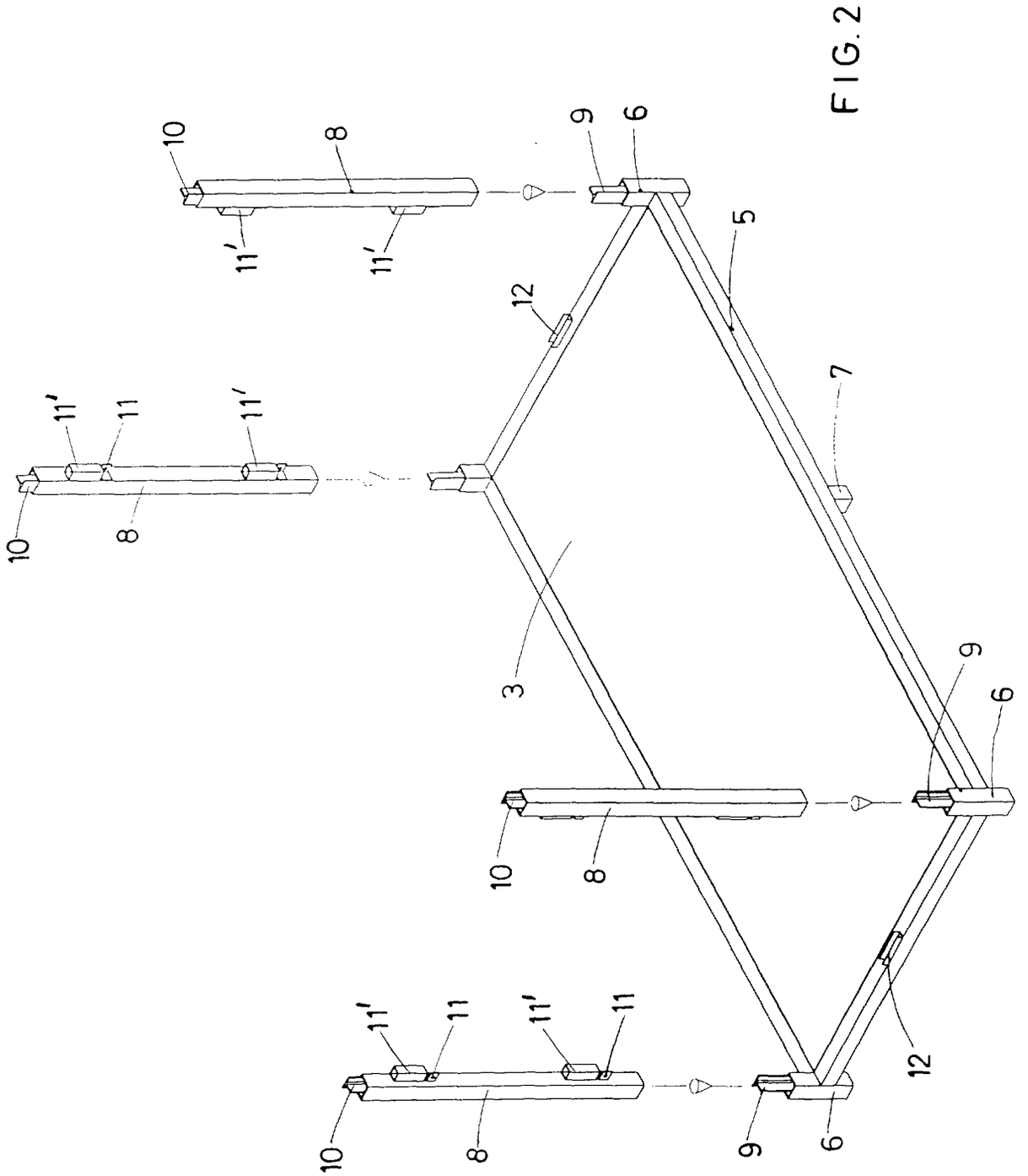


FIG. 2

FIG. 3

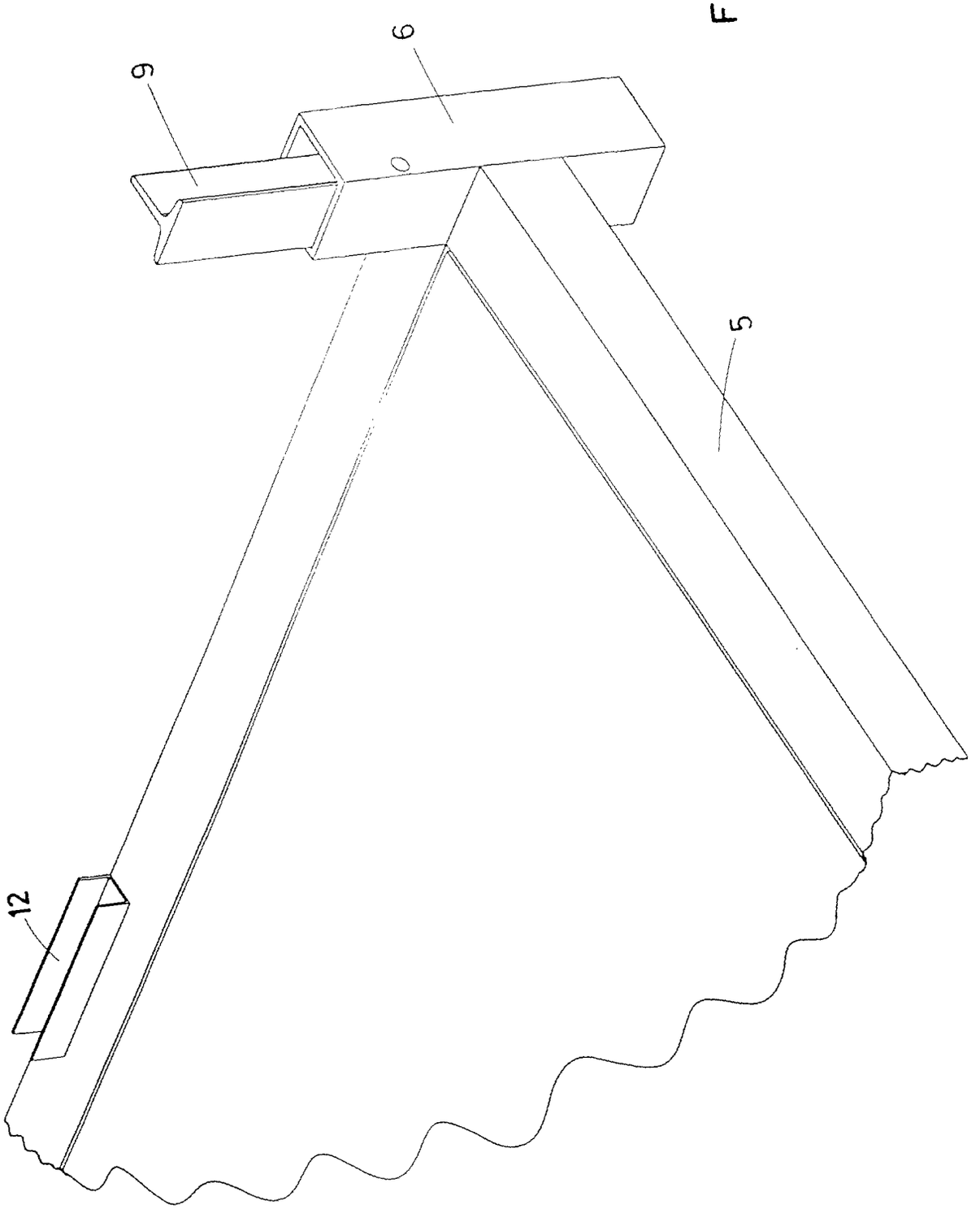
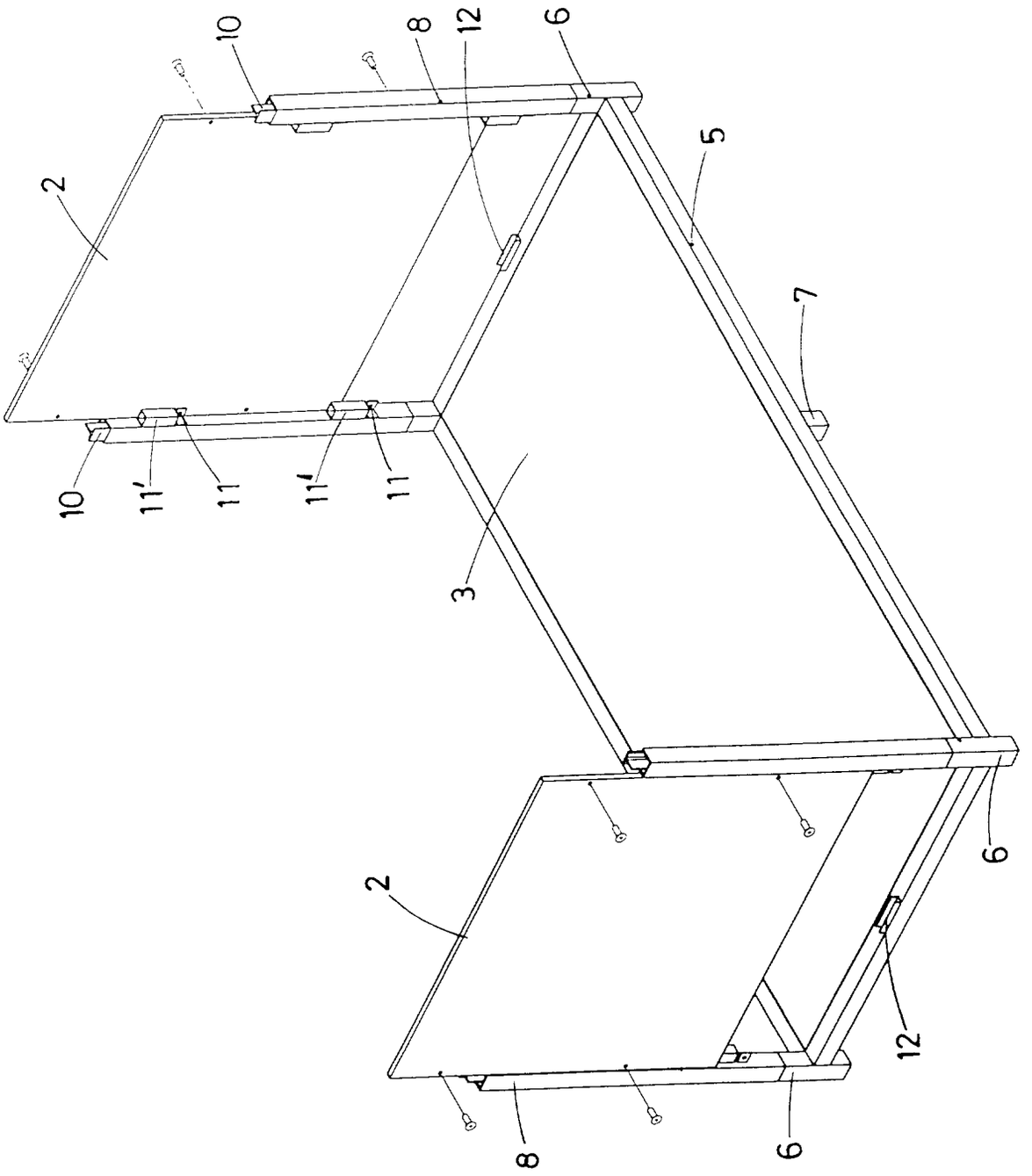


FIG. 4



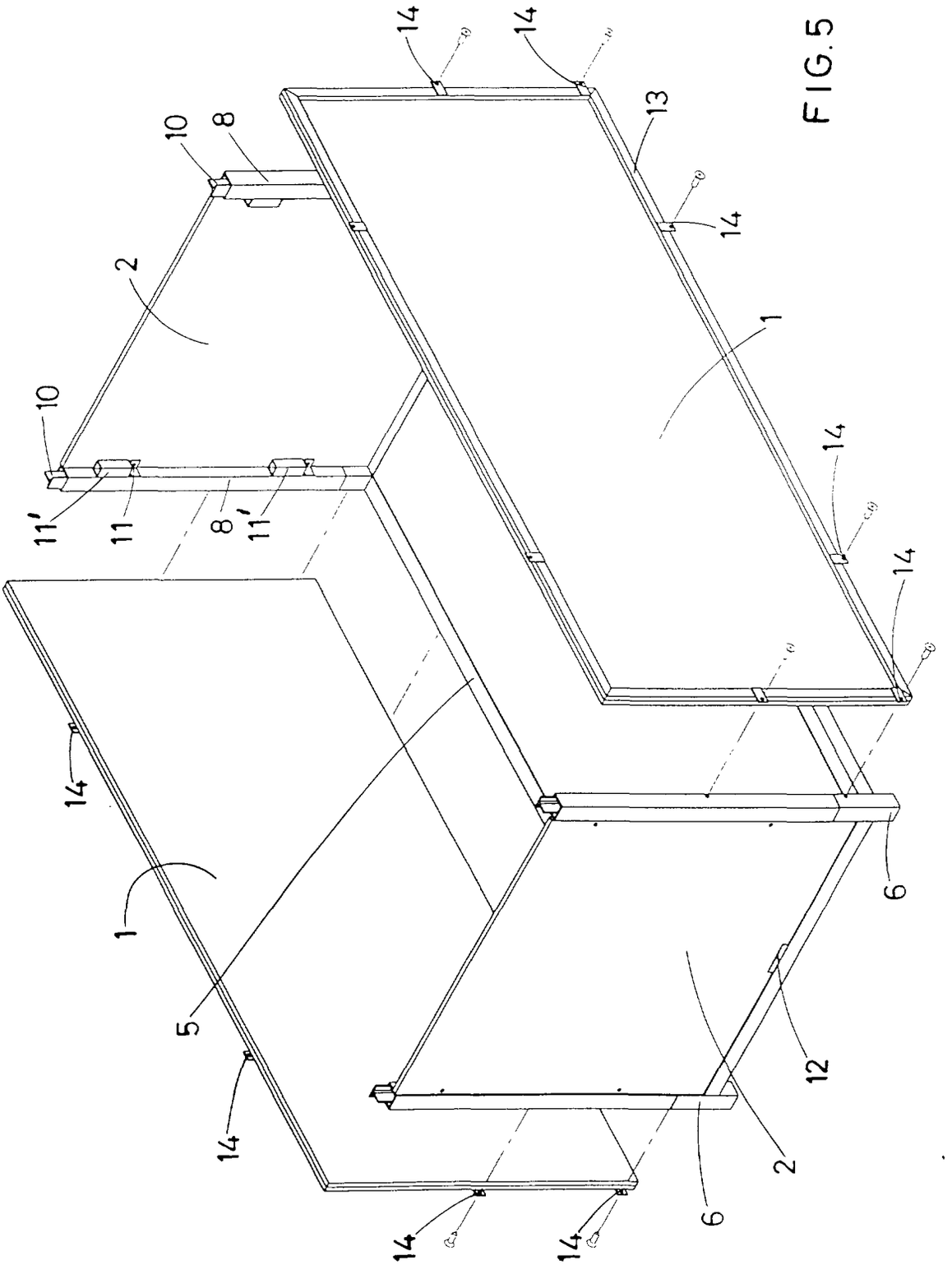


FIG.5

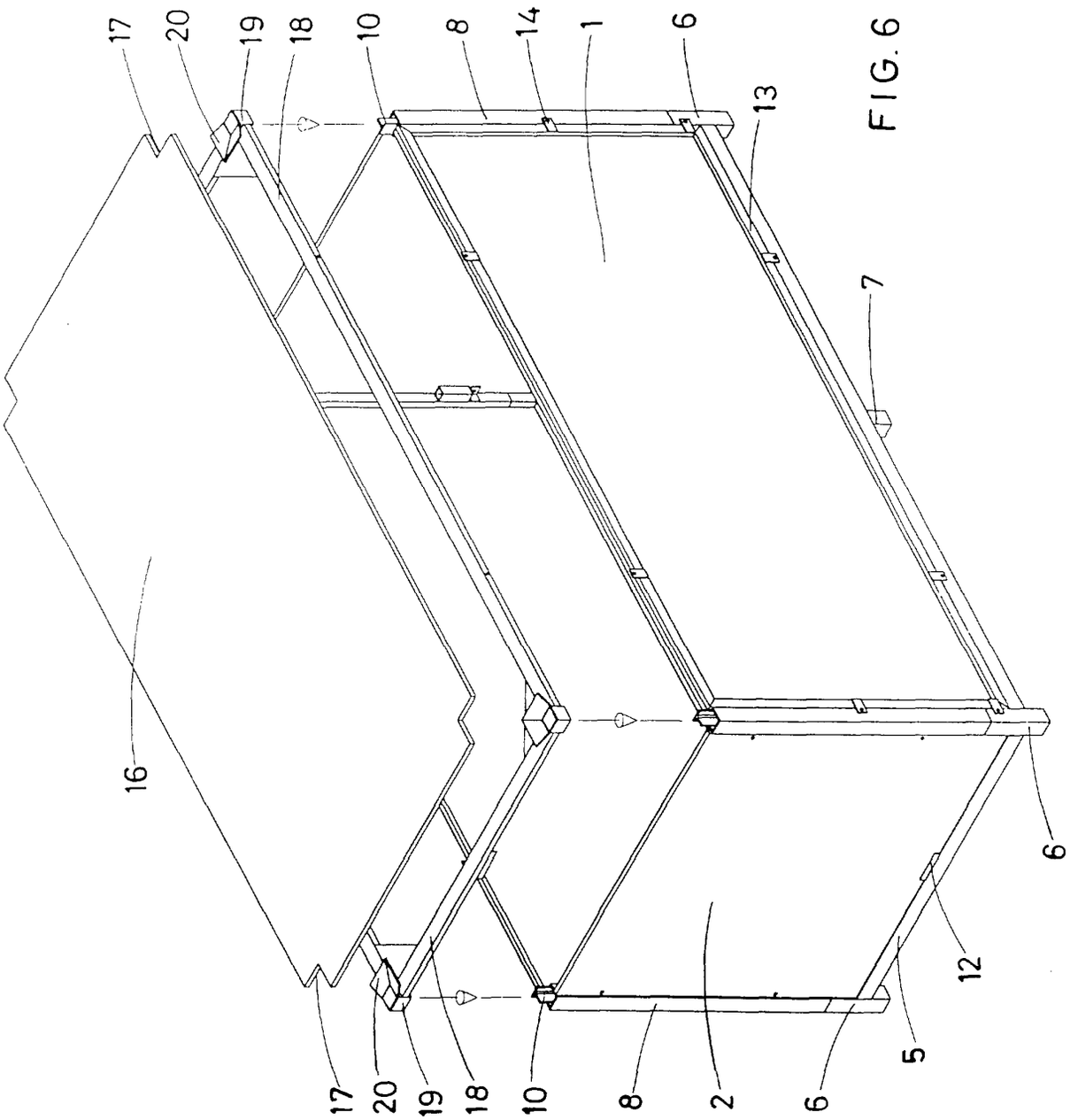


FIG. 6

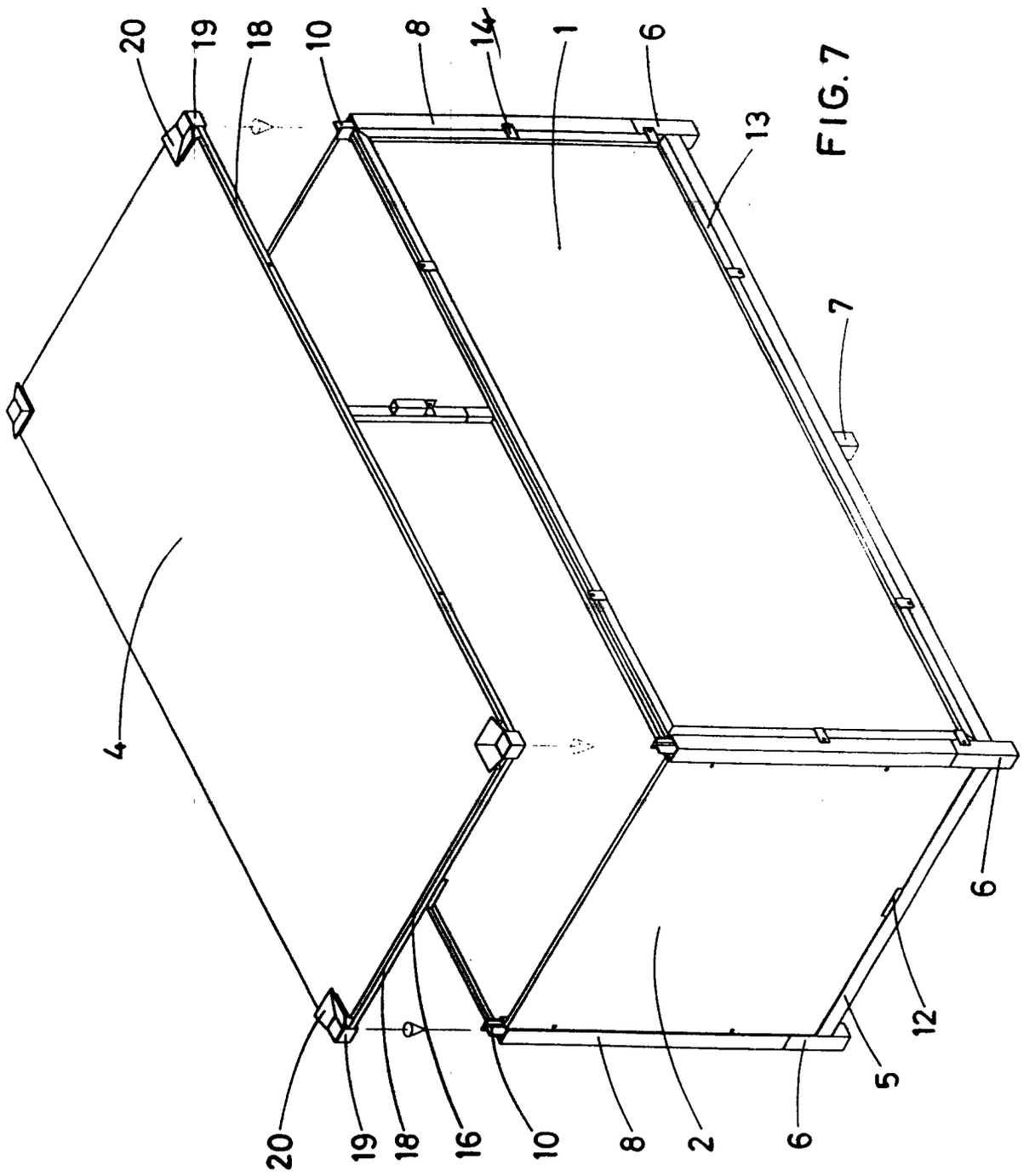


FIG. 7

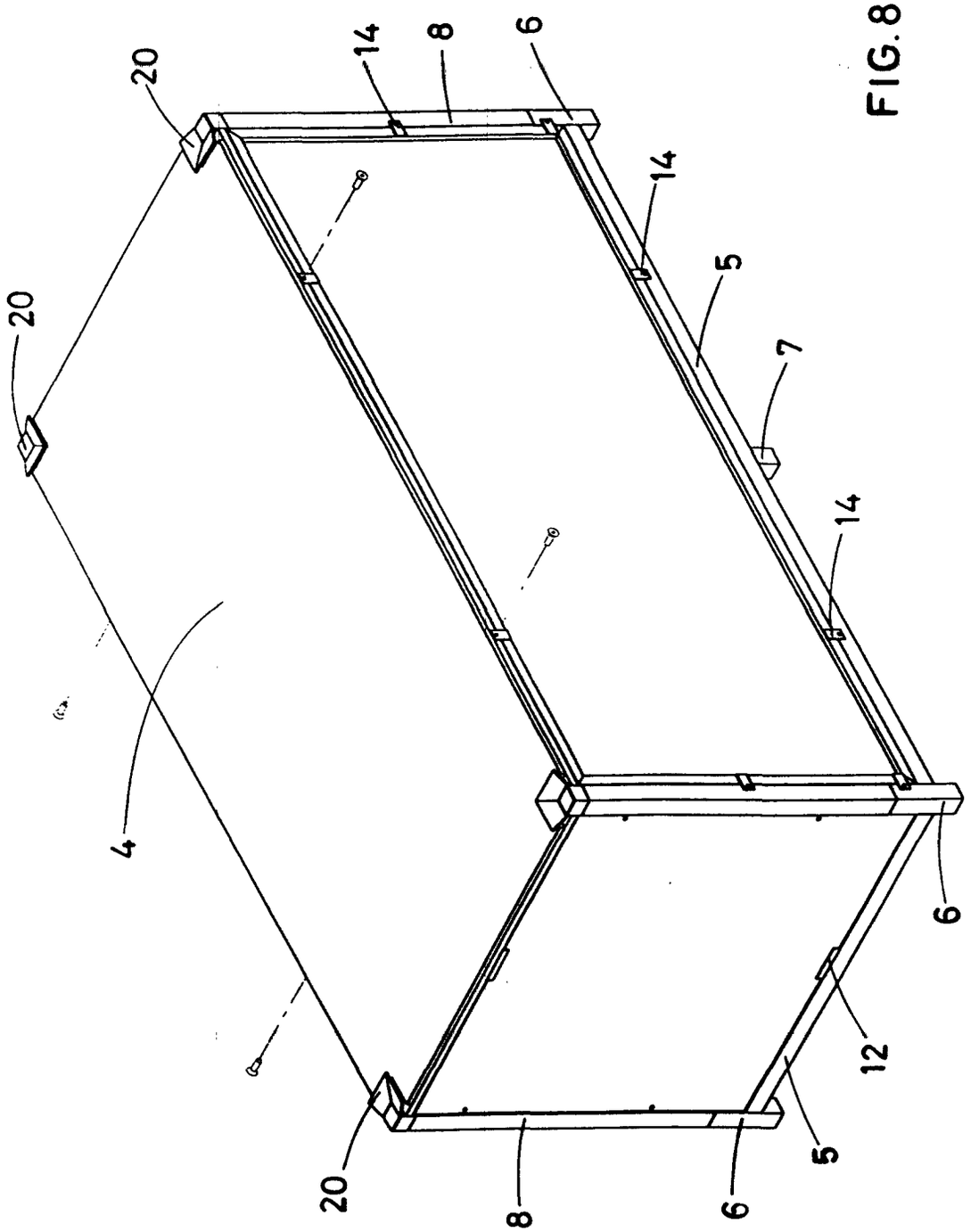


FIG.8

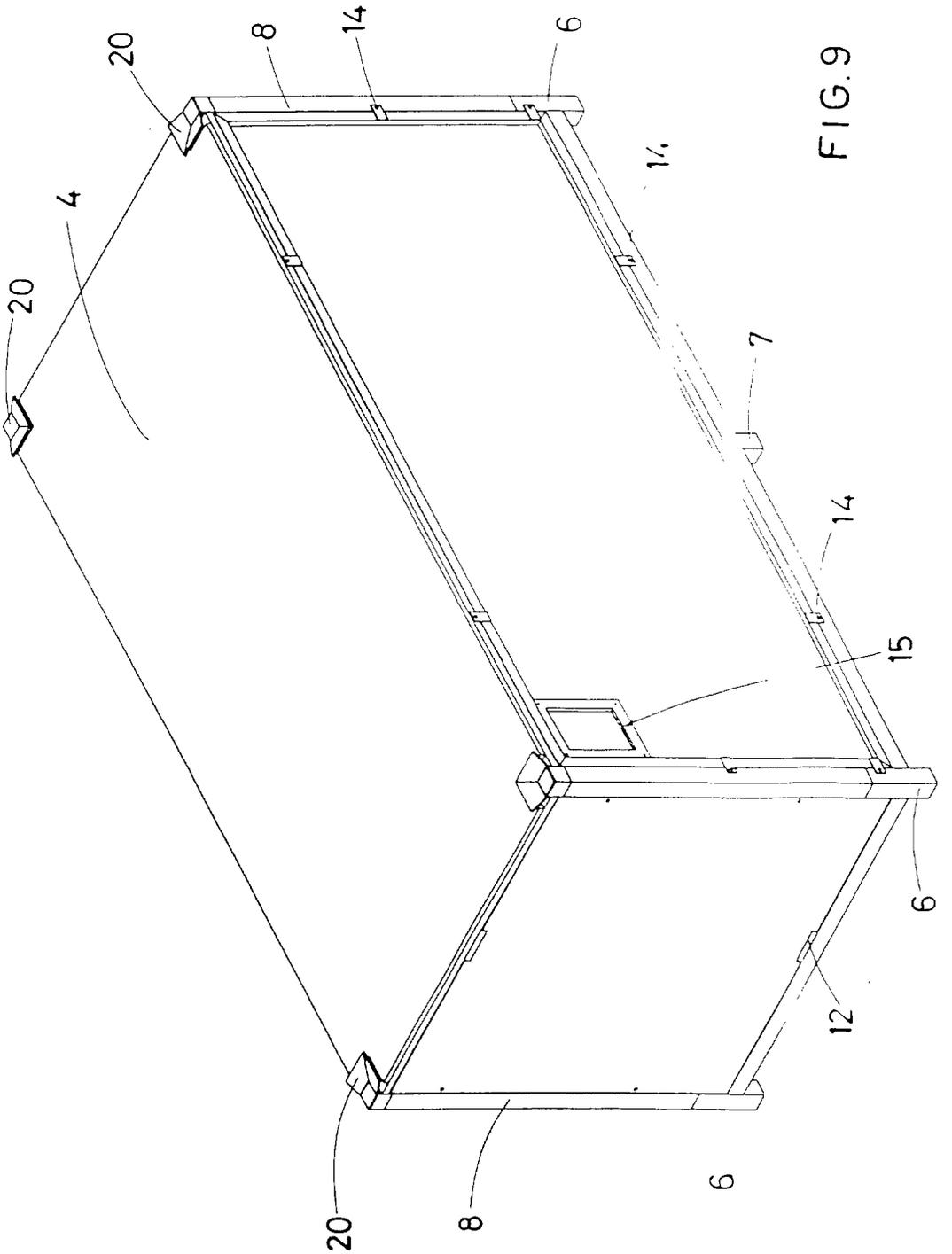


FIG.9

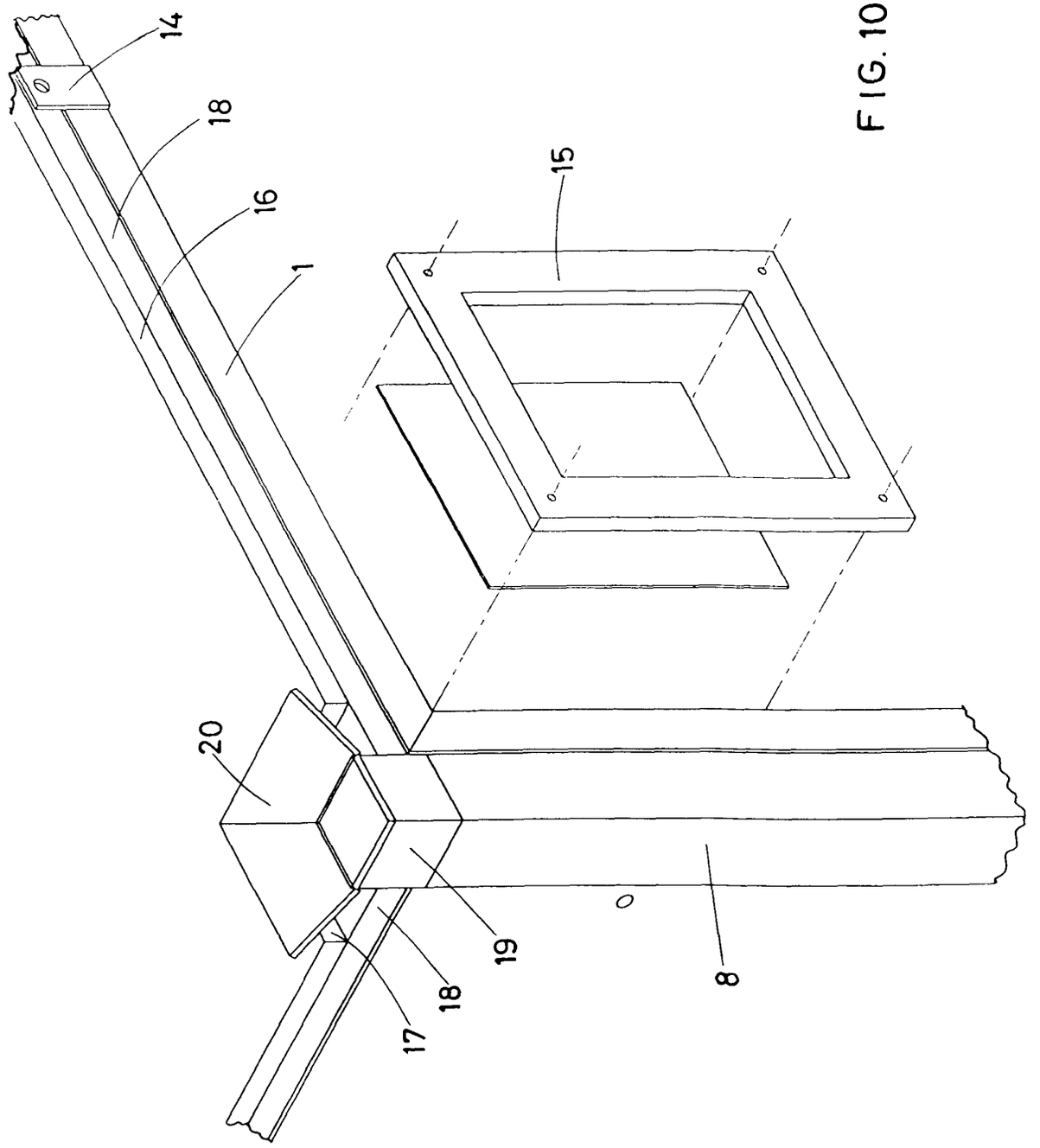
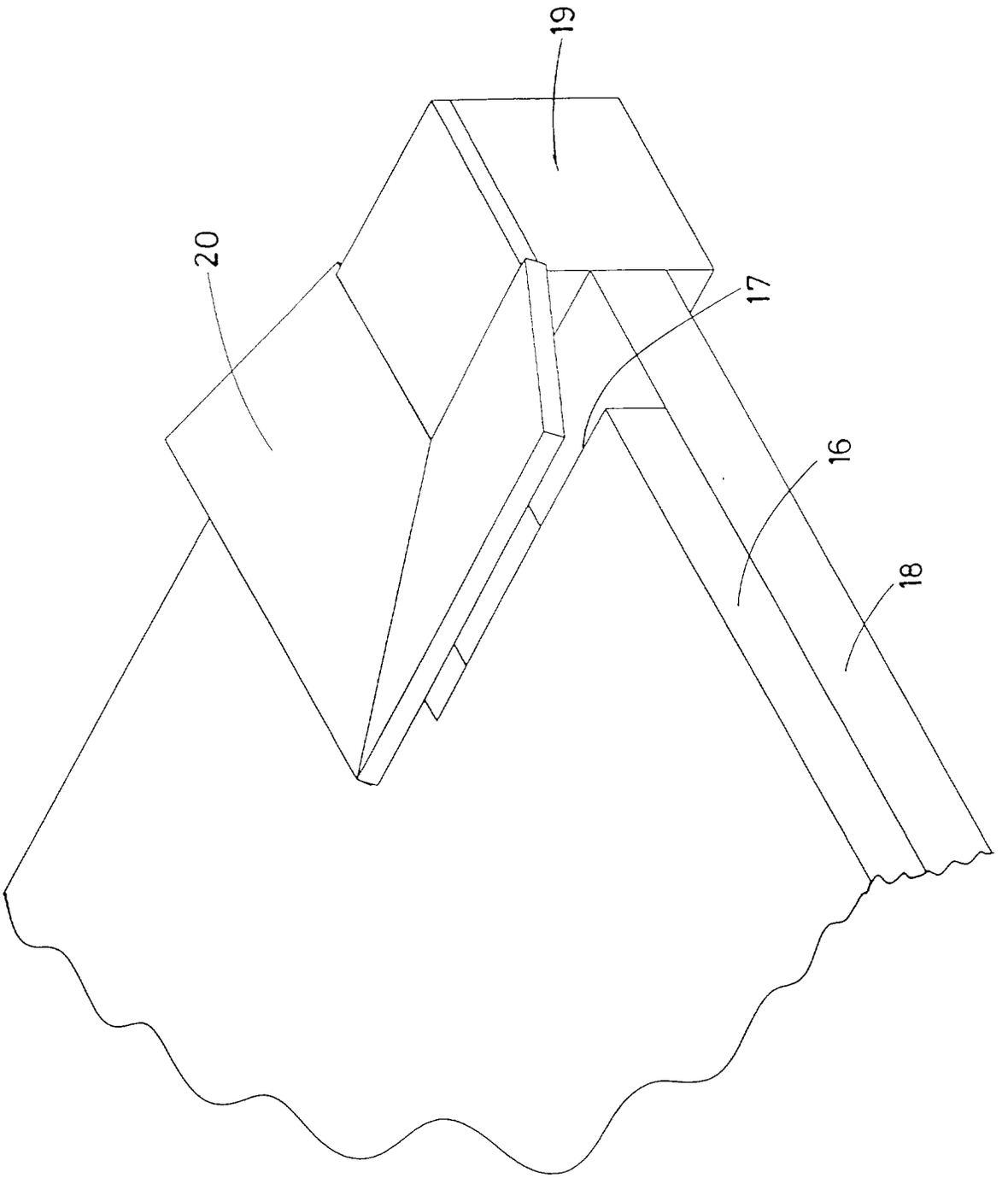


FIG. 10

FIG.11



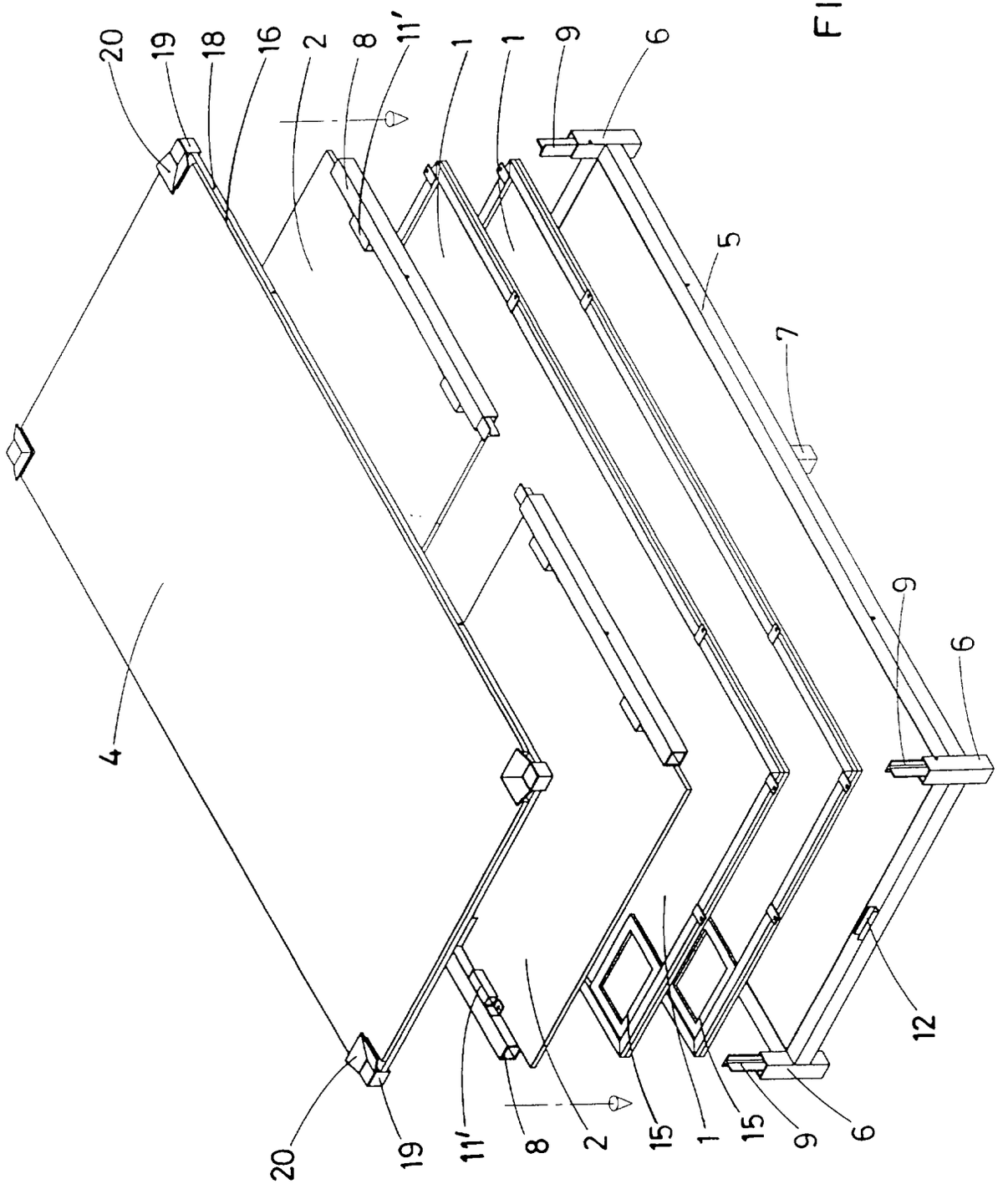


FIG.12

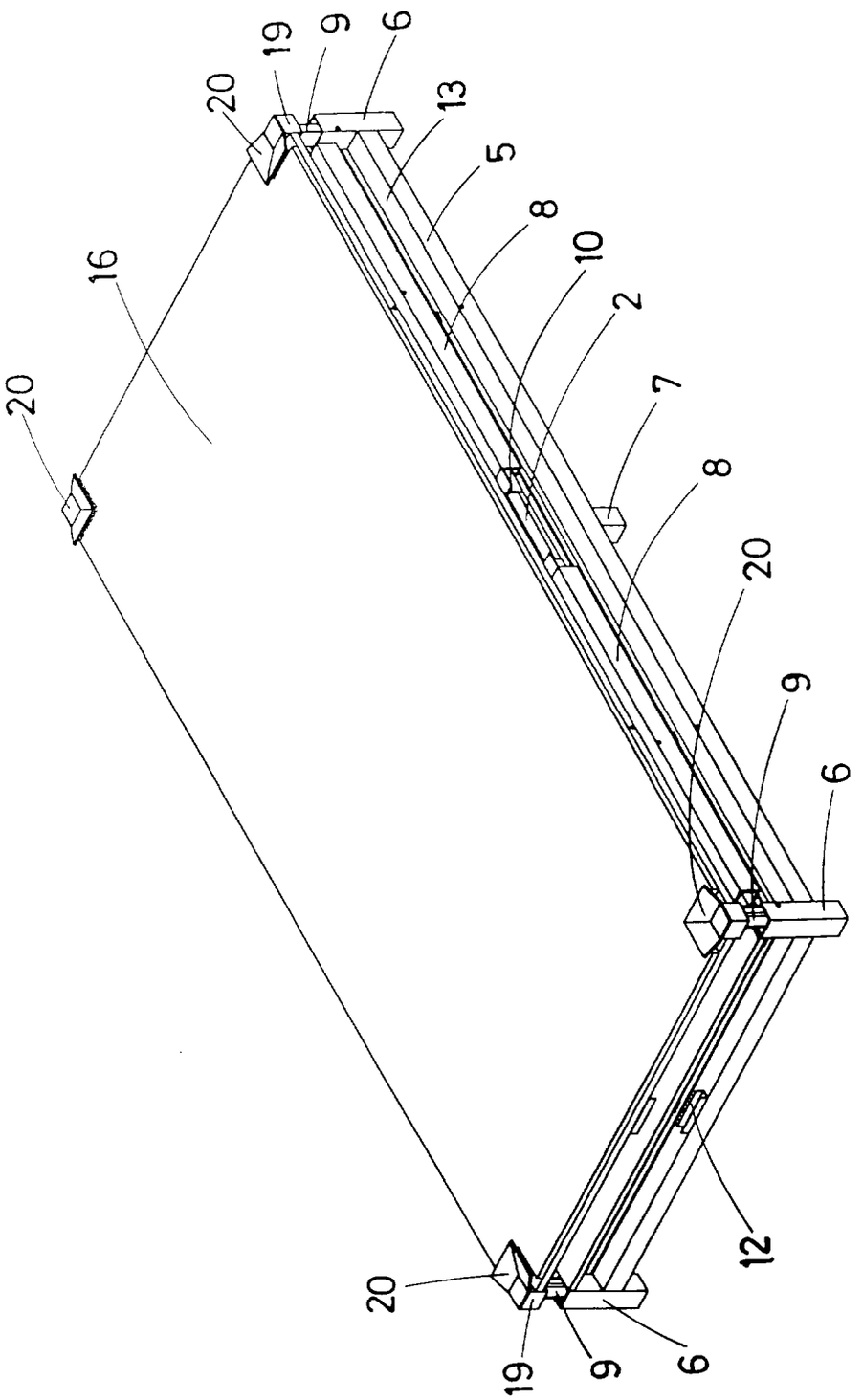


FIG. 13

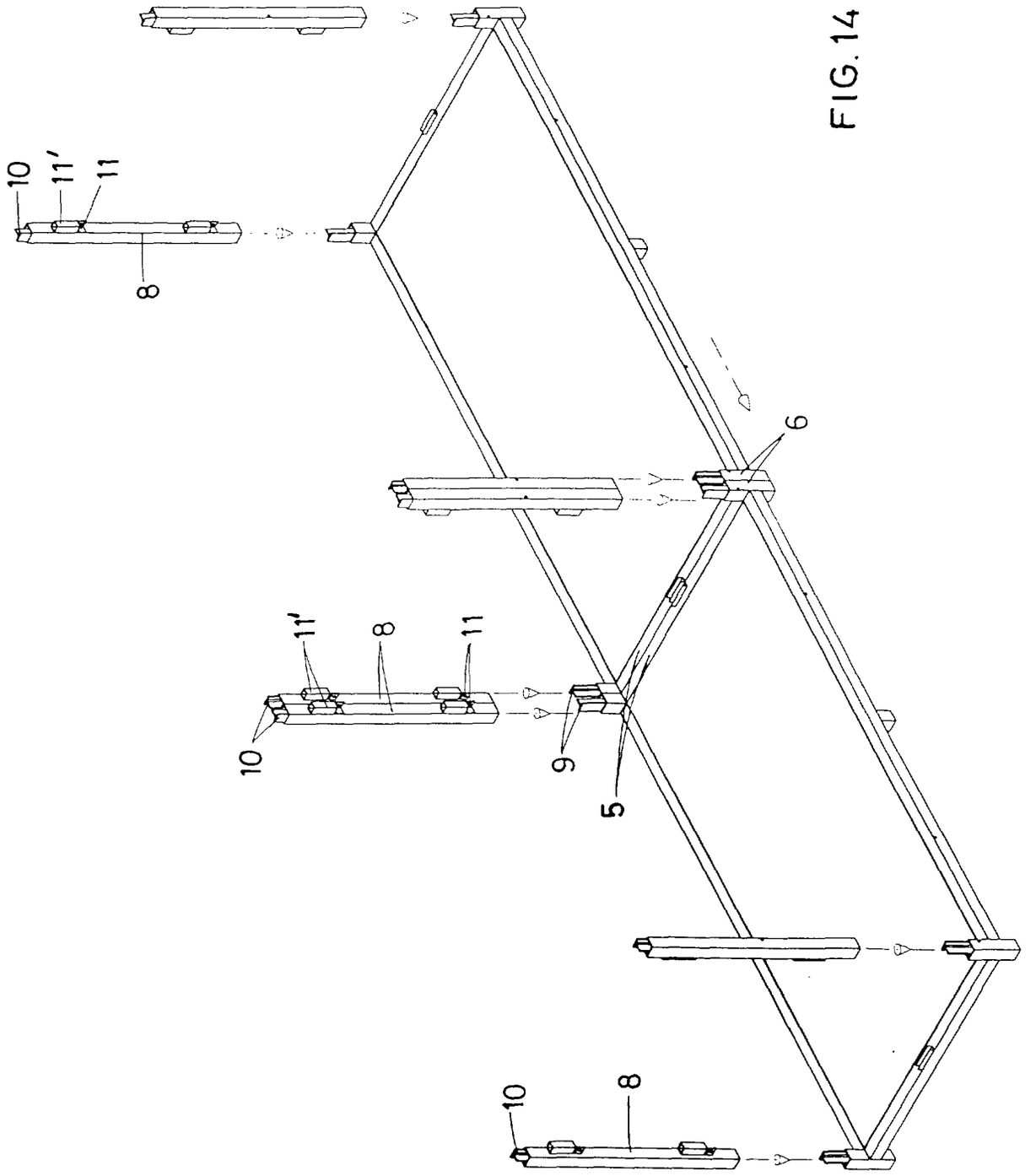


FIG. 14

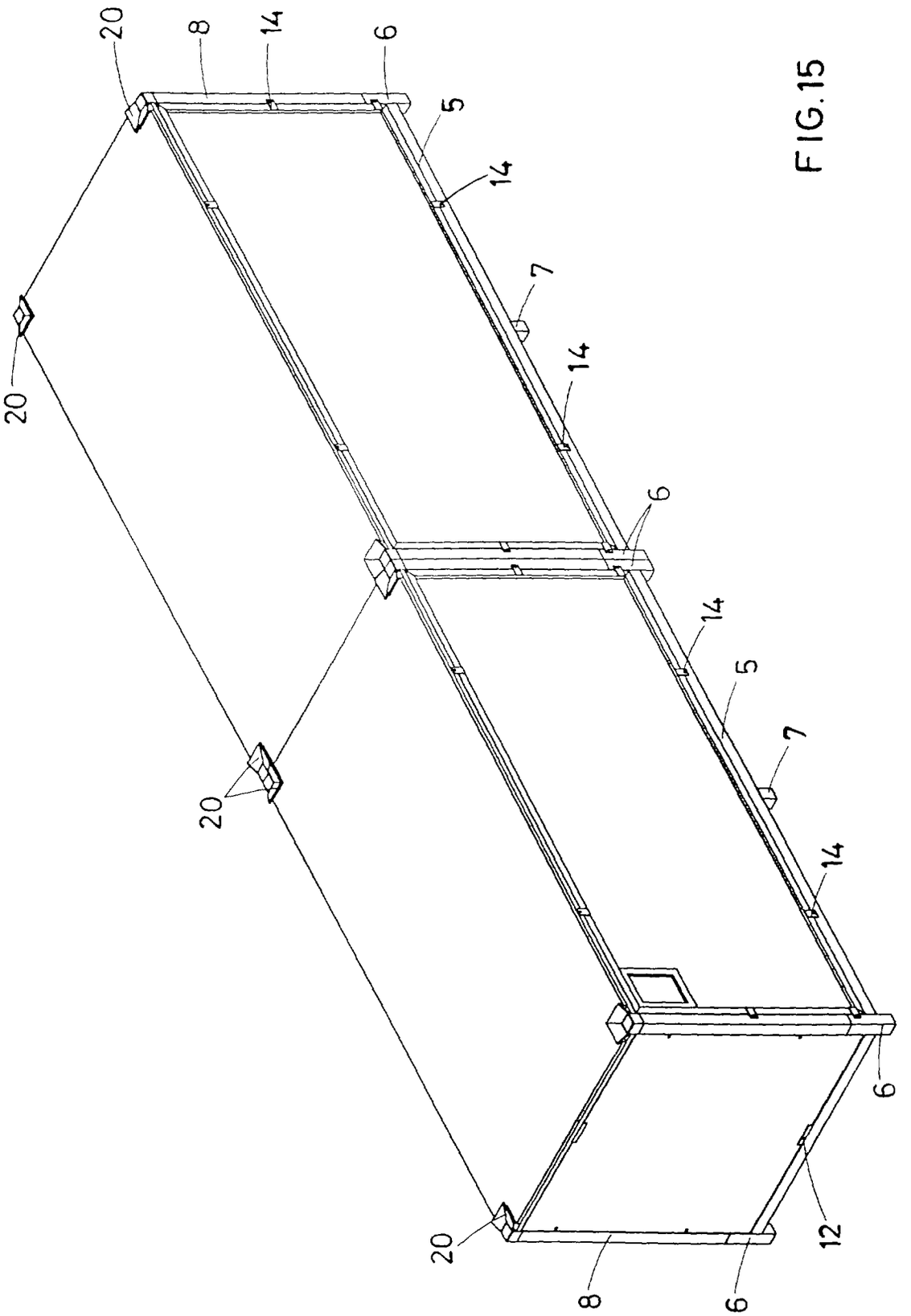
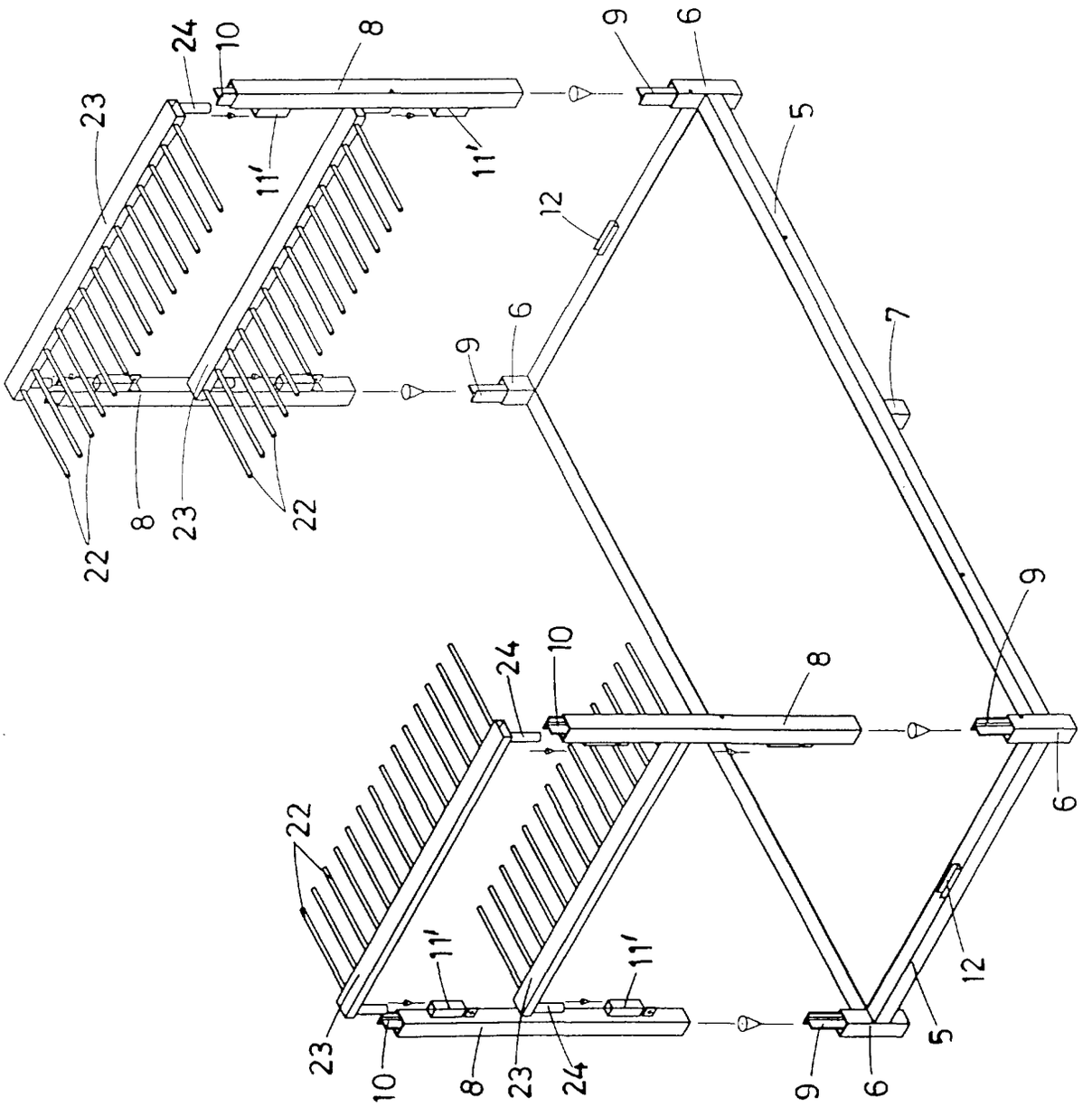


FIG.15

FIG.16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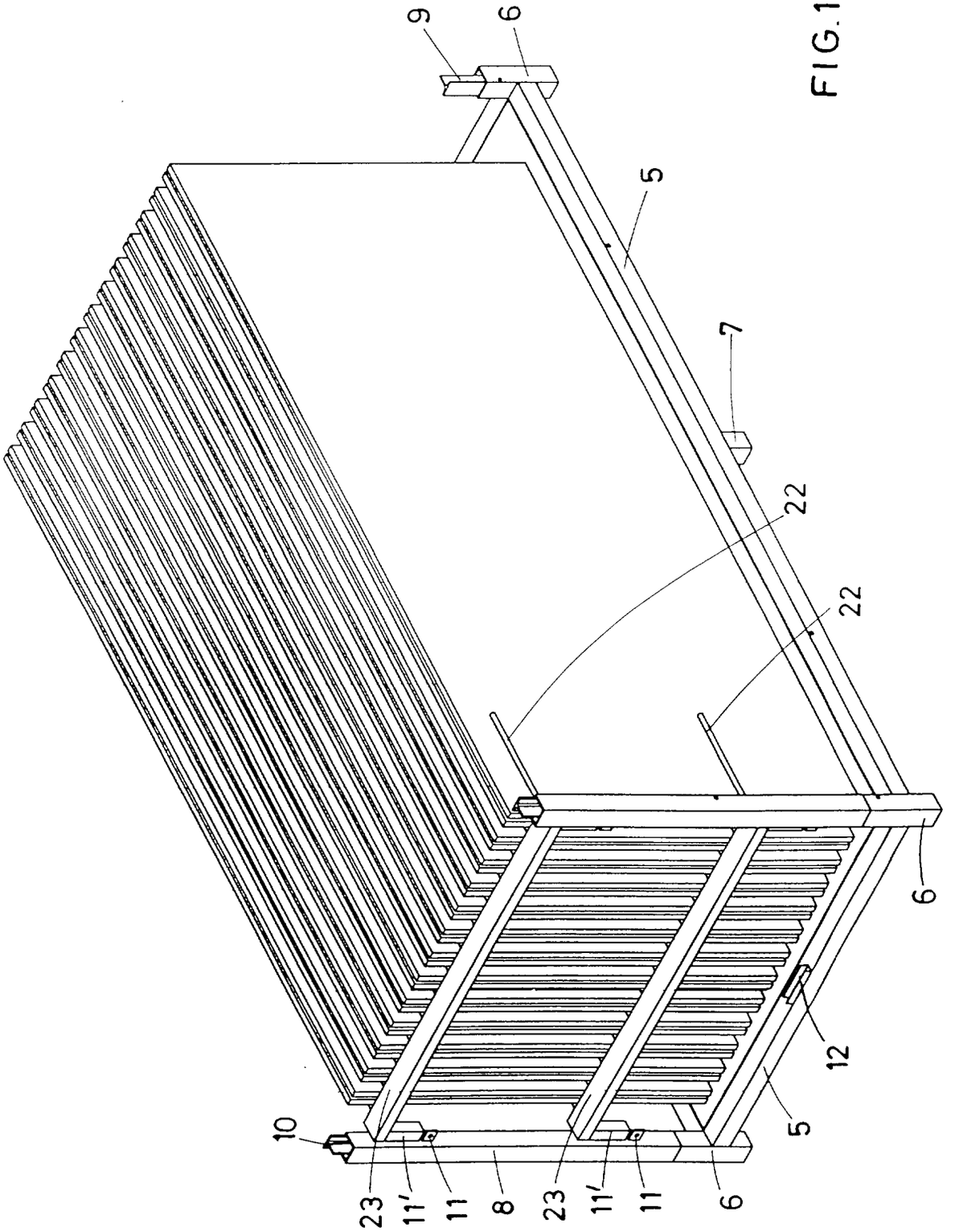

FIG.17