

REP
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| 71 | SHELTER TRUST | | |

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| FULL NAME(S) OF INVENTOR(S) | |
| 72 | ENGLISH, Steven |

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| 54 | COLLAPSIBLE TENT OR MARQUEE |

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FOR ABSTRACT SEE THE NEXT SHEET

**ABSTRACT (Class E04H)**

A collapsible marquee frame assembly is provided comprising a plurality of subframe assemblies (1) wherein each of the subframe assemblies
5 comprises a pair of uprights (2) and at least two operatively transverse roof supporting beams (4) with the uprights and beams being hingedly connected to each other so as to have a folded condition in which the uprights and beams are nested, and an open condition in which the uprights are generally parallel to each other and are spaced apart with the beams collectively
10 defining a roof span between the uprights. A plurality of tie-beams (8, 15) are configured to hold adjacent open subframes in spaced relationship relative to each other in the operative condition. The frame assembly comprises at least three subframe assemblies with outer subframe assemblies being movable towards and away from a central subframe (2a)
15 assembly during collapse and erection of the marquee frame assembly; preferably along tracks provided for the purpose and forming part of the frame assembly.

(Figure 4 for publication)

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FOR PUBLICATION

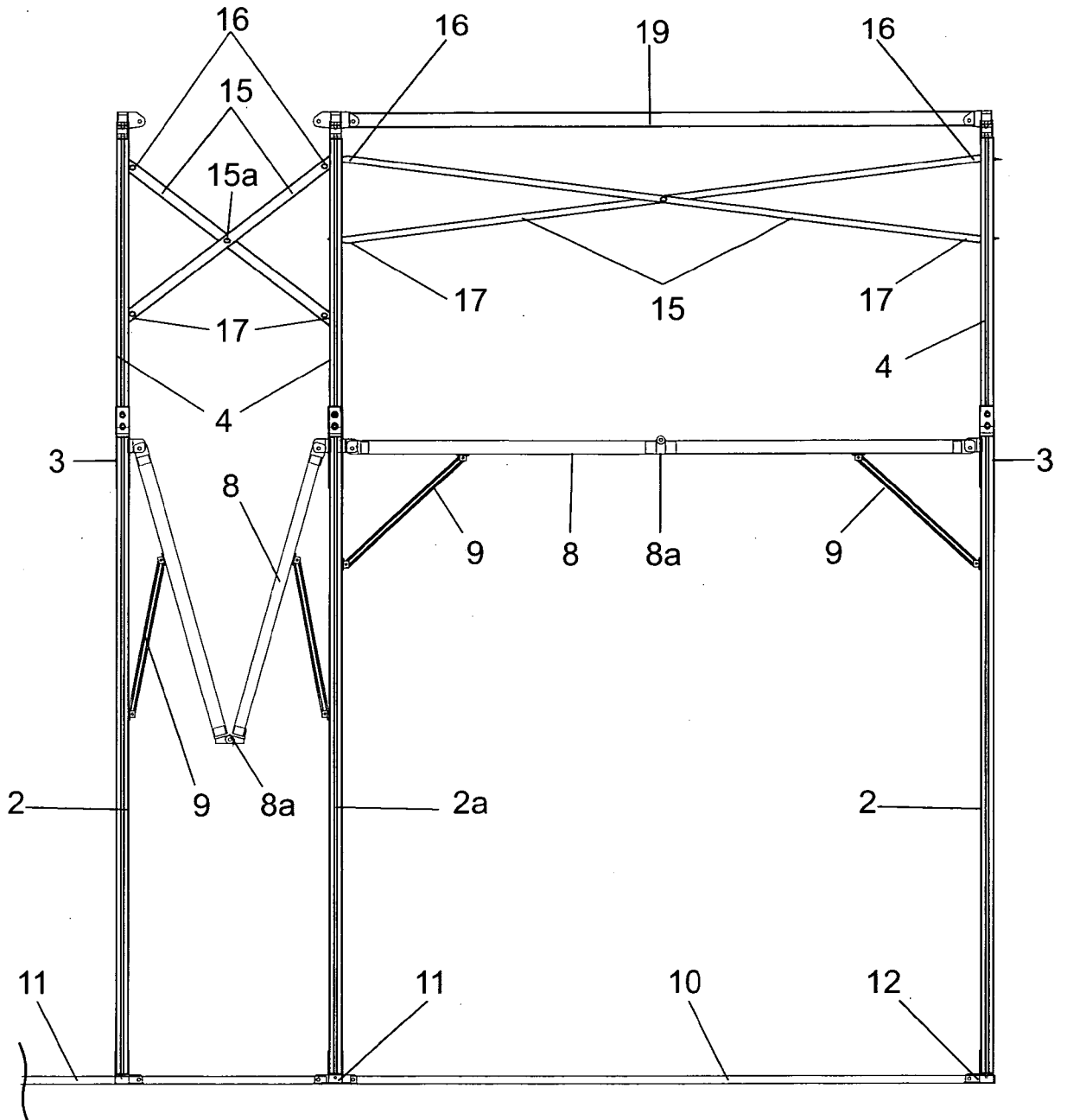


Figure 4



COLLAPSIBLE TENT OR MARQUEE

5 FIELD OF THE INVENTION

This invention relates to a collapsible tent or marquee (herein termed a marquee), especially, but not exclusively, a large format marquee of the general type widely used as temporary shelter for social, promotional or other functions and events. More particularly, the invention relates to a marquee that can be relatively easily and quickly erected and dismantled as compared to conventional marquees.

15 BACKGROUND TO THE INVENTION

Conventional marquees typically comprise a framework that is composed of a series of operatively upright and transverse frame members that are attached to each other at predetermined nodes by quick coupling arrangements.

20

Accordingly, in its disassembled form, such a marquee consists of a multitude of individual frame members that must be suitably arranged so as to be conveniently transported. Erection and disassembly of such a framework is not only tedious but also extremely time-consuming. With a multitude of different parts, the possibility also exists that one or more components, in particular key components, may become lost or misplaced thereby delaying or even preventing proper erection of the frame.

25

The venue at which a marquee is usually utilised is typically an area that may be required for other purposes at other times and the period of time made available for the erection and disassembly of a marquee is therefore often limited.

30

Numerous different forms of small format collapsible tents have been proposed in the past and are available on the market but the configuration of the associated collapsible frame is usually inappropriate to a somewhat larger size of tent of the general nature of a marquee.

5

OBJECT OF THE INVENTION

It is one object of this invention to provide a marquee frame that can be more easily and swiftly erected and collapsed when compared to the multi-
10 component prior art marquees outlined above. It is another object of the invention to provide a marquee including such a frame and a cover that can, at least in particular circumstances, be erected together.

SUMMARY OF THE INVENTION

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In accordance with this invention there is provided a collapsible marquee frame assembly comprising a plurality of subframe assemblies wherein each of the subframe assemblies comprises a pair of uprights and at least two operatively transverse roof supporting beams with the uprights and beams
20 being hingedly connected to each other so as to have a folded condition in which the uprights and beams are nested and are generally parallel to each other, and an open condition in which the uprights are generally parallel to each other and are spaced apart with the beams collectively defining a roof span between the uprights and wherein releasable locking means are
25 provided for locking the uprights and beams one to the other in their positions corresponding to the open condition of the subframe, and wherein the uprights and beams of adjacent subframe assemblies have hingedly attached thereto at least one end of each of a plurality of tie-beams that are configured to hold adjacent open subframes in spaced relationship relative to each other
30 in the operative condition of the marquee frame assembly, the collapsible marquee frame assembly being characterised in that it comprises at least three subframe assemblies with outer subframe assemblies being movable

towards and away from a central subframe assembly during collapse and erection of the marquee frame assembly.

Further features of the invention provide for the operatively lower ends of the
5 uprights to be provided with skids, rollers, casters or the like adapted to be
slid longitudinally along a track provided for the purpose in order to move the
lower ends of the uprights of one subframe relative to another in the upright
orientation of a subframes; for the track to serve as a lower tie-beam for
spacing the operatively lower ends of the uprights of adjacent subframe
10 assemblies in the erected condition of the marquee frame assembly; for a
marquee frame assembly module to comprise three subframe assemblies as
defined above in which instance a central locking base unit is preferably
secured to the operatively lower end of the central upright with the central
locking base unit serving to hold the lower ends of the other two uprights in
15 an aligned condition when the collapsible frame assembly is in its folded
condition and serving as a base to which elongate track sections are
attached in the operative position; and for the track sections to be either
removable from the central locking base unit or alternatively to be hingedly
attached to it so as to be pivotally movable between a collapsed position in
20 which the track section extends parallel to the uprights in the folded condition
and an operative position in which they extend generally horizontally with the
uprights extending vertically with one or more uprights supported thereon.

Still further features of the invention provide for an upper-tie-beam assembly
25 to be hingedly associated with at least the operatively upper end regions of
adjacent uprights with the upper tie-beam assembly either comprising a
single tie-beam preferably having a central elbow or pivot point midway along
its length for enabling the upper tie-beam to collapse to a nested
configuration together with the folded subframe assemblies in the collapsed
30 condition of the marquee frame in which instance each part of the upper tie-
beams preferably has a stay associated with it with one end of the stay being
pivotally attached to the tie-beam and the other end of each stay being

slidable longitudinally along the length of the upright and lockable in a position corresponding to the erected condition of the marquee frame; or, in the alternative, for the upper tie-beam assembly to comprise a pair of crossed tie-beams pivotally attached to each other centrally with an upper
5 end of each being pivotally attached towards the upper end an upright and the lower ends being slidable along the length of the adjacent upright.

Yet further features of the invention provide for beam separating tie-beams to be arranged in pairs thereof with the tie-beams of a pair being pivotally
10 secured to each other centrally of their length with corresponding ends of each pair pivotally attached one to each of two adjacent beams at one end with the other ends being longitudinally slidable along the length of the roof supporting beams; for the roof supporting beams to assume the form of symmetrical rafters operatively joined at an apex centrally of the width of the
15 subframe; for the lower regions of the beams to be connected by means of a generally horizontal tie-beam assembly that may either be foldable with the subframes or preferably removable from them; for the slidable ends of each of the crossed tie-beams to optionally have releasable locking means for locking the ends in their operative open condition; and for the subframe
20 assemblies to have stops secured thereto for supporting one subframe assembly relative to another in the generally horizontal orientation.

The invention also provides a method of erecting a collapsible frame assembly as defined above comprising opening the sub-frame assemblies
25 from the folded condition to an open condition in a generally horizontal plane with a result that the open subframes are stacked one on top of the other in generally horizontal planes, lifting the beams to rotate the open subframes from a generally horizontal position to a generally vertical condition with the means uppermost, and moving the subframes relative to each other to space
30 them apart and hold them in their spaced relationship by means of the various types of tie-beams.

Further features of the method defined above provide for any operatively horizontal tie-beam assembly connecting opposite end regions of the two beams of a subassembly to be operatively installed whilst the subframe assemblies horizontal; for a composite marquee frame to be erected by erecting two or more marquee frame modules as defined above in suitable relationship relative to each other to provide an enlarged modular marquee frame assembly; and for adjacent subframes of adjacent modules to be spaced apart and interconnected by means of stays.

10 In a preferred implementation of the invention in instances in which the end of a stay is movable along the length of an upright or beam, the end that slides relative to the upright or beam may have automatically engagable catch arrangements for arresting the movement of the stay end in the required erected position, such catch arrangements being manually
15 releasable.

It is also within the scope of this invention to provide the subframe assemblies with additional braces and stays in order to provide adequate rigidity to the erected frame assembly. Clearly the necessity or otherwise for
20 additional braces and stays to be provided will depend largely on the roof span of the open frame assembly and the strength of the material employed for the beams and uprights. It is envisaged that aluminium extrusions, typically of generally rectangular shape in cross-section with suitable grooves for confining fixed and slidable fittings thereto, will be most suitable for use in
25 the manufacture of the uprights and beams and it is also envisaged that hinges and fittings would conveniently be made of optionally fibre reinforced injection moulded plastics material.

It will be understood that the frame assembly described above will be
30 provided with any required type of cover either in the form of a roof with or without removable sidewalls or a roof with attached sidewalls that is made to fit over the frame assembly in substantially conventional manner. The cover

may be installed after the frame has been erected but it is preferred that the cover, at least for the roof, be attached to the marquee frame so that it automatically opens with the frame when it is erected from its collapsed inoperative condition to its erected operative condition.

5

In order that the above and other features of the invention may be more fully understood one embodiment of the invention will now be described with reference to the accompanying drawings.

10 **BRIEF DESCRIPTION OF THE DRAWINGS**

In the drawings:-

15 Figure 1 is a schematic end elevation of one embodiment of marquee frame module according to the invention in the erected condition illustrating, in effect, one subframe assembly;

 Figure 2 is the same as Figure 1 with the frame partially collapsed;

20 Figure 3 is the same as Figure 1 with the frame fully collapsed;

 Figure 3a illustrates the tie-beam assembly in its folded condition;

25 Figure 4 is a schematic side elevation of the marquee frame module showing one adjacent pair of subframes in their operative spacing relative to each other and the other partially collapsed;

30 Figure 5 is the same as Figure 4 with the three subframe assemblies in a partially collapsed condition;

- Figure 6 is same as Figure 4 with the marquee frame in a fully collapsed condition;
- 5 Figure 7 is a schematic isometric view showing the lower ends of the three uprights of the marquee frame module;
- Figure 8 is a schematic isometric view illustrating the second track unit in its operative horizontal position;
- 10 Figure 9 is an enlarged isometric view showing the lower end of a movable upright;
- Figure 10 is a schematic side view of the central locking base unit of this embodiment of the invention;
- 15 Figure 11 is a detailed perspective view from the top of a part of the erected frame;
- Figure 12 is a schematic side view showing two modules of three subframes each interconnected in spaced relationship to form an extended marquee; and,
- 20 Figure 13 is a schematic side elevation showing an alternative tie-beam arrangement for spacing the upper ends of the uprights in the erected condition.
- 25

DETAILED DESCRIPTION WITH REFERENCE TO THE DRAWINGS

In the embodiment of the invention illustrated in the drawings, and with particular reference to Figures 1 to 3, a collapsible marquee frame assembly
30 assumes the form of a single module comprising three subframe assemblies (1) each of which comprises a pair of uprights (2) interconnected at their

operatively upper ends (3) by two transverse roof supporting beams (4) that are hingedly connected to each other at an apex (5) in the operative position to provide a gabled roof configuration of low pitch. The hinged apex is such that the apex folds inwards so that the uprights and beams are all juxtaposed and generally parallel to each other in the folded condition as will be quite
5 apparent from a reference to Figures 2 and 3. A single module may typically have a size of about 5 by 6 metres, for example.

Each subframe assembly thus has a folded condition in which the uprights
10 and beams are nested next to each other and are generally parallel to each other, and an open condition in which the uprights are generally parallel to each other and are spaced apart by the beams that together define a pitched roof span between the uprights.

15 Diagonally extending stays (6) are provided for locking the beams and associated uprights in the operative position. The end (7a) of the stay that is attached to a beam is hingedly attached whilst the other end (7b) is attached so that it is longitudinally slidable relative to the upright as the frame is collapsed to its folded condition. Locking means in the form of spring loaded
20 automatically engaging and manually releasable catches are provided for locking the stays in their positions corresponding to the open condition of the subframe. Screw threaded locking means can also be used.

The upper ends of the uprights (2) of adjacent subframes are interconnected
25 by means of upper tie beams (8) that each have a hinged elbow (8a) so that the upper ends of the uprights, in the erected condition, are held in fixed spaced relationship by the relevant upper tie beam that is then straight, as illustrated on the right-hand side of Figure 4. The upper tie beams have similar stays (9) to those described above to ensure that the tie beam (8), in
30 each instance, extends at right angles to the upper end of the upright in the erected condition and lock them into position.

The lower ends of the uprights are held in their operative spaced positions by elongate track elements (10) that serve as lower tie-beams each of which is releasably attached at one end to a central locking base unit (11) fixed to the bottom end of each upright of the central subframe assembly (2a) and having
5 at its free end a locating and latching arrangement (12) for cooperation with the associated lower end of the relatively movable uprights. The uprights each have a foot (13) that includes a roller (14) for cooperation with the track element. This arrangement is most clearly shown in Figures 7 to 10.

10 Thus the track elements maintain the required spacing of adjacent uprights at the bottom end thereof whilst the tie beams (8) maintain the spacing at their upper ends in the erected condition. In the collapsed condition of the frame, catches (11a) serve to hold the lower ends of the two outer uprights in association with the central upright by way of the central locking base unit
15 (11). This assists in maintaining the three frames together during the initial opening preparatory to erection of the frame in the manner described below.

Reverting to the erected condition of the frame, the corresponding beams of each pair adjacent beams, on the other hand, are held in their spaced
20 relationship by means of a beam separating tie-beam assembly (15) comprising a pair of tie beams that are pivotally secured to each other centrally of their length, as indicated by numeral (15a). The corresponding ends (16) of each pair are pivotally attached one to each of the beams of two adjacent subassemblies with the other ends (17) being longitudinally slidable
25 lengthwise of the roof supporting beams. Locking means that are manually releasable, as described above, may be provided for locking the slidable ends of the tie beams in their positions corresponding to the erected condition of the frame should this be found to be necessary or advantageous. In the present embodiment of the invention, however, it has not been found
30 to be necessary so that no such locking means are provided.

In order to further stabilise the roof defining part of the frame in the erected condition, a generally horizontal, removable, tie-beam assembly (18) is provided to interconnect the lower regions of the roof supporting beams (4) downwards of the apex (5). In this embodiment of the invention the tie-beam assembly has two generally horizontal limbs (18a) pivotally attached to the pivot points by means of which the upper ends (7a) of the stays (6) are attached to the roof supporting beams (4), as illustrated particularly in Figures 1 and 11). The generally horizontal tie-beam limbs (18a) are pivotally attached to a central hinge member (18b) to which there is also pivotally attached the lower end of a generally vertical limb (18c) of the tie-beam assembly. Figures 1 illustrates, in addition to its installed position of the tie-beam assembly, the tie beam assembly in dotted lines removed from the frame itself. Figure 3a illustrates the tie-beam assembly in a folded condition for transport and storage purposes.

15

The basic frame module in the erected condition is completed by a removable or hinged ridge beam (19) extending between the apexes (5) of adjacent preferably provided in order to properly support a cover along the ridge of the pitched roof.

20

Finally, any suitable stops may be provided for the purpose of supporting one subframe assembly relative to another when the entire frame assembly is in its collapsed and generally horizontal position for transport or storage purposes.

25

In order to erect a module of a collapsible frame assembly as described above, the sub-frame assemblies are generally unfolded in unison from the collapsed condition to an open condition in a generally horizontal plane on a suitable support surface that is to serve as a floor of a marquee with the open subframes stacked one on top of the other and supported by way of any necessary cooperant stops in generally horizontal planes. At this stage the transverse stay assemblies (18) are installed on the roof beams so that they

30

adopt their final operative positions relative to each other as described above.

5 The roof beam end of the whole assembly is then lifted and rotated about the lower ends of the uprights from a generally horizontal condition to a generally vertical condition.

10 The elongate track elements are then installed so that they lie on the ground and extend in a direction at right angles to the width of the individual sub-frames. The two outer sub-frames are then released from the central locking base unit (11) and moved with the uprights supported through the rollers (14) on the elongate track elements (10) to their final positions in which the foot at the lower end of each of the movable uprights is releasably locked in position to the catch arrangement (12) carried at the free end of the track element.

15 During this procedure the hinged tie beams (8) move to their NBpositions corresponding to the erected condition of the frame and (8) becomes locked in their final positions. Any ridge beams (19) can then be installed or unfolded to their operative condition.

20 Depending on design considerations, it may be found that movement of the subframes to simultaneously achieve movement of the sliding ends of the stays and tie-beam's is somewhat difficult. In order to facilitate this movement, suitable tension cords (20) may be attached to the sliding ends of the tie-beams and stays and run over suitable pulleys (21) to a position near

25 the apex of each subframe. The application of tension to those cords emanating from the apex may be used to relieve any resistance to the tie beams and stays adopting their erected positions as the subframes are moved apart whilst supported on the tracks.

30 As indicated above, a generally flexible cover can be permanently carried by the frame and thereby automatically become operative when the frame is erected. Alternatively, the cover can be installed on the frame subsequent to

its erection. As a general rule, it is envisaged that the frame and cover will be supplied in the first place separately and that the cover may be installed on the frame before it is erected and for the first time and thereafter left in position on the frame when it is collapsed and re-erected

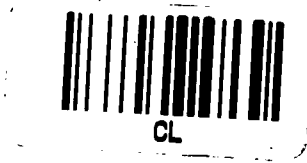
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As indicated above, a composite marquee frame may comprise two or more marquee frame modules of three subframe assemblies each as described above suitably located relative to each other to provide an enlarged marquee frame assembly. Indeed, it is considered advantageous, that in such an instance the adjacent subframes of two adjacent modules be spaced apart by a predetermined distance, say 2 meters, and various stays (22) (see Figure 12) be installed to maintain the spacing of the two subframes at the apex; at the upper ends of the uprights; and at the lower ends of the uprights.

15 One variation to the frame assembly described above that is presently being contemplated is to replace the interconnecting beams (8) that serve to separate the upper ends of the uprights in the erected condition with a pair of tie-beams (23) pivotally connected together at their centres and pivotally attached to the upper ends (24) of the uprights, as shown in Figure 13. The lower ends (25) of the tie beams are slidable longitudinally along the length of the uprights (26) and catches are provided automatically lock them in their operative position upon erection.

25 Numerous other variations may be made to the embodiment of the invention described above without departing from the scope thereof.

30



CLAIMS:

1. A collapsible marquee frame assembly comprising a plurality of subframe assemblies (1) wherein each of the subframe assemblies
5 comprises a pair of uprights (2) and at least two operatively transverse roof supporting beams (4) with the uprights and beams being hingedly connected to each other so as to have a folded condition in which the uprights and beams are nested and are generally parallel to each other, and an open condition in which the uprights are generally
10 parallel to each other and are spaced apart with the beams collectively defining a roof span between the uprights and wherein releasable locking means (9) are provided for locking the uprights and beams one to the other in their positions corresponding to the open condition of the subframe, and wherein the uprights and beams of adjacent
15 subframe assemblies have hingedly attached thereto at least one end of each of a plurality of tie-beams (8, 15) that are configured to hold adjacent open subframes in spaced relationship relative to each other in the operative condition of the marquee frame assembly, the collapsible marquee frame assembly being characterised in that it
20 comprises at least three subframe assemblies with outer subframe assemblies being movable towards and away from a central subframe (2a) assembly during collapse and erection of the marquee frame assembly.
- 25 2. A collapsible marquee frame assembly as claimed in claim 1 in which the operatively lower ends of the uprights are provided with skids, rollers, casters or the like (14) adapted to be slid longitudinally along a track section (10) provided for the purpose in order to move the lower
30 ends of the uprights of one subframe relative to another in the upright orientation of a subframes.

3. A collapsible marquee frame assembly as claimed in claim 2 in which the track serves as a lower tie-beam for spacing the operatively lower ends of the uprights of adjacent subframe assemblies in the erected condition of the marquee frame assembly.
- 5
4. A collapsible marquee frame assembly as claimed in either one of claims 2 or 3 in which the marquee frame assembly is in the form of a module that comprises three subframe assemblies as defined above in which instance a central locking base unit (11) is secured to the operatively lower end of the central upright (2a) with the central locking base unit serving to hold the lower ends of the other two uprights in an aligned condition when the collapsible frame assembly is in its folded condition and serving as a base to which elongate track sections are attached in the operative position.
- 10
5. A collapsible marquee frame assembly as claimed in claim 4 in which the track sections are removable from the central locking base-unit.
- 15
6. A collapsible marquee frame assembly as claimed in claim 4 in which the track sections are hingedly attached to the central locking base unit so as to be pivotally movable between a collapsed position in which the track section extends parallel to the uprights in the folded condition and an operative position in which they extend generally horizontally with the uprights extending vertically with one or more uprights supported thereon.
- 20
7. A collapsible marquee frame assembly as claimed in any one of the preceding claims in which an upper tie-beam assembly (8) is hingedly associated with at least the operatively upper end regions (3) of adjacent uprights.
- 25
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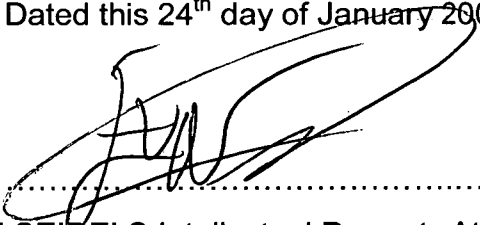
8. A collapsible marquee frame assembly as claimed in any one of the preceding claims in which beam separating tie-beams (15) are arranged in pairs thereof with the tie-beams of a pair being pivotally secured to each other centrally of their length with corresponding ends (16) of each pair pivotally attached one to each of two adjacent beams at one end with the other ends (17) being longitudinally slidable along the length of the roof supporting beams.
9. A collapsible marquee frame assembly as claimed in any one of the preceding claims in which the roof supporting beams assume the form of symmetrical rafters operatively joined at an apex (5) centrally of the width of the subframe.
10. A collapsible marquee frame assembly as claimed in claim 9 in which the lower regions of the beams are connected by means of a generally horizontal tie-beam assembly (18) that may either be foldable with the subframes or removable from them.
11. A collapsible marquee frame assembly as claimed in any one of the preceding claims in which slidable ends of each of the tie-beams has releasable locking means for locking the ends in their operative open condition.
12. A collapsible marquee frame assembly as claimed in any one of the preceding claims in which a cover is attached to the frame assembly such that the frame assembly may be collapsed and the erected with the cover in situ on the frame.
13. A collapsible marquee frame assembly substantially as herein described and exemplified with reference to Figures 1 to 11 of the accompanying drawings, or as modified and described with reference to Figure 13.

14. A method of erecting a collapsible frame assembly as claimed in any one of the preceding claims comprising opening the sub-frame assemblies from the folded condition to an open condition in a generally horizontal plane with a result that the open subframes are stacked one on top of the other in generally horizontal planes, installing any operatively horizontal tie-beam assembly connecting opposite end regions of the two beams of a subassembly whilst the subframe assemblies are horizontal, lifting the beams to rotate the open subframes from a generally horizontal position to a generally vertical condition with the means uppermost, and moving the subframes relative to each other to space them apart and hold them in their spaced relationship by means of the various types of tie-beams that are present.

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Dated this 24th day of January 2008

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VON SEIDELS Intellectual Property Attorneys
for the applicant

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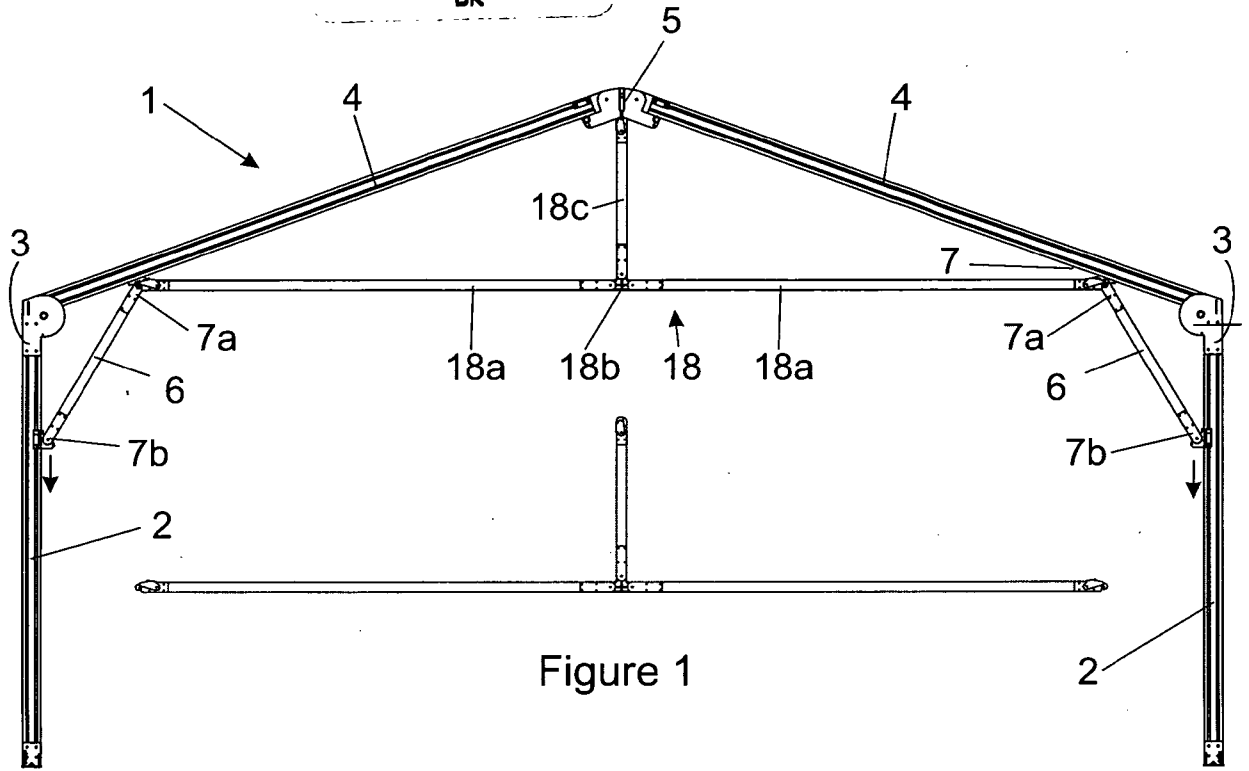
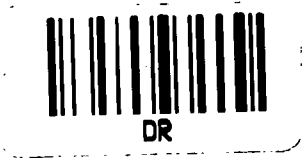


Figure 1

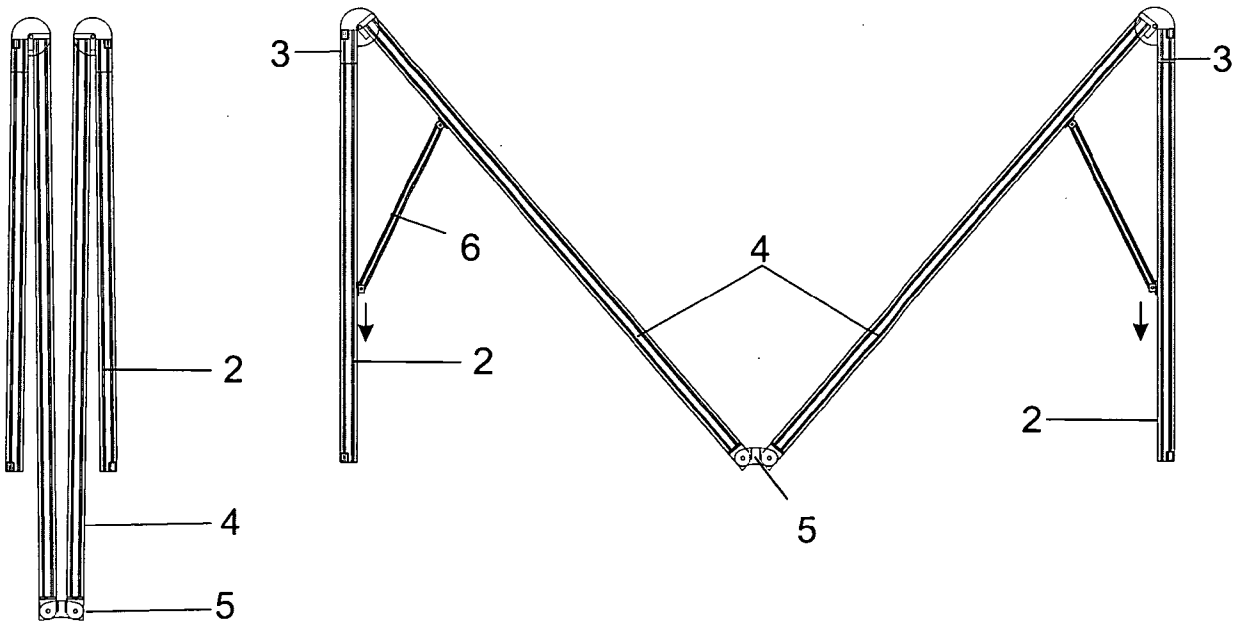


Figure 2

Figure 3

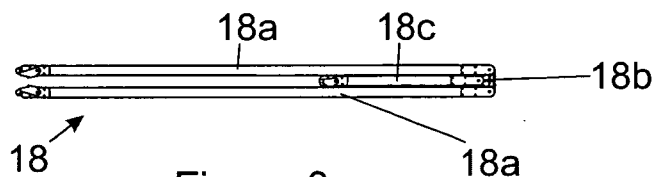


Figure 3a

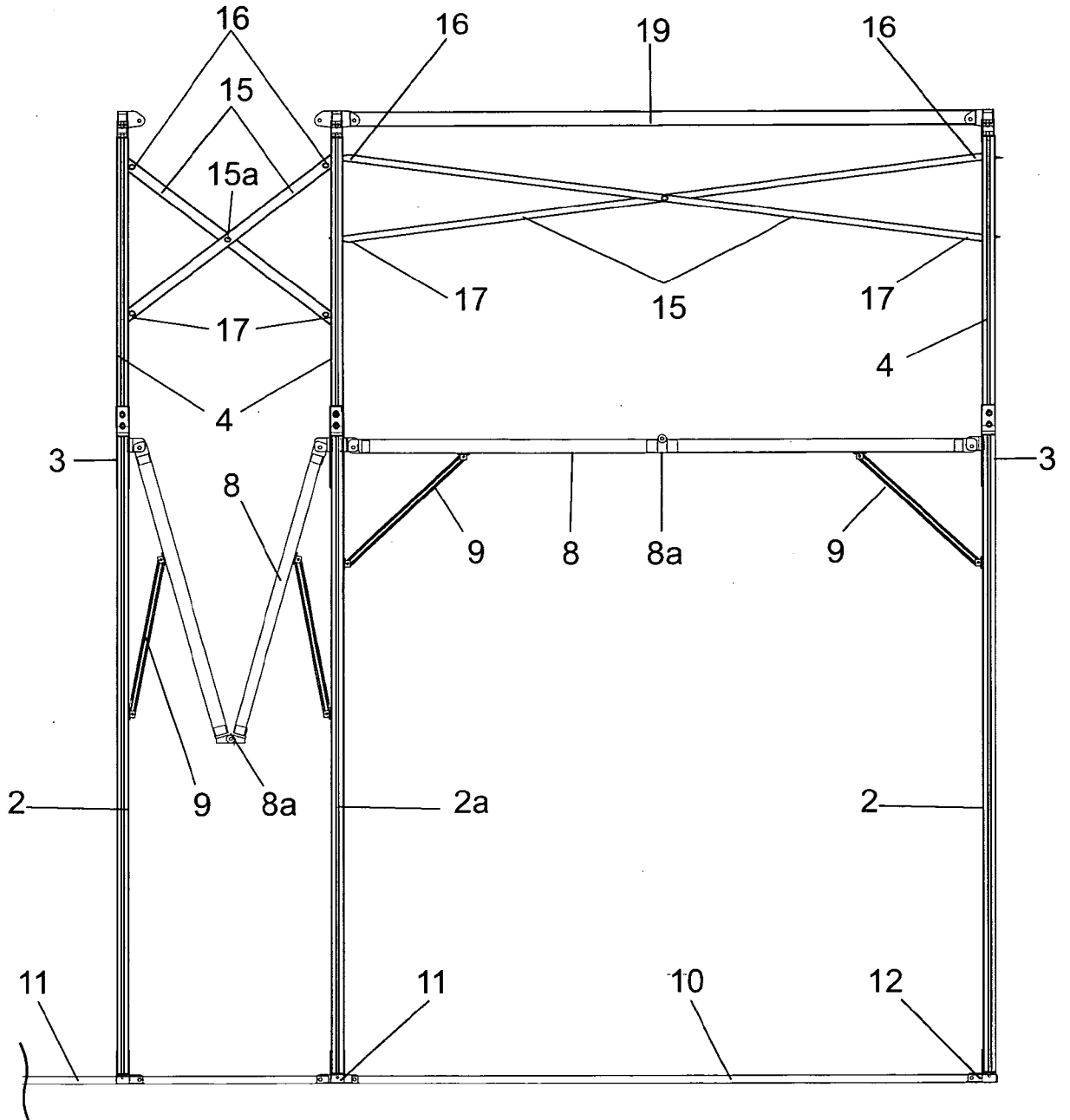


Figure 4

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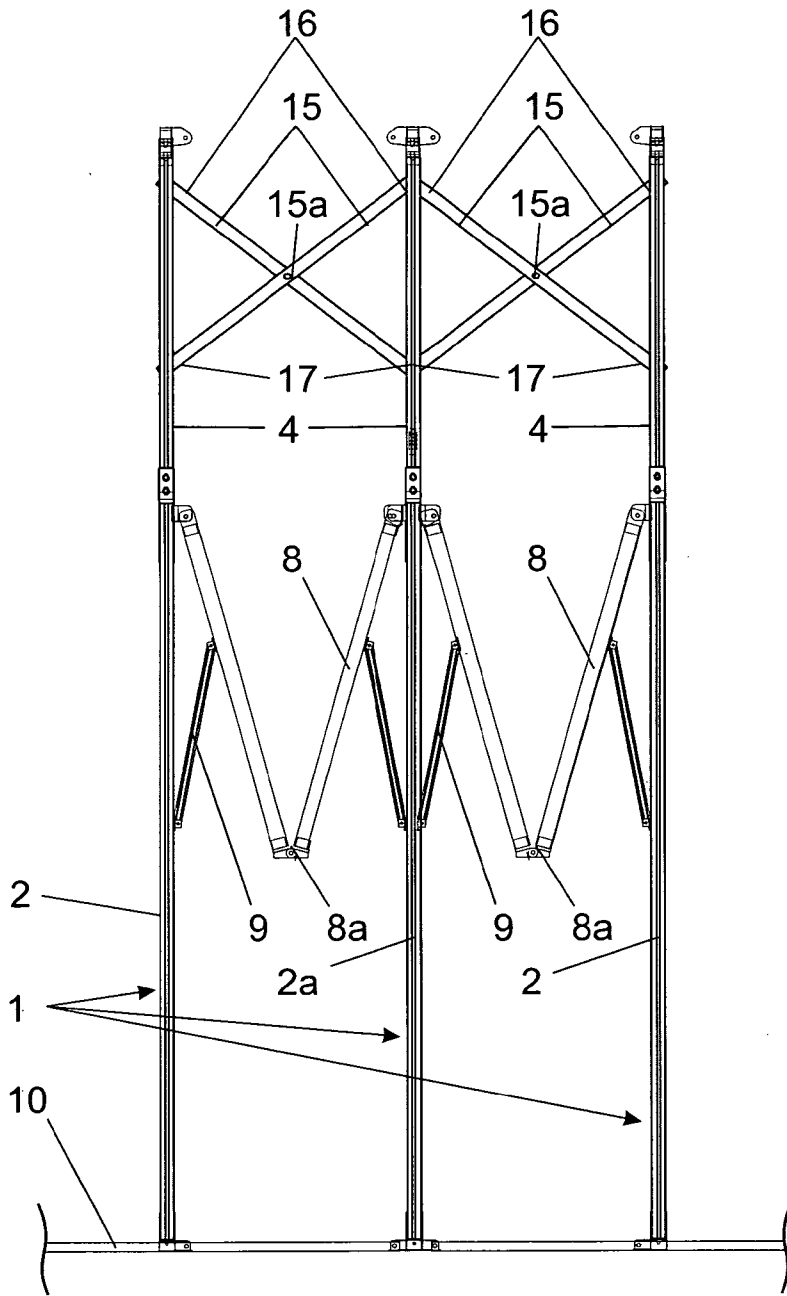


Figure 5

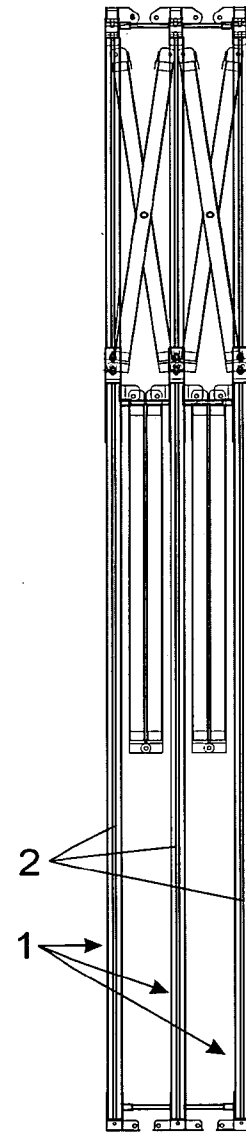


Figure 6

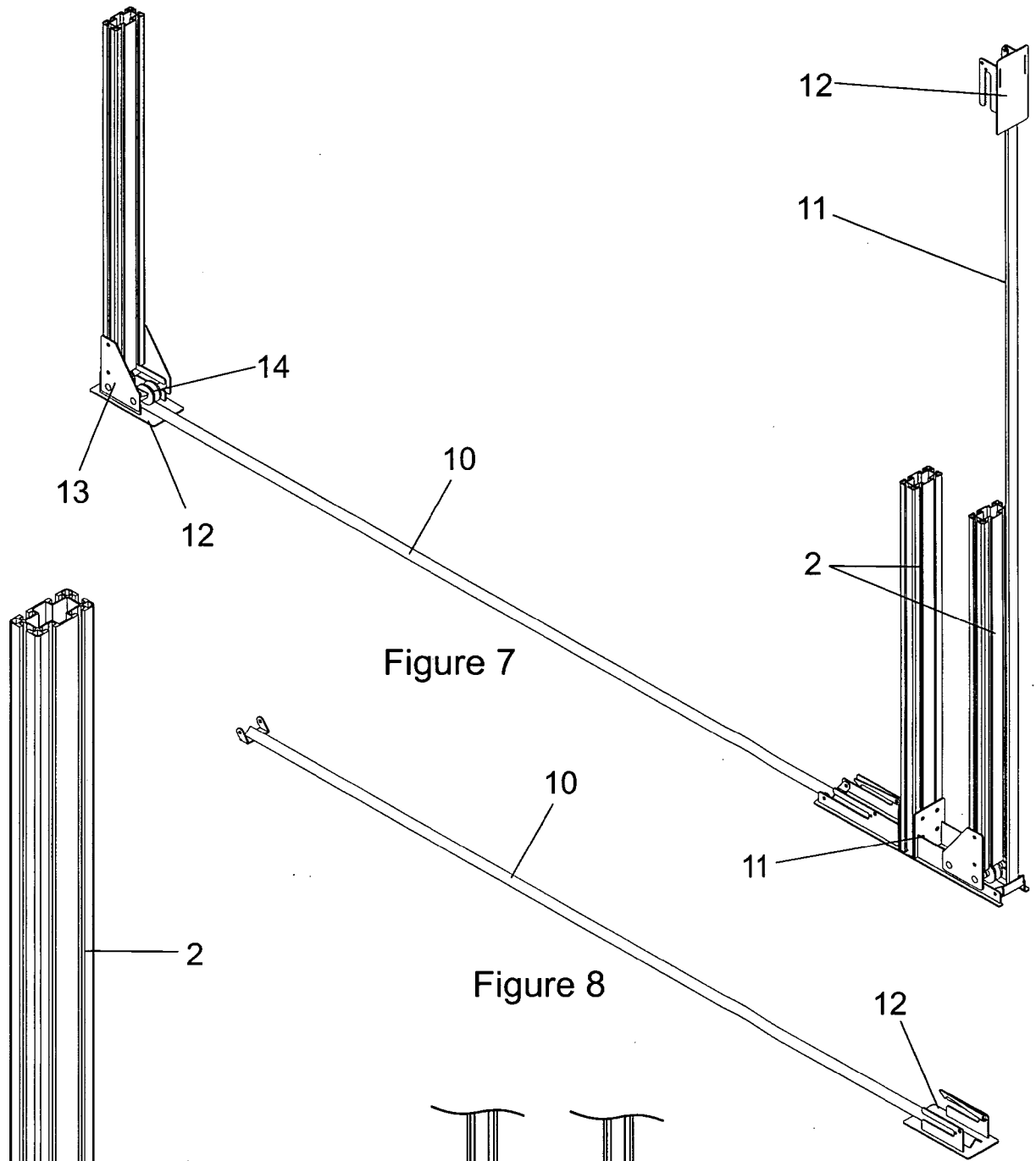


Figure 7

Figure 8

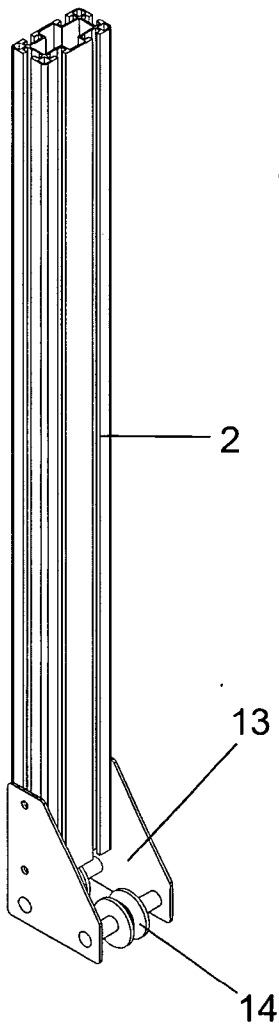


Figure 9

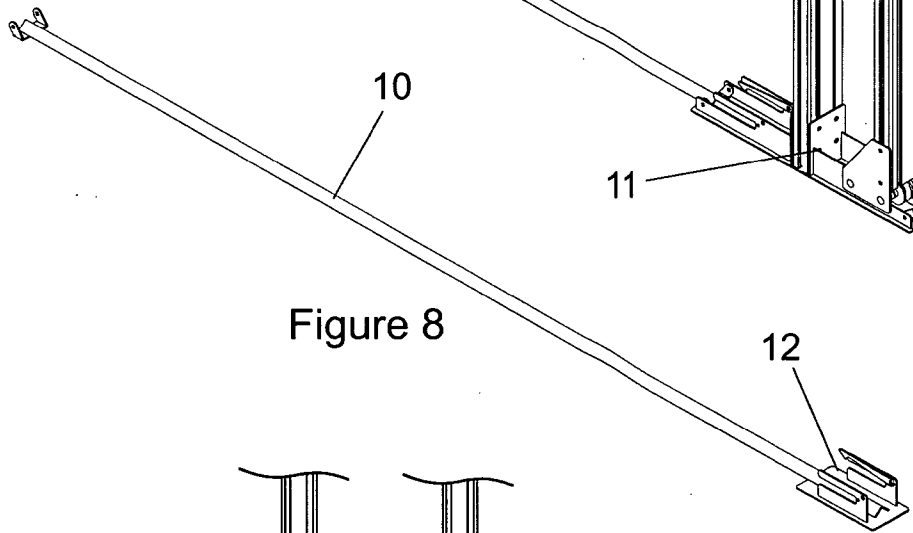



Figure 10


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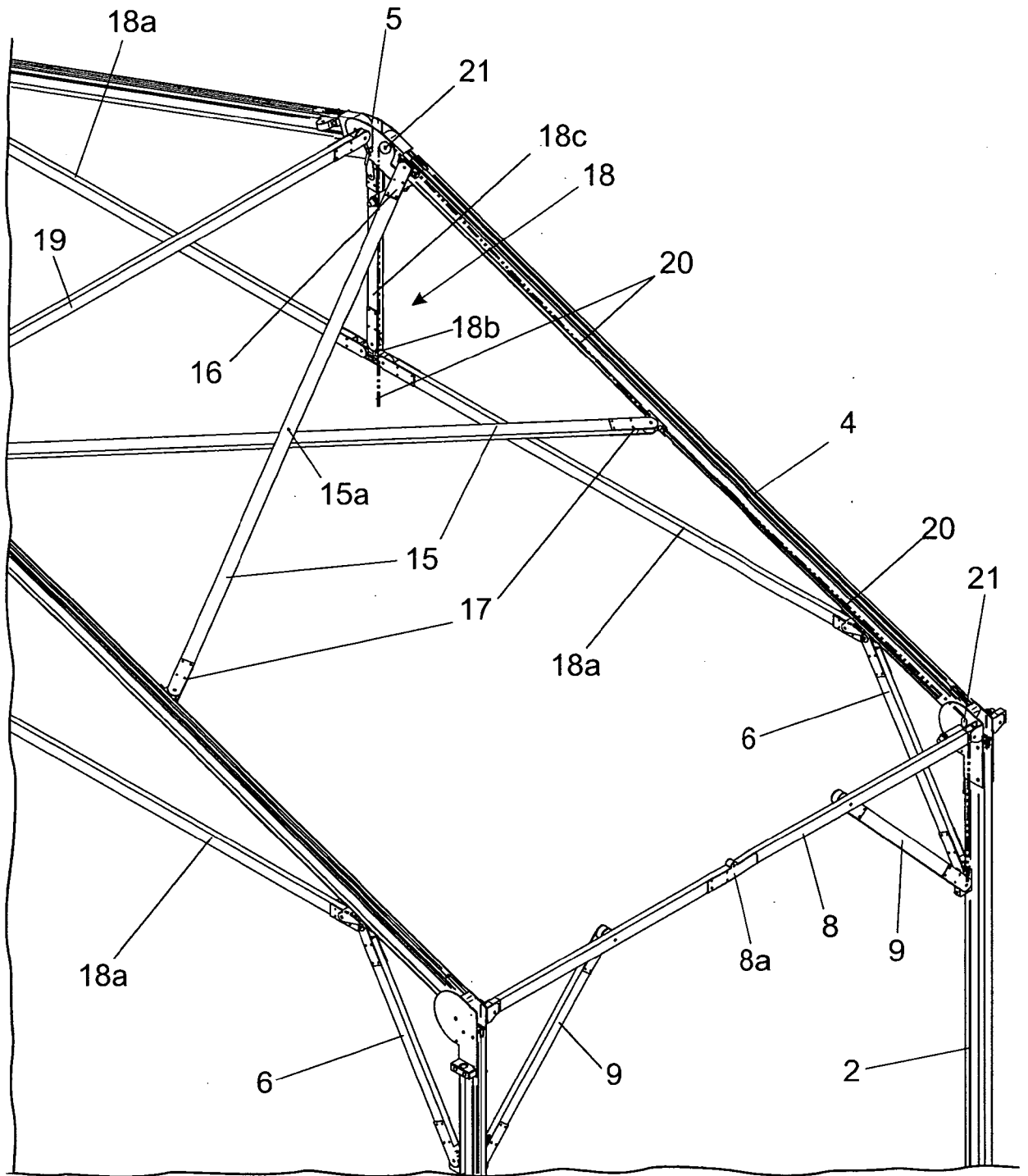


Figure 11

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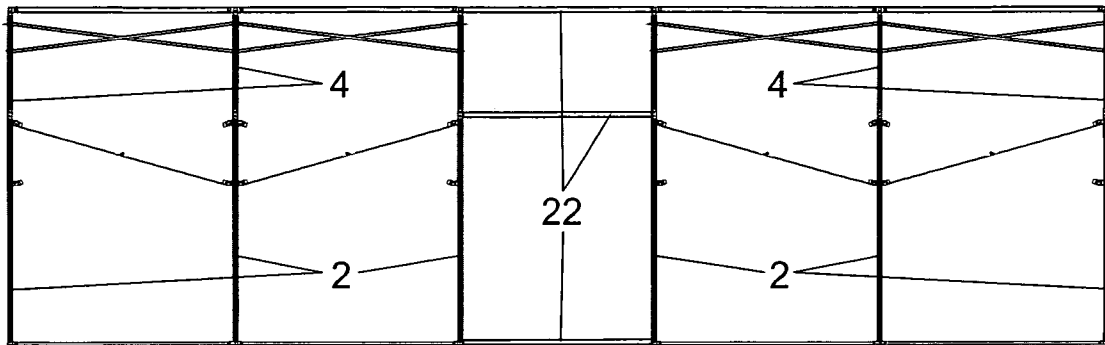


Figure 12

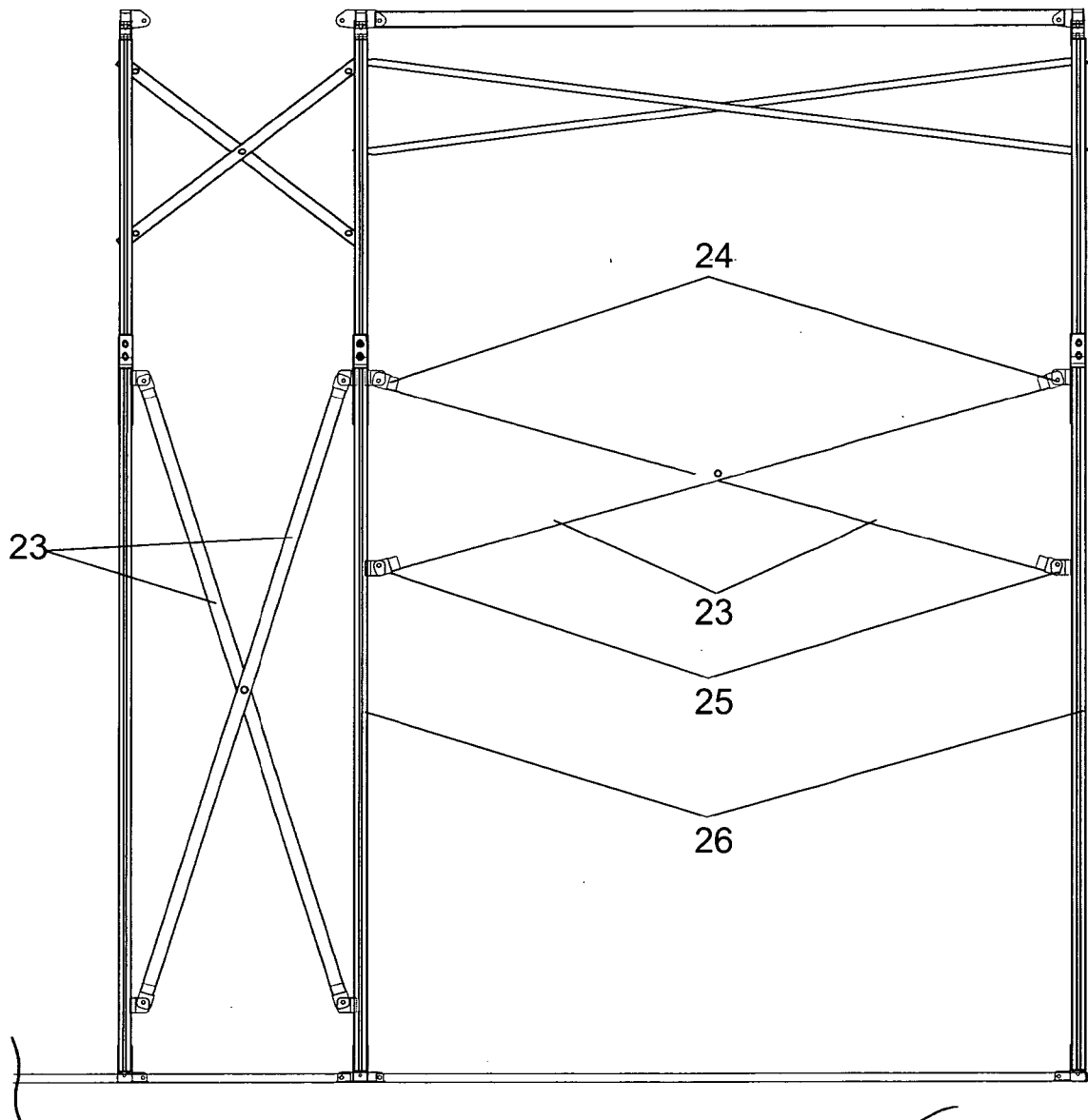



Figure 13


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