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(54) **Arrangement for a tent**

(57) The invention relates to an arrangement for a tent, comprising at least two supporting structures (2) and a plurality of elongate spacing members (4, 5), which each extend between two supporting structures (2) to form a construction (1), in which a tent cloth (12, 13) is intended to be mounted, each spacing member (4, 5) being connected to the respective supporting structures (2) with the aid of a fastening means (14). A plurality of first fastening means (14) are adapted to allow said spacing members (5) to be movable, on the one hand, perpendicularly to said supporting structures (2) and, on the other hand, parallel with said supporting structures (2), and a first tensioning member (24) is

adapted, in cooperation with each of said first fastening means (14), to apply a separating force (F) between the spacing member (5) and the supporting structure (2), said force (F) having a component (F1) which acts along the spacing member (5) and a component (F2) which acts transversely of the spacing member (5) to stretch out a cloth (12, 13), which is mounted on the construction (1), so as to make it plane.

By the invention, a tent cloth can be arranged on the construction (1) without being completely stretched, and subsequently be stretched so as to be plane with the aid of the cooperation of the tensioning member (24) with the fastening means (14), resulting in sagging portions and folds in the cloth being eliminated.

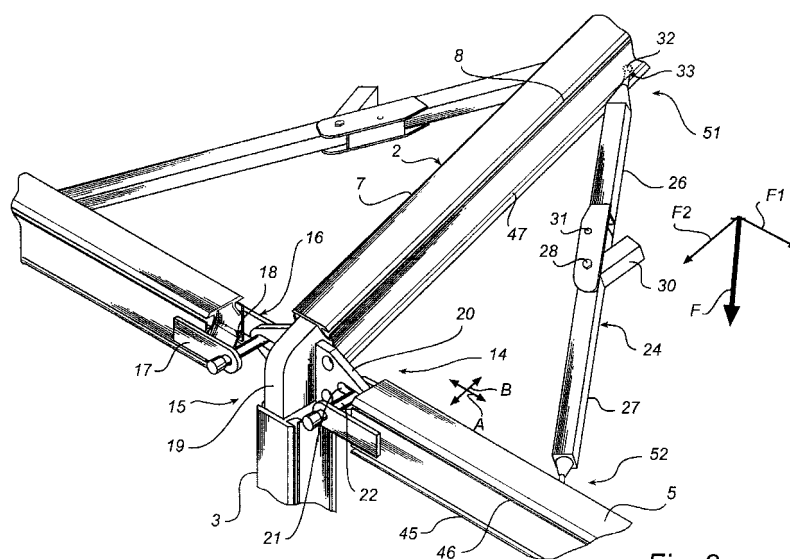


Fig. 2

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Description

Technical Field

[0001] The present invention relates to an arrangement for a tent, comprising at least two supporting structures and a plurality of elongate spacing members, which each extend between two supporting structures to form a construction, on which a tent cloth is intended to be mounted, each spacing member being connected to the respective supporting structures with the aid of a fastening means.

Technical Background

[0002] In many situations, use is made of big tents of the kind in which a firm and steady beam construction is raised, after which one or more tent cloths, made of PVC for instance, are mounted on the construction. According to a system available on the market, the sides of the tent cloths are provided with beads, which are intended to be inserted into grooves in the beams.

[0003] As the tent cloths are relatively large and heavy, great tension arises and it is difficult to arrange the tent cloths on the beam construction. Usually the beads and/or the grooves are lubricated to reduce friction, and several people must cooperate in order to pull the tent cloths into the correct position. Sometimes, even more people are needed to lift up the cloth between the beams, so that this weight will not impede the insertion of the beads.

[0004] To make it possible to insert a tent cloth into the grooves along two parallel beams, the cloth must be somewhat wider than the distance between the beams. As a result, it is impossible to obtain a tent cloth surface that is stretched so as to be completely plane, and also in the stretched position the cloth sags somewhat between the beams. In these sagging portions, rain water and/or snow gathers, which results in a great load on the cloth and the beams. These sagging portions must be emptied at regular intervals so that the load will not damage the tent.

[0005] The putting up of the cloth thus presents a difficult problem: the wider the cloth, the easier to insert the beads into the grooves, while the cloth will be less tightly stretched, and vice versa.

Summary of the Invention

[0006] The object of the present invention is to solve the above-mentioned problems and to provide an easier way of mounting the tent cloth with a satisfactory degree of tension in the tent cloth.

[0007] This object is achieved by means of an arrangement which is of the kind stated by way of introduction and in which a plurality of first fastening means are adapted to allow said spacing members to be movable, on the one hand, perpendicularly to said support-

ing structures and, on the other hand, parallel with said supporting structures, and a first tensioning member is adapted, in cooperation with each of said first fastening means, to apply a separating force between the spacing member and the supporting structure, said force having a component which acts along the spacing member and a component which acts transversely of the spacing member to stretch out a cloth, which is mounted on the construction, so as to make it plane.

[0008] Since the fastening means allows movement in two directions, both transversely of the spacing member and along the same, the tensioning member can be caused to act against the spacing member so that the cloth will be stretched so as to be plane, i.e. stretched in its entire plane instead of in one direction only, resulting in sagging portions and folds in the cloth being eliminated.

[0009] The tensioning member can be used to apply the force after the positioning of the cloth. Owing to this, the cloth can be allowed to be relatively slack when being positioned, which considerably facilitates this operation, and subsequently be stretched so as to reduce the above-mentioned problem of snow, rain and wind.

[0010] The supporting structures can comprise at least two substantially vertical portions, which are interconnected by transverse portions to form a frame extending in one plane, said first fastening means being mounted in the positions where said vertical portions and said transverse portions are connected. By means of supporting structures of this kind, it is possible to raise a tent construction which is advantageous in many respects and in which the elongate spacing members interconnect the frames. The vertical portions of the frames constitute wall posts and the transverse portions constitute roof beams.

[0011] According to one embodiment of the invention, at least one second fastening means is adapted to allow said spacing member to be movable perpendicularly to said supporting structures, and a second tensioning member is adapted, in cooperation with said second fastening means, to apply a separating force between the spacing member and the supporting structure. This second type of fastening means can function as a complement to the first type, and the other tensioning members can be tensioned after the first. If, for instance, fastening means of the first kind are arranged at the base of a tent roof sloping in two directions, fastening means of the second kind can be arranged in between at the roof ridge.

Brief Description of the Drawings

[0012] The present invention will now be described in more detail with reference to the accompanying drawings, which, for the purpose of exemplification, show a preferred embodiment of the invention.

[0013] Fig. 1 shows a tent construction on which one or more tent cloths are intended to be mounted.

[0014] Fig. 2 shows the mounting between the roof frames and the roof base beams of the tent construction in Fig. 1.

[0015] Fig. 3 shows the mounting between the roof frames and the roof ridge beams of the tent construction in Fig. 1.

[0016] Fig. 4 is a cross-sectional view of a roof beam in the construction in Fig. 1.

[0017] Fig. 5 is a cross-sectional view of a longitudinal beam in the construction in Fig. 1.

Description of a Preferred Embodiment

[0018] The tent construction 1 which is shown in Fig. 1 comprises a plurality of supporting structures in the form of V-shaped roof frames 2 consisting of vertical portions, which are referred to as legs 3 below, and transverse roof beams 7, which are joined in corners 15. The roof frames are arranged beside each other with spacing members in the form of elongate beams 4, 5, 6 arranged in between. The beams 4, 5, 6 are mounted at the roof ridge (roof ridge beams 4), at the base of the roof (roof base beams 5) and at the ground (ground beams 6). When needed, additional intermediate beams are mounted between the roof beams of the frames for improved support of the tent cloth which is intended to be extended by the construction. All the beams are sectional beams which are made of a suitable material, such as aluminium or steel.

[0019] Tent cloths are intended to be inserted between each pair of roof frames, on the one hand, in the form of roof sections 12 which extend from one roof base to the other and, on the other hand, in the form of wall sections 13 which extend from the roof base to the ground. As an alternative, wider cloth sections can be intended to cover several roof frames. The roof beams 7 and the roof base beams 5 are formed with longitudinal grooves 8 and 46, respectively, into which the edges of a tent cloth 12 can be inserted. The edges of the tent cloth 12 are suitably provided with beads 11a, 11b, for instance, in the form of plastic ropes which are sewn or welded to the material of the cloth and which can be inserted into the grooves 8 (see Fig. 4) in the roof beams 7 and into the grooves 46 in the roof base beams 5 (see Fig. 5). Moreover, the roof base beams 5 are provided with grooves 45, into which a bead 10 of a tent cloth 13 can be inserted in a corresponding manner (see Fig. 5). The bead 10 usually consists of several short segments, so that the tent cloth 13 hangs down from the roof base beam like a curtain, thus being movable in the lateral direction without much resistance.

[0020] Each roof base beam 5 is mounted with the aid of a fastening means 14 at a roof frame 2 in the corner 15 where the roof beam 7 joins the leg 3. The fastening means, which is best seen in Fig. 2, comprises a bracket 16 which is fixedly mounted, for instance riveted, in the roof base beam and which has two tongues 17 provided with holes and defining an opening 18. The width of the

opening can substantially be the same as the width of the beam 5, but can also be narrower or wider depending on the circumstances and the judging of the person skilled in the art. Furthermore, the fastening means 14 comprises an ear 20, which is fixedly mounted in the roof frame and which has an elongate hole 21 extending transversely from the roof frame, preferably in a direction perpendicular to the side of the roof frame 2. In the shown embodiment, in which the roof frame consists of roof beams 7 and legs 3 that are assembled in the corners by means of an angular sectional element 19 which is partially inserted into the roof beam 7 and the leg 3, respectively, the ear 20 is welded or riveted to this sectional element 19. Finally, the fastening means comprises a pin 22 which is fixed at least in the lateral direction and which extends through the holes in the tongues 17 and the ear 20. The pin 22 can, for instance, be a bolt which is secured between the tongues 17 of the bracket 16 by means of a sprig, a nut or the like. By this construction, the fastening means allows the roof base beam 5 and the roof frame 2 to be movable in relation to each other in two directions, on the one hand, transversely of each other by the pin 22 being moved in the longitudinal direction of the hole 21 and, on the other hand, along each other by the ear 20 being moved in the longitudinal direction of the pin 22.

[0021] In connection with the fastening means 14, a tensioning member 24 is arranged. The tensioning member is mounted between a position 51 along the roof beam 7 above the corner 15 and a position 52 along the roof base beam 5, and is arranged to apply a separating force between its mountings. In the shown embodiment, the tensioning member is a toggle joint in the form of two legs 26, 27 which are square in cross-section and which are hinged to each other in a joint 28. One of the sections 27 ends with a hinged portion 30, into which a handle (not shown) can be inserted to make the toggle joint straight. Holes 31 are made in both legs 26, 27 to allow the toggle joint to be fixed in the straight position by means of a bolt or a sprig (not shown). Each leg 26, 27 has a mounting in the form of a shank 32 which is provided with a ball and which is intended to be inserted, respectively, into a groove 47 in the roof beam 7 and into a groove 49 in the roof base beam 5 (visible in Fig. 5) to abut against an abutment 33 formed in the groove 47, 49.

[0022] In addition, each roof ridge beam 4 is mounted with the aid of a fastening means 34 on a roof frame 2 in the ridge 35. The fastening means, which is best shown in Fig. 3, comprises an ear 36 that is fixedly mounted in the roof frame and has an elongate hole 37 extending transversely from the roof frame 2, preferably in a direction perpendicular to the side of the roof frame 2. In the shown embodiment, the roof beams of the roof frame are bent at the ridge 35 and reinforced by means of an angle 42 which is welded or riveted on the roof beams 7, and the ear 36 is welded to this angle 42. The fastening means 34 further comprises a bracket 38,

which is fixedly mounted, suitably riveted, in the roof ridge beam 4 and which has two tongues 39 provided with holes and defining an opening 40. The width of the opening is substantially the same as the thickness of the ear 36. Finally, the fastening means comprises a pin 41 which is fixed at least in the lateral direction and which extends through the holes in the tongues 39 and the ear 36. The pin 41 can, for instance, be a bolt which is secured by means of a sprig, a nut or the like between the tongues 39 of the bracket 38. By this construction, the fastening means 34 allows the roof ridge beam 4 and the roof frame 2 to be movable in relation to each other by the pin 41 being moved in the longitudinal direction of the hole 36.

[0023] An eccentric plate 44 is also mounted on the fastening means 34, for instance, turnably on the pin 41. The eccentric plate is arranged to apply, by turning, a separating force between the roof ridge beam 4 and the roof frame 2. A head 43 is welded to the eccentric plate to make it possible to turn the eccentric plate, for instance, by means of a spanner.

[0024] The tent cloth 12, 13 is put up over a tent construction according to that stated above as described below with reference primarily to Fig. 1.

[0025] Usually, the roof frames 2 are first raised to their final position, after which the beams 4, 5, 6 are mounted by means of cranes and supports. Alternatively, the roof frames are mounted on the ground and subsequently raised into a sloping position, in which the beams are mounted on site. Subsequently, the frames are hoisted up to a vertical position.

[0026] The beads 10 of the wall sections 13 of the tent cloth are inserted sideways into the lower groove 45 of the roof base beams 5 (see Fig. 5) and attached in a suitable manner to the legs 3. Subsequently, the roof sections 12 of the tent cloth are inserted into the grooves 8 of the roof beams 7. The tensioning members 24 and the eccentric plates 44 are not tightened in this position, which means that the distance between the roof frames 2 is somewhat smaller than the width of the tent cloth 12, which facilitates the insertion of the cloth. After mounting the roof section 12 between the roof frames 2, the beads 11b of the roof section 12 are located along the respective roof base beams 5 and are now inserted into the upper groove 46 of the roof base beam (see Fig. 5). This groove is so wide that the beads 11b of the tent cloth 12 can be pressed into the groove 46 transversely of the groove, and to retain the cloth in place a holding member 48 in the form of a plastic strip is introduced into the groove 46, thus reducing the opening of the groove 46 so as to retain the bead 11b. In addition, the holding member 48 preferably extends a distance over the upper edge of the wall section 13 to cover an air gap 50, if any, between the tent cloth 13 and the bead 10.

[0027] When the tent cloths 12, 13 are positioned, the tensioning members 24 are tensioned by straightening out the toggle joint, possibly by means of a handle introduced into the portion 30. The tensioning member

thus applies a force F between the roof beam 7 and the roof base beam 5, said force being directed in the plane of the roof section 12. The tensioning member 24 presses the roof base beam 5 away from the roof frame 2, so that the pin 22 is moved along the elongate hole 21, thus stretching the cloth 12 in the lateral direction A. In addition, the tensioning member 24 presses the roof base beam 5 in the sloping direction of the roof, so that the ear 20 is moved in the longitudinal direction of the pin 22, thus stretching the cloth in the longitudinal direction B.

[0028] The tensioning members 24 thus having stretched the roof sections 12 at the roof base beams 5, the eccentric plates 44 are tightened, the roof frames 2 thus being pressed apart also at the roof ridge.

[0029] It will be understood that the above-described embodiment is only an example of a tent construction according to the invention and that a number of variations are feasible within the scope of the appended claims.

[0030] The tent construction can, for instance, be designed in various ways and the house-like construction which is shown in Fig. 1 is only an example of a common design. Alternative designs include a construction with arched roof frames and a pointed construction, for instance, with triangular roof sections.

[0031] The fastening means 14, 34 can also be constructed in many different ways, most obviously by placing the ears and the brackets in the opposite manner. Instead of a toggle joint, the tensioning member 24 can comprise tightening screws, such as turnbuckle screws, and the eccentric plates 44 can be replaced by spacing screws.

Claims

1. An arrangement for a tent, comprising at least two supporting structures (2) and a plurality of elongate spacing members (4, 5), which each extend between two supporting structures (2) to form a construction (1), in which a tent cloth (12, 13) is intended to be mounted, each spacing member (4, 5) being connected to the respective supporting structures (2) with the aid of a fastening means (14, 34), **characterised in that** a plurality of first fastening means (14) are adapted to allow said spacing members (5) to be movable, on the one hand, in a direction (B) perpendicular to said supporting structures (2) and, on the other hand, in a direction (A) parallel with said supporting structures (2), and that a first tensioning member (24) is adapted, in cooperation with each of said first fastening means (14), to apply a separating force (F) between the spacing member (5) and the supporting structure (2), said force (F) having a component (F1) which acts along the spacing member (5) and a component (F2) which acts transversely of the spacing member (5) to stretch

out a cloth (12, 13), which is mounted on the construction (1), so as to make it plane.

2. An arrangement as claimed in claim 1, wherein each of said first plurality of fastening means (14) comprises

an ear (20) with an elongate hole (21),
a bracket (16) with two tongues (17) which define an opening (18) that is wider than the width of the ear (20), and
a pin (22) which is arranged between the tongues (17) through the hole (21),
so that the fastening means (14) allows the spacing member (5) to move in two directions, on the one hand, by the pin (22) being movable in the longitudinal direction of the hole (21) and, on the other hand, by the ear (20) being movable between the tongues in the longitudinal direction of the pin (2).

3. An arrangement as claimed in claim 1 or 2, wherein said first tensioning member is a toggle joint (24) comprising two legs (26, 27) which are hinged to each other in a joint (28).

4. An arrangement as claimed in any one of the preceding claims, wherein at least one second fastening means (34) is adapted to allow said spacing member (5) to be movable perpendicularly to said supporting structure (2), and a second tensioning member (44) is adapted, in cooperation with said second fastening means (34), to apply a separating force (G) between the spacing member (4) and the supporting structure (2).

5. An arrangement as claimed in claim 5, wherein said second fastening means (34) comprises

an ear (36) with an elongate hole (37),
a bracket (38) with two tongues (39) which define an opening (40) that is substantially as wide as the ear (36), and
a pin (41) which is arranged between the tongues (39) through the hole (37),
so that the fastening means (34) allows the spacing member (4) to move in one direction by the pin (41) being movable in the longitudinal direction of the hole (37).

6. An arrangement as claimed in claim 5 or 6, wherein said second tensioning member is an eccentric plate (44) which is turnable on the pin (41).

7. An arrangement as claimed in any one of the preceding claims, wherein the supporting structures (2) comprise at least two substantially vertical portions (3), which are interconnected by transverse por-

tions (7) to form a frame (2) extending in one plane, said first fastening means (14) being mounted in the positions (15) where said vertical portions (3) and said transverse portions (7) are connected.

8. An arrangement as claimed in claim 7, wherein the tent cloth (12) is provided with beads (11a), which are insertable along corresponding grooves (8) in the transverse portions (7) of the supporting structures (2), so that the cloth (12) is attached in the lateral direction.

9. An arrangement as claimed in any one of the preceding claims, wherein the tent cloth is further provided with at least one bead (11b), which is insertable into a corresponding groove (46) in a spacing member (5) arranged in a first fastening means (14).

10. An arrangement as claimed in claim 9, wherein the groove (46) is so wide that the bead (11b) is transversely insertable into the groove (46), and a holding member (48) is adapted to be insertable parallel with the bead (11b), thereby reducing the opening of the groove (46) so that the bead (11b) is retained therein.

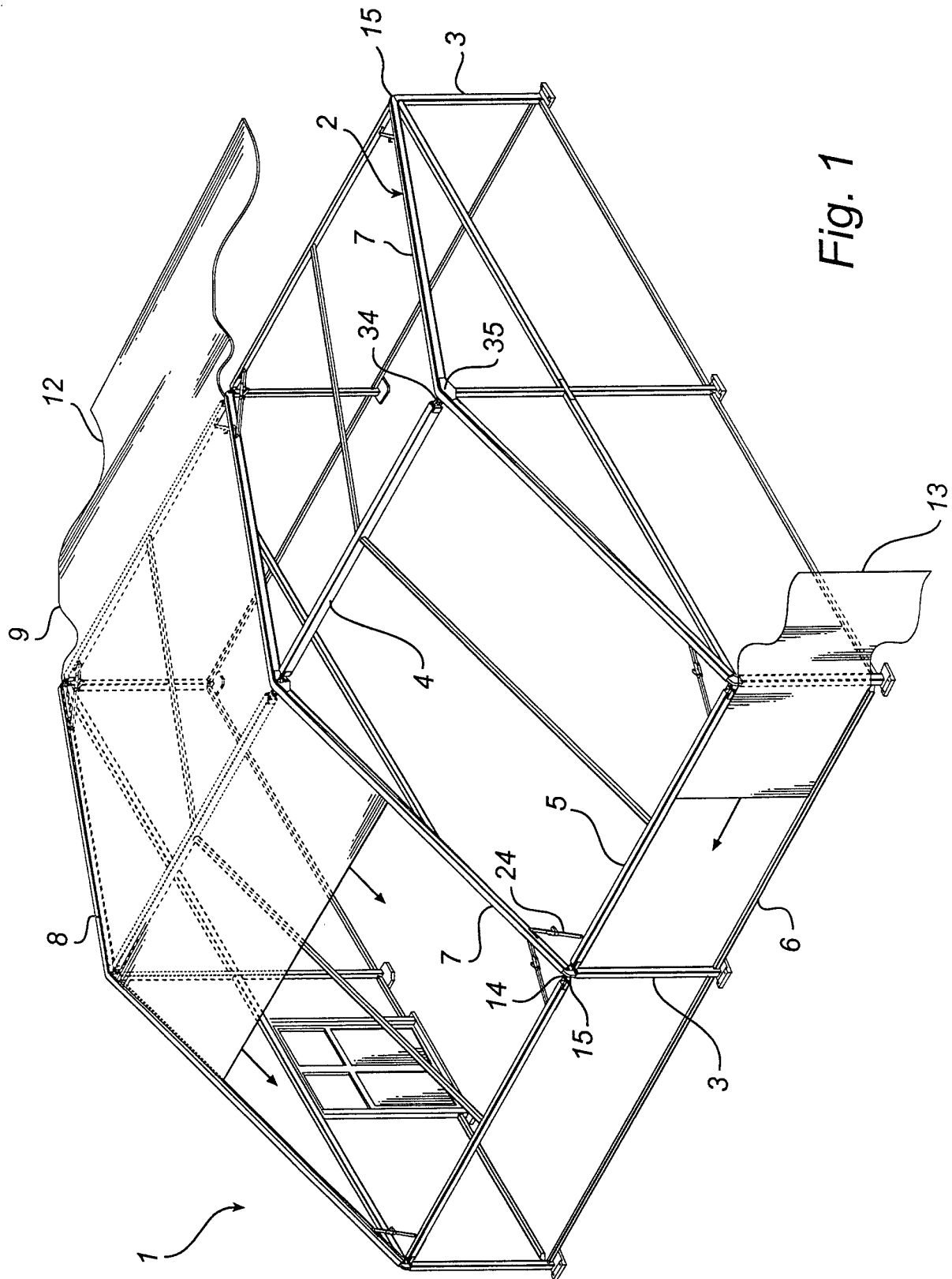


Fig. 1

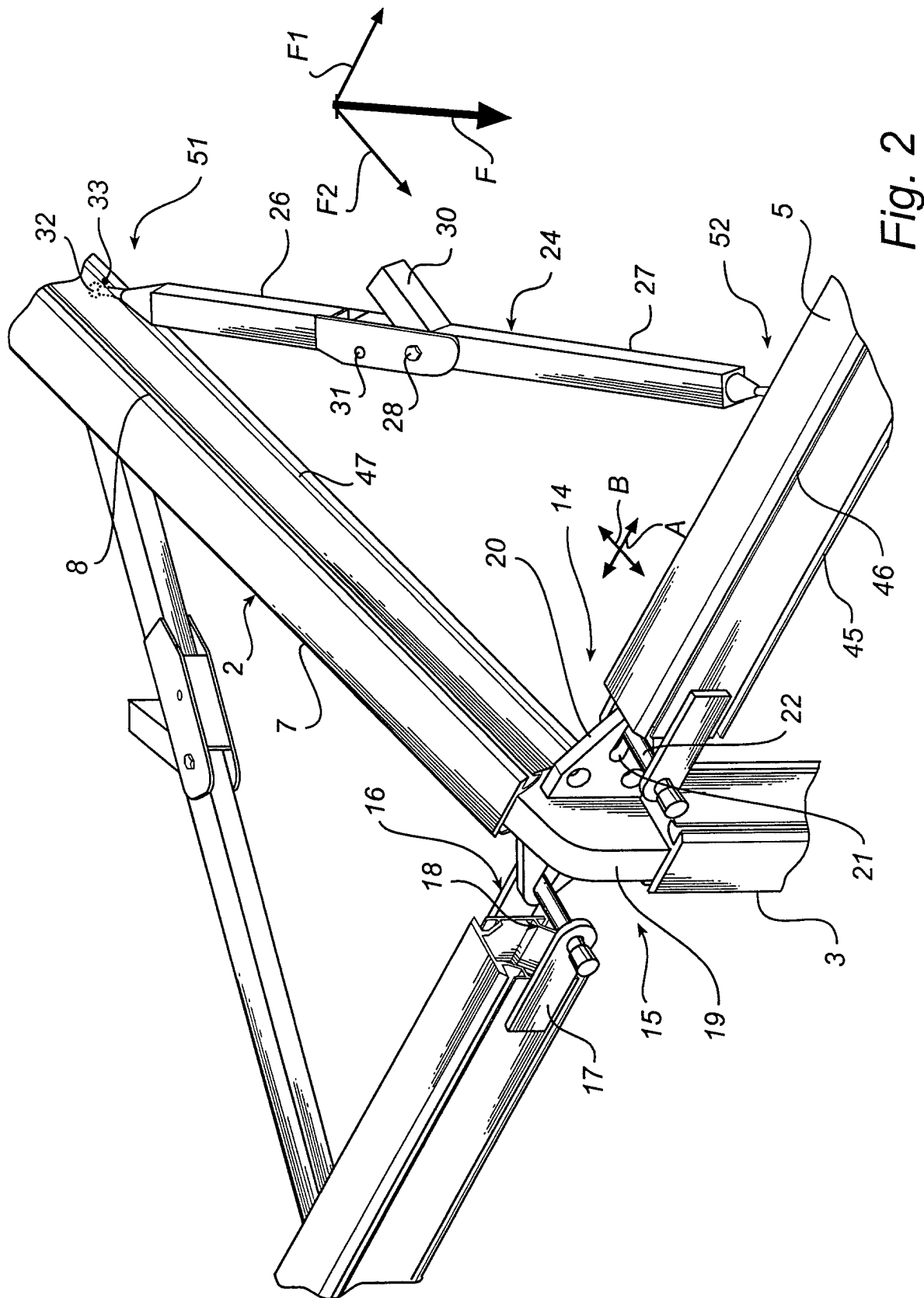


Fig. 2

