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(54) Joint for structural elements of a frame for tents

(57) The present invention relates to a joint (1) for connecting structural elements of frames for tents, said joint comprising a body (2) for fitting into a support upright member (3) of the frame, said joint being further provided with seats (4) adapted to receive said structural elements (5), coupling means (6) for coupling said seats (4) with said structural elements (5) comprising engagement elements (7) for fitting into said seats and centering elements (8) for correct centering on to said structural elements (5). The inventive joint enables a structure of a frame for outdoor tents of the folding kind to be mounted in a simple, versatile manner.

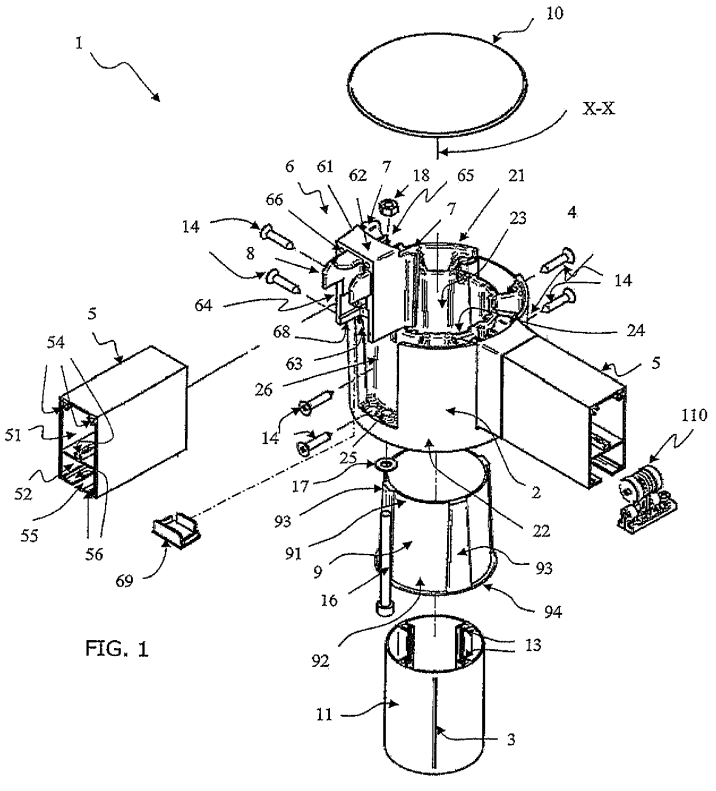

FIG. 1

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Description

Field of the Invention

[0001] The present invention relates to a joint for the connection of structural elements of frames for tents and, in particular, to a modular joint that is adapted to allow a structure of a frame for outdoor tents of the folding type to be mounted in a simple and versatile manner.

Background of the Invention

[0002] Outdoor tents are available on the market since a long time now with a variety of solutions aimed at allowing a number of different needs to be complied with. A particular kind of outdoor tents is represented by the so-called "folding" tents. These tents comprise single or modular structures provided with two or more upright members supporting the slide bars, along which the tents is caused to slide. These slide bars are engaged by corresponding roller units, which the tents - either in a single-piece form or in separate bands - is attached to. The sliding movement of the tents is brought about by means of a cord and a pair of guide pulleys that are driven either manually or by means of suitable electric motors.

[0003] Tent frames of this kind, however, is plagued by drawbacks deriving from a poor versatility thereof and a complexity in the ability of creating modules. In fact, frames available on the market are comprised of a large number of accessory parts, which do not therefore fail to weigh rather heavily on both assembly costs and assembly time. In particular, for providing a structure involving a plurality of modules, joints at the peripheral corners of the structure are usually provided with two seats - provided at a right-angle relative to each other - for coupling with respective slide bars, whereas non-corner joints may have from three to four of such seats. Consequently, depending on the position within the structure of the frame, there must be provided a joint for each one of said typologies, so as to have the correct number of slide bars duly received in the respective joints; furthermore, each such joint requires a given number of pieces for assembly, adapted to receive two or more slide bars.

Summary of the Invention

[0004] The technical problem at the basis of the present invention lies therefore in providing a joint that is adaptable, versatile and simple to mount in place of the plurality of joints that have been hitherto required to set up a frame for tents.

[0005] Said problem is solved by a joint for the connection of structural elements of frames for tents, which comprises such structural features as to enable it to be fit for universal use regardless of its position in the same structure, as this is recited in the appended claims.

Brief Description of the Drawings

[0006] Further features and the advantages of the present invention will be more readily understood from the description of an embodiment that is given by way of non-limiting example with reference to the accompanying drawings, in which:

- Figure 1 is an axonometric, partially exploded view of the joint for the connection of structural elements of frames for tents according to the present invention;
- Figures 2A-2E are axonometric views of the various steps needed to assemble the joint shown in Figure 1 on to a corresponding upright member;
- Figure 3A is a top view of the joint shown in Figure 1 in a partially assembled state;
- Figure 3B is a side cross-sectional view along the line A-A of the joint shown in Figure 3A, as provided with cap;
- Figure 4 is an axonometric view of a tent of the folding kind, comprising joints according to the present invention;
- Figure 5 is a view of a detail of the tent shown in Figure 4;
- Figure 6 is a schematical side view of a tent of the folding type comprised of two modules in an arrangement in which they are offset relative to each other.

Detailed Description of the Invention

[0007] The reference numeral 1 is used in Figure 1 to generally indicate a joint for the connection of structural elements of frames for tents according to the present invention. The joint 1 comprises a body 2 for fitting into a support or upright member 11 for supporting the frame, said joint being provided with seats 4 adapted to receive said structural elements 5, coupling means 6 for coupling said seats 4 to said structural elements 5, said coupling means comprising first engagement elements 7 for fit-in engagement into said seats and second engagement elements 8 for correct centering on to said structural elements 5.

[0008] In particular, the body 2 preferably is in a general shape of a hollow cylinder that extends along a longitudinal axis X-X from a first open end 21 to a second open end 22. Furthermore, the cavity 23 is so shaped as to be slightly tapering towards the first cavity 21, and the surface that delimitates such cavity is crossed by axial grooves 24. On the outer surface of the body there are then the seats 4 for receiveing the structural elements 5. Preferably, said seats 4 are configured to receive said structural elements 5 by means of a bayonet-fitting en-

gagement from the side of said first end 21. Alternatively, such engagement can be provided in snap-like coupling by means of elastic members, provided on said structural elements, that snap-fit into corresponding undercuts provided in said seats. In addition, the seats 4 are provided with an axially extending through-bore 25 for the insertion of a locking screw, as this shall be described in detail further on. It should be noticed that, in the exemplary embodiment illustrated in the Figures, there are shown four seats 4 that are provided in a cross-like arrangement on said outer surface of the body 2.

The surface of the cavity 23 is further provided with a circular recess 26 provided at the level of the second end 22, as this is shown in Figure 3B. Furthermore, the circumferential surface of said seats may preferably be provided with locating aids 26 for fastening elements, as this is explained in detail further on.

[0009] The structural elements 5 may be constituted by support bars for supporting tent battens, which are preferably rectangular in the cross-sectional shape thereof. As illustrated in Figure 1, these structural elements 5 are in a box-like shape, whose inner space is subdivided into a first compartment 51 and a second compartment 52 by means of a partition 53. The first compartment 51 is such as to receive the second engagement or centering elements 8 of the coupling means 6. Preferably, said first compartment 51 is such as to be able to receive the centering elements 8 - in the form of three tongues - interference fitting with the inner walls thereof. In addition, said compartment comprises appropriate seats 54 adapted to receive members for fastening with said coupling means 6, as this shall be described in detail further on in connection with the procedure for assembling the joint. The second compartment 52 comprises an opening 55 that extends to cover the whole length of said structural elements and is delimited by two side strips 56, which form - inside the same compartment - two tracks capable of being engaged by a slide carrying the tent canvass, as this shall be explained. In particular, therefore, the structural elements 5 comprise runners, which are constituted by said tracks, adapted to enable the tents to slide relative to the frame.

[0010] Advantageously, the joint 1 according to the present invention comprises coupling means 6 that are adapted to couple the structural elements 5 with the body 2 of the same joint. These coupling means 6 comprise a body 61 provided with an upper face 62, a lower face 63, a front face 64 and a rear face 65. The front face 64 is provided with the afore-mentioned centering elements 8 to centre with the structural elements 5 of the tents, as positioned near the upper face 62. In addition, the front face 64 includes through-holes 66 for engagement with corresponding fixing means. On the other hand, the rear face 65 is covered all along by the afore-mentioned engagement elements 7, as preferably configured in the shape of protruding ribs adapted to slidably engage corresponding undercuts in the seats 4 of the body 2. Furthermore, in the proximity of the upper face 62 said rear face is provided with a bored projection 67 (as best illustrated in Figure 3B) to receive retaining means to prevent said coupling means from being accidentally slipping off. Finally, the lower face is provided with a slot 68 capable of being closed by means of closing means 69.

[0011] Preferably, the joint 1 may comprise a conical sleeve 9 capable to be slipped on to a bearing element 11, such as a support upright member of the structure of the frame, and adapted to compensate for any possible dimensional difference existing between the body 2 of the joint 1 and said upright member. In particular, said sleeve 9 may have a first open end 91 and a second open end 92 connected by a wall tapering towards said first end. Furthermore, the outer surface of such wall can be provided with ribs 93, which are adapted to engage the corresponding grooves 24 provided in the inner surface of the cavity 23 of the body 2 through an interference-fit kind of engagement. In turn, the second end 92 terminates into an annular flange 94 adapted to slip into abutment against the corresponding circular recess 26 of the body 2, as this is best shown in Figure 3B. Advantageously, the inner wall of the sleeve may comprise an axial prominence 95 (shown in Figure 3A).

[0012] The joint 1 may further include one or more closing elements 19 for capping those seats that may possibly not be engaged, as well as a cap 10 adapted to close the first end 21, as this shall be described further on. Preferably, said cap 10 may be divided into a disk-shaped middle portion 10' and a annular portion 10", as shown in Figures 3A and 3B.

[0013] With reference to Figures 2A-2E, the way in which the joint 1 according to the present invention is mounted on to a support 11 or upright member of a frame for outdoor tents, said support or upright member being preferably circular in the cross-sectional shape.

[0014] In the first place, the sleeve 9 is put on the support 11 at the level of the end portion thereof lying opposite to the ground-resting foot 12 thereof (shown in Figures 2B-2E). In particular, the sleeve is put on from the side of the second end 92 thereof, which is provided with the flange 94, so that the prominence 95 is caused to slidably engage a groove 3 (Figures 1 and 2A-2E) provided along the outer surface of the support 11. It should be noticed that, owing to the tapering configuration of the sleeve, the latter slips on to said end portion of the upright member 11 until its engagement by interference. In this way, any problem deriving from dimensional tolerances can be avoided. In addition, the above-cited engagement of the prominence 95 of the sleeve 9 with the groove 3 of the support 11 allows the sleeve to be centred on the support 11 for a correct mounting of the joint on the support.

[0015] Thereupon, the body 2 of the joint 1 is in turn put on the sleeve/upright member assembly so that the grooves 24 of the cavity 23 engage the ribs 93 of the sleeve 9. The body 2 is then caused to slip on to the sleeve until the border 26 thereof comes into abutting against the flange 94 of the same sleeve.

[0016] At this point, as this is shown in Figure 2B, the body 2 is set in position on the upright member 11. Even in this case, the engagement between the grooves of the body and the ribs of the sleeve allows for a perfect alignment of the parts. Furthermore, in view of ensuring a stability of the whole joint 1 on the upright member 11, fixing elements 14, such as self-tapping screws, are screwed into the seat 4, in correspondence to the locating aids 26, until the heads thereof come into abutting against the surface of the seat, just to firmly fix the body to both the sleeve and the upright member at the same time (Figure 2C). It should in fact be noticed that advantageously, thanks to the locating-aid system created by the ribs 93 of the sleeve 9 engaging the grooves 24 of the joint body on the one side, and the prominence on the inner wall of the sleeve engaging in turn the groove 3 in the upright member 11 on the other side, the screws will automatically engage the seats 13 specially provided inside the upright member 11. In this connection, a further advantage also derives from the fact that such engagement system prevents the sleeve 9 and the body 2 from accidentally rotating relative to each other, as this is detrimental to a correct positioning of the parts and to a correct fastening thereof by means of the screws 14.

[0017] The body 2 is at this point ready to receive - simply and safely - the structural elements 5 including the runners for the slides of the tents. First of all, the ends of said structural elements 5 is each brought into engaging the coupling means 6. In particular, the coupling means 6 are coupled by inserting the centering elements 8 thereof, which may be provided in the form of three tongues, into the first compartment 51 of said structural elements. For such coupling to be firmly fixed, fastening elements 15, such as screws, as shown in Figure 2D, are screwed in from the side of the rear face 65 of the body 61 of said coupling means so as to first engage the through-holes 66 of said body and then the seats 54 of the compartment 51 of the structural elements 5.

[0018] Once the two parts are duly secured as just explained, the coupling means 6 can be mounted to the seats 4 in the body 2 of the joint 1. This mounting can be done - for instance in the present embodiment - by inserting, in a bayonet-like manner the fitting elements 7 being in the form of ribs, into the undercuts provided in the seats 4 of the body 2.

[0019] As a result, the structural elements 5 have at this point been assembled in a quick and safe manner on to the joint 1. Moreover, in order to increase the blocking, especially in view of doing away with any possible displacement along the axis X-X of the joint, the coupling means 6 may be secured to the body 2 by means, for example, of a system including a screw 16, a washer 17 and a nut 18. The screw 16 is inserted in the hole 25 in the seats 4 of the body 2, under interposition of the washer 17, until it comes to also engage the hole in the prominence 67 of the coupling means 6 and moves therebeyond. At this point, the nut 18 is screwed onto the portion of screw that protrudes from said prominence so as to lock the coupling means 6 in place on the body 2 (Figure 3B).

[0020] Figure 3A is a top view of an assembly showing how the various components or parts of the joint are assembled together, without the central portion 10' of the cap 10, and without the structural elements 5.

[0021] Preferably, with reference to Figure 2E, the body of the joint may be completed with the addition of closing elements 19 for closing the seats 4 that may possibly not be engaged by corresponding coupling elements, as in the case shown in the Figure, and the cap 10 for closing the first end 21.

[0022] The joint 1, as mounted in the above-described manner, is thus ready to receive the sliding means 110 shown in Figure 1, as connected to battens or support rods for the tent (not shown in Figure 1). These sliding means may consist of conventional slides, whose rollers - upon having been inserted in the second compartment 52 of the structural elements 5 through the slot 68 of the coupling means 6 - roll on the afore-mentioned tracks 56, thereby opening or closing the tents. Once that also these slides have been mounted, the slot 68 may be plugged by means of the closing means 69, which may for instance consist of a cap provided with fins for engaging the borders of the same slot by snap-fitting thereinto. In addition, one of said tabs of the cap may also act as a limit stop for the same tent slides.

[0023] As shown in Figure 4 and, in a particular detail thereof, also in Figure 5, a frame 200 for outdoor tents comprises four supports or upright members 11, each one of which is provided with ground-resting foot 12 at an end portion thereof and a joint 1 according to the present invention at an opposite end portion thereof. Each joint 1 joins two structural elements 5, said structural elements being adapted to slidably support a plurality of battens 210 carrying both the slides 110 and the tents 220.

[0024] The above-described structure can be most easily adjusted in a modular manner by simply taking off the cap 10, removing the closing elements 19 and - as this has been explained hereinbefore - fitting in further structural elements 5.

[0025] In addition, it is possible to mount several joints 1 on to a same support 11, in different positions so as to create mutually offset modules of a single structure, as this is illustrated in Figure 6. In this case, it will be sufficient for the lower joint to be set as shown in Figure 3A.

[0026] Fully apparent from the above description is the fact that the joint according to the present invention is fully effective in enabling the number of parts or construction elements needed to create a frame for outdoor tents to be reduced to a significant extent. As a result, assembling the same frame can be done in a greatly simplified manner.

[0027] This allows for saving the assembly time and costs for the production of a structure for outdoor tent frameworks.

[0028] Furthermore, all parts entering the construction

of the joint have been designed so as to ensure facilitated assembly operations on the one side and due robustness of the assembled frame on the other side.

[0029] More than that, the joint turns out as being particularly versatile, since it takes just a single piece to be able to join from two to four structural elements.

[0030] The joint for the connection of structural elements of frames for tents in accordance with the present invention may then be modified in a variety of variations, so as to best suit special needs or preferences.

[0031] So, for example, the seats intended to receive the structural elements might be provided in a greater number than four, in the case that the structure of the frame is particularly complex. As already stated hereinbefore, the above-noted snap-fitting or bayonet-fitting coupling systems equipping each single piece may be replaced with any other conventional kind of coupling means working by the mating of shapes or size. The materials used in the construction of each piece of the frame may be conventional plastic materials or even other materials, such as metal materials. In the latter case, the fastening means may be comprised of means differing from the afore-cited self-tapping screws, such as for instance rivets, clamps. Geometries, shapes and sizes of the pieces may vary from the substantially cylindrical or quadrangular shapes that have been indicated afore in connection with the exemplary embodiment of the present invention. The slides of the tents or any other moving elements of the frame may be driven either manually or by means of electric motors.

[0032] In all cases, all these modifications, as well as any further variations in the embodiment of the present invention shall be understood as falling within the scope of the present invention as defined in the appended claims.

Claims

1. Joint (1) of frame for tents, comprising a body (2) for engaging with a holding support (11) of the frame, said body being provided with at least a seat (4) for receiving structural elements (5) of the frame, coupling means (6) for coupling said seats with said structural elements, comprising first engaging elements (7) for engaging with said seats and second engaging elements (8) for engaging with said structural elements (5).

2. Joint (1) according to claim 1, wherein said body (2) has substantially a general cylindrical shape with a first end (21), a second end (22) and an internal tapered cavity (23) whose surface is crossed by grooves (24).

3. Joint (1) according to claim 2, wherein said at least one seat (4) is provided onto the external surface of the body (2) so as to receive said first engaging means (7) of said coupling means (6) by means of bayonet engagement from the side of said first end (21).

4. Joint (1) according to claim 2, wherein said at least one seat is provided on the outer surface of the body (2) so as to receive said engaging elements (7) of said coupling means (6) in a snap-fitting connection by means of elastic elements provided on said structural elements (5) to snap-fit into corresponding undercuts provided in said seat.

5. Joint (1) according to any of the claims 1 to 4, wherein said coupling means (6) comprise a body (61) provided with an upper face (62), a lower face (63) provided with a slot (68), a front face (64) provided with said second engaging elements (8), and a rear face (65) along which there are said first engaging elements (7).

6. Joint (1) according to claim 5, wherein said front face (64) further includes through-bores (66) for engagement with fastening means (15).

7. Joint (1) according to any of the claims 1 to 6, wherein said structural elements (5) are in a box-like shape, the inner space of which is divided into a first compartment (51) adapted to receive said second engaging elements (8) of said coupling means (6), and a second compartment (52) adapted to be engaged by sliding means (110) for the tents.

8. Joint (1) according to any of the claims 1 to 7, further comprising a taper sleeve (9) mountable between said body (2) and one end of a support (11) of the frame, said sleeve comprising ribs (93) provided on the external surface, being suitable for interfering engagement with said grooves (24) of the cavity (23) of said body.

9. Joint (1) according to claim 8, wherein the inner wall of the sleeve (9) comprises an axial protrusion (95) for engagement with a groove (3) of the support (11) for having said sleeve (9) centered on to said support to thereby allowing for correct mounting of the joint on to the same support.

10. Joint (1) according to claim 8 or 9, wherein said sleeve (9) comprises a first end (91) and a second end (92), which are open and connected to each other by a wall tapering towards said first end.

11. Joint (1) according to any of the claims 2 to 10, further comprising closing elements (19) for the seats (4) of the body (2) eventually not engaged, and a cap (10) apt to close said first end (21) of the body.

12. Joint (1) according to any of the claims 2 to 11, where-

in said body (2) comprises a through-hole (25) provided in said seats (4) for the engagement with holding means (16, 17, 18).

13. Joint (1) according to claim 12, wherein said coupling means (6) comprises a bored projection (67) for the engagement with said holding means (16, 17, 18).

14. Joint (1) according to any of the claims 8 to 13, further comprising fixing means (14) to fix together said body (2), said sleeve (9) and said support (11) once they are assembled together, and further fixing means (15) to fix said coupling means (6) with said structural elements (5).

15. Frame (200) for tents, comprising supports (11) and structural elements (5) coupled together by means of the joint (1) according to any one of the preceding claims.

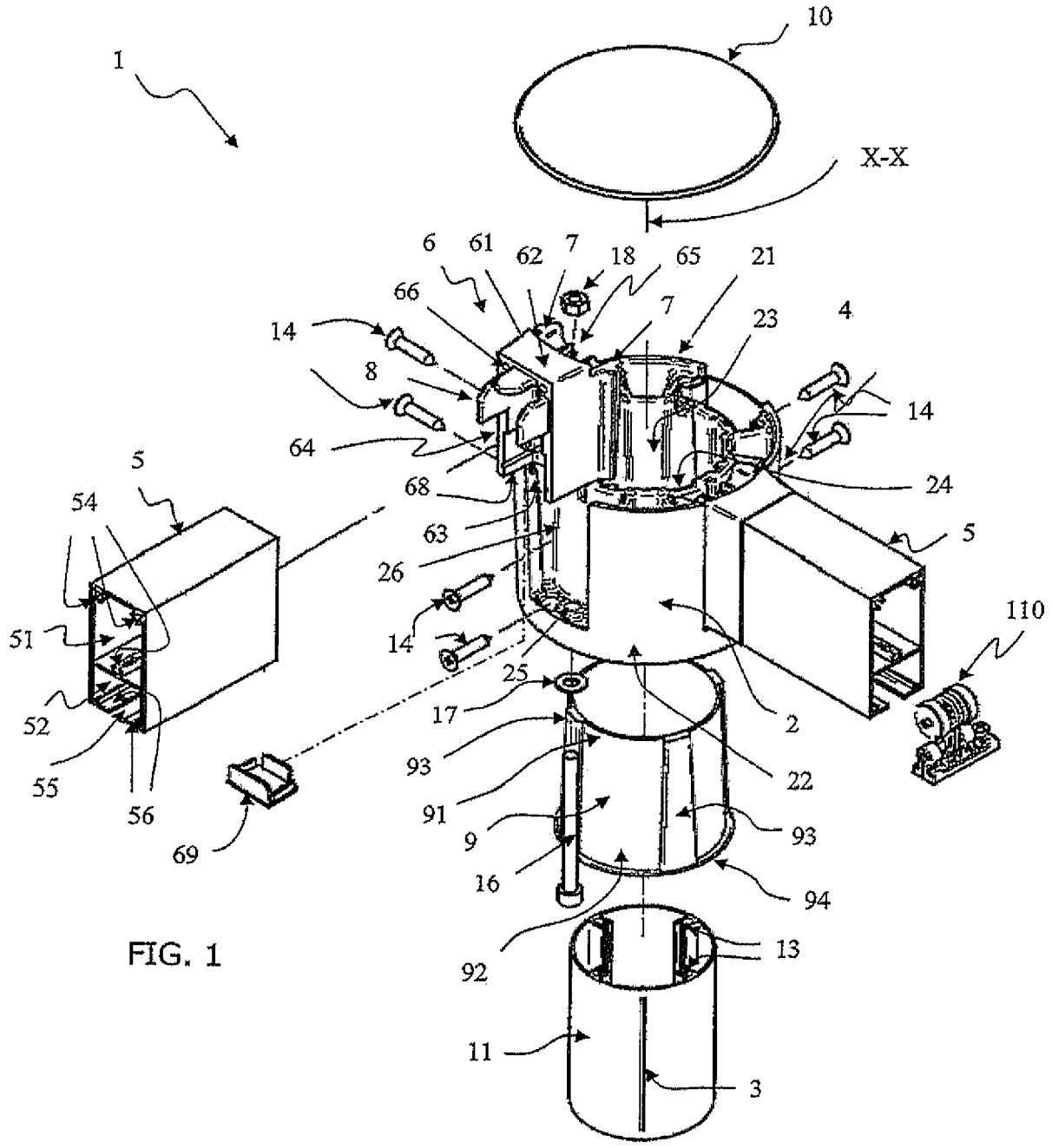
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FIG. 1

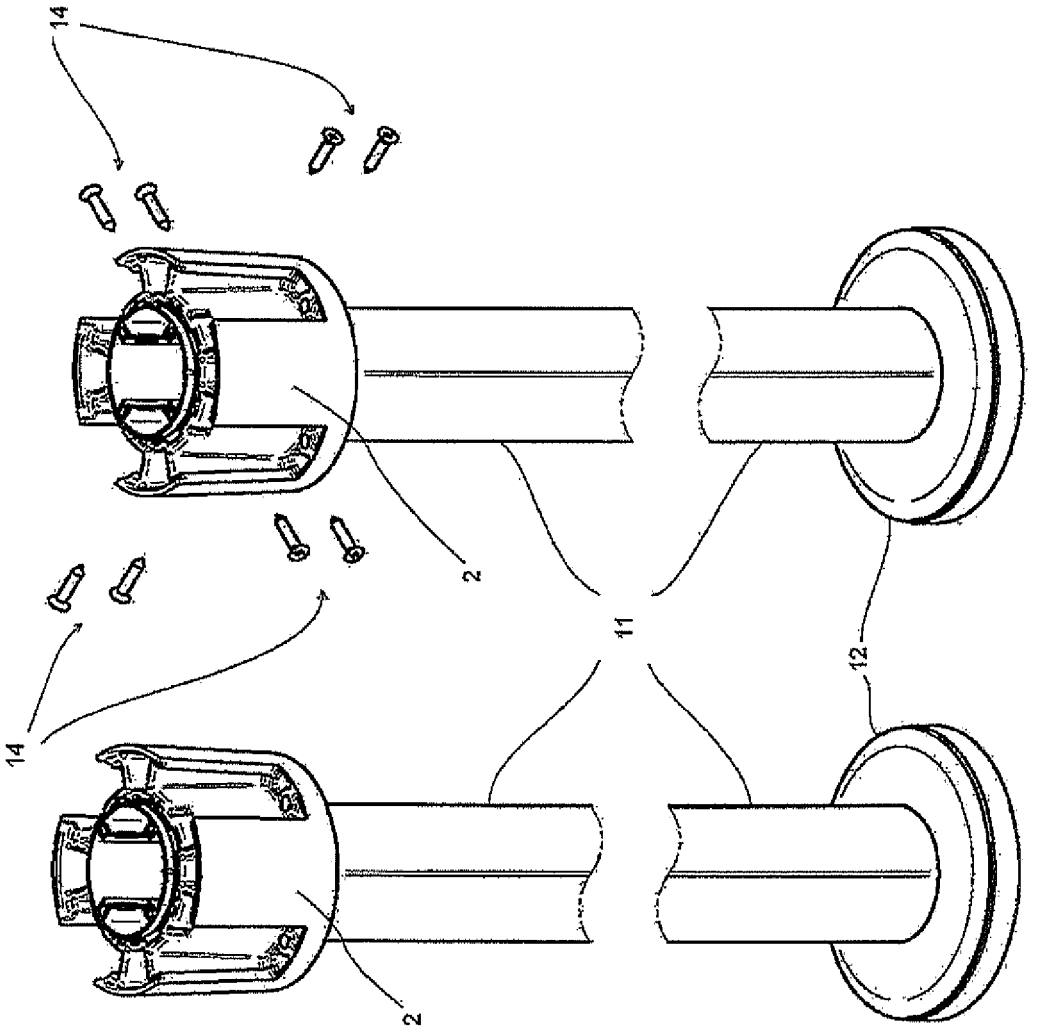

FIG. 2C

FIG. 2B

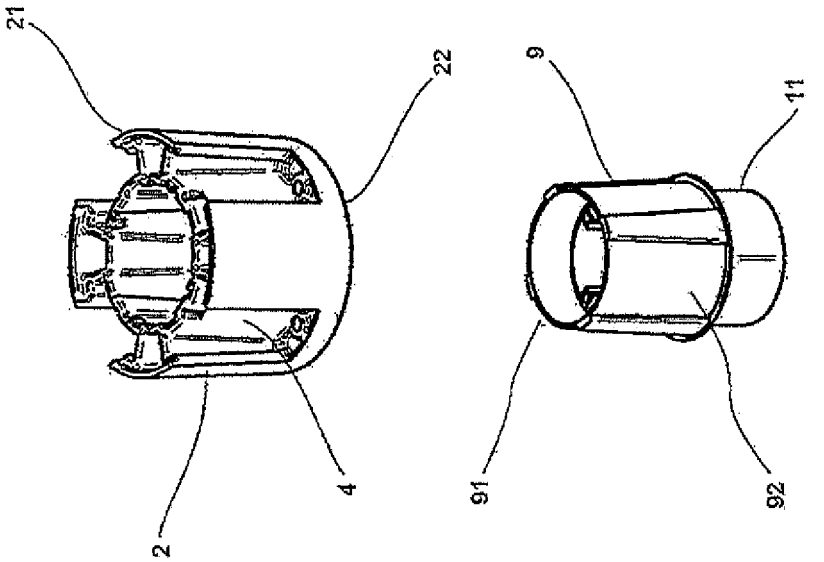

FIG. 2A

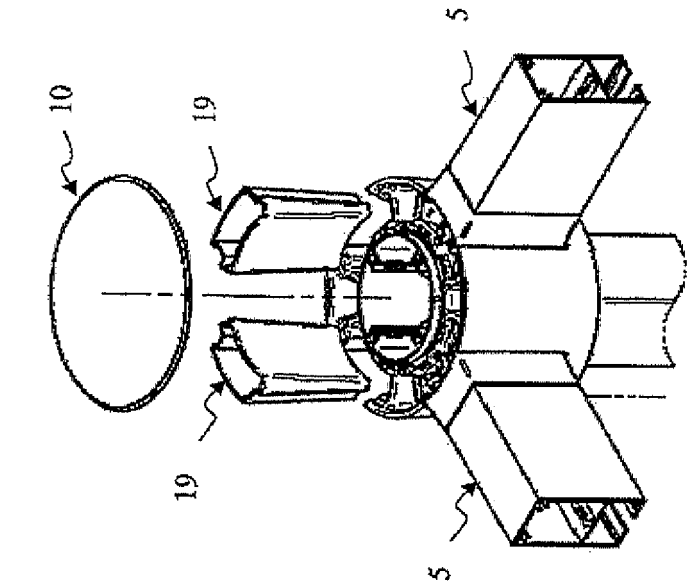

FIG. 2E

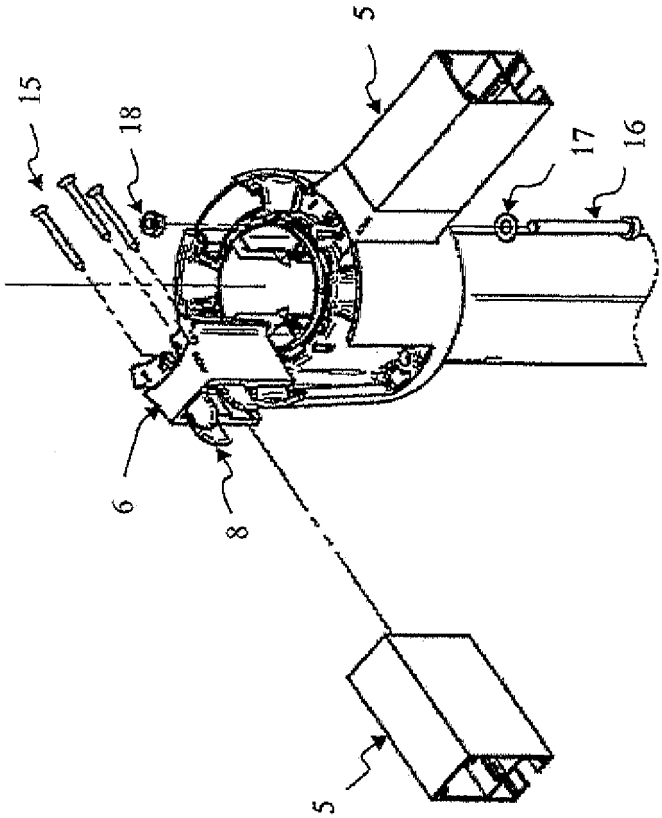

FIG. 2D

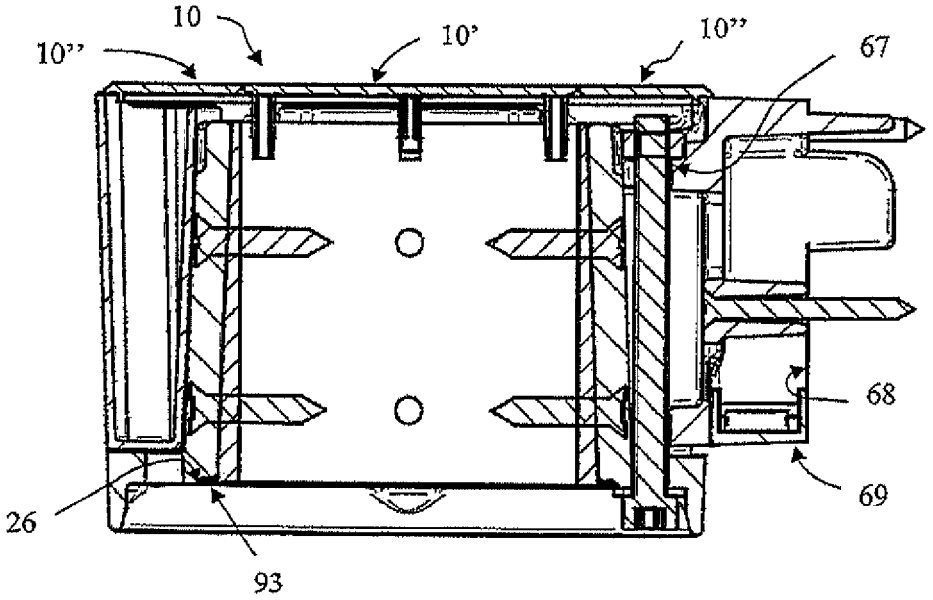

FIG. 3B

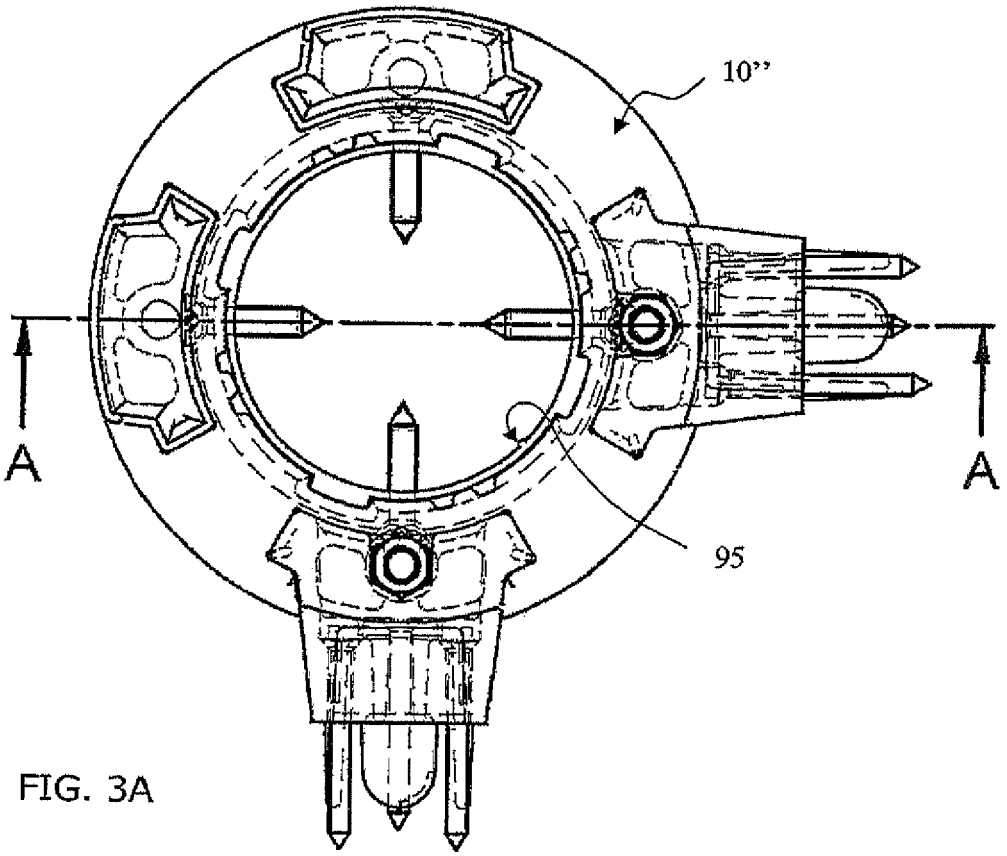

FIG. 3A

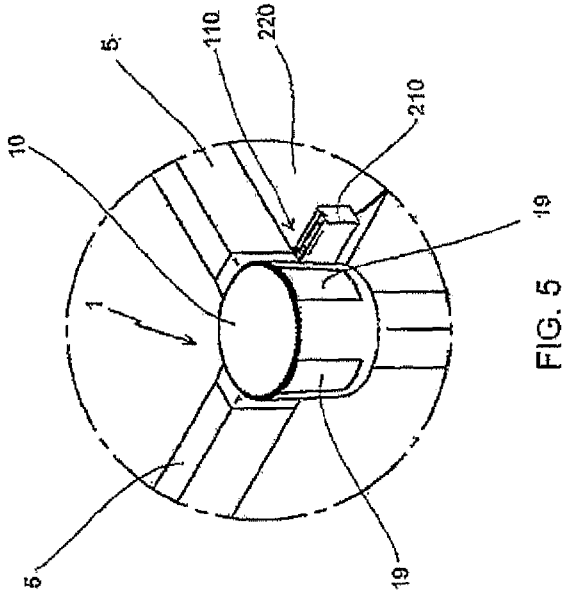

FIG. 5

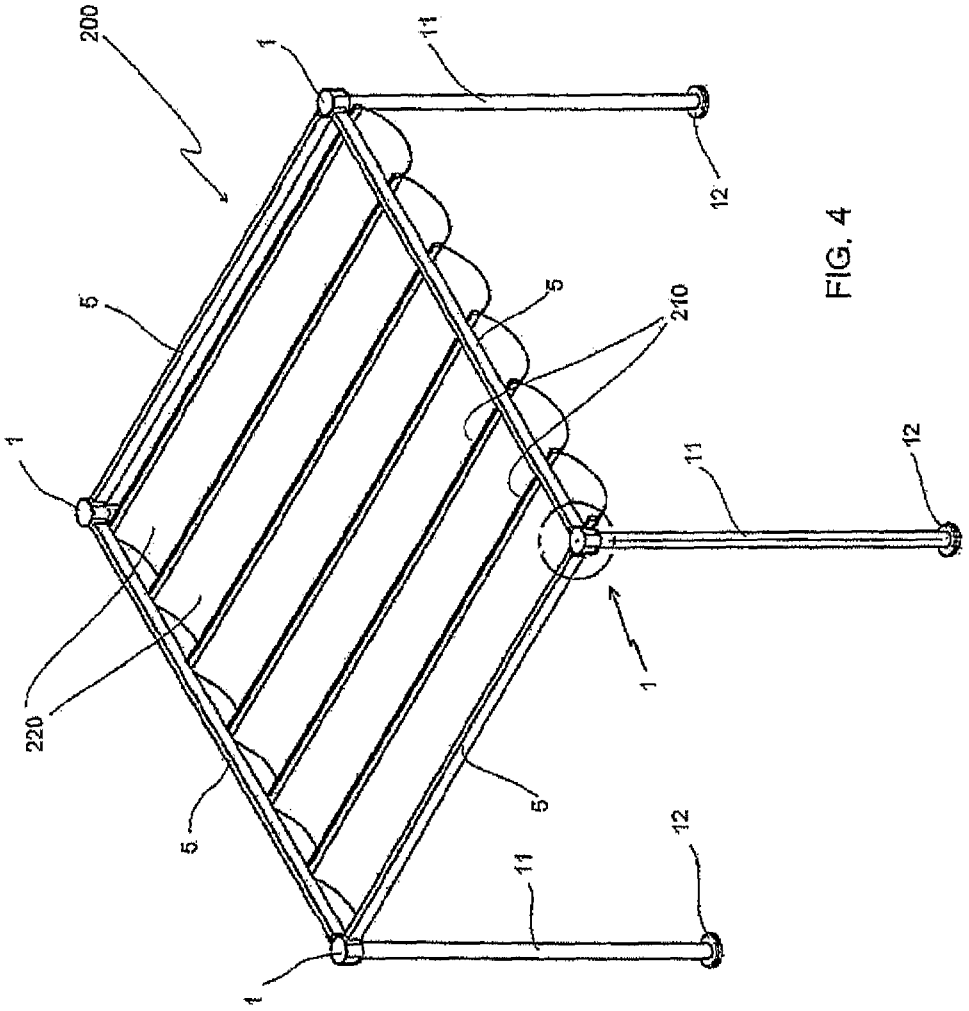

FIG. 4

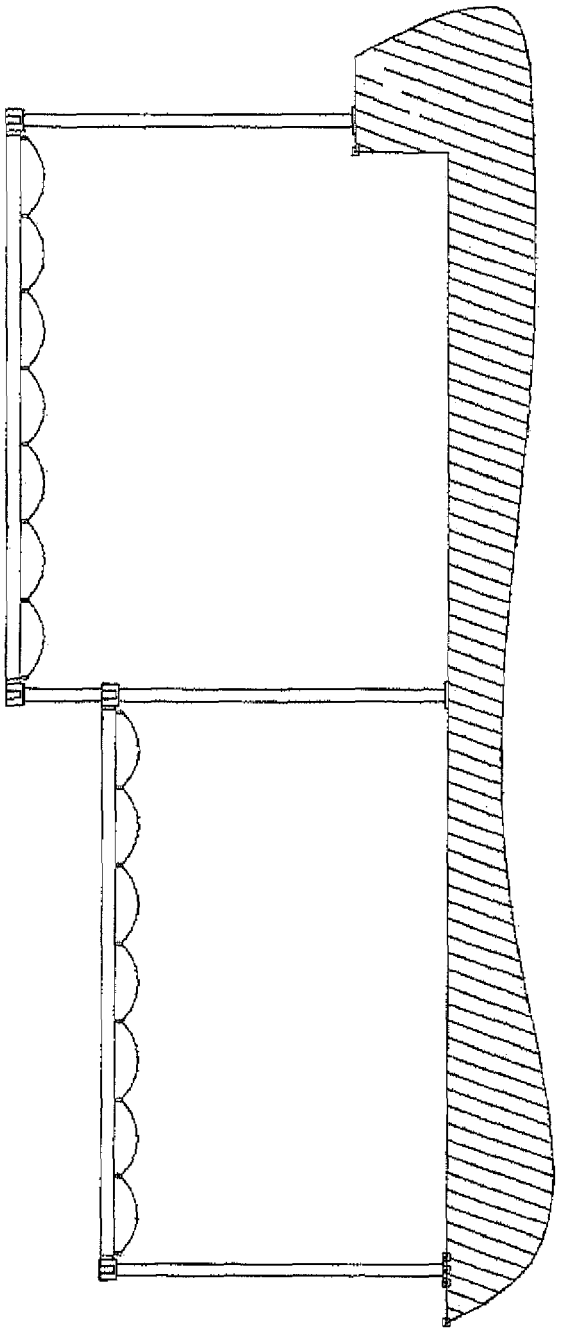

FIG. 6

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EUROPEAN SEARCH REPORT

Application Number
EP 10 15 1743

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 5 069 572 A (NIKSIC MARK R [US]) 3 December 1991 (1991-12-03) * column 3, line 7 - column 4, line 49; figures 1,2,4-9 *	1,2,11, 12,14,15	INV. E04H15/48
X A	EP 0 563 464 A (BAEJIN CORP [KR]) 6 October 1993 (1993-10-06) * column 1, line 3 - line 6 * * column 3, line 26 - column 5, line 20; figures 1-4 *	1,5,6, 8-10,15 2,11,13	
X	US 5 797 695 A (PRUSMACK A JON [US]) 25 August 1998 (1998-08-25) * column 3, line 28 - column 4, line 19 * * column 4, line 57 - column 5, line 4; figures 1-3,6,7 *	1,2, 11-15	
A	US 5 701 923 A (LOSI JR RAYMOND [US] ET AL) 30 December 1997 (1997-12-30) * figures 1-3,5-7,9-12 *	1,12-15	
A	US 2004/182430 A1 (SEO DONG WOOG [KR]) 23 September 2004 (2004-09-23) * figures 4-9 *	5,7	TECHNICAL FIELDS SEARCHED (IPC) E04H

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	25 May 2010	Stefanescu, Radu

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 10 15 1743

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25-05-2010

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