

(19)



(11)

**EP 3 147 428 A1**

(12)

**EUROPEAN PATENT APPLICATION**

(43) Date of publication:  
**29.03.2017 Bulletin 2017/13**

(51) Int Cl.:  
**E04H 6/02 (2006.01)**      **E04B 7/00 (2006.01)**  
**E04B 1/19 (2006.01)**      **E04B 1/58 (2006.01)**

(21) Application number: **16183660.6**

(22) Date of filing: **11.08.2016**

(84) Designated Contracting States:  
**AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**  
Designated Extension States:  
**BA ME**  
Designated Validation States:  
**MA MD**

(71) Applicant: **BOZARC, besloten vennootschap met beperkte aansprakelijkheid**  
**2630 Aartselaar (BE)**

(72) Inventor: **VERLINDEN, Patrick**  
**2650 Edegem (BE)**

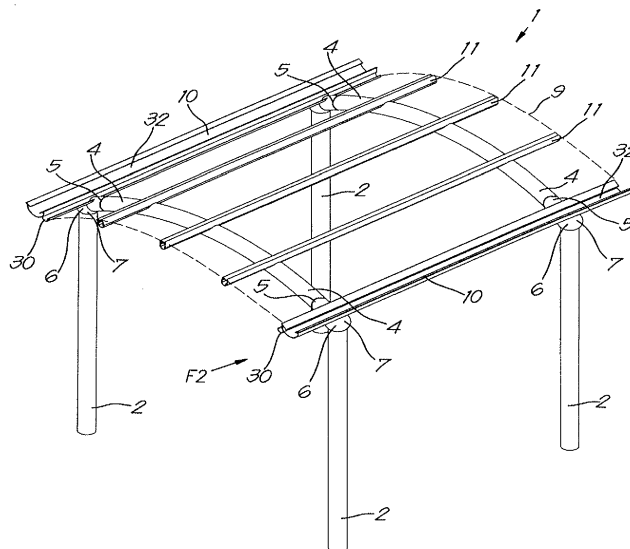
(74) Representative: **Donné, Eddy**  
**Bureau M.F.J. Bockstael nv.**  
**Arenbergstraat 13**  
**2000 Antwerpen (BE)**

(30) Priority: **28.09.2015 BE 201505598**

(54) **SHELTER**

(57) Shelter, such as a shelter (1) for a car, porch or terrace or similar, that is essentially constructed of poles (2) and/or supporting elements on which supporting beams (3) are provided on which a roofing sheet (9) is provided, whereby the ends (4) of the supporting beams (3) can cooperate with the poles (2) and/or supporting elements or similar, characterised in that an end of a pole (2) and/or supporting element is provided with at least one groove (13) that is located in a plane that extends

along the longitudinal direction (X-X') of the pole (2) and that a supporting beam (3) is provided with at least one lip-shaped protrusion (14) cooperating therewith that fits slideably in the groove (13), so that the angle (A) between a pole (2) and/or supporting element on the one hand and a supporting beam (3) on the other hand can be changed by sliding the lip-shaped protrusion (14) in the groove (13).



*Fig. 1*

**EP 3 147 428 A1**

## Description

**[0001]** The present invention relates to a shelter, more particularly a shelter that can be used as a carport for the parking of cars, bicycles or similar sheltered from the rain, but also as a shelter for a porch, as a covering for a terrace or balcony and similar for example.

**[0002]** The shelter according to the invention can also be used as a pergola or as a basic structure of a veranda or similar.

**[0003]** In most cases the known carports are constructed of beams or profiles that are sawn to size during the construction thereof, and which during the installation and construction of the carport must be connected together using nut and bolt joints or using welded joints.

**[0004]** The disadvantage of the aforementioned known carports is that the construction requires a lot of tailor-made work and that a large proportion of the work has to be done on site: the beams that are used can be sawn beforehand in the workshop but the provision of bolt holes for the nut and bolt joints or the application of welded joints must always be done on site.

**[0005]** It is known that work can be done much more efficiently in the workshop than on site, which favours the cost and quality.

**[0006]** As described in BE 1.016.161, a shelter is already known consisting of poles on which supporting beams are provided to support a roofing sheet, whereby the ends of the supporting beams cooperate with ball elements that are provided on the poles.

**[0007]** Such a shelter has the advantage that the supporting beams can cooperate with the ball elements along different orientations, while at the same time the supporting beams can always be sawn off perpendicular to the axis, irrespective of the distance or the level difference between the ball elements on the poles.

**[0008]** Moreover, the ball elements are generally applicable to different sizes of shelter, whereby the span is determined by the length of the supporting beams.

**[0009]** A disadvantage is that the orientation of the supporting beams with respect to the poles can be varied in two directions, such that a crooked installation is possible, such that the stability is negatively affected and the entire construction of the shelter will be crooked. A professional, secure and thus time-consuming installation and construction by trained specialists will be required, otherwise multiple corrections of the position of the supporting beams will be required in most cases.

**[0010]** In the aforementioned Belgian patent a bolt is provided in the ball element that is hingeably connected to the ball element whereby the hinge point is located in the centre point of the ball element.

**[0011]** The bolt is used to connect the ball element to the supporting beams and other structural elements at different angular displacements.

**[0012]** Due to the large forces on the hinge point of the bolt in the realisation of such connections, failures or breakages of these connections often occur at the loca-

tion of the hinge point.

**[0013]** The purpose of the present invention is to provide a solution to a least one of the aforementioned and other disadvantages.

**[0014]** The subject of the present invention is a shelter, such as a shelter for a car, porch or terrace or similar, that is essentially constructed of poles and/or supporting elements on which supporting beams are provided on which a roofing sheet is provided, whereby the ends of the supporting beams can cooperate with the poles and/or supporting elements or similar, whereby an end of a pole and/or supporting element is provided with at least one groove that is located in a plane that extends along the longitudinal direction of the pole and that a supporting beam is provided with at least one lip-shaped protrusion cooperating therewith that fits slideably in the groove, so that the angle between a pole and/or supporting element on the one hand and a supporting beam on the other hand can be changed by sliding the lip-shaped protrusion in the groove.

**[0015]** An advantage of such a shelter is that the supporting beams can cooperate with the poles and/or supporting elements in different orientations.

**[0016]** The principle is generally applicable for different sizes of shelters or carports. The span is determined by the length of the supporting beams.

**[0017]** Another advantage is that due to the application of the groove with the lip-shaped protrusions, the supporting beam can only be oriented in one plane with respect to the pole, so that the right position of the supporting beam is always obtained.

**[0018]** As a result, the installation of the shelter can be done more smoothly and faster without specially trained specialists being needed for this, because incorrect orientations are ruled out. This will also foster the stability.

**[0019]** The aforementioned supporting element is an alternative to the pole if the shelter is placed against an adjoining construction for example, such as a wall, facade or similar, such a supporting element can be fastened against the adjoining construction instead of placing a pole next to the facade.

**[0020]** It is clear that the precise shape of the groove and the lip-shaped protrusion can be realised in different ways. For example, the groove can have a circular segment shape whereby the lip-shaped protrusion has a complementary shape. An advantage of this is that the protrusion will always have a large contact area with the groove, the same at whatever angle the supporting beam is placed to the pole. This will ensure a good distribution of the forces and a good connection between the pole and the supporting beam and this irrespective of the orientation of the supporting beam.

**[0021]** Preferably the supporting beams are provided with a connecting piece at their end, whereby this connecting piece is provided with at least one lip-shaped protrusion.

**[0022]** The advantage of this is that the supporting beams can always be sawn off perpendicular to the axis,

irrespective of the distance or level difference between the poles or supports. The connecting piece can then be placed on the supporting beam that has been sawn off perpendicularly, whereby the lip-shaped protrusion on the connecting piece has the appropriate orientation to be able to cooperate with the groove.

**[0023]** According to a preferred characteristic of the invention coupling elements are provided on the poles and/or supporting elements, in which the aforementioned at least one groove is made, whereby the ends of the supporting beams can cooperate with the aforementioned elements.

**[0024]** These coupling elements are preferably ball elements that will enable the aforementioned groove to be constructed as a circular segment shape.

**[0025]** In a practical embodiment a bolt is hingeably connected to a pole and/or supporting element or a ball element, whereby the bolt is hingeably fastened to a shaft that is provided in the pole and/or supporting element concerned or the ball element concerned and whereby the bolt grips on the shaft at two points.

**[0026]** The advantage is that the connection of the pole and/or supporting element or the ball element can be made to other structural elements at different angular displacements, and if applicable with only one nut and bolt joint.

**[0027]** Because the bolt grips on the shaft at at least two points, the forces will be distributed on the shaft so that stresses that are too high and breakage of the shaft can be prevented.

**[0028]** In a preferred embodiment the bolt is provided at its free end with a hook-shaped element, whereby this hook-shaped element can grip in an opening provided to this end in a supporting beam or which can grip on an edge or similar provided to this end of the supporting beam in order to pull it towards the pole and/or supporting element concerned or the ball element concerned by tightening a nut on the bolt.

**[0029]** Due to the application of the hook-shaped element, the shelter can be constructed in a simple way without having to use welded joints.

**[0030]** In practice the roofing sheet will be provided on supporting profiles that are supported by the supporting beams.

**[0031]** In a preferred embodiment one or more sliding pieces are slideably provided on a supporting beam to support a supporting profile on the supporting beam concerned.

**[0032]** An advantage of this is that the location of the sliding pieces, and thus the supporting profiles, can be chosen on site during construction of the shelter.

**[0033]** This means that it does not have to be determined beforehand where the supporting profiles must rest on the supporting beams, but this only has to be determined at the last moment, for example as a function of the weight or flexibility of the roofing sheet or the local conditions.

**[0034]** With the intention of better showing the charac-

teristics of the invention, a few preferred embodiments of a shelter according to the invention are described hereinafter by way of an example, without any limiting nature, with reference to the accompanying drawings, wherein:

figure 1 schematically shows a perspective view of a shelter according to the invention;

figure 2 schematically shows a perspective view of the corner section as indicated by F2 in figure 1;

figure 3 shows an exploded view of the corner section as shown in figure 2;

figure 4 shows a cross-section according to line IV-IV in figure 2;

figure 5 shows a cross-section according to line V-V in figure 4;

figure 6 shows an alternative embodiment of figure 4.

**[0035]** The shelter 1 according to the invention, as shown in figure 1, essentially consists of four poles 2 that support a supporting beam 3 two by two.

**[0036]** In this case the supporting beams 3 are curved in their longitudinal direction. The supporting beams 3 do not have to present the curved form, but can for example also consist of straight profiles or profiles with a gabled form.

**[0037]** The ends 4 of the supporting beams 3 can cooperate with the poles.

**[0038]** In this case, but not necessarily, this cooperation is realised by the supporting beams 3 being provided with a connecting piece 5 at their end 4, and coupling elements 6 are provided on the poles 2. In this case the coupling element 6 is a ball element 6. As can be seen in figures 2 and 3 a ball element 6 is constructed from a spherical head 7 that is provided with an opening 8 that will fit over the poles 2 with a good fit.

**[0039]** The shelter 1 is further provided with a roofing sheet 9. The shape that the roofing sheet 9 adopts is determined by the bend or curve of the supporting beams 3 in their longitudinal direction Y-Y'. It is clear that the roofing sheet 9 can be constructed of different sub-sheets.

**[0040]** The roofing sheet 9 can be made of transparent and pliable polycarbonate, but can also be made of coloured polycarbonate or another plastic such as PVC or polyester for example, or even glass, metal such as sheet steel, wood or another suitable material.

**[0041]** In this case the roofing sheet 9 is provided on supporting profiles 10, 11 that are supported by the supporting beams 3.

**[0042]** The supporting profiles 10, 11 are situated transversely on the supporting beams 3, in this case there are two external supporting profiles 10 and three intermediate supporting profiles 11.

**[0043]** Although in the example shown there are four poles 2, it is clear that there can be more than four poles 2, for example six or eight poles 2. In these cases two or three roofing sheets 9 respectively can be provided.

**[0044]** Figure 2 clearly shows that in this case the sup-

porting beams 3 are profiles or columns with an essentially rectangular cross-section, whereby the walls 12 of the rectangle present a curve or are slightly curved.

**[0045]** Figures 2 to 5 clearly show how the supporting beams 3 are fastened on the poles 2.

**[0046]** In this case, the coupling elements 6 are provided with two grooves 13 that are located in two planes that extend along the longitudinal direction X-X' of the pole 2.

**[0047]** In this case, the connecting pieces 5 are provided with two lip-shaped protrusions 14 that can cooperate with the grooves 13 and which fit slideably in the grooves 13.

**[0048]** It is clear that there can also be only one groove 13 and one lip-shaped protrusion 14.

**[0049]** By sliding the lip-shaped protrusion 14 in the groove 13, the angle A between a pole 2 and a supporting beam 3 can be changed. Due to a good selection of the orientation of the grooves 13 and also of the lip-shaped protrusion 14, the orientation of the supporting beam 3 and the pole 2 will always be correct, irrespective of the angle A set between the two.

**[0050]** By working with the coupling element 6 and the connecting piece 5 to realise the cooperation between the supporting beams 3 and the poles 2, the poles 2 and the supporting beams 3 can be easily produced and are sawn off perpendicular to their axis X-X' and Y-Y' respectively.

**[0051]** An advantage of constructing the coupling elements 6 as ball elements 6 is that the groove 13 can be constructed as a circular segment shape, as can clearly be seen in figure 3.

**[0052]** The lip-shaped protrusions 14 have a complementary circular segment shaped construction.

**[0053]** This means that each angle A at which the supporting beam 3 is placed to the pole 2, there is always a maximum contact area between the grooves 13 and the lip-shaped protrusions 14. This will foster the stability and ensure a good distribution of the forces.

**[0054]** Each ball element 6 is further provided with a bolt 15 that is hingeably connected to the ball element 6 whereby the bolt 15 is hingeably fastened to a shaft 16 that is provided in the ball element 6 concerned and whereby the bolt 15 grips on the shaft 16 at two points. This is clearly presented in figure 5.

**[0055]** To this end, the bolt 15 is provided with a U-shaped coupler 17 that is connected by its two arms 18 to the aforementioned shaft 16 that fits through openings 19 in the arms 18 provided to this end.

**[0056]** In this case the bolt 15 fits through an opening 20 in the base 21 of the U-shaped coupler 17, but it is not excluded that the bolt 15 and the U-shaped coupler 17 form a single unit.

**[0057]** In this case the shaft 16 will run through the centre point of the ball element 6 concerned, whereby the shaft 16 is mounted on bearings by its ends in the ball element 6.

**[0058]** The ball element 6 is provided with a groove-

shaped cutaway 22 transverse to the shaft 16, and in this case on one side of the centre line X-X' of the pole, so that the bolt 15, that reaches to outside the ball element 6 can rotate over a larger angle around the shaft 16.

**[0059]** If there is no ball element 6 or coupling element 6, the bolt 15 will be hingeably connected to the pole 2 itself, whereby the aforementioned shaft 16 preferably runs through the centre line X-X' of the pole 2 concerned.

**[0060]** In this case, the supporting beam 3 is provided with a cutaway 23 close to each of the ends 4 of the supporting beam 3.

**[0061]** As can clearly be seen in figures 3 and 4, at its free end 24 the bolt 15 is provided with a hook-shaped element 25, whereby this hook-shaped element 25 can grip in the aforementioned cutaway 23 in an end 4 of the supporting beam 3 to pull it towards the ball element 6 concerned by tightening a nut 26 on the bolt 15.

**[0062]** It is possible that, instead of a cutaway 23, an edge or similar is provided on or in the supporting beam 3, on which or in which the aforementioned hook-shaped element 25 can grip.

**[0063]** It is clear that in an embodiment where there is no coupling element 6 or ball element 6, the supporting beam 3 will be pulled to the pole 2 itself by tightening the nut 26 on the bolt 15, and that, in an embodiment where a supporting element is used instead of a pole 2, the supporting beam 3 will be pulled towards the supporting element by tightening the nut 26 on the bolt 15. In such a case, the ball elements 6 can be provided on the aforementioned supporting elements, and the further construction proceeds completely similarly.

**[0064]** It is also possible that the ball element 6 acts as the supporting element itself, or in other words that the supporting element is constructed as a ball element 6, whereby the spherical head 7 is mounted with the opening 8 directly on a flat surface, for example on a steel plate or on a bluestone surface.

**[0065]** In this case, but not necessarily, the supporting beams 3 are provided with one or more sliding pieces 27 that are slideably provided thereon.

**[0066]** A sliding piece 27 will support a supporting profile 10, 11 on the supporting beam 3 concerned.

**[0067]** In this case there are five sliding pieces 27 per supporting beam 3, one for each supporting profile 10, 11.

**[0068]** Because the sliding pieces 27 are movable with respect to the supporting beam 3, the location where the supporting profiles 10, 11 go on the supporting beams 3 can be adjusted.

**[0069]** In this case the sliding pieces 27 are slideably held in a groove 28 provided to this end in the supporting beams 3. The groove 29 extends in the longitudinal direction Y-Y' of the supporting beams 3.

**[0070]** In this way, the best location for the supporting profiles 10, 11 on the supporting beams 3 can be chosen during construction of the shelter 1 on site.

**[0071]** The sliding pieces 27 also comprise means 29 with which they can be fastened with respect to the supporting beams 3. In this case these means 29 are two

screws or similar that are tightened through the sliding pieces 27 in the supporting beam 3, as can be seen in figure 4. However, these means 29 can also be formed by a snap connector or clip connector.

**[0072]** The supporting profiles 10, 11 are provided with a supporting face 30 with which they can rest in the sliding piece 27 or, if there are no sliding pieces 27, on the supporting beam 3.

**[0073]** The transverse cross-section of the supporting face 30 has the form of a circular segment.

**[0074]** It is clear that the cross-section of the supporting face 30 does not necessarily have to be semicircular or define a circular segment, but such an embodiment provides the advantage that the supporting profiles 10, 11 can be placed in the sliding pieces 27 or supporting beams 3 according to different orientations.

**[0075]** To this end of the sliding piece 27, or if applicable the supporting beams 3, present a cutaway 31 in which a supporting profile 10, 11 can at least be partially held and whereby the shape of the aforementioned cutaway 31 corresponds to the shape of the supporting face 30.

**[0076]** In this case, the two external supporting profiles 10 are provided with a gutter 32 that extends along the length of the supporting profile 10, that will be used to receive draining rainwater.

**[0077]** The free end of the channel of the gutter 32 is provided with plate parts 33 that slope obliquely in the aforementioned gutter 32.

**[0078]** The use and assembly of the shelter according to the invention is simple and can be as follows for example.

**[0079]** The four poles 2 are placed in the ground, using foundations or otherwise, of course with the necessary attention for the distance between the poles 2.

**[0080]** The ball elements 6 are placed on the poles 2, by guiding the spherical head 7 with the opening 8 over the poles 2, of course account is taken here of the correct orientation of the grooves 13 and it is ensured, for example, that the groove-shaped cutaways 22 are oriented towards one another in pairs.

**[0081]** If this has not yet been done then each ball element 6 is provided with a bolt 15 with a U-shaped coupler 17, by connecting a shaft 16 to the U-shaped coupler 17. In this case the shaft 16 is guided through openings 19 in the arms 18 of the U-shaped coupler 17.

**[0082]** The shaft 16 itself is provided in the ball element 7, for example using bearings or similar.

**[0083]** The hook-shaped element 25 is provided over the free end 24 of the bolt 15.

**[0084]** Then the supporting beams 3 are provided, that are provided beforehand with connecting pieces 5 with lip-shaped protrusions 14 beforehand, whereby these protrusions 14 in the grooves 13 are fitted on the ball elements 6.

**[0085]** The free end 24 of the bolt 15 with the hook-shaped element 25 is hereby brought through the connecting piece 5 and the open end 4 of the supporting

beam 3 and the cutaways 23 close to the ends 4 of the supporting beam 3.

**[0086]** The hook-shaped element 25 will grip in the cutaway 23 and by tightening the nut 26 on the bolt 15 this supporting beam 3 will be pulled firmly to the ball element 6 and the pole 2 so that a sturdy construction can be obtained. Moreover both the end 24 of the bolt 15 and the nut 26 are provided in a concealed way, so that they do not interfere with the aesthetic, elegant and rigid appearance of the shelter 1 and so that they are protected from damage.

**[0087]** Note that by tightening only one nut 26 per pole 2, the complete construction can be fixed, which enables a simple assembly.

**[0088]** Because the grooves 13 and the lip-shaped protrusions 14 have the shape of a circular segment, they will have the largest possible contact area, the same at whatever angle A the connection is made, so that the forces are optimally distributed and a good stable connection is obtained.

**[0089]** Because the bolt 15 grips on the shaft 16 at two points, the forces on the shaft 16, by tightening the nut 26 on the bolt 15, are distributed so that the shaft 16 will not yield or break.

**[0090]** In a next step, sliding pieces 27 are provided on the supporting beams 3. They can also be present beforehand.

**[0091]** By sliding the sliding pieces 27 in the groove 28 on the supporting beams 3, their desired position is chosen. Then with the help of the screws 29 they are fastened with respect to the supporting beams 3.

**[0092]** The external and intermediate supporting profiles 10, 11 respectively, are situated with their supporting face 30 in the cutaway 31 of these sliding pieces 27, as shown in figure 4.

**[0093]** As clearly shown by this drawing, the supporting profile 10, 11 can be tilted by sliding the semicircular supporting face 30 in the complementary cutaway 31.

**[0094]** When the supporting profiles 10, 11 are positioned, they are fastened in the sliding pieces 27, in this case using screws 34 or similar.

**[0095]** The roofing sheet 9 is provided in a suitable way on the supporting profiles 10, 11. At the location of the external supporting profiles 11 the roofing sheet 9 is connected to the flat plate part 33. As a result the draining rainwater will go into the gutter 32.

**[0096]** The other flat plate part 33 can be used, if need be, for shelters with successive roofing sheets 9.

**[0097]** Figure 6 shows a variant of figure 4, whereby in this case a ball element 6 is provided with more than one bolt 15, i.e. in this example there are two bolts 15 which are both provided on the shaft 61 and which also reach to outside the ball element 6 and can be oriented at a different angular position.

**[0098]** In this case the ball element 6 is provided with two groove-shaped cutaways 22 transverse to the shaft 16, one on each side of the centre line X-X' of the pole 2.

**[0099]** Furthermore, the ball element 6 will be provided

with grooves 13, which are extended as it were and which continue from the one side of the centre line X-X' to the other side of the centreline X-X', so that the lip-shaped protrusions 14 of both supporting beams 3 can grip on the grooves 13.

**[0100]** Using the two bolts 15 two supporting beams 3 can be mounted on the pole 2 in the same plane, but on an opposite side of the ball element 6. The assembly is analogous to the embodiment described above. It is also clear that the ball elements 6 can support different supporting beams 3 that are not necessarily located in the same plane.

**[0101]** It is clear that the connection described above at the location of a ball element 6 is particularly diverse and flexible. Indeed, due to the fact that the bolt 15 is hingeably provided around a shaft 16 that runs through the centre point of the spherical head 7, the bolt 15 will always adopt a radial orientation such that the orientation of the supporting beam 3 has no impact on the fastening thereof. This degree of freedom provides the advantage that the ball elements 6 with the aforementioned bolts 15 can be generally applied, irrespective of the span of the shelter 1, and irrespective of the radius of curvature of the supporting beams 3.

**[0102]** The fact that only nuts 26 and bolts 15 are used for the realisation of the connection so that no welded joints have to be provided on the site, enables the entire shelter 1 according to the invention to be made of aluminium, which makes the construction light and corrosion resistant. It is clear that a shelter 1 according to the invention, or at least parts thereof, can also be made of plastic, wood or another metal.

**[0103]** It is clear that the number of poles 2 and/or supporting beams 3 and/or supporting profiles 10, 11 used in the embodiments shown above is not restrictive and that many combinations of the constituent components are possible without departing from the scope of the invention.

**[0104]** As already mentioned above, supporting elements can also be used instead of poles 2.

**[0105]** If ball elements 6 are used, they can be fastened on the supporting element by means of an eyebolt that is provided on the central shaft 16.

**[0106]** This eyebolt can then be guided through a wall clamp, for example, by its other end that acts as the aforementioned supporting element.

**[0107]** The supporting elements can also be realised in different ways instead of a wall clamp.

**[0108]** As already stated above, the supporting elements can also be constructed as the ball elements 6 themselves for example, whereby a ball element 6 is mounted with the opening 8 directly on a flat surface, using an eyebolt or otherwise that is fastened to the central shaft 16.

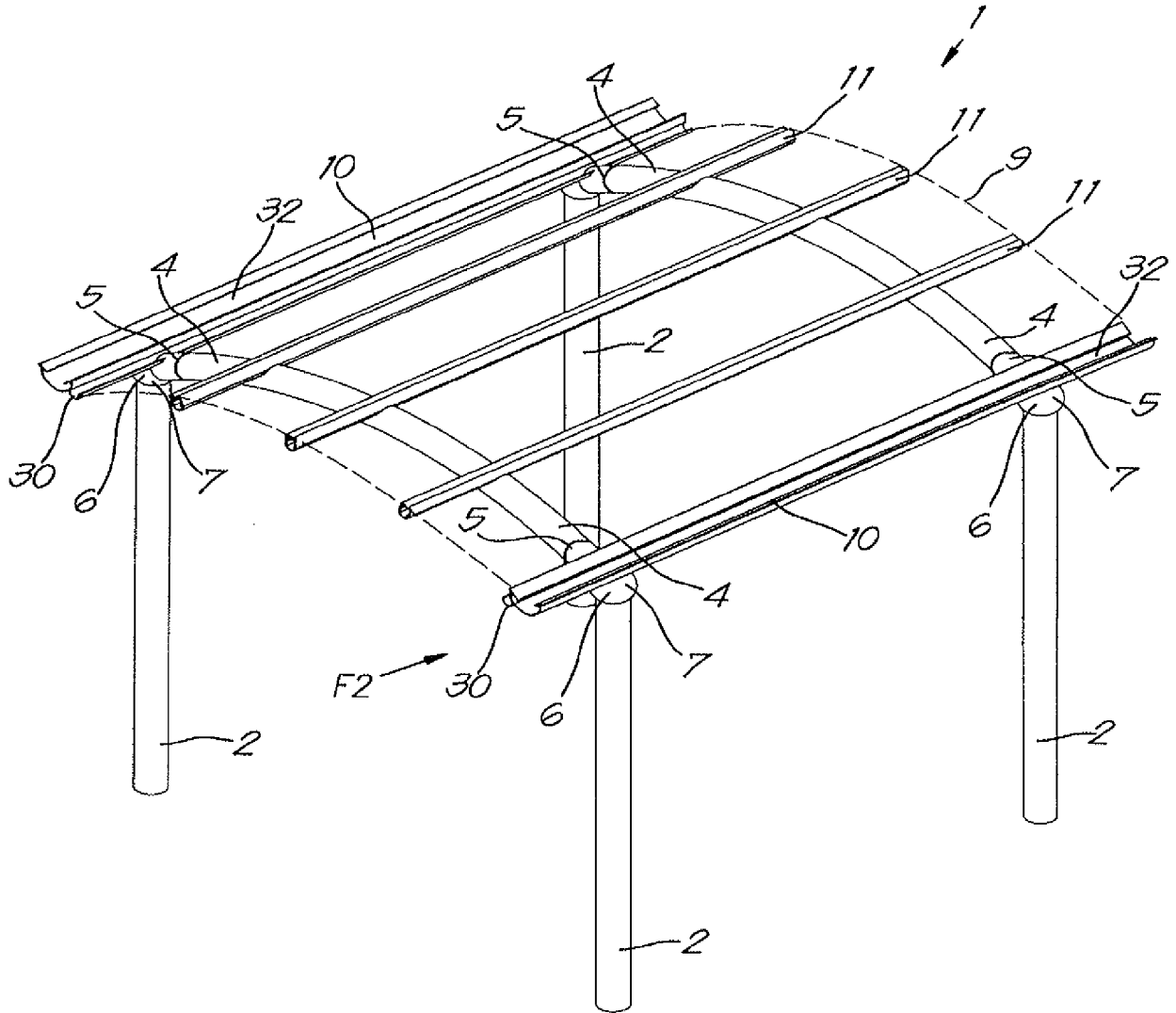
**[0109]** The present invention is by no means limited to the embodiments described as an example and shown in the drawings, but a shelter according to the invention can be realised in all kinds of forms and dimensions, with-

out departing from the scope of the invention.

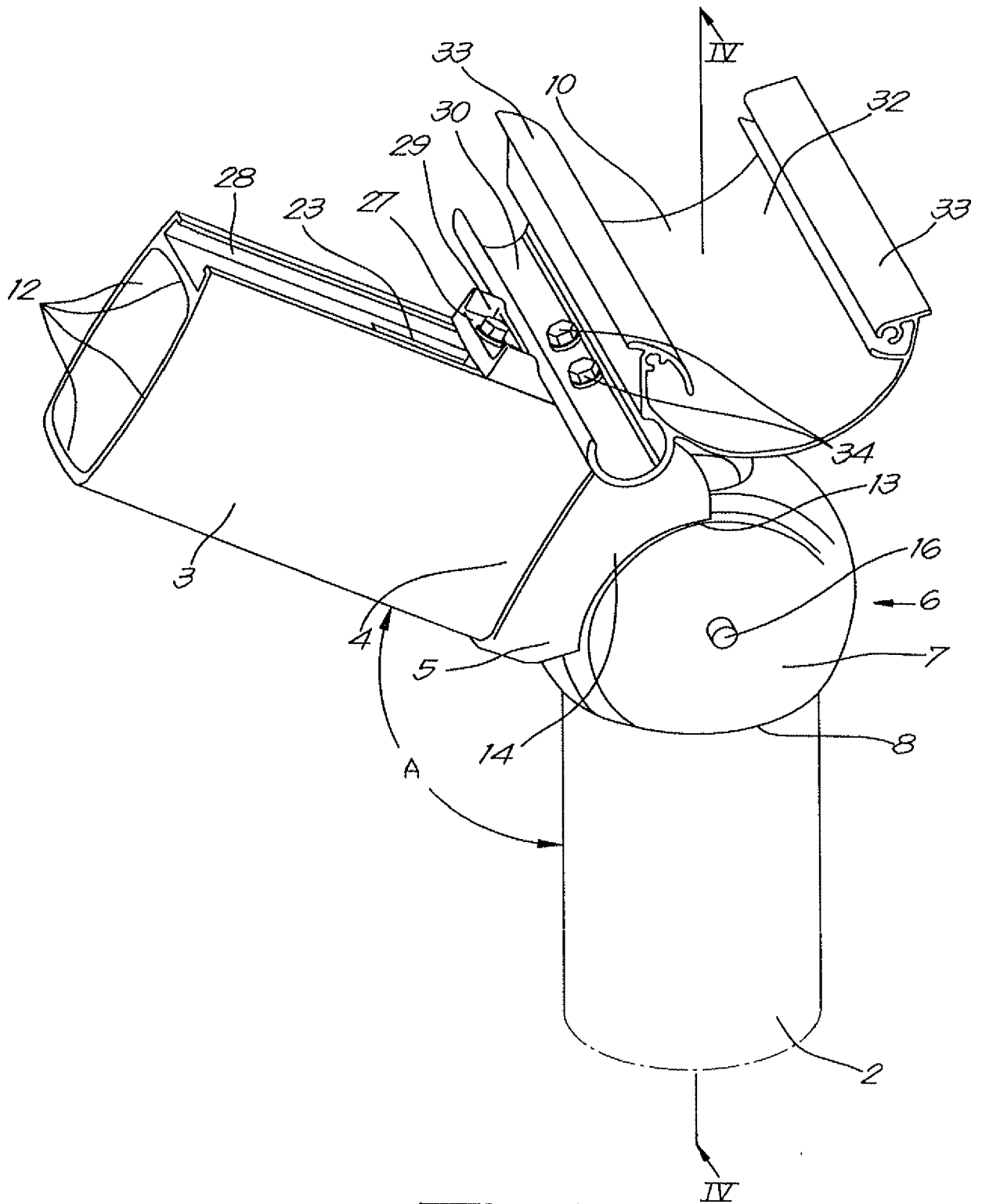
## Claims

- 5 1. Shelter, such as a shelter (1) for a car, porch or terrace or similar, that is essentially constructed of poles (2) and/or supporting elements on which supporting beams (3) are provided on which a roofing sheet (9) is provided, whereby the ends (4) of the supporting beams (3) can cooperate with the poles (2) and/or supporting elements or similar, **characterised in that** an end of a pole (2) and/or supporting element is provided with at least one groove (13) that is located in a plane that extends along the longitudinal direction (X-X') of the pole (2) and that a supporting beam (3) is provided with at least one lip-shaped protrusion (14) cooperating therewith that fits slideably in the groove (13), so that the angle (A) between a pole (2) and/or supporting element on the one hand and a supporting beam (3) on the other hand can be changed by sliding the lip-shaped protrusion (14) in the groove (13).
- 10 2. Shelter according to claim 1, **characterised in that** the supporting beams (3) are provided at their end (4) with a connecting piece (5), whereby this connecting piece (5) is provided with the at least one lip-shaped protrusion (14).
- 15 3. Shelter according to claim 1 or 2, **characterised in that** a pole (2) and/or supporting element is provided with two grooves (13) and that a supporting beam (3) is provided with two lip-shaped protrusions (14) cooperating therewith.
- 20 4. Shelter according to any one of the previous claims, **characterised in that** on the poles (2) and/or supporting elements, coupling elements (6) are provided in which the aforementioned at least one groove (13) is made, whereby the ends (4) of the supporting beams (3) can cooperate with the aforementioned coupling elements (6).
- 25 5. Shelter according to claim 4, **characterised in that** the coupling element (6) is a ball element (6).
- 30 6. Shelter according to claim 5, **characterised in that** a ball element (6) is constructed with a spherical head (7) with an opening (8) that fits over a pole (2) with a close fit.
- 35 7. Shelter according to any one of the previous claims, **characterised in that** a bolt (15) is hingeably connected to a pole (2) and/or supporting element or a ball element (6), whereby the bolt (15) is hingeably fastened to a shaft (16) that is provided in the pole (2) and/or supporting element concerned or the ball
- 40
- 45
- 50
- 55

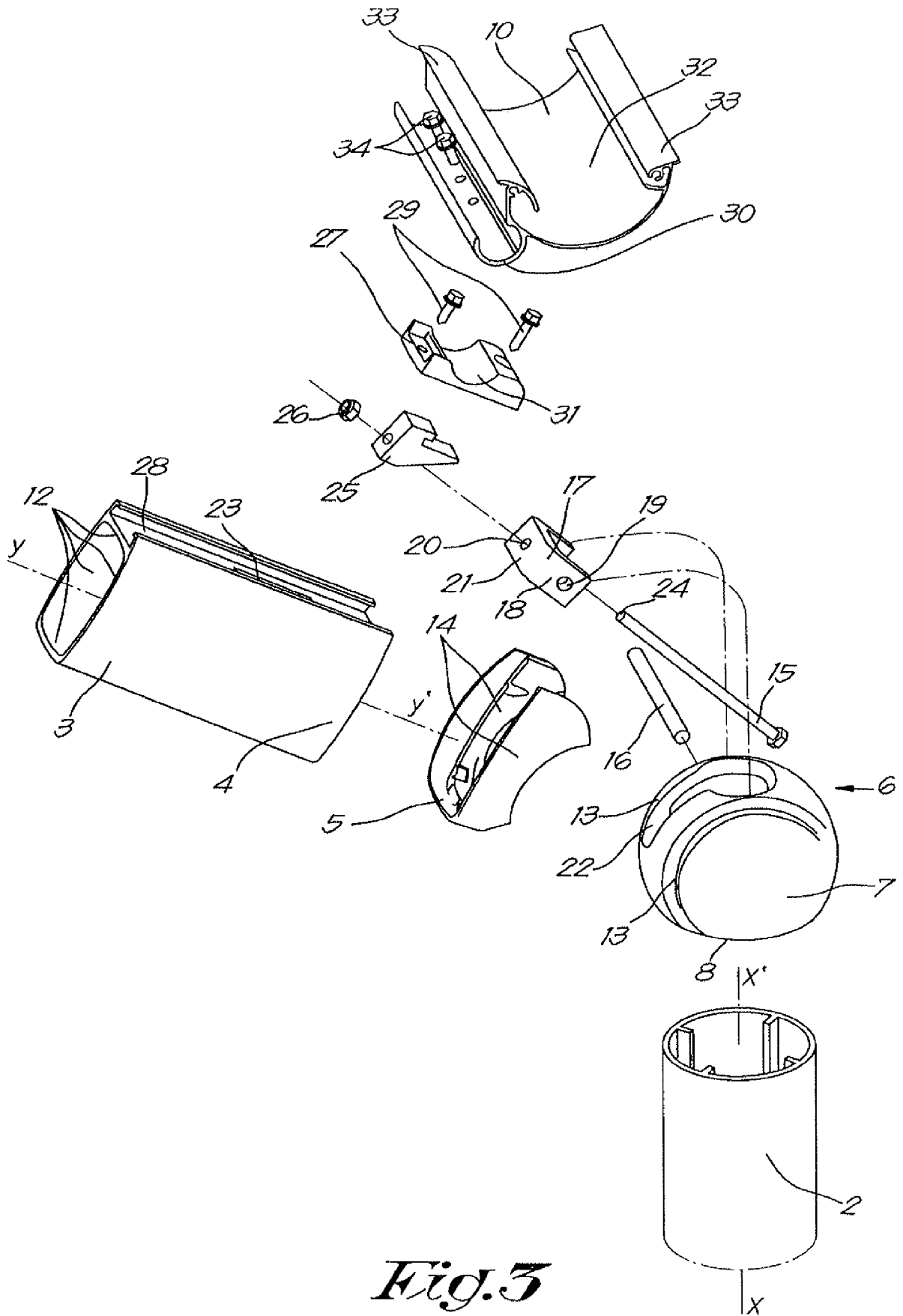
- element (6) concerned and whereby the bolt (15) grips on the shaft (16) at at least two points.
8. Shelter according to claim 7, **characterised in that** the shaft (16) runs through the axis (X-X') of the pole (2) and/or supporting element concerned or through the centre point of the ball element (6) concerned. 5
  9. Shelter according to claim 7 or 8, **characterised in that** the bolt (16) is provided with a U-shaped coupler (17) that is connected by its two arms (18) to the aforementioned shaft (16). 10
  10. Shelter according to any one of the previous claims 7 to 9, **characterised in that** a pole (2) and/or supporting element or a ball element (6) presents a groove-shaped cutaway (22) transverse to the shaft (16), so that the bolt (15), that reaches to outside the pole (2) and/or supporting element or the ball element (6), can rotate over a larger angle around the shaft (16). 15
  11. Shelter according to any one of the previous claims 7 to 10, **characterised in that** a pole (2) and/or supporting element or a ball element (6) is provided with more than one bolt (15). 20
  12. Shelter according to any one of the previous claims 7 to 11, **characterised in that** at its free end (24) the bolt (15) is provided with a hook-shaped element (25), whereby this hook-shaped element (25) can grip in a cutaway (23) provided to this end in a supporting beam (3) or which can grip on an edge or similar provided to this end of the supporting beam (3) in order to pull this, by tightening a nut (26) on the bolt (15), to the pole (2) and/or supporting element concerned or the ball element (6) concerned. 25
  13. Shelter according to any one of the previous claims, **characterised in that** the roofing sheet (9) is provided on supporting profiles (10, 11) that are supported by the supporting beams (3). 30
  14. Shelter according to claim 13, **characterised in that** one or more sliding pieces (27) are slideably provided on a supporting beam (3), to support a supporting profile (10, 11) on the supporting beam (3) concerned. 35
  15. Shelter according to claim 14, **characterised in that** the sliding pieces (27) are held in a groove (28) provided to this end in the supporting beams (3). 40
  16. Shelter according to claim 14 or 15, **characterised in that** the sliding pieces (27) comprise means (29) with which the sliding pieces (27) can be fastened with respect to the supporting beams (3). 45
  17. Shelter according to any one of the previous claims 13 to 16, **characterised in that** a supporting profile (10, 11) has a supporting face (30) with which it can rest in the sliding piece (27) or on a supporting beam (3). 50
  18. Shelter according to claim 17, **characterised in that** the transverse cross-section of the supporting face (30) has the shape of a circular segment.
  19. Shelter according to claim 17 or 18, **characterised in that** the sliding piece (27) or the supporting beams (3) present a cutaway (31) in which a supporting profile (10, 11) can at least be partially held and whereby the shape of the aforementioned cutaway (31) corresponds to the shape of the supporting face (30).
  20. Shelter according to any one of the previous claims 13 to 19, **characterised in that** a supporting profile (10) is provided with a gutter (32).
  21. Shelter according to claim 20, **characterised in that** the gutter (32) is provided with plate parts (33) that slope obliquely in the aforementioned gutter (32).
  22. Shelter according to any one of the previous claims, **characterised in that** the supporting beams (3) are profiles or columns with an essentially rectangular cross-section, whereby the wall of the rectangle presents a curve or is slightly curved.
  23. Shelter according to any one of the previous claims, **characterised in that** a supporting beams (3) is curved in its longitudinal direction (Y-Y').



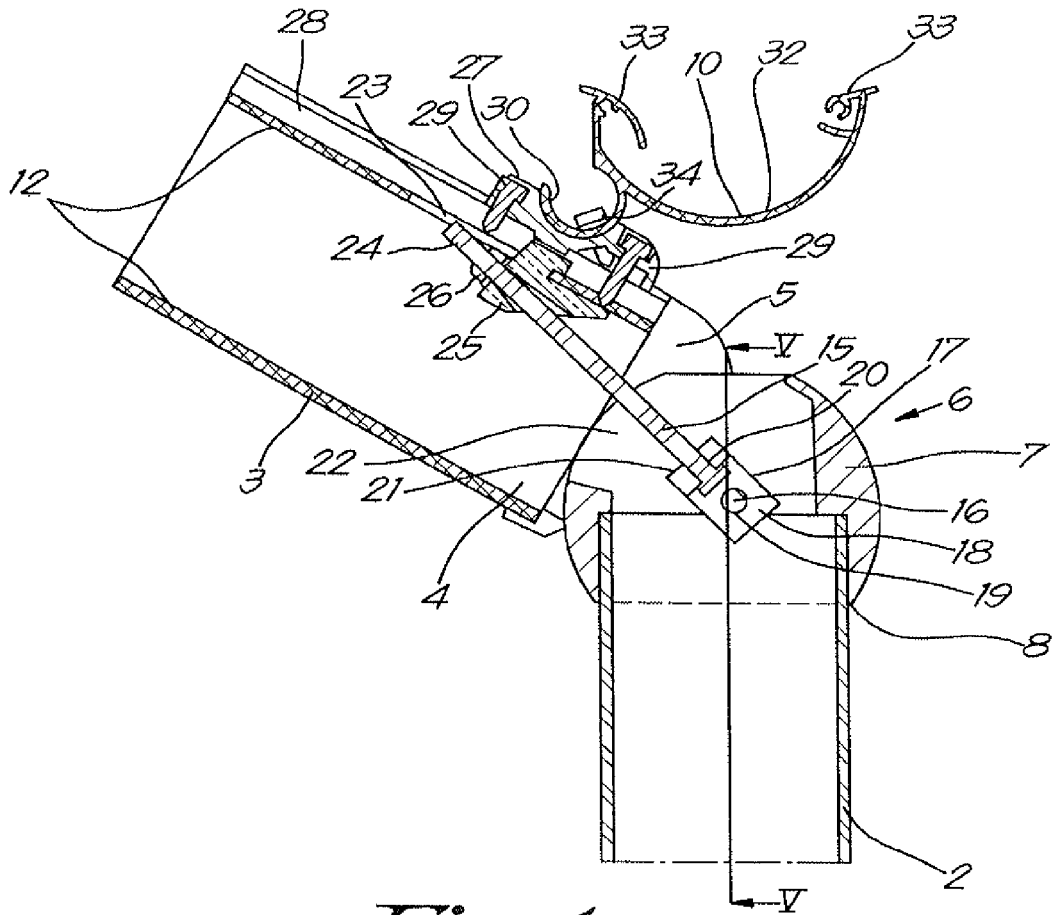
*Fig. 1*



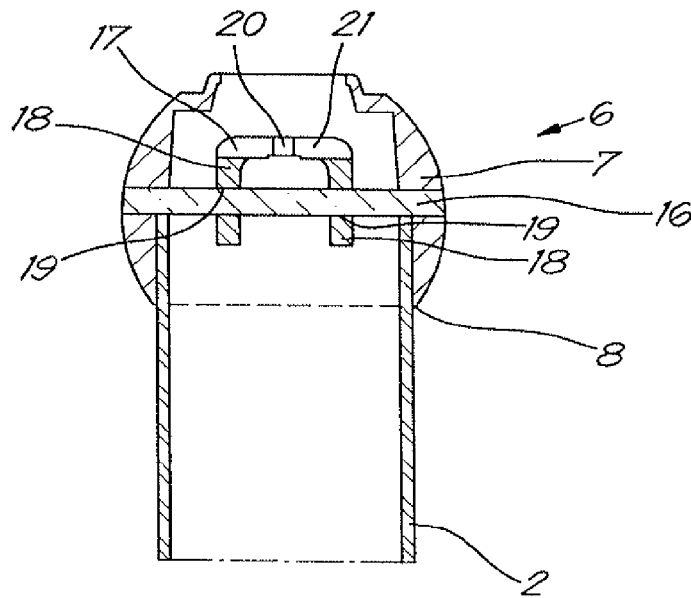
*Fig. 2*



*Fig. 3*



*Fig. 4*



*Fig. 5*





EUROPEAN SEARCH REPORT

Application Number  
EP 16 18 3660

5

10

15

20

25

30

35

40

45

50

55

| DOCUMENTS CONSIDERED TO BE RELEVANT  |  |   |   |
|--|--|---|---|
| Category   | Citation of document with indication, where appropriate, of relevant passages  | Relevant to claim   | CLASSIFICATION OF THE APPLICATION (IPC)                             |
| A  | EP 1 679 410 A1 (VERLINDEN PATRICK JEAN MARIE I [BE]) 12 July 2006 (2006-07-12)<br><br>* column 1, line 3 - line 9 *<br>* column 2, line 34 - column 6, line 45; figures 1-7 * | 1,2,4-8, 10-13, 17,18, 20-23  | INV.<br>E04H6/02<br>E04B7/00<br><br>ADD.<br>E04B1/19<br>E04B1/58    |
| A  | EP 0 166 982 A1 (GROTEMEYER GMBH & CO GEB [DE]) 8 January 1986 (1986-01-08)<br>* page 4, line 7 - page 7, line 12; figures 1,2,4 *   | 1,2,4-6, 10,13  |   |
| A  | EP 1 493 884 A2 (BTW GMBH BRANDSCHUTZTUEREN UND [DE]) 5 January 2005 (2005-01-05)<br>* column 9, line 20 - column 12, line 30; figures 1-3,6 *                                 | 1,2,13, 20,21   |   |
| A  | FR 2 533 605 A1 (DUBOIS CLAUDE [FR]) 30 March 1984 (1984-03-30)<br>* page 2, line 18 - page 3, line 21; figure *   | 1,2,13, 20,21   | TECHNICAL FIELDS SEARCHED (IPC)<br><br>E04H<br>E04B<br>E04D<br>F16B |
| The present search report has been drawn up for all claims   |  |   |   |
| Place of search<br><b>Munich</b>   |  | Date of completion of the search<br><b>3 February 2017</b>  | Examiner<br><b>Stefanescu, Radu</b>                                 |
| CATEGORY OF CITED DOCUMENTS<br>X : particularly relevant if taken alone<br>Y : particularly relevant if combined with another document of the same category<br>A : technological background<br>O : non-written disclosure<br>P : intermediate document |  | T : theory or principle underlying the invention<br>E : earlier patent document, but published on, or after the filing date<br>D : document cited in the application<br>L : document cited for other reasons<br>.....<br>& : member of the same patent family, corresponding document |   |

1  
EPO FORM 1503 03/02 (P04/C01)

ANNEX TO THE EUROPEAN SEARCH REPORT  
ON EUROPEAN PATENT APPLICATION NO.

EP 16 18 3660

5

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on  
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

03-02-2017

10

15

20

25

30

35

40

45

50

55

| Patent document cited in search report | Publication date | Patent family member(s)   | Publication date                                     |
|--|------------------|---|--|
| EP 1679410 A1                          | 12-07-2006       | AT 370295 T<br>BE 1016368 A3<br>DE 602005002018 T2<br>EP 1679410 A1 | 15-09-2007<br>05-09-2006<br>08-05-2008<br>12-07-2006 |
| EP 0166982 A1                          | 08-01-1986       | DE 3420841 A1<br>EP 0166982 A1                                      | 05-12-1985<br>08-01-1986                             |
| EP 1493884 A2                          | 05-01-2005       | AT 360737 T<br>DE 10329717 A1<br>EP 1493884 A2                      | 15-05-2007<br>27-01-2005<br>05-01-2005               |
| FR 2533605 A1                          | 30-03-1984       | NONE  |  |

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

**REFERENCES CITED IN THE DESCRIPTION**

*This list of references cited by the applicant is for the reader's convenience only. It does not form part of the European patent document. Even though great care has been taken in compiling the references, errors or omissions cannot be excluded and the EPO disclaims all liability in this regard.*

**Patent documents cited in the description**

- BE 1016161 [0006]