



(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
05.07.2017 Bulletin 2017/27

(51) Int Cl.:
E04F 10/04 (2006.01) A45B 23/00 (2006.01)

(21) Application number: **15778350.7**

(86) International application number:
PCT/ES2015/070623

(22) Date of filing: **13.08.2015**

(87) International publication number:
WO 2016/030561 (03.03.2016 Gazette 2016/09)

(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

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(30) Priority: **29.08.2014 ES 201431159 U**

(54) **SUN UMBRELLA**

(57) A parasol (1) comprising a series of spokes (2), between which a piece of fabric (3), designed to project shade extends, these spokes being linked to a mechanism (4) that makes it possible to vary the arrangement of the spokes, such that the parasol adopts at least one folded position (A) and one operative unfolded position (B1, B2, B3, B4, B5). The mechanism comprises a shaft

(5) and a plurality of rings (6), which overlap and are mounted rotationally around said shaft, at least two spokes being joined to different rings; and also the mechanism comprises a stop device (7), which may be operated manually and is capable of blocking relative movement between rings.

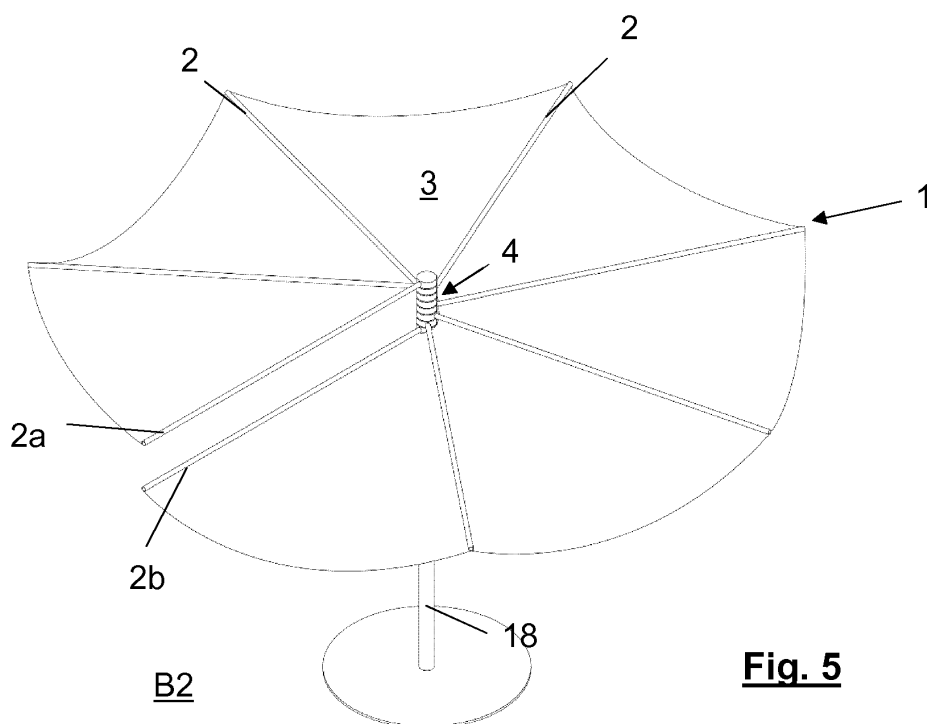


Fig. 5

Description

Technical field of the invention

[0001] The invention relates to a parasol of the variety used to project shade, in order to provide shelter from the sun. This parasol makes it possible to regulate the surface area of the shade projected, in order to adapt it to different locations and needs.

Background of the invention

[0002] Parasols designed to project shade, which may adopt a folded position suitable for transport, and an operative position, in which to provide shelter from the sun, are known about in the state of the art.

[0003] Parasols provided with spokes and a sheet of fabric are also known about, it being possible to fold and unfold the same like an umbrella, as described in documents ES1024843U, ES1060738U and ES1056592. Nevertheless, it is not possible to adjust the surface area of the shade projected by these parasols, since the spokes thereof must be open completely so as not to obstruct access to the shaded area.

[0004] The present invention therefore aims to reveal a parasol that makes it possible to regulate the shade projected by the same, by adopting different operative positions in which different surface areas of shade are projected.

[0005] Another aim of the present invention constitutes revealing a parasol that may be housed in narrow spaces, where current parasols known about in the state of the art cannot be located.

Explanation of the invention

[0006] The parasol of the present invention is of the variety that comprises a series of spokes, between which a sheet of fabric is extended in order to project shade, these spokes being linked to a mechanism that makes it possible to alter the arrangement of the spokes, in order for the parasol to adopt at least one folded position and one operative, unfolded position.

[0007] The parasol is essentially characterised in that the mechanism comprises a shaft and a plurality of overlapping rings, which are mounted rotationally around said shaft, with at least two spokes being joined to different rings. It is also characterised in that the mechanism comprises a stop device, which may be operated manually, capable of blocking the relative movement between rings, thereby making it possible to alter the position of the spokes so that the fabric unfolds in such a way that it creates the right amount of shade required. This also makes it possible to lock the spokes into position, thereby making it possible to choose the angle at which the parasol is opened.

[0008] It must also be noted that the spokes are joined firmly to the rings, directed perpendicularly to the shaft,

comprising an equal number of spokes and rings, each spoke being joined to a respective ring, it therefore being possible for the fabric to be unfolded in such a way that it is perpendicular to the shaft, thereby maximising the shade projected for a desired circular segment, whilst preventing the ends of the spokes from being too low.

[0009] According to another characteristic of the invention, the rings form a pile, a bearing being arranged between each two rings, it being possible for said bearing to be a friction bearing or an axial washer, which can slide when dry or oiled and is preferably made of plastic, therefore enabling the rings to be rotated smoothly, without making noise.

[0010] It must also be noted that the fabric is joined to all of the spokes and extends from the upper spoke to the lowest spoke, the length of the fabric preferably being the same between every two consecutive spokes, i.e. between each two spokes joined to both adjacent rings, in such a way that the fabric spans all of the spokes, thereby resulting in a better distribution of said fabric.

[0011] It must also be noted that the length of the fabric is the same between every two consecutive spokes, i.e. between each two spokes joined to both adjacent rings, in such a way that, upon the spokes being opened out completely, the fabric between each pair of spokes determines the same circular segment, thus meaning the fabric arranged between each pair of spokes has the same level of wind resistance.

[0012] It must also be noted that the parasol is adapted to form a second loosely closed unfolded position, upon the lower spoke rotating by one full turn, the lower spoke therefore being aligned with the upper spoke, wherein, upon arranging the rest of the spokes at an equal distance from one another, the fabric between the spokes is loose, thereby enabling a first kind of finish where the edges of the parasol form waves as a result of the clearance produced in the fabric, whilst facilitating the rapid evacuation of water in the event of rain along the channel formed by said clearance.

[0013] The parasol is also adapted such that, after having achieved the second loosely closed unfolded position and going on to rotate the lower spoke, it determines a third tense closed unfolded position, in which a second kind of finish where the edges of the parasol are essentially straight and tense is achieved. In this third tense closed unfolded position, the lower spoke will preferably be aligned with the next spoke, in order to achieve a better finish and reduce wind resistance. Naturally, the possibility of the fabric being larger in order to enable the spokes to continue rotating has been taken into account, in such a way that the segments of fabric form a helical structure.

[0014] It must be noted that the parasol comprises a total of eight spokes, the fabric between each two consecutive spokes being long enough to enable the circular segment formed by two consecutive spokes to reach 60°, in such a way that when the fabric is completely open, they may form a hexagon.

[0015] In other embodiments, the parasol comprises two spokes being joined to each ring, allowing more combinations in the joints of the fabric and the spokes, such that more than a portion of fabric can be used.

[0016] In an embodiment, the two spokes joined to the same ring form an angle of 180 degrees between them, such that when the fabric is joint to one of the spokes of each ring, and extends from a upper spoke to a lower spoke, allowing that two fabrics could be placed, joining each one to one of the spokes of the pair of spokes of each ring, in the unfolded position the fabric shapes as a double helix, allowing the projection of a denser shade.

[0017] In another embodiment the fabric is attached to the two spokes that are attached to the same ring, allowing the rings to freely rotate as the fabric is only fixed to the spokes of the same ring. According to this variant, when the two spokes are attached to the same ring they form an angle of 60 degrees with each other, it is possible to form a parasol that in its unfolded position has an hexagonal shape.

[0018] It must also be noted that the stop device comprises two press bodies, between which the rings are arranged such that they overlap, and with which they form a packet, the press bodies being able to move closer to or further away from one another and adopt both stop and free positions, axially compressing or relaxing the plurality of overlapping rings, in order to respectively block or allow the relative movement thereof.

[0019] According to another characteristic of the invention, at least one of the press bodies is joined to the shaft, in such a way that upon the plurality of rings being compressed, in addition to preventing the relative movement thereof, the assembly formed by the same is also prevented from rotating around the shaft.

[0020] It must also be noted that the press bodies are subject to the action of a number of elastic means, which tend to arrange them in their stop position, i.e. at a distance from one another, such that they axially compress the plurality of rings; the stop device comprising a number of actuation means adapted to overcome the force of said elastic means and arrange the press bodies in their free position, i.e. sufficiently separated to allow the rings to rotate freely around the shaft.

[0021] According to another characteristic, the parasol furthermore comprises a regulation screw, in order to regulate the force of the elastic means.

[0022] It must also be noted that the elastic means comprise a spring that acts upon traction, a terminal or end of the spring being connected to one of the press bodies, being capable of relative movement in relation to the same, it thereby being possible to regulate the compression of the spring and, as such, the force that the same exerts on the press bodies.

[0023] It must also be noted that the actuation means comprise a cam or a manually manoeuvrable eccentric wheel, in order to thus be able to stop and release the spokes easily by means of a rotational movement.

[0024] It must also be noted that the actuation means

furthermore comprise a lever for manually moving the cam, in such a way that users may easily operate the cam.

[0025] It must also be noted that the shaft comprises fastening means for fastening to a post and fastening means for fastening to a wall support, thereby enabling the parasol to be held up both in a post and on a wall.

Brief description of the drawings

[0026] In order to complement the present description, with the aim of facilitating an understanding of the invention characteristics, the present descriptive specification is accompanied by a set of drawings, in which the following has been represented by way of non-limiting illustration:

Figure 1. is a front cross-sectional view of the parasol of the present invention,

Figure 2. is a side cross-sectional view of the parasol of the present invention,

Figure 3. shows the parasol mounted in a post when in folded position,

Figure 4. shows the parasol mounted in a post in a first unfolded position,

Figure 5 shows the parasol mounted in a post in a second unfolded position,

Figure 6 shows the parasol mounted in a post in a third unfolded position,

Figure 7 shows a second embodiment of the parasol in its folded position,

Figure 8 shows the second embodiment in an unfolded position,

Figure 9 shows a third embodiment of the parasol in its folded position,

Figure 10 shows the third embodiment in an unfolded position, and Figure 11 shows a ring of the third embodiment.

Detailed description of the drawings

[0027] Figure 1 is a cross-sectional view of the parasol 1 mechanism 4 of the present invention. As can be observed, the mechanism 4 makes it possible to vary the arrangement of the spokes 2 so that the parasol 1 adopts various positions, amongst which a folded position A and various operative unfolded positions B1, B2 and B3 stand out. The mechanism 4 furthermore comprises a shaft 5 and a plurality of overlapping rings 6, mounted rotationally around said shaft 5, at least two spokes 2 being joined to different rings 6. The mechanism 4 furthermore comprises a stop device 7, which may be operated manually and is capable of blocking relative movement between the rings 6.

[0028] As can also be seen in Figure 1, the spokes 2 are joined firmly to the rings 6, directed perpendicularly to the shaft 5 and the invention comprises an equal number of spokes 2 and rings 6, each spoke 2 being joined to a respective ring 6. The spokes 2 are to be

separated from their rings 6 in order to dismount them. It is also foreseen that the spokes 2 may be foldable, thus making it possible to adapt a compact transportation and storage form.

[0029] The various rings 6 of the mechanism 4 form a pile, a bearing 9 being arranged between every two rings 6, facilitating the rotation of the spokes 2 when the stop device 7 is not acting on said pile of rings 6. The bearings 9 may be friction bearings, such as axial sliding washers that move when dry or oiled, for example made of plastic material.

[0030] It is also possible to observe, in both Figures 1 and 2, that the stop device 7 comprises two press bodies 10, between which the overlapping rings 6 are arranged, thereby forming a packet with the same, the press bodies 10 being capable of moving closer to or further away from one another and adopting both stop and free positions, which axially compress or relax the plurality of overlapping rings 6 in order to respectively block or free the relative movement thereof. At least one of the press bodies 10, specifically the upper press body 10, is joined to the shaft 5, in such a way that upon the plurality of rings 6 being compressed, in addition to impeding the relative movement thereof, the assembly formed by the same is also prevented from rotating around the shaft 5. Said press bodies 10 are in turn subject to the action of a number of elastic means 11, which tend to arrange them in their stop position, i.e. at a distance from one another, such that they axially compress the plurality of rings 6; the stop device 7 comprising a number of actuation means 12 adapted to overcome the force of said elastic means 11 and arrange the press bodies 10 in their free position, i.e. separated enough to facilitate the free rotation of the rings around the shaft 5. The lower press body 10 will be able to travel between 1 and 2 millimetres, thus serving to provide a clearance between the rings 6 large enough to facilitate the rotation of the spokes 2. The mechanism 4 furthermore comprises a regulation screw 13 in order to regulate the force of the elastic means 11. These elastic means 11 comprise a spring 14 that acts by means of traction, a spring 14 terminal or end being connected to one of the press bodies 10, with the ability to move relatively in relation to the same, it being possible to regulate the compression of the spring 14 as a result and as such, the force that this exerts on the press bodies 10. Of course, it is contemplated that at least one press body 10 may itself act as a ring 6, being attached thereto at least one of the spokes 2.

[0031] The actuation means 12 comprise a cam 15 that may be manoeuvred manually by means of a lever 16 that serves to arrange the press bodies 10 in their free position, in order to be able to rotate the spokes 2 and arrange the fabric 3 of the parasol 1 in an unfolded operative position, as illustrated later on. Upon achieving the operative unfolded position desired, the same lever 16 serves to arrange the press bodies 10 in the stop position once again, in order to fix the unfolded operative position.

[0032] As can be seen in Figures 1 and 2, the shaft 5 of the mechanism 4 is provided with a number of fastening means 17, which make it possible to fasten said mechanism 4 to a post 18 or an umbrella stand. The shaft 5 illustrated in Figure 2 may additionally or alternatively be provided with a number of anchoring means, in order to provide the parasol 1 with a wall support, in order to form a canopy or even on the floor, in order to form a partition screen.

[0033] As can be seen, the mechanism 4 of the parasol 1 shown in Figures 1 and 2 is provided with a series of spokes 2, between which a piece of fabric 3 is extended, as shall further be seen later on. This piece of fabric 3 may be a piece of vinyl, acrylic or PVC fabric, for example, designed to project shade. The elements that form the mechanism 4 are essentially to be made from aluminium or stainless steel.

[0034] The parasol 1 will preferably be made up of eight spokes 2, the fabric 3 being joined to all of the spokes 2 and extending from the upper spoke 2a to the lower spoke 2b, as shown in Figures 3 to 6, wherein, in Figure 3, the parasol 1 is firstly shown in the folded position A, with the spokes 2 aligned in such a way that the fabric 3 between the spokes forms clearances, whilst Figures 4 and 6 shown the parasol 1 unfolded in various operative positions B1, B2, B3. Naturally, it is foreseen that they will be able to adopt other operative positions by varying the rotation between the spokes 2 in relation to one another, so that the fabric 3 forms a lesser or greater circular segment. Although the parasol 1 is shown to be mounted to a post 18 in Figures 3 to 6, the parasol 1 may alternatively be mounted to a wall or wall support, such that, when anchored to the wall, it could unfold with the upper spoke 2a applied against the wall and the lower spoke 2b likewise applied against the wall, the fabric 3 therefore forming a circular segment at approximately 180°, which protrudes from the wall by way of a canopy or visor. As such, it would be possible to successfully project shade onto a wall, without needing to use a stand. Likewise, the parasol 1 may be arranged in a corner, with the spokes 2 unfolded such that they occupy the surface available, for example 90°, such that the fabric 3 projects shade in this corner.

[0035] In order to unfold the parasol 1 starting from the folded position A shown in Figure 3, until the same adopts an operative unfolded position B1, B2, B3, the user must firstly actuate the stop device 7 using the lever 16 in order to free the spokes 2. Once these have been released and may rotate freely, the user will take one of the spokes 2, preferably the lower spoke 2b and make it rotate, separating it from the upper spoke 2a, in order to thus unfold the fabric 3 of the parasol 1, such that the same forms a circular segment that will project the desired shade. After having obtained the desired shade, the user would lock the spokes 2 into this position by means of the same stop device 7. For example, Figure 4 shows a first operative unfolded position B1, in which the parasol 1 projects shade in the form of a 90° circular segment. In order to

obtain a better finish, it is recommendable that the length of the fabric 3 be the same between every two consecutive spokes 2, i.e. between every two spokes 2 of those joined to both adjacent rings 6.

[0036] Going on to rotate the spokes 2, it is possible to select other operative positions as necessary, until you reach 360° degrees. As can be seen in Figure 5, upon the lower spoke 2b making a complete turn, the same would be aligned with the upper spoke 2a, the fabric 3 being loose between the rest of the spokes 2, arranged at equal distances for example. In this position, a second unfolded position B2 is determined, wherein the parasol 1 is closed, with the fabric 3 being loose. If the fabric 3 between each two consecutive spokes 2 is long enough for the circular segment formed by two consecutive spokes to reach 60°, after adopting the second unfolded position B2, upon continuing to rotate, it would therefore be possible to attain a third closed unfolded position B3, the fabric 3 being tense, as shown in Figure 6. Fig. 7 shows a second alternative embodiment of the parasol 1, provided with two rods 2 in each ring 6 disposed at an angle of 180 degrees, as shown in Fig. 7 in its folded position A. It is noted that the mechanism 4 of this second embodiment of the parasol 1 is the same as described above and shown in Figures 1 and 2, but instead of being provided each ring 6 of a spoke 2, each ring 6 has two spokes 2 arranged at an angle of 180 degrees.

[0037] It is noted that the fabric 3 is attached to a spoke 2 of each ring 6 and extends from an upper spoke 2a to a lower spoke 2b. Naturally, being each ring 6 provided with a pair of spokes 2 will need to have two portions of fabric 3, each of which extend from one of the upper spokes 2a through one of the lower spokes 2b, each fabric 3 being attached to a spoke 2 of each pair of spokes 2 of each ring 6. Thus, by deploying the parasol 1 until reaching the unfolded position B4 shown in FIG. 8, the fabrics 3 of the parasol 1 will adopt a double helix shape allowing, besides a more attractive visual effect, projecting a thicker shadow, as it will be necessary for light to pass through the two fabrics 3.

[0038] Fig. 9 shows a third alternative embodiment of the parasol 1 in its folded position A in which the fabric 3 is attached to the two spokes 2 that are attached to the same ring 6 forming each pair of spokes 2 attached to the same ring 6 an angle of 60 degrees, so that the fabric 3 attached to each pair of spokes 2 and provided with a straight end, forms a portion of an hexagon, as illustrated in the detail of Fig. 11. In this variant, the mechanism 4 is also similar to that described above and shown in FIGS. 1 and 2. In this third variant, the parasol 1 may adopt in the deployed unfolded position B5 shown in FIG. 10 a closed hexagonal shape. Advantageously, as the fabric 3 is not attached between the spokes 2 of different rings 6, the portions are freely rotatable and may adopt other intermediate positions where the portions overlap. It is also envisaged in other alternative embodiments of the parasol 1 that the spokes 2 of one ring 6 may form other angles, for example if the spokes form an angle of 45

degrees, the parasol 1 may adopt a closed octagonal form.

[0039] Although the second and third embodiment show the parasol 1 mounted on a post 18, the parasol 1 may alternatively also be mounted on a wall or wall bracket as described above, to form an awning, or even on the ground to forming a separation partition.

10 Claims

1. A parasol (1) comprising a series of spokes (2), between which a piece of fabric (3), designed to project shade extends, these spokes being linked to a mechanism (4) that makes it possible to vary the arrangement of the spokes, such that the parasol adopts at least one folded position (A) and one operative unfolded position (B1, B2, B3, B4, B5), **characterised in that** the mechanism comprises a shaft (5) and a plurality of rings (6), which overlap and are mounted rotationally around said shaft, at least two spokes being joined to different rings, also **characterised in that** the mechanism comprises a stop device (7), which may be operated manually and is capable of blocking relative movement between rings.
2. The parasol (1) according to the previous claim, **characterised in that** the spokes (2) are joined firmly to the rings (6), directed perpendicularly to the shaft.
3. The parasol (1) according to any one of the previous claims, **characterised in that** the rings (6) form a pile, a bearing (9) being arranged between every two rings.
4. The parasol (1) according to the previous claim, **characterised in that** the bearings (9) are friction bearings.
5. The parasol (1) according to the previous claim, **characterised in that** the bearings (9) are axial washers that slide when dry or oiled.
6. The parasol (1) according to any one of the previous claims, **characterised in that** it comprises an equal number of spokes (2) and rings (6), each spoke being joined to a respective ring.
7. The parasol (1) according to any one of the previous claims, **characterised in that** the fabric (3) is joined to all of the spokes (2) and extends from the upper spoke (2a) to the lower spoke (2b).
8. The parasol (1) according to any one of the previous claims, **characterised in that** this fabric (3) is the same length between every two consecutive spokes (2), i.e. between every two spokes joined to both

adjacent rings (6).

9. The parasol (1) according to any one of the previous claims, **characterised in that** it is adapted to form a second loosely closed unfolded position (B2) upon the lower spoke (2b) rotating one full turn, the lower spoke (2b) being aligned with the upper spoke (2a), wherein the rest of the spokes are arranged at an equal distance from one another, if the fabric between the spokes is loose. 5
10. The parasol (1) according to any one of the previous claims, **characterised in that** it is adapted for, after having reached the second loosely closed unfolded position (B2) and going on to rotate the lower spoke (2b), determining a third tensely closed unfolded position (B3) wherein the rest of the spokes are at an equal distance from one another, the fabric between the spokes therefore being tensed. 10 15
11. The parasol (1) according to any one of the previous claims, **characterised in that** it comprises a total of eight spokes (2), the fabric (3) being long enough between every two consecutive spokes in order for the circular segment formed by two consecutive spokes to reach 60°. 20 25
12. The parasol (1) according to any one of the claims 1 to 5, **characterised in that** it comprises two spokes (2) being joined to each ring (6). 30
13. The parasol (1) according to claim 12, **characterised in that** the two spokes (2) joined to the same ring (6) form an angle of 180° between them. 35
14. The parasol (1) according to the preceding claim, **characterised in that** the fabric (3) is attached to a spoke (2) of each ring (6) and extending from an upper spoke (2a) to a lower spoke (2b). 40
15. The parasol (1) according to claim 12, **characterised in that** the fabric (3) is attached to the two spokes (2) joined to the same ring (6). 45
16. The parasol (1) according to the preceding claim, **characterised in that** the two spokes (2) joined to the same ring (6) form an angle of 60° between them. 50
17. The parasol (1) according to any one of the previous claims, **characterised in that** the stop device (7) comprises two press bodies (10), between which the rings (6) are arranged such that they overlap and form a packet with the same, the press bodies being able to move closer to or further away from one another and to adopt both stop and free positions, which respectively compress or relax the plurality of overlapping rings axially, in order to respectively block or allow the relative movement thereof. 55
18. The parasol (1) according to the previous claim, **characterised in that** at least one of the press bodies (10) is joined to the shaft (5), in such a way that upon compressing the plurality of rings (6), in addition to impeding the relative movement thereof, the assembly formed by the same is also prevented from rotating around the shaft.
19. The parasol (1) according to the previous claim, **characterised in that** the press bodies (10) are subject to the action of a number of elastic means (11), which tend to arrange them in their stop position, i. e. at a distance from one another such that they axially compress the plurality of rings (6), the stop device comprising a number of actuation means (12), adapted to overcome the force of said elastic means and arrange the press bodies in their free position, i. e. sufficiently separated from one another so as to allow the rings to rotate freely around the shaft (5).
20. The parasol (1) according to the previous claim, **characterised in that** it furthermore comprises a regulation screw (13), in order to regulate the force of the elastic means (11).
21. The parasol (1) according to any of the claims 19 to 20, **characterised in that** the elastic means (11) comprise a spring (14) that acts by way of traction, one of the press bodies (10) being connected to a terminal or end of the spring, with the ability to move relatively in relation to the same, it thus being possible to regulate the compression of the spring and, as such, the force this exerts on the press bodies.
22. The parasol (1) according to any of the claims 19 to 21, **characterised in that** the actuation means (12) comprise a manually operable cam (15).
23. The parasol (1) according to the previous claim, **characterised in that** the actuation means (12) furthermore comprise a lever (16) for manually moving the cam (15).
24. The parasol (1) according to any one of the previous claims, **characterised in that** the shaft comprises fastening means (17) for fastening to a post (18).
25. The parasol (1) according to any one of the previous claims, **characterised in that** the shaft comprises anchoring means for anchoring to a wall support.

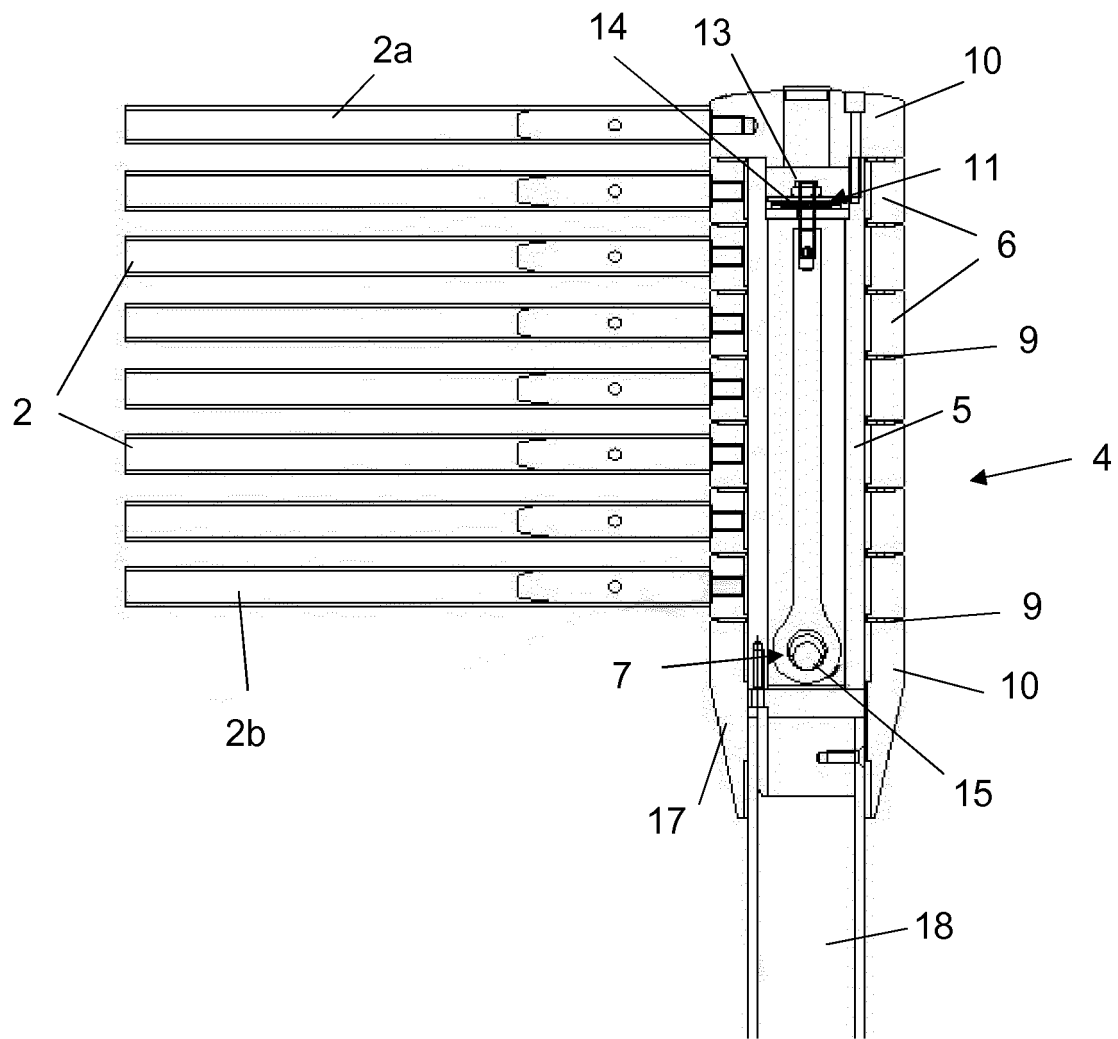


Fig. 1

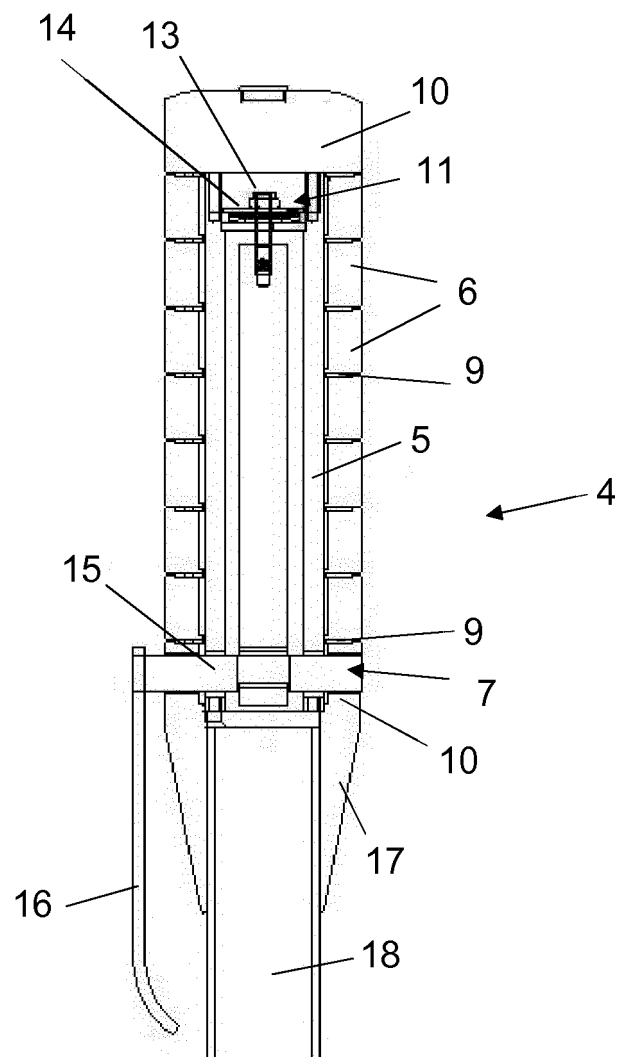


Fig. 2

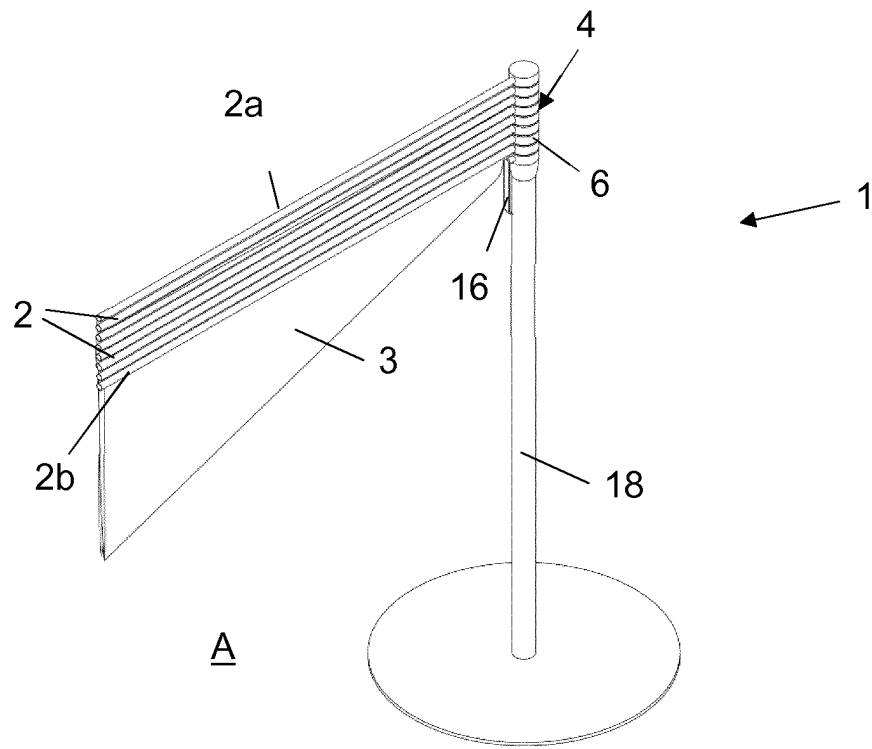


Fig. 3

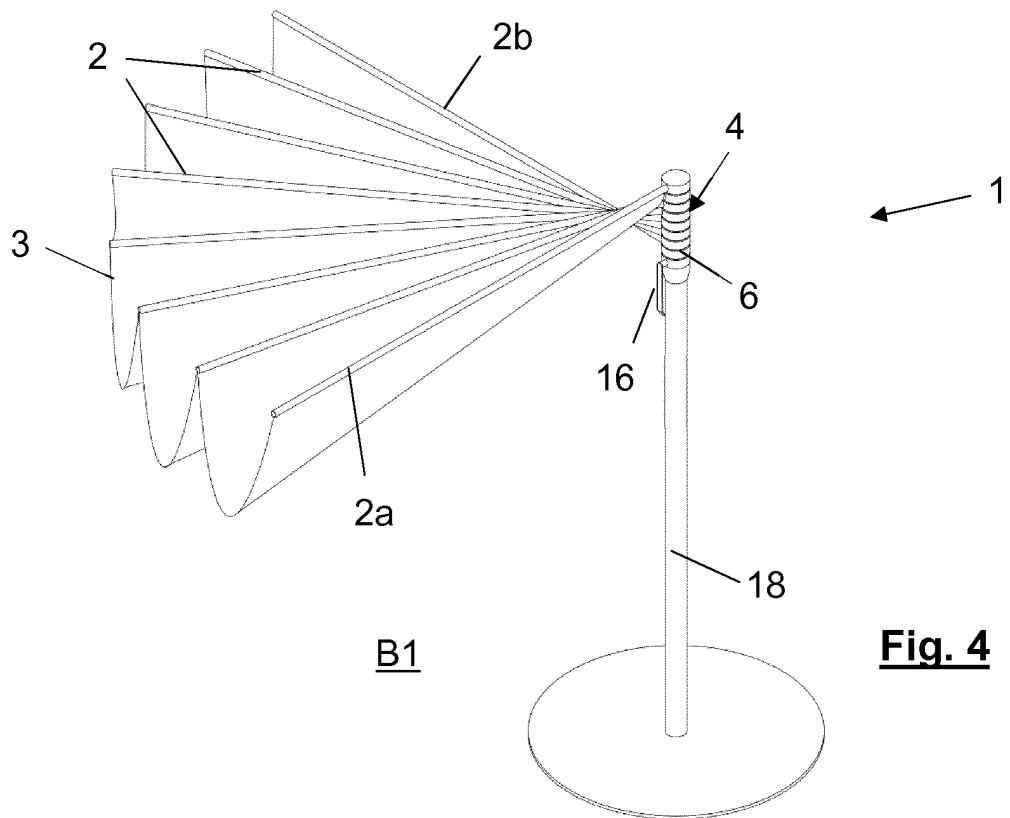


Fig. 4

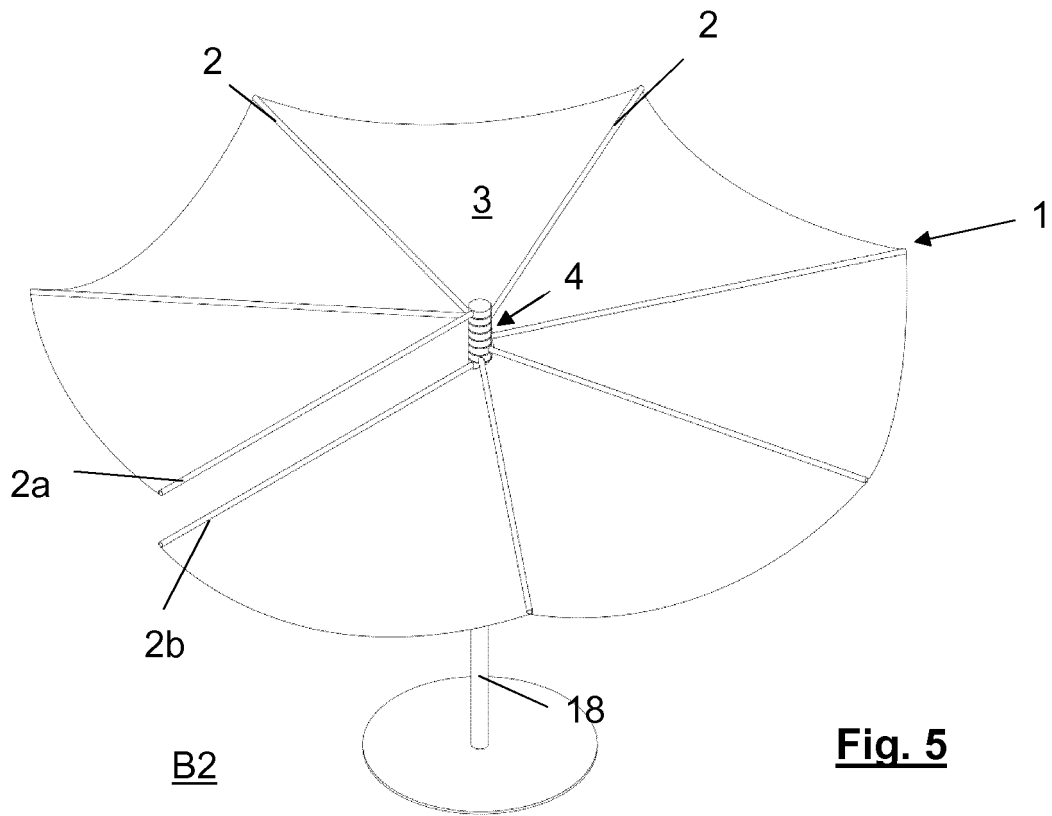


Fig. 5

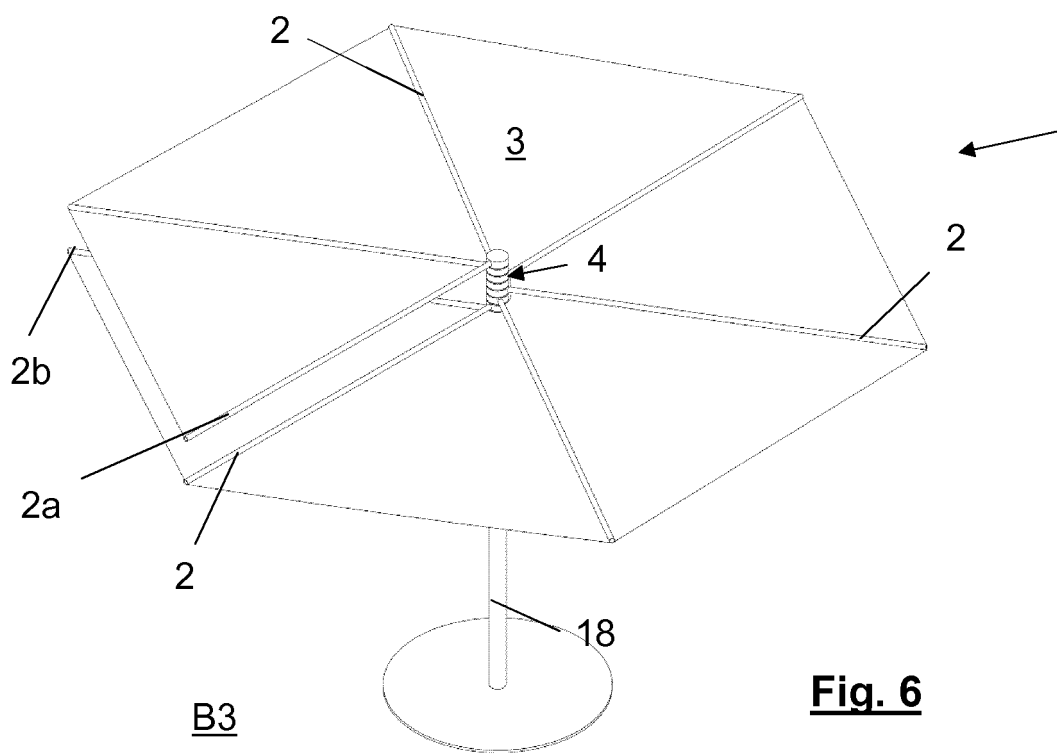
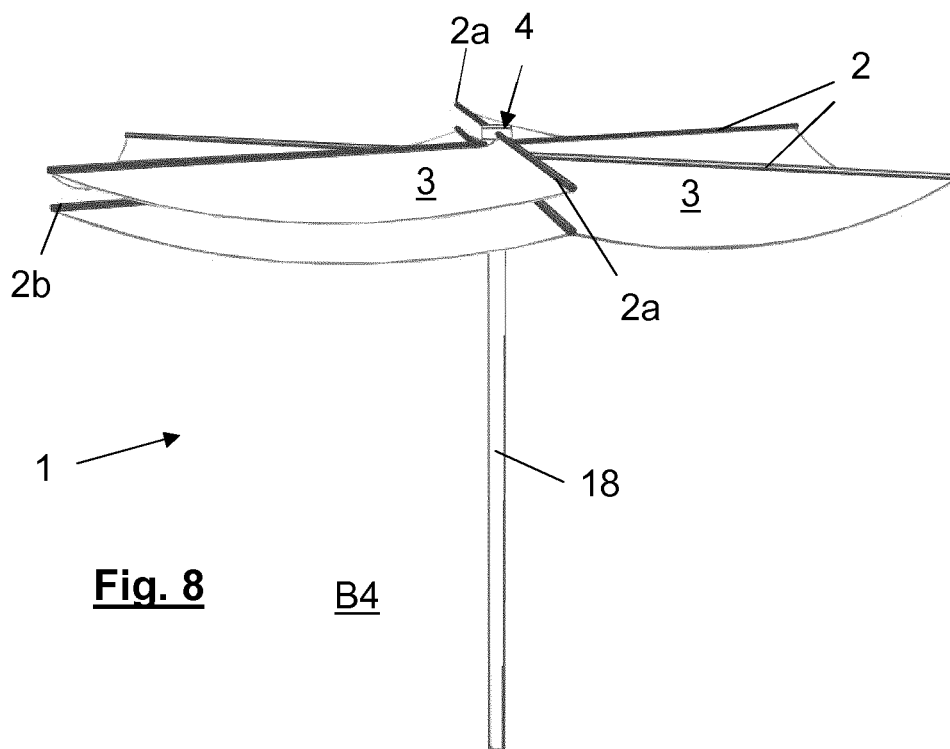
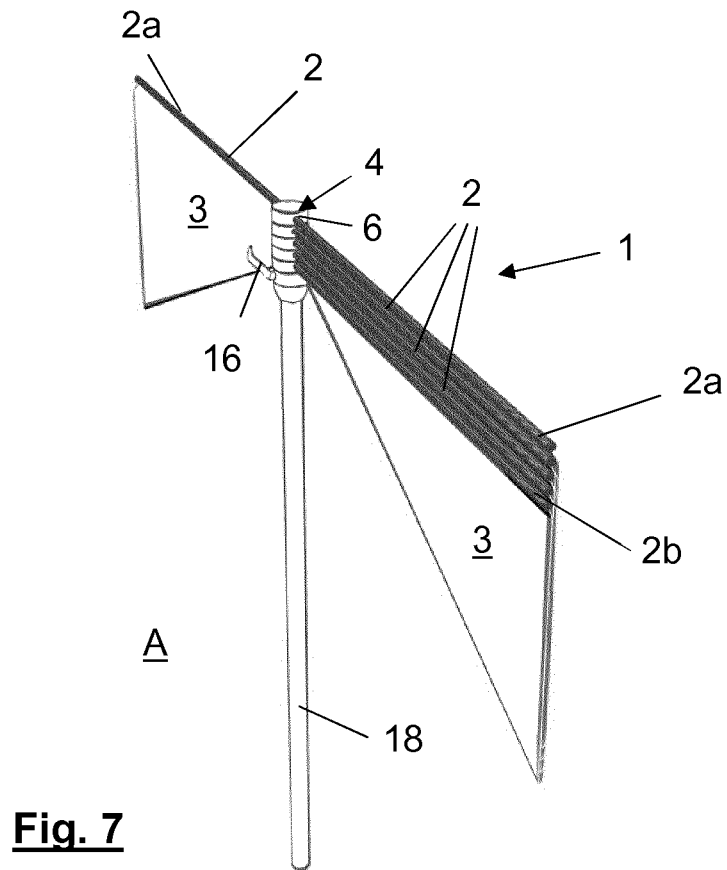
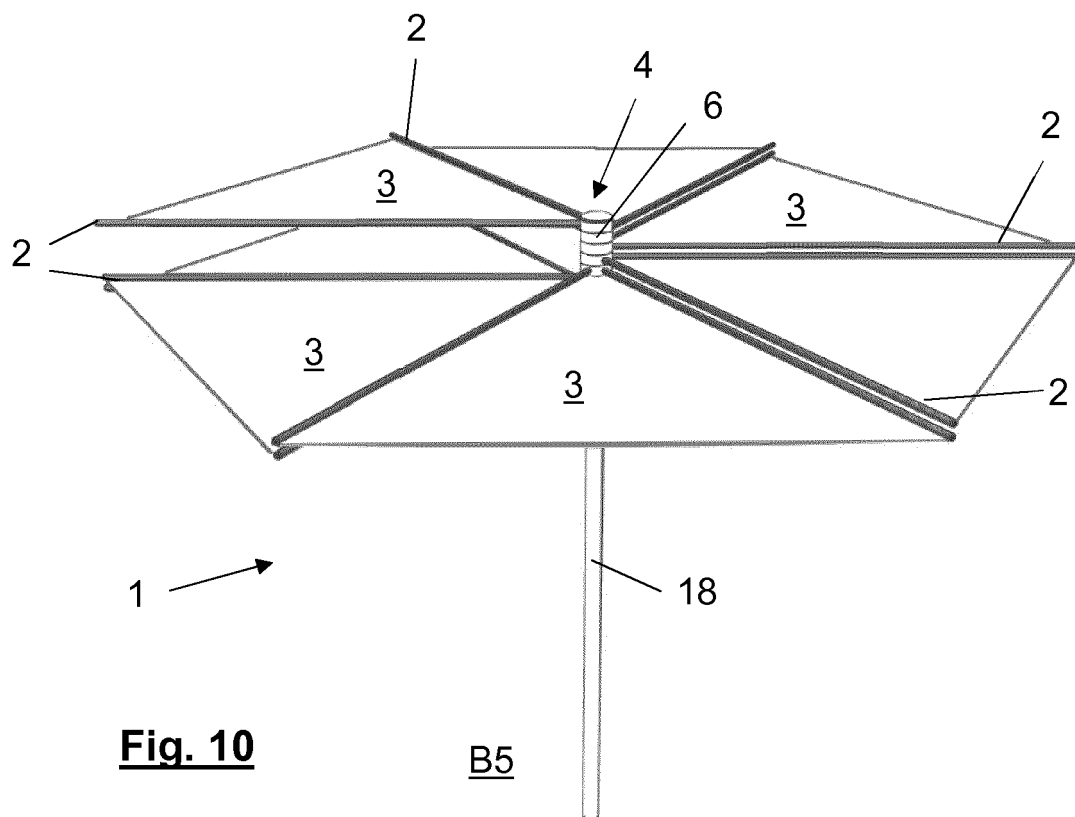
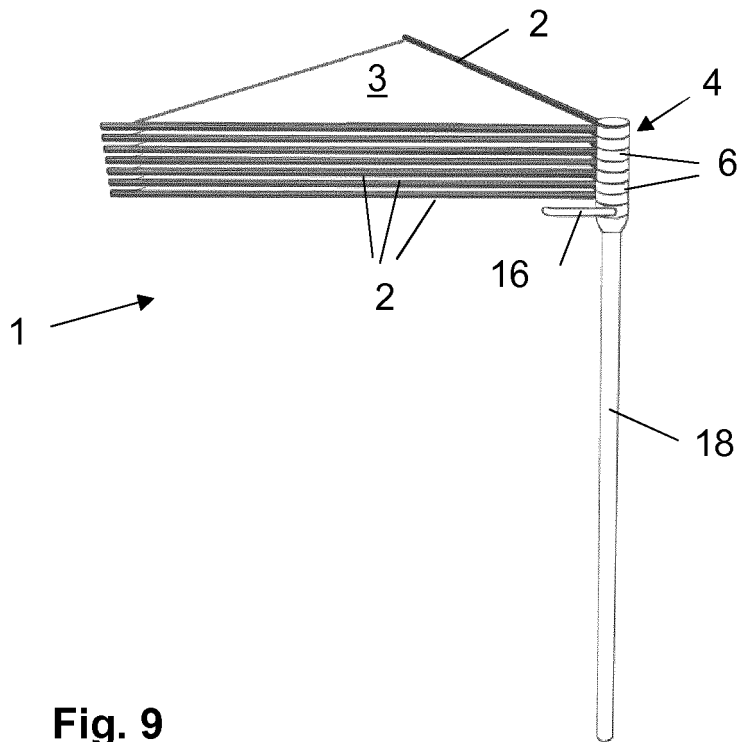


Fig. 6





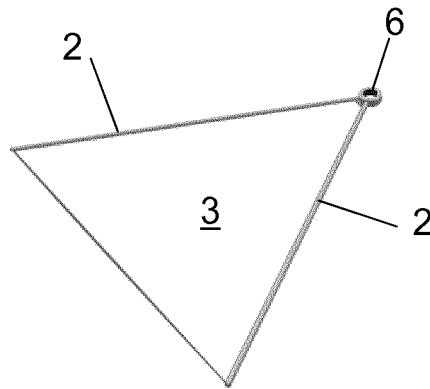


Fig. 11

INTERNATIONAL SEARCH REPORT

International application No

PCT/ES2015/070623

A. CLASSIFICATION OF SUBJECT MATTER

INV. E04F10/04 A45B23/00
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

A45B E04F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 4 836 232 A (DE ROSA R JAMES [US] ET AL) 6 June 1989 (1989-06-06) the whole document	1-11,17, 18,24,25
Y	DE 35 08 851 A1 (CLAUSS MARKISEN [DE]) 25 September 1986 (1986-09-25) the whole document	1-11,17, 18,24,25
A	US 2011/030744 A1 (YUN SEOK RYUL [KR]) 10 February 2011 (2011-02-10) the whole document	1
A	US 5 947 139 A (LEBRECHT HORST [US]) 7 September 1999 (1999-09-07) the whole document	1
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Date of the actual completion of the international search

30 November 2015

Date of mailing of the international search report

07/12/2015

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INTERNATIONAL SEARCH REPORT

International application No PCT/ES2015/070623

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