



(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
29.10.2014 Bulletin 2014/44

(51) Int Cl.:
E04H 15/58^(2006.01)

(21) Application number: **14165091.1**

(22) Date of filing: **17.04.2014**

(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

(71) Applicant: **Rezidencija Martina Doo**
51000 Rijeka (HR)

(72) Inventor: **Bettega, Roberto**
I-36075 Montecchio Maggiore (VI) (IT)

(74) Representative: **Contadin, Giorgio**
Praxi Intellectual Property S.p.A.
Via N. Tommaseo, 76/D
35131 Padova (IT)

(30) Priority: **23.04.2013 IT PD20130107**

(54) **Manually operated stucture providing shade**

(57) A manually operated structure (1; 50) providing shade comprising a laminar surface (2, 3) which is spread at a given height from the ground (T) for covering an area below (A), a winding shaft (4; 51), which develops along a first longitudinal axis (Z) and to which the laminar surface (2, 3) is firmly bound, suitable to be associated through fastening means (5) with a reference surface (S) facing the area below (A), actuation means (6; 52) able to rotate the winding shaft (4; 51) around the first longitudinal axis (Z) so as to cause winding/unwinding of the laminar surface (2, 3) from/on the winding shaft (4; 51) and place it between the complete uncovering position of the area below (A) and a plurality of at least partial covering position of the area below (A), and tightening means (7) connecting each other the laminar surface (2,

3) and the actuation means (6; 52). In particular, the actuation means (6; 52) comprise self-braking means (8; 53) coupled with the reference surface (S) at a height from the ground (T) such that to be accessible by the users and, during unwinding/winding of the laminar surface (2, 3), mechanically cooperating with elastic means internally integral with the winding shaft (4; 51) and suitable to be loaded/released during unwinding/winding of the laminar surface (2, 3) as a result of the rotation of the winding shaft (4; 51), in such a way that manual moving of the self-braking means (8; 53) causes progressive and continuous passage of the laminar surface (2, 3) from the complete uncovering position of the area below (A) to the plurality of at least partial covering position of the area below (A) and vice versa.

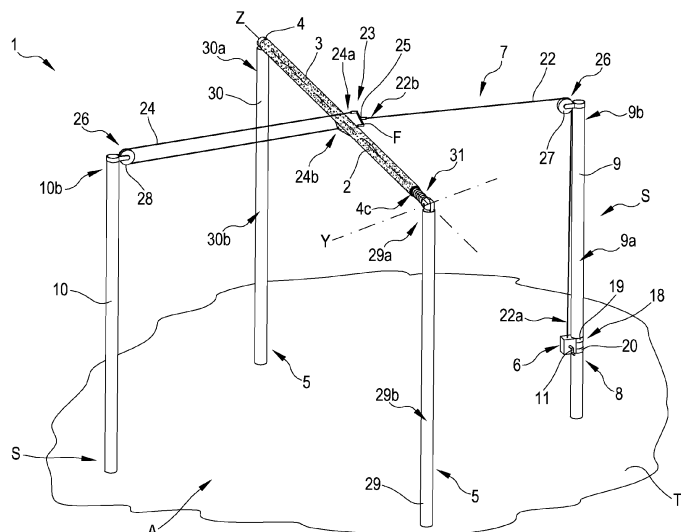


FIG.1

Description

[0001] The present invention concerns a manually operated structure providing shade, of the so-called "sail" type in the relevant sector, which can be operated in unwinding and winding around a central drum or shaft of rotation in order to obtain temporary covering of external areas defined in gardens, squares, beaches, swimming pools, terraces of housing units or generic buildings, areas adjacent to a public place such as a bar, a restaurant, a pizzeria, a hotel and/or any architectural space where an elegant, resistant and functional covering is required: this in order to create an outdoor protection space fully ventilated and which can be however comfortably inhabited and haunted by people as it offers cover from critical atmospheric agents such as especially the sun, balancing the need for freshness with the desire of light.

[0002] As it is nearly widely known, in order to create covered protection areas in open places such as squares, gardens, parks, swimming pools and so on, or to increase the covered protection area of public businesses such as hotels, restaurants, bars and the like, or any building such as a housing unit (for example, at the terrace), special roll-up structures providing shade are used, of the so-called "sail" type as they exploit, changing them in deep way, the technologies of the nautical sails.

[0003] These known structures providing shade, which can reach overall dimensions of a certain level (65 m² or more) when in operating configurations, open/close to cover/uncover a bounded area below them quickly in every weather conditions, present a remarkable, refined and elegant aesthetic impact and offer great installation flexibility, adapting to several application environments.

[0004] Basically, structures providing shade of the "sail" type available on the market use one or more laminar surfaces installed at a given height from the ground (or soil, as in the case of a garden, or a generic flooring as in the case of bars and restaurants) and specifically devoted to at least partly covering the area below when the shade structure takes on of the operating configuration, so that users or customers can occupy the area below itself protected from the bad weather or from invasive atmospheric conditions (such as the burning sun), while remaining outdoors.

[0005] Operation of the laminar surfaces both in one direction, aimed at achieving the position of at least partial covering of the area below - coincident with one of the operating configurations of the shade structure - and in the opposite direction, aimed at achieving the position of upper uncovering of the area below - coincident with the rest configuration of the shade structure - occurs in the prior art:

- in a totally automatic way - by means of the only contribution of motorization means -;
- in a semiautomatic way - by means of motorization means only in the opening phase of the laminar surfaces in order to arrange them in one of the possible

covering positions and by appropriate elastic means that, being operatively connected with the laminar surfaces, bring them back in the uncovering position due to the effect of recovery of the mechanical energy stored during the opening phase -;

- in manual way - through the only intervention of the operator or user who, by acting on suitable actuation means accessible to him, moves the laminar surfaces between the

uncovering position and any of at least partial covering positions of the area below -. The present invention is directed in particular to the "sail" shade structures of the manual type, wherein the laminar surfaces are moved without using motorization means.

such a type of shade structure currently available on the market comprises at least one laminar surface, suitable to be spread at a given height from the ground (in its forms defined above) for covering an area below, and a winding shaft, which develops along a longitudinal axis and to which the laminar surface is stably bound.

[0006] In particular, the winding shaft is attached by fastening means, such as a pair of support uprights, to a generic reference surface - belonging to the support framework of the shade structure itself or to a bearing body distinct from the shade structure - facing the area below. A manually operated structure providing shade of known type also comprises actuation means available to the user and suitable to be handled by the latter for rotating the winding shaft around the longitudinal axis and thus cause unwinding/winding of the laminar surface from/on the winding shaft, placing it between the complete uncovering position of the area below (closed position) and a plurality of at least partial covering positions of the area below itself (open position).

[0007] In addition, according to the prior art, a typical manually operated structure providing shade includes tightening means which connect together the laminar surface and the actuation means: in general, the tightening means comprise at least a metal wire provided with a first end fixed to the actuation means, and with a second end fixed to the laminar surface through connecting means of the type per se known to a person skilled in the art.

[0008] Advantageously, a manually operated structure providing shade of known type is designed to fit to the particular needs of the environment in which it must be installed and it also provides safety mechanisms against sudden gusts of wind that determine its immediate and rapid automatic closure, with the rewind of the laminar surface on the winding shaft.

[0009] In functional terms, during unwinding of the laminar surface, the actuation means cause the rotation in a given direction of the winding shaft around the first longitudinal axis, thus allowing the laminar surface itself to open and cover the area below by desired portion. During winding of the laminar surface, the actuation means rotate the winding shaft around the first longitudinal axis in

the direction opposite to the previous one, rewinding the laminar surface on the shaft itself and uncovering the area below firstly only partially and finally totally, when the shade structure, no longer necessary to use at least for a certain period, takes the rest configuration.

[0010] In particular, the most widespread manually operated structures providing shade of the known technique provide that the movement of the laminar surface around the diagonal winding shaft, both in the winding phase and in the unwinding phase, firstly takes place by means of a first rope available to the user, both the ends of which hang from a winding element bound to one end of the aforesaid winding shaft and on which the rope is free to slide under the manual action exerted by the user's hands on both its ends.

[0011] The movement of the laminar surface is then perfected by means of a second rope, which is also available at the user's handle and fixed to the support upright of the fastening means through which, as said, the winding shaft is usually made integral to the reference surface: this second rope allows to tension the surface and place it in the best position, however achieved as a result of the movements imparted by the user to the winding shaft acting on the actuation means.

[0012] Such a manually operated structure providing shade of known type is expressly described in the patent publication AT506083 A4, in which the actuation or drive means, operated by the user through the aforementioned first rope and associated coaxially with the winding shaft (reference numeral 3), present numerical reference 18.

[0013] The manually operated structure providing shade described in such a prior art document also requires that a tensioning rope (reference number 11), which engages a transmission pulley (numbered with 8), is led to a fastening clamp (which has reference numeral 13 and is clearly integral with an upright numbered with 6) passing around a further transmission pulley (having 12 as reference number) stationary resting on an upright (reference number 6).

[0014] However, the manually operated structures providing shade of the current state of the art summarily described above present some recognized drawbacks.

[0015] It appears, indeed, evident as disadvantageously, in the traditional manually operated structures providing shade of the prior art, and in particular that one described in AT506083 A4, the moving system of the laminar surface, arranged in order to place it in the various covering positions and in the uncovering position of the area below, is rather complex, laborious and articulated both in terms of construction and in terms of operative-functional. This is caused by the need to provide, on one side, actuation or drive systems at the winding shaft, coaxially to the latter, for moving the laminar surface, and, on the other side, locking mechanisms at a side support upright, to stably keep the laminar surface in the position reached in the previous moving phase: it follows a rather complicated construction design of the manually operated structures providing shade of known

type, with the inevitable economic disadvantages that this entails, manpower and raw materials costs being equal. Moreover, the construction design of these known manually operated structures providing shade practically requires the simultaneous presence of two people in order to sufficiently effective and rapid operate the laminar surface, one intended to manoeuvre the actuation means for the rotation of the diagonal shaft, the other one intended to release and subsequently engage the locking means that crystallize the position reached by the laminar surface as a result of its handling.

[0016] In addition, the moving operation of the laminar surface is rather cumbersome and complicated and not so easy to be performed by any user, due to the relevance of the load (winding shaft and laminar surface coupled with it) to be moved, especially in case in which the diagonal winding shaft presents a relevant length (it should be noted that the winding shaft reaches lengths of even 15 meters in certain embodiments).

[0017] Starting, therefore, from the knowledge of the aforesaid drawbacks of the prior art, the present invention intends to give them full remedy.

[0018] More in detail, it is primary purpose of the present invention to provide a manually operated structure providing shade which presents a constructive design and, in turn, an operation simpler than the equivalent known technique, especially as far as the components suitable to allow the movement of the laminar surface are concerned.

[0019] In the context of the purpose just stated, it is a first task of the present invention to create a manually operated structure providing shade which, while maintaining a high operative efficiency, presents a cost of manufacture more competitive than that one of the manually operated structures providing shade of known type, manpower and raw materials cost being equal.

[0020] It is another purpose of the invention to give substance to a manually operated structure providing shade which includes a handling still effective, correct and precise of the laminar surface but without requiring the simultaneous presence of several persons, as in the case of the most modern manually operated structures providing shade of the prior art.

[0021] It is a further purpose of the present invention to make available a manually operated structure providing shade whose actuation means can be operated easily, effectively and in absolute safety conditions for his own physical state by any person, even non-expert and even not necessarily adult.

[0022] It is a last but not least purpose of the invention to devise a manually operated structure providing shade which is suitable to be installed in any environment and which, for the pleasantness of the materials and technical details however used by it, is able to positively contribute but not improve the value of the environment itself.

[0023] Said purposes are achieved by means of a manually operated structure providing shade, of the so-called "sail" type, according to the attached claim 1, as herein-

after referred for the sake of exhibition brevity.

[0024] Further technical features of detail of the manually operated structure providing shade of the invention are contained in the respective dependent claims.

[0025] The above claims, in the following specifically and concretely defined, are integral part of the present description.

[0026] Advantageously, the manually operated structure providing shade of the invention presents a construction design and an operation mode simpler than those ones of the equivalent manually operated structures providing shade of the equivalent prior art, in particular as regards the components suitable to allow the moving of the laminar surface.

[0027] This is due to the fact that, in the invention presented herein, the actuation means includes self-braking means - preferably a clutched hoist - available to the user who, by manoeuvring them, causes the rotation of the central and diagonal winding shaft, so as to determine the progressive and continuous passage of the laminar surface from the complete uncovering position of the area below to a plurality of at least partial covering positions of the area below itself and vice versa.

[0028] During unwinding or winding of the laminar surface, it is kept perfectly in tension by elastic means which, from the inside of the winding shaft in which are stably housed, counteract the force transmitted by the user on the laminar surface through the aforesaid self-braking means.

[0029] It follows that, still advantageously, the manually operated structure providing shade of the invention presents, in general, a very competitive manufacturing cost, lower than that one of manually operated structures providing shade of known type, manpower and raw materials used cost being of course equal, without this negatively affects on the performance of the manually operated structure providing shade.

[0030] Equally advantageously, the manually operated structure providing shade of the invention simplifies the operations that must be performed for an effective, correct and precise moving of the laminar surface, since the operation of the actuation means of which the shade structure itself is particularly provided with does not require the simultaneous presence of several persons, as in the case of the most modern manually operated structures providing shade of the prior art: such a manoeuvre is comfortably, easily and effectively performed by a single person in conditions of absolute safety.

[0031] In advantageous manner, furthermore, the manually operated structure providing shade of the present invention includes actuation means which can be handle in conditions of absolute safety, under his own physical safety, by any user, even non-expert and also not necessarily adult.

[0032] In advantageous way, moreover, the manually operated structure providing shade of the invention lends itself to be installed in any outdoor environment, thanks to the fact that the self-braking means are adapted to

various applicative solutions, and contributes at an appreciable and evident extent to beautify such an environment, thanks to the type of materials used to produce the structural components that remain in view.

[0033] Said purposes and advantages, as well as other ones that will emerge in the course of the paper, will be more apparent from the following description, relating to a preferred embodiment of the manually operated structure providing shade of the present invention, given by indicative and illustrative, but not limitative, way with reference to the accompanying drawings, in which:

- figure 1 is an assonometric view of the manually operated structure providing shade in the rest configuration;
- figure 2 is an assonometric view of the manually operated structure providing shade of figure 1 in one of the possible operating configurations;
- figure 3 is an assonometric view in itself of a constructive detail of figures 1 and 2;
- figure 4 is a side view of figure 3;
- figure 5 is a sectional view of the detail of figure 3;
- figure 6 is an assonometric exploded view of a constructive assembly (the hinge means) of figures 1 and 2;
- figure 7 is the side view of the constructive assembly of figure 6 in a first possible operating position;
- figure 8 is the side view of the constructive assembly of figure 7 in a second possible operating position;
- figure 9 is a plan view of figure 8;
- figure 10 is an assonometric view of a first possible embodiment of the self-braking means belonging to the actuation means of the shade structure of the invention;
- figure 11 is the plan view of figure 10;
- figure 12 is the front view of figure 10 in a different operating condition.

[0034] The manually operated structure providing shade of the invention, of the so-called "sail" and roll-up type, it is illustrated in two different operating configurations in figures 1 and 2, where it is globally numbered with 1.

[0035] As it is shown in these figures, the manually operated structure 1 providing shade includes:

- two laminar surfaces 2, 3, each of which is adapted to be spread at a certain height from the ground T for covering an area below A;
- a winding shaft 4, which develops along a first longitudinal axis Z and to which the laminar surfaces 2, 3 are stably bound, suitable to be associated through fastening means, overall indicated with 5, with a reference surface S facing the area below A;
- actuation means, indicated as a whole with 6, suitable for rotating the winding shaft 4 around the first longitudinal axis Z to cause unwinding/winding of the laminar surfaces 2, 3 to/from the winding shaft 4 and

place them between the complete uncovering position of the area below A and a plurality of at least partial covering positions of the area below A;

- tightening means, generally indicated with 7, which connect each other the laminar surfaces 2, 3 and the actuation means 6.

[0036] In accordance with the invention, the actuation means 6 comprise self-braking means, as a whole indicated with 8, coupled with the reference surface S at a height from the ground T such that to be accessible by the user and, during the unwinding/winding of the laminar surfaces 2, 3, mechanically cooperating with elastic means, not visible, internally integral with the winding shaft 4 and suitable to be loaded/released during again unwinding/winding of the laminar surfaces 2, 3 as a result of the rotation of the winding shaft 4, in such a way that the manual moving of self-braking means 8 causes the regulated, controlled and punctual passage of the laminar surfaces 2, 3 from the complete uncovering position of the area below A to the plurality of at least partial covering positions of the area below A and vice versa.

[0037] The reference surface S, present outdoor and insistent on the ground T, is in this case installed, for example, in a garden, a pavement immediately adjacent to the premises of public businesses such as restaurants, bars, pizzerias, hotels, refreshment kiosks in parks, beaches and the like, or a flooring of a terrace of any building (such as a house unit) or the edge of a swimming pool.

[0038] In the specific case, purely by indicative but non-limiting title, the reference surface S belongs to the manually operated structure providing shade 1 of the invention which is thus totally self-bearing.

[0039] This does not exclude, however, that in other embodiments of the invention, not shown in the attached drawings, the reference surface belongs wholly or partly to a foreign bearing body distinct from the manually operated structure providing shade claimed herein: in this case, the reference surface could be made up by the outer masonry wall or by a pillar of any building (such as a house, a swimming pool, a hotel, a restaurant, a bar and so on), by a tree of a garden or a park or by other appropriate available bearing bodies.

[0040] In a preferred but not limiting way, the reference surface S, therefore, includes in this case a pair of mutually opposite first support uprights 9, 10 having a longitudinal development and, still preferably, symmetrically arranged with respect to the winding 4 shaft; in application, each of the first support uprights 9, 10 insists on the ground T and one of them stably and externally supports the self-braking means 8 through which the user manually operates the winding shaft 4 in one or in the other direction of rotation.

[0041] In a preferred but not exclusive way, the winding shaft 4 is fully tubular and made of metallic material, such as steel, with a cylindrical shape; similarly, the first support uprights 9, 10 have a cylindrical shape and circular

profile, and are made of metallic material, such as steel.

[0042] In particular, as figures 1 and 2 show, the self-braking means 8 are suitably and advantageously provided with an operating handle 11 at disposal of the user who rotates it in order to obtain winding/unwinding of laminar surfaces from/on the winding shaft 4. Preferably but not necessarily, the self-braking means 8 comprise a so-called clutched traction or drag hoist 12 of the type per se known at commercial level, provided with a clutch mechanism 13, automatically operated by the load applied by the laminar surfaces 2, 3 which the clutched hoist 12 is made integral with through the tightening means 7, as well as with a protection carter 14, in preferred but not binding way made of plastic material, which envelopes and surrounds said friction mechanism 13, as it can be seen by observing figures 3-5.

[0043] The clutched hoist 12 is, in essence, provided with an automatic safety braking assembly, overall numbered with 15 and visible in figure 5 (inclusive of friction components for braking systems, known to the man skilled in the art also with the name commercial of "lining"), which, during the winding phase of the laminar surfaces 2, 3, allows to maintain braked the load (in this case, as mentioned, constituted by the laminar surfaces 2, 3), without the user acting on the operating handle 11.

[0044] The automatic safety braking assembly 15 is also provided with a rotatable and elastically yielding contrast tooth 16 which, with its operation, allows ultimately to slow the rotation of the winding shaft 4 during the winding phase of the surfaces laminar 2, 3, determined by the recovery of the mechanical energy stored by the elastic means during the previous phase of unwinding of the latter.

[0045] Figures 3-5 also show that the operating handle 11 protrudes externally from the protection carter 14 of the clutched hoist 12 and is coupled with a transmission shaft 17 defining a second longitudinal axis X around which the user rotates the operating handle 11 in order to get unwinding/winding of the laminar surfaces 2, 3 from/ on the winding shaft 4.

[0046] As it can be observed in figures 1 and 2 and as already partly mentioned, the self-braking means 8 are coupled with the outer wall 9a of the first supporting upright 9 (integral part of the reference surface S) by means of blocking means, generally indicated with 18.

[0047] Only by preferred title and in function of the composition assumed in this specific case by the reference surface S, the blocking means 18 comprise a pair of metallic collars (or clamps) 19, 20 bound to the protection carter 14 of the clutched traction or drag hoist 12 and enveloping the first support upright 9.

[0048] Figures cited since now, also, illustrate that the protection carter 14 of the clutched hoist 12 is in this case suitably provided at the lateral edge 12a with a concave surface 21, having to be, in operative conditions, coupled with the first upright support 9 which, as stated, presents circular profile: the concave surface 21 thus matches perfectly with the convexity of the outer wall 9a of the first

support upright 9.

[0049] As regards the laminar surfaces 2, 3, each of them is fixed to the winding shaft 4 through union means, not represented and of the type per se known in the field concerned, arranged at the side border 2a, 3a of the respective laminar surfaces 2, 3.

[0050] The two laminar surfaces 2, 3 are also connected each other near the side border 2a, 3a through junction means, also not shown for the sake of simplicity and of the type per se known to the person skilled in the art, typically including a seam section which extends to the maximum width of each of the laminar surfaces 2, 3.

[0051] Each of the laminar surfaces 2, 3 is preferably although nearly typically constituted by a sheet of naval derivation made of thermoplastic fabric also known under the trademark Dacron®.

[0052] In addition, still in preferential and not exhaustive manner, each of the laminar surfaces 2, 3 presents in plan a substantially isosceles triangle shape profile, in which the base coincides with the side border 2a, 3a concerned by the union means and the junction means.

[0053] From an operational point of view, it should be noted that the two laminar surfaces 2, 3 are wound on the winding shaft 4 according to directions opposite each other to unwind/wind along the same line but in directions opposite each other.

[0054] According to the preferred embodiment described herein of the invention, the tightening means 7 comprise:

- a first metal rope 22 provided with a first end 22a stably bound inside the self-braking means 8 and with a second end 22b, opposite to the first end 22a, firmly bound to an outer perimetrical point 2b of a first laminar surfaces 2, 3 through balancing means, generically numbered with 23: in this case, the outer perimetrical point 2b coincides with the vertex of the triangular profile of the laminar surface 2;
- a second metal rope 24 provided with a first end 24a stably bound to the balancing means 23 and with a second end 24b, opposite to the first end 24a, stably bound to the laminar surface 3, that one farthest from the actuation means 6.

[0055] More in detail, the balancing means 23 comprise a movable plate 25, coupled frontally with the outer perimetrical point 2b of the first laminar 2 and to which the first metal rope 22 and the second metal rope 24 are bound: this movable plate 25 defines a fulcrum F around which it rotates (or oscillates) of a predefined angle when the actuation means 6 place the laminar surfaces 2, 3 in one of the covering positions and this with the advantageous object maintain tensioning of the laminar surfaces 2, 3 balanced.

[0056] The significant greater length of the second metal rope 24 over the first metal rope 22, which can be found in the preferred embodiment described herein of the manually operated structure providing shade of the

invention, makes, indeed, the use of the balancing means 23 particularly appropriate and advantageous: their absence would cause a rash, inappropriate and undesirable unbalancing in tension of the laminar surfaces 2, 3 and the subsequent wilt of one of them, with inevitable at least partial loss of the functional efficacy and with evident jeopardizing of the overall aesthetic effect of the manually operated structure 1 providing shade of the invention.

[0057] According to an alternative embodiment, not shown, of the manually operated structure providing shade of the invention, the tightening means could comprise a single metal rope provided with a first end firmly bound inside the self-braking means and with a second end, opposite to the first end, stably bound to an outer perimetrical point of the laminar surface: this especially in the case in which the manually operated structure providing shade includes a single laminar surface.

[0058] In an advantageous but not exclusive way, the tightening means 7 mechanically cooperate with transmission means, overall indicated with 26, coupled with the reference surface S and suitable to contribute to the proper tensioning of the laminar surfaces 2, 3.

[0059] In this case, in particular, the transmission means 26 are fixed to the first support upright 9, at its upper end 9b, as well as, preferably, also to the opposite first support upright 10, at its upper end 10b, through coupling means (not shown) of the type known to the skilled person. The transmission means 26, therefore, comprise a first pulley 27, on which the first metal rope 22 runs, stably associated with the first support upright 9, and a second pulley 28, on which the second metal rope 24 runs, stably associated with the first support upright 10. With reference to the fastening means 5 firstly introduced, they comprise in this case a pair of second support uprights 29, 30 having a longitudinal development, each of which suitable to insist on the ground T and provided with an upper end 29a, 30a coupled with one of the ends 4a, 4b of the winding shaft 4 through hinge means, overall numbered with 31. Similarly to the first support uprights 9, 10, also each of the second support uprights 29, 30 presents for example cylindrical shape and circular profile, and is made of metallic material such as steel.

[0060] The hinge means 31, visible in figures 6-9, have the function to allow the installer to adjust the angular position of the winding shaft 4 on a plane passing through the first longitudinal axis Z, facilitating the correct positioning of such a winding shaft 4 in every applicative situation, even in presence of a composite reference surface S, formed by irregular bearing elements, different and/or staggered each other or difficult to be accessed.

[0061] More specifically, the hinge means 31 define a linear rotation axis Y orthogonal to the first longitudinal axis Z defined by the winding shaft 4.

[0062] Even more in detail, figures 6 and 7 show that the hinge means 31 comprise a first shaped semi-portion 32 (having a U-shaped profile in front view) belonging to a first block 33 that is coupled coaxially with the winding

shaft 4, and a second counter-shaped semi-portion 34 (always having a U-shaped profile in front view) that is coupled with the first shaped semi-portion 32 by means of an interconnection pin 35 and belongs to a second block 36 that is stably placed close to the outer surface 29b, 30b of each of the second support uprights 29, 30. In particular, figures 8 and 9 show that when the first shaped semi-portion 32 and the second counter-shaped semi-portion 34 are oriented according to the first longitudinal axis Z, they are arranged inversely and symmetrically opposite each other with respect to such a first axis Z.

[0063] Additionally, the first shaped semi-portion 32 can be angularly oriented until even an angle of 180° (depending on the application requirements which can be found in the installation environment) compared to the second counter-shaped semi-portion 34: this to allow to achieve their correct mutual position, in which the application of the interconnection pin 35 stably binds each other the first shaped semi-portion 32 and the second counter-shaped semi-portion 34, subsequently fixed to the second support upright 29, 30.

[0064] More precisely, the first block 33 comprises a central body 37 which, at a first end 37a, is provided with the aforesaid first shaped semi-portion 32 and, at the second end 37b, is provided with a cylindrical indentation 38 which protrudes axially from the central body 37 and is engaged inside the winding shaft 4.

[0065] The second block 36 includes the aforesaid second counter-shaped semi-portion 34 which protrudes, according to an orthogonal plane, from a strike base 39 which perfectly matches with the outer surface 29b, 30b of each of the second support uprights 29, 30 against which it is arranged externally close.

[0066] For example, in the case illustrated in figures 6-9, the strike base 39 presents at a side edge 39a a concave wall 40 which matches with the circular profile of the second support upright 29, 30.

[0067] With specific reference to the elastic means firstly introduced, preferably but not exclusively, they comprise a helical spring, not visible in the attached figures, which develops along the first longitudinal axis Z for a predefined section of the length of the winding shaft 4 and is provided with one end fixed to a cylindrical buffer, not yet visible, placed inside the winding shaft 4.

[0068] The opposite end of the helical spring is, instead, connected with a side abutment cap 41 externally arranged close to the lateral edge 4c of the winding shaft 4.

[0069] The elastic means - in particular the helical spring in the case described - contained inside the winding shaft 4 are preloaded during installation directly on site, with a pre-loading force depending on the size (square surface and/or width) of the laminar surface (in this case the laminar surfaces 2, 3) when it takes the closed position (or of uncovering of the area below A): this is done by rotating the winding shaft 4 in a direction opposite to that one that allows the unwinding of the lam-

inar surfaces 2, 3 to arrange them in the at least partial covering position of the area below A.

[0070] More in detail, the side abutment cap 41 presents an axial through hole 42 that allows its coupling with the cylindrical indentation 38 of the first block 33, as shown in figure 7: once the installation is completed, the side abutment cap 41 is so clamped between the lateral edge 4c and the intermediate shoulder 43 of the central body 37 of the first block 33.

[0071] The function of the side abutment cap 41 is double: preventing the entry of air and/or impurities, always harmful from a point of view of the structural integrity of the components, inside the winding shaft 4 and making more pleasant, since continuous and linear, the aesthetic effect of the roll-up manually operated structure 1 at the ends 4a, 4b of the winding shaft 4.

[0072] In other embodiments of the manually operated structure providing shade of the invention, not shown, the elastic means could include a plurality of modular helical spring, connected in series each other along the first longitudinal axis, mounted inside the winding shaft in a variable number depending on the variability of the length of the winding shaft itself. Figure 10 shows a first possible embodiment of the present invention in which the manually operated structure providing shade, only partially visible and numbered with 50, differs from that one previously described and indicated with 1 for the constructive design of the self-braking means, overall indicated with 53 and belonging to the actuation means, in turn, overall indicated with 52.

[0073] Indeed, in this case the self-braking means 53 still include a clutched hoist 54 provided with a clutch mechanism 55, automatically operated by the load applied by the laminar surface, not shown in this embodiment and to which the clutched hoist 54 is made integral through the tightening means, now not represented, and with a protection carter 56 which encloses and surrounds the clutch mechanism 55.

[0074] However, in this case, the inner structure of the clutched hoist 54 is different from that one of the clutched hoist 12 previously described, as it is well derived by comparing figures 5 and 11 each other: it refers in this case to a direct drive motion transmission, imparted by the user by acting on the operating handle 57, contrary to the constructive example of the previous case in which the motion transmission is at indirect drive through a gear.

[0075] In the clutched hoist 54, the transmission shaft 58, defining the second longitudinal axis X around which the user rotates the aforesaid operating handle 57, is externally threaded with two principles thread which engages a corresponding nut screw made in the central pulley 59 around which the tightening means wrap; the transmission shaft 58 also comprises, at the first end 58a close to the operating handle 57, a pair of braking washers 60, 61 made of metallic material (e.g. copper), plastic material (such as rubber) or composite material (such as for example bakelite), coaxially mounted to it.

[0076] The transmission shaft 58, also, includes an in-

intermediate toothed wheel 62 separating the two braking washers 60, 61 and which cooperates with a rotatable and elastically yielding contrast tooth, not visible, which in turn coupling with one of the teeth of the intermediate wheel 62 defines various stable positions for the laminar surface.

[0077] In the phase of unwinding of the laminar surface from the winding shaft 51, the user, by turning the operating handle 57 in a given direction, causes the sliding of the central pulley 59 along the second longitudinal axis X in such a way that the two braking washers 60, 61 do not exert any braking action (situation illustrated in figure 11), while in the phase of winding of the laminar surface on the winding shaft 51, the user, by turning the operating handle 57 in the opposite direction, causes the sliding of the pulley 59 along the second central longitudinal axis X up to compress the braking washers 60, 61 which thus exert their braking, although non-blocking action (situation illustrated in figure 12): in this way, the winding manoeuvre of the surface is extremely secure, controllable and fully managed by the user.

[0078] It should be noted at figures 11 and 12 also the presence of a coupling washer 63, coaxial to the braking washers 60, 61 and the intermediate toothed wheel 62, which makes integral these members, and in particular the brake assembly 60, 61, with the winding shaft 51.

[0079] In use conditions, starting from the operating configuration of the manually operated structure 1 providing shade illustrated in figure 1, in which it is already installed in the environment exploiting the fastening means 5 and the reference surface S and with the self-braking 8 means fixed to the first support upright 9 of the reference surface S itself by means of the blocking means 18, the user (even a non-expert person) rotates by any angle (less than the round angle or, more likely, for an appropriate number of revolutions), with extreme ease and with limited physical effort, the operating handle 11 of the clutched hoist 12 of the self-braking means 8, so as to cause the unwinding of the laminar surfaces 2, 3 for the desired amount, arranging them to partly or totally cover the area below A.

[0080] With this handle, the use also puts the user give traction to the tightening means 7 and compresses the elastic means placed inside the winding shaft 4.

[0081] During the rotation of the operating handle 11, the clutched hoist 12 of the self-braking means 8 operates the automatic safety braking assembly 15 that instantaneously, as soon as the user stops the rotation of the operating handle 11, stably locks in the position reached the laminar surfaces 2, 3.

[0082] Once reached the desired level of spreading (or opening), illustrated for example in figure 2, the laminar surfaces 2, 3 remain so effectively stretched and strained, thus offering to people occupying the area below A an effective protection against the atmospheric agents, such as the sun, the beating rain and so on.

[0083] In the winding phase, the user rotates the operating handle 11 by a small angle but in the opposite

direction to the previous one, so as to disengage the automatic safety braking assembly 15 of the clutched hoist 12 and to allow the elastic means to bring back, thanks to the recovery of mechanical energy stored during the unwinding phase, the laminar surfaces 2, 3 in the closed position (or of uncovering of the area below A) and the manually operated structure 1 providing shade in the rest configuration: in the winding phase, the elastic means determine the rotation of the winding shaft 4 around the first longitudinal axis Z in the direction opposite to that one of the unwinding phase.

[0084] In any case, winding of the laminar surfaces 2, 3 around the winding shaft 4 is suitably slowed and controlled in a constant way by the rotatable and elastically yielding contrast tooth 16, due to its contrast with the various teeth of the ring 44 of the gear 45 of the clutched hoist 12 with which it progressively interfere: such a trick creates conditions of safety for the user during the still ticklish winding of the laminar surfaces 2, 3 around the winding shaft 4. At the end of the winding phase, the elastic means are completely released and thus they take the rest position.

[0085] According to the description just given, it is understood, therefore, that the manually operated structure providing shade of the present invention achieves the purpose and reaches the advantages already mentioned.

[0086] Contrary to the available known art, especially that one represented by the document published as AT506083 A4, the user operates the winding shaft in mutually opposite directions of rotation to unwind/wind (or open/close) the laminar surface simply by acting manually, in conditions of extreme safety and with ease and speed, on actuation means of the type comprising self-braking means arranged at a given height from the ground, however, easily accessible by the user and able to cause the progressive and continuous passage of the laminar surface from the plurality of at least partial covering positions of the area below to the complete uncovering position of the area below and vice versa.

[0087] In executive stage, modifications could be made to the manually operated structure providing shade of the invention, consisting, for example, in fastening means, through which the winding shaft is associated with the reference surface, different from those ones described above and shown in attached figures.

[0088] Beyond to this, other embodiments of the manually operated structure providing shade of the present invention, not shown, could exist in which the tightening means present a constructive composition different from that one highlighted in the course of the description, such a also and especially depending on the design choices and number of laminar surfaces required by the specific solution of structure providing shade.

[0089] In this regard, it is stated precisely that in further embodiments of the invention, again not illustrated, the manually operated structure providing shade of the present invention could include a number of laminar sur-

faces different from two, such a number being able to vary, indeed, depending on the constructive choices starting from one.

[0090] The manually operated structure providing shade, of roller type, of the invention could be so available in various exemplars, some of which could include a single laminar surface having triangular or squared (square, rectangular or trapezoidal) profile.

[0091] In addition, other embodiments of the manually operated structure providing shade of the invention, not shown, could provide that the actuation means comprise self-braking means different from those ones previously described and illustrated in the attached tables. Furthermore, alternative and optional embodiments of the manually operated structure providing shade which is herewith claimed by exclusive, always not accompanied by drawings of reference, could include elastic means inside the winding shaft of different type from that one indicated above, which does not affect the advantage brought by the present invention.

[0092] It is, finally, clear that several other changes could be made to the manually operated structure providing shade concerned, without departing from the principle of novelty intrinsic in the inventive idea expressed herein, as it is clear that, in the practical implementation of the invention, materials, shapes and sizes of the illustrated details could be changed, as needed, and replaced with others technically equivalent.

[0093] Where the constructive features and techniques mentioned in the following claims are followed by reference numbers or signs, those reference signs have been introduced with the sole objective of increasing the intelligibility of the claims themselves and therefore they have no limiting effect on the interpretation of each element identified, by way of example only, by these reference signs.

Claims

1. Manual operated structure (1; 50) providing shade (1) comprising:

- at least one laminar surface (2, 3) suitable to be spread at a given height from the ground (T) for covering an area below (A);
- a winding shaft (4; 51), which develops along a first longitudinal axis (Z) and to which said laminar surface (2, 3) is firmly bound, suitable to be associated through fastening means (5) with a reference surface (S) facing said area below (A);
- actuation means (6; 52) suitable to rotate said winding shaft (4; 51) around said first longitudinal axis (Z) so as to cause winding/unwinding of said laminar surface (2, 3) from/on said winding shaft (4; 51) and place it between the complete uncovering position of said area below (A) and a plurality of at least partial covering position

of said area below (A);

- tightening means (7) connecting each other said laminar surface (2, 3) and said actuation means (6; 52),

characterized in that said actuation means (6; 52) comprise self-braking means (8; 53) coupled with said reference surface (S) at a height from the ground (T) such that to be accessible by the users and, during unwinding/winding of said laminar surface (2, 3), mechanically cooperating with elastic means internally integral with said winding shaft (4; 51) and suitable to be loaded/released during unwinding/winding of said laminar surface (2, 3) as a result of the rotation of said winding shaft (4), in such a way that manual moving of said self-braking means (8; 53) causes progressive and continuous passage of said laminar surface (2, 3) from said complete uncovering position of said area below (A) to said plurality of at least partial covering position of said area below (A) and vice versa.

2. Structure (1; 50) according to claim 1) **characterized in that** said self-braking means (8; 53) are provided with an operating handle (11; 57) at the user's disposal who operates it in order to obtain winding/unwinding of laminar surface (2, 3) from/on said winding shaft (4; 51).

3. Structure (1; 50) according to claim 1) or 2) **characterized in that** said self-braking means (8; 53) include a clutched hoist (12; 54) provided with a friction mechanism (13; 55), automatically operated by the load applied by said laminar surface (2, 3) with which said clutched hoist (12; 54) is made integral through said tightening means (7), and with a protection carter (14; 56) which envelopes and surrounds said friction mechanism (13; 55).

4. Structure (1; 50) according to claim 3) when dependent on claim 2) **characterized in that** said operating handle (11; 57) protrudes externally from said protection carter (14; 56) of said clutched hoist (12; 54) and is coupled with a transmission shaft (17; 58) defining a second longitudinal axis (X) around which said user rotates said operating handle (11; 57) in order to determine the unwinding/winding of said laminar surface (2, 3) from/on said winding shaft (4; 51).

5. Structure (1; 50) according to any of the preceding claims **characterized in that** said self-braking means (8; 53) are coupled with the outer wall (9a) of said reference surface (S) through blocking means (18).

6. Structure according to any of the preceding claims **characterized in that** said tightening means include

a metal rope provided with a first end firmly bound within said self-braking means and with a second end, opposite to said first end, firmly bound to an outer perimetrical point of said laminar surface.

7. Structure (1; 50) according to any of the preceding claims **characterized in that** it includes two laminar surfaces (2, 3) connected together near a side border (2a, 3a) through junction means.

8. Structure (1; 50) according to claim 7) **characterized in that** said tightening means (7) comprise:

- a first metal rope (22) provided with a first end (22a) stably bound within said self-braking means (8) and a with second end (22b), opposite to said first end (22a), stably bound through balancing means (23) to an outer perimetrical point (2b) of a first of said laminar surfaces (2, 3);
- a second metal rope (24) provided with a first end (24a) stably bound to said balancing means (23) and with a second end (24b), opposite to said first end (24a), stably bound to a second of said laminar surfaces (2, 3).

9. Structure (1; 50) according to claim 8) **characterized in that** said balancing means (23) comprise a movable plate (25), coupled frontally with said outer perimetrical point (2b) of said first laminar surface (2) and to which said first metal rope (22) and said second metal rope (24) are bound, defining a fulcrum (F) around which it is suitable to rotate of a predefined angle when said actuation means (6; 52) place said laminar surfaces (2, 3) in one of said covering positions in order to maintain the tension of said laminar surfaces (2, 3) balanced.

10. Structure (1; 50) according to any of the preceding claims **characterized in that** said tightening means (7) mechanically cooperate with transmission means (26) coupled with said reference surface (S) and suitable to contribute to the proper tensioning of said laminar surface (2, 3).

11. Structure (1; 50) according to any of the preceding claims **characterized in that** said reference surface (S) includes at least a first support upright (9, 10) having a longitudinal development, suitable to insist on said ground (T) and with which said self-braking means (8) are externally coupled through blocking means (18).

12. Structure (1; 50) according to any of the preceding claims **characterized in that** said fastening means (5) comprise at least one second support upright (29, 30) having a longitudinal development, suitable to insist on said ground (T) and provided with an upper end (29a, 30a) coupled with one end (4a, 4b) of said

winding shaft (4; 51) through hinge means (31) suitable to allow adjustment of the angular position of said winding shaft (4; 51) on a plane passing through said first longitudinal axis (Z).

13. Structure (1; 50) according to claim 12) **characterized in that** said hinge means (31) define a linear rotation axis (Y) orthogonal to said first longitudinal axis (Z).

14. Structure (1; 50) according to any of the preceding claims **characterized in that** said elastic means comprise at least one helical spring extending along said first longitudinal axis (Z) for a predefined section of the length of said winding shaft (4; 51), provided with one end fixed to a cylindrical buffer arranged inside said winding shaft (4; 51) and with the opposite end connected with a side abutment cap (41) externally arranged close to the lateral edge (4c) of said winding shaft (4; 51).

15. Structure according to claim 14) **characterized in that** said elastic means comprise a plurality of modular helical springs, connected in series each other along said first longitudinal axis, mounted inside said winding shaft in a variable number depending on the variability of said length of said winding shaft.

FIG.1

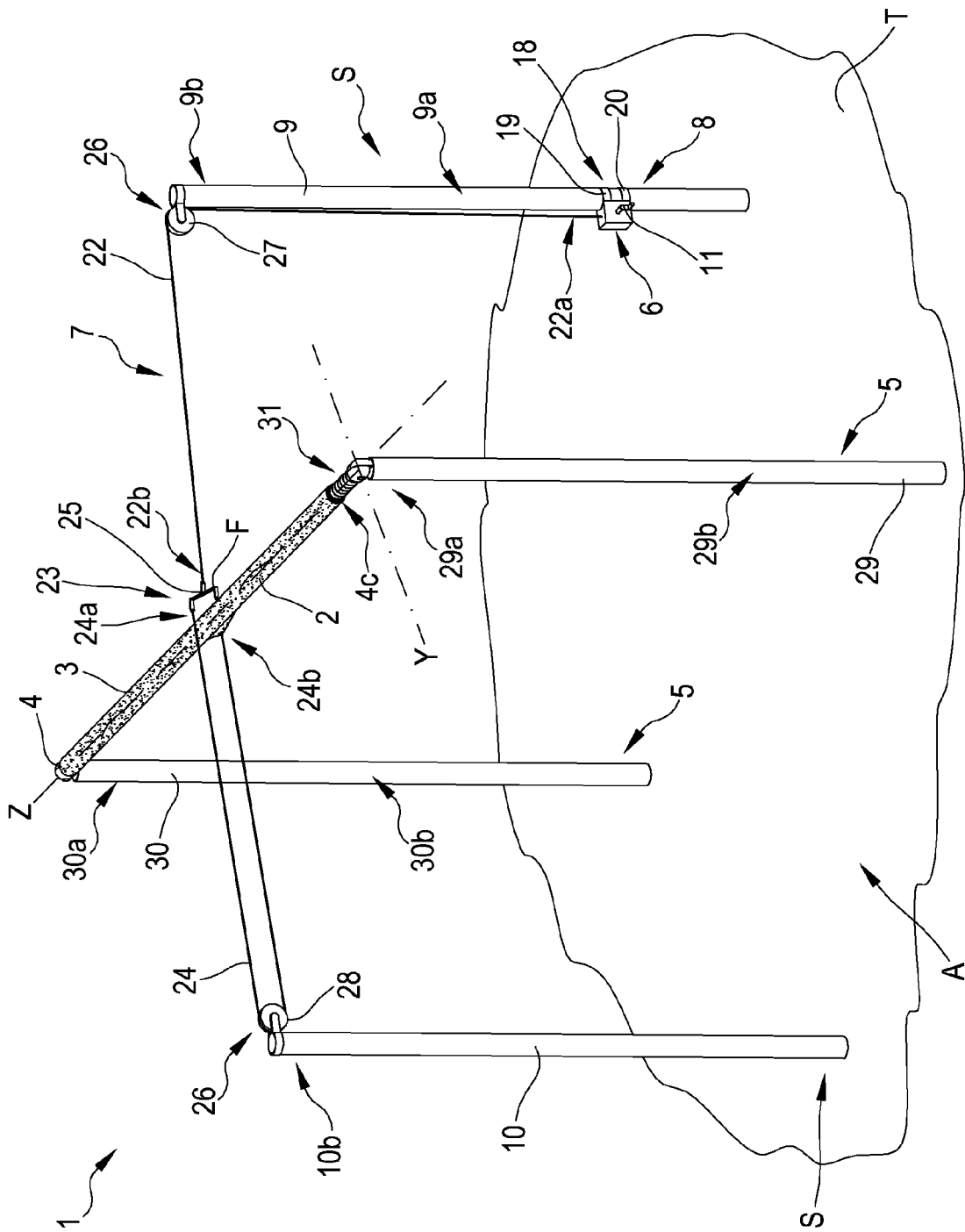


FIG. 2

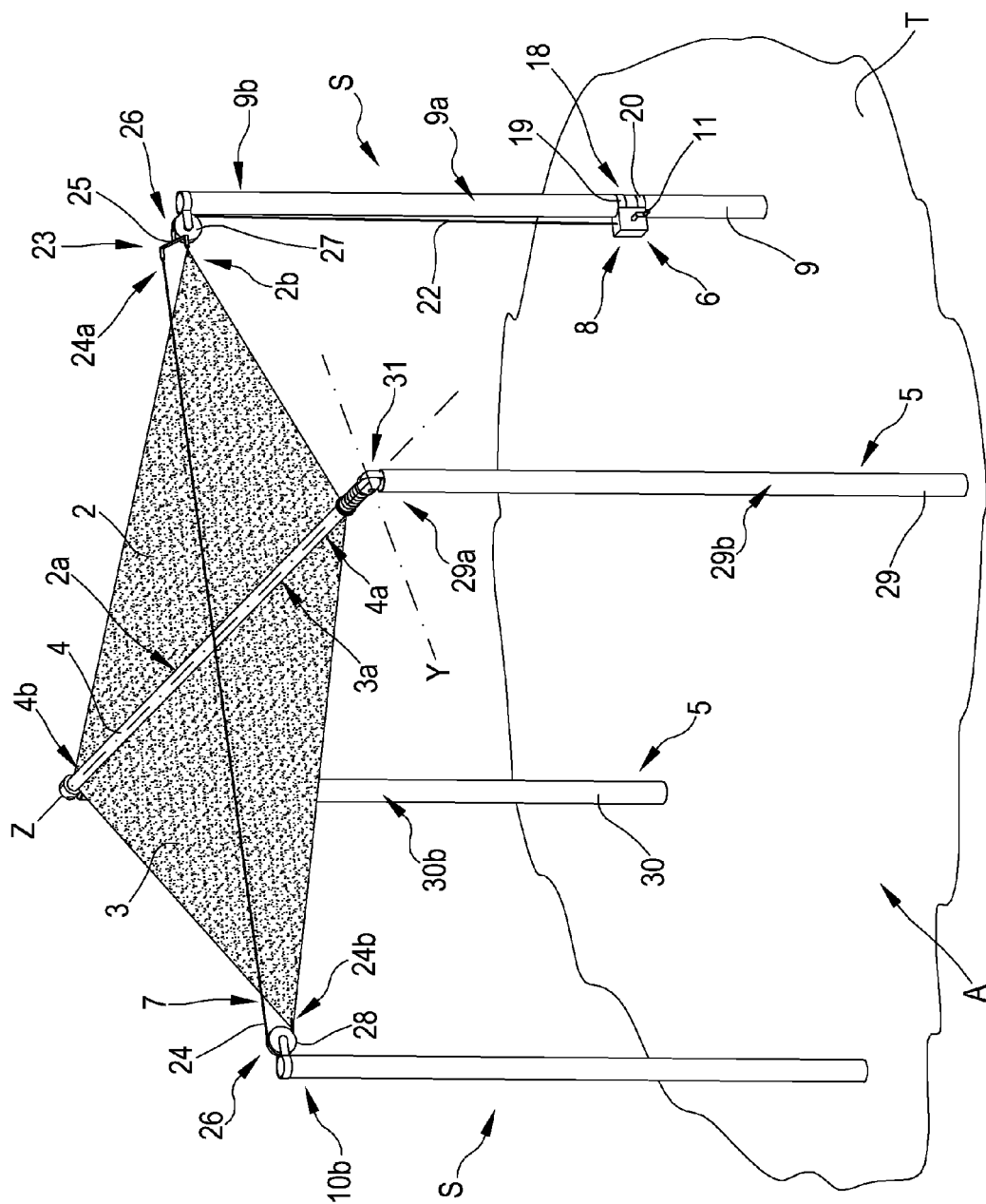


FIG.3

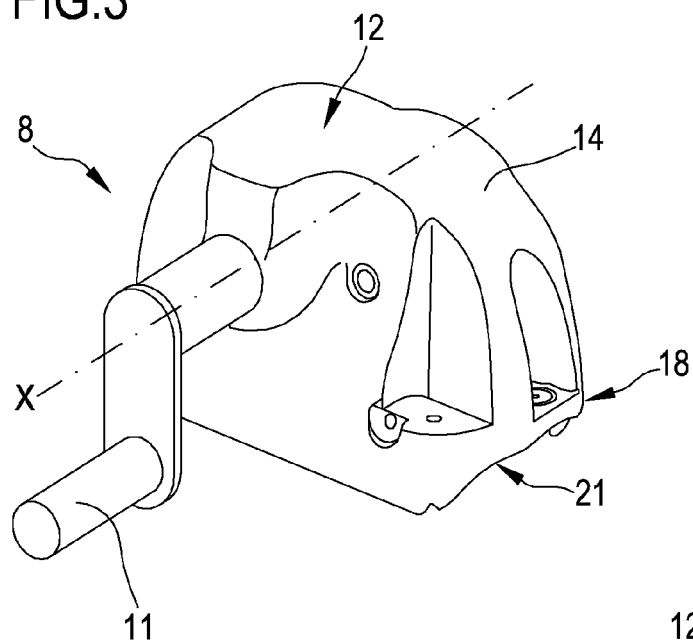


FIG.4

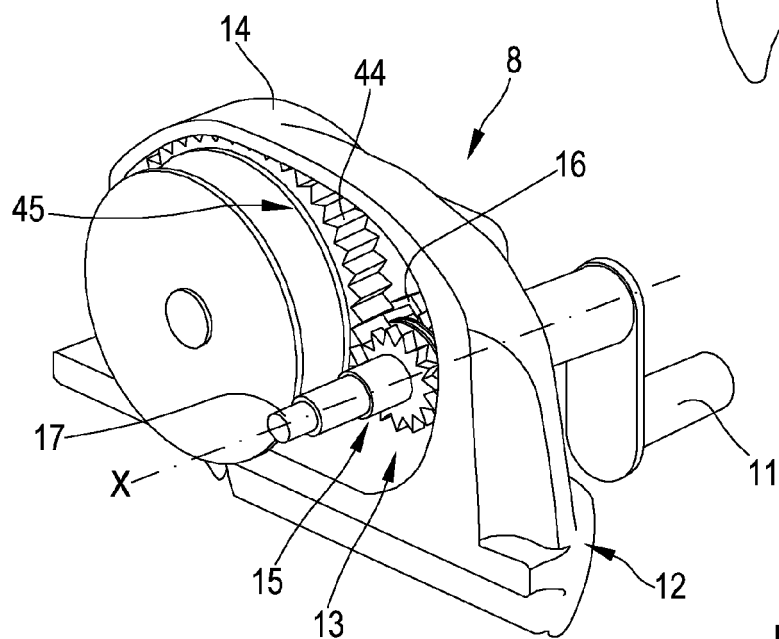
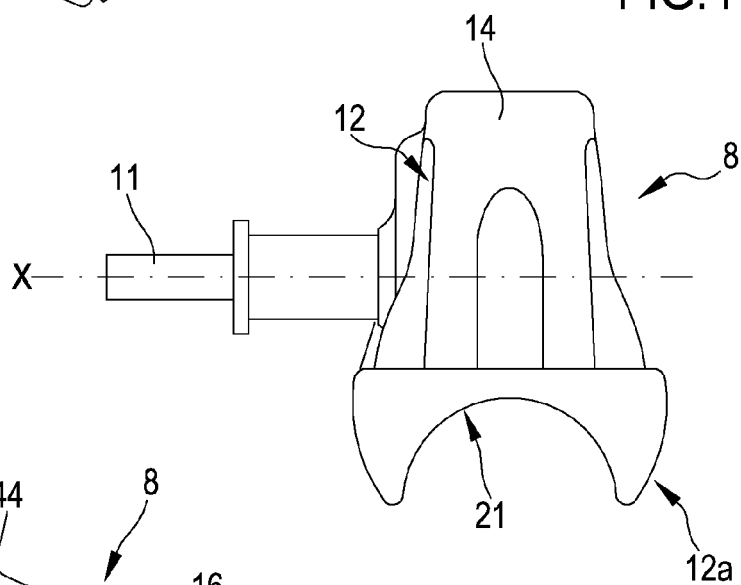


FIG.5

FIG.6

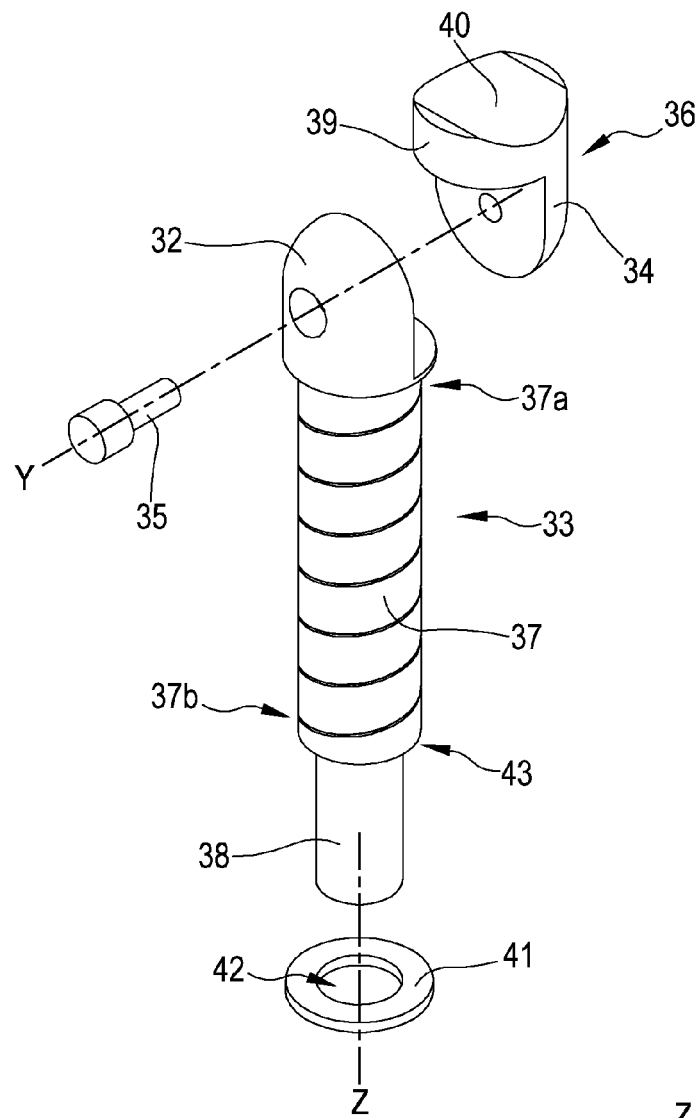
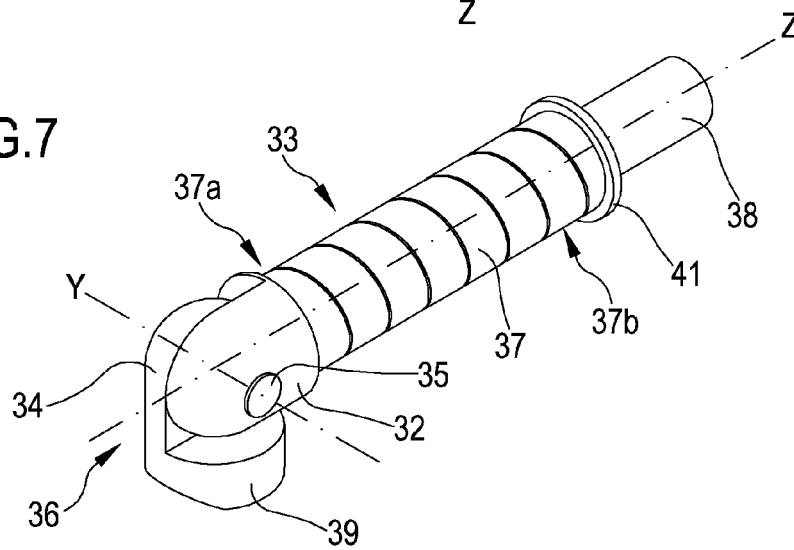


FIG.7



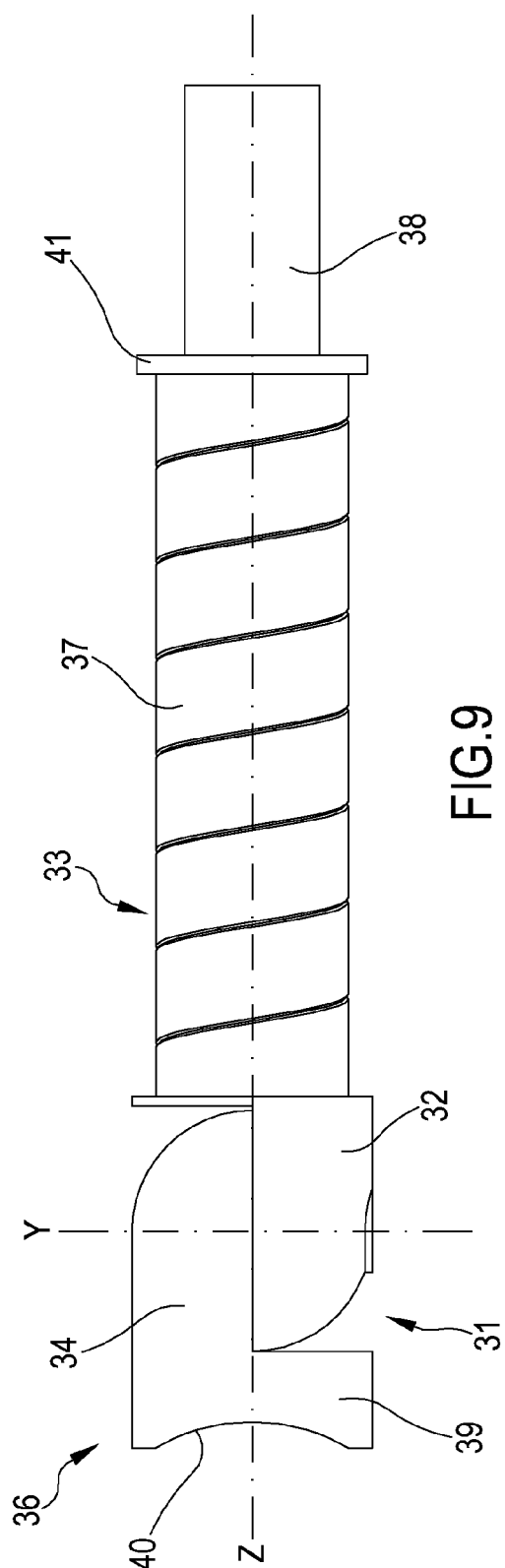
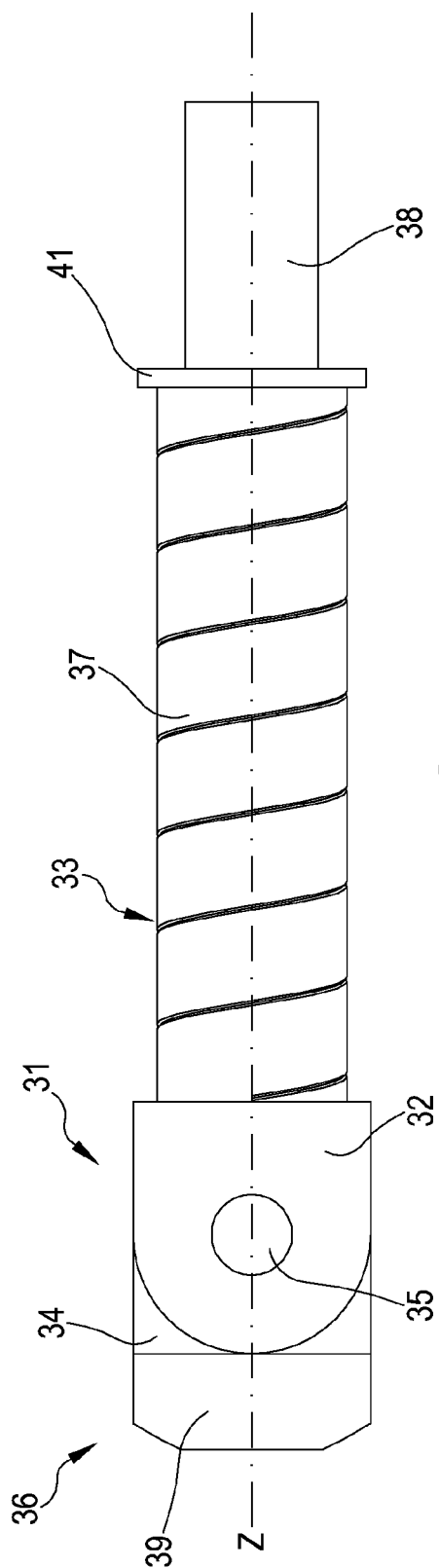


FIG.10

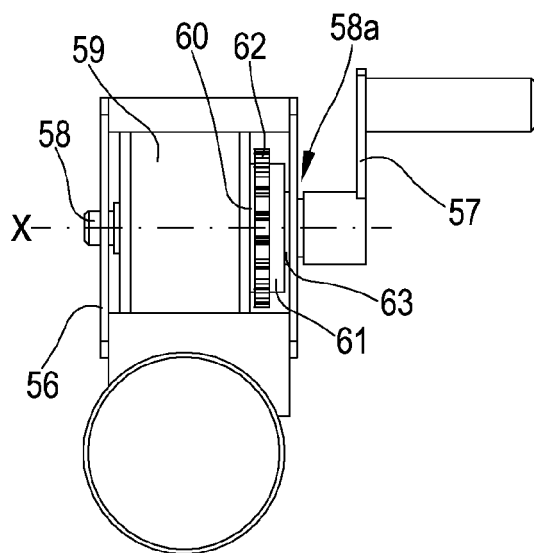
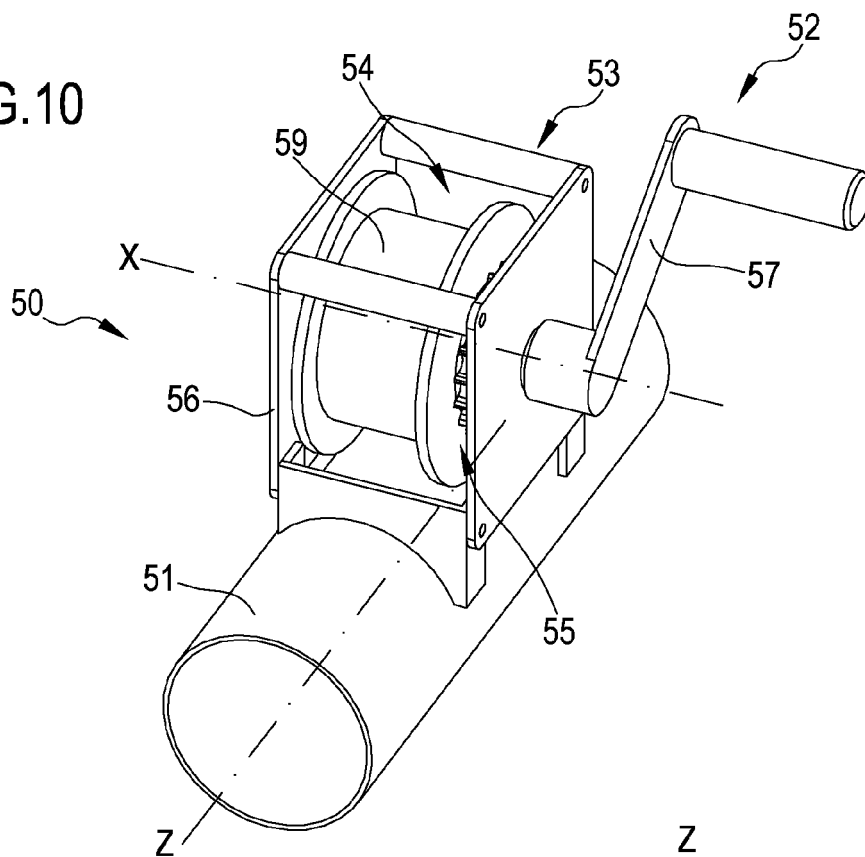


FIG.11

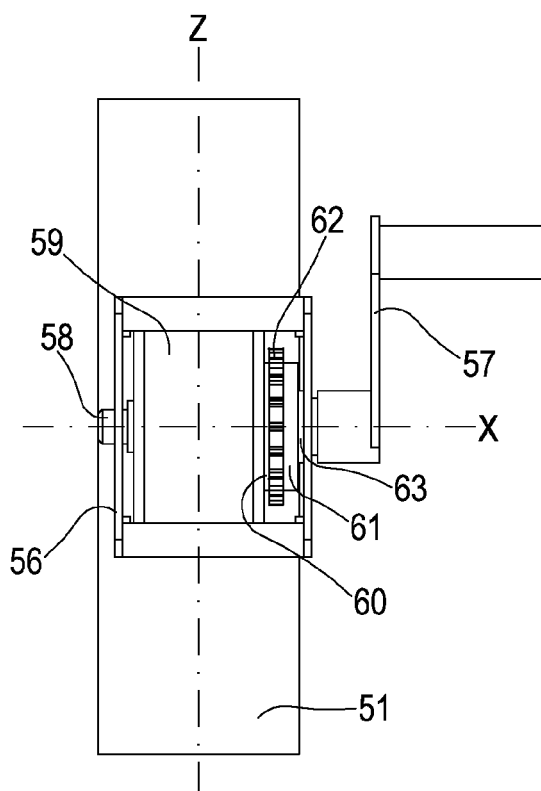


FIG.12



EUROPEAN SEARCH REPORT

Application Number
EP 14 16 5091

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	AT 506 083 A4 (PLASPACK NETZE GMBH [AT]) 15 June 2009 (2009-06-15)	1-8,10	INV. E04H15/58
Y	* the whole document *	2-5, 11-15	
A	-----	9	
Y	EP 2 216 460 A1 (VELOMBRA S R L [IT]) 11 August 2010 (2010-08-11) * figures 1-5 * * paragraphs [0036] - [0038] *	2-5, 11-13	
Y	EP 1 914 365 A2 (WAREMA RENKHOFF GMBH & CO KG [DE]) 23 April 2008 (2008-04-23) * figures 1,2 * * claims 1,4,5,8 *	14,15	TECHNICAL FIELDS SEARCHED (IPC)
			E04H E04F
The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 19 August 2014	Examiner Schnedler, Marlon
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document		T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons ----- & : member of the same patent family, corresponding document	

EPO FORM 1503 03.82 (P04C01)

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

EP 14 16 5091

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.

19-08-2014

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
AT 506083 A4	15-06-2009	AT 506083 A4	15-06-2009
		AT 529586 T	15-11-2011
		DE 202009018220 U1	01-08-2011
		DK 2260160 T3	13-02-2012
		EP 2260160 A1	15-12-2010
		ES 2374791 T3	22-02-2012
		HR P20120041 T1	29-02-2012
		SI 2260160 T1	30-03-2012
		WO 2009111810 A1	17-09-2009

EP 2216460 A1	11-08-2010	NONE	

EP 1914365 A2	23-04-2008	AT 510983 T	15-06-2011
		DE 102006047899 B3	30-04-2008
		EP 1914365 A2	23-04-2008

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

- AT 506083 A4 [0012] [0015] [0086]