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(11) **EP 1 591 616 A1**

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
02.11.2005 Bulletin 2005/44

(51) Int Cl.7: **E06B 9/42**, E06B 9/60,
E06B 9/80

(21) Application number: **04101744.3**

(22) Date of filing: **26.04.2004**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IT LI LU MC NL PL PT RO SE SI SK TR**
Designated Extension States:
AL LT LV MK

(72) Inventor: **Verheijden, Bjorn**
6043 SK, Roermond (NL)

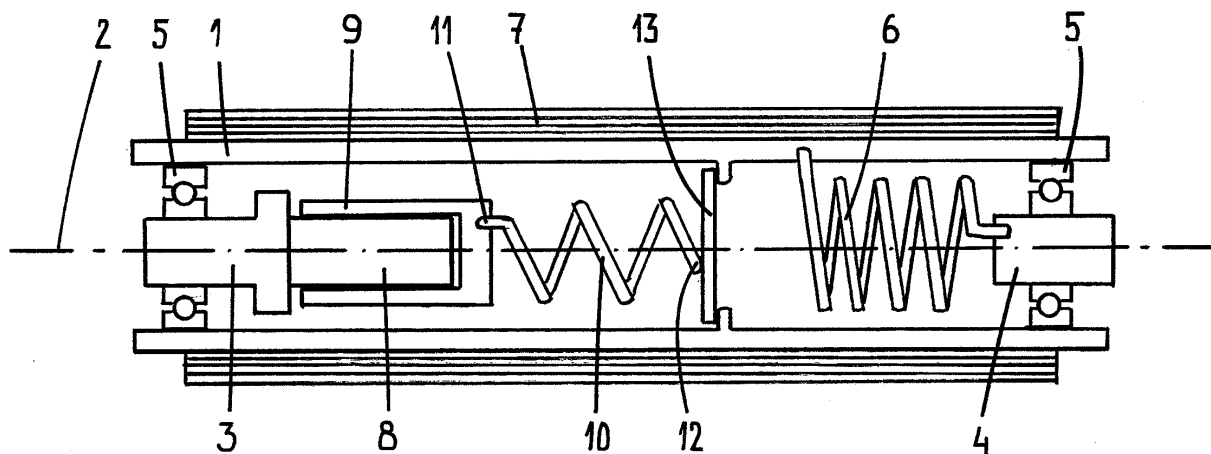
(74) Representative:
**Voncken, Bartholomeus Maria Ch.
De Vries & Metman,
Overschiestraat 180
1062 XK Amsterdam (NL)**

(71) Applicant: **Inalfa Roof Systems Group B.V.**
5804 AH Venray (NL)

(54) **Sunscreen assembly**

(57) A sunscreen assembly is provided comprising a winding tube (1) which is rotatably mounted on a stationary axis (2) and which is springloaded in a first rotational sense and which further comprises a sunscreen (7) which can be wound onto said winding tube (1) when the winding tube rotates in the said first rotational sense

and which can be wound off said winding tube when the winding tube is rotated in a second rotational sense against the spring-load. A friction mechanism is positioned between the stationary axis (2) and the winding tube (1), which friction mechanism only generates a friction force on the winding tube when the latter rotates in the first rotational sense.



EP 1 591 616 A1

Description

[0001] The invention relates to a sunscreen assembly, comprising a winding tube which is rotatably mounted on a stationary axis and which is springloaded in a first rotational sense and further comprising a sunscreen which can be wound onto said winding tube when the winding tube rotates in the said first rotational sense and which can be wound off said winding tube when the winding tube is rotated in a second rotational sense against the spring-load.

[0002] When, in a known sunscreen assembly of the type referred to above, the sunscreen has to be moved to an operative position, in which it is wound off said winding tube in a predetermined amount, the sunscreen generally is engaged manually and pulled away from the winding tube in such a manner that it is wound off said winding tube, which winding tube then will rotate in the second rotational sense against the spring-load. When a desired position of the sunscreen has been reached, generally a locking mechanism is activated for maintaining the sunscreen in its position. For again winding the sunscreen onto the winding tube, the locking mechanism is deactivated and the spring-load acting on the winding tube will cause the winding tube to rotate in the first rotational sense for winding the sunscreen thereon to.

[0003] For obtaining a controlled wind-up movement of the sunscreen onto the winding tube, most times mechanisms for generating a mechanical friction between the sunscreen and stationary parts of the sunscreen assembly are used. For example, the sunscreen comprises at its free end a pulling beam which, at its opposite ends, is provided with slide shoes frictionally engaging corresponding guides extending alongside the sunscreen. Although such friction mechanisms can prevent an uncontrolled movement of the sunscreen when released from its operative position, such friction mechanisms also will make the movement of the sunscreen towards its operative position (i.e. unwinding the sunscreen from the winding tube) more difficult, because apart from the spring-load also the friction has to be overcome. Further, such friction mechanisms cause additional wear and tear which will reduce the life expectancy of the sunscreen assembly and its reliable operation.

[0004] It is an object of the present invention to provide an improved sunscreen assembly of the type referred to above.

[0005] Thus, in accordance with the present invention, a sunscreen assembly of the type referred to above is characterised by a friction mechanism positioned between the stationary axis and the winding tube, which friction mechanism only generates a friction force on the winding tube when the latter rotates in the first rotational sense.

[0006] As a result, only a friction will be generated when the sunscreen is wound onto said winding tube,

said friction causing a controlled movement of the sunscreen. However, when the sunscreen is unwound from the winding tube no friction is generated, thus enabling a smooth and easy manipulation of the sunscreen (during which only the spring-load has to be overcome).

[0007] In a preferred embodiment of the sunscreen assembly according to the present invention the friction mechanism comprises a first friction element attached non-rotatably to the stationary axis, a second friction element engaging the first friction element and a clutch mechanism positioned between the second friction element and the winding tube.

[0008] When the sunscreen is unwound from the winding tube, the clutch mechanism is inoperative, such that the second friction element can move relative to the winding tube and thus can be stationary relative to the first friction element, causing no friction therebetween. However, when the sunscreen is wound onto the winding tube (that means when the winding tube rotates in the first rotational sense) the clutch mechanism becomes operative and temporarily interconnects the second friction element and the winding tube. As a result, the second friction element will move relative to the first friction element causing friction therebetween for realising a controlled movement of the sunscreen.

[0009] In a further preferred embodiment of the sunscreen assembly according to the present invention, the first friction element is a cylindrical silicon body concentric with the stationary axis, whereas the second friction element is a cylindrical tube member surrounding the silicon body and comprising an inner surface engaging an outer surface of the silicon body.

[0010] When the clutch mechanism mentioned above is operative, the cylindrical tube member will move relative to the cylindrical silicon body, such that the inner surface of the cylindrical tube member will slide along the outer surface of the silicon body, generating the desired friction.

[0011] Of course, many types of clutch mechanisms could be applied in a sunscreen assembly according to the present invention. However, in a simple, yet nevertheless very reliable embodiment of the sunscreen assembly, the clutch mechanism comprises a helical spring concentric with the stationary axis, with a first end rigidly connected to a first one of said second friction element and winding tube and a second end engaging the other of said second friction element and winding tube in a ratchet-like manner.

[0012] Such a clutch mechanism comprises a minimal amount of parts, and thus is cheap, light-weighted and very reliable. Moreover, the provision of a helical spring offers the possibility of moving the assembly of first friction element and second friction element in parallel to the stationary axis, for example for reasons of mounting or dismounting the sunscreen assembly in fixed bearings.

[0013] When such a helical spring is applied, preferably the helical spring with a first end is rigidly connected

to the second friction element, whereas its second end engages the winding tube. If so, one possible manner to realise the engagement between the second end of the helical spring and the winding tube is that the winding tube comprises an inner wall member which is engaged by the helical spring, which wall member extends perpendicularly to the stationary axis.

[0014] It is noted, that the phrase "stationary axis" not necessarily means that a physical body defining a stationary axis is provided. It is also possible, that said stationary axis defines an imaginary geometrical axis.

[0015] Hereinafter the invention will be elucidated referring to the drawing, in which an embodiment of the sunscreen assembly according to the present invention is illustrated.

[0016] The only figure shows in a schematical longitudinal section an embodiment of a sunscreen assembly according to the present invention.

[0017] Referring to the figure, a winding tube 1 is illustrated which is rotatably mounted on (or around) a stationary axis 2. Such a mounting may be realised using stationary shafts 3, 4 and bearings 5. Basically the shafts 3, 4 cooperate with stationary external parts (not illustrated) and have a fixed position, and cannot rotate around the stationary axis 2. However, as will appear later, at least one shaft (3) may be movable in the longitudinal direction of the stationary axis 2.

[0018] A torsion spring 6 is positioned within the winding tube 1, of which torsion spring 6 a first end is connected to the stationary shaft 4, and the second end is connected to the winding tube 1. As is known in the state of the art, this torsion spring 6 preloads the winding tube 1 in a first rotational sense for winding a sunscreen 7 thereonto.

[0019] The shaft 3 has rigidly attached thereto a cylindrical silicon body 8 concentric with the stationary axis 2. A cylindrical tube member 9 concentrically surrounds the silicon body 8, whereas an inner surface of the tube member 9 engages an outer surface of the silicon body 8.

[0020] A helical spring 10 has a first end 11 rigidly connected to the tube member 9, and a second end 12 engaging a wall member 13 extending perpendicularly to the stationary axis 2 and attached to the winding tube 1. The engagement between the second end 12 of the helical spring 10 and wall member 13 of the winding tube 1 occurs in a ratchet-like manner, which will be discussed in more detail later.

[0021] As mentioned, the torsion spring 6 tries to rotate the winding tube 1 in a first rotational sense for winding the sunscreen 7 thereonto. When the sunscreen 7 has to be unwound, it is pulled in such a direction that the winding tube 1 will rotate in a second opposite rotational sense against the spring-load of the torsion spring 6. The shafts 3, 4 will not rotate. The second end 12 of the helical spring 10 has such an orientation, that when the winding tube 1 rotates in its second rotational sense, said second end 12 will freely slide along the wall mem-

ber 13, and therefor will not obstruct the rotation of the winding tube 1.

[0022] When the winding tube 1 will rotate in its first rotational sense (under influence of the spring-load of the torsion spring 6), the orientation of the second end 12 of the helical spring 10 (possibly together with an appropriate profiling of the wall member 13) will cause a ratchet-like engagement between itself and the wall member 13, preventing a relative movement therebetween. That means, that the helical spring 10 will be rotated in unison with the winding tube 1, and thus the tube member 9 which is connected to the spring 10 will rotate relative to the silicon body 8. Thus, the inner surface of the tube member 9 will slide along the outer surface of the silicon body 8, generating friction which will control the wind-up movement of the sunscreen 7 onto the winding tube 1.

[0023] In a special embodiment of the sunscreen assembly not illustrated, the shaft 3 is movable axially relative to the stationary axis 2 towards the wall member 13. Such a movement will occur against the spring-load of the helical spring 10, and can be used for mounting the assembly or dismounting it. After release of the shaft 3 it will move outwardly (away from the wall member 13) under influence of the helical spring 10.

[0024] The invention is not limited to the embodiment described before which may be varied widely within the scope of the invention as defined by the appending claims.

Claims

1. Sunscreen assembly, comprising a winding tube which is rotatably mounted on a stationary axis and which is springloaded in a first rotational sense and further comprising a sunscreen which can be wound onto said winding tube when the winding tube rotates in the said first rotational sense and which can be wound off said winding tube when the winding tube is rotated in a second rotational sense against the spring-load, **characterized by** a friction mechanism positioned between the stationary axis and the winding tube, which friction mechanism only generates a friction force on the winding tube when the latter rotates in the first rotational sense.
2. Sunscreen assembly according to claim 1, wherein the friction mechanism comprises a first friction element attached non-rotatably to the stationary axis, a second friction element engaging the first friction element and a clutch mechanism positioned between the second friction element and the winding tube.
3. Sunscreen assembly according to claim 2, wherein the first friction element is a cylindrical silicon body concentric with the stationary axis, whereas the

second friction element is a cylindrical tube member surrounding the silicon body and comprising an inner surface engaging an outer surface of the silicon body.

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4. Sunscreen assembly according to claim 2 or 3, wherein the clutch mechanism comprises a helical spring concentric with the stationary axis, with a first end rigidly connected to a first one of said second friction element and winding tube and a second end engaging the other of said second friction element and winding tube in a ratchet-like manner.

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5. Sunscreen assembly according to claim 4, wherein the helical spring with a first end is rigidly connected to the second friction element, whereas its second end engages the winding tube.

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6. Sunscreen assembly according to claim 5, wherein the winding tube comprises an inner wall member which is engaged by the helical spring, which wall member extends perpendicularly to the stationary axis.

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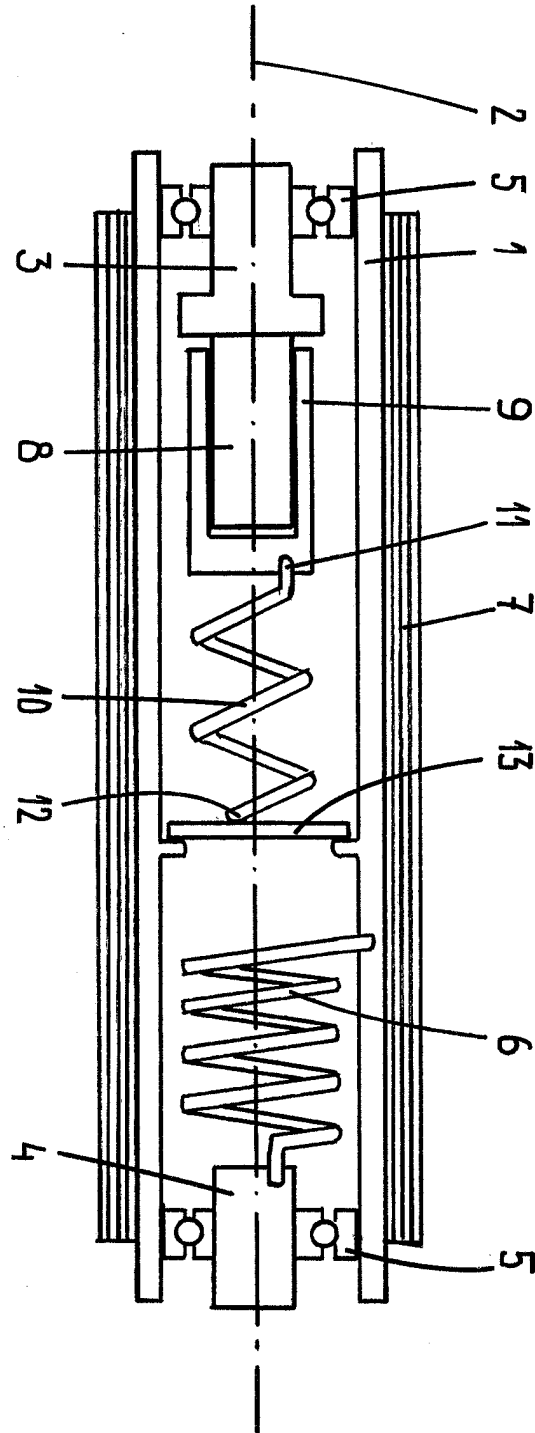
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Application Number
EP 04 10 1744

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
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A	* paragraph [0005] - paragraph [0012] * * paragraph [0029] - paragraph [0035]; figures 5,6 *	3-6	
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The present search report has been drawn up for all claims			
Place of search Munich		Date of completion of the search 1 October 2004	Examiner Merz, W
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	

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EPO FORM 1503 03/82 (P04C01)

**ANNEX TO THE EUROPEAN SEARCH REPORT
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This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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