(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 1 783 297 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 158(3) EPC

(43) Date of publication:
09.05.2007 Bulletin 2007/19

(21) Application number: **05748690.4**

(22) Date of filing: **09.05.2005**

(51) Int Cl.:
E04F 10/06 *(2006.01)*

(86) International application number:
PCT/ES2005/000248

(87) International publication number:
WO 2005/121472 (22.12.2005 Gazette 2005/51)

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

(30) Priority: **27.05.2004 ES 200401279**

(71) Applicant: **LLAZA, S.A.**
E-43206 Reus (Tarragona) (ES)

(72) Inventor: **LLAGOSTERA FORNS, Joan**
E-43206 Reus (ES)

(74) Representative: **Gislon, Gabriele**
Torner, Juncosa i Associats
c/ Bruc 21
08010 Barcelona (ES)

(54) INCLINE-ADJUSTABLE SUPPORT ASSEMBLY FOR AN AWNING CASE

(57) An end plate (20) for the side closing of a box is rotatably coupled to a support part (10) fixed to a structure. A flexible traction element (30) has a first end (31) fixed to an anchoring (21) of the plate (20), a middle part (33) supported on a support surface (23) of the plate (20), and a second end (32) fixed to an anchoring (42) of a sliding block (40) assembled in the support part (10) and coupled to a screw spindle (41) which can be actuated to move the sliding block (40) for the purpose of varying the angular position of said end plate (20) with respect to the support part (10). Fixing means allow fixing the end plate (20) with respect to the support part (10) in a selected angular position.

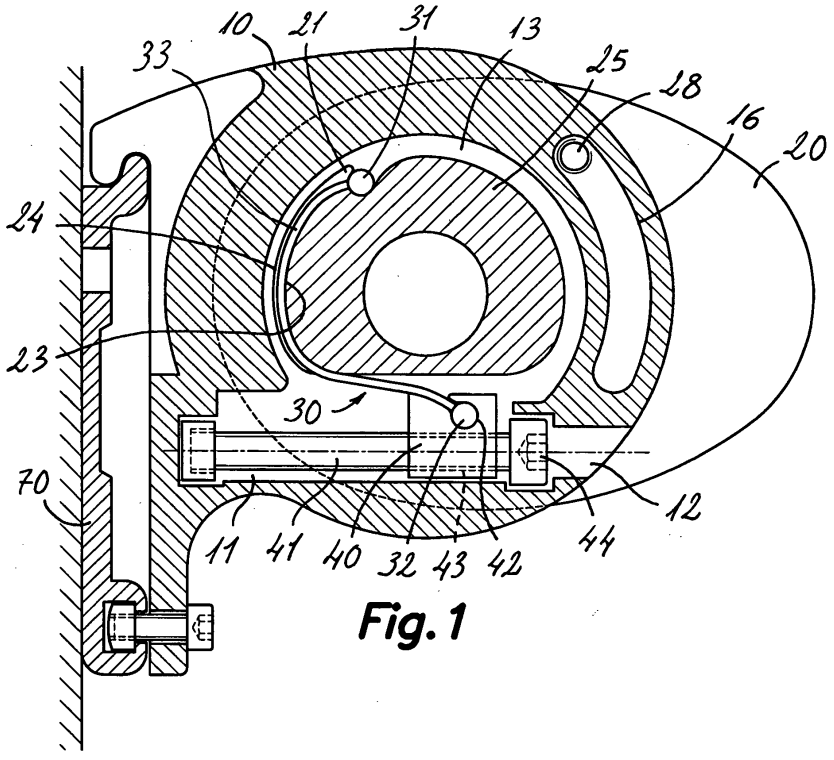

Fig. 1

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Description

Field of the art

[0001] The present invention generally relates to a support assembly with inclination adjustment for an awning box and more particularly to a support assembly for an awning box provided with means for varying the angular position of the box by means of a mechanism including a flexible band as a traction element.

State of prior art

[0002] Extensible awning devices comprising a rolling tube actuated to roll a canvas forming the awning, a load bar fixed to the free end of the canvas, and a pair of articulated arms connected to the load bar and actuated by elastic elements to support the load bar and extend the canvas as the rolling tube is rotated to unroll the canvas are well known. Awning assemblies of this type are known in the prior art in which the rolling tube of the canvas and the articulated arms are housed inside a protective casing, in a folded awning situation. In this folded awning situation, the load bar is coupled to close a longitudinal opening of the box provided to allow the passage of the canvas and the arms in an open awning situation. The ends of the rolling tube and the inner ends of the arms are fixed to respective end plates closing the longitudinal ends of the box. The mentioned end plates are coupled to respective support parts fixed to a wall or another structure.

[0003] Patent application EP-A-03380120, to the present applicant, discloses a support assembly for an awning box of this type provided with an inclination adjustment for the box which allows selecting a desired inclination degree for the canvas and the arms in the open awning situation. For each side end of the box, the assembly comprises a support part to which the corresponding end plate of the end of the box is rotatably coupled. The mentioned support part is adapted to be fixed with respect to a wall or another structure. Angular adjustment means include a gear wheel sector formed in the end plate and a rack meshed with said gear wheel sector. The rack is formed in a body coupled to a screw spindle which can be actuated manually so as to move the rack linearly, which allows rotating the end plate for the purpose of varying the angular position of the box with respect to the support part. There are fixing means including a wedge element formed in a part coupled to a screw spindle assembled in the support part and which can be actuated to move the wedge element against conjugated surfaces formed in the end plate, which surfaces allow fixing the selected angular position of the box with respect to the support part.

[0004] On the other hand, patent ES-A-2159211, to the present applicant, describes a flexible traction element useful for transmitting the tension of one or more elastic elements housed inside a segment of the articulated arm to another segment through the hinge. This flexible traction element has the form of a planar band comprising a body of a flexible plastic material and a plurality of cores made of a high tensile strength metallic cable. The ends of said cable cores project from both ends of the plastic body and are firmly connected to respective terminals located at the ends of the band. The terminals are made of a metallic material molded in a substantially cylindrical shape transverse to the longitudinal direction of the flexible traction element, and the cable ends are embedded in the material of the terminals.

[0005] One purpose of the present invention is to provide a support assembly with inclination adjustment for an awning box with a simplified construction by using a flexible traction element.

Disclosure of the invention

[0006] The present invention contributes to achieving the previous and other advantages by providing a support assembly with inclination adjustment for an awning box of the type comprising a support part adapted to be fixed with respect to a wall or another structure, and an end plate for closing one of the side ends of a box, which end plate is rotatably coupled to said support part, angular position adjustment means being provided for varying the angular position of said end plate with respect to the support part, and fixing means for fixing the end plate with respect to the support part in a selected angular position. The assembly of the present invention is characterized in that said angular position adjustment means comprise a flexible traction element having a first end fixed to an anchoring of the end plate, a middle part supported on a support surface of the end plate spaced apart from a rotation axis thereof, and a second end fixed to an anchoring of a sliding block slidingly assembled in the support part and coupled to actuation means which can be actuated to move said sliding block with respect to the support part.

[0007] In one exemplary embodiment, said actuation means comprise a screw spindle coupled to a threaded through hole in said sliding block. The mentioned screw spindle and the sliding block coupled thereto are housed in a cavity formed in the support part. The screw spindle is longitudinally trapped in said cavity, such that its movements in the direction of the rotation axis thereof are restricted. However, the screw spindle has a coupling end which can be accessed by a driving tool from the outside through an opening in the support part, such that it can be rotated by means of said driving tool from the outside to thus pull or loosen the traction element for the purpose of rotating the end part and thereby varying the angular position of the box in one direction or another.

[0008] The center of masses of the assembly of the elements linked to the box is preferably offset sideways with respect to the rotation axis of the box, thereby the box has a tendency to rotate in one direction due to the effect of gravity, and the traction element is arranged to

pull the end plate in the opposite rotation direction.

[0009] The mentioned anchoring of the end plate and said anchoring of the sliding block are shaped so as to respectively trap terminals in the first and second ends of the flexible traction element. A flexible traction element like the one described in the mentioned patent ES-A-2159211 is useful for the present invention.

[0010] The mentioned fixing means for fixing the angular position of the end plate with respect to the support part can be of any known type. For example, the fixing means can comprise at least one screw passed through an elongated opening of the support part and secured to a threaded hole of the end plate or to a part fixed with respect to the end plate. Alternatively, the fixing means can comprise a wedge device similar to the one described in the mentioned patent application EP-A-03380120.

[0011] The support assembly of the present invention shows, by virtue of the use of the mentioned flexible traction element, a simplified construction eliminating the need of molding or machining gear teeth in the involved parts.

Brief description of the drawings

[0012] The features and advantages of the present invention will be more fully understood from the following detailed description of an exemplary embodiment with reference to the attached drawings, in which:

Figure 1 is a cross-sectional side view of the support assembly with inclination adjustment for an awning box according to an exemplary embodiment of the present invention;

Figure 2 is a cross-sectional front view of the support assembly of Figure 1.

Detailed description of an exemplary embodiment

[0013] With reference to Figures 1 and 2, an exemplary embodiment of the support assembly with inclination adjustment for an awning box according to the present invention is shown, which comprises a support part 10 adapted to be fixed with respect to a wall or another structure, either directly or with the intermediation of an anchoring part 70 previously fixed to said wall or another structure. Different elements of an awning are housed in a box 50 comprising a casing 51, a side end of which is shown as closed by an end plate 20 in Figure 2. The mentioned end plate 20 is rotatably coupled to said support part 10. The assembly incorporates angular position adjustment means for varying the angular position of said end plate 20 with respect to the support part 10, and fixing means for fixing the end plate 20 with respect to the support part 10 in a selected angular position:

[0014] The mentioned angular position adjustment means comprise a flexible traction element 30 which has a first end 31 fixed to an anchoring 21 of the end plate 20, a middle part 33 supported on a support surface 23 of the end plate 20 spaced apart from a rotation axis thereof, and a second end 32 fixed to an anchoring 42 of a sliding block 40 slidingly assembled in the support part 10 and coupled to actuation means which can be actuated to move said sliding block 40 with respect to the support part 10. The mentioned support surface 23 of the end plate 20 is formed in a projection 25 of the end plate 20 housed in a cavity 13 of the support part 10, whereas the sliding block 40 and its actuation means are housed in a cavity 11 formed in the support part 10.

[0015] The center of masses of the assembly of elements linked to the box 50 is offset sideways with respect to the rotation axis of the end plate 20, thereby the box 50 has a tendency to rotate in a first direction due to the effect of gravity. The traction element 30 is arranged such that when the sliding block is moved in one direction, the flexible traction element 30 transmits the movement to the anchoring 21 of the end plate 20 to make it rotate in a second direction, opposite to the effect of gravity, and when the sliding block is moved in a second direction, opposite to the first one, the flexible traction element 30 is loosened, allowing the rotation of the box 50 in the first direction in favor of gravity.

[0016] For the actuation of the movements of the sliding block 40 there is provided a screw spindle 41 coupled to a threaded through hole 43 in said sliding block 40. The mentioned screw spindle 41 and the sliding block coupled thereto are housed in said cavity 11 formed in the support part 10. The screw spindle 41 is longitudinally trapped in said cavity 11 such that it cannot move in a direction parallel to its own axis. However, the screw spindle can be rotated on its longitudinal axis. To this purpose, the screw spindle 41 has a coupling end 44, for example, an Allen type hexagonal recess, facing an opening 12 of the support part 10. A driving tool (not shown) for example an Allen type hexagonal key, can be introduced from the outside through said opening 12 so as to couple with said coupling end 44 and actuate the screw spindle 41, thus adjusting the angular position of the box 50.

[0017] A band of the type described in the mentioned patent ES-A-2159211 can be used as a flexible traction element. Thus, the mentioned middle part 33 located between said first and second ends 31, 32 of the flexible traction element 30 generally has the form of a planar band formed by a body of flexible material, such a plastic, and a plurality of cores made of a flexible material with a high tensile strength, such as for example, metallic cables. Ends of said cores projecting form the ends of the band body are firmly connected to respective terminals located in said first and second ends 31, 32. These terminals are preferably made of a metallic material molded in a substantially cylindrical shape transverse to the longitudinal direction of the flexible traction element 30, and the cable ends are embedded therein. The anchoring 21 of the end plate 20 and the anchoring 42 of the sliding block 40 are shaped so as to respectively trap the terminals of the first and second ends 31, 32 of the flexible traction element 30. The support surface 23 of the end

plate 20 is delimited at both sides thereof by guide ribs 24 to prevent side movements of the band or flexible traction element 30.

[0018] The mentioned fixing means for fixing the end plate 20 with respect to the support part 10 in a selected angular position comprise, for example, a screw (not shown) passed through an elongated opening 16 of the support part 10 and secured in a threaded hole 28 of the end plate 20, or in a threaded hole of a part fixed with respect to the end plate 20, such as a hexagonal nut housed in a corresponding recess. However, other fixing means can be applied, such as, for example, one or more wedge elements (not shown) actuated to move in a radial direction and be locked in corresponding tilted surfaces, as described in the mentioned patent application EP-A-03380120.

[0019] As observed in Figure 2, the end plate 20 comprises, at one side thereof opposite to said projection 15, at least one coupling configuration 26 for coupling to the end of said casing 51 of the box 50, a tube support to rotatably support an end of the canvas rolling tube (not shown), and an arm support 27 for the articulated fixing of an awning arm 60. The mentioned rolling tube can be connected through respective central openings of the support part 10 and of the end plate 20 with a rotation actuation mechanism (not shown) which can be actuated manually by means of a crank, or it can contain a rotation actuation electric motor (not shown) connected to the power supply and to control organs through cables passed through said central openings.

[0020] A person skilled in the art will be able to introduce variations and modifications in the described and shown exemplary embodiment without departing from the scope of the present invention as it is defined in the attached claims.

Claims

1. A support assembly with inclination adjustment for an awning box, of the type comprising a support part (10) adapted to be fixed with respect to a wall or another structure, and an end plate (20) for closing one of the side ends of a box casing (51), said end plate (20) being rotatably coupled to said support part (10), angular position adjustment means being provided for varying the angular position of said end plate (20) with respect to the support part (10), and fixing means being provided for fixing the end plate (20) with respect to the support part (10) in a selected angular position, **characterized in that** said angular position adjustment means comprise a flexible traction element (30) having a first end (31) fixed to an anchoring (21) of the end plate (20), a middle part (33) supported on a support surface (23) of the end plate (20) spaced apart from a rotation axis thereof, and a second end (32) fixed to an anchoring (42) of a sliding block (40) assembled in a sliding manner in the support part (10) and coupled to actuation means which can be actuated to move said sliding block (40) with respect to the support part (10).

2. An assembly according to claim 1, **characterized in that** said actuation means comprise a screw spindle (41) coupled to a threaded through hole (43) in said sliding block (40).

3. An assembly according to claim 2, **characterized in that** said screw spindle (41) and the sliding block (40) coupled thereto are housed in a cavity (11) formed in the support part (10), where the screw spindle (41) is longitudinally trapped in said cavity 11 and a coupling end (44) of the screw spindle (41) can be accessed by a driving tool from the outside through an opening (12) of the support part (10).

4. An assembly according to any of the previous claims **characterized in that** said flexible traction element (30) has at its middle part (33) the form of a planar band comprising a body made of a flexible material and a plurality of cores made of a flexible material with a high tensile strength, ends of said cores being firmly connected to respective terminals located at said first and second ends (31, 32).

5. An assembly according to claim 4, **characterized in that** said body is made of a plastic material, said cores are metallic cables and said terminals are made of a metallic material molded in a substantially cylindrical shape transverse to the longitudinal direction of the flexible traction element (30).

6. An assembly according to claim 5, **characterized in that** said anchoring (21) of the end plate (20) and said anchoring (42) of the sliding block (40) are -shaped so as to respectively trap the terminals of the first and second ends (31, 32) of the flexible traction element (30).

7. An assembly according to claim 6, **characterized in that** said support surface (23) of the end plate (20) is delimited at both sides thereof by guide ribs (24) to prevent side movements of the flexible traction element (30).

8. An assembly according to claim 1, **characterized in that** said fixing means comprise at least one screw passed through an elongated opening (16) of the support part (10) and secured in a threaded hole (28) of the end plate (20) or of a part fixed with respect to the end plate (20).

9. An assembly according to claim 1, **characterized in that** said support surface (23) of the end plate (20) is formed in a projection (25) of the end plate (20) housed in a cavity (13) of the support part (10).

10. An assembly according to claim 9, **characterized in that** the end plate (20) comprises, in one side thereof opposite to said projection (15), at least one coupling configuration (26) for coupling to the end of said casing (51), a tube support to rotatably support an end of the rolling tube, and an arm support (27) for the articulated fixing of an awning arm (60).

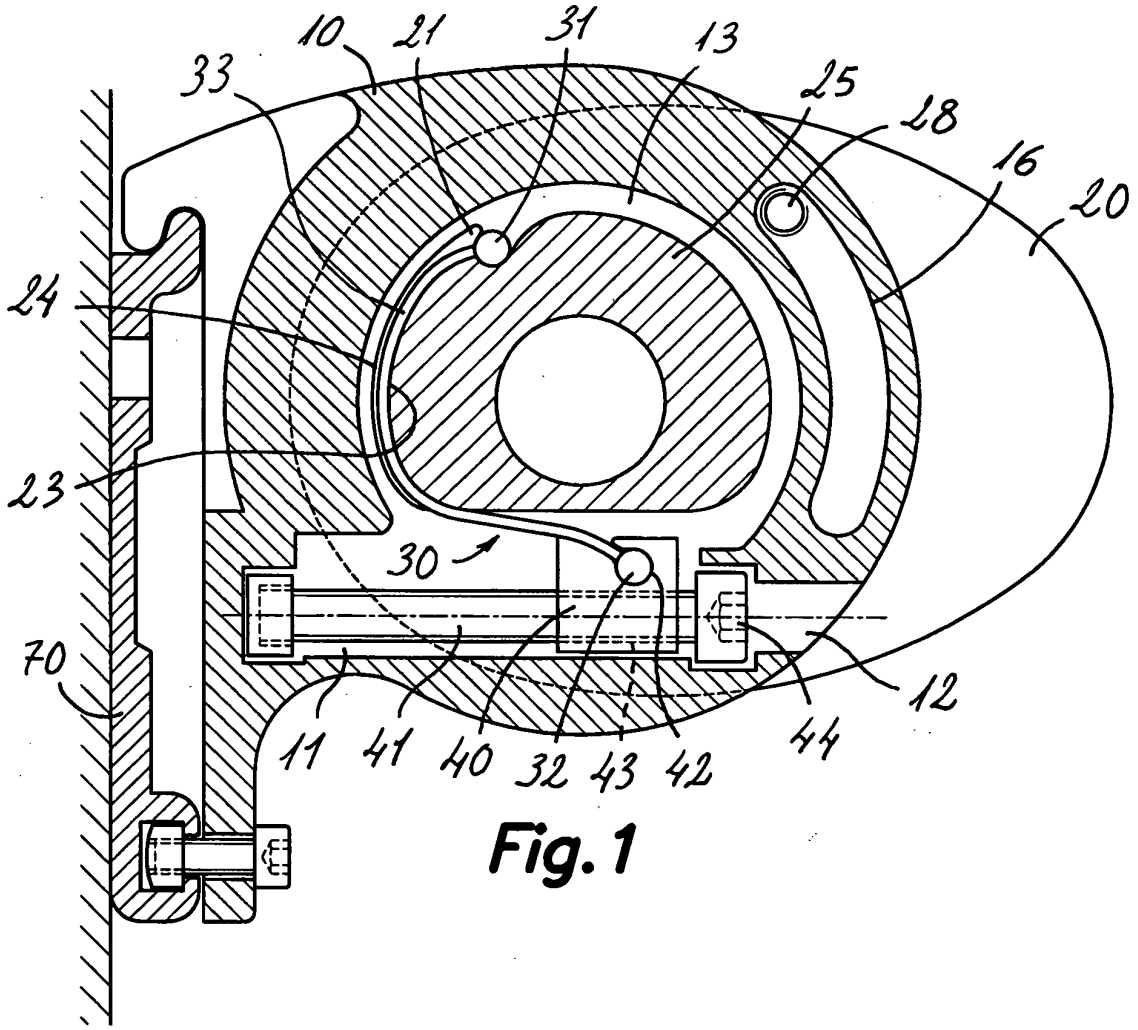

Fig. 1

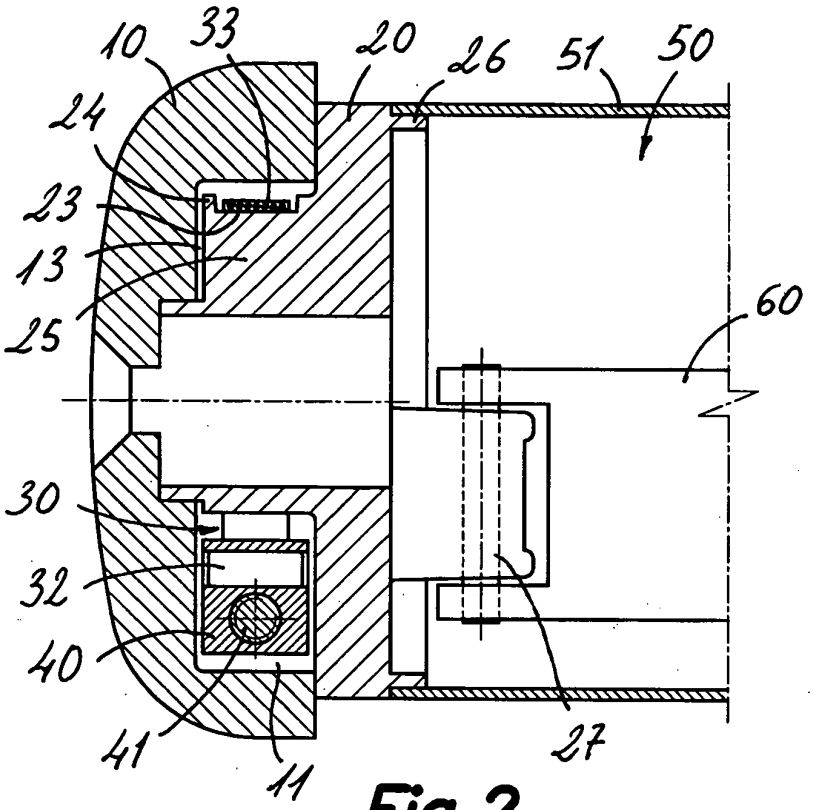

Fig.2

INTERNATIONAL SEARCH REPORT

International application No.
PCT/ ES 2005/000248

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 : E04F10/06

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)

IPC 7 : E04F10+

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)

CIBEPAT,EPODOC,WPI,PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	DE20120786 U (SCHOENE KG ROBERT) 08.05.2003; the whole document	1-3,8-10
A	EP0839971 (RODELBRONN GMBH) 06.05.1998; the whole document	1-3,8-10
A	ES475476 A (TALLERES LLAZA SA) 28.11.1978; the whole document	1-3,8-10

☐ Further documents are listed in the continuation of Box C. ☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

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"P" document published prior to the international filing date but later than the priority date claimed

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
15 July 2005 (15.07.07)	**03 August 2005 (03.08.05)**
Name and mailing address of the ISA/ S.P.T.O.	Authorized officer
Facsimile No.	Telephone No.

Form PCT/ISA/210 (second sheet) (July 1992)

INTERNATIONAL SEARCH REPORT
Information on patent family members

International Application No
PCT/ ES 2005/000248

Patent document cited in search report	Publication date	Patent familiy member(s)	Publication date
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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- EP 03380120 A **[0003] [0010] [0018]**
- ES 2159211 A **[0004] [0009] [0017]**