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(54) **Roll-up awning**

(57) Roll-up awning (1), comprising a housing (2) containing a rotatably mounted reel (5). The screen is wound on this reel and a front frame (4) is fixed on its free extremity. At winding up, the front frame will be fed into a recess of the housing and then locked. Such a screen can be used particularly on campers and the like, where it is important that the front frame is locked in position when the camper, caravan or the like is travelling.

According to the present invention, it is proposed to provide for a locking device comprising locking means (6,7,11-15) on the front frame and locking means on the storage reel. The locking means on the storage reel com-

prises a tothing which extends along the reel circumference and the locking means on the front frame comprise a lip or strip provided with a tothing. All this is made such that when the screen is moving inwards the locking means of the reel and those of the front frame come into contact with each other. Apart from that this causes the front frame to be locked, it is also possible not to draw the frame any more inwards via the screen during the final portion of the movement of the frame in relation to the housing, but to do so by means of the tothing provided on the front frame.

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Description

[0001] The present invention relates to a roll-up awning a housing having a rotatably mounted storage reel for screen, awning screen attached to the storage reel, and a front frame attached to the free extremity of said screen, said front frame being provided with first locking means for locking said front frame relative to said housing, said storage reel being provided with second locking means which cooperate with the first locking means.

[0002] Such an awning is known from EP 1199423 A2 and is used, inter alia, for vehicles such as campers, caravans and the like. Here it is important that in the "out of use" (retracted) position of the screen during transport it is guaranteed that the front frame is firmly and reliably locked on the housing.

[0003] For that purpose EP 1199423 proposes a locking system comprising a cam on the storage reel, a locking part in the housing and a further locking part on the front frame. These three parts are capable of cooperating with each other in a complicated manner.

[0004] It is not only the operation of such a construction that is complicated. During unlocking there is the risk that the front frame pops away in an uncontrolled manner. Besides this, the positioning of the various components is exceptionally critical. The prime cost of such a construction, too, is high and the reliability in operation is limited.

[0005] US-A-4658877 discloses an awning of which the screen together with the roll is moved along a guiding device. In the retracted position, two arms are positioned parallel to each other and locking is effected by means of a tiltable locking cam. On the side, the screen is provided with a tothing, which, close to the mounting wall, moves into a corresponding recess with a tooth. When moving into this recess, the cloth is slightly released and subsequently retained in this position by the tooth. By means of this tooth, rotation of the screen roll is supported. This recess with tooth does not serve as a locking means for the roll but it serves exclusively as a gear wheel segment for rotary driving. The tooth is not movable in relation to the recess.

[0006] The present invention aims to provide an improved roll-up awning that can be made at low costs and provides for a construction that is reliable in operation.

[0007] With a screen as described above this object is achieved in that said first and second locking means embodied to directly engage each other.

[0008] According to the present invention a locking part mounted on the housing is not used any more. Only two parts provide for locking: One part is connected to the storage reel, whereas the other one is placed on the front frame. Through this direct coupling of the two locking means, according to an advantageous embodiment of the invention, positive locking can be achieved not only in a simple manner, but positive guidance of the front frame in relation to the housing can also be achieved during the final portion of the movement of the front frame

in the housing. In other words, the front frame is drawn into the housing by means of the locking means.

[0009] In addition, the present invention enables unlocking to take place in an extraordinarily simple and controlled way. For, by turning the storage reel "back" to release the screen, locking between the locking means on the storage reel and the front frame is automatically overruled and the front frame is pushed outwards.

[0010] According to a special variant of the invention, the locking means comprise a tothing connected with the storage reel. This tothing is preferably a toothed ring concentric with the storage reel. The front frame is provided with a tothing cooperating with the former. The relevant toothings come into engagement with each other just before the front frame is fully taken into the housing, and the front frame is also positively moved further inwards by further rolling-up the screen. Because a locking device for stopping the storage reel will usually be present e.g. in the shape of a self-braking worm gear, it is not necessary to take further measures to guarantee that the front frame is fixed in relation to the housing. This tothing is preferably made such that in one direction locking is brought about and that free movement in opposite direction is possible.

[0011] According to a further variant of the present invention, the locking device in the front frame is such that it is capable of moving along the locking means on the storage reel, such as a tothing in one direction, i.e. the closing direction.

[0012] In certain circumstances it may occur that a side of the front frame is lockingly received in the housing in the way described above. However, since the screen may have a non-uniform length, it may be that the other side of the front frame still projects from the housing outwards. In the event that on both sides of the housing a locking device as described above is present, on this other side, locking can be brought about by simply pushing the front frame inwards.

[0013] If the locking device is a tothing, it may be that, on account of the strength of this tothing, it is made relatively coarse. In order to provide for that, notwithstanding this, the front frame is accurately equal with the outer circumference of the housing, according to an advantageous embodiment of the invention the locking device of the front frame is made in the form of two sub-locking devices staggered mutually. For tothing this mutual staggering means that one of the toothings is shifted over half a pitch distance in relation to the other tothing.

[0014] Preferably, the locking means provided in the front frame comprise spring loaded lips capable of moving on a hinge and being driven in the direction to, for instance, the tothing in the housing.

[0015] The invention will be further explained below with reference to the embodiment depicted in the drawing, where:

Fig. 1 represents schematically a roll-up awning according to the invention in folded-out condition;

Fig. 2 shows in detail the roll-up awning according to the invention just prior to moving the front frame into the housing.

Fig. 3 shows the condition after the front frame has moved into the housing.

[0016] In the drawings, the roll-up awning according to the invention, is indicated by 1.

[0017] It comprises a housing 2 which may be fixed on a camper, caravan or the like, e.g. by means of screws 8 (see Fig.3)

[0018] In the housing, there is provided a rotatably mounted storage reel 5 on which a screen 3 can be wound and unwound respectively. On the free front extremity of the screen there is a front frame 4 which has a front side 10 and a top side 9. In the present embodiment this front frame 4 is represented by a continuous extrusion profile, in which provisions for fixation of the screen have been made. However, it should be understood that the screen can be fixed on the front frame 4 in any other way known from prior art.

[0019] Near the two free extremities of the front frame 4, in pivot 11 there are provided rotary lock lips 13 and 14 respectively (see Fig. 2). Each of them is provided with a tothing 15 in which the teeth project leftwards. A translational motion of the lock lips is also possible.

[0020] On the two free extremities, the storage reel 5 is provided with gear wheels 6 with corresponding tothing 7. In the Figures, these teeth are pointing to the right.

[0021] Against the pressure exerted by spring 12, the tothings 15 can be pressed downwards.

[0022] Fig. 2 shows the situation in which the front frame is just before the housing 2. As the screen 3 is rolled up further by driving reel 5, at any time the tothing 15 will come into contact with tothing 7. This is caused by the presence of a guide, not shown in detail, for the front frame 4 in the housing 2. At the point of time that contact between tothing 15 and tothing 7 is made, the inward movement of the front frame will be determined not only by the rolling up of screen 3 but also by the operation of the rotating tothing 7. This means that moving the front frame 7 in a positive manner is provided for. When the front frame 4 has come into the correct position, the user will automatically detect a considerable increase in the driving force and so, fortified by his perception, he may draw the conclusion that the front frame 4 has fully moved inwards. Because the drive of the the reel 5 is made self-braking, any return movement will be ruled out.

[0023] Should the front frame 4 still project slightly outwards on any side of the housing for any reason whatsoever, then the user can move this front frame into the housing by pressing on the front frame. Due to the presence of the pivoting lock lips 13 and 14, tothings 15 and 7 will move along each other. The tothings 15 on lips 13 and 14 have half a pitch distance in relation to each other. Consequently, in the accurately determined end position of the front frame in relation to the housing, one of these two tothings 15 of the lock lips 13 or 14 will be

firmly locking the tothing 7 when meshing. If the user desires to move the screen outwards, this may be done in a simple way. For, by turning the reel 5 backwards in the sense of unwinding the screen 3, not the screen 3 only is released, but also the front frame 4 is moved outwards for a little distance, whereupon it may continue its way controlled by the articulated arm (not shown).

[0024] From the above it will be understood that the construction shown here is extraordinarily simple. For, parts connected with the housing are not necessary any longer. Only a guiding device for the front frame at closing with respect to the housing is important. In addition, the present invention makes it possible to obtain a positive transport of the front frame during the final closing phase. Too, it is not necessary to fit delicate locking means which prevent the frame from moving reversely.

[0025] Having read the above, variants being within the scope of the accompanying claims will immediately occur to a person skilled in the art. So the tothings may be made in any different manner and with that special effects may be obtained. Instead of tothings, cams and the like can be applied.

25 Claims

1. Roll-up awning (1) comprising a housing (2) having a rotatably mounted storage reel (5) for screen awning, screen (3) attached to the storage reel and a front frame fixed on the free extremity of said screen (3), said front frame (4) being provided with first locking means (11-15) for locking said front frame relative to said housing, and said storage reel (5) being provided with second locking means (6, 7) cooperating with the first locking means, **characterized in that** said first and second locking means are embodied to directly engage each other.
2. Roll-up awning according to claim 1, wherein said first and second locking means are made such that, when the screen is being rolled up and the housing approached, the front frame, for the second locking means on this storage reel, is drawn towards this housing.
3. Roll-up awning according to one of the preceding claims, wherein one of said locking means is unlockable.
4. Roll-up awning according to one of the preceding claims, wherein one of said locking means can be moved against spring force (12) over the other locking means.
5. Roll-up awning according to one of the preceding claims, wherein said locking means comprise cooperating tothings (7, 15).

6. Roll-up awning according to one of the preceding claims, wherein said second locking means comprise a tothing (7) extending along the circumference of the reel.
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7. Roll-up awning according to one of the preceding claims, wherein one of said locking means comprises two sub-locking means (13, 14) being next to each other and mutually staggered in locking direction.
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8. Roll-up awning according to one of the preceding claims, wherein said front frame in a position of use comprises an L-profile with a front side (10) and top side (9), the top side of this L-profile being provided with the first locking means which project outwards.
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9. Roll-up awning according to claim 8, wherein the first locking means comprise a lock lip (12, 13) pivotally mounted on said front frame.
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10. Roll-up awning according to claim 9, wherein the pivot (11) of this hinge mounting is on the side facing away from the front of the top side.

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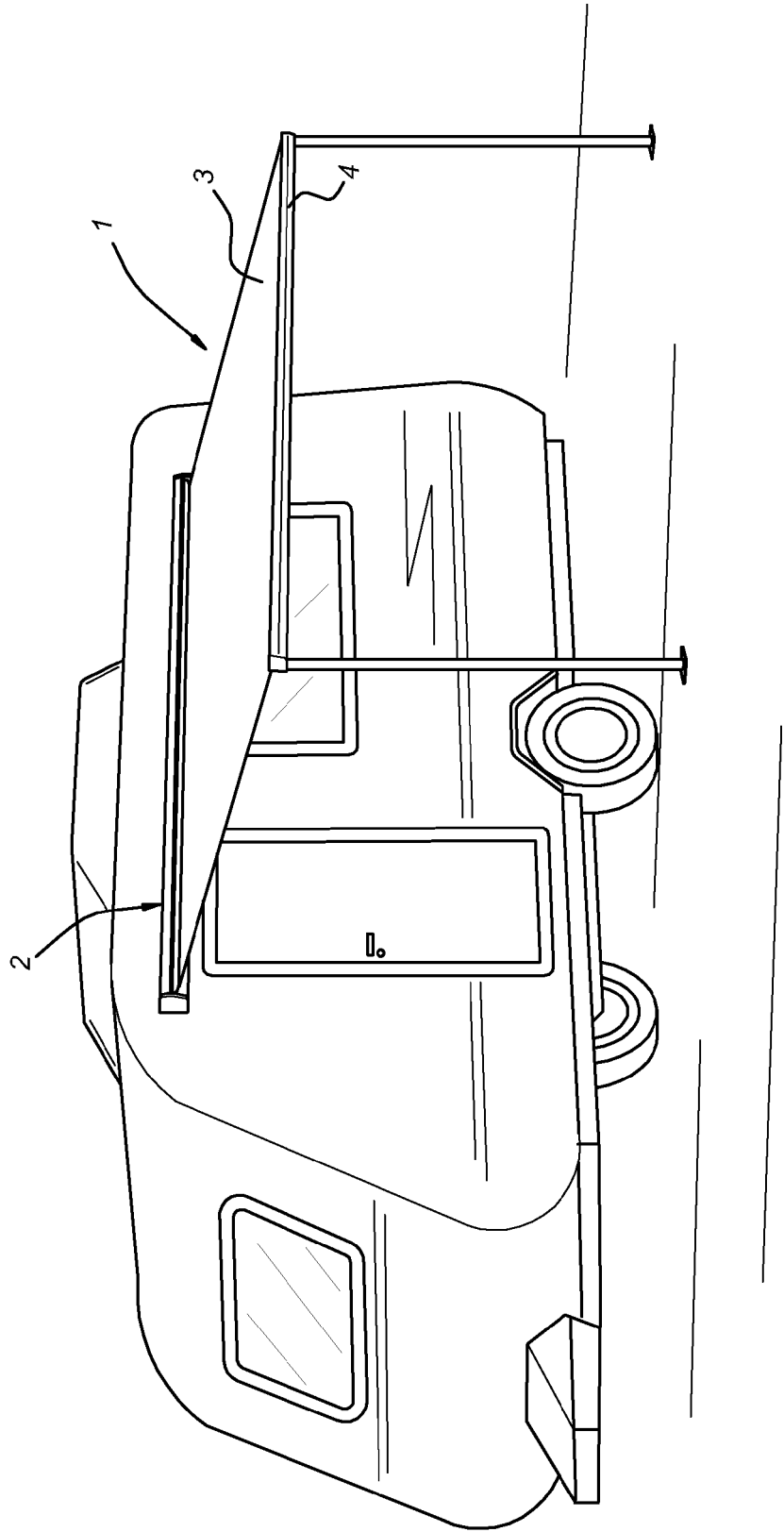


Fig 1

Fig 2

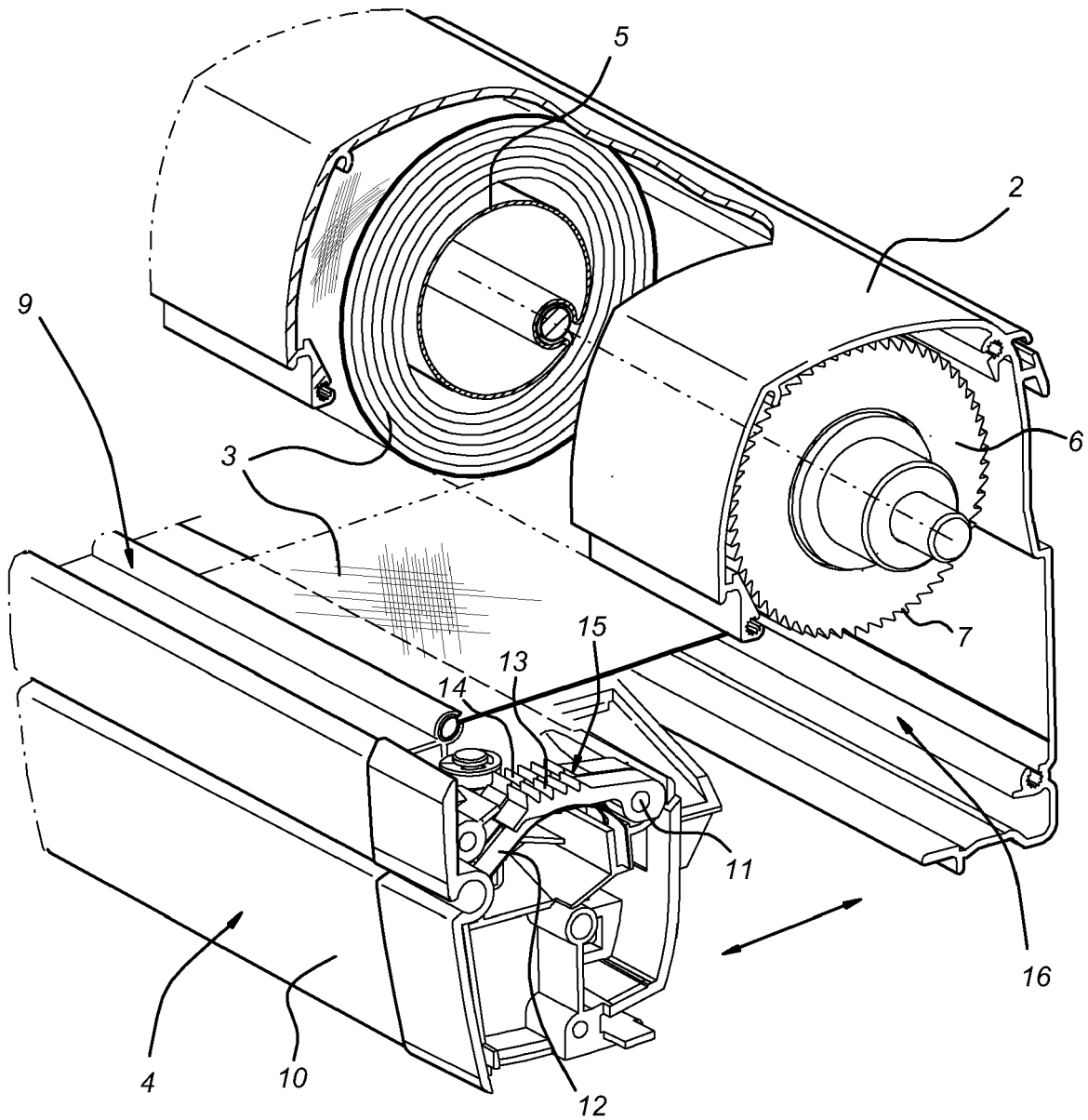
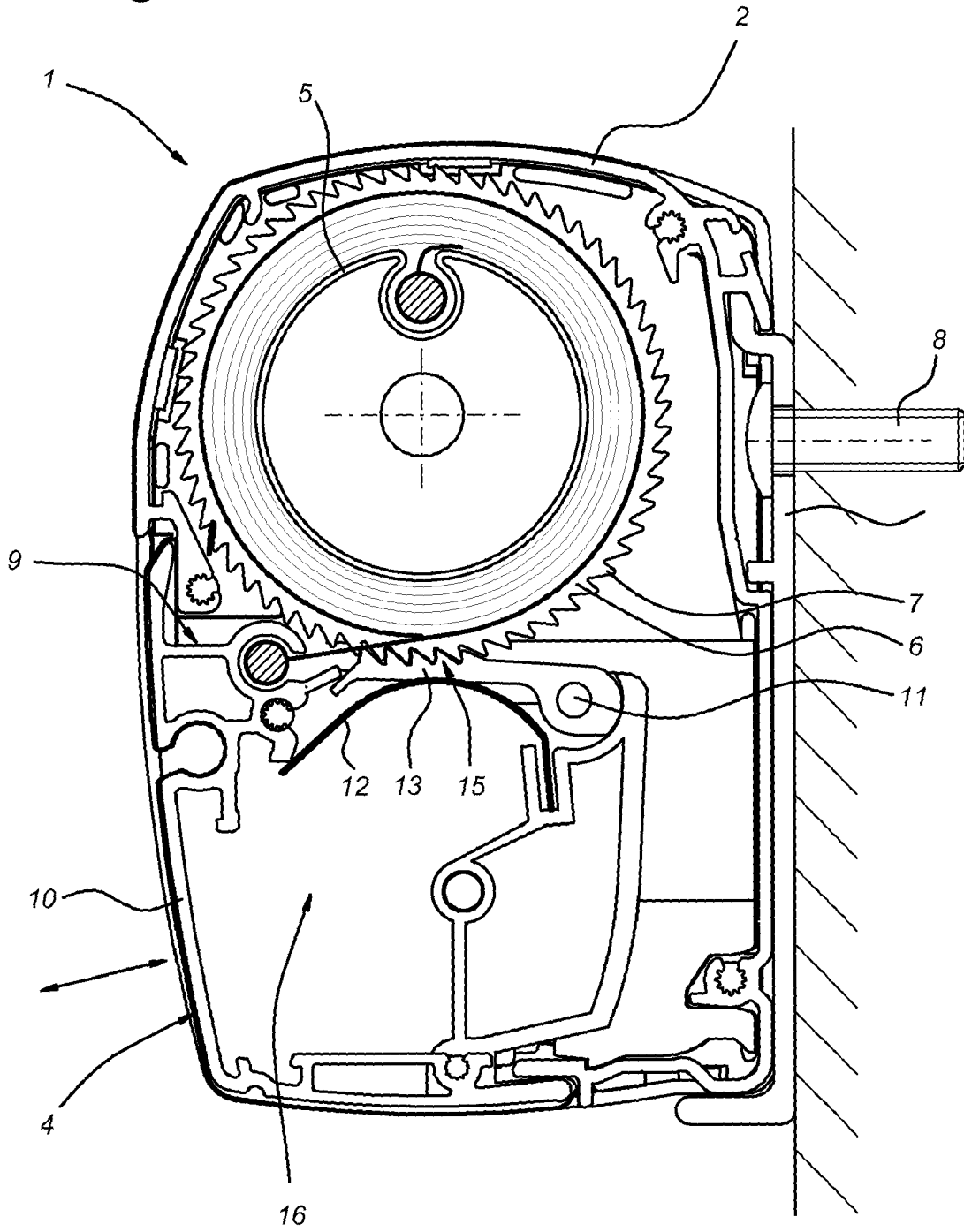


Fig 3





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	FR 2 656 372 A1 (BRUTSAERT LOUIS [BE]) 28 June 1991 (1991-06-28) * the whole document *	1-5,8	INV. E04F10/06
D,Y	EP 1 199 423 A (BRUSTOR, N.V; BRUTSAERT SUNPROTECTION, N.V) 24 April 2002 (2002-04-24) * the whole document *	1-6,8	
A		7,9,10	
D,Y	US 4 658 877 A (QUINN ET AL) 21 April 1987 (1987-04-21) * column 5, line 29 - line 49 * * figure 3 *	1-6,8	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			E04F
Place of search		Date of completion of the search	Examiner
The Hague		26 March 2007	Geivaerts, Dirk
<p>CATEGORY OF CITED DOCUMENTS</p> <p>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</p> <p>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</p> <p>& : member of the same patent family, corresponding document</p>			

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

EP 06 12 7290

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
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26-03-2007

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REFERENCES CITED IN THE DESCRIPTION

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- EP 1199423 A2 [0002]
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