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(71) Applicant:
Bruynzeel Plastics B.V.
3341 LL Hendrik-Ido-Ambacht (NL)

(72) Inventor: **Stevens, Albert Jan**
3343 CT Hendrik-Ido-Ambacht (NL)

(74) Representative:
Ottevangers, Sietse Ulbe et al
Vereenigde Octrooibureaux
Nieuwe Parklaan 97
2587 BN 's-Gravenhage (NL)

(54) **Insect curtain**

(57) An insect curtain, comprising a number of partially overlapping, vertical strips (4) of insect screen, and, at the top side of the curtain, means for supporting said strips, which means comprise at least one elongated, rotatably bearing-mounted shaft (8), and means for causing said shaft to rotate so as to be able to wind the strips (4) of insect screen on the shaft or shafts (8).

The advantage of this insect curtain is that, if it need not be used, it can be entirely removed from the door opening and does not obstruct the passage and block the incidence of light.

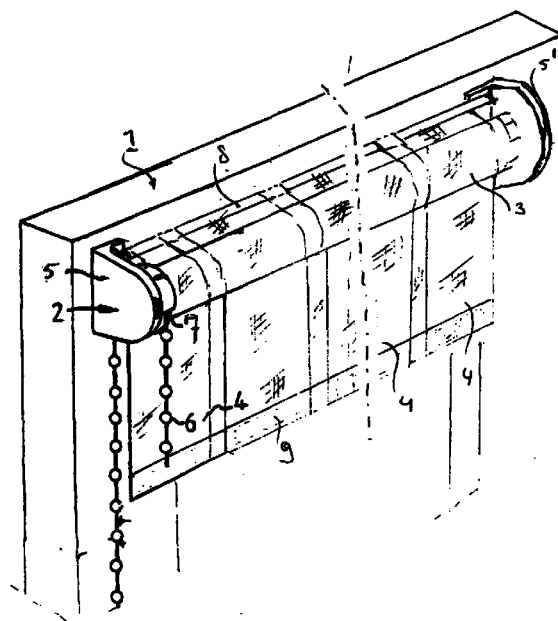


Fig. 1

EP 0 989 280 A1

Description

[0001] The invention relates to an insect curtain, comprising a number of partially overlapping, vertical strips of insect screen and, at the top side of the curtain, means for supporting these strips.

[0002] Such insect curtain is, for instance, shown in Benelux trademark registration No. 26972-00, published in September 1996. Such insect curtains, intended for being fitted in a door frame, have in a short time proved to be extremely successful, as they function much better than the old-fashioned insect curtains consisting of narrow, non-overlapping plastic strips. Also, the cost price can be lower than that of roller screen doors which have been available on the market since a couple of years, consisting of an insect screen which can be unrolled horizontally and which is wound on a vertical rod mounted on a door post and containing a spring motor, through which the screen, after having been unlocked from an opposite door post, automatically rewinds on the rod.

[0003] A drawback of the above-mentioned insect curtain is that it closes off the door opening also during often relatively long periods in a year when no insects are present and also when the door is closed. Under such circumstances, the curtain obstructs the passage and reduces the incidence of light.

[0004] The object of the invention is to provide a solution to this problem and to that end, it is characterized in that the means that support the strips of insect screen comprise at least one elongated shaft bearing-mounted for rotation, and means for causing said shaft or shafts to rotate so as to be able to wind the strips of insect screen on the shaft or shafts.

[0005] If two parallel shafts are provided, the successive strips of insect screen are alternately wound on one shaft and on the other. This prevents the strips from rolling up on the shaft irregularly, due to their overlap.

[0006] In the case of two shafts, these shafts are preferably intercoupled at one of their ends, for instance by means of gears, so that one drive member for the roll-up mechanism may suffice.

[0007] Preferably, there are also provided guide means arranged parallel to the elongated shaft or shafts and intended to guide the strips of insect screen at the top side of the insect curtain along the lintel of a door frame.

[0008] Due to the features of the invention, the above-mentioned problem is solved in an elegant manner, because the insect curtain, when not in use, can readily be rolled up at the top side of the door frame. As roll-up mechanism, a chain or cord operated mechanism as known for use with roller curtains can, for instance, be applied. Such chain roll-up mechanism is, for instance, known from WO 96/07007.

[0009] Hereinafter, the invention will be specified on the basis of two exemplary embodiments, with reference to the accompanying drawings. In these drawings:

Fig. 1 is a perspective view of a first embodiment of the insect curtain according to the invention;

Fig. 2a is a perspective view of a second embodiment of the insect curtain according to the invention with two shafts;

Fig. 2b is a detailed view of Fig. 2a, showing an embodiment of the drive mechanism of the two shafts; and

Fig. 2c is a view of a variant of the second embodiment.

[0010] In Fig. 1, reference numeral 1 designates a door post, along the lintel of which the suspension system of the insect curtain 2 according to the invention is mounted. The insect curtain 2 comprises an elongated shaft, hereinbelow to be referred to as rolling stick 3, around which strips 4 of insect screen have been wound. These strips in each case partially overlap each other, as shown in the Figure, to guarantee a proper seal against insects. The rolling stick 3 has its two ends rotatably bearing-mounted in the supports 5 and 5' respectively, mounted on the frame 1. Provided at one end of the rolling stick is a roll-up mechanism 7 which is known per se and driven by a chain 6. It is also possible to use a cord-driven roll-up mechanism, known per se. As it is desired that the insect curtain in lowered condition closes off the opening in the door frame optimally on all sides, guide means 8 are provided, for instance in the form of a rod or a rotatably bearing-mounted shaft, along which the insect screen is guided closely against the frame to prevent, in the lowered condition, a large gap between the rolling stick 3 and the lintel of the frame. The rod or shaft 8 can be mounted on the supports 5, 5', but can also be mounted directly on the frame 1.

[0011] In Figs. 2a-c, identical parts are designated by the same reference numerals as in Fig. 1, with the strips of insect screen being alternately designated by 4 and 4'. In this embodiment, two rotatably bearing-mounted, elongated shafts or rolling sticks 3 and 11 respectively are provided, while the strips 4 can be wound on the rolling stick 11 and the strips 4' can be wound on the rolling stick 3. To provide an insect curtain that hangs tightly against a door post, there are now provided two guide rods or shafts 8 and 12 (Fig. 2b). An advantage of the use of two rolling sticks is that the strips of insect screen 4 and 4' respectively can be wound up evenly, without overlap, which promotes a failure-free functioning. Of course, the rolling sticks 3 and 11 on the one hand and the guide shafts 8 and 12 on the other can be mounted on the side supports 5 and 5' in any position relative to each other, such as above each other, next to each other, etc. Also, the guide shafts 8 and 12 need not be round, but may also be oval or the like.

[0012] To enable actuating both rolling sticks 3 and 11 by a single pull 6, gears 13 and 14 are provided, mounted at the end of the rolling sticks 3 and 11 respectively and meshing with each other for realizing a 1:1

transmission. Instead of gears, there may also be provided a rope, chain or similar coupling, or the pull 6 may drive both rolling sticks directly.

[0013] Fig. 2c shows a variant in which a cover 15, having for instance a substantially U-shaped section, is provided over the entire roll-up system. A function of this cover may be to conceal the roll-up system and to prevent the rolled-up strips from fouling. In addition, the lower edge 15' of the cover may take over the function of one of the guide shafts 8 or 12 and guide the strips tightly along the frame.

[0014] To provide that the strips of insect screen properly close off the door opening at the lower side as well, these strips have their lower sides for instance provided with a hem in which weighting elements 9 are arranged, or weighting elements may be fitted on the lower edge of the strips otherwise, such as by a snap connection, gluing or the like.

[0015] It is also possible to solve the problems described hereinabove with respect to the known insect curtain by designing the insect curtain as a lamellar curtain, as is known for covering window sections. Such curtain comprises vertical strips of textile or plastic that, by means of a construction provided at the top side thereof, can be tilted about their vertical axes and moved in horizontal direction by pull cords or rods. If in such lamellar curtain, the lamellae are designed as strips of insect screen, and the curtain is mounted in the door opening, the lamellae can, when not used, be slid aside into a position close to the door post, so that at any rate the passage is partially cleared and the incidence of light is obstructed less.

[0016] It will be understood by anyone skilled in the art that within the framework of the invention, still many variants of the embodiments shown are possible.

Claims

1. An insect curtain, comprising a number of partially overlapping, vertical strips of insect screen, and, at the top side of the curtain, means for supporting said strips, characterized in that the means supporting the strips of insect screen comprise at least one elongated, rotatably bearing-mounted shaft, and means for causing said shaft or shafts to rotate so as to be able to wind the strips of insect screen on the shaft or shafts.
2. An insect curtain according to claim 1, characterized in that two shafts are provided, bearing-mounted parallel to each other, and that the successive strips of insect screen are alternately attached to one shaft or the other and can be wound thereon.
3. An insect curtain according to claim 2, characterized in that the shafts are intercoupled and can be rotated by a drive member.
4. An insect curtain according to claim 3, characterized in that a gear is arranged at the end of the two shafts.
5. An insect curtain according to claim 1 or 2, characterized by guide means provided parallel to the elongated shaft or shafts and intended to guide the strips of insect screen at the top side of the insect curtain along the lintel of a door frame.
6. An insect curtain according to claim 5, characterized in that the guide means comprise a shaft provided parallel to the rolling stick.
7. An insect curtain according to claim 5, characterized in that the guide means at least partially consist of the edge of a cover arranged over the rotatably bearing-mounted shaft or shafts.

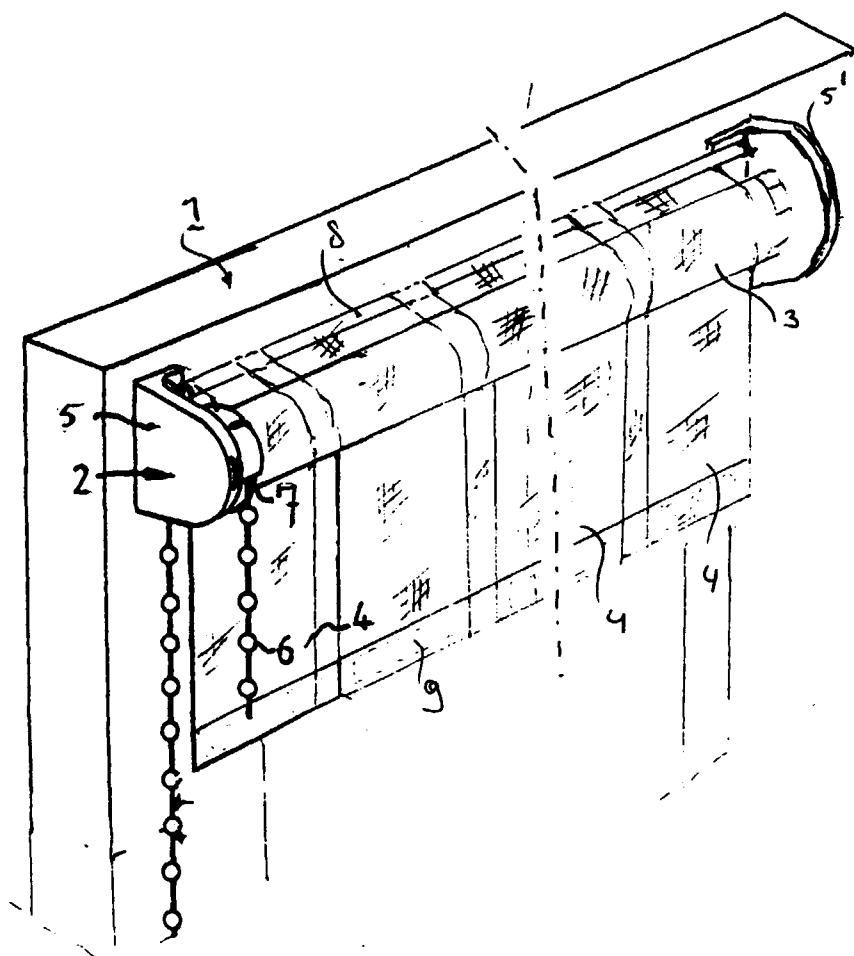
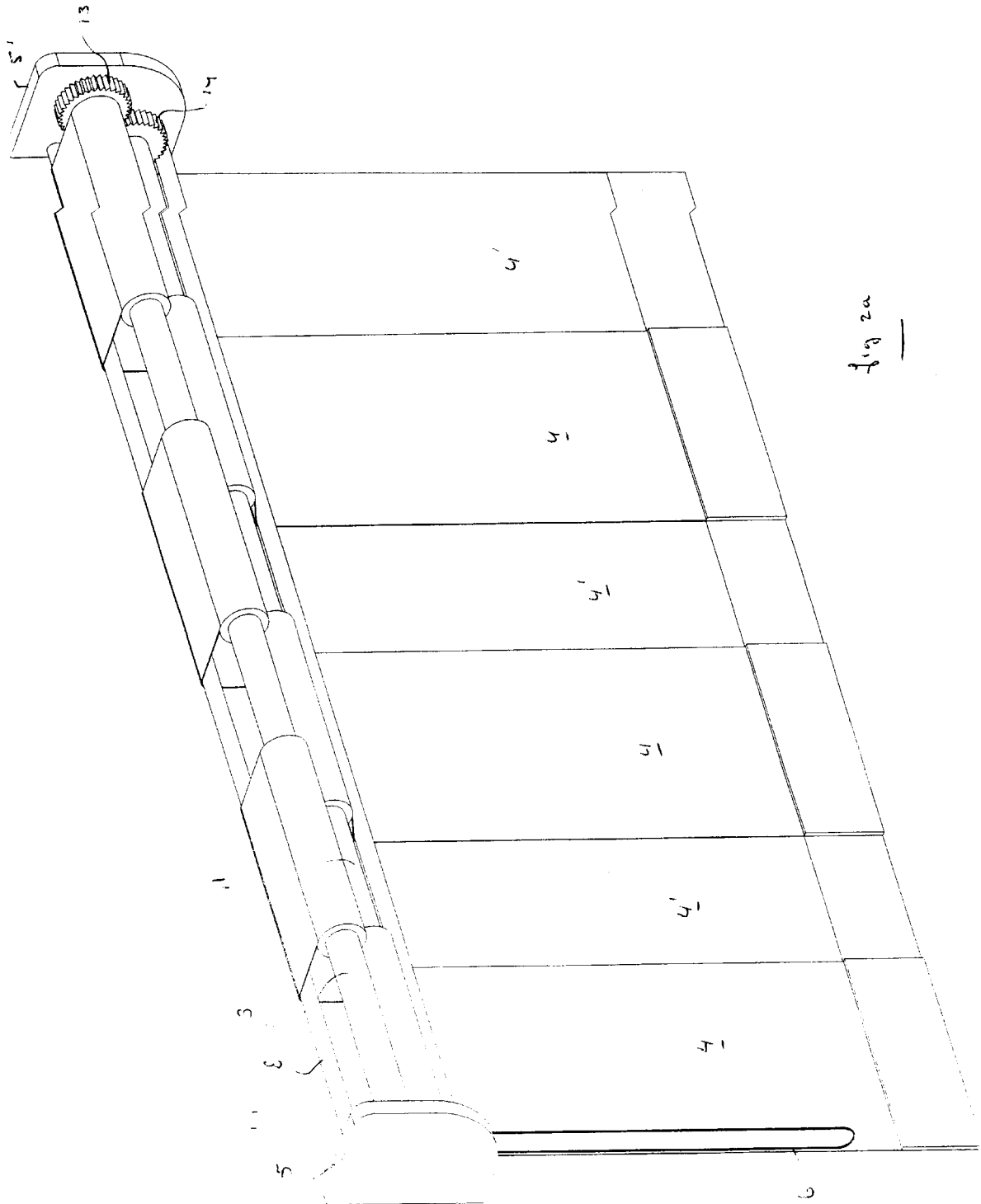
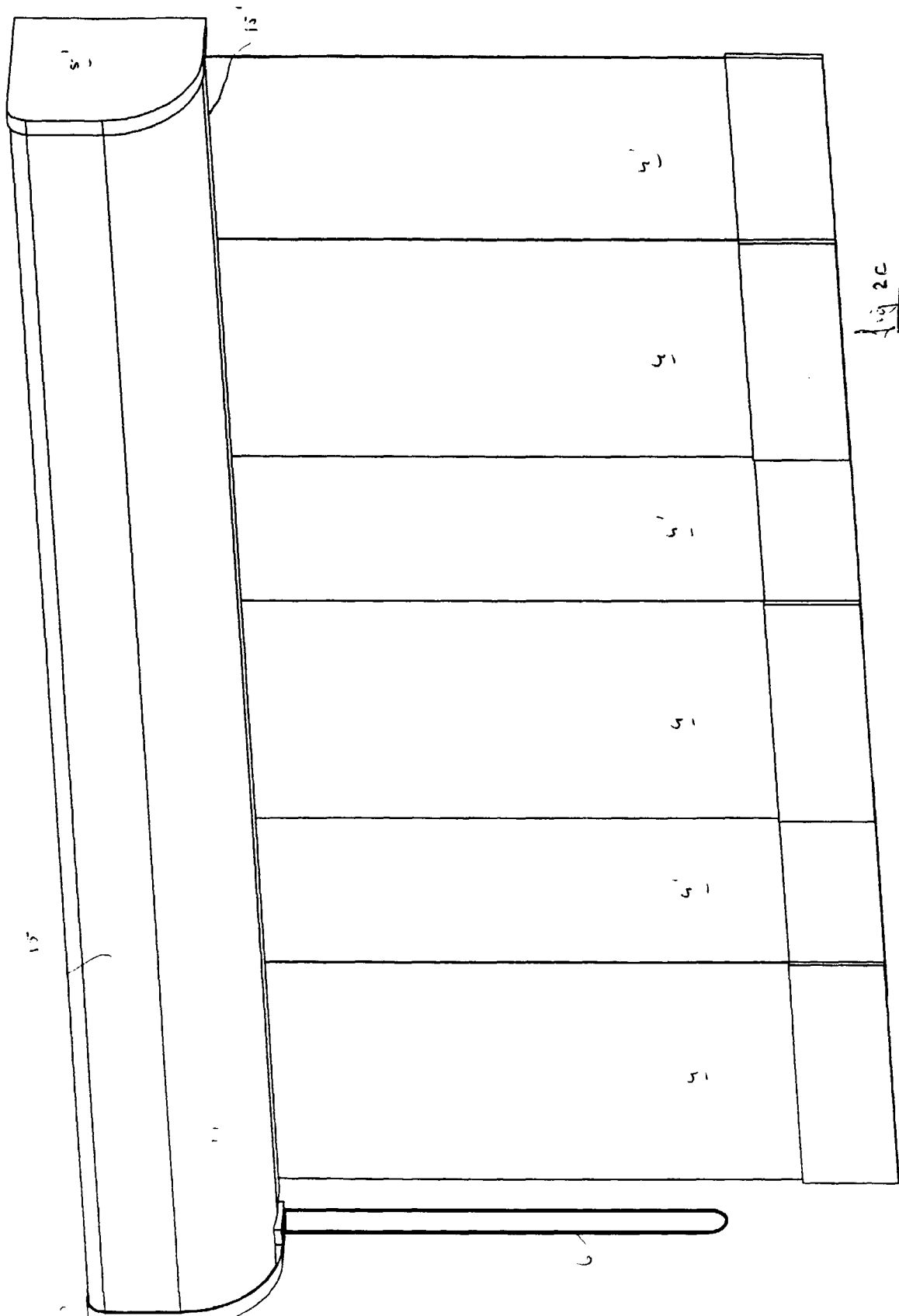


Fig. 1







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EUROPEAN SEARCH REPORT

Application Number
EP 99 20 2790

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	US 2 498 094 A (PLAUM) 21 February 1950 (1950-02-21)	1,2	E06B9/54
Y	* column 1, line 41 - column 2, line 45 * ---	6,7	
Y	US 1 550 879 A (CLARK) 25 August 1925 (1925-08-25) * figure 3 * ---	6	
Y	US 1 738 608 A (PERIOR) 10 December 1929 (1929-12-10) * figure 4 * -----	7	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			E06B
Place of search		Date of completion of the search	Examiner
MUNICH		24 November 1999	Knerr, G
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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**ANNEX TO THE EUROPEAN SEARCH REPORT
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EP 99 20 2790

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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24-11-1999

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US 2498094	A	21-02-1950	NONE	
US 1550879	A	25-08-1925	NONE	
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