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(54) **Device for the correct orientation of an anchor for boats during anchor recovery and associated anchor winch system**

(57) A device to automatically achieve correct orientation of an anchor during its recovery up on a boat is disclosed, comprising a connection body between said anchor (5) and a recovery chain which has a first head (2a) apt to the coupling with an end of said chain (6) and a second fixed endhead equipped with means

(13, 14) for coupling with the anchor (5) which substantially prevent mutual rotation, and wherein said connection body (2) has a portion (2b) shaped so that it can be coupled with the groove of a snub pulley (7) integral with the boat (9) exclusively in a preset rotation position about its longitudinal axis.

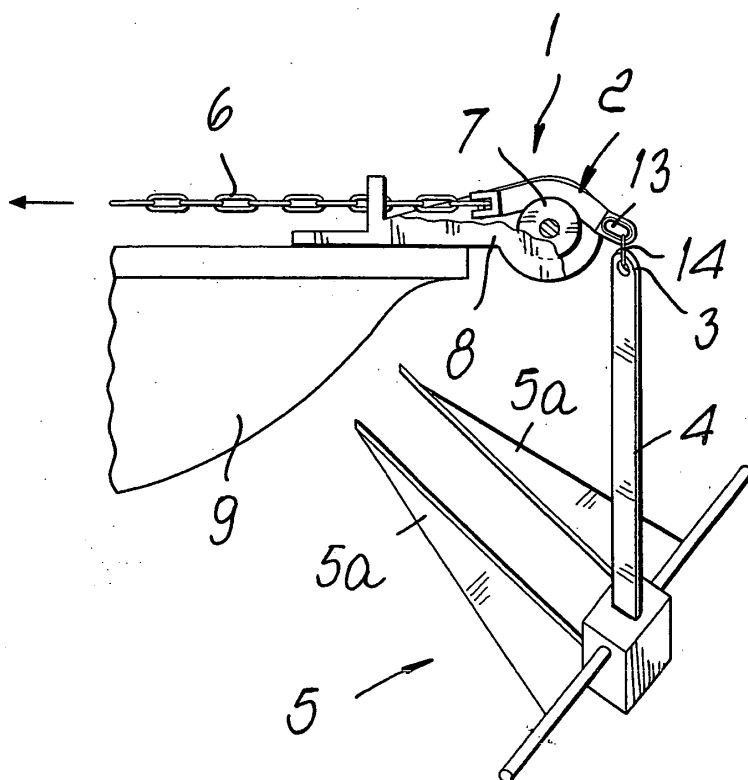


Fig. 5

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Description

[0001] The present invention relates to a device for the correct orientation of the anchor of boats during recovery thereof, particularly for anchors with arms arranged on a plane tilted with respect to the axis of the anchor shaft or shank.

[0002] As known, in boats using anchors equipped with arms arranged on a tilted plane with respect to the axis of the anchor shaft or shank, there is a need to achieve a correct orientation of the anchor arms at the end of the anchor recovery.

[0003] Generally, the anchor hangs at the end of a chain which is transmitted to a winch through a snub pulley which is part of a member usually fixed in the proximity of the boat head and called bow rake. Due to the fact that the anchor is rotatably mounted about the axis of the shaft thereof, it is difficult to achieve correct orientation thereof, i.e. with the arms facing the boat, when the anchor is weighed up in the proximity of the boat and in particular at the end of the recovery thereof.

[0004] Devices are currently available on the market which act as a connection between the anchor shaft and the chain. Such devices consist of a simple-joint or double-joint attachment, which aids the rising of the anchor shaft onto the bow rake, but which is not capable of guiding and correcting the orientation of the anchor about the axis of the shaft thereof.

[0005] The main object of the present invention is to solve the above described problem by providing a device capable of guaranteeing correct orientation of the anchor of boats during recovery thereof, particularly for anchors with arms arranged on a tilted plane with respect to the axis of the anchor shaft. In particular, a device which accomplishes correct orientation of the anchor in an autonomous manner, i.e. without requiring outside intervention onto the anchor.

[0006] Furthermore, it is intended to achieve such object through a device which does not imply substantial changes to the bow rakes currently in use.

[0007] A further object of the invention is to manufacture a device which can be mounted, in an extremely simple manner, onto the anchors currently on the market.

[0008] This task, as well as these and other objects which will be clearer in the following, is accomplished through a device as described in its essential features in the accompanying main claim.

[0009] Other inventive aspects are described in the dependent claims.

[0010] Further features and advantages of the device according to the invention will in any case be more evident from the following detailed description of a preferred embodiment of the same, given by way of example and illustrated in the accompanying drawings, wherein:

shank according to the invention;

figure 2 is an elevation front view of the shaped shank of fig. 1;

figure 3 is a plan top view of the shaped shank of fig. 1;

figure 4 and 5 are partial views which show the device according to the invention in its application to a boat, in two successive steps of the anchor recovery, respectively.

[0011] With reference to the cited figures, the device according to the invention, globally marked by the reference number 1, comprises an attachment 2, in the following called "shaped shank", equipped with a head 2a, which is connectable with the end of a chain 6 supporting the anchor 5, and with a body 2b, with an elongated shape, which is connectable, through one of its ends, to the head 2a and, through its opposite end, to the head 3 of a shaft 4 of an anchor 5.

[0012] According to the invention, the body 2b of the shaped shank 2 is coupled through a freely rotating attaching means with the head 2a joining the recovery chain 6. Preferably, the head 2a of the shaped shank 2 can rotate with respect to the body 2b of the shaped shank 2 about a rotation axis which is oriented transversally to the longitudinal axis of the body 2b of the shaped shank 2. More specifically, the head 2a of the shaped shank 2 has a fork equipped with tenons 10a, 10b mutually connected by a transversal pin 11 which is insertable into a link of the chain 6 to connect the chain to the shaped shank 2. The head 2a of the shaped shank 2 is then connected to the body 2b of the shaped shank 2 through a longitudinal pin 12 whose axis 12a, which defines the axis of rotation of the head 2a with respect to the body 2b, is substantially perpendicular to the axis 11a of the transversal pin 11.

[0013] On the opposite side, the body 2b is connected, with no opportunity for substantial rotation about the axis, with the shaft 4 of the anchor 5, for example through coupling of an annular body 14 with a slot 13 of the body 2b. The annular body 14 can simply consist of a known-type fairlead shackle. The connection between the shaped shank 2 and the shaft 4 of anchor 5, thus obtained, prevents the anchor 5 from rotating, beyond a certain rotation angle (for example $\pm 30^\circ$) in any case allowed by the clearances existing in such connection, about the axis of the shaft 4 with respect to body 2b of the shaped shank 2, or the body 2b of the shaped shank 2 from rotating, beyond a certain angle of rotation, about its longitudinal axis with respect to the shaft 4 of the anchor 5. This means that the angular position of the shaped shank 2 about its longitudinal axis also establishes the angular position of the anchor 5 about the axis of its shaft 4.

[0014] The main body 2b of the shaped shank has a peculiar shape, clearly illustrated in figs. 1 and 2, apt to couple exclusively in a preset rotational position about its longitudinal axis, with the snub pulley 7 of the chain

figure 1 is an elevation side view of the shaped

6 positioned in the bow rake 8 attached to a boat 9.

[0015] In fact, on a plane passing through its longitudinal axis and substantially perpendicular to the axis of the through-hole or through-slot 13, it has an arched curvature, visible in particular in figures 1, 4, and 5, which may be coupled, through its concave side 15, with the bottom of the groove of the snub pulley 7 for the chain 6. Furthermore, the body 2b of the shaped shank 2 along its longitudinal development suitably has a complex curvature, visible in particular in figure 2, determined by at least one curvature and one counter-curvature, which is apt to cause rotation of the body 2b of the shaped shank 2 about its longitudinal axis, upon leading the body 2b into the groove of the snub pulley 7, so as to cause the concave side 15 of the arched curvature to couple with the bottom of the groove of the snub pulley 7.

[0016] The body 2b preferably consists of a stainless steel drill rod, but it can also be made of other materials suited to resist to the sea environment.

[0017] The operation of the device according to the invention is the following.

[0018] During recovery of the anchor 5, said anchor can freely rotate about the axis of the shaft 4, together with the body 2b of the shaped shank 2, without causing torsions of the chain 6, since there the body 2b of the shaped shank is free to rotate about the pin 12 of the head 2a to which the chain 6 is associated.

[0019] When the body 2b of the shaped shank 2 begins to couple with the groove of the snub pulley 7, if the concave side 15 of the body 2b is not already correctly positioned by chance, the shape thereof is in any case such as to cause, during its sliding into the pulley groove 7, automatic re-orientation with the concavity 15 facing downwards, i.e. in contact with the groove of the pulley 7.

[0020] Together with this rotation or driven orientation of body 2b about the longitudinal axis thereof, through the coupling means 13-14 a desired re-orientation of the entire anchor 5 is achieved. In fact, the coupling means 13-14 is arranged so that when the concave side 15 of the body 2b of the shaped shank 2 couples with the bottom of the groove of the snub pulley 7, as shown in figure 5, the anchor 5 lies with the arms 5a facing towards the boat 9.

[0021] In practice, the particular shape of the body 2b of the shaped shank 2 achieves, at the end of the recovery of the anchor 5, following the coupling of the same body 2b of the shaped shank 2 with the snub pulley 7, correct orientation of the anchor 5, with the arms 5a facing towards the boat 9, with no need for outside intervention.

[0022] The object set forth in the preliminary remarks is hence achieved through the device according to the invention.

[0023] Another advantage of the device according to the invention is that it is structurally very simple and can hence be manufactured at a low cost.

[0024] A further advantage of the device according to

the invention is that it can be mounted onto a variety of different anchors with no need of changes or special coupling with the anchor.

Claims

1. Device to automatically achieve correct orientation of an anchor during recovery thereof up on a boat, of the type comprising a connection body between said anchor (5) and a recovery chain (6), **characterised in that** said connection body (2) has a first head (2a) apt to couple with an end of said chain (6), and a second fixed endhead equipped with means (13, 14) for the coupling with the anchor (5) which substantially prevent a mutual rotation, and **in that** said connection body (2) has a portion (2b) shaped so that it may be coupled with the groove of a snub pulley (7) provided on the boat (9) exclusively in a preset rotation position about the longitudinal axis of said portion.
2. Device according to claim 1), wherein said first head is freely rotatable with respect to said body (2) about a rotation axis substantially aligned with the longitudinal axis of said connection body (1).
3. Device according to claim 2), wherein said first head has a fork-shaped end (10a, 10b) within which lies a transversal pin (11) insertable into a link of the chain (6) .
4. Device according to one or more of the previous claims, wherein said coupling means in correspondence of the second endhead consist of a through-hole or through-slot (13) at the end of said shaped portion (2b) and of an annular body (14) for connection to the head of the shaft (4) of the anchor (5).
5. Device according to one or more of the previous claims, wherein said shaped portion (2b) has, on a plane substantially perpendicular to the axis of said hole or slot (13) and passing through the longitudinal axis of the connection body (2), an arched curvature which can be coupled, through the concave side thereof, with the bottom of the groove of said snub pulley (7).
6. Device as in claim 5), wherein said shaped portion (2b) has, along the longitudinal development thereof, a complex curvature apt to cause rotation of said connection body (2) about the longitudinal axis thereof upon being led into and sliding onto the groove of the snub pulley (7) of the chain (6), bringing the concave side of said arched curvature to couple with the bottom of said groove.

7. Device as in any one of the previous claims, wherein said shaped portion (2b) has a shape and curvature as shown.
8. Anchor winch system comprising at least one recovery chain (6) and a snub pulley (7) onto which said chain (6) is intended to slide, **characterised in that** it comprises a device as in any one of the previous claims at the end of said chain (6) which is intended to connect with the anchor.

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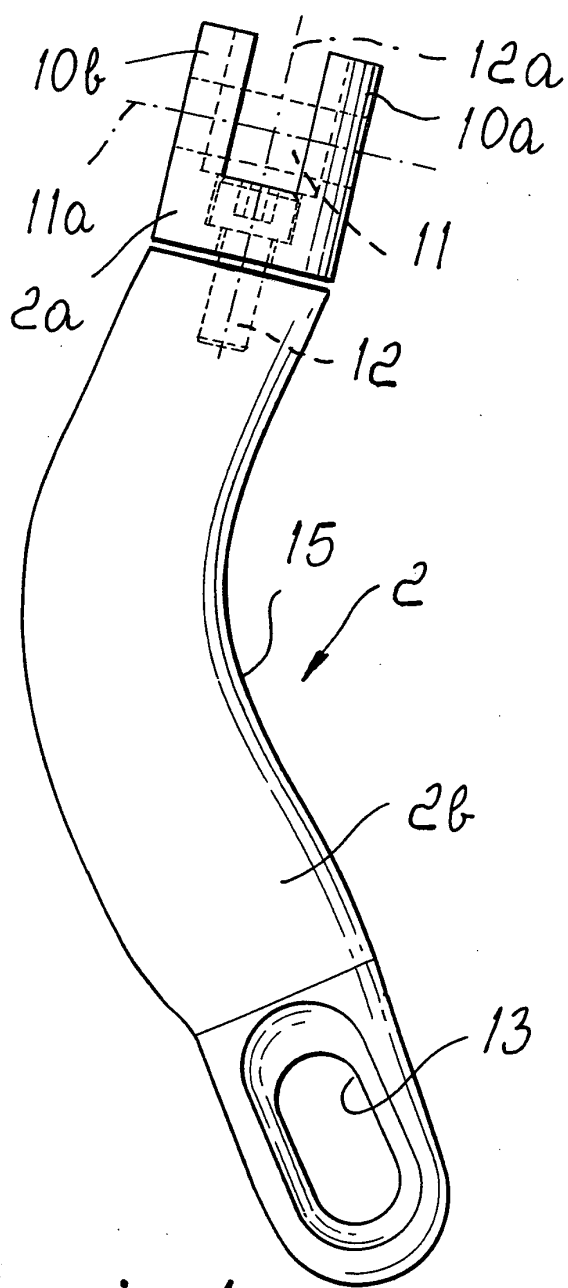


Fig. 1

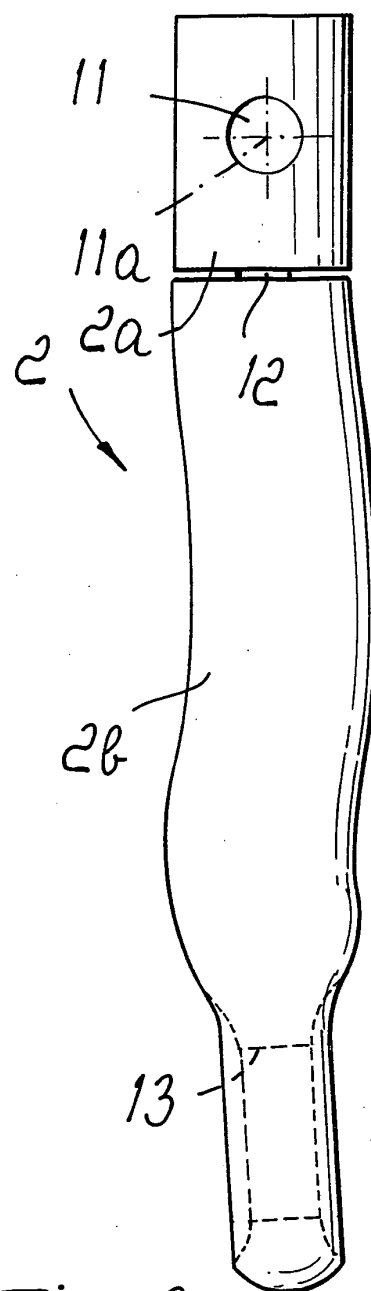


Fig. 2

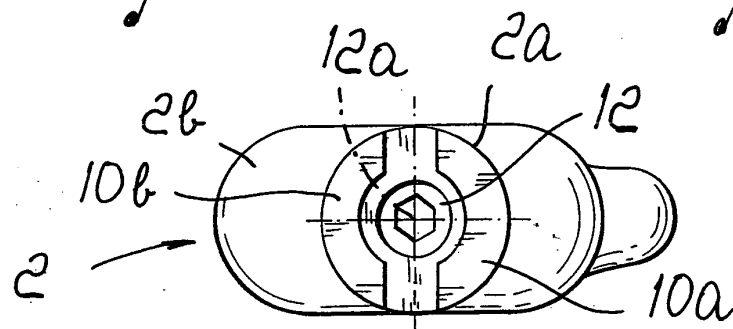
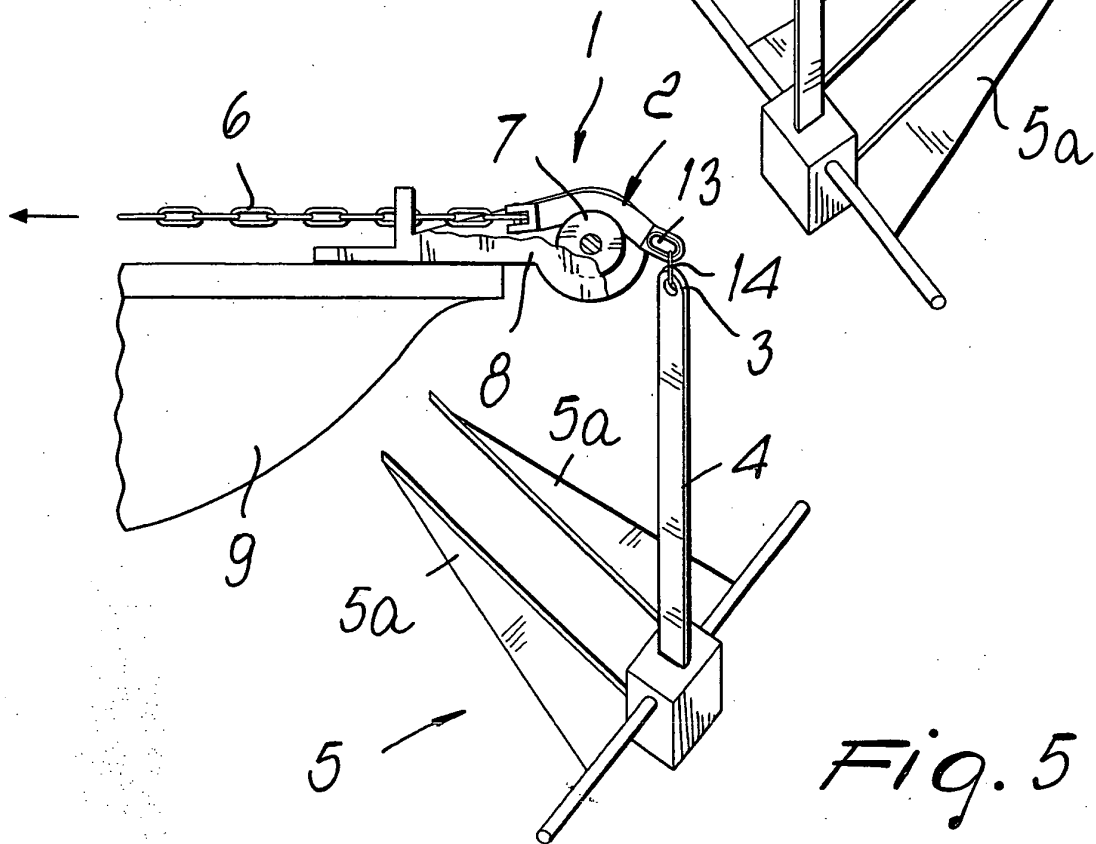
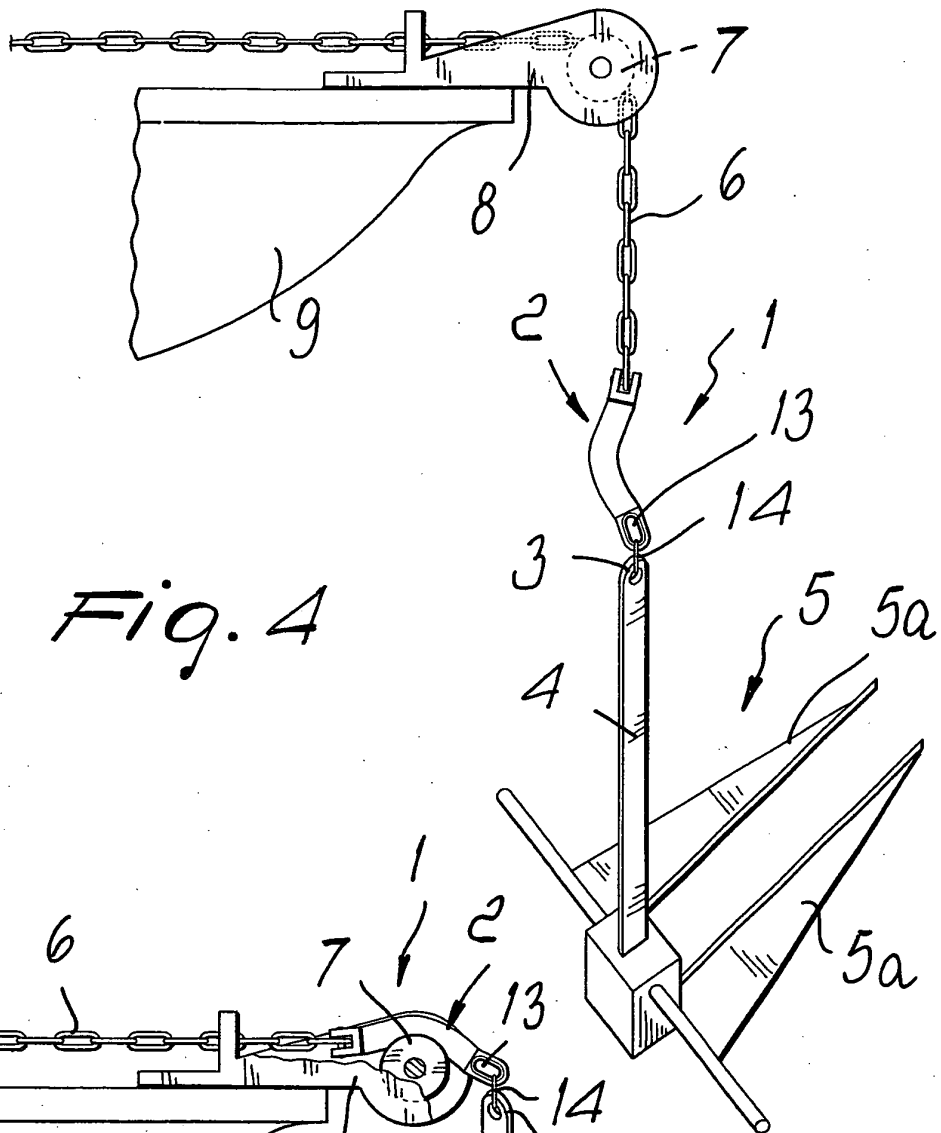


Fig. 3





European Patent
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EUROPEAN SEARCH REPORT

Application Number
EP 04 10 5977

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 5 421 280 A (GAST ET AL) 6 June 1995 (1995-06-06) * the whole document *	1-6,8	B63B21/22
X	US 6 418 871 B1 (SIMON WERNER) 16 July 2002 (2002-07-16) * abstract; figures *	1-4,8	
X	DE 138 876 C (A. KRAUS) 3 June 1902 (1902-06-03) * figures *	1-4,8	
X	US 3 704 680 A (EDMUND UHER) 5 December 1972 (1972-12-05) * abstract; figures * * column 1, lines 1-11 * * column 3, line 1 - column 4, line 4 *	1-4,8	
X	US 4 864 955 A (BRUCE ET AL) 12 September 1989 (1989-09-12) * abstract; figures *	1-4,8	
			TECHNICAL FIELDS SEARCHED (Int.Cl.7)
			B63B
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
Munich		2 February 2005	Nicol, Y
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
ON EUROPEAN PATENT APPLICATION NO.**

EP 04 10 5977

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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02-02-2005

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 5421280	A	06-06-1995	NONE
US 6418871	B1	16-07-2002	WO 0037307 A1 29-06-2000 AT 225276 T 15-10-2002 AU 759833 B2 01-05-2003 AU 2163099 A 12-07-2000 CA 2334013 A1 29-06-2000 DE 59805856 D1 07-11-2002 DK 1140613 T3 27-01-2003 EP 1140613 A1 10-10-2001 ES 2183438 T3 16-03-2003 HR 20000708 A1 31-08-2001 JP 2002532338 T 02-10-2002 NZ 509771 A 25-10-2002 PT 1140613 T 28-02-2003
DE 138876	C	NONE	
US 3704680	A	05-12-1972	DE 1955986 A1 13-05-1971 DE 2039083 A1 10-02-1972 CA 920435 A1 06-02-1973 FR 2067035 A1 13-08-1971 GB 1280586 A 05-07-1972 JP 50014792 B 30-05-1975 NL 7015445 A 11-05-1971
US 4864955	A	12-09-1989	WO 8707574 A1 17-12-1987 GB 2199005 A ,B 29-06-1988