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(54) **Dishwasher**

(57) A dishwasher having a washing tub (2) comprising:
a first (3) and a second (4) wall, a detergent dispenser (6) is arranged on the first wall (3).
A water inlet (7) is arranged on the second wall (4),

wherein the water inlet (7) is arranged to provide a water jet (8) directed towards the detergent dispenser (6) for rinsing out detergent from the dispenser (6), and wherein the water inlet (7) is so arranged that the water jet (8) is guided towards the detergent dispenser (6) by a third limiting surface (5) of the washing tub (2).

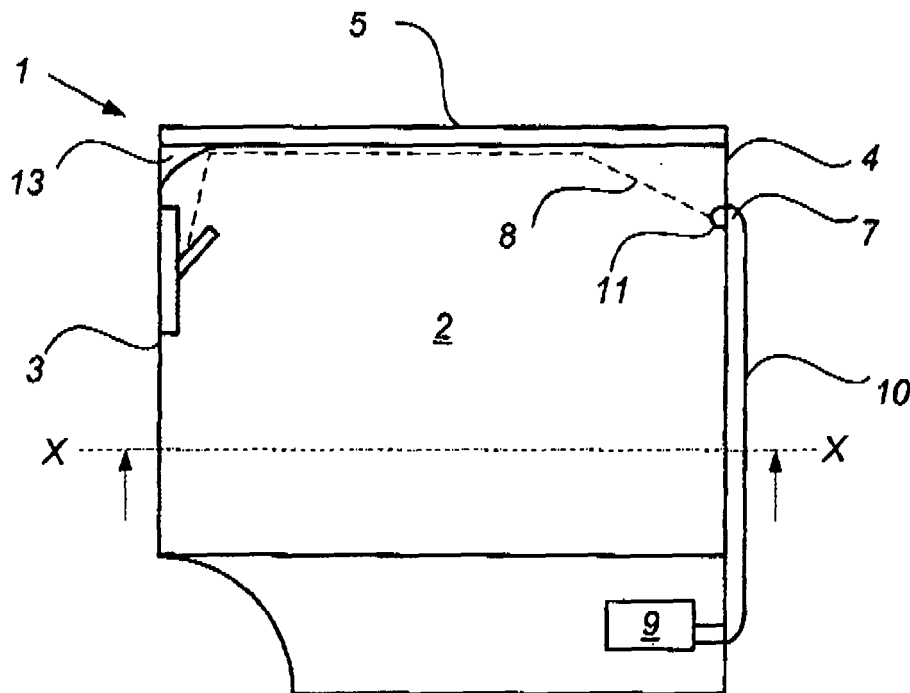


Fig. 2

Description

Technical Field

[0001] The present disclosure relates to a dishwasher having a washing tub comprising a first and a second wall. A detergent dispenser is arranged on the first wall.

Background

[0002] In conventional dishwashers the dispenser is provided with an activation device, which guarantees that all detergent is rinsed out during the wash program. The device is activated when the front portion of the dishwasher is closed properly.

[0003] This type of device can not be used in drawer dishwashers since the drawer front wall is always in a substantially vertical position.

[0004] In order to maximize the amount of objects that can be washed in a dishwasher, there is a general need for space saving measures in respect of the arrangement of the functional components of the dishwasher.

[0005] Hence, there is a need for a different arrangement for the purpose of rinsing out detergent from the dispenser of a dishwasher and which arrangement takes up little space.

[0006] US 6,244,277 shows a prior art drawer dishwasher. The drawer dishwasher has a detergent dispenser arranged in one of the walls of the washing chamber. At least one water outlet nozzle is arranged in the same wall as the dispenser and directed towards the dispenser to facilitate the rinsing out of detergent. The invention according to US 6,244,277 is adapted for use in an arrangement with two wash chambers and with the purpose of re-use rinsing water from the first wash chamber to the second wash chamber, therefore an arrangement according to US 6,244,277 requires a lot of special adapted components.

[0007] WO 2006/069827 shows a conventional dishwasher comprising a crockery basket which is arranged in a washing container and receives washable items and a cleaner dispensing chamber which is disposed in the wall or door of the washing container and dispenses the cleaner there inside. Guiding devices are mounted in front of the crockery basket for deviating a water jet, which is directed to the crockery basket, towards the dispensing chamber. The water jet derive both from a spray arm arranged under the crockery basket and from a nozzle arranged in the ceiling of the washing container.

[0008] An arrangement according to WO 2006/069827 require a special adapted dispensing chamber which is totally uncovered in opened position. Further, the guides who are arranged on the crockery basket takes up some space from the washing container.

[0009] Compared to the prior art arrangements there is still a need for a different arrangement for the purpose of rinsing out detergent from the dispenser of a dishwasher drawer, which arrangement takes up a little space and

which arrangement requires a minimum of special adapted components.

Summary

[0010] In order to solve the above problems a dishwasher according to the preamble of claim 1 is provided and which is characterized in that a water inlet is arranged on the second wall, wherein the water inlet is arranged to provide a water jet directed towards the detergent dispenser for rinsing out detergent from the dispenser, and wherein the water inlet is so arranged that the water jet is guided towards the detergent dispenser by a third limiting surface of the washing tub.

[0011] By arranging the water inlet and the detergent dispenser on different sides of the washing tub and arranging the water jet to be guided by a third limiting surface of the washing tub, an arrangement that takes a little space from the washing tub is provided. The arrangement further allows additional wetting to the objects to be washed, in addition to the water from a conventional sprinkler. Hence, at a high water jet spillage water from the water jet is obtained.

[0012] By providing a dishwasher wherein the detergent dispenser is arranged on a front wall of the washing tub and the water inlet is arranged on a rear wall of the washing tub, it is easy to reach the detergent dispenser when adding detergent to the dispenser.

[0013] By providing a dishwasher wherein the water jet from the water inlet on the rear wall of the washing tub is guided towards the detergent dispenser on the front wall of the washing tub via a ceiling of the washing tub, no space demanding guiding arrangement is needed.

[0014] By providing at least one guiding rib on the inside of the ceiling, for guiding and focusing the water jet towards the detergent dispenser, an effective guiding arrangement is provided that hardly takes any space from the washing tub.

[0015] By providing at least two guiding ribs that are arranged as two elongated ribs with a front end each, arranged upstreams in relation to the direction of the water jet, and a rear end each, arranged downstreams in the direction of the water jet, and wherein the space between the ribs decreases from the rear of the ribs end towards the front end of the ribs.

[0016] The water jet is focused towards the detergent dispenser in a very effective way.

[0017] By providing a deflection arrangement on the inside of the ceiling, for deflecting the water jet from the ceiling downwards, towards the detergent dispenser yet another effective arrangement for guiding the water jet towards the detergent dispenser is provided. The deflection arrangement also prevents the water jet from sprinkle towards the sealing between the washing tub and the ceiling of the washing tub and thereby, unnecessarily, exposing the sealing to a lot of water.

[0018] By providing an arrangement wherein the water inlet is connected to an outlet of a main circulation pump

of the dishwasher the already existing components are used to provide an effective arrangement for rinsing out detergent from the detergent dispenser. By using already existing components an arrangement that takes little space is provided.

[0019] By providing an arrangement wherein the water inlet is connected to a ventilation outlet of the main circulation pump, spillage water is used, and that provides an environment friendly arrangement.

[0020] By arranging the water jet to sprinkle intermittently during a washing program of the dishwasher, the amount of water that is drawn from the pump can be apportioned during the wash program and applied to the dishwasher when it is needed the most. By this arrangement less water is needed during the wash program and a more environment friendly dishwasher is provided.

[0021] An arrangement according to the invention can with advantage be provided in a drawer dishwasher.

Brief Description of the Drawings

[0022]

Fig 1 schematically illustrates a perspective view of a tub of a dishwasher with an arrangement according to claim 1.

Fig 2 schematically illustrates a cross section of a side view of dishwasher drawer with an arrangement according to the invention.

Fig 3 schematically illustrates section X-X of fig 2 seen from below.

Description of Embodiments

[0023] Fig 1 illustrates a dishwasher drawer 1, having a conventional washing tub 2. An arrangement according to the invention can with advantage be provided in a drawer dishwasher, but can also be used for conventional dishwashers.

[0024] In one embodiment of the invention the drawer 1 and the washing tub 2 are the same unit.

[0025] The washing tub 2 has a front wall 3, a rear wall 4 and a ceiling 5 (see Fig 2). The washing tub 2 and the ceiling 5 are with advantage made of rigid plastic, or that like.

[0026] The ceiling 5 and the upper edge of the washing tub are in an engagement position when the dishwasher is closed and during the wash program. A sealing device (not shown) can with advantage be provided between the ceiling 5 and the washing tub 2 to prevent the risk of leakage.

[0027] A dispenser 6 for receiving detergent, such as e.g. powder, tablets and liquid detergent etc., is arranged on the inside of a first wall 3.

[0028] In one embodiment of the invention the first wall 3 is the front wall 3 of the washing tub 2. The dispenser 6 is arranged on the upper part of the front wall 3. Therefore there is a small distance between the detergent dis-

penser 6 and the ceiling 5. Different types of detergent dispensers of conventional type can be used in the dishwasher according to the invention. A detergent dispenser with a shutter that is opened during the wash program is with advantage used.

[0029] A water inlet 7 is arranged on the second wall 4 of the washing tub.

[0030] In one embodiment of the invention the second wall 4 is the rear wall 4 of the washing tub 2.

[0031] The water inlet 7 is connected to an outlet of a main circulation pump 9 of the dishwasher. More particularly the water inlet is connected to a ventilation outlet of the main circulation pump 9. When air is drawn through the pump 9 of the dishwasher, it is ventilated through a ventilation device 10, and when only water is drawn, a water jet 8 is provided through the ventilation device 10. The water jet 8 is guided through the ventilation device 10. The ventilation device 10 consists of a substantially vertical tube. The tube 10 is guided on the backside of the second wall 4 and attached to a water inlet 7 provided in the upper part of the second wall 4.

[0032] A nozzle 11 is arranged to the water inlet 7 and attached on the inside of the rear wall 4 of the washing tub 2. The nozzle 11 has with advantage a spherical shape and is provided with a hole through which the water jet emerges.

[0033] The nozzle is so arranged that the water jet 8 is guided towards the detergent dispenser 6 by a third limiting surface 5 of the washing tub 2.

[0034] In one embodiment of the invention the third limiting surface 5 of the washing tub is the ceiling 5 of the washing tub 2.

[0035] The nozzle 11 is arranged on the inside of the rear wall 4, to direct the water jet 8 towards the dispenser 6 in order to rinse out detergent.

[0036] The nozzle 11 is locked in a specific position, so that the water jet 8 always hits the ceiling 5 with the same angle. Parameters that effects the water jet 8 and how it ends up right are; the angle X with which the water jet hits the ceiling 5; the amount of water from the pump 9; and the water pressure of the water jet 8. By setting these parameters a well-directed water jet 8 towards the detergent dispenser 6 is provided.

[0037] At least one guiding rib 12 is arranged on the inside of the ceiling 5, for guiding and focusing the water jet 8 towards the detergent dispenser 6. The rib has a front end arranged upstreams in relation to the direction of the water jet 8, and a rear end arranged downstreams in the direction of the water jet 8.

[0038] In one embodiment of the invention at least two guiding ribs 12 are arranged as two elongated ribs, see fig 3. The ribs 12 are arranged in a direction along the direction of the water jet 8. The space between the ribs 12 decreases from the rear end of the ribs 12 towards the front end of the ribs 12, see fig 3.

[0039] A deflection arrangement 13 is arranged on the inside of the ceiling 5, for deflecting the water jet from the ceiling 5 downwards and towards the detergent dis-

penser 6.

[0040] As a result of the small distance between the detergent dispenser 6 and the ceiling 5 the water jet would hit the sealing between the ceiling 5 and the upper edge of the washing tub 2 and thereby unnecessarily, expose the sealing to a lot of water. By arranging a deflecting arrangement 13 according to the invention this is prevented.

[0041] In one embodiment of the invention the ribs 12 and the deflecting arrangement 13 are moulded of the same material as the ceiling 5 and represents a part of the ceiling 5.

[0042] In one embodiment of the invention the water jet 8 - sprinkles continuously, in pulses, during the washing program of the dishwasher. At a high pulse, spillage water is obtained from the water jet 8. The spillage water can be used to provide additional wetting to the objects to be washed, in addition to the water from a conventional sprinkler (not shown) arranged in the bottom of the washing space.

[0043] In one embodiment of the invention the water jet 8 is arranged to sprinkle intermittently during a washing program of the dishwasher.

[0044] In one embodiment of the invention the washing tub 2 is arranged in a drawer of a drawer dishwasher. Typical drawer dishwashers comprise two such drawers, arranged on top of each other. However, configurations with one or more drawers are contemplated. In an arrangement in a drawer dishwasher the ceiling 5 is the lid of the drawer.

[0045] In the drawings and specification, there have been disclosed preferred embodiments and examples of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for the purpose of limitation, the scope of the invention being set forth in the following claims.

Claims

1. A dishwasher having a washing tub (2) comprising:

a first (3) and a second (4) wall, and a detergent dispenser (6) arranged on the first wall (3),

characterized in that a water inlet (7) is arranged on the second wall (4), wherein the water inlet (7) is arranged to provide a water jet (8) directed towards the detergent dispenser (6) for rinsing out detergent from the dispenser (6), and wherein the water inlet (7) is so arranged that the water jet (8) is guided towards the detergent dispenser (6) by a third limiting surface (5) of the washing tub (2).

2. The dishwasher as claimed in claim 1, wherein the first wall (3) is an internal, rear wall of the washing tub (2) and the second wall (4) is an internal, front wall of the washing tub (2).

3. The dishwasher as claimed in claim 1 or 2, wherein the third limiting surface (5) of the washing tub (2) is a ceiling (5) of the washing tub (2).

4. The dishwasher as claimed in claim 3, wherein at least one guiding rib (12) is arranged on the inside of the ceiling (5), for guiding and focusing the water jet (8) towards the detergent dispenser (6).

5. The dishwasher as claimed in claim 4, wherein at least two guiding ribs (12) are arranged as two elongated ribs with a front end each, arranged upstreams in relation to the direction of the water jet (8), and a rear end each, arranged downstreams in the direction of the water jet (8), and wherein the space between the ribs (12) decreases from the rear of the ribs (12) end towards the front end of the ribs (12).

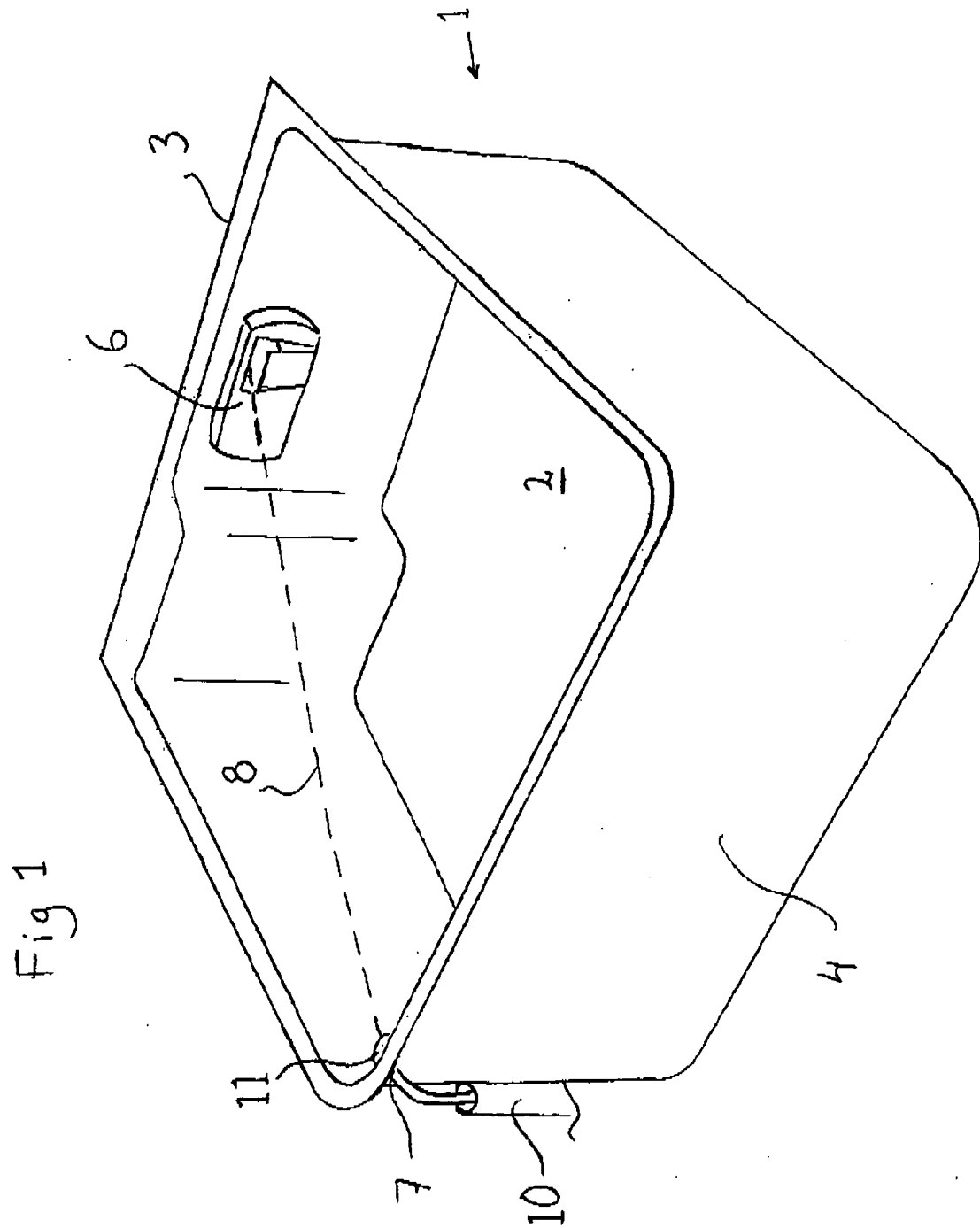
6. The dishwasher as claimed in any of claims 3-5, wherein a deflection arrangement (13) is arranged on the inside of the ceiling (5), for deflecting the water jet from the ceiling (5) downwards and towards the detergent dispenser (6).

7. The dishwasher as claimed in any one of the preceding claims, wherein the water inlet (7) is connected to an outlet of a main circulation pump (9) of the dishwasher.

8. The dishwasher as claimed in claim 7, wherein the water inlet (7) is connected to a ventilation outlet of the main circulation pump (9).

9. The dishwasher as claimed in any one of the preceding claims, wherein the water jet (8) is arranged to sprinkle intermittently during a washing program of the dishwasher.

10. The dishwasher as claimed in any one of the preceding claims, wherein the dishwasher is a drawer dishwasher.



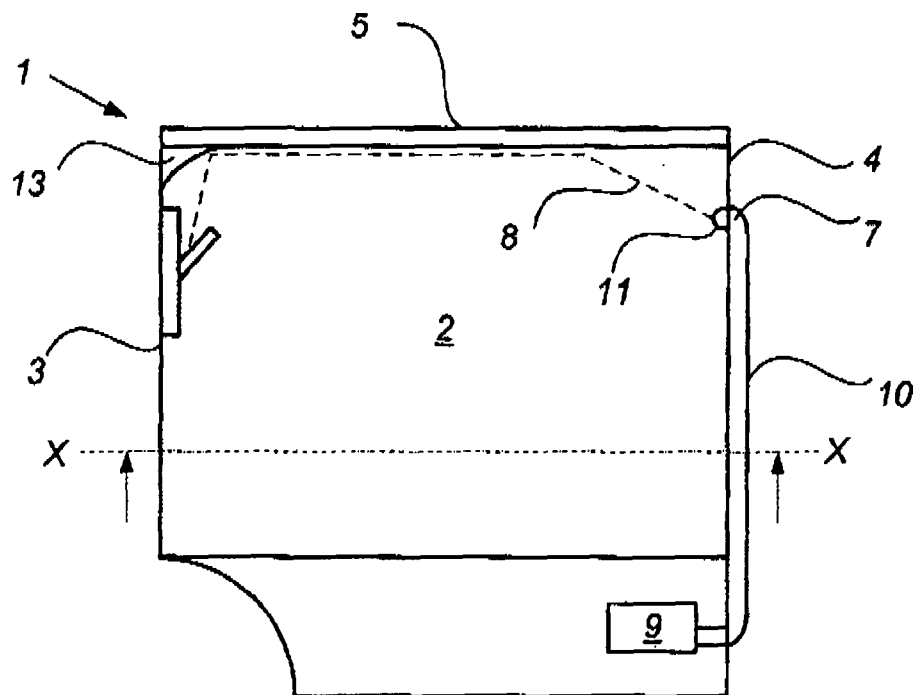


Fig. 2

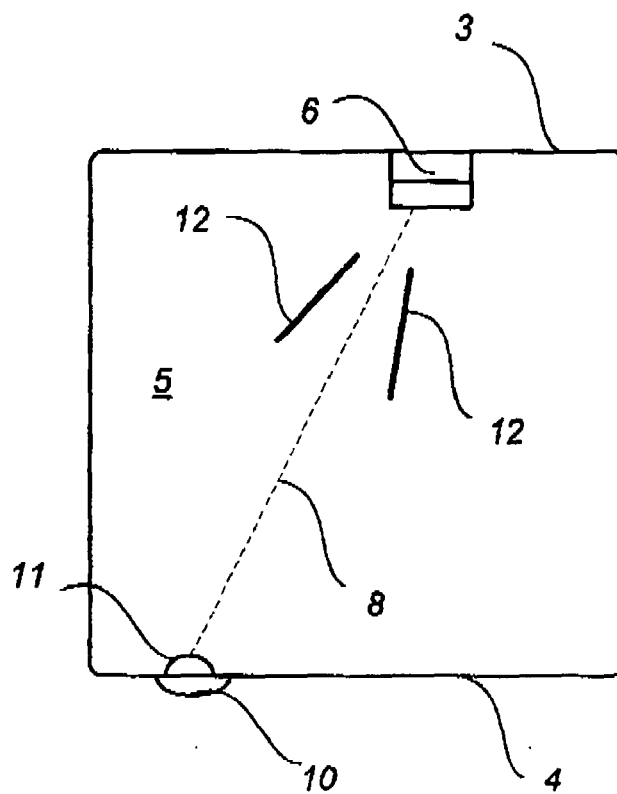


Fig. 3



European Patent
Office

EUROPEAN SEARCH REPORT

Application Number
EP 06 02 5204

DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
A,D	WO 2006/069827 A (BSH BOSCH SIEMENS HAUSGERAETE [DE]; KACZMAREK WOLFGANG [DE]) 6 July 2006 (2006-07-06) * claim 1; figure 1 *	1	INV. A47L15/16 A47L15/44
A	DE 85 16 941 U1 (LICENTIA PATENT-VERWALTUNGS-GMBH, 6000 FRANKFURT, DE) 9 October 1986 (1986-10-09) * claims; figures *	1	
A	EP 0 766 945 A2 (SMEG SPA [IT]) 9 April 1997 (1997-04-09) * abstract; figure 5 *	1	
A	US 2 236 791 A (AUGUST FORSBERG ERIK) 1 April 1941 (1941-04-01) * figure 1 *	1	
			TECHNICAL FIELDS SEARCHED (IPC)
			A47L
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 7 May 2007	Examiner Courrier, Gilles
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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EPC FORM 1503 03.82 (P04001)

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

EP 06 02 5204

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07-05-2007

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
WO 2006069827 A	06-07-2006	DE 102004062243 A1	13-07-2006
DE 8516941 U1	09-10-1986	FR 2582927 A1	12-12-1986
		IT 1204888 B	10-03-1989
EP 0766945 A2	09-04-1997	DE 69618409 D1	14-02-2002
		DE 69618409 T2	29-08-2002
		ES 2169789 T3	16-07-2002
		IT MI952021 A1	03-04-1997
US 2236791 A	01-04-1941	GB 490913 A	23-08-1938

REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 6244277 B [0006] [0006] [0006]
- WO 2006069827 A [0007] [0008]