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

(11) EP 1 516 998 A1

(12) EUROPEAN PATENT APPLICATION

(43) Date of publication:
**23.03.2005 Bulletin 2005/12**

(51) Int Cl.[7]: **E06B 9/28**

(21) Application number: **03077933.4**

(22) Date of filing: **17.09.2003**

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

(71) Applicant: **Vero Duco N.V.**
**8630 Veurne (BE)**

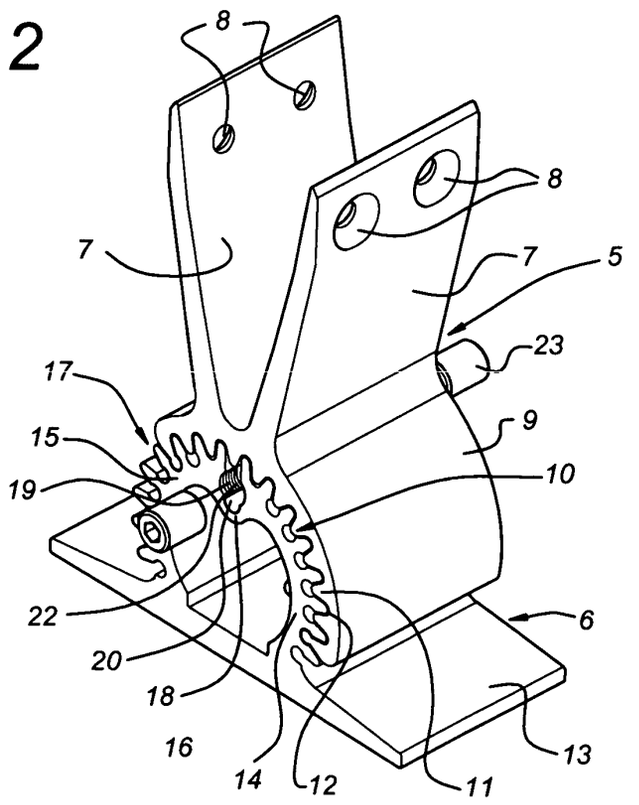
(72) Inventor: **Renson, Luc Louis**
**8620 Nieuwpoort (BE)**

(74) Representative: **van Westenbrugge, Andries**
**Nederlandsch Octrooibureau**
**Postbus 29720**
**2502 LS Den Haag (NL)**

# (54) Adjustable louvre system

(57) A louvre system comprises at least one louvre (1), elongate carriers (2) and securing means (3) for securing the louvre to in each case one of the carriers, in such a manner that the louvre is oriented transversely with respect to the carriers, which securing means comprise a holder (5) and a support (6), provided with convexly or concavely curved series (10,16,17) of uniform elevations (11) and recesses (12) which alternate at regular intervals with one another, which series can be made to interact with one another in different angular positions in order to define different angles between the louvre and the carrier, as seen in a plane which is defined by the cross section of the louvre and the longitudinal direction of the carrier. One of the series comprises at least two subseries, and there are also means for influencing the distance between these subseries with a view to fixing the louvres in place.

Fig 2




EP 1 516 998 A1

## Description

**[0001]** The invention relates to a louvre system, comprising at least one louvre, elongate carriers and securing means for securing the louvre to in each case one of the carriers, in such a manner that the louvre is oriented transversely with respect to the carriers, which securing means comprise a holder and a support, provided with convexly or concavely curved series of uniform elevations and recesses which alternate at regular intervals with one another, which series can be made to interact with one another in different angular positions in order to define different angles between the louvre and the carrier, as seen in a plane which is defined by the cross section of the louvre and the longitudinal direction of the carrier.

**[0002]** A louvre system of this type is known from GB-A-2126708. The series of elevations and recesses are in this case designed as series of teeth which are circular in cross section. By making these series interact with one another at different orientations, it is possible to adjust the louvre angle. For this purpose, the louvres have to be slid onto the carriers. To enable this sliding movement to take place, there has to be a certain degree of play between the series of teeth which interact with one another. However, a drawback of such an arrangement is that the louvres are not held completely tightly in the assembled state.

**[0003]** It is an object of the invention to provide a louvre system of the type described above which on the one hand allows the angular position of the louvres to be adjusted and on the other hand provides good securing. This object is achieved by virtue of the fact that one of the series comprises at least two subseries, and that there are means for influencing the distance between these subseries.

**[0004]** In the louvre system according to the invention, the louvres can be slid onto the carriers in the usual way. For this purpose, there is a certain play between the profiles of the carriers and the louvres. After the louvres have been moved to the desired location with respect to the carriers, it is possible to fix them in place by displacing the relevant subseries slightly with respect to one another. This results in clamping between the louvres and the carriers, in such a manner that the louvres can be held in place without play.

**[0005]** The displacement of the subseries with respect to one another can be effected in various ways. One example which may be mentioned is a variant in which the subseries have working surfaces and the means for influencing the distance between these subseries comprise a displacement member which can be made to interact with the working surfaces in order to change the position of these working surfaces with respect to one another. The working surfaces and the displacement member may for this purpose have screw threads which can be made to interact with one another. The displacement member, preferably a screw, may then be of a size which is such that when it is screwed in the working surfaces are pressed slightly apart, to a sufficient degree to produce the clamping action between the series.

**[0006]** Subseries which are displaced with respect to one another in the process are preferably curved convexly. They may each be incorporated on a curved lip, which lips are connected at one end to a base plate. These lips preferably project from their end which is secured to the base plate. The other series is curved concavely; the associated lip is preferably smooth on the outer side and forms a good cover for the convexly shaped subseries. This smooth coverage gives a better appearance.

**[0007]** Further strengthening of the louvre system can be obtained if the lips are connected to one another at their mutually facing ends by means of a relatively flexible bridge. The flexibility of this bridge must be such that displacement of the subseries which respect to one another remains possible. In particular, the bridge may to this end be in wave form.

**[0008]** According to a further preferred embodiment, the size of the securing means, as seen in the longitudinal direction of the louvre, is substantially equal to the size of the carrier in this direction. The advantage of this is that the relatively expensive series of elevations and recesses do not have to extend over the entire louvre. This is made possible, inter alia, by the use of a separate holder, which does not form an integral part of the louvre itself.

**[0009]** Reference is made to the louvre system which is known from EP-A-1308597. This known louvre system has series of elevations and recesses which are not uniform and are not distributed regularly. These series of elevations and recesses can be made to interact with one another by clicking together, in view of the open spaces which remain on account of their irregularity and non-uniformity. One drawback is that a louvre system of this type gives a less robust connection between the carriers and the louvres. This is caused by the fact that the elevations belonging to one series are not all accommodated between the elevations belonging to the other series.

**[0010]** The invention will now be explained in more detail with reference to an exemplary embodiment of the louvre system according to the invention which is illustrated in the figures, in which:

Fig. 1 shows a side view of a holder and a support for the louvre system;

Fig. 2 shows the holder and support in perspective;

Fig. 3 shows a perspective view of a support;

Fig. 4 shows a plan view of the support shown in Fig. 3;

Fig. 5 shows a side view of a section of the louvre system;

Fig. 6 shows a section of the louvre system in perspective.

**[0011]** The louvre system according to the invention illustrated in Fig. 5 and 6 comprises louvres 1 which are secured to carriers 2 by means of securing means 3. In the exemplary embodiment illustrated, the louvres 1 have an elliptical cross section, but other shapes are also possible. The louvres 1 comprise a profiled section which has an internal hollow space 4.

**[0012]** The securing means 3, which are also shown in Fig. 1 and 2, comprise a holder 5 and a support 6. The holder 5 is secured to the louvre 1, for example by means of nut-and-bolt connections 21, rivets or the like. The support 6 is in turn secured to the carrier 2.

**[0013]** As can also be seen from Figures 1 and 2, the holder 5 has two lips 7 provided with holes 8 for, for example, screws or rivets. Furthermore, the holder 5 has a foot 9 which describes part of a circle and on its interior has a series 10 of alternating elevations 11 and recesses 12. These elevations 11 and recesses 12 are distributed regularly over the foot 9 and are uniform.

**[0014]** The support 6 has a base plate 13, on which two segments of a circle 14, 15 are formed. These segments of a circle 14, 15 each have subseries 16, 17 of alternating elevations 11 and recesses 12. These elevations 11 and recesses 12 are regularly distributed and uniform. At their end facing away from the base plate 13, the subseries 16, 17 are connected to one another by a slightly flexible bridge 18.

**[0015]** When the louvre system is being assembled, the holders 5 are pushed over the support 6, with the elevations 11 belonging to series 10 of the holder 5 coming to lie inside the recesses 12 belonging to the subseries 16, 17 of the support 6. Since the elevations and recesses 12 and 11 belonging to the subseries 16, 17 are regularly distributed, in accordance with the regular distribution of the elevations 11 and recesses 12 belonging to the series 10 of the holder 5, they can be slid off, without too much friction and with a certain play in the longitudinal direction of these elevations 11 and recesses 12.

**[0016]** After the holders 5 and the supports 6 have been made to interact with one another, the subseries 16, 17 are placed under prestress, in such a manner that the elevations 11 and recesses 12 belonging to the subseries 16, 17 and belonging to the series 10 are pressed firmly onto one another. For this purpose, the segments of a circle 14, 15 have respective working surfaces 19, 20 at their ends which are remote from the base plate 13. These working surfaces have a screw thread 22, in such a manner that by screwing in a slightly oversized screw 23 these working surfaces 19, 20 are pressed apart. This ensures that the louvres 1 are securely attached to the carriers 3.

**[0017]** As shown in particular in Figures 3 and 4, the segments of a circle 14, 15 are connected to one another at their ends which are remote from the base plate 13 by a relatively flexible bridge 18. This flexible bridge 18 comprises two parts which are separated by the opening 24. Together with the wavy shape of the bridge 18, this opening 24 ensures that the segments of a circle 14, 15 can move slightly with respect to one another without an excessively great spreading force being required for this purpose.

**[0018]** Moreover, the bolt connection 25, which fits through the hole 26 in the base plate 13 with a view to securing the louvre to the carrier 2 as shown in Fig. 5, can be screwed in via the opening 24.

## Claims

1. Louvre system, comprising at least one louvre (1), elongate carriers (2) and securing means (3) for securing the louvre (1) to in each case one of the carriers (2), in such a manner that the louvre (1) is oriented transversely with respect to the carriers (2), which securing means (3) comprise a holder (5) and a support (6), provided with convexly or concavely curved series (10; 16, 17) of uniform elevations (11) and recesses (12) which alternate at regular intervals with one another, which series (10; 16, 17) can be made to interact with one another in different angular positions in order to define different angles between the louvre (1) and the carrier (2), as seen in a plane which is defined by the cross section of the louvre (1) and the longitudinal direction of the carrier (2), **characterized in that** one of the series comprises at least two subseries (16, 17), and **in that** means (19, 20) are provided for influencing the distance between the said subseries (16, 17).

2. Louvre system according to Claim 1, in which the subseries (16, 17) are delimited by working surfaces (19, 20), and the means for influencing the distance between these subseries (16, 17) comprise a displacement member which can be made to interact with the working surfaces (19, 20) in order to change the respective positions of these working surfaces (19, 20).

3. Louvre system according to Claim 2, in which the working surfaces (19, 20) and the displacement member have screw threads which can be made to interact with one another.

4. Louvre system according to one of the preceding claims, in which the subseries (16, 17) are convexly curved.

5. Louvre system according to Claim 5, in which the subseries (16, 17) are each accommodated on a

segment of a circle (14, 15).

**6.** Louvre system according to Claim 5, in which the segments of a circle (14, 15) are connected at one end to a base plate (13).

**7.** Louvre system according to Claim 6, in which the segments of a circle (14, 15) project from their end which is secured to the base plate (13).

**8.** Louvre system according to Claim 6, in which the segments of a circle (14, 15) are connected to one another at their ends which face towards one another by means of a relatively flexible bridge (18).

**9.** Louvre system according to Claim 8, in which the bridge (18) is in wave form.

**10.** Louvre system according to Claim 8 or 9, in which the bridge (18) has an opening (24).

**11.** Louvre system according to Claim 2 or 3 in combination with claim 8, 9 or 10, in which the bridge (18) is located next to the working surfaces (19, 20).

**12.** Louvre system according to one of the preceding claims, in which the dimension of the securing means (3), as seen in the longitudinal direction of the louvre (1), is substantially equal to the dimension of the carrier (2) in this direction.

Fig 1

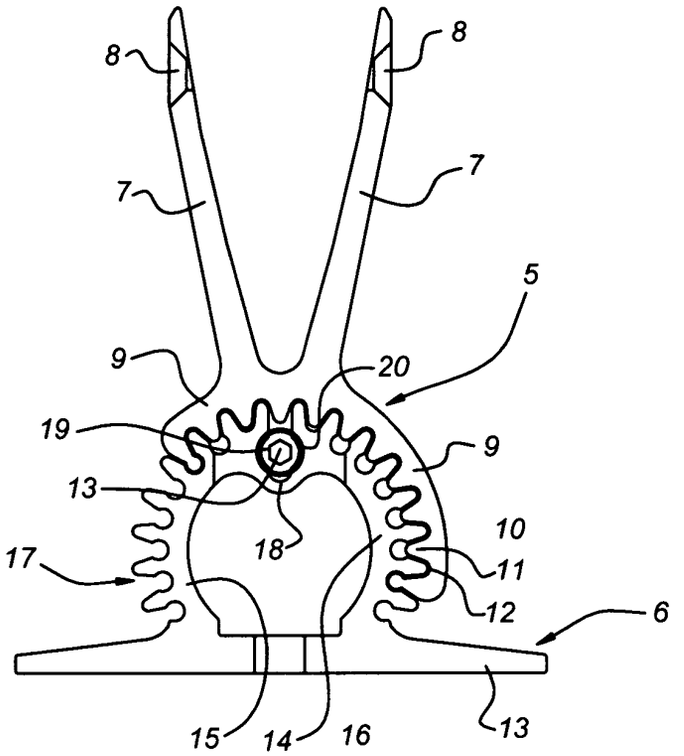

8
8
7
7
5
9
20
19
9
13
10
18
17
11
12
6
15
14
16
13

Fig 2

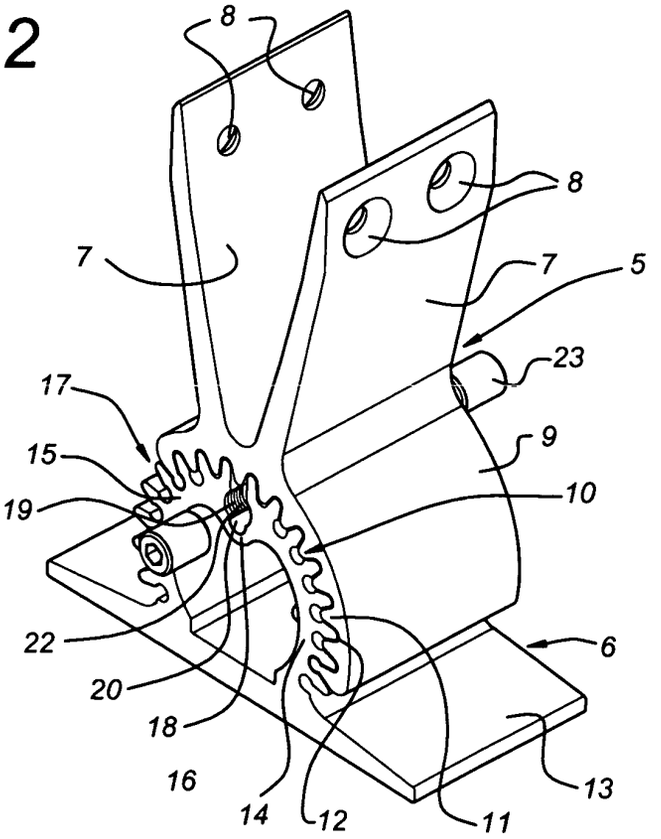

8
8
7
7
5
23
17
9
15
10
19
6
22
20
18
16
14
12
11
13

Fig 3

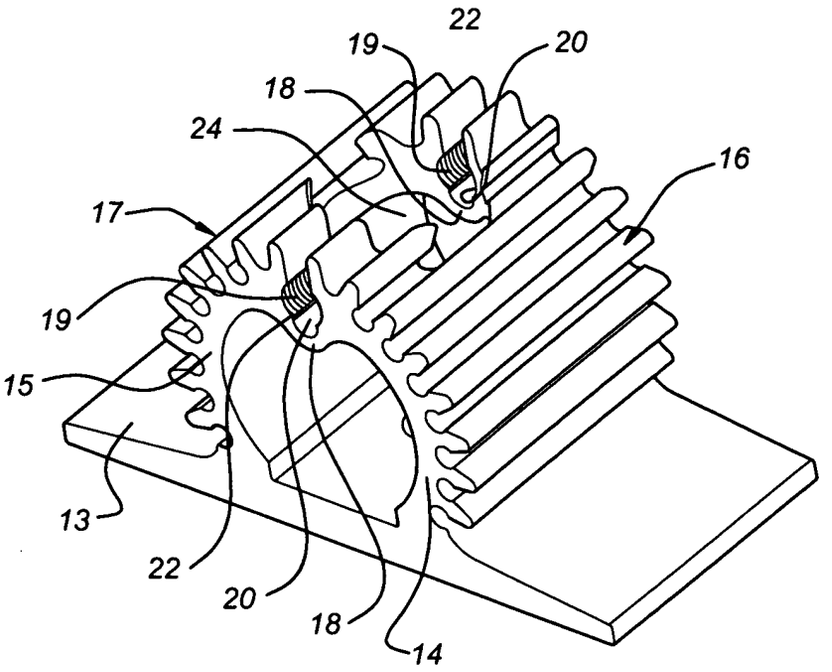

22
19
20
18
24
16
17
19
15
13
22
20
18
14

Fig 4

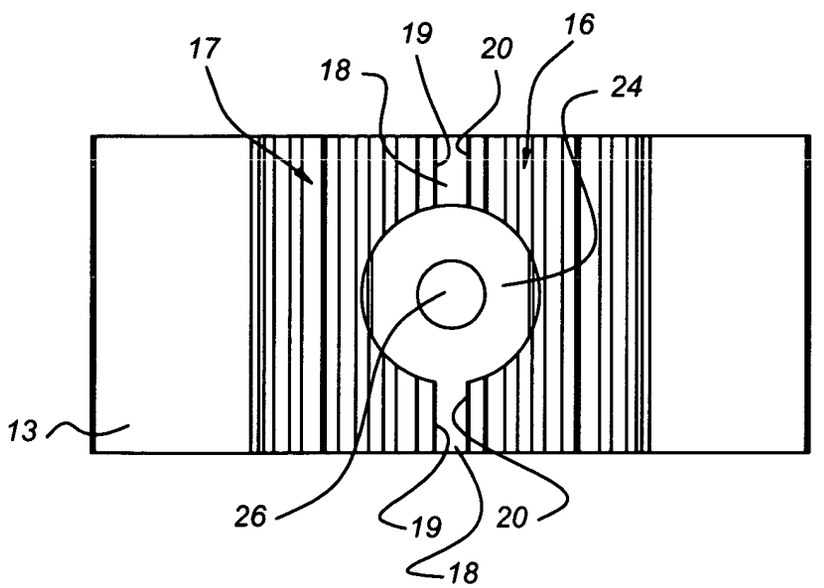

17
19
20
16
18
24
13
26
19
20
18

Fig 5

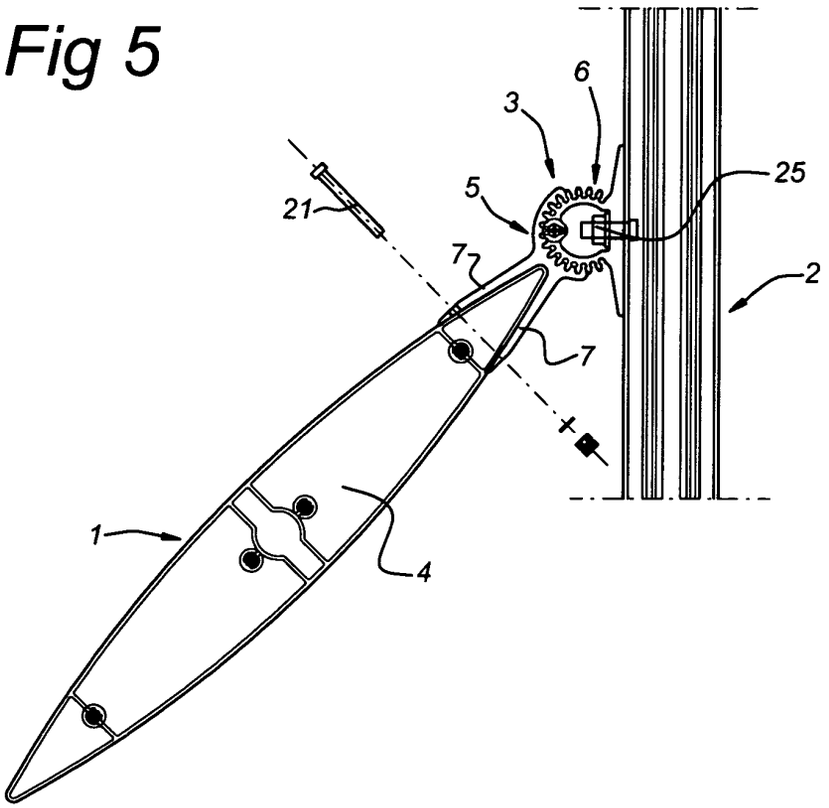
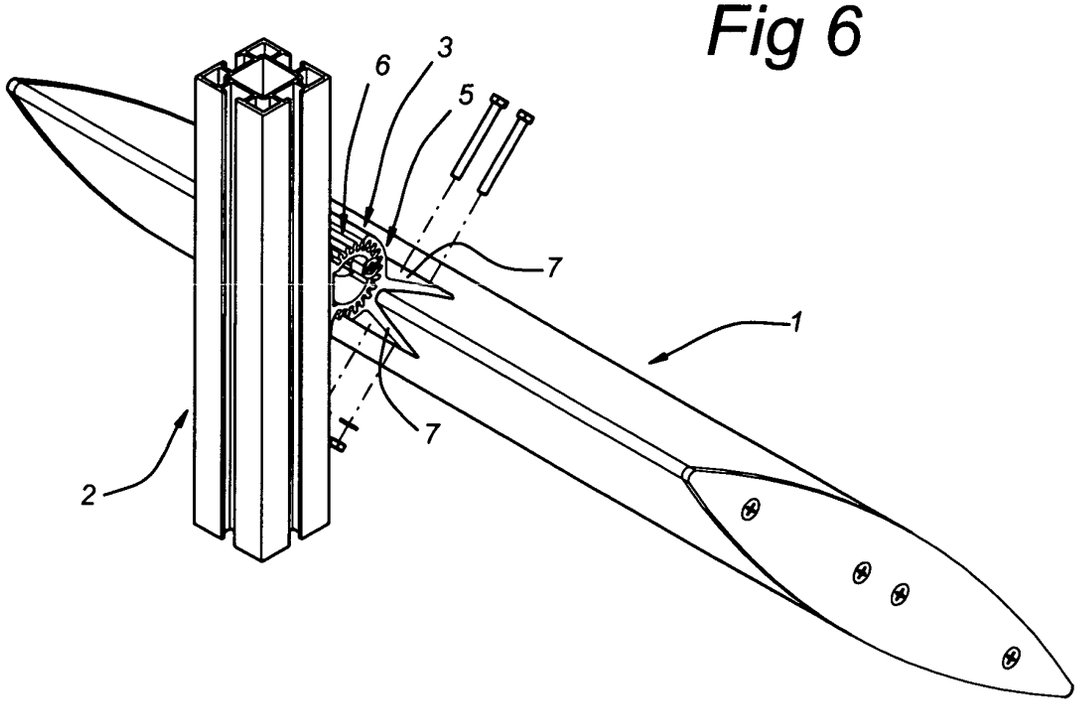



Fig 6



European Patent Office

# EUROPEAN SEARCH REPORT

Application Number
EP 03 07 7933

## 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) |
|---|---|---|---|
| D,A | EP 1 308 597 A (RENSON NV ;RENSON PAUL (BE)) 7 May 2003 (2003-05-07)<br>* figures 1A-C *<br>--- | 1 | E06B9/28 |
| D,A | GB 2 126 708 A (GREENWOOD AIRVAC VENTILATION) 28 March 1984 (1984-03-28)<br>* figure 1 *<br>----- | 1 | |

TECHNICAL FIELDS SEARCHED (Int.Cl.7)

E06B

The present search report has been drawn up for all claims

| Place of search | Date of completion of the search | Examiner |
|---|---|---|
| THE HAGUE | 17 February 2004 | Severens, 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

EPO FORM 1503 03.82 (P04C01)

## ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 03 07 7933

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
The European Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

17-02-2004

| Patent document cited in search report | Publication date | Patent family member(s) | Publication date |
|---|---|---|---|
| EP 1308597 A | 07-05-2003 | BE 1014457 A5 | 07-10-2003 |
| | | EP 1308597 A1 | 07-05-2003 |
| GB 2126708 A | 28-03-1984 | NONE | |

EPO FORM P0459

For more details about this annex : see Official Journal of the European Patent Office, No. 12/82