

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
9 February 2006 (09.02.2006)

PCT

(10) International Publication Number
WO 2006/014740 A1

(51) International Patent Classification⁷: **B60R 3/00**,
F16B 5/06, 37/04, 5/02

(21) International Application Number:
PCT/US2005/025750

(22) International Filing Date: 21 July 2005 (21.07.2005)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/590,403 21 July 2004 (21.07.2004) US

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(81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

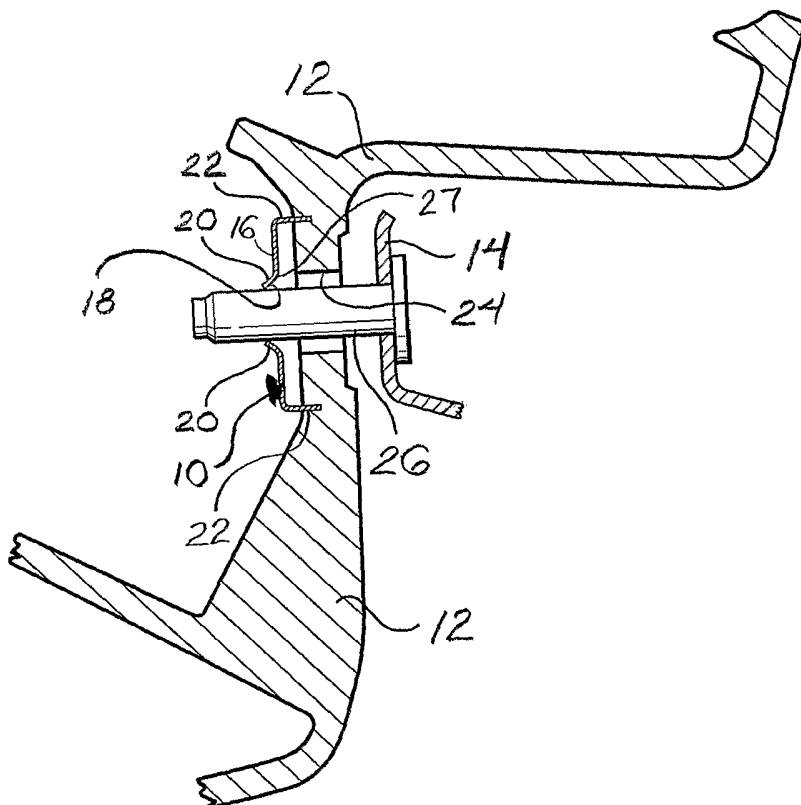
(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

[Continued on next page]

(54) Title: ASSEMBLY AID FOR RUNNING BOARDS



(57) Abstract: The invention provides an assembly aid (10) for assisting in the installation of a running board (12), having at least one mounting bore (24), about a vehicle mounting bolt (26). The assembly aid includes a bolt clip (16) fixedly secured to the running board. The bolt clip defines a bore (18) coaxially aligned with the mounting bore of the running board to receive the vehicle mounting bolt and configured to engage the vehicle mounting bolt.



For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

ASSEMBLY AID FOR RUNNING BOARDS

Field of the Invention

[0001] The invention relates to an assembly aid for a running board. More particularly, the invention relates to an assembly aid for allowing a single technician to install a running board on a motor vehicle.

Description of Related Art

[0002] In pickup trucks, sport utility vehicles, and other motor vehicles having a relatively high ground clearance, running boards are commonly utilized as a step to assist individuals in entering and exiting the vehicle. Running boards are subjected to significant loads from a variety of sources. Initially, running boards were fabricated from metal in order to withstand these loads. More recently, running boards have been formed from plastic. Plastic running boards provide several advantages over metal running boards including, but not limited to, reduced running board weight, simplified fabrication, corrosion resistance, skid resistance, molded in color, and molded in steps. Each of these advantageous features has a cost reduction component associated with it.

[0003] The reduction in weight that results from the use of plastic running boards significantly simplifies post-fabrication handling as well as running board attachment to the motor vehicle. Metal running boards are heavy, which increases the time involved handling the running board. In addition, more than one technician and/or mechanical assistance is required for installation of the metal running board. By contrast, a single technician can quickly and easily move and position a plastic running board. But due to the way running boards are secured to the motor vehicle, more than one technician and/or mechanical assistance is still required to install the plastic running board.

[0004] Thus, it would be desirable to provide an assembly aid that will permit additional cost savings by allowing a single technician to handle a plastic running board and install the plastic running board on a motor vehicle.

Summary of the Invention

[0005] According to one aspect of the invention, an assembly aid is provided for assisting in installation of a running board, having at least one mounting bore, along a vehicle mounting bolt. The assembly aid includes a bolt clip fixedly secured to the running board. The bolt clip defines a bore coaxially aligned with the mounting bore of the running board to receive the vehicle mounting bolt therethrough and configured to engage the vehicle mounting bolt.

[0006] According to another aspect of the invention, an assembly aid is provided for assisting in installation about a vehicle mounting bolt. The assembly aid includes a running board having a mounting bore for receiving the mounting bolt therethrough. The running board includes an integrated bolt clip having a bore coaxially aligned with the mounting bore to receive the vehicle mounting bolt and configured to engage the vehicle mounting bolt.

[0007] According to yet another aspect of the invention, a method is provided for securing a running board, having a mounting bore, along a vehicle mounting bolt utilizing an assembly aid including a bolt clip having a bore. The method includes the steps of: securing the bolt clip to the running board such that the bore and mounting bore are coaxially aligned; positioning the running board to receive the vehicle mounting bolt inside the bore and mounting bore; and applying pressure to the running board until the vehicle mounting bolt passes through the mounting bore into engagement with the bolt clip.

Brief Description of the Drawings

[0008] Advantages of the present invention will be readily appreciated as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

[0009] Figure 1 is a fragmentary, perspective view of an assembly aid according to one embodiment of the invention secured to a running board;

[0010] Figure 2 is a perspective view of a bolt clip of the assembly aid;

[0011] Figure 3 is a top view of the bolt clip;

- [0012] Figure 4 is a side view of the bolt clip;
- [0013] Figure 5 is a longitudinal, side view of the bolt clip;
- [0014] Figure 6 is a bottom view of the bolt clip secured to the running board;
- [0015] Figure 7 is a cross-sectional view taken along lines 7-7 in Figure 6;
- [0016] Figure 8 is a top view of the bolt clip secured to the running board;
- [0017] Figure 9 is a cross-sectional view of the running board and assembly aid held in position disposed along a mounting bolt extending out from a portion of a motor vehicle;
- [0018] Figure 10 is a cross-sectional view similar to Figure 9 further including a mounting nut positioned on the mounting bolt to fix the running board in place;
- [0019] Figure 11 is a fragmentary, perspective view of a running board including an assembly aid according to a second embodiment of the invention integrally formed therewith;
- [0020] Figure 12 is a top view of a bolt clip of the assembly aid integrally formed with the running board;
- [0021] Figure 13 is a perspective view of an assembly aid according to a third embodiment of the invention;
- [0022] Figure 14 is a fragmentary, perspective view of a bolt clip, including a slip fastener, of the assembly aid secured to a running board; and
- [0023] Figure 15 is a cross-sectional view of a mounting bolt extending through the assembly aid.

Detailed Description of the Preferred Embodiments

[0024] Referring to Figures 1 through 5, an assembly aid, generally indicated at 10, is provided for assisting in installment of a running board 12 along a portion 14 of a motor vehicle (shown in Figure 9). In the embodiments set forth herein, the portion of the motor vehicle shown is a motor vehicle frame 14. The assembly aid 10 includes a bolt clip 16 having a bore 18 and ferrules 20 disposed around the bore 18. The bolt clip 16 also includes a plurality of prongs 22. Although four prongs 22 are shown in the current embodiment, it is contemplated that the exact number of prongs 22 may vary. In a preferred embodiment, the bolt clip 16 is formed from metal. It is, however, appreciated, that the bolt clip 16 may be formed from any of numerous materials, including plastic.

[0025] Each of the plurality of prongs 22 is configured to penetrate the running board 12. Thus, the bolt clip 16 is "stapled" into the running board 12 coaxially such that the bolt clip 16 is positioned over a mounting bore 24 formed in the running board 12. Although only one mounting bore 24 is shown, it is appreciated that the running board 12 has a plurality of spaced apart mounting bores 24. When the bolt clip 16 is positioned over the running board 12, the bore 18 of the bolt clip 16 is aligned with one of the mounting bores 24 of the running board 12.

[0026] Referring to Figures 6 through 10, each mounting bore 24 is configured to receive a mounting bolt 26 therethrough. Each mounting bolt 26, which extends out from the motor vehicle frame 14, also extends through the bore 18 of the bolt clip 16, where it is engaged by the ferrules 20 along an inner edge 27 of the bore 18. The engagement between the mounting bolt 26 and the ferrules 20 holds the running board 12 in place along the motor vehicle frame 14.

[0027] A mounting nut 28, shown in Figure 10, is tightened on the mounting bolt 26 to fix the running board 12 to the motor vehicle frame 14. When the running board 12 is fixed as such, the mounting bolt 26, the mounting bore 24 of the running board 12, and the bore 18 of the bolt clip 16 are coaxially aligned.

[0028] Referring to Figures 11 and 12, according to another embodiment of the invention, the assembly aid 10 includes a bolt clip 30 integrated with the running

board 12. The integrated bolt clip 30 includes the bore 18 and the ferrules 20 for engaging the mounting bolt 26. The integrated bolt clip 30 may be molded in place within the running board 12. More specifically, the bolt clip 30 may be fabricated simultaneously with the running board 12, or fabricated separately from the running board 12 and integrated therewith at a later time.

[0029] The integrated bolt clip 30 is formed from metal or plastic. If the integrated bolt clip 30 is formed from plastic, the plastic may be the same as or different from the plastic used to assemble the running board 12.

[0030] Referring to Figures 13 through 15, according to still another embodiment of the invention, the assembly aid 10 includes a bolt clip 32 held in place along the running board 12 by a slip fastener 34. As in the previous embodiments, the mounting bolt 26 is received within the bore 18 of the bolt clip 32 and the mounting bore 24 of the running board 12. The bolt clip 32 includes the ferrules 20 for engaging the mounting bolt 26.

[0031] In a method of fixing the running board 12 to a portion 14 of the motor vehicle, the bolt clip 16, 30, 32 of the assembly aid 10 is first secured to the running board 12 such that the bore 18 of the bolt clip 16, 30, 32 is positioned coaxially over one of the mounting bores 24 of the running board 12. The bolt clip 16, 30, 32 may be secured to the running board 12 by stapling, integrating, or fixing. The running board 12 is then positioned such that each mounting bore 24 receives one of the mounting bolts 26 extending out from the portion 14 of the motor vehicle. A predetermined amount of pressure is applied to the positioned running board 12 so that each mounting bolt 26 passes through the respective mounting bore 24 and into engagement with the ferrules 20 of the bolt clip 16, 30, 32. As a result, the running board 12 is held along the portion 14 of the motor vehicle. The tightening nut 28 threadedly engages the mounting bolt 26 to fixedly secure the running board 12 to the portion 14 of the motor vehicle.

[0032] One skilled in the art will understand that the various embodiments of the assembly aid 10 may additionally be fastened to the running board 12 using

additional adhesive and/or fasteners. Any such configuration or mounting method utilizing the assembly aid 10 is, thus, within the scope of the invention.

[0033] Furthermore, one skilled in the art will appreciate that the assembly aid 10 may be utilized on all types of running boards, steps, step bars, and power running boards for all types of motor vehicles having such a running board or step. In addition, other assembly aids may be utilized including hooks, clips, buttons, and other fasteners, so long as the assembly aid allows a technician to handle and mount the running board 12 onto the mounting bolts 26 for fixed attachment to the portion 14 of the motor vehicle.

[0034] The invention has been described in an illustrative manner. It is to be understood that the terminology, which has been used, is intended to be in the nature of words of description rather than of limitation. Many modifications and variations of the invention are possible in light of the above teachings. Therefore, within the scope of the appended claims, the invention may be practiced other than as specifically described.

What is claimed:

1. An assembly aid for assisting in installation of a running board, having at least one mounting bore, about a vehicle mounting bolt, said assembly aid comprising:
a bolt clip fixedly secured to the running board, said bolt clip defining a bore coaxially aligned with the mounting bore of the running board to receive the vehicle mounting bolt therethrough and configured to engage the vehicle mounting bolt.
2. An assembly aid as set forth in claim 1 wherein said bolt clip includes ferrules disposed along said bore for engaging the vehicle mounting bolt.
3. An assembly aid as set forth in claim 2 wherein said bolt clip includes a plurality of prongs engageable with the running board for fixedly securing said bolt clip thereto.
4. An assembly aid as set forth in claim 2 wherein said bolt clip includes a slip fastener engageable with the running board for fixedly securing said bolt clip thereto.
5. An assembly aid engageable with a vehicle mounting bolt, said assembly aid comprising:
a running board having a mounting bore for receiving said mounting bolt therethrough, said running board having an integrated bolt clip including a bore coaxially aligned with said mounting bore to receive the vehicle mounting bolt and configured to engage the vehicle mounting bolt.
6. An assembly aid as set forth in claim 5 wherein said integrated bolt clip includes ferrules disposed along said bore for engaging the vehicle mounting bolt.
7. An assembly aid as set forth in claim 6 wherein said integrated bolt clip is formed from metal.

8. An assembly aid as set forth in claim 6 wherein said integrated bolt clip is formed from a first plastic material.

9. An assembly aid as set forth in claim 8 wherein said running board is formed from a second plastic material.

10. An assembly aid as set forth in claim 9 wherein said first plastic material is different from said second plastic material.

11. A method of securing a running board, having a mounting bore, along a vehicle mounting bolt utilizing an assembly aid including a bolt clip having a bore, the method comprising the steps of:

securing the bolt clip to the running board such that the bore and mounting bore are coaxially aligned;

positioning the running board to receive the vehicle mounting bolt within the mounting bore; and

applying pressure to the running board until the vehicle mounting bolt passes through the mounting bore into engagement with the bolt clip.

12. A method as set forth in claim 11 including the step of fixedly securing the mounting bolt in place to secure the running board to the portion of the motor vehicle.

13. A method as set forth in claim 12 wherein the step of securing the bolt clip to the running board such that the bore and mounting bore are coaxially aligned includes the step of integrating the bolt clip with the running board.

14. A method as set forth in claim 13 wherein the step of integrating the bolt clip with the running board includes the step of fabricating the bolt clip simultaneously with the running board.

15. A method as set forth in claim 13 wherein the step of integrating the bolt clip with the running board includes the step of fabricating the bolt clip separately from the running board and later integrating the bolt clip therewith.

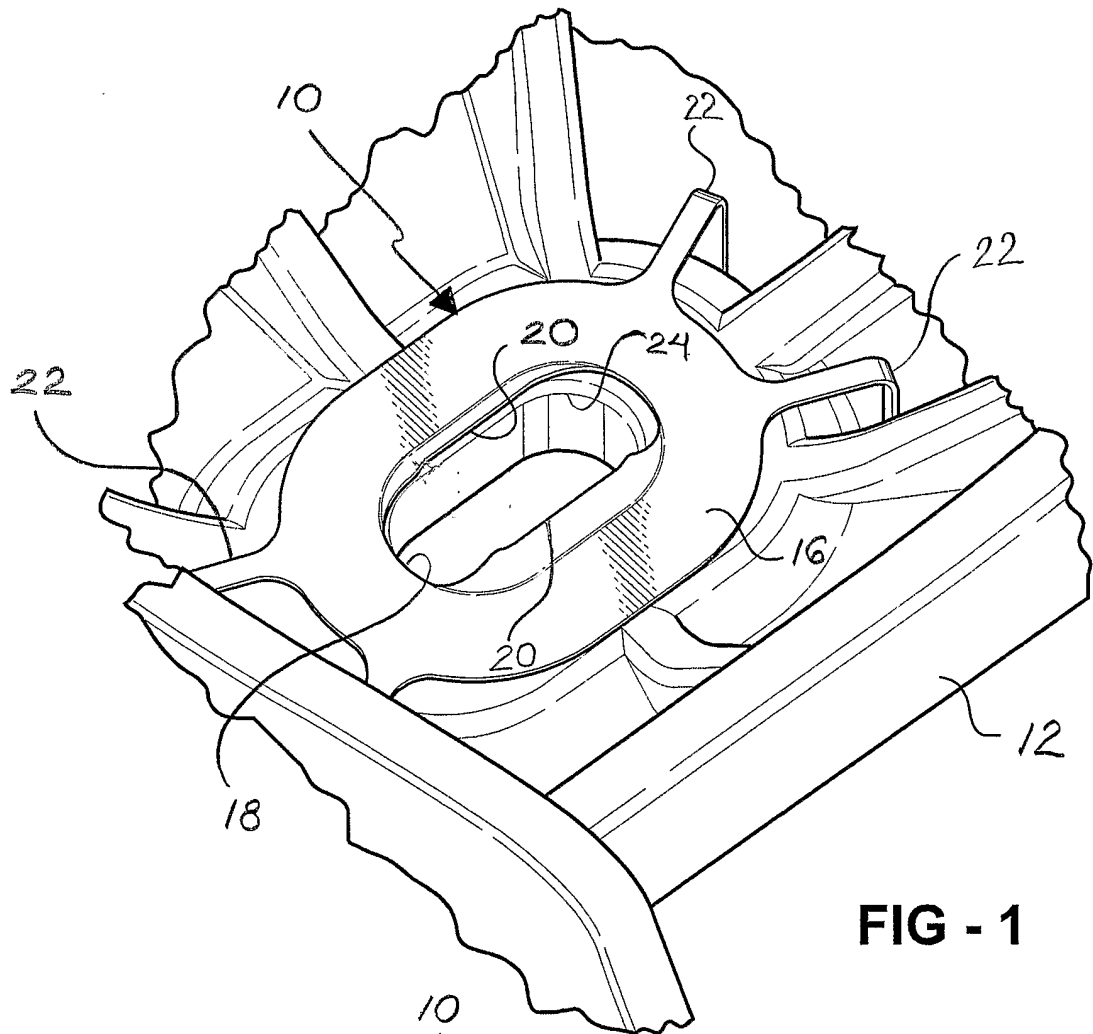


FIG - 1

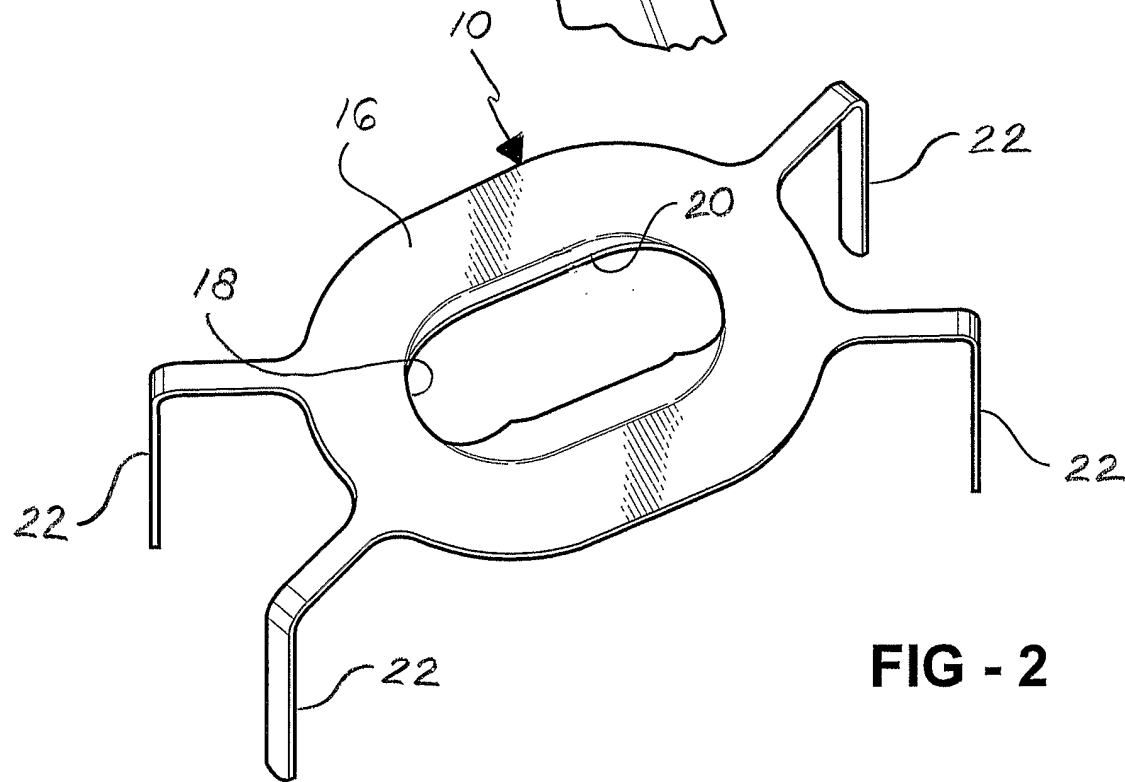
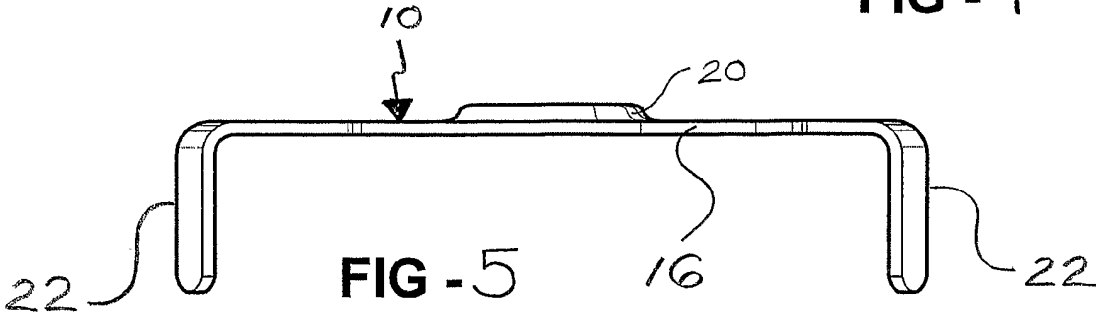
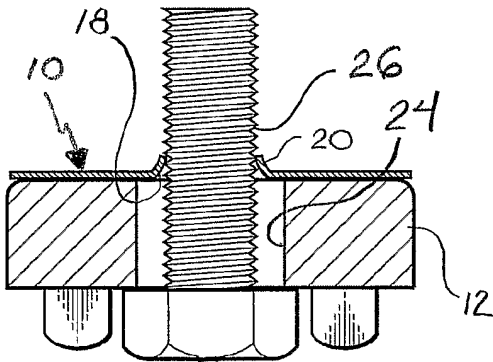
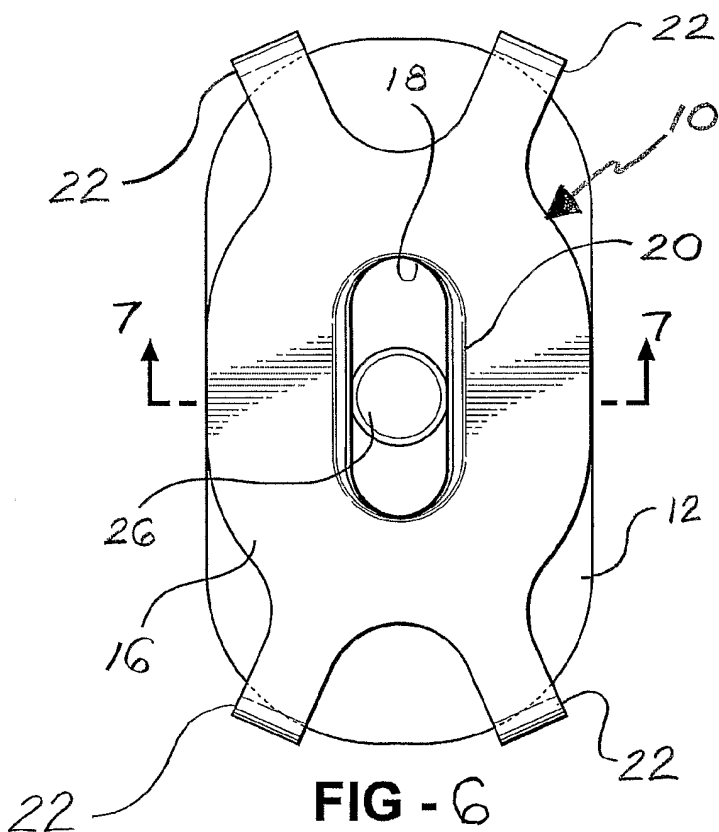
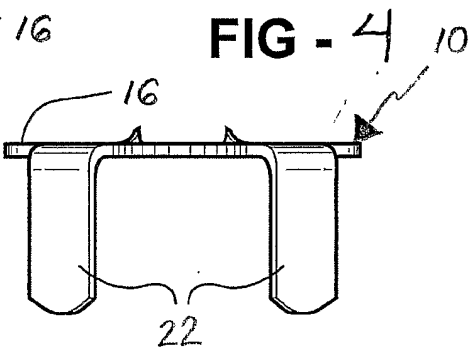
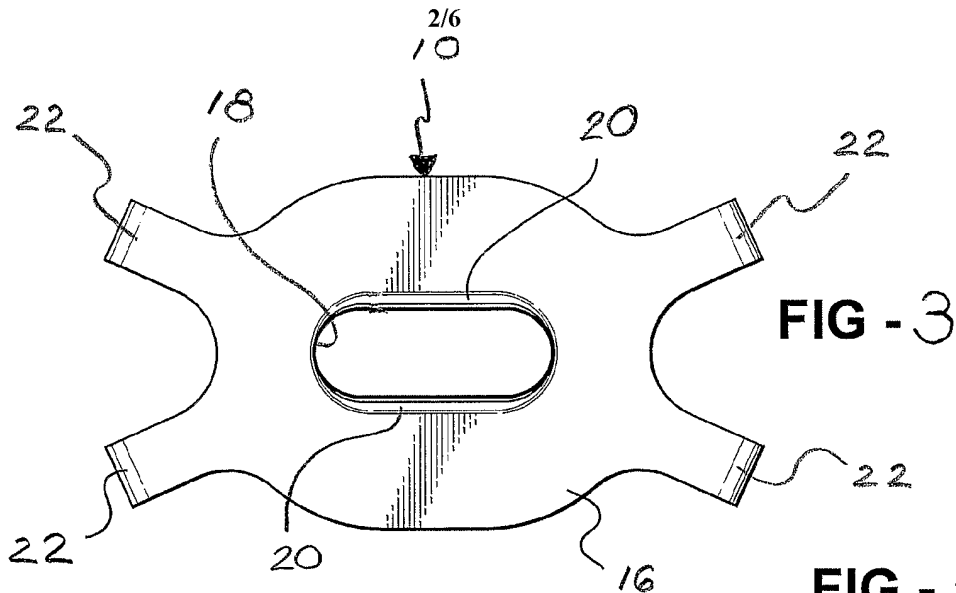


FIG - 2



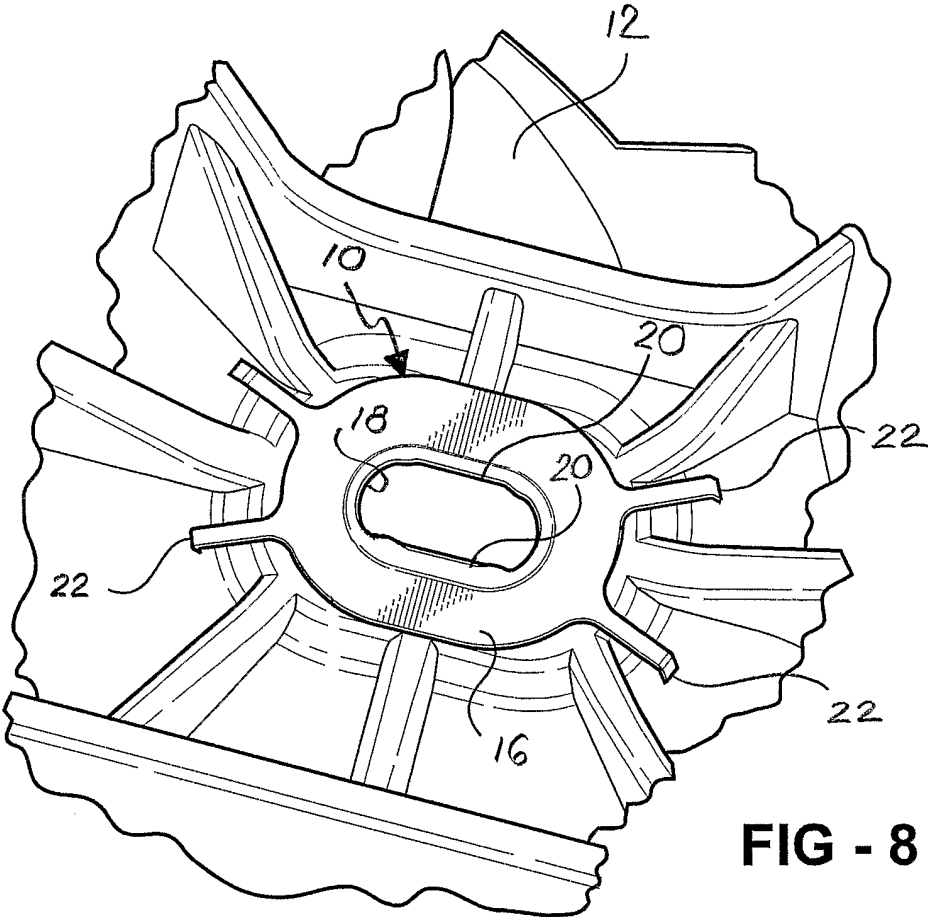


FIG - 8

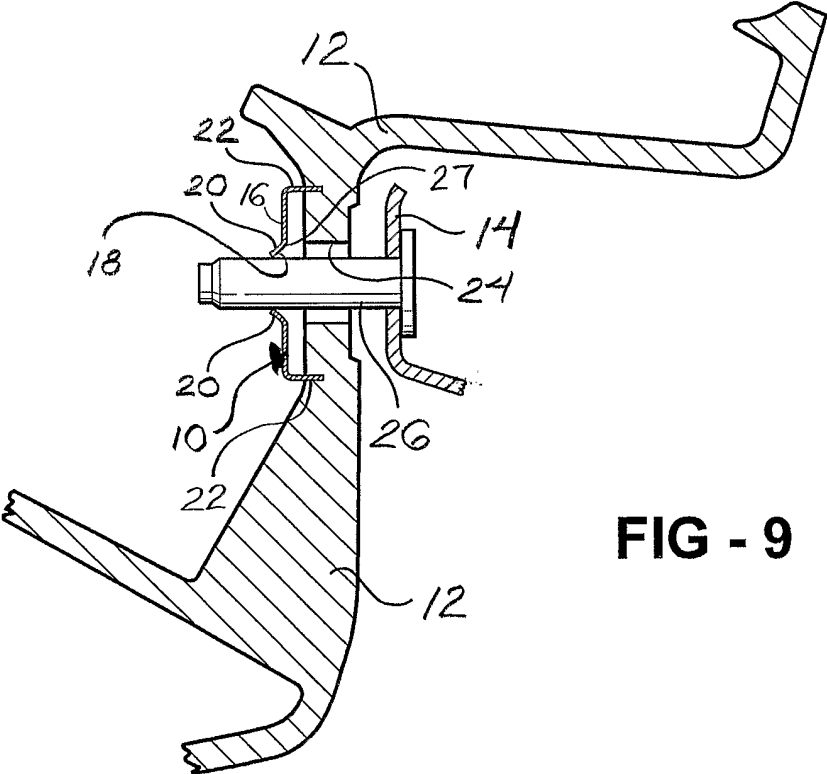
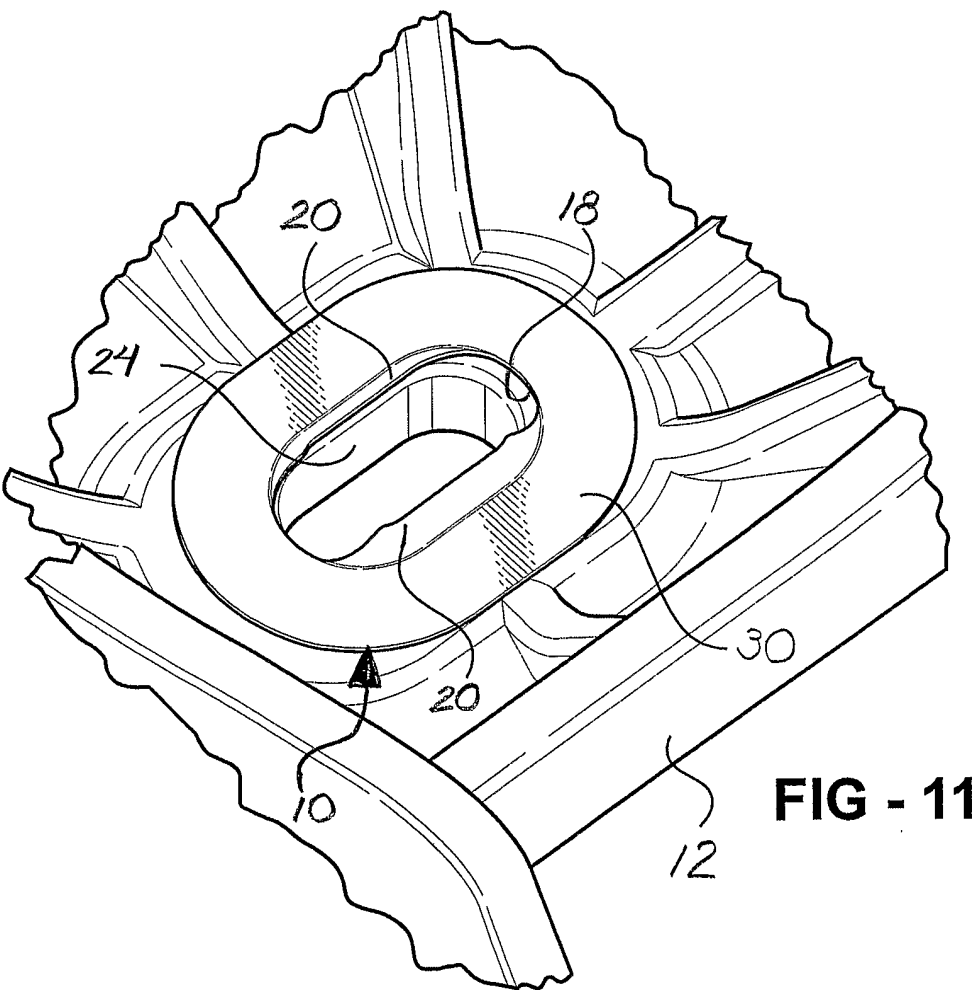
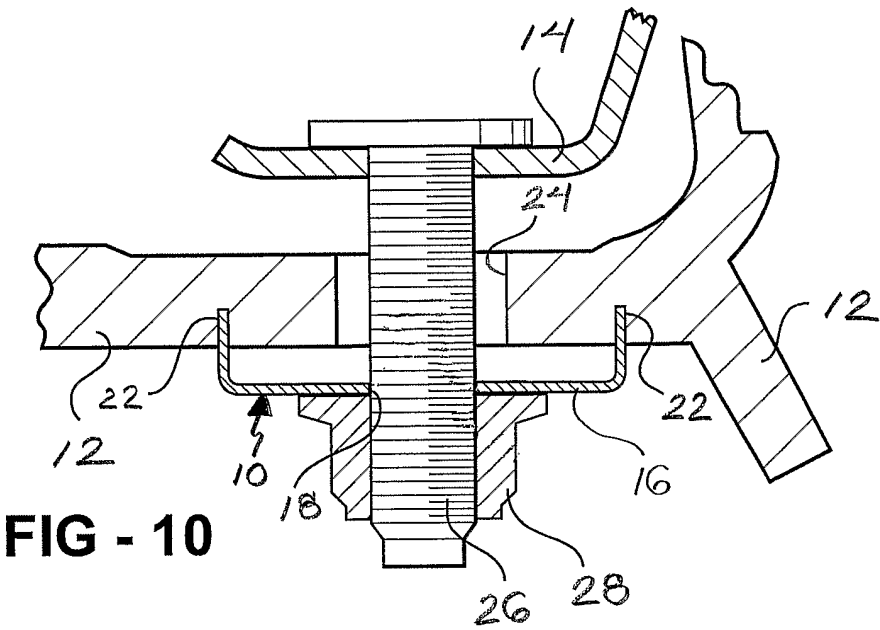


FIG - 9



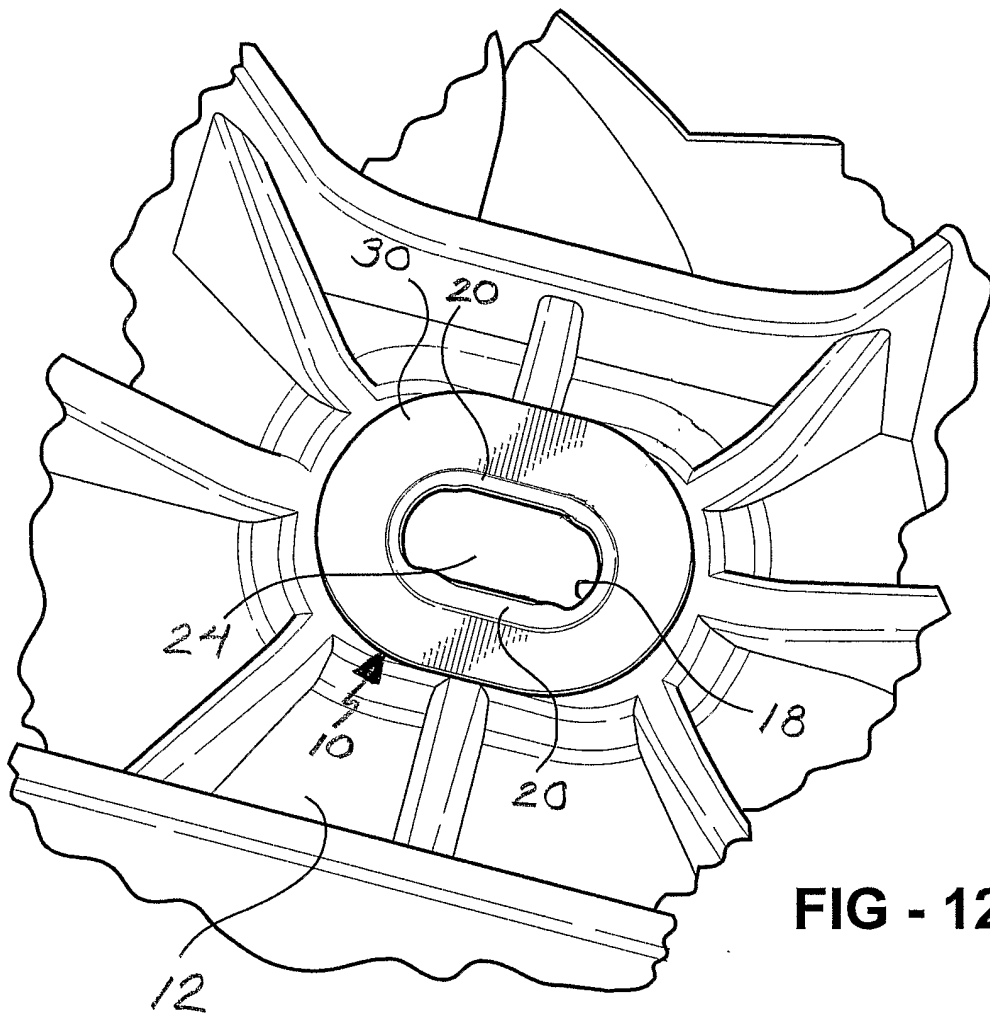


FIG - 12

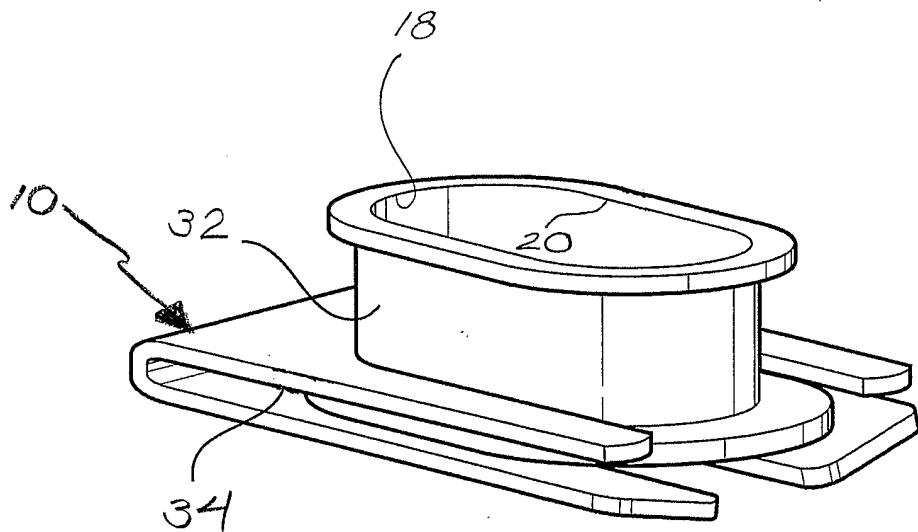


FIG - 13

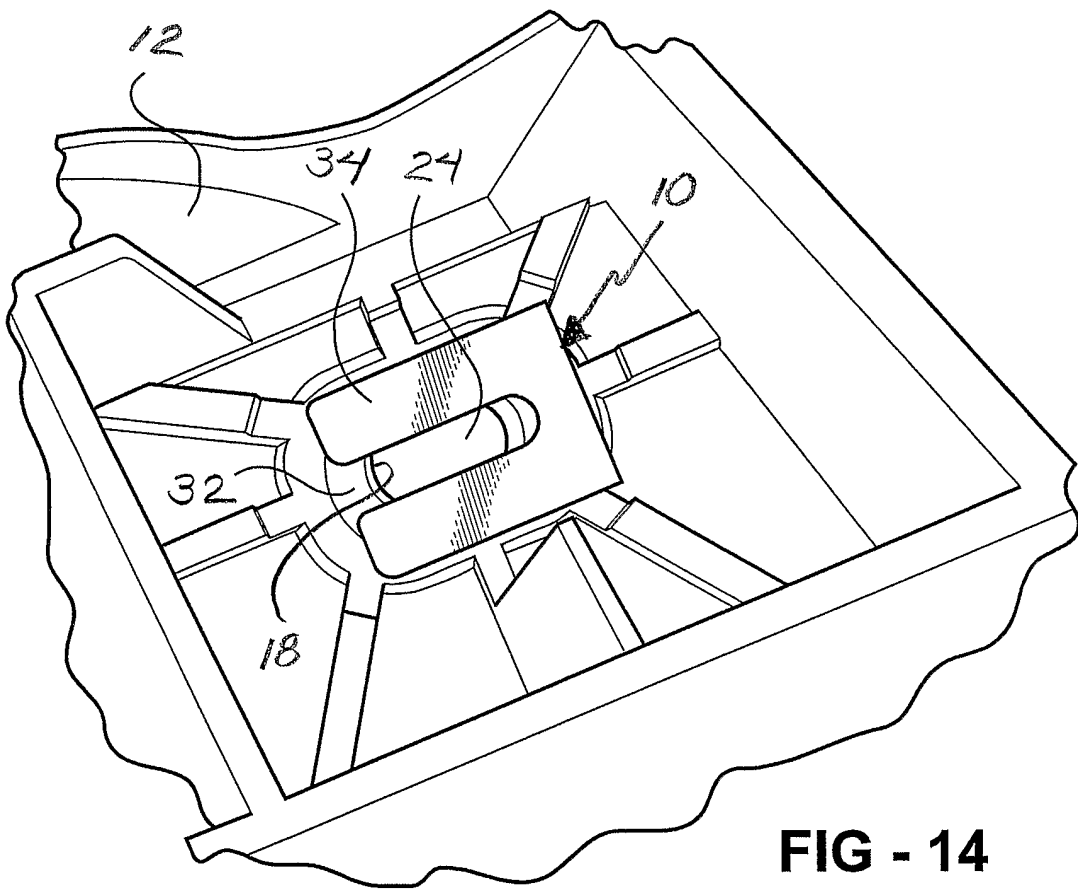


FIG - 14

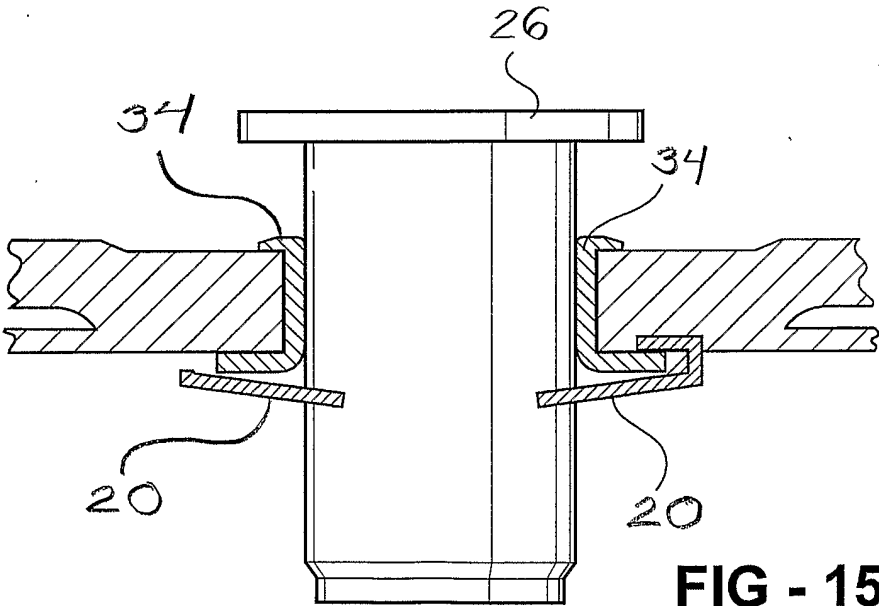


FIG - 15

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2005/025750

A. CLASSIFICATION OF SUBJECT MATTER
B60R3/00 F16B5/06 F16B37/04 F16B5/02

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
B60R F16B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category °	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 590 993 A (EMHART INC) 6 April 1994 (1994-04-06) column 2, line 53 - column 3, line 51 column 4, line 33 - column 5, line 33; figures 2,5,7,8,10,13,14 -----	1-3,5,6, 8-13,15
X	US 2003/184039 A1 (SCHUMACHER CHRIS) 2 October 2003 (2003-10-02) paragraphs '0026!, '0027!; figures 7-9 -----	1,2,4
A	US 2002/070527 A1 (TURGEON ROMAIN JOSEPH ALPHONSE) 13 June 2002 (2002-06-13) paragraphs '0021!, '0025!; figure 4 -----	1,5,11



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

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Date of the actual completion of the international search

3 November 2005

Date of mailing of the international search report

24/11/2005

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INTERNATIONAL SEARCH REPORT

Information on patent family members

International Publication No
PCT/US2005/025750

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0590993	A	06-04-1994	JP 2553547 Y2 JP 6032177 U	05-11-1997 26-04-1994
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