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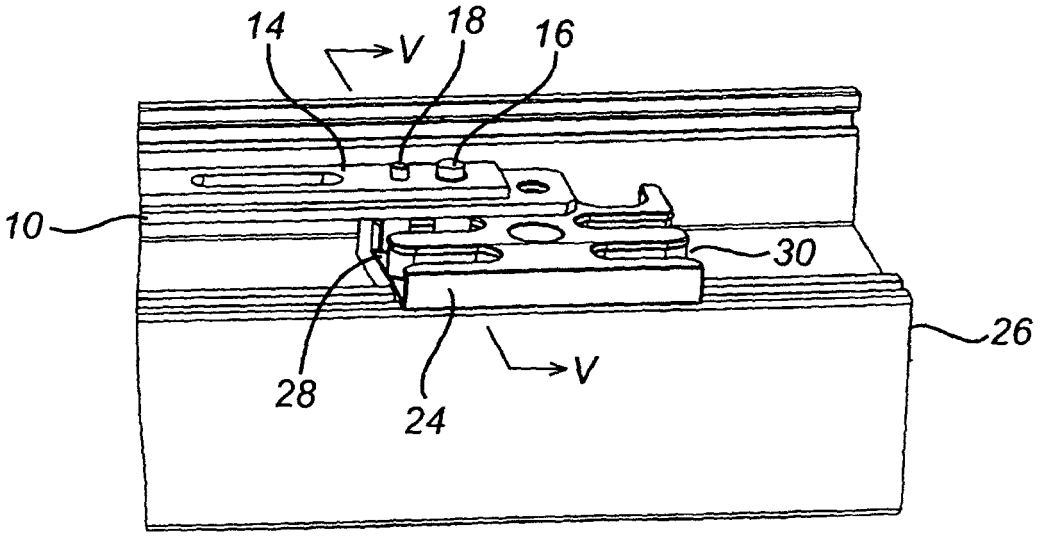
(54) A locking mechanism and parts therefor

(57) A bar 14 for an espagnolette locking mechanism and an espagnolette assembly including said bar 14. The bar 14 comprises a means 16 for engaging a keep, and a security device 18 for preventing rotation about the engagement means 16. Improved security is thereby provided.

FIG. 4



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Description

[0001] This invention relates to locking mechanisms, and in particular to a locking mechanism for an espagnolette assembly and a bar for such a mechanism.

[0002] Espagnolette assemblies are well known for locking vents, such as windows and doors, in fixed frames. In general, an espagnolette assembly comprises a drive mechanism mounted in or on a vent which, when activated by a handle, drives rods or bars which extend or retract from the sides of the vent into holes or keeps in the sides of the fixed frame.

[0003] Locking systems for espagnolette assemblies are well known in the art. For example, UK patent application GB 2164382A describes an espagnolette fastener for doors or windows comprising a plurality of spaced apart bolts for engagement with a corresponding plurality of keepers. The bolts are operated by an external handle which slides the bolts longitudinally along a rail plate to engage or disengage the keepers.

[0004] UK patent application GB 22701 10A describes a locking mechanism for a sash whereby a plurality of projections on an elongate carrier attached to the vent frame engage complementary retainers on the sash. The elongated carrier is shifted, to engage or disengage the plurality of projections, by means of turning a handle.

[0005] UK patent application GB 2241531A describes a keep, or keeper, for receiving a locking pin mounted on a movable espagnolette bar such that the associated espagnolette bar is held in a closed position, and a second channel, having a respective open end for receiving the locking pin, inclined from its open end away from the first channel to restrain the espagnolette bar in a partially open position.

[0006] A secure locking mechanism on windows and/or doors is essential to prevent unwanted intruders. The espagnolette locking mechanisms described above offer many advantages over conventional window locks in terms of security. However, there is always the need to improve security of espagnolette locking mechanisms as the methods of potential intruders become sophisticated. Current espagnolette assemblies rely on a bar, comprising means for engaging a keep. They suffer from the disadvantage that a force, applied perpendicular to the direction of travel of the locking bar, will generate a rotational force around the axis of the engagement means. This force may allow sufficient movement in the window/door to facilitate the insertion of a lever or jemmy between sash and frame, thereby increasing the likelihood of the locking mechanism being forced open.

[0007] With the foregoing in mind, the present invention aims to improve upon the security of the prior art locking mechanisms for espagnolette assemblies. The improved locking mechanism does so by providing a security device for preventing said rotation around the engagement means, thereby preventing movement of the window/door away from the frame. Although the present invention is particularly applicable to an espagnolette assembly, it is envisaged that the locking mechanism herein described could be used in other types of vent lock and, indeed, in other apparatus requiring a secure fastening means.

[0008] According to the present invention there is provided a bar for an espagnolette locking mechanism, the bar comprising means for engaging a keep, wherein the bar further comprises a security device which follows the engagement means in use into a keep without engaging the keep, wherein the security device prevents rotation about the engagement means during a security attack.

[0009] According to a preferred embodiment of the present invention the engagement means is a pin or spigot designed to engage a keep. Preferably the pin or spigot is mushroom headed and may be attached to the moveable bar by any means known in the art, including riveting and welding. The engagement means may be made from metal, plastics or other suitable material.

[0010] According to a preferred embodiment of the present invention the security device is a pin or spigot. The pin or spigot may be any shape suitable for engaging a keep, including mushroom headed. The security device may be attached to the moveable bar by any means known in the art; preferably, it is rigidly fixed to the bar. The security device may be made from metal, plastics or other suitable material.

[0011] According to a preferred embodiment of the present invention the security device engages the same keep as the engagement means. Preferably, the spacing between the engagement means and the security device is <5cm.

[0012] According to a preferred embodiment of the present invention the bar is flat. However, it may be other shapes.

[0013] According to a preferred embodiment of the present invention the engagement means and security device extended substantially perpendicular to the bar, although these angles may be altered if appropriate.

[0014] According to a preferred embodiment of the present invention the engagement means and security device each have substantially the same height.

[0015] According to a still further embodiment of the present invention, there is provided an espagnolette assembly comprising at least one bar as herein claimed. The espagnolette assembly may further comprise a keep having two engagement slots. One engagement slot will allow the window to be engaged in the locked position whilst the other will allow the window to be engaged in a night vent position. Preferably, the engagement slots are defined by flanges to retain the mushroom-headed engagement means within the slot.

[0016] According to a still further embodiment of the present invention, there is provided a vent comprising a sash, a fixed frame and an espagnolette assembly as herein described.

[0017] A specific embodiment of the present invention is now described, by way of example only, with reference to the accompanying drawings in which:

Figure 1 shows a perspective view of an espagnolette assembly comprising a first embodiment of locking mechanism according to the present invention.

Figure 2 shows a perspective view of a bar assembly of the present invention.

Figure 3 shows a perspective view of a passive universal keep of the present invention.

Figure 4 shows a perspective view of the bar assembly of Figure 2 engaged with the keep of Figure 3 in the locked position.

Figure 5 shows a cross-sectional view of the bar assembly engaged with keep through line V-V.

[0018] An espagnolette assembly (Figure 1) comprises two espagnolette rods 2, a drive mechanism 4 and a handle 6 to be mounted on a sash 8. Each espagnolette rod 2 comprises a fixed bar 10, further comprising a slot 12, and a moveable bar 14, further comprising a engagement means 16, which is mushroom headed 17, and a security pin 18. The fixed bar 10 is secured to the sash 8 and drive mechanism housing 20. The moveable bar 14 is positioned in a groove 22 between the sash 8 and fixed bar 10. The moveable bar 14 is moveably attached to the fixed bar 10 via the engagement means 16 which extends through the slot 12 in the fixed bar 10 and is flanged to prevent separation of the bars. The moveable bar 14 is also attached to gears within the drive mechanism 4. The espagnolette assembly (Figure 1) is activated by the handle 6, which rotates the gears within the drive mechanism 4. These gears extend or retract the moveable bars 14 in opposite directions. The bars can engage various keeps on the vent frame by methods known in the art.

[0019] A locking mechanism of the present invention for use in an espagnolette assembly comprises two parts. The first part (Figure 2) comprises an espagnolette rod 2 having a fixed bar 10 and a moveable bar 14. The fixed bar 10 further comprises a slot 12. The moveable bar 14 further comprises a mushroom headed 17 engagement means 16 and a security pin 18. The espagnolette assembly, when in use, is mounted on a sash 8.

[0020] The second part (Figure 3) comprises a universal keep 24 for mounting on a vent frame 26. The keep 24 comprises an engagement slot 28 for use in a locking position, a similar engagement slot 30 for use in a night vent position and two slotted fixing positions 32 to allow cam engagement adjustment, with a triangulated third circular final fixing position 34 to ensure keep stability following fixing. The engagement slots 28 & 30, are both flanged 31 to retain the mushroom headed 17 engagement means 16.

[0021] In use, with the vent in the closed position, rotation of the handle 6 engages the gears within the drive mechanism 4. These gears extend the moveable bars 14 causing both the engagement means 16 and the security pin 18 to engage the engagement slot 28 of the keep 24 (Figures 4 and 5). Alternatively, the vent may be positioned so as to allow engagement of the engagement means 16 and the security pin 18 with the night vent slot 30. This allows airflow through the vent whilst preventing access.

[0022] Reversing this process unlocks the mechanism. Thus, the moveable bar 14 is moved in the opposite direction by means of rotating the espagnolette handle 6 in an opposite direction, thereby retracting the engagement means 16 and security pin 18 from the engagement slot 28/30.

[0023] An espagnolette assembly of the present invention gives a clear advantage over the prior art by reducing the chance of a window or door being forced open. If a force is applied perpendicular to the direction of travel of the moveable bar 14 and to the axis of the engagement means 16, rotation around the axis of the engagement means 16 will be prevented by the security pin 18. This will subsequently prevent movement of the sash 8 away from the vent frame 26 and decrease the chance of a lever or jemmy being inserted between the sash 8 and vent frame 26.

[0024] It will, of course, be understood that the present invention has been described above purely by way of example, and that modifications of detail can be made within the scope of the invention.

Claims

1. A bar for an espagnolette locking mechanism, the bar comprising means for engaging a keep, wherein the bar further comprises a security device which follows the engagement means in use into a keep without engaging the keep, wherein the security device prevents rotation about the engagement means during a security attack.

2. A bar as claimed in claim 1, wherein the engagement means is a pin.

3. A bar as claimed in any preceding claim, wherein the engagement means is a mushroom headed pin.

4. A bar as claimed in any preceding claim, wherein the security device is a pin or spigot.

5. A bar as claimed in any preceding claim, wherein the security device is rigidly fixed to the bar.

6. A bar as claimed in any preceding claim, wherein the security device engages the same keep as the engagement means.

7. A bar as claimed in any preceding claim, wherein the bar is flat.

8. A bar as claimed in any preceding claim, wherein the engagement means and security device extended substantially perpendicular to the bar.

9. A bar as claimed in any preceding claim wherein the engagement means and security device each have substantially the same height.

10. A bar substantially as herein described above and illustrated in the accompanying drawings.

11. An espagnolette assembly comprising at least one bar as claimed in any preceding claim.

12. An espagnolette assembly as claimed in claim 11, further comprising a keep having two engagement slots.

13. An espagnolette assembly as claimed in claim 12, wherein each engagement slot is defined by flanges to retain the engagement means within the slot.

14. A vent comprising a sash, a fixed frame and a espagnolette assembly as claimed in any of claims 11-13.

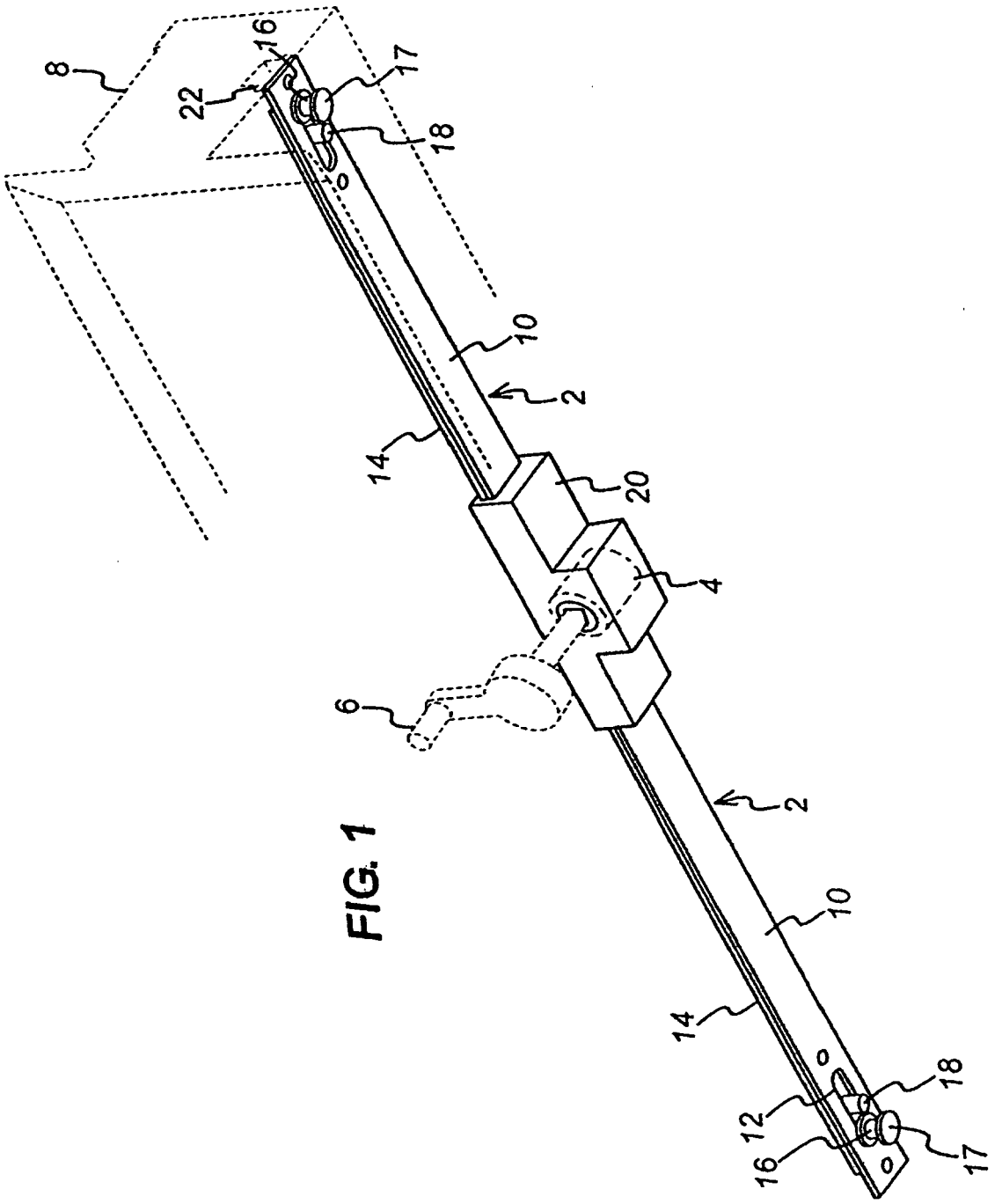


FIG. 1

FIG. 2

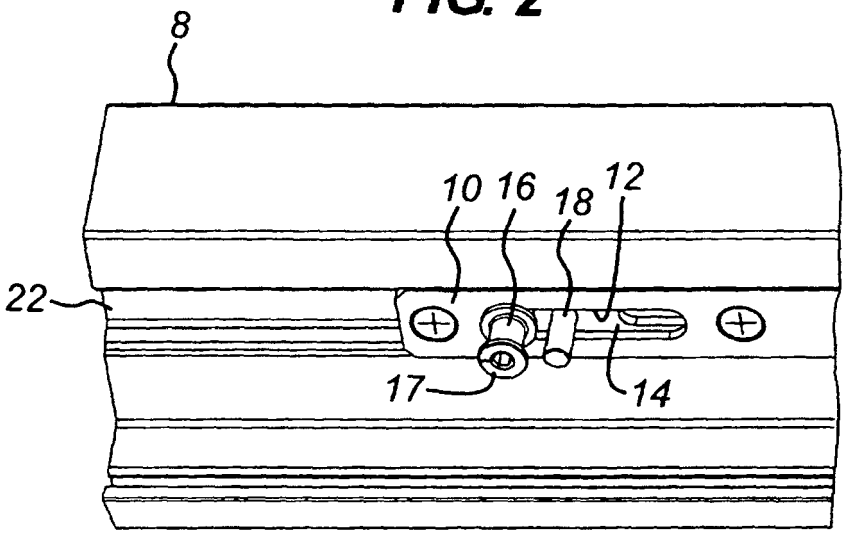


FIG. 3

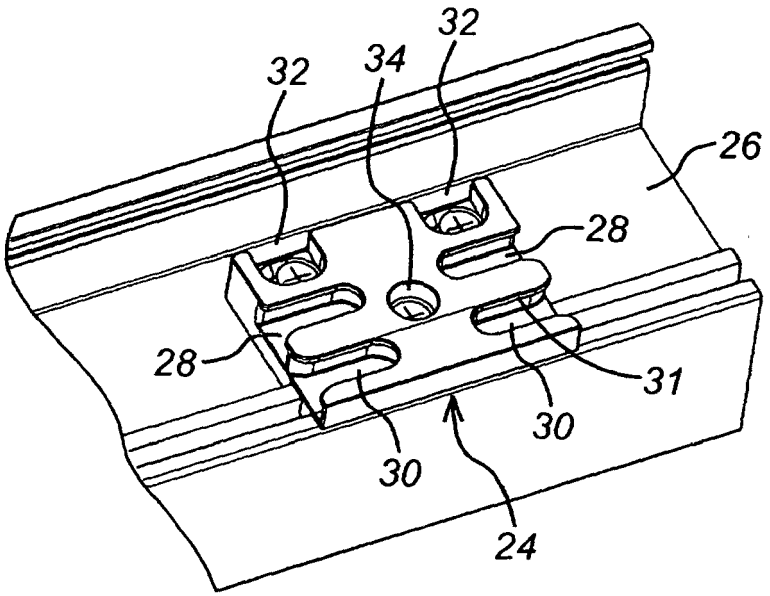


FIG. 4

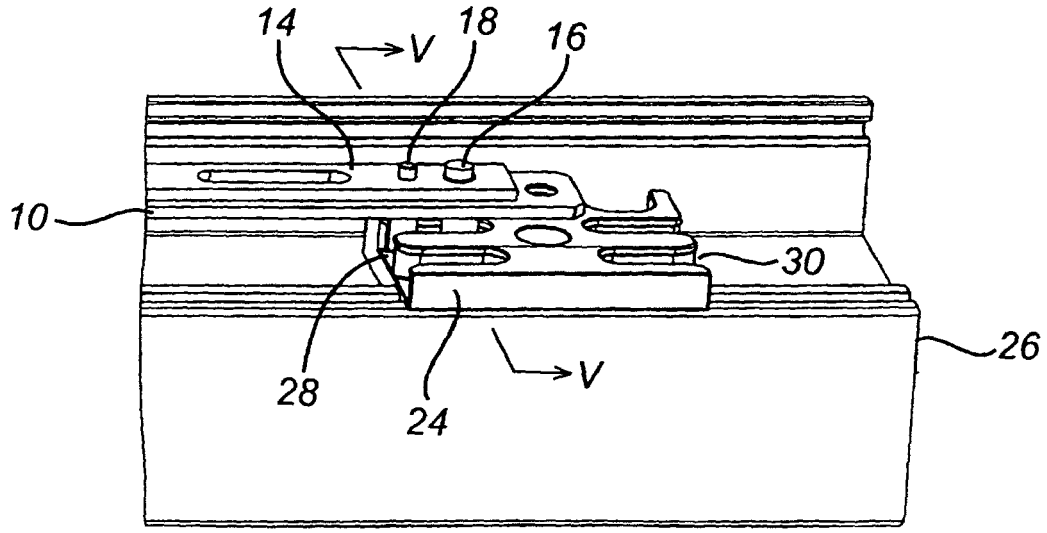
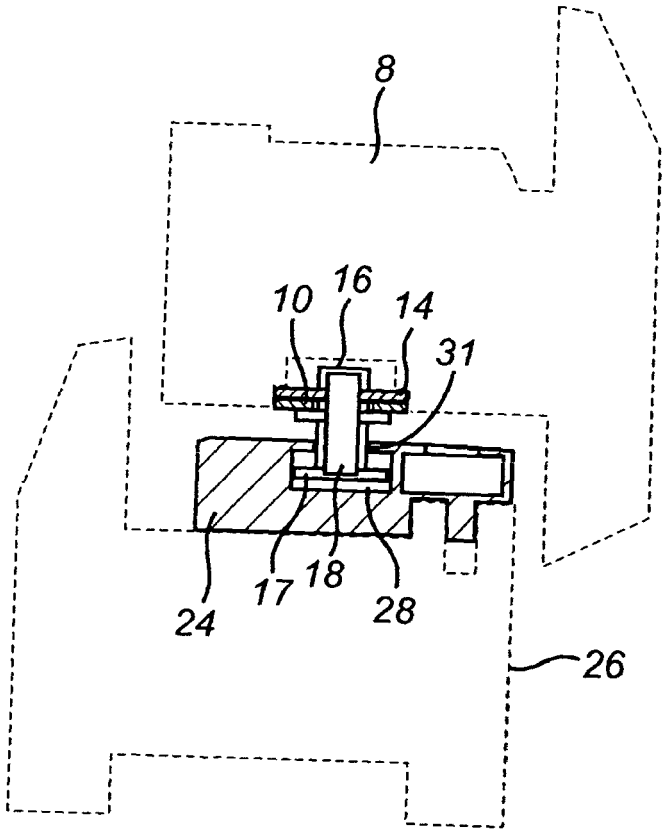


FIG. 5



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PARTIAL EUROPEAN SEARCH REPORT

which under Rule 45 of the European Patent Convention shall be considered, for the purposes of subsequent proceedings, as the European search report

Application Number EP 05 25 6838

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	WO 98/41718 A (SCHLEGEL SYSTEMS, INC; PARKER, RICHARD) 24 September 1998 (1998-09-24) * the whole document *	1-5,7-9, 11-14	INV. E05C9/18
X	EP 0 777 026 A (AUBI BAUBESCHLAEGE GMBH) 4 June 1997 (1997-06-04) * the whole document *	1-5,7-9, 11-14	

TECHNICAL FIELDS SEARCHED (IPC)

E05C

INCOMPLETE SEARCH

The Search Division considers that the present application, or one or more of its claims, does/do not comply with the EPC to such an extent that a meaningful search into the state of the art cannot be carried out, or can only be carried out partially, for these claims.

Claims searched completely :

Claims searched incompletely :

Claims not searched :

Reason for the limitation of the search:

see sheet C

Place of search	Date of completion of the search	Examiner
Munich	29 March 2006	Wagner, A

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

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INCOMPLETE SEARCH SHEET C

Application Number
EP 05 25 6838

Reason for the limitation of the search:

Present claim 10 relate to a reverence to the drawings without defining any technical features. Therefore claim 10 is unclear in the sense of Article 84 EPC and could not be searched.

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 05 25 6838

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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29-03-2006

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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EP 0777026 A	04-06-1997	AT 182953 T	15-08-1999
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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82