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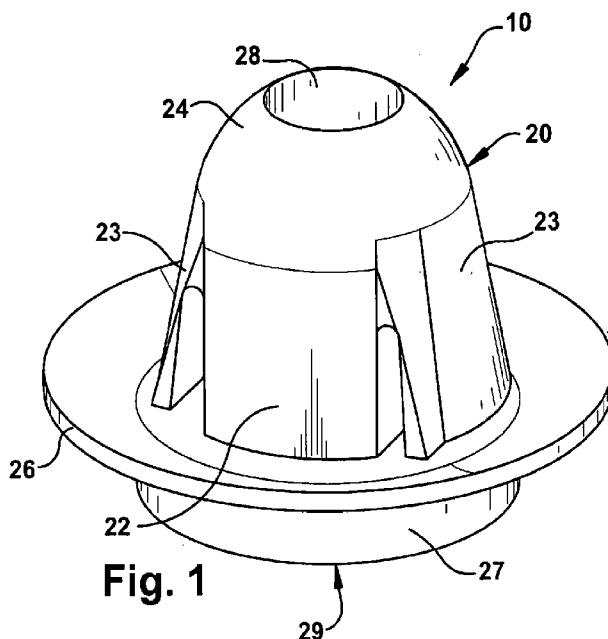
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(54) Title: TRIM CLIP



(57) Abstract: A clip having a body portion and a fastener portion is provided. The clip has an opening extending therethrough that is securable to a trim panel post. The fastener portion is retained at least partially within the opening. One or more prongs of the fastener portion secure the trim panel post to the clip. One or more spring-arms on the body portion are biased in an outward direction and snap or other fit into the body panel to secure the body panel to the clip.

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## TITLE

## TRIM CLIP

## CROSS-REFERENCE TO RELATED APPLICATIONS

[0001] This application claims benefit from U.S. Provisional Patent Application No. 60/966,589, entitled "Trim Clip," filed on August 29, 2007, which is hereby incorporated in its entirety by reference.

## FIELD OF THE INVENTION

[0002] The present invention relates to a fastener for coupling a first component to a second component, such as, an automotive trim panel to an automotive body panel.

## BACKGROUND

[0003] Trim panels are often employed as exterior components on automotive vehicles. One of the purposes of such exterior trim panels is to present an aesthetically pleasing appearance. Exterior trim panels are typically mounted to structural support members or other structural components of the automotive vehicle. For example, trim panels are often mounted to sheet metal body panels of an automotive vehicle.

[0004] At least one post is mounted to or integrally formed with a trim panel. The body panel has a corresponding aperture that is aligned with the post. Once the post is inserted

through the aperture, an operator typically maintains the trim panel in proper position with one hand, while using the other hand to install a fastener on the post to couple the trim panel to the body panel. Most commonly, the fastener employed in these operations is an acorn nut having self-threading capability. The acorn nut provides its own engaging threads on the post to secure the trim panel. The self-threading nuts do not allow for long-term durability nor do they achieve high clamping loads. For example, over time, trim panels are subject to becoming loose and often rattle against associated body panels, and, ultimately, trim panels may become completely disengaged from associated body panels and fall away from the vehicle.

[0005] Therefore, there is a significant need for a clip which allows trim panel installation to be a substantially one-handed operation while also providing a sufficient clamp load to maintain the trim panel in proper position over the long-term.

#### SUMMARY OF INVENTION

[0006] The present invention relates to a clip that may be used to secure a first component to a second component. The clip may have a body portion and a fastener portion is provided. The clip may have an opening extending therethrough that is securable to a first component, such as a trim panel post. The fastener portion may be retained at least partially within the opening. One or more prongs of the fastener portion may secure the first component to the clip. One or more spring-arms on the body portion are biased in an outward direction and snap or other fit into a second component, such as a body panel to secure the body panel to the clip.

### BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

[0007] Objects and advantages together with the operation of the invention may be better understood by reference to the following detailed description taken in connection with the following illustration, wherein:

[0008] Fig. 1 is a first perspective view of a trim clip;

[0009] Fig. 2 is a second perspective view of the trim clip of Fig. 1;

[0010] Fig. 3 is an environmental view showing a trim clip in locking engagement with a trim panel;

[0011] Fig. 4 is an environmental view showing a trim clip rigidly secured to a body panel.

### DETAILED DESCRIPTION OF THE INVENTION

[0012] While the present clip is described with reference to the preferred embodiment described herein, it should be clear that the present invention should not be limited to such an embodiment. Therefore, the description of the embodiment provided herein is illustrative only and should not limit the scope of the invention as claimed.

[0013] In the illustrative embodiment, the present invention may be used to secure a first component to a second component. Although the description below may relate specifically to use of the present invention with a trim panel and a body panel, a person

having ordinary skill in the art will appreciate that the present invention may be used to secure other components and objects.

[0014] An embodiment of a use of the present invention relates to securing a trim panel to a body panel. Trim panels typically include a post extending therefrom, and body panels typically include corresponding apertures for receiving the post. The present clip may be positioned about the post whereby the post and the clip are lockingly engaged. The post and the clip may be inserted or otherwise positioned within a body panel aperture such that the clip rigidly secures the trim panel to the body panel. While the present clip is described as coupling a trim panel to a body panel, it will be appreciated that the present clip may have a wide range of applications, and, thus, is not limited to only applications involving coupling trim panels to body panels.

[0015] Referring now to Figs. 1-4, a trim clip 10 is shown. The clip 10 generally comprises a body portion 20 and a fastener portion 30. The fastener portion 30 comprises an annular base 35 and a central aperture 40 for receiving a post 110 of a trim panel 100. The fastener portion 30 may be formed from any sufficiently durable and resilient material, including but not limited to metal, polymer, composite material, or the like.

[0016] A plurality of prongs 45 may extend radially from the base 35. For example, the prongs 45 may extend toward the central aperture 40. The prongs 45 are operable to lockingly engage the post 110. In an embodiment, the prongs 45 may be at an angle relative to the base 35. The post 110 may be inserted through the central aperture 40 and engage the prongs 45 to prevent the post 110 from being withdrawn therefrom. While

not required, the post 110 may include one or more ribs for enhancing the locking engagement between the prongs 45 and the post 110.

[0017] The body portion 20 has a projection 22 which includes a central opening 28 for also receiving the post 110. The projection 22 may also have a generally domed end 24 to assist in properly aligning the clip 10 with a body panel aperture (not shown). For example, the domed end 24 may be shaped to properly align the clip 10 with respect to the body panel aperture.

[0018] One or more snap-arms 23 may be positioned on the projection 22. For example, the snap-arms 23 may be positioned on the side of, or otherwise disposed about the perimeter of, the projection 22. In an embodiment, the snap-arms 23 may be integrally formed with the projection 22. The snap-arms 23 may be movable in a direction toward the central opening 28. The snap-arms 23 may be biased or otherwise forced outward to an outward position with respect to the central opening 28. The snap-arms 23 may be moved inward to an inward position to secure to the aperture of the body panel 200. The snap-arms 23 may be operable to initially retain the clip 10 within the aperture of the body panel 200. In such an embodiment, the operator may apply a subsequent force to further insert the clip 10 into the body panel aperture. To this end, the snap-arms 23 may snap fit or otherwise secure to a component, such as a body panel.

[0019] A tensioner 26 may extend radially from the base of the projection 22. For example, the tensioner 26 may extend a distance from the central opening 28 that is greater than the distance in which the projection 22 and/or the snap-arms 23 extend from

the central opening 28. The tensioner 26 provides sufficient clamp load to rigidly secure the trim panel 100 to the body panel 200. A wall 27 may extend from the bottom of tensioner 26 and thereby defines a recess 29. In an embodiment, the recess 29 is in coaxial alignment with the central opening 28. The recess 29 may be configured to lockingly engage the fastener portion 30 such that the central aperture 40 of the fastener portion 30 is in coaxial alignment with central opening 28. For example, the internal portion of the wall 27 may include an annular ridge or other feature capable of retaining the fastener portion 30 within the recess 29. The wall 27 may have a diameter or other dimension that is less than the diameter or size of the fastener portion 30. The fastener portion 30 may be pressed or otherwise forced into the wall 27 such that the fastener portion 30 is maintained within the central opening 28.

[0020] In an embodiment, the fastener portion 30 may be attached to or secured to within the recess 29 by an adhesive, spot welding, ultrasonic welding, or any other manner of securing the fastener portion 30 known to a person having ordinary skill in the art. The body portion 20 may be formed from any sufficiently durable and resilient material, including but not limited to metal, polymer, composite material, or the like.

[0021] In use, the fastener portion 30 is disposed within the recess 29 of the body portion 20. Alternatively, the body portion 20 and fastener portion 30 may be formed as an integral piece. In any case, the post 110 extending from the trim panel 100 may be inserted through the central aperture 40 of the fastener portion 30 and the central opening 28 of the snap 20 whereby the clip 10 and trim panel 100 are lockingly engaged via the

prongs 45. The domed end 24 of the body portion 20 may then be introduced to an aperture of a body panel 200 and pressed therethrough until the snap-arms 23 initially engage the body panel aperture. Force may be applied to the trim panel 100, preferably in close proximity to the clip 10, whereby the clip 10 is further inserted into the body panel aperture such that the tensioner 26 is passed through the body panel aperture. Once inserted, the tensioner 26 provides a sufficient clamp load whereby the body panel 200 and trim panel 100 are rigidly secured to one another.

[0022] The invention has been described above and, obviously, modifications and alternations will occur to others upon a reading and understanding of this specification. The claims as follows are intended to include all modifications and alterations insofar as they come within the scope of the claims or the equivalent thereof.



## CLAIMS

Having thus described the invention, the following is claimed as the invention:

1. A clip for securing a first component to a second component comprising:  
  
a body portion having an opening formed therethrough;  
  
a spring-arm extending from the body portion, the spring-arm biased at an outward position from the body portion, wherein force applied to the spring-arm moves the spring-arm toward the opening to secure the spring arm to the first component; and  
  
a fastener portion retained within the opening, the fastener portion having a plurality of prongs for securing to the second component.
2. The clip of claim 1 wherein the fastener portion is integrally formed with the body portion.
3. The clip of claim 1 further comprising:  
  
a wall or ridge for retaining the fastener portion within the body portion.
4. The clip of claim 1 wherein fastener portion is separable from the body portion.
5. The clip of claim 1 further comprising:  
  
a projection extending from the body portion and outward from the opening.
6. The clip of claim 5 wherein the projection has a domed end at one end of the clip.

7. The clip of claim 1 further comprising:

a tensioner extending radially from the spring-arm and sized to secure about the first component.

8. The clip of claim 1 wherein a wall extends from the tensioner.

9. The clip of claim 1 wherein the wall has a recess that has a diameter or size less than a size or diameter of the fastener portion such that the fastener portion is retained within the opening.

10. The clip of claim 9 wherein the wall is located on an opposite side of the tensioner than the spring-arm.

11. The clip of claim 9 wherein the size of the opening is greater at the wall than the size of the opening at the spring-arm.

12. A clip for securing a body panel to a trim panel having a post extending therefrom, the clip comprising:

a body portion having a central opening sized and shaped for receiving the post;

a fastener portion disposed at least partially within the central opening; and

one or more prongs connected to the fastener portion and extending at least partially within the central opening, the one or more prongs securable to the post.

13. The clip of claim 12 further comprising:

a plurality of spring-arms positioned about the body portion, the spring-arms biased in a first direction.

14. The clip of claim 13 wherein the spring-arms are engagable with an aperture in the body panel and securing the body panel to the clip.

15. The clip of claim 12 further comprising:

a ridge positioned within the central opening for retaining the fastener portion.

16. The clip of 15 wherein the ridge has a size smaller than the size of the fastener portion.

17. A method for securing a trim panel to a body panel comprising the steps of:

providing a clip having an opening extending therethrough, the clip having a fastener portion with a plurality of prongs and a body portion having at least one snap-arm capable of moving from an outward position to an inward position with respect to the opening;

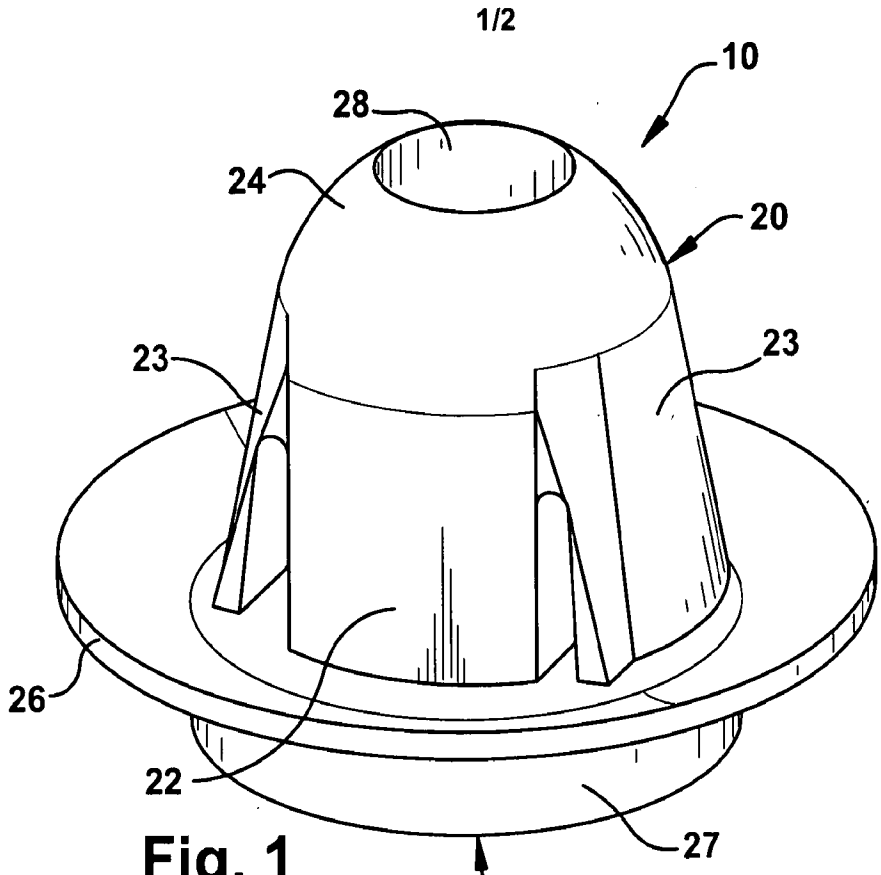
positioning a portion of the trim panel within the central opening;

securing the portion of the trim panel to the clip by use of the plurality of prongs;

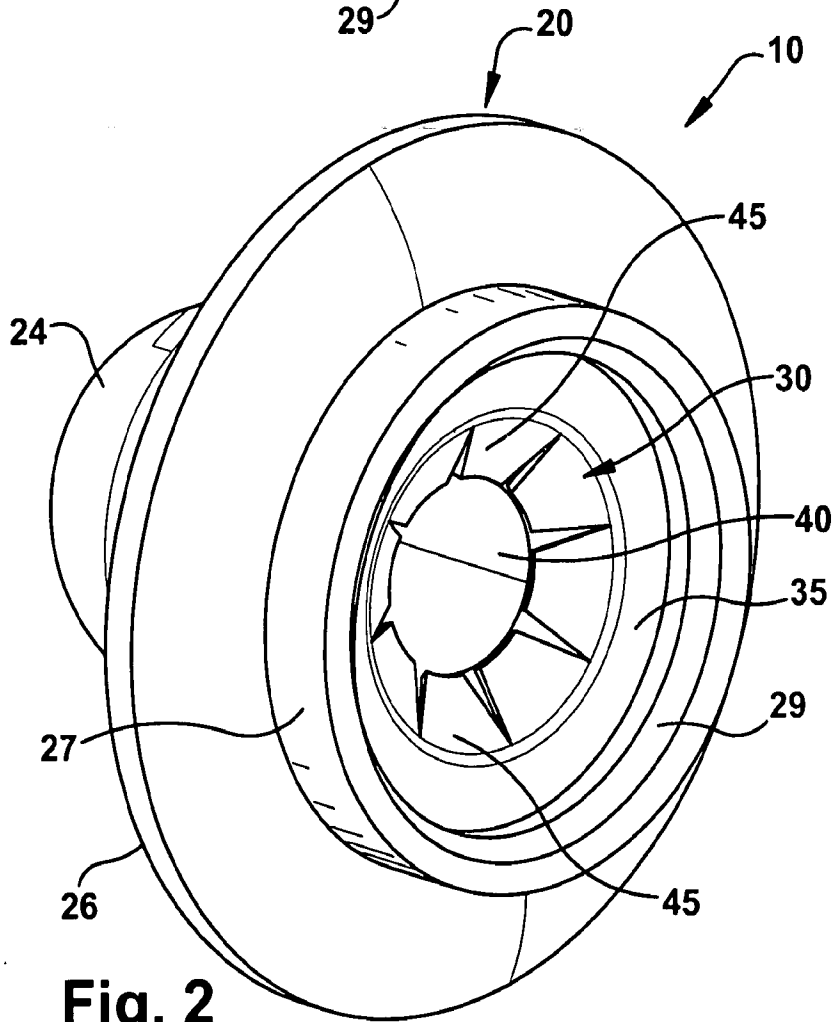
and

inserting the clip into the body panel such that the spring-arm secures the clip to the body panel.

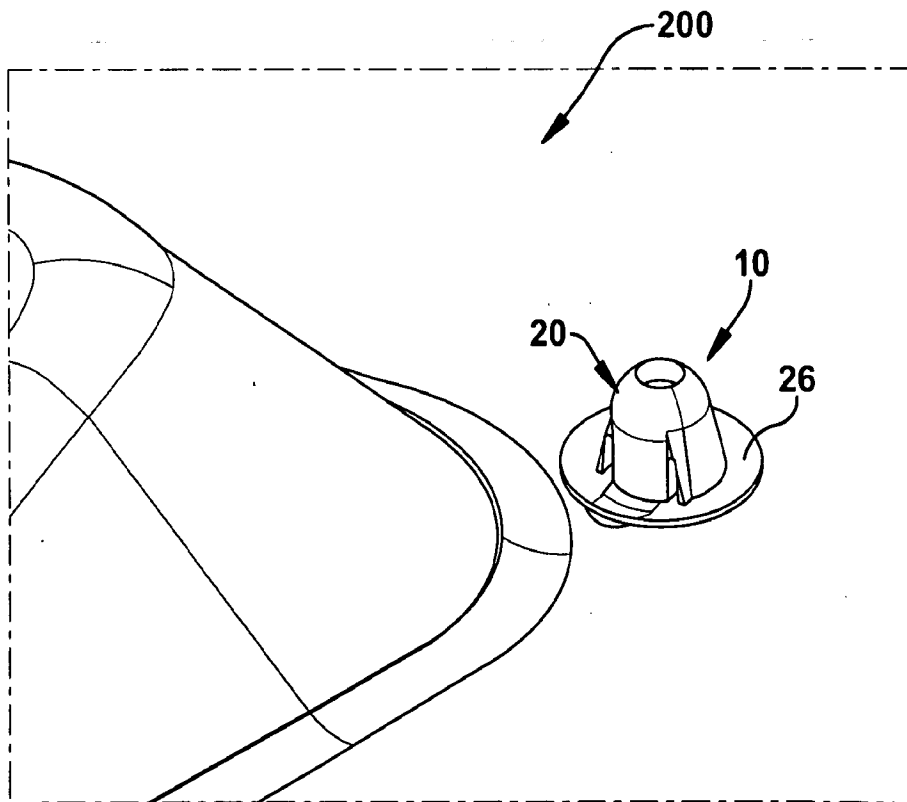
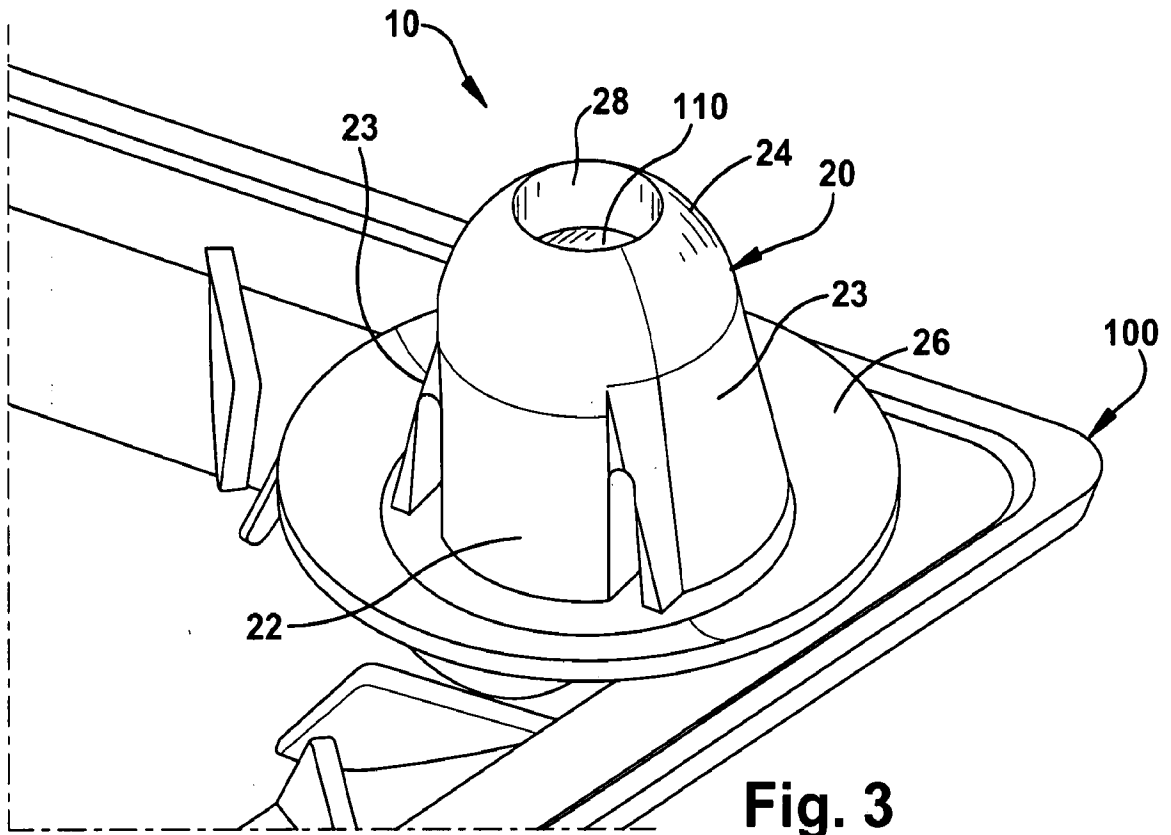
18. The method of claim 17 wherein inserting the clip into the body panel moves the spring-arm from the outward position to the inward position.
19. The method of claim 18 wherein the spring-arm biases to the outward position to secure the clip to the body panel.
20. The method of claim 17 wherein the fastener portion is retained within the opening of the clip.



**Fig. 1**



**Fig. 2**



## INTERNATIONAL SEARCH REPORT

International application No.

PCT/US2008/010245

## A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - F16B 2104 (2008.01)

USPC - 411/182

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)

IPC(8) - A44B 17/00; F16B 21/04(2008.04)

USPC - 24/289, 292, 297; 411/182

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 practicable, search terms used)

PatBase

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X ---	US 5,291,639 A (BAUM ET AL.) 08 March 1994 (08.03.1994) see entire document.	12-14 ---
Y		1-11, 15-20
Y	JP 2003-139113 A (NAGASAWA) 14 May 2003 (14.05.2003) see entire document.	1-11, 15-20
A	US 5,871,320 (KOVAC) 16 February 1999 (16.02.1999) see entire document.	1-20
A	US 2006/0248691 A1 (ROSEMANN) 09 November 2006 (09.11.2006) see entire document.	1-20.

 Further documents are listed in the continuation of Box C.

\* Special categories of cited documents:

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"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"&amp;" document member of the same patent family

Date of the actual completion of the international search

02 November 2008

Date of mailing of the international search report

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