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 DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT,
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 TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW,
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[Continued on next page]

(54) Title: FASTENER AND ATTACHMENT METHOD

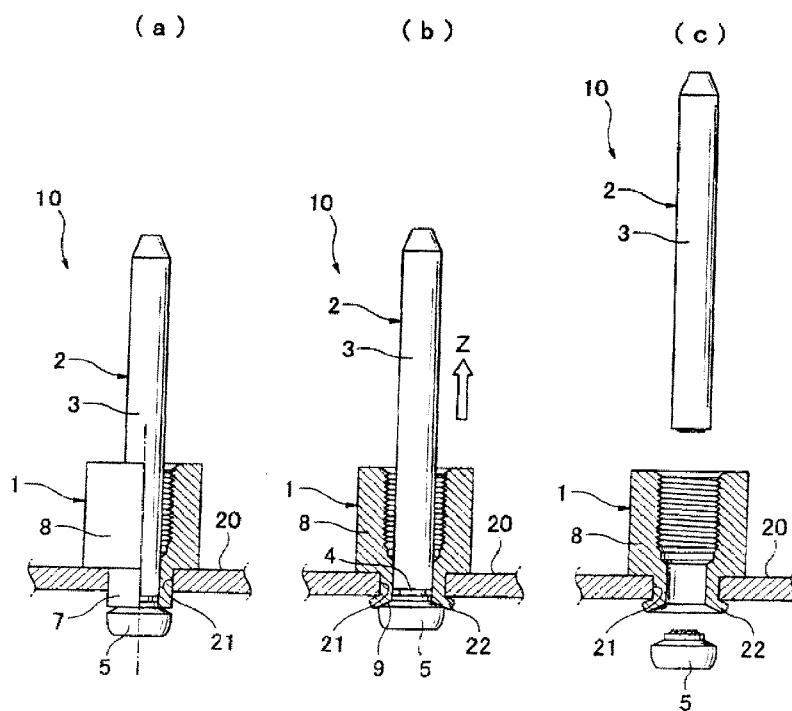


FIG. 2

(57) Abstract: A fastener (10) including a
 spanner nut (1) and a mandrel (2). The span-
 ner nut (1) has a hollow main body (8) with
 female threads on an inner surface. Tip re-
 gion (7) extends from the nut body (8) with
 a diameter smaller than the diameter thereof.
 The spanner nut (1) has a setting part at the
 tip region (7), and the mandrel body has a
 breaking portion (4) of a diameter smaller
 than the diameter thereof. The spanner nut
 (1) is made so that when only the tip region
 (7) is completely inserted into a hole in a
 workpiece and the mandrel (2) is passed
 through the hollow interior of the spanner
 nut (1) and pulled up, the setting portion is
 deformed as its diameter expands, and the
 main body and the head (5) are broken apart
 at the breaking portion (4).

**Declarations under Rule 4.17:**

— *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments (Rule 48.2(h))*

Published:

— *with international search report (Art. 21(3))*

(88) Date of publication of the international search report:

23 September 2010

A. CLASSIFICATION OF SUBJECT MATTER***F16B 19/10(2006.01)i, F16B 19/08(2006.01)i, F16B 19/04(2006.01)i, F16B 37/04(2006.01)i, F16B 37/00(2006.01)i***

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: F16B 13/04

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)

eKOMPASS(KIPO internal) and keywords: blind, one-side, fastener, nut, break, cut off

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 2002-0127080 A1 (AASGAARD, A.L. PEPPER) 12 SEPTEMBER 2002 See Paragraph 51; Claim 1 and Figures 9-11.	1-4
X	US 2004-0223832 A1 (AASGAARD, A.L. PEPPER) 11 NOVEMBER 2004 See Paragraph 36; Claim 1 and Figures 12.	1-4
A	US 2007-0248432 A1 (CASSATT, GARY G. et al) 25 OCTOBER 2007 See Abstract and Figures 1-4.	1-4

☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"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

"&" document member of the same patent family

Date of the actual completion of the international search

26 JULY 2010 (26.07.2010)

Date of mailing of the international search report

02 AUGUST 2010 (02.08.2010)

Name and mailing address of the ISA/KR

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gu, Daejeon 302-701, Republic of Korea

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INTERNATIONAL SEARCH REPORTInternational application No.
PCT/US2009/068449**Box No. II Observations where certain claims were found unsearchable (Continuation of item 2 of first sheet)**

This international search report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
because they relate to subject matter not required to be searched by this Authority, namely:
2. ☐ Claims Nos.:
because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:
3. ☐ Claims Nos.:
because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box No. III Observations where unity of invention is lacking (Continuation of item 3 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

Claims 1-3 and claims 4 have a common technical feature of employing a fastener with a spanner nut and a mandrel such that a tip region of the spanner nut is crushed and expanded to fasten one or more sheet metal work pieces together as claimed in claim 1. However, this feature lacks novelty and/or inventive step with respect to either US 2002-0127080 A1 or US 2004-0223832 A1 cited in this ISR.

Thus, there is no technical relationship left over the prior art between these inventions, leaving the claims without a single general inventive concept.

Hence there is lack of unity "a posteriori"(PCT Rules 13.1 and 13.2)

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.
2. ☒ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.
3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:
4. ☐ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:

Remark on Protest

- ☐ The additional search fees were accompanied by the applicant's protest and, where applicable, the payment of a protest fee.
- ☐ The additional search fees were accompanied by the applicant's protest but the applicable protest fee was not paid within the time limit specified in the invitation.
- ☐ No protest accompanied the payment of additional search fees.

INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2009/068449

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
US 2002-0127080 A1	12.09.2002	AT 367227 T	15.08.2007
		AU 2002-239914 A8	24.07.2002
		DE 60221252 D1	30.08.2007
		DE 60221252 T2	17.04.2008
		DK 1409179 T3	12.11.2007
		EP 1409179 A4	13.04.2005
		EP 1409179 A2	21.04.2004
		EP 1409179 B1	18.07.2007
		ES 2290272 T3	16.02.2008
		US 2005-0207862 A1	22.09.2005
		US 06796759 B2	28.09.2004
		WO 2002-055231 A2	18.07.2002
		WO 0205-5231A8	08.01.2004
		WO 0205-5231A3	05.06.2003
		WO 2002-055231 A3	18.07.2002
US 2004-0223832 A1	11.11.2004	US 2006-0165505 A1	27.07.2006
US 2007-248432 A1	25.10.2007	None	