



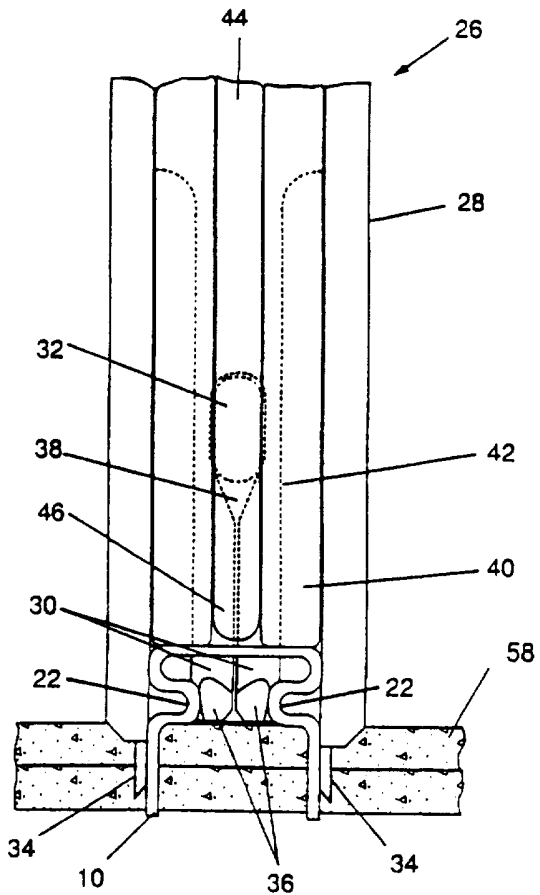
INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<p>(51) International Patent Classification <sup>6</sup> : <b>A61B 17/04</b></p>	<p><b>A3</b></p>	<p>(11) International Publication Number: <b>WO 97/12729</b> (43) International Publication Date: 10 April 1997 (10.04.97)</p>
<p>(21) International Application Number: PCT/US96/15077 (22) International Filing Date: 20 September 1996 (20.09.96) (30) Priority Data: 08/538,001 2 October 1995 (02.10.95) US (71) Applicant: TRACOR AEROSPACE, INC. [US/US]; 6500 Tracor Lane, Austin, TX 78725-2070 (US). (72) Inventors: KELLEY, Mark; 110 Sunset Ridge, Dripping Springs, TX 78620 (US). MCDUFFIE, Phil; 10110 Vaquero Trail, Austin, TX 78759 (US). (74) Agents: SHAFFER, J., Nevin, Jr. et al.; Shaffer &amp; Culbertson, Building One, Suite 360, 1250 Capital of Texas Highway South, Austin, TX 78746 (US).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BB, BG, BR, BY, CA, CH, CN, CZ, DE, DK, EE, ES, FI, GB, GE, HU, IS, JP, KE, KG, KP, KR, KZ, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, TJ, TM, TR, TT, UA, UG, UZ, VN, ARIPO patent (KE, LS, MW, SD, SZ, UG), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b> <i>With international search report.</i></p> <p>(88) Date of publication of the international search report: 2 October 1997 (02.10.97)</p>	

(54) Title: STAPLE, STAPLING APPARATUS, AND STAPLING METHOD

(57) Abstract

A staple (10) and stapler (26) for injecting the staple (10). The staple (10) has a rectilinear bridge part (12) from which depend oppositely positioned side parts (16) and from the side parts (16) consist of a proximal arcuate section (20) attached to the bridge part (12) and an oppositely directed distal arcuate section (22) attached to the legs (18). The legs (18) may have sharpened points. Also disclosed is a stapler (26) adapted to force the oppositely directed distal arcuate sections (22) outward, in one embodiment, thereby forcing a reaction of the legs (18) of the staple (10) to face each other in linear alignment and form a closed staple (10). The unpreloaded fully-formed staple (10) may be deformed in situ by means of a preload part on a cam slide (38) so as to create a U-shaped central portion (60) for the compression of captured material. Alternatively, a preformed staple with the U-shaped central portion (60) may be used.



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# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US96/15077

**A. CLASSIFICATION OF SUBJECT MATTER**  
 IPC(6) : A61B: 17/04  
 US CL : Please See Extra Sheet.  
 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)  
 U.S. : 29/432.1, 812; 227/175.1, 175.2, 175.3, 175.4, 902 411/457, 471, 473, 920, 921; 606/219; 59/71, 72, 73, 74, 75, 77  
 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)

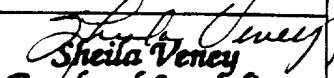
**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,060,468 A (MATSUTANI ET AL.) 29 OCTOBER 1991, SEE ENTIRE DOCUMENT	1-20
Y	US 3,605,402 A (LARSON) 20 SEPTEMBER 1971, SEE ENTIRE DOCUMENT	1-20
Y	US 2,741,147 A (MARANO) 10 APRIL 1956, SEE ENTIRE DOCUMENT	1-20
Y	US 2,778,266 A (FORRESTER) 22 JANUARY 1957, SEE ENTIRE DOCUMENT	1-20
Y	US 5,222,975 A (CRAINICH) 29 JUNE 1993, SEE ENTIRE DOCUMENT	1-20
Y	US 5,236,440 A (HLAVACEK) 17 AUGUST 1993, SEE ENTIRE DOCUMENT	1-20

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

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Date of the actual completion of the international search <p style="text-align: center;">22 MAY 1997</p>	Date of mailing of the international search report <p style="text-align: center; font-size: 1.2em;">09 JUL 1997</p>
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Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231 Facsimile No. (703) 305-3230	Authorized officer For JOSEPH M. GORSKI Telephone No. (703) 308-1805 <div style="text-align: right; font-style: italic;">   <b>Sheila Veney</b>  <b>Paralegal Specialist</b>  <b>Group 3200</b> </div>
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**INTERNATIONAL SEARCH REPORT**International application No.  
PCT/US96/15077

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5,158,567 A (GREEN) 27 OCTOBER 1992, SEE ENTIRE DOCUMENT	1-20
Y	US 4,505,273 A (BRAUN ET AL.) 19 MARCH 1985, SEE ENTIRE DOCUMENT	1-20
Y	US 4,887,601 A (RICHARDS) 19 DECEMBER 1989, SEE ENTIRE DOCUMENT	1-20
Y	US 4,874,122 A (FROELICH ET AL.) 17 OCTOBER 1989, SEE ENTIRE DOCUMENT	1-20

# INTERNATIONAL SEARCH REPORT

International application No.  
PCT/US96/15077

A. CLASSIFICATION OF SUBJECT MATTER:  
US CL :

606/219; 227/902; 411/471,457.920; 227/175.1; 29/432.1 59/75,77