



(51) International Patent Classification:

A44B 13/00 (2006.01) A42B 3/08 (2006.01)
A41D 13/00 (2006.01)

(21) International Application Number:

PCT/US2016/017277

(22) International Filing Date:

10 February 2016 (10.02.2016)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

62/115,516 12 February 2015 (12.02.2015) US

(71) Applicant: SKYDEX TECHNOLOGIES, INC.
[US/US]; 12508 E. Briarwood Avenue, Suite 1-F, Centennial, Colorado 80112 (US).

(72) Inventors: SUGANO, Eric William; 8161 Cody Circle, Arvada, Colorado 80005 (US). TAYLOR, James; PO Box 3577, Breckenridge, Colorado 80424 (US).

(74) Agent: SMITH, Teryl L.; HolzerIPLaw, PC, 216 16th Street, Suite 1350, Denver, Colorado 80202 (US).

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

(84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, RW, SD, SL, ST, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, RU, TJ, TM), European (AL, AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, RS, SE, SI, SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, KM, ML, MR, NE, SN, TD, TG).

Published:

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

[Continued on next page]

(54) Title: HARD SHELL FASTENING DEVICE

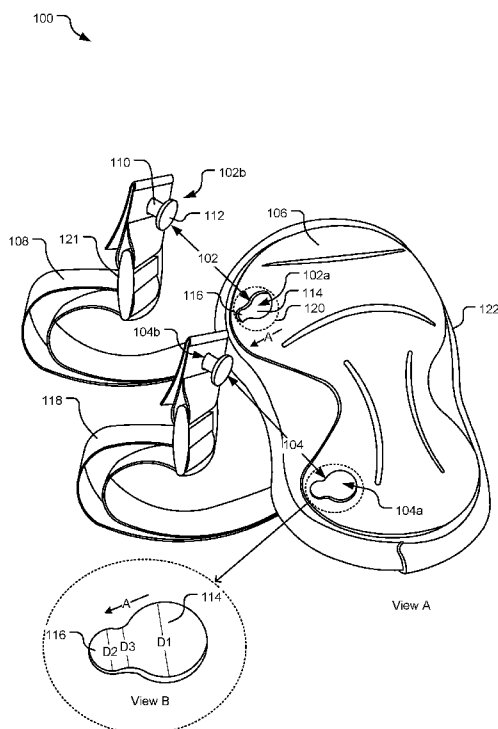


FIG. 1

(57) Abstract: An apparatus includes a protective wearable article including a flexible backing layer and a semi-rigid shell layer. The hard shell layer includes a molded receptacle that acts as a female component in a dual-component fastening device. The apparatus further includes a strap for securing the protective wearable article to a user. A first end of the strap is attached to a male fastening component sized and shaped for insertion into and securement within the molded receptacle.



— *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))*

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

3 November 2016

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2016/017277**A. CLASSIFICATION OF SUBJECT MATTER****A44B 13/00(2006.01)i, A41D 13/00(2006.01)i, A42B 3/08(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)

A44B 13/00; A41D 13/00; A42B 3/30; A41D 13/06; B62J 17/06; A63B 71/12; A42B 3/14; A42B 3/08

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

Korean utility models and applications for utility models

Japanese utility models and applications for utility models

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

eKOMPASS(KIPO internal) & Keywords: hard, shell, knee, pad, helmet, fastening, device, receptacle, aperture, male, component, protrusion, strap, slide**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	KR 10-1377421 B1 (DAEHAN ESG CO., LTD.) 25 March 2014 See abstract; claims 1-4; paragraphs [10],[41]-[46] and figures 1-7.	1-22
A	JP 2000-303244 A (TANIZAWA SEISAKUSHO LTD.) 31 October 2000 See abstract; claims 1-3 and figures 1A-6.	1-22
A	US 7707649 B2 (DANCYGER, MICHAEL) 04 May 2010 See abstract; claims 1, 2 and figures 1-4.	1-22
A	WO 2005-030349 A1 (ALPINESTARS RESEARCH SRL) 07 April 2005 See abstract; claims 1-12 and figures 1, 2.	1-22
A	JP 2005-538266 A (INNOTECH PTY LTD.) 15 December 2005 See abstract and figure 9.	1-22



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 another 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

30 September 2016 (30.09.2016)

Date of mailing of the international search report

30 September 2016 (30.09.2016)

Name and mailing address of the ISA/KR

International Application Division

Korean Intellectual Property Office

189 Cheongsa-ro, Seo-gu, Daejeon, 35208, Republic of Korea

Facsimile No. +82-42-481-8578

Authorized officer

KIM, Yeon Kyung

Telephone No. +82-42-481-3325



INTERNATIONAL SEARCH REPORT

Information on patent family members

International application No.

PCT/US2016/017277

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
KR 10-1377421 B1	25/03/2014	None	
JP 2000-303244 A	31/10/2000	None	
US 7707649 B2	04/05/2010	US 2007-0192922 A1	23/08/2007
WO 2005-030349 A1	07/04/2005	AT 374062 T	15/10/2007
		CN 1859955 A	08/11/2006
		CN 1859955 C	13/08/2008
		EP 1610872 A1	04/01/2006
		EP 1610872 B1	26/09/2007
		ES 2295861 T3	16/04/2008
		US 2006-0167396 A1	27/07/2006
		US 7204819 B2	17/04/2007
JP 2005-538266 A	15/12/2005	AT 539633 T	15/01/2012
		AU 2003-203807 A1	01/04/2004
		AU 2003-203807 B2	09/03/2006
		AU 2003-258357 A1	30/04/2004
		CA 2497675 A1	25/03/2004
		CA 2497675 C	19/06/2012
		CN 100542447 C	23/09/2009
		CN 101626528 A	13/01/2010
		CN 101646112 A	10/02/2010
		CN 1681409 A	12/10/2005
		EP 1551242 A1	13/07/2005
		EP 1551242 A4	25/06/2008
		EP 1551242 B1	04/01/2012
		MY 138773 A	31/07/2009
		NZ 539250 A	28/09/2007
		NZ 554118 A	28/09/2007
		NZ 554282 A	28/09/2007
		US 2006-0227982 A1	12/10/2006
		US 8194875 B2	05/06/2012
		WO 2004-023914 A1	25/03/2004