

(19) World Intellectual Property
Organization
International Bureau



(43) International Publication Date
8 April 2004 (08.04.2004)

PCT

(10) International Publication Number
WO 2004/028937 A3

(51) International Patent Classification⁷: **B21D 28/00**,
B32B 3/10

(21) International Application Number:
PCT/US2003/030248

(22) International Filing Date:
26 September 2003 (26.09.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
10/256,870 26 September 2002 (26.09.2002) US

(63) Related by continuation (CON) or continuation-in-part
(CIP) to earlier application:
US 10/256,870 (CIP)
Filed on 26 September 2002 (26.09.2002)

(71) Applicant (for all designated States except US): **INDUS-
TRIAL ORIGAMI, INC.** [US/US]; 487 Bryant Street,
San Francisco, CA 94107 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **DURNEY, Max, W.**
[US/US]; 4069 Hayes Street, San Francisco, CA 94117

(US). **PENDLEY, Alan, D.** [US/US]; 1708 Spyglass
Road, Petaluma, CA 94954 (US). **RAPPAPORT, Irving,
S.** [US/US]; 1500 Edgewood Drive, Palo Alto, CA 94303
(US).

(74) Agents: **CHICKERING, Robert, B.** et al.; DORSEY &
WHITNEY LLP, 4 Embarcadero Center, Suite 3400, San
Francisco, CA 94111 (US).

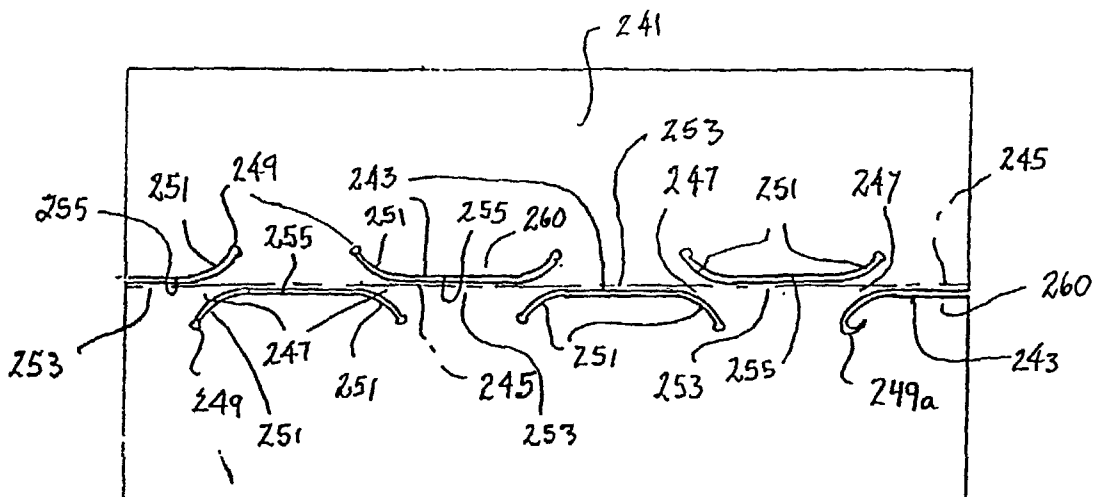
(81) Designated States (*national*): AE, AG, AL, AM, AT, AU,
AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,
CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE,
GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR,
KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK,
MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT,
RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR,
TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM,
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,
ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO,
SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM,
GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— with international search report

[Continued on next page]

(54) Title: MANUFACTURING FOLDED STRUCTURES AND SHEET THEREFORE



(57) Abstract: A process for designing and manufacturing precision-folded, high strength, fatigue-resistant structures and a sheet therefore. The techniques include methods for precision bending of a sheet of material (41, 241, 341, 441, 541) along a bend line (45, 245, 345, 445, 543) and a sheet of material formed with bending strap-defining structures, such as slits or grooves (43, 243, 343, 443, 542), are disclosed. Methods include steps of designing and then separately forming longitudinally extending slits or grooves (43, 243, 343, 443, 542) through the sheet of material in axially spaced relation to produce precise bending of the sheet (41, 241, 341, 441, 541) when bent along the bend line (45, 245, 345, 445, 543).

WO 2004/028937 A3



— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

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

26 August 2004