



- (51) International Patent Classification:
A61F 13/15 (2006.01)
- (21) International Application Number:
PCT/US2013/038091
- (22) International Filing Date:
25 April 2013 (25.04.2013)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
13/455,857 25 April 2012 (25.04.2012) US
- (71) Applicant: **THE PROCTER & GAMBLE COMPANY**
[US/US]; One Procter & Gamble Plaza, Cincinnati, Ohio
45202 (US).
- (72) Inventors: **COE, Richard, George**; 7420 Heatherwood
Lane, Cincinnati, Ohio 45244 (US). **ORR, Jill, Marlene**;
6089 Lancashire Trail, Liberty Township, Ohio 45044
(US). **GROSS, Sarah, Beth**; 10720 Crosby Road, Harris-
on, Ohio 45030 (US). **ISBURGH, Robert, Karl**; 11637
Windy Hill Court, Symmes Township, Ohio 45140 (US).
KOCHER, Leroy, Joseph; 9755 East County Road 1425
N, Sunman, Indiana 47041 (US). **MUHS, Kevin, Gerard**;
7420 Heatherwood Lane, Cincinnati, Ohio 45244 (US).
MULLANE, Timothy, Ian; 10806 North Drive, Union,
Ohio 41091 (US).
- (74) Agent: **GUFFEY, Timothy B.**; c/o The Procter & Gamble
Company, Global Patent Services, 299 East 6th Street, Sy-
camore Building, 4th Floor, Cincinnati, Ohio 45202 (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, IS, JP, KE, KG, KM, KN, KP,
KR, KZ, LA, LC, LK, LR, LS, LT, 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, 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.

[Continued on next page]

(54) Title: APPARATUS AND PROCESS FOR APERTURING AND STRETCHING A WEB

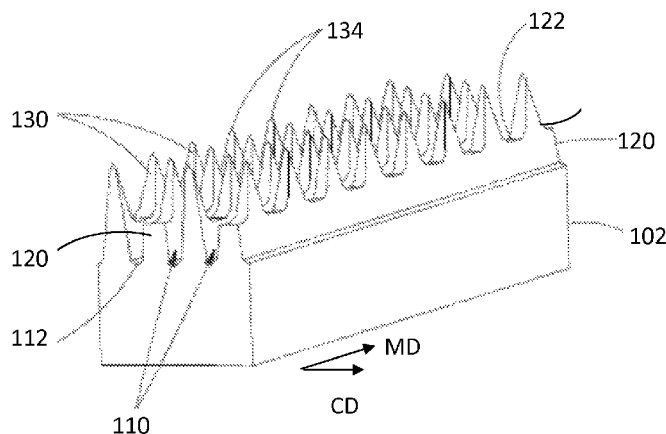


FIG. 4A

(57) Abstract: Apparatuses and processes for aperturing and stretching a web are disclosed. In one embodiment, the method involves feeding a web into a nip that is formed between at least one pair of intermeshing rolls. The first roll is a raised ridge rotary knife aperturing roll and the second roll is a ring roll; both rolls comprise ridges and grooves. The first roll comprises a plurality of spaced-apart teeth extending outwardly from the top surface of the ridges, said teeth having tips, wherein the top surface of said ridges are disposed between the tips of said teeth and the bottom surface of said grooves. These apparatuses and processes enable a web to be formed which comprises apertures having greater open area than previously achievable with traditional processes and apparatuses.





(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, 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, ML, MR, NE, SN, TD, TG).

Published:

- with international search report (Art. 21(3))
- 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:

30 January 2014