

(19) World Intellectual Property Organization  
International Bureau



(43) International Publication Date  
20 February 2003 (20.02.2003)

PCT

(10) International Publication Number  
**WO 03/013873 A3**

(51) International Patent Classification<sup>7</sup>: **B41M 5/00**,  
B41J 2/17, 2/175, G01D 11/00

[US/US]; 2132 Tudor Lane, Florence, SC 29550 (US).  
**KICK, James** [US/US]; 912 Kingscove Ct., Town &  
Country, MO 63017 (US).

(21) International Application Number: PCT/US02/22864

(22) International Filing Date: 19 July 2002 (19.07.2002)

(74) Agent: **FASSNACHT, Harold**; Bullwinkel Partners, Ltd.,  
19 S. LaSalle Street, Suite 1300, Chicago, IL 60603 (US).

(25) Filing Language: English

(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, 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, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG,  
SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ,  
VN, YU, ZA, ZM, ZW.

(26) Publication Language: English

(30) Priority Data:  
09/928,217 10 August 2001 (10.08.2001) US

(71) Applicant (*for all designated States except US*):  
**SONOCO DEVELOPMENT, INC.** [US/US]; North  
Second Street, Hartsville, SC 29550 (US).

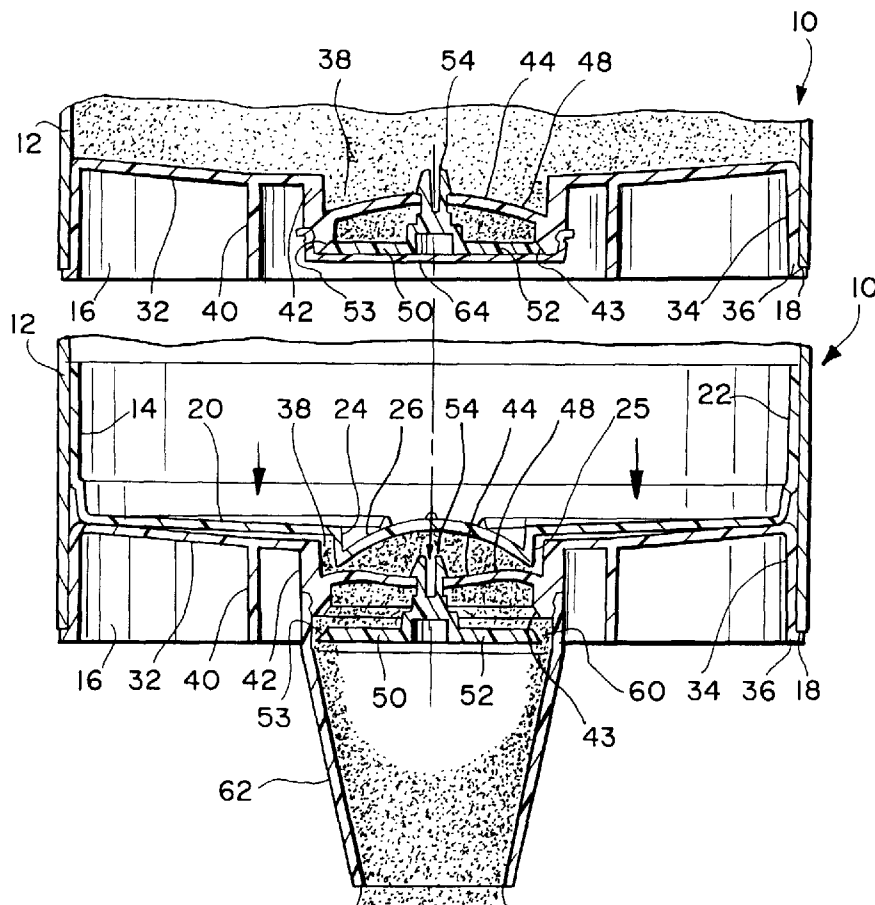
(84) Designated States (*regional*): ARIPO patent (GH, GM,  
KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW),  
Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),  
European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE,

(72) Inventors; and

(75) Inventors/Applicants (*for US only*): **REA, Keith**

[Continued on next page]

(54) Title: INK CARTRIDGE WITH SELF-CLOSING VALVE



(57) Abstract: An improved ink cartridge (10) of the type used to dispense ink in automatic lithographic presses. The ink cartridge (10) comprises a hollow cylindrical body (12) for holding a supply of extrudable ink, a plunger (14) and a dispensing fitment (16). The improvement comprises a valve member (50) mounted over a central aperture (38) in the dispensing fitment (16), and a flexible molded plastic spring (44) that biases the valve member (50) in the closed position. The valve member (50) opens when subjected to pressure from the ink and closes automatically and completely when the ink pressure is less than the biasing force of the flexible spring (44).

WO 03/013873 A3



ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Declarations under Rule 4.17:**

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations 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, 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, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VN, YU, ZA, ZM, ZW, 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, IE, IT, LU, MC, NL, PT, SE, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for all designations
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designation US
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designation US

**Published:**

- with international search report

**(88) Date of publication of the international search report:**  
24 April 2003

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.