



- (51) International Patent Classification:
H05K 1/00 (2006.01) *H05K 1/16* (2006.01)
- (21) International Application Number:
PCT/US2012/052262
- (22) International Filing Date:
24 August 2012 (24.08.2012)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
13/222,276 31 August 2011 (31.08.2011) US
- (71) Applicant (for all designated States except US): **LEX-MARK INTERNATIONAL, INC.** [US/US]; IP Law Department, Bldg. 082-1, 740 West New Circle Road, Lexington, KY 40550 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **HALL, Paul, Kevin** [US/US]; 4504 Turtle Creek Way, Lexington, KY 40509 (US). **HARDIN, Keith, Bryan** [US/US]; 2404 Shady Oak Place, Lexington, KY 40515 (US). **KRATZER, Zachary,**

Charles Nathan [US/US]; 3240 Bienheim Way, Lexington, KY 40503 (US). **ZHANG, Qing** [CN/US]; 2201 Chesapeake Court, Lexington, KY 40513 (US).

(74) Agent: **TROMP, Justin, Michael**; IP Law Department, Bldg. 082-1, 740 West New Circle Road, Lexington, KY 40550 (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, 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.

(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,

[Continued on next page]

(54) Title: SPIN COAT PROCESS FOR MANUFACTURING A Z-DIRECTED COMPONENT FOR A PRINTED CIRCUIT BOARD

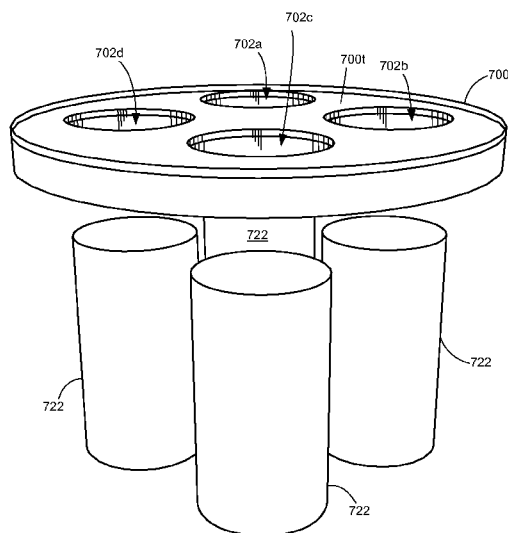


Figure 14

(57) Abstract: A method for manufacturing a z-directed component for insertion into a mounting hole in a printed circuit board according to one example embodiment includes depositing a liquid based material onto a top surface of a rotatable plate. The top surface of the rotatable plate has at least one cavity formed thereon that defines the shape of a layer of the z-directed component. The rotatable plate is spun to level a top surface of the liquid based material in the at least one cavity. The liquid based material is cured to form the layer of the z-directed component. A conductive material is applied to at least one surface of the formed layer. The z-directed component is formed including a stack of component layers that includes the formed layer.



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))