

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property
Organization
International Bureau

(43) International Publication Date
09 February 2023 (09.02.2023)



(10) International Publication Number
WO 2023/014422 A1

(51) International Patent Classification:
H05K 13/04 (2006.01)

(21) International Application Number:
PCT/US2022/030890

(22) International Filing Date:
25 May 2022 (25.05.2022)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
17/392,998 03 August 2021 (03.08.2021) US

(71) Applicant: **ILLINOIS TOOL WORKS INC.** [US/US];
155 Harlem Avenue, Glenview, IL 60025 (US).

(72) Inventors: **FORGET, Ronald, J.**; 137 Wallis Street, Douglas, MA 01516 (US). **KARLINSKI, Thomas, J.**; 30A Maple Avenue, Atkinson, NH 03811 (US). **REID, Scott, A.**; 37 Towne Hill Road, Bradford, MA 01835 (US).

(74) Agent: **NOE, Keith, F.**; Lando & Anastasi, LLP, 60 State Street, 23rd Floor, Boston, MA 02109 (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, DJ, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IQ, IR, IS, IT, JM, JO, JP, KE, KG, KH, KN, KP, KR, KW, 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, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, WS, 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).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

(54) Title: TILT AND ROTATE DISPENSER HAVING MOTION CONTROL

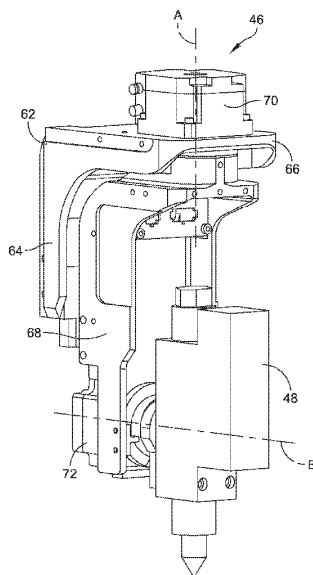


FIG. 4

(57) Abstract: A dispensing system includes a frame, a support coupled to the frame, a dispensing unit configured to dispense viscous material, and a gantry assembly coupled to the frame. The gantry assembly includes a gantry configured to support the dispensing unit and to move the dispensing unit in x-axis, y-axis and z-axis directions and a tilt and rotate subassembly configured to tilt and rotate the dispensing unit. The dispensing system further includes a controller configured to control dispensing unit and the gantry assembly to perform a dispense operation on the electronic substrate. The controller is configured to simultaneously coordinate the movement of the gantry assembly and the tilt and rotate subassembly to position and orient the nozzle of the dispensing unit a predetermined distance and orientation from the electronic substrate while dispensing material along a three-dimensional path.

WO 2023/014422 A1

[Continued on next page]

Published:

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