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(21) International Application Number: PCT/US99/15791 (22) International Filing Date: 13 July 1999 (13.07.99) (30) Priority Data: 09/116,012 15 July 1998 (15.07.98) US (71) Applicant: SPEEDLINE TECHNOLOGIES, INC. [US/US]; 16 Forge Park, Franklin, MA 02038 (US). (72) Inventors: FOULKE, Richard, F.; Apartment 5H, 7 Stonehill Drive, Stoneham, MA 02180 (US). FOULKE, Richard, F., Jr.; 116 Carlisle Road, Westford, MA 01886 (US). OHLENBUSCH, Cord, W.; 15 Smithshire Estates, Andover, MA 01810 (US). (74) Agent: SULLIVAN, Thomas, M.; Mintz, Levin, Cohn, Ferris, Glovsky and Popeo, P.C., One Financial Center, Boston, MA 02111 (US).		(81) Designated States: AE, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, 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, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG). Published With international search report.

(54) Title: SOLDER BALL PLACEMENT APPARATUS

(57) Abstract

An apparatus for placing an array of solder balls on a substrate includes a carrier plate having an array of holes therethrough. Each hole is capable of holding a solder ball. A ball placement head having an array of pins is aligned with a desired pattern of solder balls held by the carrier plate. The array of pins push the pattern of solder balls through the holes in the carrier plate onto the substrate. The invention is also directed to a solder ball dispenser for dispensing solder balls to a plate having an upper surface with an array of holes formed therein. The solder ball dispenser includes a plate support to support the plate such that the upper surface is tilted at an angle from horizontal, a ball feed device to provide solder balls to the plate, and a solder ball retainer. The solder ball retainer is movable across the upper surface of the plate for controlling a speed at which the solder balls move across the plate.

