



(51) International Patent Classification:
B65B 3/00 (2006.01)

(21) International Application Number:
PCT/US2019/036671

(22) International Filing Date:
12 June 2019 (12.06.2019)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
62/712,486 31 July 2018 (31.07.2018) US

(71) Applicant: **AMGEN INC.** [US/US]; Law Department -
Patent Operations, One Amgen Center Drive, Thousand
Oaks, CA 91320-1799 (US).

(72) Inventors: **FRADKIN, Dmitry**; C/o Amgen Inc., One Am-
gen Center Drive, Thousand Oaks, CA 91320-1799 (US).
PEARSON, Thomas, Clark; C/o Amgen Inc., One Am-
gen Center Drive, Thousand Oaks, CA 91320-1799 (US).
CHAVALI, Neelima; C/o Amgen Inc., One Amgen Center
Drive, Thousand Oaks, CA 91320-1799 (US). **FREUND,**
Erwin; C/o Amgen Inc., One Amgen Center Drive, Thou-
sand Oaks, CA 91320-1799 (US).

(74) Agent: **BETEMAN, Andrew, W.**; Marshall, Gerstein &
Borun LLP, 233 S. Wacker Drive, 6300 Wills Tower,
Chicago, IL 60606-6357 (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, IR, IS, 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, 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, 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).

(54) Title: **ROBOTIC SYSTEM FOR PERFORMING PATTERN RECOGNITION-BASED INSPECTION OF PHARMACEUTI-
CAL CONTAINERS**

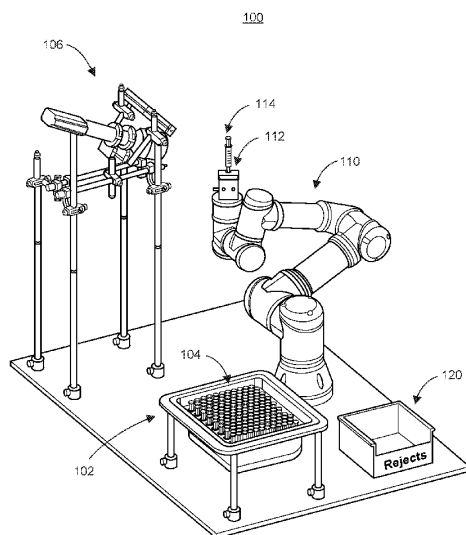


FIG. 1

(57) Abstract: A robotic inspection platform comprises a robotic arm, an imager, and a controller. The controller causes the robotic arm to retrieve, using its end effector, a container, and to manipulate the container such that the container is sequentially placed in a plurality of orientations while in view of the imager. The controller also causes the imager to capture images, with each of the images being captured while the container is in a respective one of the orientations. The controller also determines one or more attributes of the container, and/or a sample within the container, by analyzing the images using a pattern recognition model and, based on the attribute(s), determines whether the container and/or sample satisfies one or more criteria. If the container and/or sample fails to satisfy the criteria, the controller causes the robotic arm to place the container in an area (e.g., bin) reserved for rejected containers and/or samples.

[Continued on next page]

Published:

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