

CORRECTED VERSION

(19) World Intellectual Property Organization
International Bureau(43) International Publication Date
29 October 2009 (29.10.2009)

PCT

(10) International Publication Number
WO 2009/131663 A8

(51) International Patent Classification:

B01J 8/18 (2006.01) *C08F 10/00* (2006.01)*B01J 8/38* (2006.01) *C08F 2/34* (2006.01)

(21) International Application Number:

PCT/US2009/002472

(22) International Filing Date:

21 April 2009 (21.04.2009)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

61/125,069 22 April 2008 (22.04.2008) US

(71) Applicant (for all designated States except US): **UNIVATION TECHNOLOGIES, LLC** [US/US]; 5555 San Felipe, Suite 1950, Houston, TX 77056 (US).

(72) Inventors; and

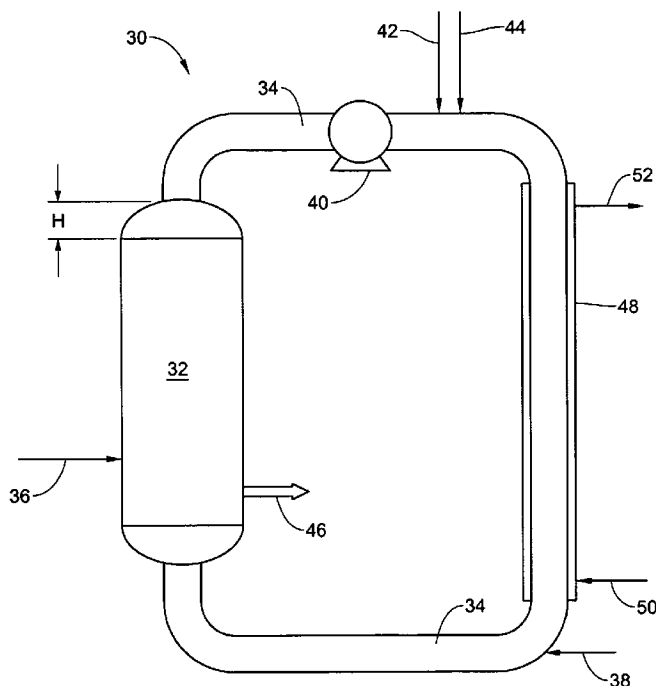
(75) Inventors/Applicants (for US only): **HUSSEIN, Fathi, D.** [US/US]; 5403 Bennett Drive, Cross Lanes, WV25313 (US). **CAI, Ping, P.** [US/US]; 5 Greenbrier Avenue, Hurricane, WV 25526 (US). **CEVALLOS-CAN-DAU, Jose, F.** [US/US]; 1518 Coventry Lane, Charleston, WV 25314 (US). **BURDETT, Ian, D.** [GB/US]; 106 East Ridge Road, Charleston, WV 25314 (US). **HAMILTON, W., Scott** [US/US]; 986 Harmony Lane, S. Charleston, WV 25303 (US). **THOMAS, Daniel, N.** [US/US]; 42 Presidio Pointe, Cross Lanes, WV 25313 (US).(74) Agent: **ARECHEDERRA, III, Leandro**; Univation Technologies, LLC, 5555 San Felipe, Suite 1950, Houston, TX 77056-2746 (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, BR, BW, BY, BZ, CA, CH, 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,

[Continued on next page]

(54) Title: REACTOR SYSTEMS AND PROCESSES FOR USING THE SAME

Fig. 2



(57) Abstract: A process for the polymerization of olefin's, including: introducing an olefin and a polymerization catalyst into a polymerization reactor to form a polyolefin, the polymerization reactor including: a fluidized bed region having a top and a bottom; and a motive bed region; wherein a first end of the motive bed region is fluidly connected to the top of the fluidized bed region; and wherein a second end of the motive bed region is fluidly connected to the bottom of the fluidized bed region; and wherein a diameter of the fluidized bed region is greater than a diameter of the motive bed region; circulating at least a portion of the olefin, the catalyst, and the polyolefin through the fluidized bed region and the motive bed region; maintaining a dense-phase fluidized bed within the fluidized bed region; recovering polyolefin from the fluidized bed region, is provided. A reactor system directed to the process is also provided.



NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, 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, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (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, SE, SI, SK, TR), OAPI (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))*

- *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

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

- (88) Date of publication of the international search report:**
23 December 2009

- (48) Date of publication of this corrected version:**
18 March 2010

- (15) Information about Correction:**
see Notice of 18 March 2010