

(19) World Intellectual Property Organization
International Bureau



(43) International Publication Date
16 November 2006 (16.11.2006)

PCT

(10) International Publication Number
WO 2006/121615 A1

(51) International Patent Classification:

B01J 19/24 (2006.01) **B01J 10/02** (2006.01)
B01J 19/00 (2006.01)

(21) International Application Number:

PCT/US2006/015770

(22) International Filing Date: 25 April 2006 (25.04.2006)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:

11/122,965 5 May 2005 (05.05.2005) US

(71) Applicant: **EASTMAN CHEMICAL COMPANY**
[US/US]; 100 North Eastman Road, Kingsport, TN 37660
(US).

(72) Inventors: **WINDES, Larry, Cates**; 1212 Jerry Lane,
Kingsport, TN 37664 (US). **MURDOCH, William,
Speight**; 3424 Lakeshore Drive, Kingsport, TN 376633370
(US). **YOUNT, Thomas, Lloyd**; 3208 Nola Lane,
Kingsport, Tennessee 37664 (US). **SCHERRER, Paul**,

Keith; 1011 Nottingham Place, Johnson City, TN 37604
(US). **BONNER, Richard, Gill**; 126 Kelsey Glen Drive,
Lexington, SC 29072 (US). **SLAUGHTER, Christopher,
Scott**; #3 Gentry Carson Drive, Johnson City, TN 37615
(US).

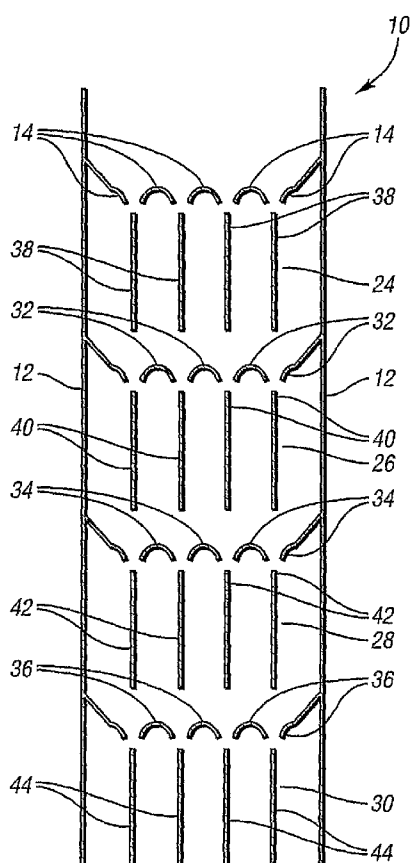
(74) Agent: **CARRIER, Michael, K.**; P.O.Box 511, Kingsport,
TN 37662-5075 (US).

(81) Designated States (*unless otherwise indicated, for every
kind of national protection available*): AE, AG, AL, AM,
AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN,
CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI,
GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE,
KG, KM, KN, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV,
LY, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NG, NI,
NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG,
SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ,
VC, VN, YU, 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,

[Continued on next page]

(54) Title: A FAMILY OF STATIONARY FILM GENERATORS AND FILM SUPPORT STRUCTURES FOR VERTICAL STAGED POLYMERIZATION REACTORS



(57) Abstract: A bundle assembly for vertical, gravity flow driven polymerization reactors for combinations of high viscosity, high throughput, and thin polymer films is provided. The bundle assembly includes static internal components that provide large areas of free liquid surfaces in contact with the atmosphere of the reactor while still attaining sufficient liquid holdup times for polymerization to take place. The bundle assembly includes one or more stationary film generators. The bundle assembly further includes one or more stationary arrays of film support structures. Each of the film support structures has a first side and a second side. Both sides of the film support structure are coated with flowing polymer. The vertical arrangement of components in the bundle assembly cause the polymeric melt to cascade down the vertical length of a reaction vessel interior that incorporates the bundle assembly. The present invention also provides a polymerization reactor that incorporates the assembly of the invention and a method of increasing the degree of polymerization of a polymer melt by using the assembly of the invention.



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, HU, IE, IS, IT, LT, LU, LV, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:

— with international search report

— before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.