



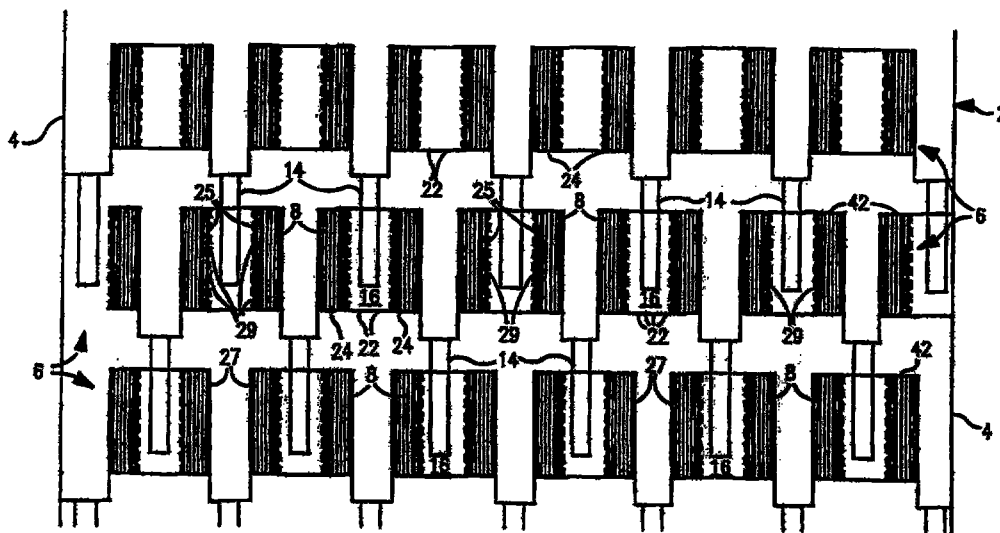
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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : B01D 3/14, 3/26, 3/32, F02M 11/00	A1	(11) International Publication Number: WO 99/54018 (43) International Publication Date: 28 October 1999 (28.10.99)
(21) International Application Number: PCT/US99/07999 (22) International Filing Date: 13 April 1999 (13.04.99) (30) Priority Data: 09/061,492 17 April 1998 (17.04.98) US (71) Applicant: MOBIL OIL CORPORATION [US/US]; 3225 Gallows Road, Fairfax, VA 22037 (US). (72) Inventors: SOWIAK, Raymond, Michael; 121 S. Chancellor Street, Newton, PA 18940 (US). STOBBER, Berne, Kim; 14 Bethel Road, Glen Mills, PA 19342 (US). (74) Agents: PRATER, Penny, L. et al.; Mobil Oil Corporation, 3225 Gallows Road, Fairfax, VA 22037 (US).		(81) Designated States: AU, CA, JP, SG, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). Published <i>With international search report.</i>

(54) Title: CO-CURRENT CONTACTING SEPARATION TRAY DESIGN AND METHODS FOR USING SAME

**(57) Abstract**

A tray design for use in a separation column (2) for distilling or fractionating a feed stream is provided that incorporates co-current contact of the liquid and vapor streams and their subsequent separation on each tray (6). Located on the trays are a plurality of co-current vapor and liquid contacting sections (16). Also located in the trays are a plurality of de-entrainment devices (8) for separating entrained liquids from a vapor stream, the de-entrainment devices having an inner (25) and an outer side (27). The tray design further incorporates a plurality of downcomers (14), having an upper portion (13) and a lower portion (15), where the upper portion of the liquid downcomer is capable of accepting liquid from the outer side of the de-entrainment device of a first tray, and the lower portion of the liquid downcomer is located within the co-current contacting section of a second tray. The trays further contain vapor openings (22) located through the bottom (24) of the trays.