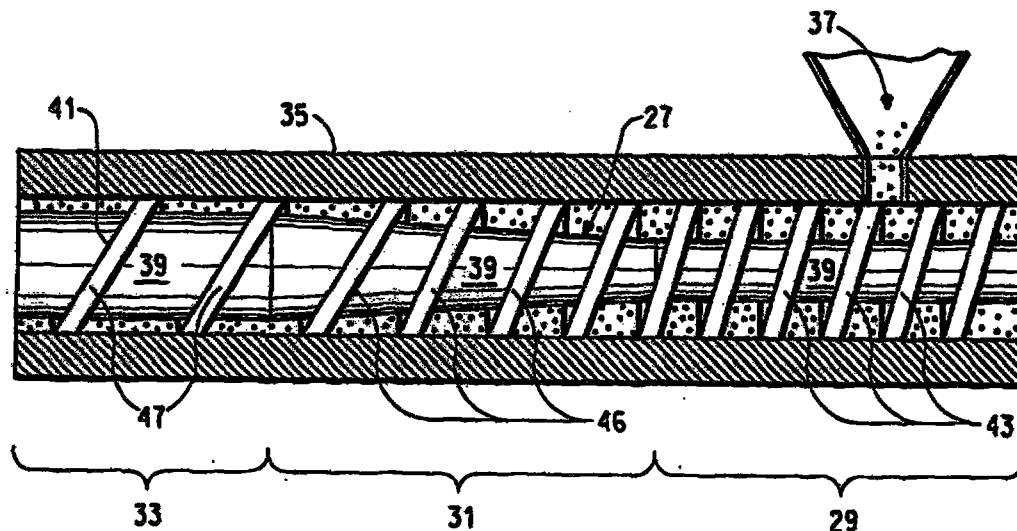




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ : B29C 47/60		A1	(11) International Publication Number: WO 99/56937
			(43) International Publication Date: 11 November 1999 (11.11.99)
(21) International Application Number: PCT/US99/09866 (22) International Filing Date: 6 May 1999 (06.05.99) (30) Priority Data: 09/073,281 6 May 1998 (06.05.98) US 09/283,516 1 April 1999 (01.04.99) US (71) Applicant (for all designated States except US): E.I. DU PONT DE NEMOURS AND COMPANY [US/US]; 1007 Market Street, Wilmington, DE 19898 (US). (72) Inventors; and (75) Inventors/Applicants (for US only): LEVEQUE, Alain, Yves [FR/FR]; 959, route du Château, F-74330 Choisy (FR). SCHIRMER, Karl, Adolf [DE/DE]; Laurentiusstrasse 12C, D-90451 Nürnberg (DE). (74) Agents: WALKER, P., Michael et al.; E.I. du Pont de Nemours and Company, Legal Patent Records Center, 1007 Market Street, Wilmington, DE 19898 (US).		(81) Designated States: AE, AL, AU, BA, BB, BG, BR, CA, CN, CU, CZ, EE, GD, GE, HR, HU, ID, IL, IN, IS, JP, KP, KR, LC, LK, LR, LT, LV, MG, MK, MN, MX, NO, NZ, PL, RO, SG, SI, SK, SL, TR, TT, UA, US, UZ, VN, YU, ZA, 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: PLASTICIZING SCREW



(57) Abstract

The present invention relates to a screw (27) for use in, for example, an injection molding machine or an extruder. The screw (27) includes a screw shaft (39) having a thread (41) spirally positioned about the screw shaft (39) so as to form a plurality of flights (43, 45, 47). The screw (27) has three zones (29, 31, 33), a feeding zone (29), a compression zone (31) and a metering zone (33), and the depth and pitch of the flights (43, 45, 47) of the screw (27) are designed based upon the material to be used in the screw (27) so that the difference in the ratio of the actual flow to the theoretical drag flow of material in the feeding zone (29) and the ratio of the actual flow to the theoretical drag flow of material in the metering zone (33) is less than 0.2, preferably less than 0.1, and more preferably less than 0.05. This design results in a screw (27) which has a balanced mass flow, and thus a constant pressure gain along the screw without pressure peaks.