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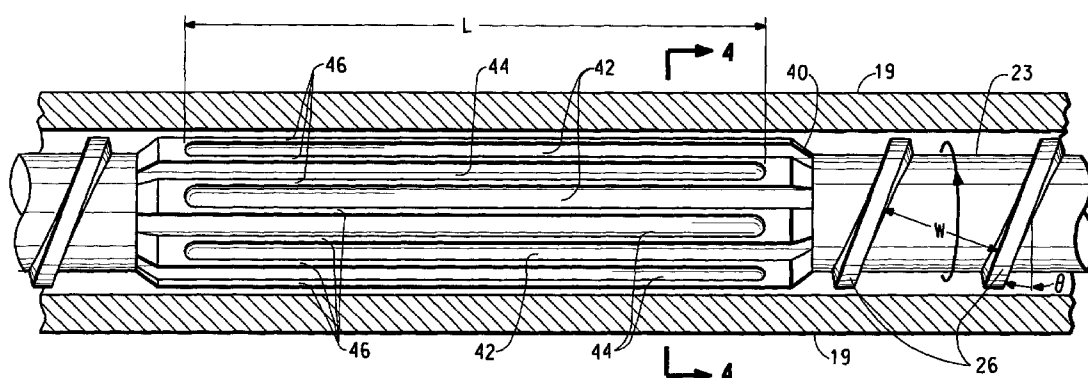
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(54) Title: MIXING ELEMENT/SECTION OF A SCREW IN A PLASTIFICATION APPARATUS



(57) **Abstract:** An apparatus for mixing thermoplastic materials is provided. The apparatus includes a barrel and a screw rotatably mounted in the barrel. The screw has a screw shaft with a thread spirally extending around the screw shaft so as to form a plurality of flights, and the screw has a zone through which melted polymer conveyed. The screw has a portion that is without a screw thread where the screw shaft forms a mixing element with a drum-shaped surface extending above the screw shaft that is coaxial with the screw shaft. This drum-shaped surface has a plurality of alternating input grooves output grooves extending in a generally axial direction. Lands extend between the input grooves and output grooves so as to separate the input grooves from the output grooves, with the length of each land being substantially equal to the length of the contiguous portion of the adjacent input and output grooves. There is a land cross-sectional shear area corresponding to each land that is equal to the length of the land multiplied by the clearance between the land and the inside surface of the barrel hollow space, and the summation of the land cross-sectional shear areas for all of the lands of the mixing element is greater than or equal to 95% of the flow cross-sectional area between the adjacent flights of the screw through which polymer passes immediately prior to entering the mixing element.



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