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(54) ULTRASONIC EDGE SEALING OF SHEET MOLDING COMPOUND CARRIER FILM

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(58) Field of Classification Search

See application file for complete search history.

(56) References Cited

U.S. PATENT DOCUMENTS

6,837,961 B2* 1/2005 Malchow A61F 13/15756 156/290

* cited by examiner

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(57) ABSTRACT

A process for manufacturing a sheet molding compound carrier film including a first layer of material and a second layer of material sealed with each other along an edge. The seal is formed using ultrasound transmitted by a weld horn as both layers of material move along an anvil portion. The seal on the edge is suitably formed to protect the edge and build a weld to ensure moldable sheet molding compound flows to the edges of the carrier sheet, while providing a homogeneous mixture of glass and resin and also allowing air to escape.

15 Claims, 5 Drawing Sheets

