

[54] **SONIC OR ULTRASONIC APPARATUS FOR
SIMULTANEOUSLY CUTTING AND
SEAMING SHEET MATERIAL**

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156/553; 156/580.2; 228/1 B**

[58] Field of Search **156/73.1, 73.3, 510,
156/515, 580.1, 580.2, 553; 228/1 R, 1 B**

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[57] **ABSTRACT**

A sonic or ultrasonic apparatus for exposing sheet mate-

rial having a heat fusible component disposed therein to high frequency vibrational or mechanical energy to perform an operation thereon. The apparatus includes a plurality of electro-acoustical converter units, each of which is energized by high frequency electrical energy that is converted into high frequency vibrational energy. The units are horizontally spaced in juxtaposition to each other in line transversely above the sheet material, and each electro-acoustical converter unit has a horn resonant at the high frequency vibrational energy which opposes stationary anvil means positioned beneath the sheet material. The horns are simultaneously moved vertically downwardly from an indexing position into engagement with the sheet material and then horizontally in a small increment while in engagement to perform the operation on the sheet material and then vertically upwardly and horizontally back to the initial indexing position for a next operation on the sheet material. The anvil means, which is stationary, permits the horns to simultaneously cut the sheet material and seam the cut edges by producing fusion bonds along the cut edges. Alternatively, the anvil means can be arranged to either provide an elongated seam transversely across the sheet material or provide an elongated transverse cut in the sheet material.

41 Claims, 25 Drawing Figures

