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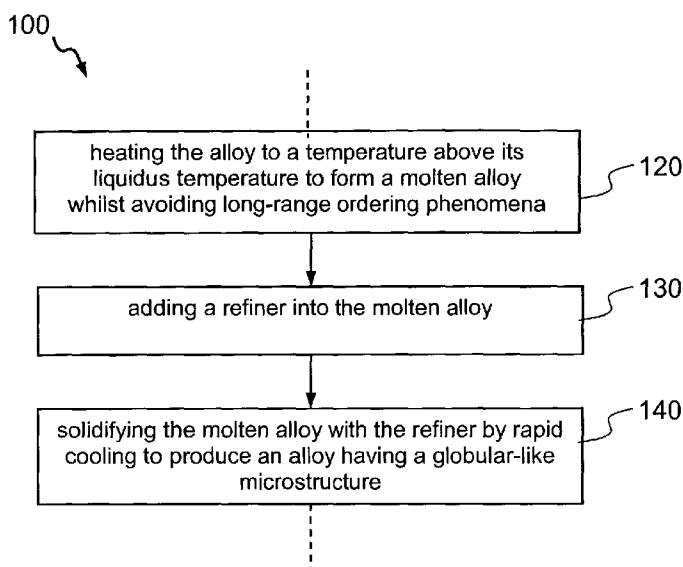
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(54) Title: TRANSFORMABLE AND RECYCLABLE SEMI-SOLID METAL PROCESSING



(57) Abstract: A method and system for treating an alloy to modify its dendritic microstructure for improved semi-solid metal processability are provided. The method comprises heating the alloy to a first temperature above its liquidus temperature to form a molten alloy, and adding a refiner into the molten alloy. The molten alloy is then solidified to form an alloy slug with a globular and/or equiaxed microstructure for producing metal components or parts. The system comprises a heating module (120), a refining module (130), and a cooling module (140). The heating module (120) heats up a metal material to a temperature above its liquidus temperature to melt the metal material. The refining system (130) receives the molten metal material from the heating module (130) and to add a refiner into the molten metal. Thereafter, the metal material with the refiner added is solidified in the solidifying module (140) to form a metal slug with a globular and/or equiaxed microstructure.

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