Title (en)

APPARATUS FOR PRODUCING CASTINGS WITH DIRECTIONAL AND SINGLE CRYSTAL STRUCTURE

Title (de)

VORRICHTUNG ZUR HERSTELLUNG VON GUSSSTÜCKEN MIT GERICHTETER EINKRISTALLSTRUKTUR

Title (fr)

APPAREIL PERMETTANT DE PRODUIRE DES MOULAGES PRESENTANT UNE STRUCTURE DIRECTIONNELLE ET MONOCRISTALLINE

Publication

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Application

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Abstract (en)

[origin: WO9913137A1] The present invention relates to metal casting and can be used in producing large sized blades with directional and single crystal structure having large horizontal shoulders. The apparatus comprises a vacuum chamber inside which there is positioned a mold preheating furnace (4) with a ceramic mold (1) and a vertical shield (2) disposed therein, and a crystallizer (7). The shield (2) is positioned concentrically to the casting vertical axis and is fixed on the mold upper portion or on a hanger. The shield (2) can be made integral or as a row of members having projecting flanges which telescopically insert into each other. The shield (2) is made of a graphitized foil or a carbon/carbon based composite material. The disclosed apparatus allows to decrease the role of the radial component of the thermal gradient in the process of directional solidification of the blades having large horizontal shoulders, to increase the degree of structural perfection along the complete height of a casting and to avoid porosity in the transition portion between a shroud and an airfoil.

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