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(54) Title: INGOT FURNACE FOR DIRECTIONAL SOLIDIFICATION GROWTH OF CRYSTALLINE SILICON AND APPLICATION

(54) 发明名称: 一种定向凝固生长晶体硅的铸锭炉及应用

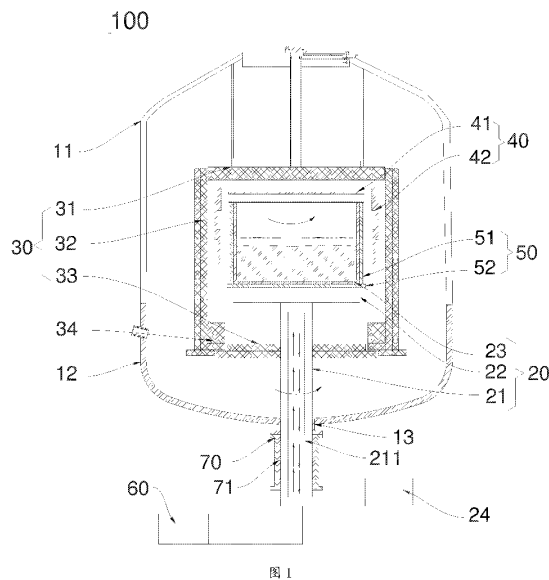


图 1

(57) Abstract: The present invention relates to an ingot furnace for directional solidification growth of a crystalline silicon, comprising: a furnace body having an upper furnace body and a lower furnace body matching with each other, a shaft hole being formed on the bottom of the lower furnace body; a support platform comprising a rotating shaft and a heat exchange platform fixed to one end of the rotating shaft, wherein a crucible is provided on the heat exchange platform; the other end of the rotating shaft passes through the shaft hole and is connected to a rotation-driving device provided outside the lower furnace body, a cooling liquid circulation pipeline

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is further provided in the rotating shaft, and the cooling liquid circulation pipeline is used for introducing cooling liquid and allowing the cooling liquid to flow circularly so as to achieve circulated cooling of the rotating shaft; a guard plate; a heat insulation cage; and a heater. The ingot furnace realizes uniform heating of the crucible, can greatly improve the large number of uneven interfaces present on each side of the silicon ingot, can significantly reduce the red zone at the tail part of the prepared silicon ingot, and improves silicon ingot quality and production yield. The present invention also relates to application of the ingot furnace.

(57) 摘要: 本公开涉及一种定向凝固生长晶体硅的铸锭炉, 包括: 炉体, 所述炉体包括相互配合的上炉体和下炉体, 所述下炉体底部设置一轴孔; 支撑台, 所述支撑台包括旋转轴和固定在所述旋转轴一端的热交换台, 所述热交换台上设有坩埚; 所述旋转轴的另一端穿过所述轴孔, 且与设置在所述下炉体外部的旋转驱动装置连接, 所述旋转轴内还设有冷却液循环管道, 所述冷却液循环管道用于通入冷却液并供所述冷却液循环流动, 以实现所述旋转轴的循环冷却; 护板, 隔热笼和加热器。该铸锭炉实现对坩埚的均匀加热, 可以大大改善硅锭各个侧面上存在的大量凹凸界面, 可以显著减少制备得到的硅锭尾部红区, 提升硅锭的质量和出材率。本公开还涉及该铸锭炉的应用。