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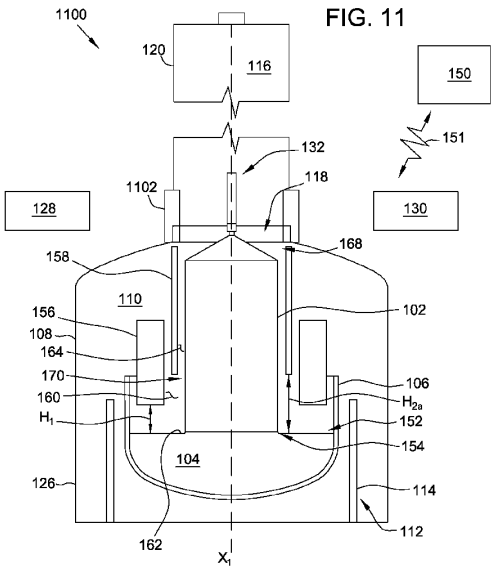

FIG. 11

(57) Abstract: An ingot puller apparatus for producing a single crystal ingot includes a housing defining a growth chamber and a growth chamber outlet, a crucible positioned in the growth chamber for containing a melt of semiconductor material, a cooling jacket positioned in the growth chamber between the crucible and the growth chamber outlet, the cooling jacket defining a cooling passage having an inlet proximate the crucible and an outlet proximate the growth chamber outlet, a puller positioned to contact a seed crystal with a surface of the melt and pull the single crystal ingot from the melt and through the cooling passage, and an actuator connected to the cooling jacket and operable to move the cooling jacket in the growth chamber to control a cooling profile of the single crystal ingot.

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