resistivity such as at least 1000 ohm-cm or even at least 7,500 ohm-cm.

[0038] In some embodiments, polycrystalline silicon is not added during the growth of the ingot (e.g., as in a batch process). In other embodiments, polycrystalline silicon is added to the melt as the product ingot is grown (e.g., as in a continuous Czochralski method).

[0039] When the sample rod has an oxygen content above the threshold, the first product ingot is not grown in the ingot puller apparatus (i.e., the first ingot puller apparatus). Instead, a second product ingot with a higher oxygen specification is grown with the first ingot puller apparatus (i.e., the second product ingot has an oxygen content greater than the first product ingot). For example, the first product ingot may have an oxygen content of less than 5 ppma and the second product ingot may have an oxygen content of greater than 5 ppma.

[0040] The first product ingot may be then grown from a second ingot puller apparatus that is different from the first ingot puller apparatus. A second sample rod may be grown in the second ingot puller apparatus in step 200 (Figure 6) to determine if the ingot puller apparatus is suitable to form a relatively low oxygen ingot before the first ingot is grown (i.e., by forming a slab or one or more coins from the sample rod in step 210, measuring the oxygen content of the slab or one or more coins in step 220, and determining if the oxygen content is less than the threshold in step 230). If the oxygen content of the sample rod grown from the second ingot