CLAIMS:

1. A method for producing a single crystal silicon ingot from a silicon melt held within a crucible, the method comprising:

adding polycrystalline silicon to the crucible, the crucible being disposed within an ingot puller inner chamber;

heating the polycrystalline silicon to cause a silicon melt to form in the crucible;

pulling a single crystal silicon ingot from the silicon melt;

providing a source of solid-phase boric acid;

producing a boron-containing gas from the solid-phase boric acid; and

contacting the boron-containing gas with a surface of the melt to cause boron to enter the melt as a dopant while pulling the single crystal silicon ingot from the melt.

2. The method as set forth in claim 1 comprising adding an n-type dopant to the crucible prior to pulling the single crystal silicon ingot from the melt.

3. The method as set forth in claim 2 wherein the n-type dopant is phosphorous.

4. The method as set forth in any one of claims 1 to 3 wherein the boron-containing gas is produced by:

liquefying the solid-phase boric acid to produce a boric acid liquid; and

evaporating the boric acid liquid to produce the boron-containing gas.

5. The method as set forth in any one of claims 1 to 4 wherein the solid-phase boric acid is disposed within the ingot puller inner chamber.

6. The method as set forth in claim 5 wherein the solid-phase boric acid is disposed within a capsule.

7. The method as set forth in any one of claims 1 to 4 wherein the solid-phase boric acid is disposed exterior to an ingot puller housing in which the crucible is disposed.

8. The method as set forth in claim 7 wherein the solid-phase boric acid is within a chamber of a vaporization unit.