CLAIMS:

1. An ingot puller apparatus for manufacturing a single crystal silicon ingot, the ingot puller apparatus comprising:

a crucible assembly for holding a silicon melt;

a crystal puller housing that defines a growth chamber for pulling a silicon ingot from the silicon melt, the crucible assembly being disposed within the growth chamber; and

a silicon feed tube for adding solid silicon to the crucible assembly, the silicon feed tube comprising:

a conduit portion having an inner diameter; and

a kick plate extending from and disposed below the conduit portion, the kick plate extending from 60% to 90% of the inner diameter of the conduit portion.

2. The ingot puller apparatus as set forth in claim 1 wherein the kick plate extends across at least 70% of the inner diameter of the conduit portion.

3. The ingot puller apparatus as set forth in claim 1 or claim 2 wherein the conduit portion and the kick plate are made of silicon.

4. The ingot puller apparatus as set forth in any one of claims 1 to 3 wherein the kick plate is part of a guide section of the silicon feed tube, the silicon feed tube further comprising a tube section disposed above the guide section.

5. The ingot puller apparatus as set forth in claim 4 wherein the guide section comprises at least a portion of the conduit portion of the silicon feed tube.

6. The ingot puller apparatus as set forth in claim 4 wherein the tube section comprises the entire conduit portion of the silicon feed tube.

7. The ingot puller apparatus as set forth in any one of claims 4 to 6 wherein the guide section and the tube section are separate components that are interconnected.

8. The ingot puller apparatus as set forth in any one of claims 4 to 6 wherein the guide section and tube section are integrally formed from a single piece of material.

9. The ingot puller apparatus as set forth in any one of claims 4 to 8 wherein the tube section is made of silicon.

10. The ingot puller apparatus as set forth in any one of claims 1 to 9 wherein the silicon feed tube comprises a longitudinal axis, the kick plate and longitudinal axis forming an angle and between 20° and 60°.

11. The ingot puller apparatus as set forth in any one of claims 1 to 10 wherein the kick plate has a height, wherein the conduit portion overlaps less than 70% of the height of the kick plate.

12. An ingot puller apparatus for manufacturing a single crystal silicon ingot, the ingot puller apparatus comprising:

a crucible assembly for holding a silicon melt;

a crystal puller housing that defines a growth chamber for pulling a silicon ingot from the silicon melt, the crucible assembly being disposed within the growth chamber; and

a silicon feed tube for adding solid silicon to the crucible assembly, the silicon feed tube comprising:

a conduit portion; and

a kick plate at least partially disposed below the conduit portion, the kick plate having a height, wherein the conduit portion overlaps from 20% to 70% of the height of the kick plate.

13. The ingot puller apparatus as set forth in claim 12 wherein the conduit portion overlaps less than 60% of the height of the kick plate.

14. The ingot puller apparatus as set forth in claim 12 or claim 13 wherein the conduit portion and the kick plate are made of silicon.

15. The ingot puller apparatus as set forth in any one of claims 12 to 14 wherein the kick plate is part of a guide section of the silicon feed tube, the silicon feed tube further comprising a tube section disposed above the guide section.

16. The ingot puller apparatus as set forth in claim 15 wherein the guide section comprises at least a portion of the conduit portion of the silicon feed tube.

17. The ingot puller apparatus as set forth in claim 15 wherein the tube section comprises the entire conduit portion of the silicon feed tube.

18. The ingot puller apparatus as set forth in any one of claims 15 to 17 wherein the guide section and tube section are separate components that are interconnected.

19. The ingot puller apparatus as set forth in any one of claims 15 to 17 wherein the guide section and tube section are integrally formed from a single piece of material.

20. The ingot puller apparatus as set forth in any one of claims 15 to 19 wherein the tube section is made of silicon.

21. The ingot puller apparatus as set forth in any one of claims 12 to 20 wherein the silicon feed tube comprises a longitudinal axis, the kick plate and longitudinal axis forming an angle between 20° and 60°.