Claims:

1. A method for producing silicon ingots (1), comprising the following steps:
   - providing a container (2) to receive a silicon melt (3),
   - providing~~arranging~~ a fine-grain silicon layer (5) in the container (2),
   - arranging a silicon melt (3) in the container (2) in contact with the fine-grain silicon layer (5),
   - directional solidification of the silicon melt (3) starting from the fine-grain silicon layer (5),

   wherein the temperature in the region of the fine-grain silicon layer (5), during the solidification of the silicon melt (3), is kept at a temperature below the melt temperature of silicon.

2. A method according to claim 1, **characterised by** the following step: producing the fine-grain silicon layer (5).

3~~2~~. A method according to claim 1, **characterised in that** liquid silicon is rapidly solidified to produce the fine-grain silicon layer (5).

4~~3~~. A method according to claim ~~1~~2 , **characterised in that** liquid silicon is brought into contact with a substrate having a temperature below the melting temperature of silicon to produce the fine-grain silicon layer (5).

5~~4~~. A method according to claim ~~3~~4, **characterised in that** the substrate is selected from the group of one or more plates (4), a layer of fine grain

and a base (9) of the container.

~~5~~6. A method according to claim ~~3~~4, **characterised in that** a layer of a fine-grain raw material with a mean grain size in the range from 0.1 mm to 3 mm is used as the substrate and is placed directly on a base (9) of the container (2).

~~6~~7. A method according to claim ~~5~~6, **characterised in that** the layer of a fine-grain raw material has a thickness in the range from 1 cm to 5 cm.

~~7~~8. A method according to claim ~~3~~4, **characterised in that** the substrate, when brought into contact with the liquid silicon, has a temperature of at most 1200°C.

~~8~~9. A method according to claim ~~3~~4, **characterised in that** the substrate, when brought into contact with the liquid silicon, has a temperature of at most 1100°C.

~~9~~10. A method according to claim ~~3~~4, **characterised in that** the substrate, when brought into contact with the liquid silicon, has a temperature of at most 1000°C.

~~10~~11. A method according to claim ~~3~~4, **characterised in that** the substrate consists at least partially of a material selected from the group of silicon, silicon carbide, silicon nitride, graphite.

12~~1~~. A method according to claim 1, **characterised in that** the fine-grain silicon layer (5) is produced in the same container (2), in which the silicon melt (3) is solidified.

13~~2~~. A method according to claim 1, **characterised in that** the fine-grain silicon layer (5) is produced in a different container (2) to the one in which the silicon melt (3) is solidified.

~~13. A method according to claim 1, **characterised in that** the temperature in the region of the fine-grain silicon layer (5), during the solidification of the silicon melt (3), is kept at a temperature below the melt temperature of silicon~~.

14. A method according to claim 1, **characterised in that** the solidification of the silicon melt (3) takes place close to equilibrium.

15. A silicon ingot (1) produced by a method according to claim 1.

16. A silicon ingot (1) according to claim 15, **characterised by** a grain number, which decreases from a base (9) toward a cap (10) of the ingot.

17. A silicon ingot (1) according to claim 16, **characterised in that** the grain number decreases from the base (9) to the cap (10) by at least 20%.

18. A silicon ingot (1) according to claim 16, **characterised in that** the grain number decreases from the base (9) to the cap (10) by at least 30%.

19. A silicon ingot (1) according to claim 15, **characterised in that** a defect proportion is constant from a specific height (h_0).

20. A silicon ingot (1) according to claim 15, **characterised by** a height of at least 50 cm.

21. A silicon ingot (1) according to claim 15, **characterised by** a height of at least 75 cm.

22. A silicon ingot (1) according to claim 15, **characterised by** a height of at least 100 cm.