Claims

1. A method for pulling a cylindrical crystal (5) from a melt (2) by means of a crystal pulling unit which comprises: a crucible (3), in which the melt (2) is located, a crucible heater (4), which surrounds the crucible (3) annularly, a crucible lifting device (7) for lifting the crucible (3), a crystal lifting device (6) for pulling the crystal (5) from the melt (2), and a heat shield (10) surrounding the crystal (5) annularly and having a lower edge which ends above the melt (2), forming an annular gap (12), **characterized** in that the actual value of the crystal diameter is measured at the melt surface and compared with a setpoint value for the crystal diameter, and in that the height of the annular gap (12) is set as a function of the deviation between the actual value and the setpoint value, using a first controller, which has a first readjustment time,~~.~~

~~2. The method according to claim 1, **characterized** in that the first readjustment time is selected so as to compensate influences of the melting convection at the melt-contacting end face of the crystal and of the melt.~~

~~3. The method according to claim 1 or 2, **characterized** in that~~ wherein for an actual value which is smaller than the setpoint value, the annular gap height is reduced, and for an actual value which is larger than the setpoint value, the annular gap height is increased;~~.~~ and

~~4. The method according to any of the preceding claims, **characterized** in that~~ wherein for changing the annular gap height, the lifting rate of the crucible

(3) and in equal measure the lifting rate of the crystal (5) are varied, so that the crystal pulling rate remains constant.

25. The method according to claim 14, **characterized** in that for the lifting rate (14) of the crucible a base value is set which compensates the volume consumption of the melt (2), in that a base value is set for the rate (13) of crystal lifting, and in that for regulating the annular gap height, the same offset value is added to both base values.

36. The method according to ~~any of the preceding~~ claim~~s~~ 1 or 2, **characterized** in that the control value for the annular gap height is supplied as actual value for regulating the heating power of the crucible heater (4) by means of a second controller, which has a second readjustment time, with a medial annular gap height being prespecified as setpoint value.

~~7. The method according to claim 6, **characterized** in that the second readjustment time is selected so as to compensate influences of the changes in the position of the melt surface in the crucible that come about during the pulling procedure.~~

48. The method according to any of the preceding claim~~s 7~~, **characterized** in that the first readjustment time is smaller than the second readjustment time.

59. The method according to claim 37 or 48, **characterized** in that the control value for the annular gap height is supplied via a PT1 filter (40) as actual value to a heating power regulator (28).