Abstract: A method and apparatus for forming a sheet wafer add material to a crucible having a feed area and a dump area, and melt the material to form a wafer growth are between the feed area and the dump area. The material is added to the feed area and removed through the dump area. The method and apparatus substantially simultaneously draw a plurality of sheet wafers from the growth area, and directly apply dopant to the melted material at the growth area. The dopant thus bypasses the feed area to dope at least a portion of the growth area.
(88) Date of publication of the international search report:
6 June 2013
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC(8) - C30B 11/00 (201 3.01 )
USPC - 117/78

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC(8): C30B 11/00 (2013.01 )
USPC: 117/78

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
IPC(8): C30B 11/00 (2013.01 )
USPC: 17/11, 19, 21, 41, 78, 928, 931, 932

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
PatBase; Google Scholar; Google Patent; Search Terms: sheet wafer crucible feed dopant ribbon wafer furnace impurity string filament silicon

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category* Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No.

A US 2008/0134964 A1 (Harvey et al.) 12 June 2008 (12.06.2008) para. [0029]-[0081], Fig. 1-10 1-33
A US 2009/0233396 A1 (Kellerman et al.) 17 September 2009 (17.09.2009) para. [0035], [0070], Fig. 1-16 1-33
A US 6,090,199 A (Wallace, Jr. et al.) 18 July 2000 (18.07.2000) col. 5 In. 18-40, Fig. 3-5 2-7, 18, 22, 23, 25, 28-30
A US 4,889,686 A (Singh et al.) 26 December 1989 (26.12.1989) col. 2 In. 20-37, Fig. 1, 2 9 and 20

Further documents are listed in the continuation of Box C.

Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
"E" earlier application or patent but published on or after the international filing date
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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
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"&" document member of the same patent family

Date of the actual completion of the international search
29 February 2013 (29.02.2013)

Date of mailing of the international search report
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