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[Continued on next page]

(54) Title: APPLICATION SPECIFIC IMPLANT SYSTEM AND METHOD FOR USE IN SOLAR CELL FABRICATIONS

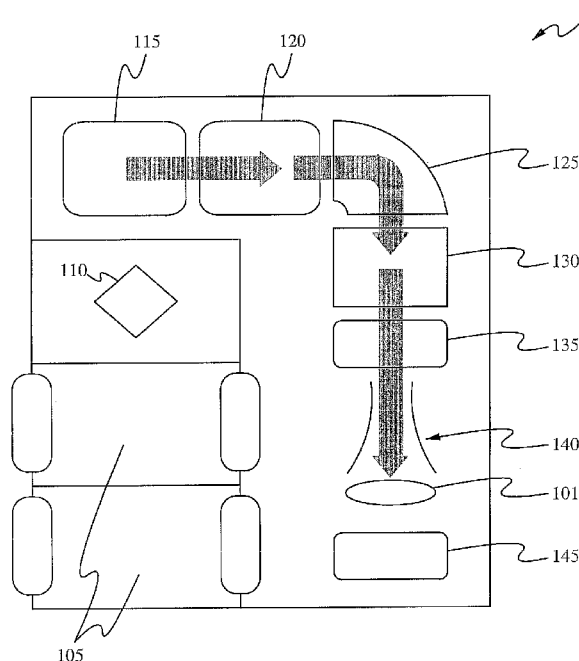


Fig. 1

(57) Abstract: Solar cells and other semiconductor devices are fabricated more efficiently and for less cost using an implanted doping fabrication system. A system for implanting a semiconductor substrate includes an ion source (such as a single-species delivery module), an accelerator to generate from the ion source an ion beam having an energy of no more than 150kV, and a beam director to expose the substrate to the beam. In one embodiment, the ion source is single-species delivery module that includes a single-gas delivery element and a single-ion source. Alternatively, the ion source is a plasma source used to generate a plasma beam. The system is used to fabricate solar cells having lightly doped photo-receptive regions and more highly doped grid lines. This structure reduces the formation of "dead layers" and improves the contact resistance, thereby increasing the efficiency of a solar cell.



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