

Exhibit 24



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(12) **United States Patent**
Reuter

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(54) **LOAD PORT OPERATION IN ELECTRONIC DEVICE MANUFACTURING APPARATUS, SYSTEMS, AND METHODS**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 99 days.

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(21) Appl. No.: **15/458,908**

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(65) **Prior Publication Data**

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(51) **Int. Cl.**
H01L 21/677 (2006.01)
H01L 21/673 (2006.01)

(52) **U.S. Cl.**
CPC .. **H01L 21/67772** (2013.01); **H01L 21/67393** (2013.01); **H01L 21/67775** (2013.01)

(58) **Field of Classification Search**
CPC H01L 21/67772; H01L 21/67775
See application file for complete search history.

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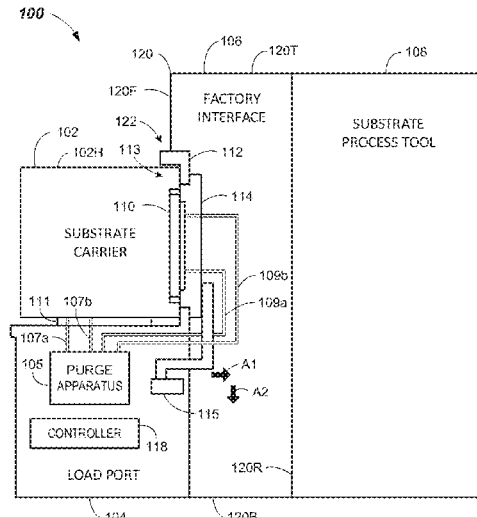
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(57) **ABSTRACT**
An electronic device manufacturing system may include a factory interface having a controlled environment. The electronic device manufacturing system may also include a load port coupled to the factory interface. The load port may be configured to receive a substrate carrier thereon and may include purge apparatus and a controller. The controller may be configured to operate the load port such that any air located around and between a substrate carrier door and the load port is at least partially or entirely purged, thus reducing or preventing contamination of the controlled environment upon the opening of the substrate carrier door by the load port. Methods of operating a factory interface load port are also provided, as are other aspects.

18 Claims, 7 Drawing Sheets



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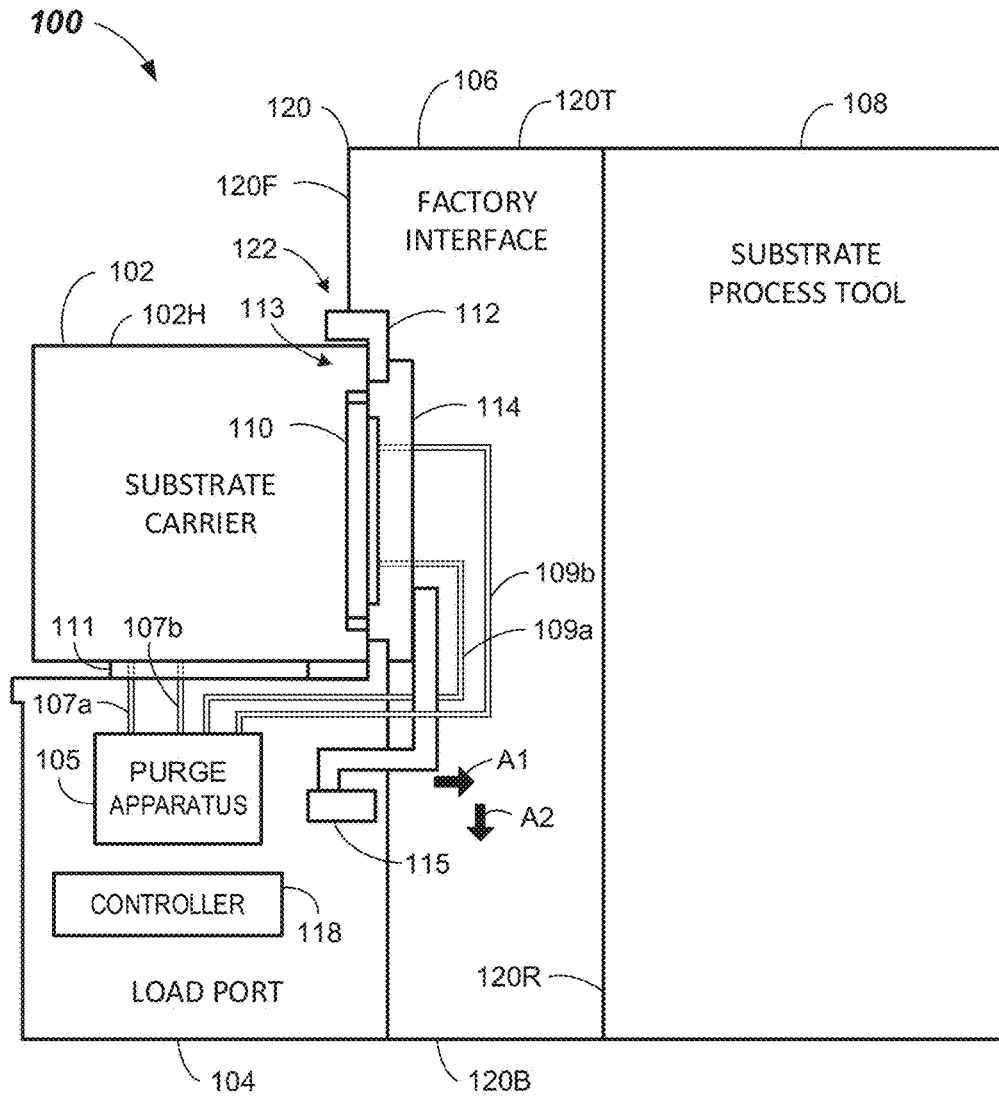


FIG. 1

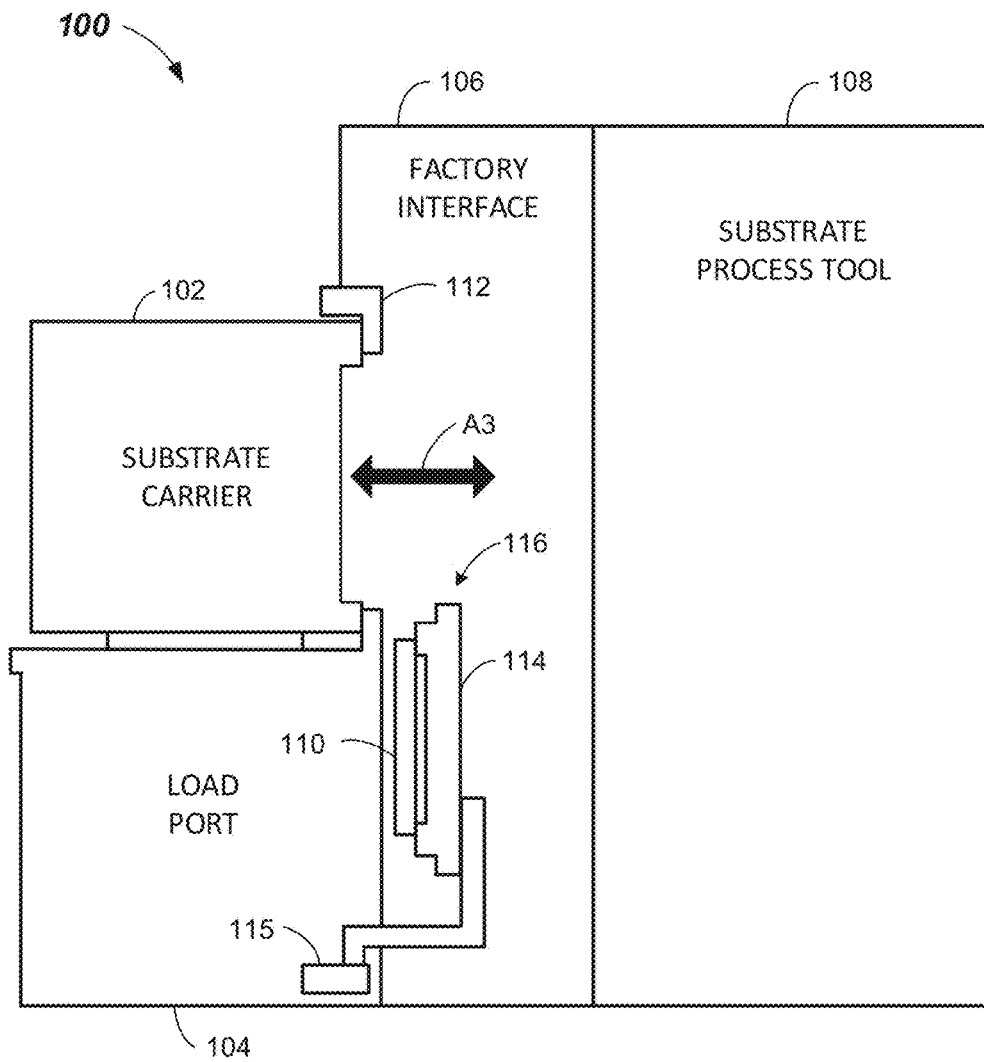


FIG. 1A

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