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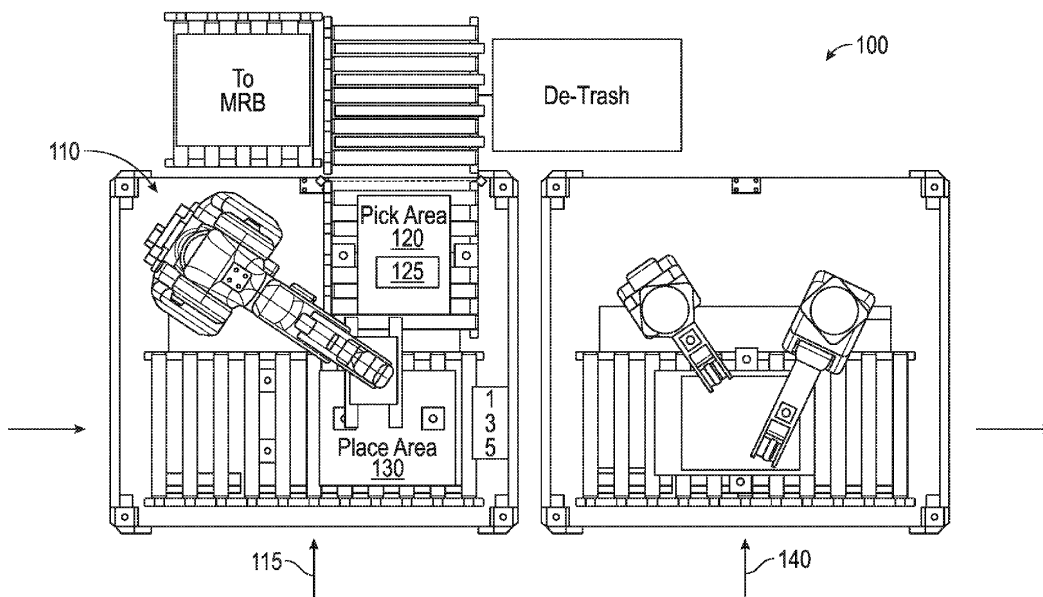


FIG. 1A

(57) Abstract: An assembly operation and a robotic cell for inserting a part into a chassis comprising calculating a first part pose estimation for the part in the pick area, picking up the part, and moving the part above the chassis, calculating a second part pose estimation for the part being held by the robot arm above the chassis, and correcting the second part pose estimation using a chassis pose estimation. The operation further comprising inserting the part into the chassis, wherein the multi-stage verification ensures that a high value part is not damaged in the assembly.

[Continued on next page]

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