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(54) **Title:** METHODS AND SYSTEMS FOR CHUCKING A WARPED WAFER

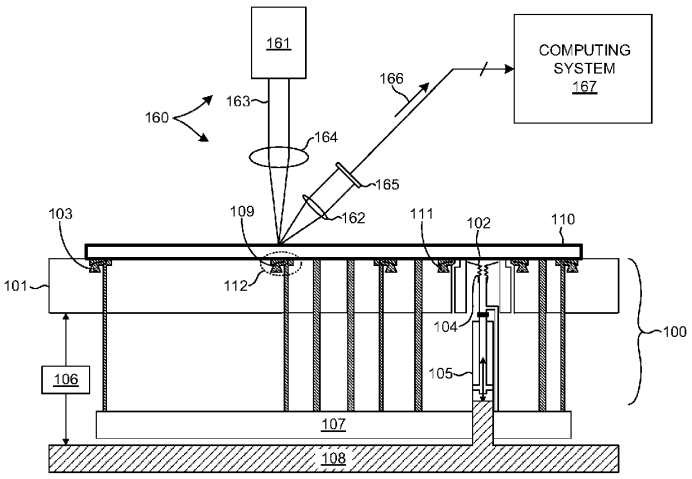


FIG. 7

(57) **Abstract:** Methods and systems for vacuum mounting a warped, thin substrate onto a flat chuck are presented herein. A vacuum chuck includes three or more collapsible bellows that move above the chuck and into contact with a warped substrate. The bellows seal and vacuum clamp onto the backside surface of the substrate. In some embodiments, the bellows collapse by at least five hundred micrometers while clamping. An extensible sealing element is mounted in a recessed annular channel on the surface of the chuck body. As the substrate moves toward the chucking surface, the extensible sealing element extends at least five millimeters above the chuck body and into contact with the substrate. As the space between the chuck and the substrate is evacuated, the extensible sealing element collapse into the recessed annular channel, and the substrate is clamped onto the flat chucking surface of chuck body.

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