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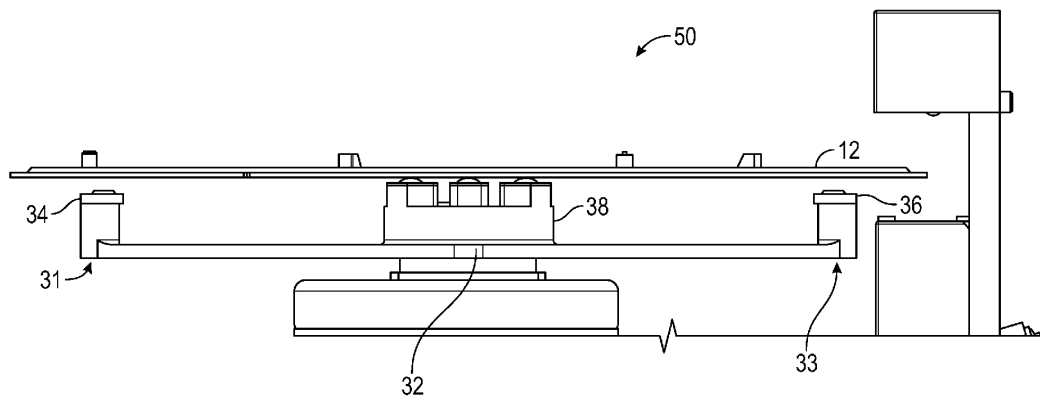


FIG. 4

(57) Abstract: Described herein are aligners and methods of aligning workpieces. A workpiece aligner apparatus comprises an aligner chuck including an arm having a first end and a second end, a first edge gripping element on the first end and a second edge gripping element on the second end, the first edge gripping element and the second edge gripping element spaced apart to hold a workpiece at edges thereof, and a central workpiece handling element located in a central region of the arm, wherein the central workpiece handling element has a height such that the central workpiece handling element extends higher than the first edge gripping element and second edge gripping element.

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