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[54] APPARATUS AND METHOD FOR FORMING A WORKPIECE SURFACE INTO A NON-ROTATIONALLY SYMMETRIC SHAPE

[75] Inventors: Thomas A. Dow; Kenneth P. Garrard; George M. Moorefield, II, all of Raleigh; Lauren W. Taylor, Cary, all of N.C.

[73] Assignee: North Carolina State University, Raleigh, N.C.

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[58] Field of Search 82/1.11, 18, 118, 82/137

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Primary Examiner—Bruce M. Kisliuk

Assistant Examiner—Derris H. Banks

Attorney, Agent, or Firm—Bell, Seltzer, Park & Gibson

[57] ABSTRACT

A turning machine includes a controller for generating both aspherical and non-symmetrical shape components defining the predetermined shape, and a controller for controlling a spindle and a positionable cutting blade to thereby form a predetermined non-rotationally symmetric shape in a workpiece surface. The apparatus includes a rotatable spindle for rotatably mounting the workpiece about an axis, a spindle encoder for sensing an angular position of the rotating workpiece, the cutting blade, and radial and transverse positioners for relatively positioning the cutting blade and workpiece along respective radial and transverse directions. The controller cooperates with a fast transverse positioner for positioning the cutting blade in predetermined varying transverse positions during a revolution of the workpiece.

36 Claims, 13 Drawing Sheets

