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(54) **MODULAR ROBOTIC DEVICE AND MANUFACTURING SYSTEM**

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(52) **U.S. Cl.** **414/749.1**; 198/468.9

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(57) **ABSTRACT**

A manufacturing system is provided for automatic assembly, testing and/or packaging of a variety of products. The system is based on utilization of one or more robotic modules, each having a programmable servo-driven linear actuator of a rod type, combined with slides, and standardized extrusions that form guide rails and a frame to support the actuators. The standardized extrusions include a plurality of faces, with a groove formed in at least one of the faces. Each slide fits in one of the grooves and is attached to the actuator rod, which moves the slide along the guide rails. The guide rails provide structural support to the slides in every direction that a load is attached to the slides, and include grooves to direct the motion of the slides. Two or more such robotic modules, each being positioned in a Cartesian coordinate relationship to one another, complete a system. Each module houses a dedicated controller that operates its respective actuator. The dedicated controller, in turn, connects to a remote computer or industrial controller such that a programmed sequence for robotic motion can be provided by the computer to control movement in the system in all three Cartesian directions.

13 Claims, 15 Drawing Sheets

