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**Tierney et al.**

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(54) **MECHANICAL ACTUATOR INTERFACE SYSTEM FOR ROBOTIC SURGICAL TOOLS**

(75) Inventors: **Michael J. Tierney**, Pleasanton, CA (US); **Thomas G. Cooper**, Menlo Park, CA (US); **Chris A. Julian**, Los Gatos, CA (US); **Stephen J. Blumenkranz**, Redwood City, CA (US); **Gary S. Guthart**, Foster City, CA (US); **Robert G. Young**, Portola Valley, CA (US)

(73) Assignee: **Intuitive Surgical, Inc.**, Sunnyvale, CA (US)

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**Related U.S. Application Data**

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(51) **Int. Cl.**  
**A61B 19/00** (2006.01)

(52) **U.S. Cl.** ..... **606/130; 606/1**

(58) **Field of Classification Search** ..... **606/1, 606/130; 700/259, 260, 263**

See application file for complete search history.

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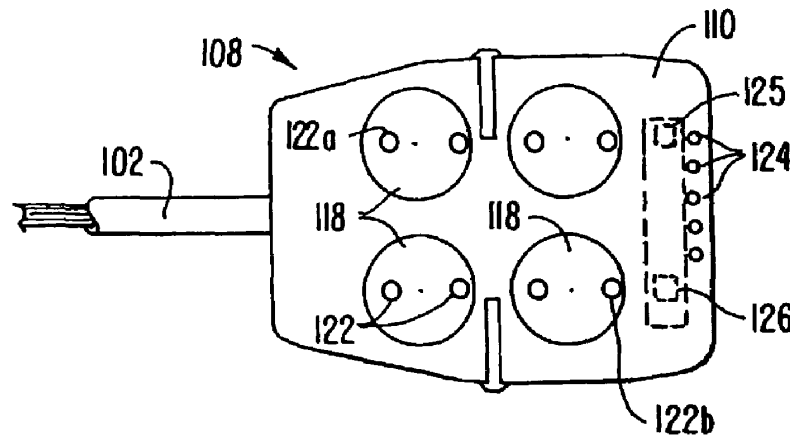
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*Primary Examiner*—Eduardo C Robert  
*Assistant Examiner*—James L Swiger, III

(57) **ABSTRACT**

Robotic surgical tools, systems, and methods for preparing for and performing robotic surgery include a memory mounted on the tool. The memory can perform a number of functions when the tool is loaded on the tool manipulator: first, the memory can provide a signal verifying that the tool is compatible with that particular robotic system. Secondly, the tool memory may identify the tool-type to the robotic system so that the robotic system can reconfigure its programming. Thirdly, the memory of the tool may indicate tool-specific information, including measured calibration offsets indicating misalignment of the tool drive system, tool life data, or the like. This information may be stored in a read only memory (ROM), or in a nonvolatile memory which can be written to only a single time. The invention further provides improved engagement structures for coupling robotic surgical tools with manipulator structures.

**31 Claims, 22 Drawing Sheets**



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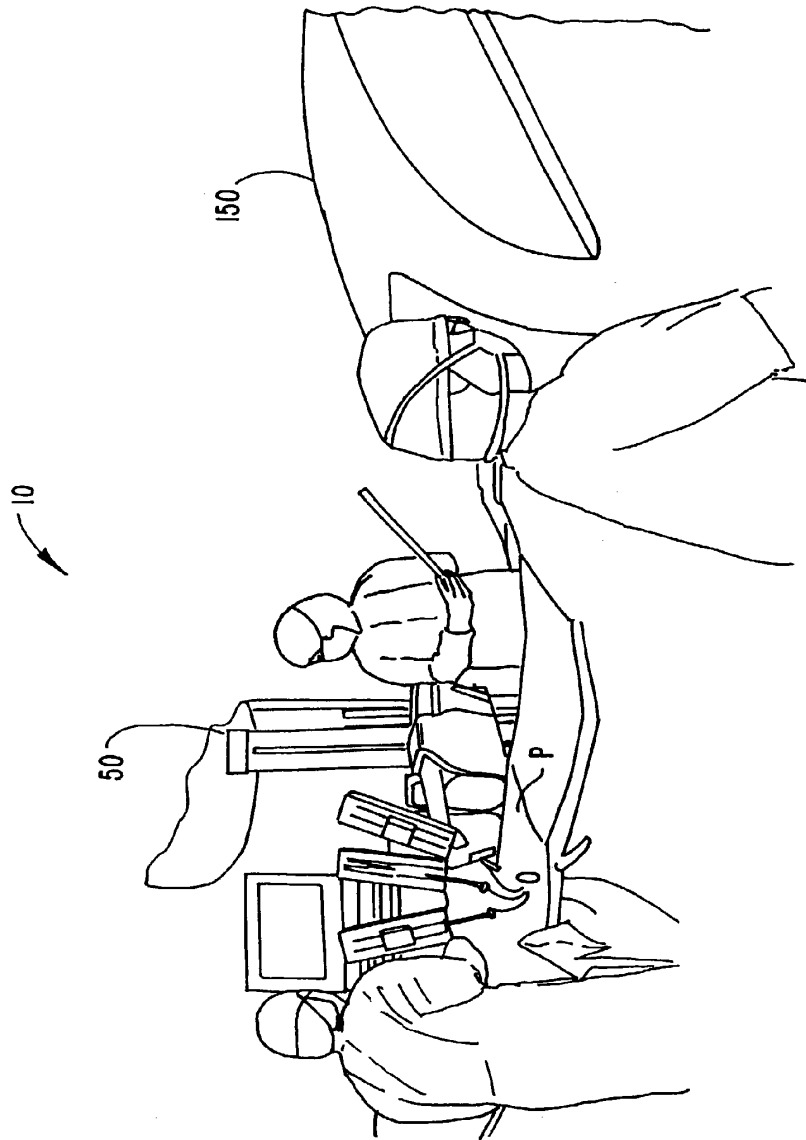
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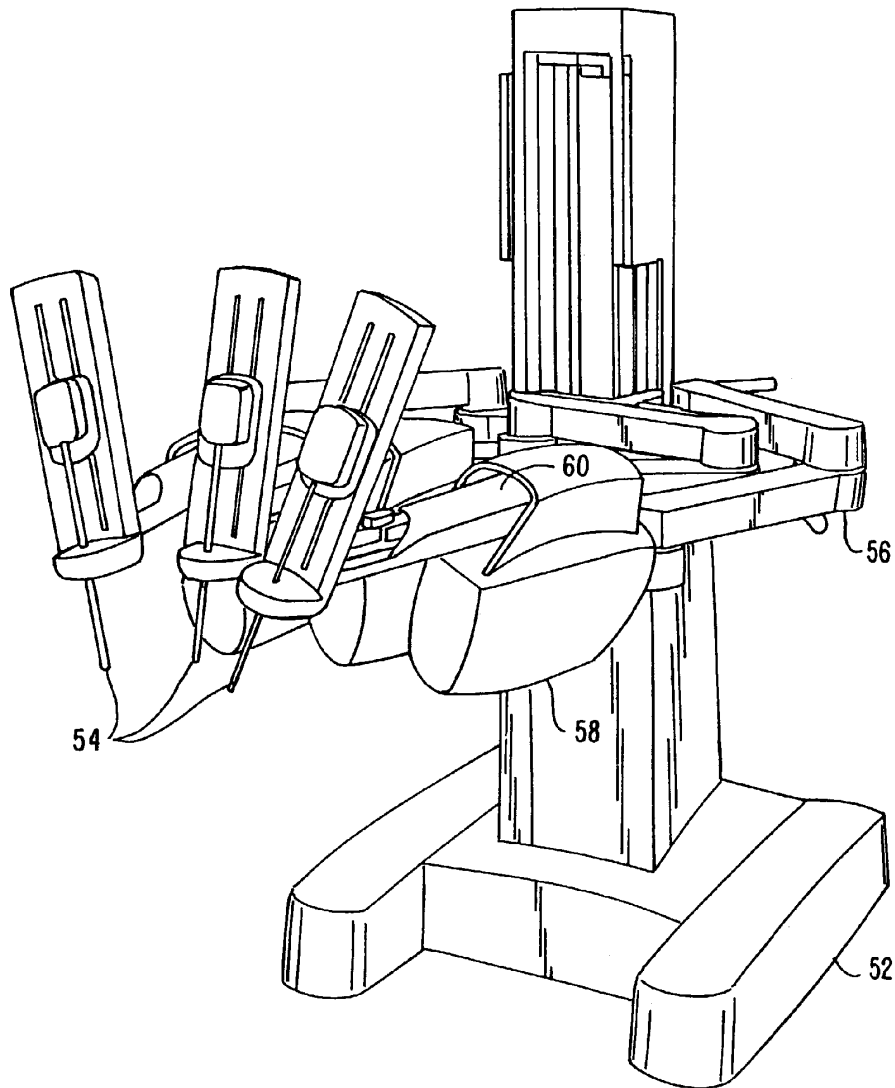


FIG. 2.

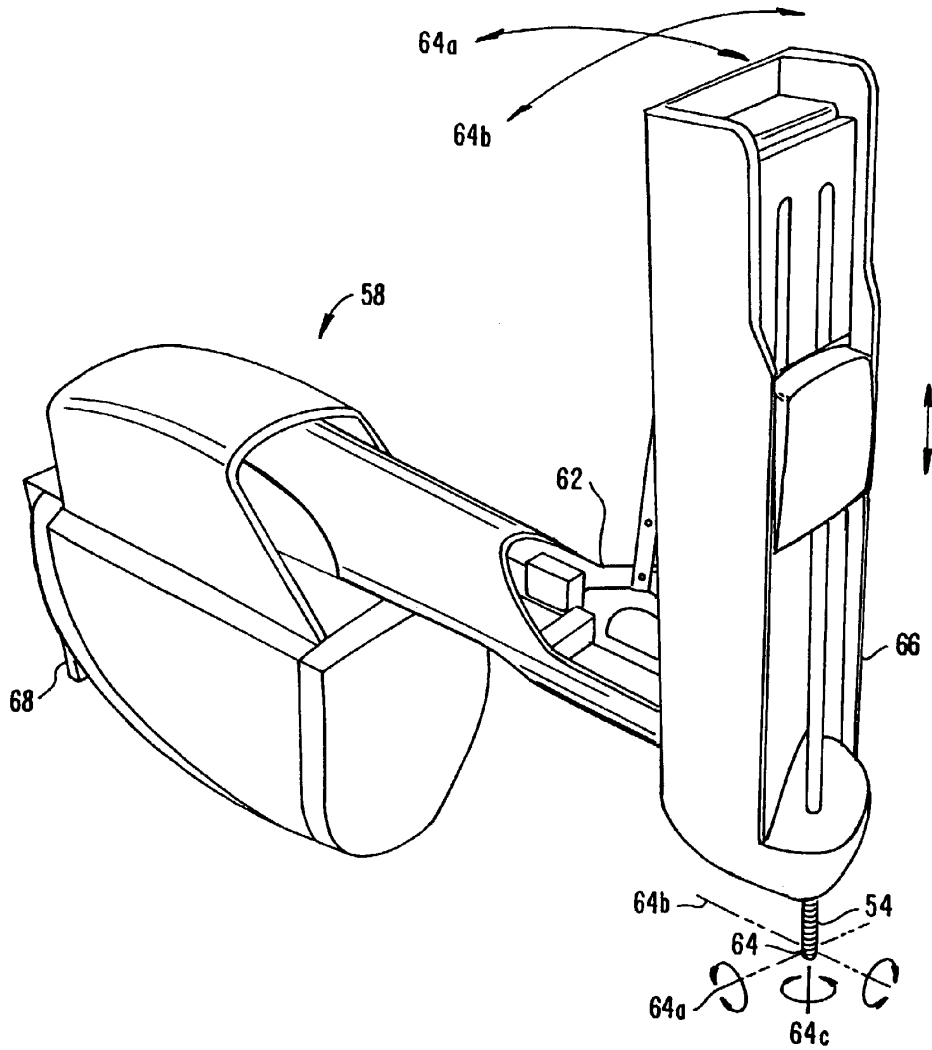


FIG. 2A.

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