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Tierney et al.

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(54) **SURGICAL ROBOTIC TOOLS, DATA ARCHITECTURE, AND USE**

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(51) **Int. Cl.**^{7} **A61B 19/00**
(52) **U.S. Cl.** **606/130**; 600/429
(58) **Field of Search** 606/130; 600/429

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(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.

28 Claims, 22 Drawing Sheets
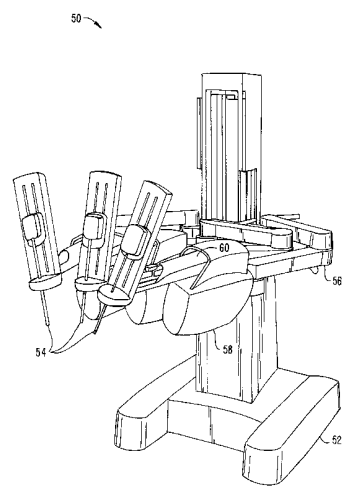
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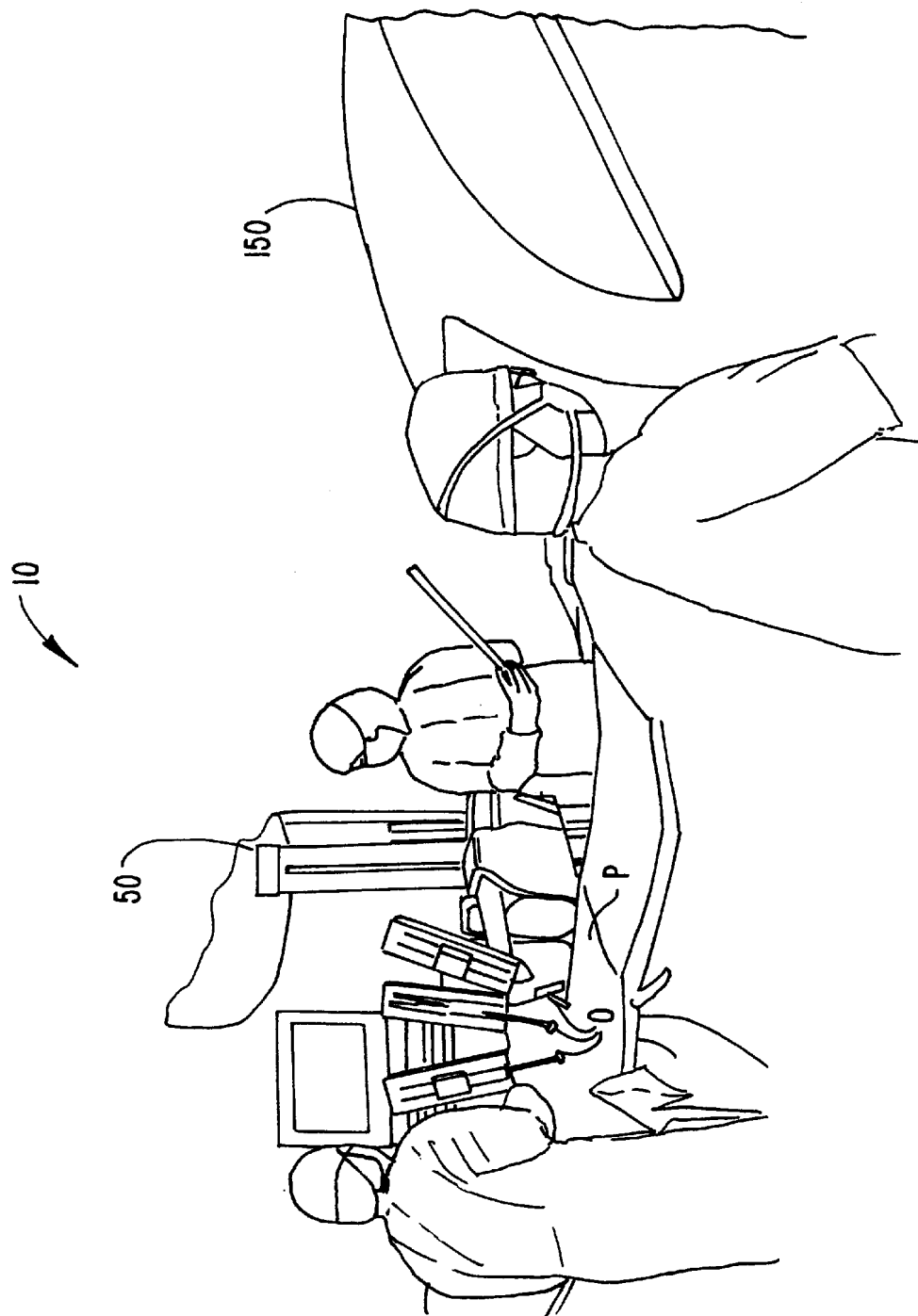
FIG. I.

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FIG. 2.

FIG. 2A.

DOCKET ALARM
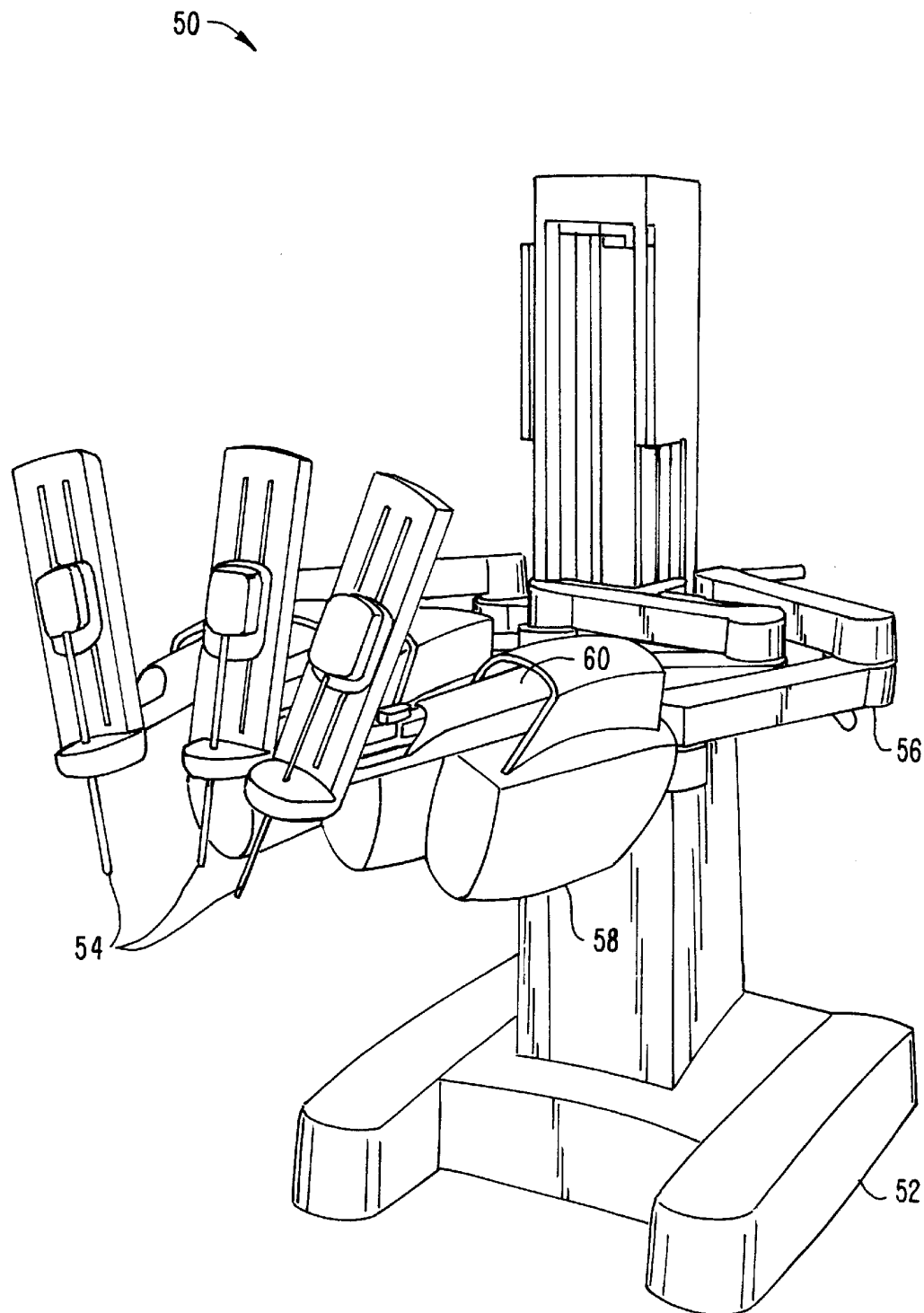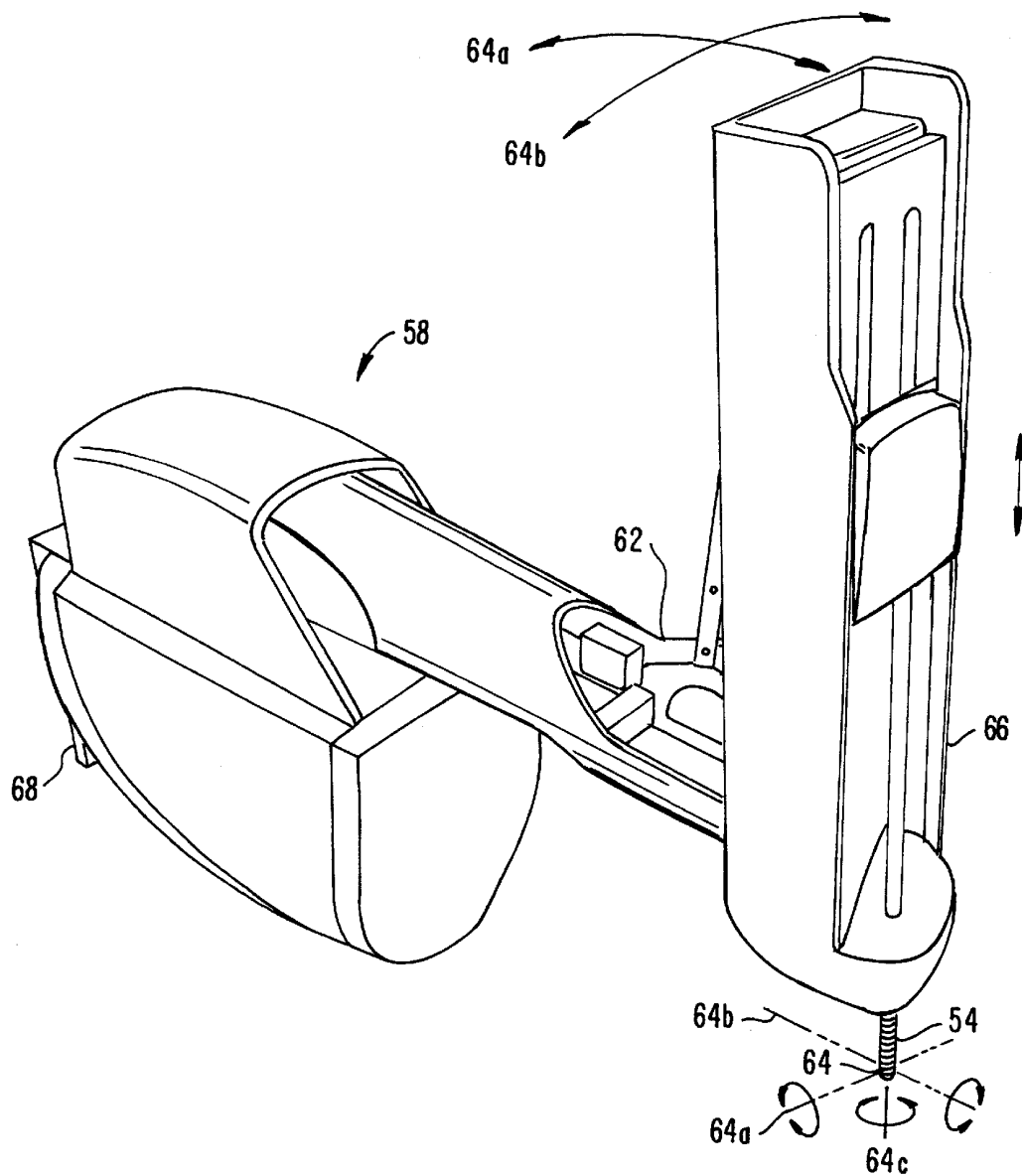
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