

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent of: Shelton, IV
U.S. Pat. No.: 8,479,969 Attorney Docket No.: 11030-0049IP5
Issue Date: July 9, 2013 11030-0049IPA
Appl. Serial No.: 13/369,609
Filing Date: Feb. 9, 2012
Title: DRIVE INTERFACE FOR OPERABLY COUPLING A
MANIPULATABLE SURGICAL TOOL TO A ROBOT

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**SUPPLEMENTAL DECLARATION OF
DR. BRYAN KNODEL IN SUPPORT OF
PETITION FOR
INTER PARTES REVIEW OF U.S. PATENT NO. 8,479,969
IPR2018-01247
IPR2018-01254**

I, Bryan Knodel, declare as follows:

I. INTRODUCTION

1. I have been engaged as an expert by Fish & Richardson P.C. on behalf of Intuitive Surgical, Inc. (“Petitioner”) for the above-captioned *inter partes* review. I understand that this proceeding involves United States Patent No. 8,479,969 entitled “Drive Interface for Operably Coupling a Manipulatable Surgical Tool to a Robot” by Frederick E. Shelton IV, filed February 9, 2012, and issued July 9, 2013 (the “’969 Patent” or “’969”). I understand that the ’969 Patent is currently assigned to Ethicon LLC.

2. I have previously submitted a declaration in this matter that provides my qualifications, and this declaration responds to specific issues raised in the Patent Owner Response and supporting expert declarations in this proceeding.

II. RESPONSE TO SPECIFIC ISSUES RAISED BY PATENT OWNER

3. I understand that Patent Owner has submitted declarations by Dr. Fegelman (a surgeon) and Dr. Awatar in support of the Patent Owner Response. In those declarations, both Dr. Fegelman and Dr. Awatar assert that handheld linear stapler/cutters would not be combined with Anderson or Wallace (which disclose surgical robots) because those surgical robots allegedly fail to disclose tactile feedback, and that a handheld linear stapler/cutter with passive articulation, such as disclosed by

Timm would not be combined Anderson, as I proposed because, again, Anderson does not disclose tactile feedback.

4. I disagree with those conclusions for two reasons. First, a person of ordinary skill in the art would have understood that both Anderson and Wallace in fact disclose tactile feedback. Second, even if they had not disclosed tactile feedback, a person of ordinary skill in the art would nonetheless have been motivated to make the combinations I propose (including Timm with Anderson and Giordano/Shelton with Wallace).

5. As the '969 Patent explains, there are different forms of feedback in robotic systems, which can include video feedback and tactile feedback. Video feedback allows a surgeon operating a surgical robot to see what the end effectors are doing so that the surgeon can properly control the movement of the end effectors. Tactile feedback is force feedback to the surgeon's hands so that the surgeon feels the forces being applied to the end effectors. The '969 Patent explains: "the robotic controller 1001 system may provide the surgeon with an indication that signifies the closure of the anvil. Such indication may be, for example, in the form of a light and/or audible sound, tactile feedback on the control members, etc." '969 Patent, 67:32-36.

6. With regard to passive articulation, Dr. Fegelman has stated:

Because passive articulation brings the end effector into contact with

other structures, passive articulation requires nearly instantaneous, tactile feedback to ensure that excessive forces are not applied to the structures. This is particularly true when the exterior of the end effector is being pressed against a structure in the body. With hand-held laparoscopic devices, the surgeon's grip on the hand-held portion (which is connected to the end effector through the shaft of the instrument) provides this tactile feedback. The surgeon also views the surgical site on video; however, the video does not provide an indication of the forces that are being applied. Thus, the tactile feedback provided through the surgeon's grip on the hand-held portion is critical to the use of passive articulation.

Fegelman Declaration, ¶19.

7. While I agree that passive articulation against **a structure in the body** raises concerns of damaging tissue due to excessive force, such concerns may be addressed by a skilled surgeon, and in any event are not applicable when passive articulation is performed by pressing one instrument against another instrument. Tactile feedback is not a necessity and is not "critical" when using passive articulation against a second instrument.

8. Accordingly, passive articulation is not a necessity and is not critical in the proposed combination of Timm with a surgical robot because Timm expressly discloses passive articulation either by pressing against a body organ or

by pressing against another instrument. Accordingly, a person of ordinary skill in the art reading Timm would be motivated to combine Timm with a surgical robot and employ Timm's passive articulation with the expectation that the passive articulation would be performed, as taught by Timm, at least by pressing the instrument against another instrument. Timm specifically discloses:

To use this embodiment, the clinician positions the tool assembly 100 in the patient and then **applies an articulation force to the tool assembly with another surgical instrument** or by bringing the tool assembly 100 into contact with a portion of the patient to articulate the tool assembly to a desired position before drawing the actuation member 3050 in the proximal direction PD.

Timm, 32:32-38.

9. The above passage from Timm is quoted by Dr. Awtar (at paragraph 41 of his Declaration). However, nothing in Timm mandates that the second option (pressing against the body) for use of passive articulation must be used, and a person of ordinary skill in the art would readily understand that either option may be used. A person of ordinary skill in the art would understand that when adapting Timm to a robot that lacked tactile feedback, a surgeon could simply articulate one instrument by pressing it against another instrument. Tactile feedback is not necessary or critical when using passive articulation in this manner. Furthermore,

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