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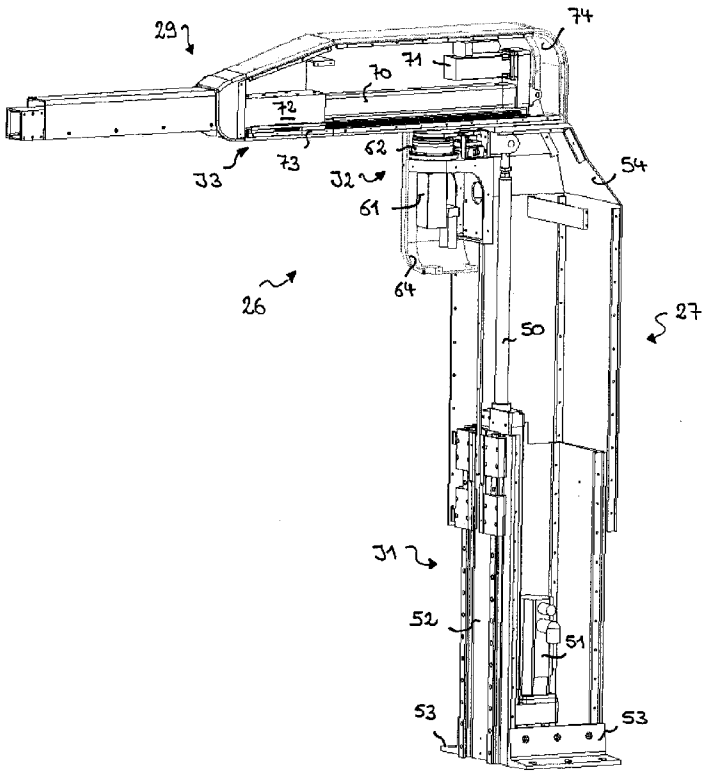
[Continued on next page]

(54) **Title:** MEDICAL ROBOTIC SYSTEM WITH MANIPULATOR ARM OF THE CYLINDRICAL COORDINATE TYPE



(57) **Abstract:** A medical robotic system (10) for performing medical procedures comprises a robot manipulator (14) for robotically assisted handling of a medical instrument, in particular a laparoscopic surgery instrument (18). The robot manipulator (14) comprises a base (24); a manipulator arm (26) with an essentially vertical part (27) supported by the base and with an essentially horizontal part (29) supported by the vertical part (27); a manipulator wrist (28) supported by the manipulator arm (26); and an effector unit (30) supported by the manipulator wrist and configured for holding a medical instrument. The manipulator arm (26) has a cylindrical PRP kinematic configuration for positioning the manipulator wrist. More particularly, the PRP kinematic configuration has the following joint sequence: a prismatic (P) first joint (J1) for varying the height of the vertical part (27) by providing a translational degree of freedom along an essentially vertical axis, a revolute (R) second joint (J2) for varying the rotational angle between the vertical part (27) and the horizontal part (29) by providing a rotational degree of freedom about an essentially vertical axis, and a prismatic (P) third joint (J3) for varying the reach of the horizontal part by providing a translational degree of freedom along an essentially horizontal axis.

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A. CLASSIFICATION OF SUBJECT MATTER
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B25J A61B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)
EPO-Internal, WPI Data, PAJ

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5 351 676 A (PUTMAN ET AL) 4 October 1994 (1994-10-04) abstract; figures 3,8,11	1-4, 7-10,19
Y	US 6 120 433 A (MIZUNO ET AL) 19 September 2000 (2000-09-19) figures 2,9,11a column 5, line 10 - line 17	1-5,7

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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Date of the actual completion of the international search	Date of mailing of the international search report
20 June 2007	26/07/2007

Name and mailing address of the ISA/	Authorized officer
European Patent Office, P.B. 5818 Patentlaan 2 NL – 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016	Lumineau, Stéphane

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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	FARAZ A ET AL: "A robotic case study: optimal design for laparoscopic positioning stands" ROBOTICS AND AUTOMATION, 1997. PROCEEDINGS., 1997 IEEE INTERNATIONAL CONFERENCE ON ALBUQUERQUE, NM, USA 20-25 APRIL 1997, NEW YORK, NY, USA,IEEE, US, vol. 2, 20 April 1997 (1997-04-20), pages 1553-1560, XP010235537 ISBN: 0-7803-3612-7 table 1	1-5,7
A	BOUAZZA-MAROUF K ET AL: "ROBOTIC-ASSISTED INTERNAL FIXATION OF FEMORAL FRACTURES" PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS. JOURNAL OF ENGINEERING IN MEDICINE. PART H, MECHANICAL ENGINEERING PUBLICATIONS LTD, LONDON, GB, vol. 209, no. H1, 1995, pages 51-58, XP000582781 ISSN: 0954-4119 figure 5 page 54, right-hand column, line 5 - line 18	1-5

INTERNATIONAL SEARCH REPORT

Information on patent family members

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Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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