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(51) International classification (86) International Application No Filing Date (87) International Publication No (61) Patent of Addition to Application Number Filing Date (62) Divisional to Application Number Filing Date		(71)Name of Applicant : 1)INDIAN INSTITUTE OF TECHNOLOGY (INDIAN SCHOOL OF MINES), DHANBAD Address of Applicant :Dhanbad - 826004, Jharkhand, India Dhanbad ----- ----- Name of Applicant : NA Address of Applicant : NA (72)Name of Inventor : 1)Ashish Siddharth Address of Applicant :Purnima Kutir, Vill Merha, Post Chirkunda, Dist. Dhanbad – 828202, Jharkhand, India Dhanbad ----- 2)Arun Dayal Udai Address of Applicant :Room No: 128A, Department of Mechanical Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, Police Line Road, Hirapur, Sardar Patel Nagar, Dhanbad - 826004, Jharkhand, India Dhanbad - ----- ----- 3)Ajay Bhandari Address of Applicant :Room No: 225B, Department of Mechanical Engineering, Indian Institute of Technology (Indian School of Mines), Dhanbad, Police Line Road, Hirapur, Sardar Patel Nagar, Dhanbad – 826004, Jharkhand, India Dhanbad ----- -----	
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(57) Abstract :
The present invention relates to an equipment and method for ocular surgery and drug delivery with needle twisting capability with robotic-assisted techniques. The equipment comprises a top frame, (9) bottom frame (1), needle connector (10), and links (3,4) comprised of active and passing bearings, along with rod-end bearings (8) disposed to form the passive joints of the manipulators. Six nos. servo actuators (2) are configured to form the active joints of the manipulators to manipulate the end effector to the desired pose through rotation to specific joint angles. The interconnected mechanism facilitates six different configurations for the top platform (9), thereby achieving six degrees of freedom in positioning (movement along x-axes, y-axes, z-axes) and orientation (rotation about x-axes, y-axes, and z-axes). This prefers that the needles be rotated along their insertion axis while they are inserted into the eye for drug delivery. The rotating needle ensures quicker penetration and reduces stress and pain for the patient. To adopt this technology for surgical procedures, the surgical robots that have been invented incorporate three distinct control mechanisms such as control type A (approach phase), control type B (insertion phase), control type C (Surgery Phase). Fig.1

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