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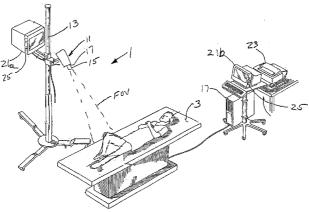
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(54) Title: APPARATUS FOR FITTING IMPLANTS AND BALANCING LIGAMENTS



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(57) Abstract: Apparatus and method for determining the kinematics of a large joint (e.g., a knee) undergoing arthroplasty, for comparing the kinematics of the joint undergoing surgery with the kinematics of the normal joint, and for providing the surgeon with information allowing the balancing of the ligaments of the joint upon the installation of a prosthesis replacement joint. The apparatus (1) includes optical targets (9) mounted on joint replacement components (5, 7) fitted to the resected bones of the joint. One or more video cameras (11) are used to obtain a series of images of the various optical targets as the extremity is flexed, extended, and rotated. A computer (17) is responsive to the images of the targets to determine the kinematics of the joint as it is flexed, extended and rotated. The computer compares the kinematics of the observed joint with the kinematics of a normal joint and determines, based on anomalies of the observed joint relative to the normal joint, whether other implant components or spacers are required, and determines which ligaments must be relaxed or contracted so that the ligaments are balanced. The computer displays suggestions to the surgeon for changing components and for relaxing or contracting specific ligaments such that the ligaments of the joint is balanced with the prosthesis joint in place. A method of computer ligament balancing is also disclosed.



INTERNATIONAL SEARCH REPORT

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B. FIEL	DS SEARCHED				
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	ata base consulted during the international search (na ontinuation Sheet	me of data ba	ase and, where practicable, se	earch terms used)	
C. DOC	UMENTS CONSIDERED TO BE RELEVANT				
Category *	Citation of document, with indication, where a			Relevant to claim No.	
Α	US 6,205,411 B1 (DIGIOIA III et al) 20 March 2001 (20.03.2001), see entire specification.		1-6		
A,P	P US 6,450,978 B1 (BROSSEAU et al) 17 September 2002 (17.09.2002), see entire specification.		1-6		
Α	US 5,682,886 A (DELP et al) 04 November 1997 (04.11.1997), see entire specification.		, see entire specification.	1-6	
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	documents are listed in the continuation of Box C.		ee patent family annex.		
"A" document	pecial categories of cited documents: defining the general state of the art which is not considered to icular relevance	p	ater document published after the interiority date and not in conflict with tenderstand the principle or theory understand the principle or theory understand the principle or theory understand the principle or the principle or the principle of	he application but cited to	
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Continuation of Item 4 of the first sheet: The existing title is too long in length.
New Title: Apparatus for Fitting Implants and Balancing Ligaments
Continuation of B. FIELDS SEARCHED Item 3: East Database
Search terms: ligament, ligamentous, balance, computer, camera, trial, prosthesis, knee

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