

[54] **NEW JERSEY MENISCAL BEARING KNEE REPLACEMENT**

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Related U.S. Application Data

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[51] Int. Cl.³ **A61F 1/03**

[52] U.S. Cl. **3/1,911; 128/92 C**

[58] Field of Search **3/1.9-1.913; 128/92 C, 92 CA**

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[57] **ABSTRACT**

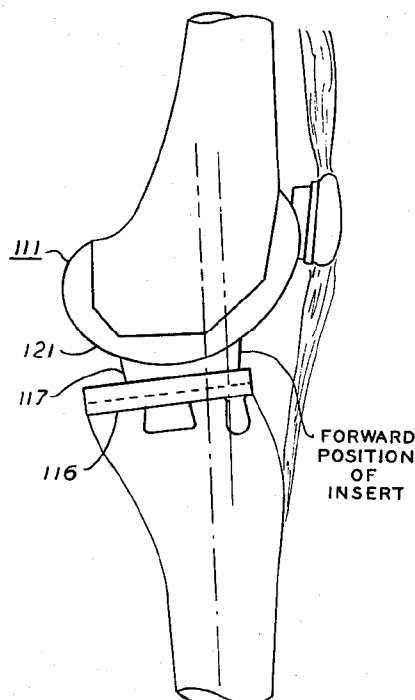
A prosthesis for the surgical replacement of a dysfunctional knee joint is disclosed. The prosthesis includes a

tibial platform, one or two tibial bearing inserts, and a femoral component.

In a unicompartmental embodiment of the invention, the tibial platform includes a spike for securing the tibial platform to the tibia. The tibial platform, in the unicompartmental embodiment, includes a track, which may be curved, and which is slidably engaged in dovetail fashion by a tibial bearing insert, typically of high molecular weight polyethylene. The superior surface of the tibial bearing insert is concave spherical, designed to slidably engage the inferior surface of the femoral component. The inferior surface of the femoral component is generally convex spherical, with radius of curvature slightly smaller than the radius of curvature of the tibial bearing insert. In some embodiments the inferior surface of the femoral component may have two or more differing radii of curvature at different points on such surface. Typically the tibial platform and the femoral component are constructed of cobalt-chromium alloy.

In a bicompartamental or tricompartmental embodiment of the invention, the tibial platform includes two tracks, each of which may be curved, and each of which slidably engages in dovetail fashion a tibial bearing insert. The two tibial bearing inserts each engage, via their superior concave spherical surfaces, mating inferior convex surfaces of the femoral component. The two curved tracks are in general not concentric; rather, the center of each falls on a line normal to the plane of such curved track and passing through the center of curvature of the concave spherical surface of the tibial bearing insert of the other curved track.

6 Claims, 76 Drawing Figures



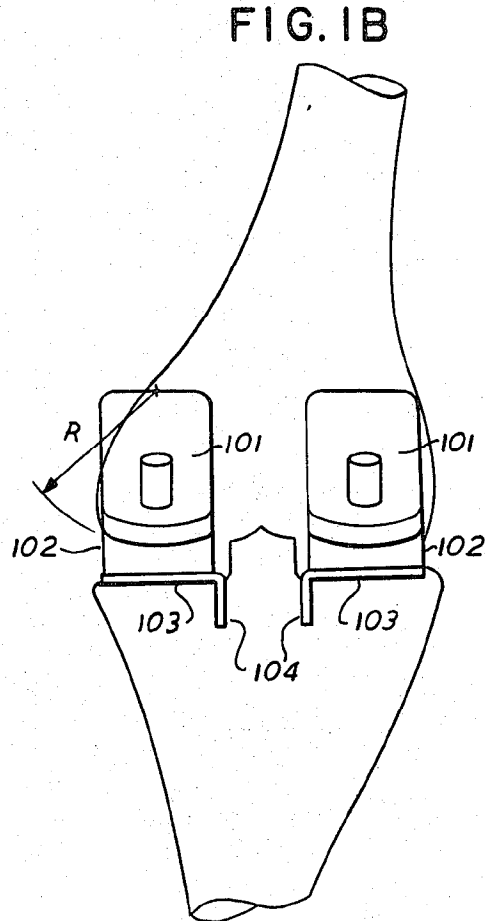
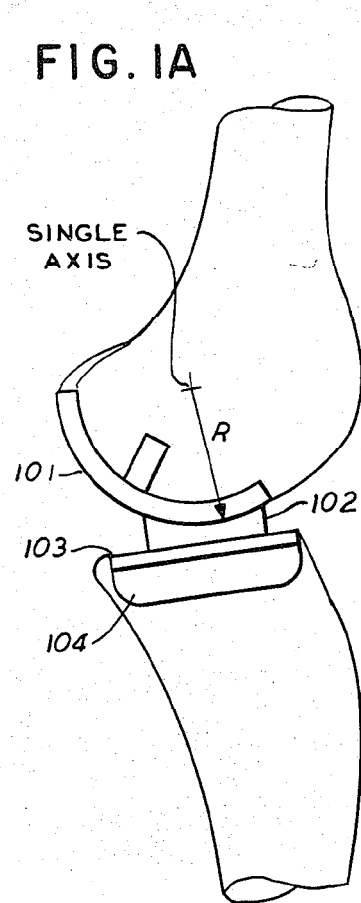


FIG. 3A
POSITION OF BEARING INSERTS
AT 90° FLEXION WITH NO
ROTATION

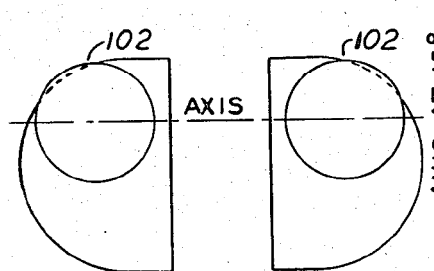
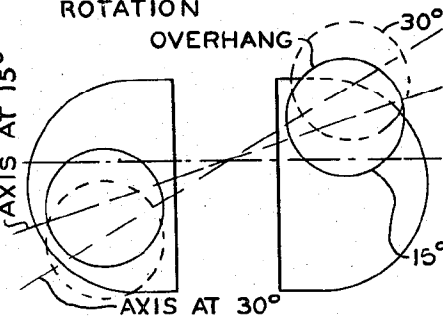


FIG. 3B
POSITION OF BEARING IN-
SERTS AT 90° FLEXION
WITH 15° AND 30° AXIAL
ROTATION



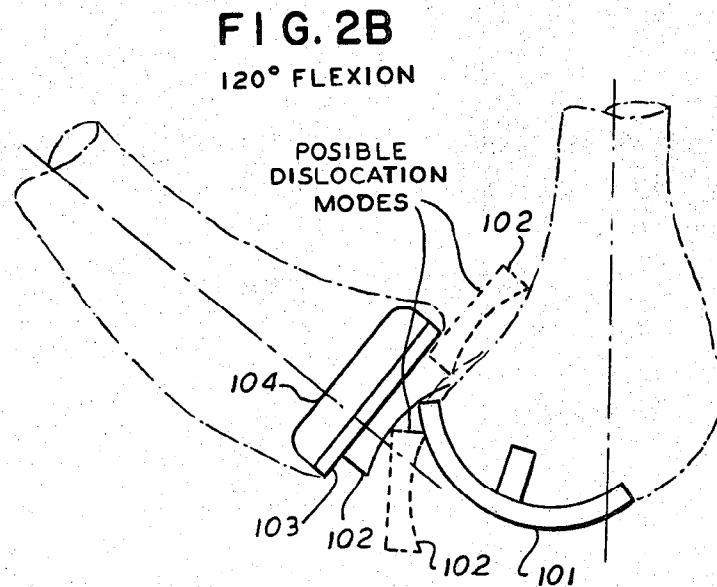
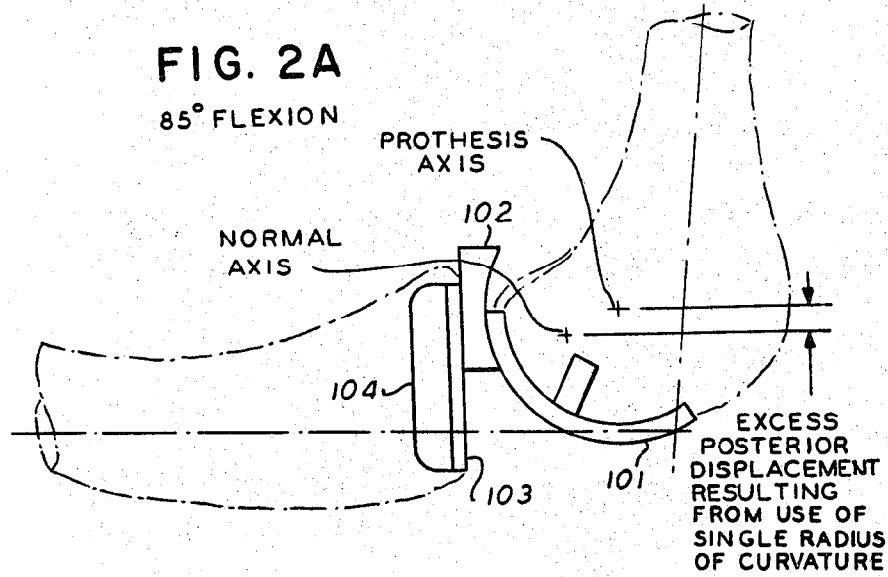


FIG. 4

SWING PHASE
OF WALKING

KNEE DISTRACTED
INSERT FREE TO
DISLOCATE

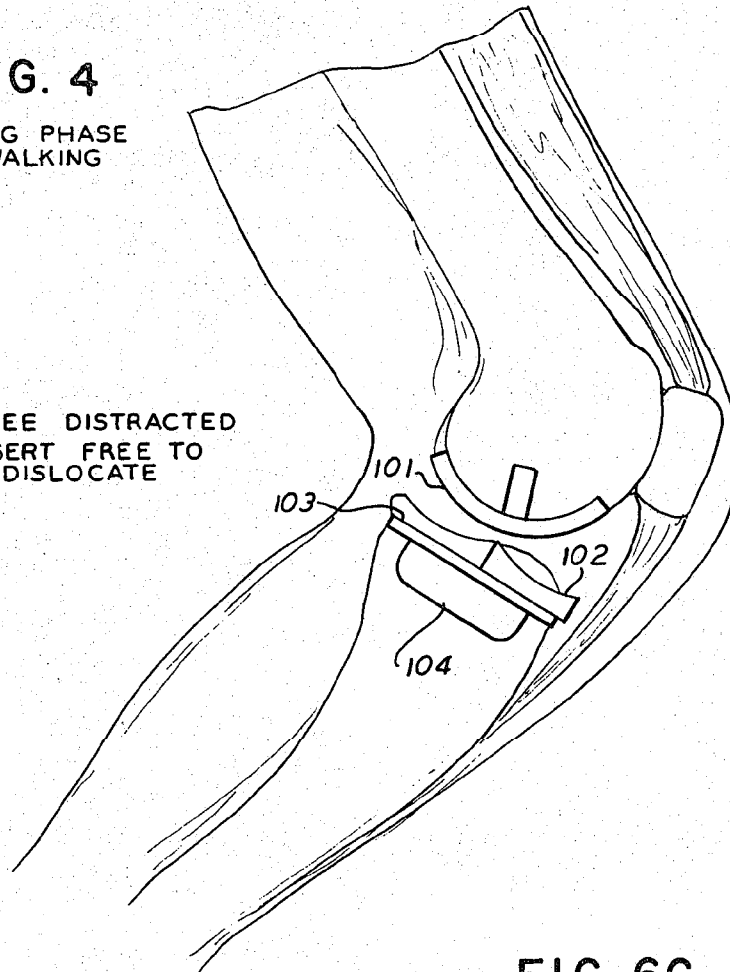
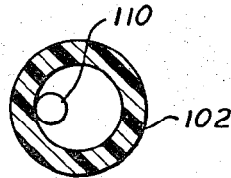


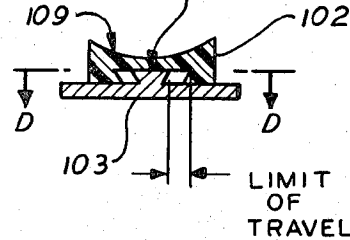
FIG. 6D



HIGH STRESS DUE TO
HIGHLY INCONGRUENT
CONTACT

FIG. 6C

HIGH COMPRESSION
STRESS



LIMIT
OF
TRAVEL

FIG. 5A
ANATOMICAL RAMP
HEIGHT

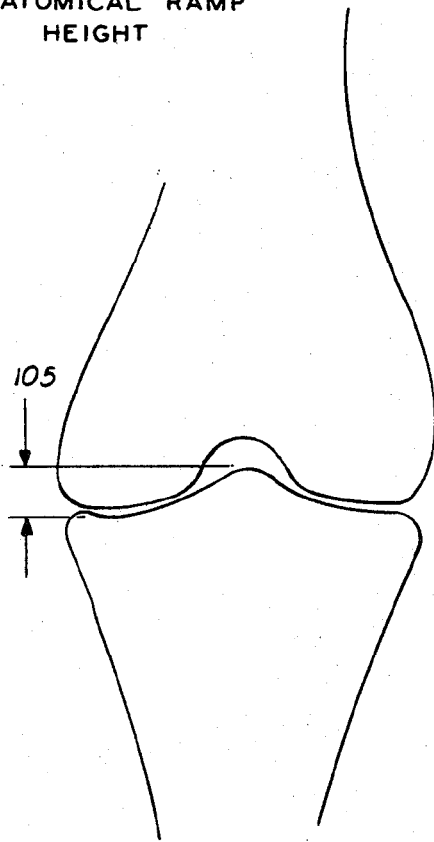


FIG. 5B

OXFORD PROSTHESES
RAMP HEIGHT

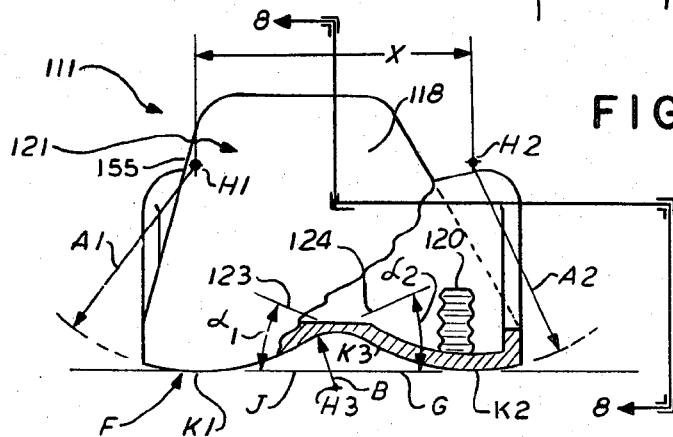
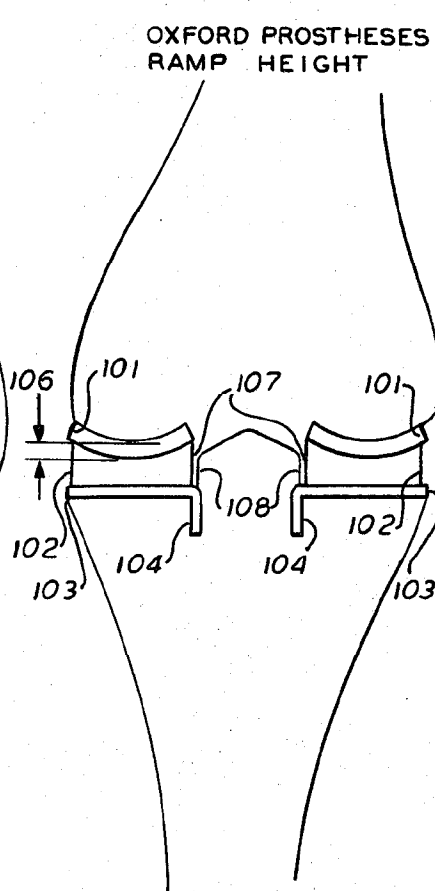


FIG. 7

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