PATENT SPECIFICATION (11) 1 573 608

1 573 608

(21) Application No. 52400/75 (22) Filed 22 Dec. 1975

(23) Complete Specification Filed 22 Dec. 1976

(44) Complete Specification Published 28 Aug. 1980

(51) INT. CL.[3] A61F 1/03
F16C 11/08

(52) Index at Acceptance
A5R AB
E2F 602 662 BA BH BJ

(72) Inventor: DEREK LESLIE HOWSE

(54) PROSTHETIC HIP CUP ASSEMBLY

(71) We, D. HOWSE & COMPANY LIMITED, of St. Marks Road, Lymington, Hants SO4 8HA, a British Company, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:-

This invention relates to a prosthetic hip cup assembly for use with a femoral head prosthesis in the replacement of a patient's hip joint.

One known form of hip cup for such application comprises a substantially hemispherical hollow body of a resilient synthetic plastics material which can snap over the femoral head. In use however only the inherent strength of the cup itself prevents the cup from being pulled off the spherical head and it has been found in practice that it is possible for a patient to lever the cup from the femoral head and separate these components. It has also been experienced that in cases where the outer surface of the plastics material has been exposed to the rough surface of human bone, damage has taken place to the outer surface of the hip cup.

According to the present invention, there is provided a prosthetic hip cup assembly comprising an inner cup of resilient material capable of being snapped on to a part-spherical prosthetic femoral head, and a substantially rigid outer cup having a blind bore for receiving the inner cup to inhibit the inner cup from stretching over the femoral head and separating therefrom, an annular recess being provided adjacent the open end of the bore on the inside of the outer cup, and a corresponding annular protuberance being provided on the outer surface of the inner cup, the blind end of the bore in the outer cup being part-spherical and concentric with a part-spherical outer surface of the outer cup, and the inner cup having a corresponding part-spherical outer end face which is concentric with a part-spherical recess for accommodating the part-spherical femoral head. The inner cup is first snapped over the femoral head, after which the outer cup is pressed over the inner cup, which will slide into the bore in the outer cup. As the inner cup is pressed to the blind end of the bore in the outer cup, the protuberance on the inner cup will snap into the recess inside the outer cup; this now inhibits the inner cup from stretching over the femoral head, and further prevents the resilient material of the inner cup from coming into contact with human bone, since it offers the outer surface of the rigid outer cup to the patient's acetabulum.

The invention will now be described by way of example with reference to the accompanying drawings, in which:

Figure 1 is a sectional view of a metal hip cup, and

Figure 2 is a sectional view of a complete hip joint assembly.

The assembly shown in Figure 2 comprises a metal hip cup 1, also shown in Figure 1, with a part-spherical outer surface 2 which will fit into the patient's acetabulum. The inside is bored out to provide a blind bore 3 which receives a plastics cup 4. The plastics cup 4 with a part-spherical recess 5 is first resiliently snapped over a femoral head 6, and is then inserted into the bore 3 of the metal cup 1. A recess 7 adjacent the open end of the bore 3 in the cup 1 allows a protuberance 8 on the plastics cup to snap into the recess 7 and lock the plastics cup in position in the bore 3. The presence of the outer metal cup 1 inhibits the cup from stretching over the femoral head and separating therefrom.

The recess 7 and protuberance 8 are preferably annular and extend around the entire cylindrical wall 9 of the bore 3 and the corresponding cylindrical outer surface of the cup 4 respectively. The bore 3 has a part-spherical blind end 10 which is concentric

with the part-spherical outer surface 2.

The corresponding part-spherical outer end face of the inner cup 4 is likewise concentric with the part-spherical recess 5 which receives the part-spherical femoral head 6.

WHAT WE CLAIM IS:-

1. A prosthetic hip cup assembly comprising an inner cup of resilient material capable of being snapped on to a part-spherical prosthetic femoral head, and a substantially rigid outer cup having a blind bore for receiving the inner cup to inhibit the inner cup from stretching over the femoral head and separating therefrom, an annular recess being provided adjacent the open end of the bore on the inside of the outer cup, and a corresponding annular protuberance being provided on the outer surface of the inner cup, the blind end of the bore in the outer cup being part-spherical and concentric with a part-spherical outer surface of the outer cup, and the inner cup having a corresponding part-spherical outer end face which is concentric with a part-spherical recess for accommodating the part-spherical femoral head.

2. A prosthetic hip cup assembly substantially as herein described with reference to the accompanying drawings.

3. A hip joint prosthesis comprising a prosthetic hip cup assembly according to any preceding claim and a femoral head prosthesis having a part-spherical head accommodated in the part-spherical recess in the hip cup assembly.

FITZPATRICKS
Chartered Patent Agents,
Warwick House,
Warwick Court,
London, WC1R 5DJ
and
14-18 Cadogan Street,
Glasgow, G2 6QW.

Printed for Her Majesty's Stationery Office,
by Croydon Printing Company Limited, Croydon, Surrey, 1980.
Published by The Patent Office, 25 Southampton Buildings,
London, WC2A 1AY, from which copies may be obtained.

1573608 COMPLETE SPECIFICATION
1 SHEET *This drawing is a reproduction of the Original on a reduced scale*

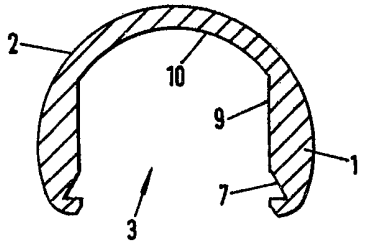

FIG.1.

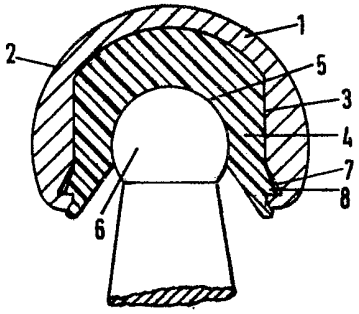

FIG.2.