

Oct. 9, 1956

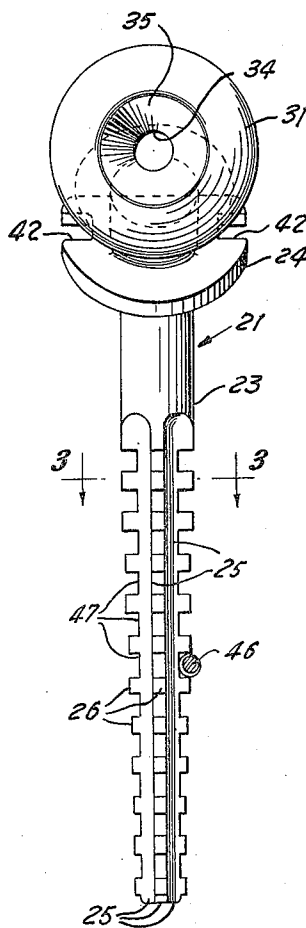
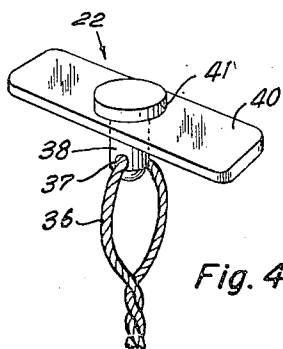
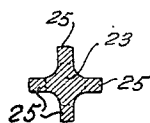
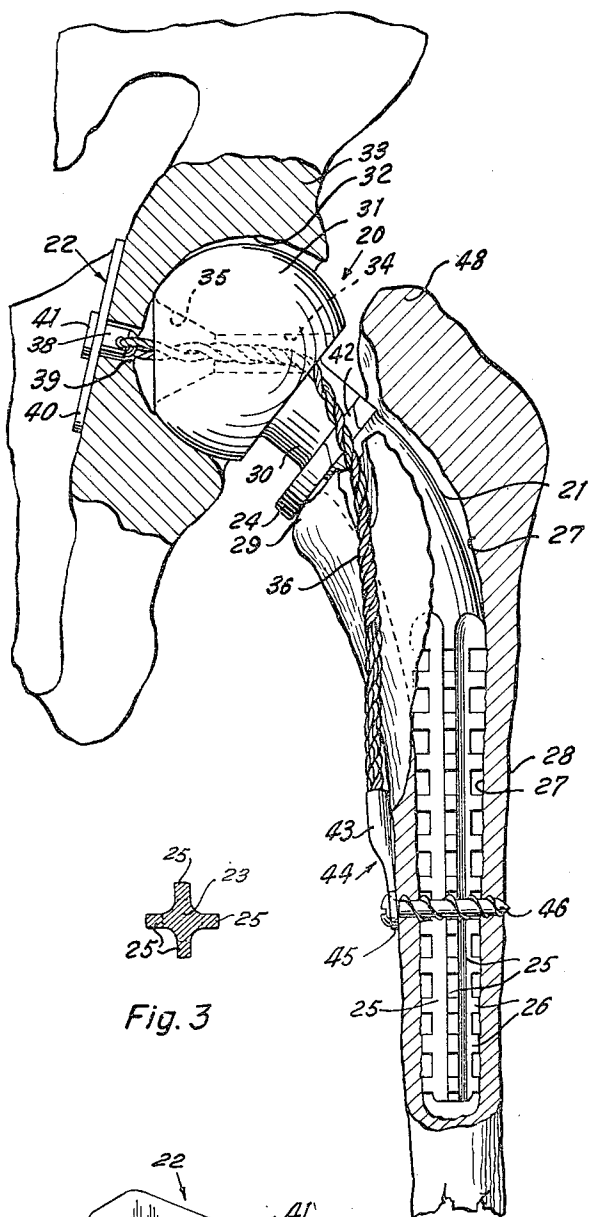
L. L. PELLET

2,765,787

HIP ARTHROPLASTY WITH FLEXIBLE SECURING MEANS

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2 Sheets-Sheet 1



INVENTOR

Leon L. Pellet

BY

Lebzeiten Acker

ATTORNEY

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L. L. PELLET

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HIP ARTHROPLASTY WITH FLEXIBLE SECURING MEANS

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2 Sheets-Sheet 2

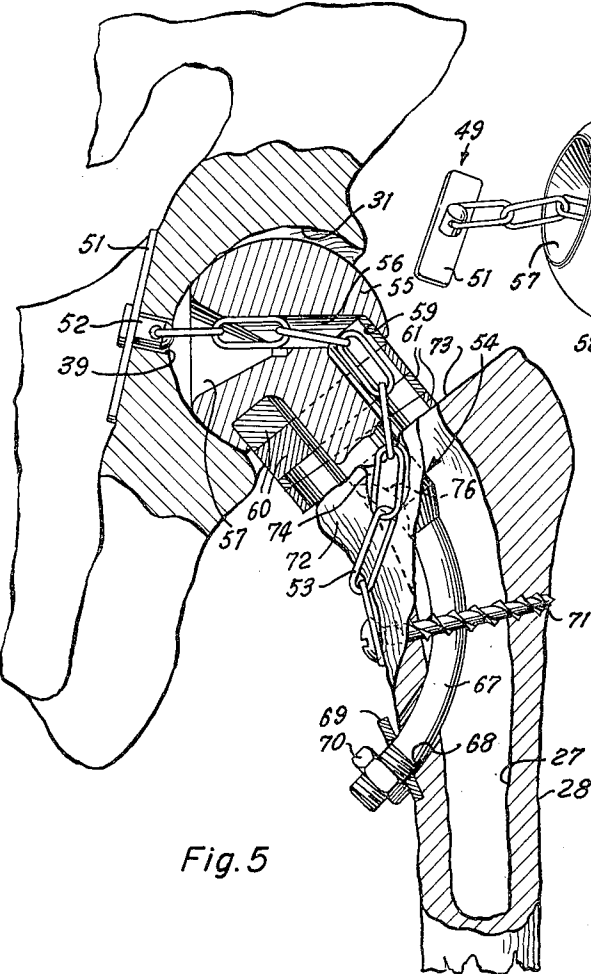


Fig. 5

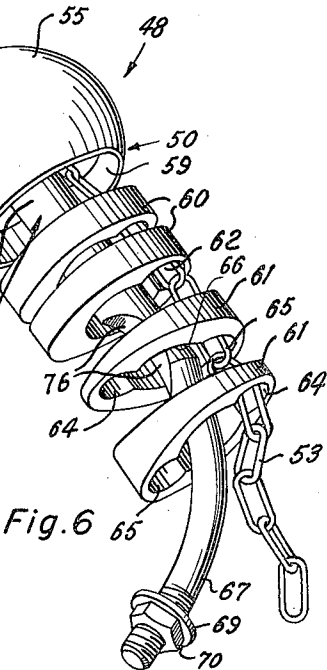


Fig. 6



Fig. 7

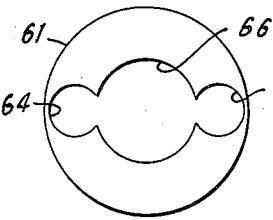


Fig. 10

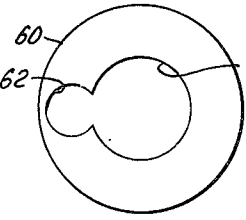


Fig. 9

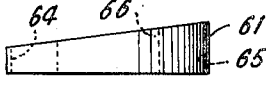


Fig. 8

INVENTOR
Leon L. Pellet

BY *Hepburns Ashley*

ATTORNEY

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2,765,787

HIP ARTHROPLASTY WITH FLEXIBLE SECURING MEANS

Leon L. Pellet, Dallas, Tex.

Application August 2, 1954, Serial No. 447,107

19 Claims. (Cl. 128—92)

This invention relates to a method and means for treating subcapital fractures of the femur.

Subcapital fractures of the femur, i. e. fracture of the neck of the femur between the head and the trochanter of the femur, occur frequently in elderly people because the bone structure of the femoral neck becomes porous and weak with age. Further, sometimes, as a result of aseptic necrosis occurring after a dislocation or for some other reason, and in some instances of arthritic spurs on the femoral head, it is necessary or desirable to replace the femoral head. Hip prostheses of various types are known which are secured to the femur after the femoral head is removed and which provide a head that fits in the acetabulum of the os coxae to permit articulation of the hip joint. Such a conventional hip prosthesis is not provided with any means for locking the prosthesis in the acetabulum of the os coxae and in the shaft of the femur so that the hip of the patient must be immobilized for a period of several weeks after the prosthesis is fixed to the femur to permit healing of the ligaments and muscles which are required to hold the members of the hip joint in normal conjugated position. During this period of immobilization, the forced inactivity of the elderly patient often results in urinary tract irritations or infections, decubitus ulcers, paralytic ileus, hypostatic pneumonia, phlebothrombosis, and even malnutrition. It is desirable, therefore, that a hip prosthesis be provided which will permit early and continuous free unhampered movement of the patient, such as turning and sitting up and very early ambulation, even the day of, or the day after, the operation.

It has also been noted that present conventional hip prostheses are usually driven into the shaft of the femur after the femoral head is removed, the fixation of the prosthesis being dependent upon its tight fit in the femur. As a result, the operator in attempting a firm fixation of the prosthesis in the neck and/or in the shaft of the femur drives the prosthesis in so rigorously that splitting of the femoral neck, the trochanter or the shaft sometimes occurs.

The bone texture in the area frequently is very thin and porous due to the age of the patient or marked atrophy of disuse. Adequate drilling or reaming of the neck or shaft in the poor texture bone frequently results in the prosthesis being too loose after it is seated. Dislocation of the prosthesis is then apt to occur.

Accordingly, it is desirable that a hip prosthesis be provided which does not have to be driven into the neck or shaft of the femur for a tight fit but may be merely snugly or slightly loosely fitted therein, which can be locked into the acetabulum of the os coxae to prevent dislocation of the head of the prosthesis therefrom, and which can be locked into the shaft of the femur to prevent dislocation of the stem of the prosthesis from the femur or rotation of the stem therein.

It is therefore an object of the invention to provide a new and improved method for treating fractures of the femur and for replacing the femoral head which permits

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early movement and ambulation of the patient after the fixation of a hip prosthesis to the femur.

Another object of the invention is to provide a new and improved hip prosthesis.

Still another object is to provide a new and improved hip prosthesis having means for locking the head of the prosthesis in the acetabulum.

A further object is to provide a new and improved hip prosthesis, of the type described, having means for locking the stem of the prosthesis to the shaft of the femur into which it is inserted.

A still further object is to provide a hip prosthesis, of the type described, whose stem need not have a tight fit in the neck or shaft of the femur.

Additional objects and advantages of the invention will be readily apparent from the reading of the following description of devices constructed in accordance with the invention and reference to the accompanying drawings thereof, wherein:

Figure 1 is a partly sectional view of one form of the hip prosthesis of the invention showing it in place secured in operative position to the os coxae and the femur of a hip joint;

Figure 2 is a front view of the hip prosthesis shown in Figure 1;

Figure 3 is a sectional view taken on the line 3—3 of Figure 2;

Figure 4 is a perspective view of the T bar which locks the head of the prosthesis in the acetabulum;

Figure 5 is a partly sectional view of another form of the hip prosthesis of the invention showing it in place secured in operative position to the os coxae and the femur of a hip joint;

Figure 6 is a perspective view of the hip prosthesis shown in Figure 5;

Figure 7 is a side view of one of the symmetrical spacer washers of the hip prosthesis shown in Figures 5 and 6,

Figure 8 is a side view of one of the asymmetrical washers of the hip prosthesis shown in Figures 5 and 6;

Figures 9 and 10 are top views of the washers shown in Figures 7 and 8, respectively.

Referring now particularly to Figures 1 to 4 of the drawing, the hip prosthesis 20 includes a femur section 21 and an acetabulum lock 22. The femur section 21 of the prosthesis includes a stem 23 which curves downwardly from a neck flange 24 and whose lower portion is fluted to provide four longitudinal flanges 25 which are notched transversely to provide broach teeth 26. The curvature of the stem corresponds to the curvature of the medullary canal 27 of the femur 28.

The neck flange 24 is designed to abut the upper remaining portion 29 of neck of the femur to limit inward movement of the stem 21 into the medullary canal of the femur.

The femur section 21 also includes a neck 30 which extends angularly upwardly from the neck flange and which is provided with a substantially ball shaped head 31 which, it will be noted, corresponds to the head of a normal femur and which seats in the acetabulum 32 of an os coxae 33. The head is provided with a bore 34 which extends therethrough substantially perpendicularly to the longitudinal axis of the stem 23. The bore 34 is enlarged or flared outwardly as at 35 toward the interior portion of the head 31 to permit normal movement of the head in the acetabulum, which would otherwise be restricted by the flexible retaining member or wire 36 which extends through the bore 34.

The flexible member or stranded wire 36 is preferably of stainless steel and is looped through the transverse bore 37 of a rod 38 arranged to extend into a hole 39 drilled in the os coxae which communicates with the socket or acetabulum 32. The rod 38 extends through an aperture

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in a flat rectangular keeper member 40 and is prevented from passing therethrough by a flange 41 on the end of the rod remote from the ball 31. It will be noted that the keeper member 40 and rod 38 form a T bar, the leg 38 of which extends into the hole 39 of the os coxae while the cross member 40 thereof abuts the interior surface of the os coxae to limit the movement of the leg 38 through the hole 39.

The flexible member passes from the rod 38 through the hole 39 of the os coxae, the bore 34 of the head and through one of the slots 42 of the neck flange 28 to extend along the exterior of the shaft of the femur. The free ends of the flexible member extend into the socket 43 of a connector 44 and are secured therein by crimping, swaging or in any other convenient manner. The connector has a flat apertured portion 45 which abuts the femur and through which a screw 46 may extend into and through transverse holes drilled in the femur. The holes are so drilled that the screw 46 passes through one of the notches 47 between the broach teeth 26 and thus prevents either longitudinal or rotary movement of the stem 23 in the medullary canal of the femur in addition to securing the flexible member to the femur.

The prosthesis is secured in place by the following operative technique. The hip joint having the sub capital fracture of the femur or from which the head of the femur is to be removed may be exposed by any suitable approach, although an L-shaped incision on the lateral side of the trochanter 48 and upper shaft of the femur 28 is suggested. The upper end of the incision is tailed toward the iliac crest to a point approximately seven centimeters behind the anterior superior spine and three centimeters below the iliac crest.

The femoral head is then removed by any suitable means, such as a lion jawed femur holding forceps. All capsule structure which can be reached is removed and the round ligament remnants are then removed from the acetabulum.

The hole 39 is then drilled through the os coxae in the superior center portion of the acetabulum just inferior to the joint cartilage. This hole 39, which is preferably about $\frac{3}{8}$ inch in diameter, should be disposed where the superior attachment of the round ligament had been located.

A curved forceps, preferably a tonsil or common bile duct right angle forceps, is passed around the hole 39 inside the pelvis in order to loosen the adjacent muscle attachment.

The flexible member 36 and the lock 22 are then passed into the pelvis with the curved forceps, the flexible member being passed through the hole 39 in the os coxae and the keeper member pushed into the position shown in Figure 1. A pull is exerted on the flexible member to insure that the keeper is locked in position. The free end of the flexible member is then attached to the drapes by a wire (not shown) or any other suitable means to hold it out of the way for succeeding operations.

Any remaining superior part of the neck of the femur is then removed. The flexible member 36 is next passed through the hole 34 in the head 31 of the prosthesis and the stem 23 of the prosthesis is inserted in the medullary canal of the femur by several broaching type movements imparted to the stem. Antiversion or retroversion of the neck 30 of the prosthesis is obtained by so inserting the stem in the femur. After the prosthesis is seated firmly in the femur, the flexible member is pulled taut.

An assistant then makes traction on the leg gradually internally rotating the leg while the operator keeps the chain, cable or other flexible member taut until the head 31 of the prosthesis is reduced or seats in the socket or acetabulum 32. The flexible member is then pulled taut, then passed through the slot 24 in the flange 28 and anchored with the screw 46 which passes through a hole previously drilled in the shank of the femur. Sufficient slack is left in the flexible member to permit normal

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movement of the femur. The hole through which the lock screw 46 passes is so drilled that the screw passes through a notch 47 between two of the broach teeth 26. The drill is directed obliquely through the femur while the hole is drilled and a notch 47 can be felt for as the drill passes through the femur.

When the lock screw is secured in place, the stem 23 is locked in the medullary canal of the femur against any movement. Simultaneously, the flexible member 36 and the keeper section 22 lock the head 31 of the femur section 21 of the prosthesis in the acetabulum although the head is free for normal rotary movement therein.

The incision is then closed.

Since the femur is thus locked to the os coxae by means of the lock section and the flexible member 36, the patient need not be immobilized for several weeks until the ligaments and muscles of the hip joint have healed to hold the prosthesis head 31 in the acetabulum. The patient can move his leg immediately after the operation and walk the next morning since the head 31 is held in place by the lock section 22 and the flexible member.

The advantages of the above desirable prosthesis, which permits early ambulation, over conventional prosthesis which requires immobilization of the patient for several weeks are quite obvious. No cast or splinting is necessary, no special nursing precautions are necessary, little or no narcotics are needed, and mental depression is minimized.

Another form of the prosthesis is illustrated in Figures 5 to 10, wherein the prosthesis 48 includes a lock section 49 and a femur section 50. The lock section 49 is similar to the lock section 22 shown in Figure 1 and includes a keeper member 51 and a rod 52 rotatably connected to the keeper. A flexible member 53 which may be in the form of a chain of stainless steel is secured to the exterior end of the rod 52, though the stranded wire may be used.

The femur section includes a stem 54 provided at its upper end with a substantially ball shaped head 55. The head 55 is provided with a transverse bore 56, having an inwardly directed flared or enlarged portion 57, through which the chain or flexible member 53 may pass. The head is undercut around the upper straight neck portion 58 of the stem to form an annular recess 59 with which the outer end of the bore 56 communicates. Symmetrical washers 60 having a uniform thickness and asymmetrical washers 61 having a non-uniform or tapered thickness are disposed on the upper straight neck portion of the stem with the topmost washer being received in the annular recess 59 in the head. The symmetrical washers 60 have a single side bore 62 which is aligned with the bore 56 of the head so that the chain or flexible member may pass through the bore 56 in the head and through the side bore 62 of the symmetrical washer or washers disposed therebeneath. The stem 54, of course, extends through the central bore 63 of the symmetrical washers. The asymmetrical washers have two side bores 64 and 65 disposed on opposite sides of the central bore 66 with the side bore 64 disposed in the thinnest portion of the washer. The provision of asymmetrical washers enables the ball 55 to be selectively set at desired angles with respect to the femur 28. A side portion of the straight portion 58 of the stem may be removed, as at 76, to avoid undesired contact with the inner side of the femur adjacent the neck.

The lower portion 67 of the stem is reduced and is curved toward the head so that its lower end will extend outwardly from the medullary canal to the exterior of the inner or medial side of the femur, being passed through an upwardly and inwardly extending hole 68 drilled in the femur. A washer 69 and a nut 70 threaded on the lower end of the stem secure the stem in place in the femur. A lock screw 71 passes through the lowermost link of the flexible member 53 and through suit-

able holes drilled in the femur. This secures the flexible member to the femur and thus locks the head 55 in the acetabulum 31 of the os coxae since the other end of the flexible member is secured to the rod 52 of the lock section 49, disposed in the hole 39 drilled in the os coxae.

The operative technique for installing the locking section and flexible member is the same as that for the form previously described, but in this form of the prosthesis the femur section 50 is secured to the femur by drilling a $\frac{3}{8}$ inch hole obliquely down the superior portion of the neck toward the junction of the shaft and neck in the general direction of the lesser trochanter 72 of the femur. A selected number of symmetrical and asymmetrical washers are then disposed on the stem 54, the number and shapes of the washers depending upon the amount and shape of the remaining neck of the femur. The orientation of the asymmetrical washers on the stem can be adjusted to the angle of the top surface 73 of the remaining portion of the neck of the femur so as to position the head 55 properly with respect to the femur.

The femur section of the prosthesis is then placed adjacent the femur with the edge of the lowermost spacer washer resting on top of the remaining femoral neck with the stem disposed exteriorly of the medullary canal to indicate or mark the sight for the hole 68 in the lesser trochanter area of the femur. The hole 68 is then drilled by first drilling at a right angle to the shaft of the femur and then angling the drill upwardly using lower reduced portion 67 of the stem as a directional guide for the drill. If any antiversion or retroversion of the femur is desired, the hole 68 should be drilled more to the lateral or medial side, respectively, of the femur. A 15 or 20 degree antiversion is usually desirable.

In order to allow the flexible member 53 to pass the anterior superior part of the neck of the femur without binding against the femur, a small groove 74 is rougured in this area of the femur.

A wire which is secured to the free end of flexible member is then passed through the bore 56 of the head 55 and through aligned side bores of the spacer washers. The lower curved end portion of the stem 54 is inserted into the medullary canal and is then passed out through the hole 68. The washer 69 and nut 70 are then disposed on the reduced portion 67 of the stem and the nut is rotated by means of a wrench or pliers until the washer presses snugly against the femur. The excess portion of the stem projecting outwardly of the nut is cut off with a pin cutter and the remaining exposed threads are mutilated with the side of an osteotome mallet to prevent the nut from unscrewing.

The flexible member 53 is then pulled taut through the bore 56 of the head and the side bores of the spacer washers while an assistant makes traction and gradually rotates the femur inwardly to reduce or seat the head 55 in the acetabulum 31. A hole is then drilled in the femur to receive the lock screw 71 and the screw is passed through a link of the flexible member and into this hole to rigidly secure the lower end of the flexible member to the femur. Sufficient slack is left in the flexible member to permit normal movement of the femur relative to the acetabulum. Excess links of the flexible member are cut off with a pin cutter.

The incision is then closed.

It will now be seen that a new and improved prosthesis has been provided having a lock section and a femur section, the lock section having a flexible member which extends through a bore in the head of the femur section and connects the lock section to the femur. In one form of the prosthesis the flexible member is secured to the femur by a lock screw which passes through a notch in the stem of the femur section of the prosthesis located in the medullary canal of the femur to lock the stem in place in the femur. In another form of the prosthesis, the stem of the

femur section extends outwardly the medullary canal through a hole drilled in the femur and is secured to the femur by a nut threaded on the stem. It will be noted that in both forms of the prosthesis, the head of the prosthesis is locked against dislocation from the acetabulum by the locking section and the flexible member. In each form the head of the prosthesis is locked against dislocation from the acetabulum and the stem of the prosthesis is locked against movement with respect to the femur.

It will also be apparent that a new method of treating fractures of the femur or for replacing the femoral head has been described which includes removing the femoral head from the acetabulum, forming a hole in the os coxae, placing a keeper member against the os coxae on the interior side opposite the acetabulum, passing a flexible member connected to the keeper member through the hole, inserting a stem of a femur prosthesis provided with a head downwardly into the medullary canal of the femur, securing the flexible member to the femur, and securing the stem of the femur prosthesis against withdrawal from the medullary canal.

It will of course be apparent that the principal function of the flexible members is to prevent dislocation of the prosthesis head from the acetabulum during the first few weeks after the operation and that when the ligaments and muscles of the hip joint heal and strengthen, these ligaments and muscles will serve to prevent dislocation.

The foregoing description of the invention is explanatory only, and changes in the details of the constructions illustrated and the methods described may be made by those skilled in the art, within the scope of the appended claims, without departing from the spirit of the invention.

What I claim and desire to secure by Letters Patent is:

1. A prosthesis for hip joints including: a femur section having a stem insertable downwardly in the medullary canal of a femur, a head on the upper end of said stem receivable in the acetabulum of the os coxae of the hip joint, said head having a bore extending substantially perpendicularly to the longitudinal axis of the femur; locking means securable to said os coxae; and a flexible member connected to said locking means and extending through said bore, said flexible member being connectable to said femur whereby said head may be held against dislocation from the acetabulum.

2. A prosthesis for hip joints including: a femur section having a stem insertable downwardly in the medullary canal of a femur, a head on the upper end of said stem receivable in the acetabulum of the os coxae of the hip joint, said head having a bore extending substantially perpendicularly to the longitudinal axis of the femur; a locking section attachable to said os coxae; a flexible member connected to said locking section and extending through said bore, said flexible member being connectable to said femur whereby said head may be held against dislocation from the acetabulum; said stem having a plurality of broach teeth; and a connecting member connected to said flexible member and extendable transversely through said medullary canal for engaging said broach teeth to lock said stem to the femur.

3. A prosthesis for hip joints including: a femur section having a stem insertable downwardly in the medullary canal of a femur, a head on the upper end of said stem receivable in the acetabulum of the os coxae of the hip joint, said head having a bore extending substantially perpendicularly to the longitudinal axis of the femur; a locking section attachable to said os coxae; a flexible member connected to said locking section and extending through said bore, said flexible member being connectable to said femur whereby said head may be held against dislocation from the acetabulum; said stem having a plurality of broach teeth; and a connecting member connected to the other end of said flexible member and extendable transversely through said medullary canal for engaging said broach teeth to lock said stem to the femur; and a lateral

flange on said stem between said broach teeth and said head for limiting movement of said stem into said femoral canal, said flange having a notch for receiving said flexible member.

4. A hip prosthesis comprising: an elongate stem having an upwardly and outwardly extending upper end neck portion; and a substantially ball shaped head on said upper end neck portion, said ball having a bore extending angularly with respect to the longitudinal axis of said stem through said head for receiving a flexible member, said bore having an enlarged portion remote from said stem.

5. A hip prosthesis comprising: an elongate stem having an upwardly and outwardly extending upper end portion; and a substantially ball shaped head on said upper end portion, said ball having a bore extending angularly with respect to the longitudinal axis of the upper end portion of said stem through said head for receiving a flexible member, said bore having an enlarged portion remote from said stem, said stem having a reduced lower end curved in the direction of said head, said lower end being threaded to receive a nut.

6. A hip prosthesis comprising: an elongate stem having an upwardly and outwardly extending neck portion; a substantially ball shaped head on said neck portion, said ball having a bore extending angularly with respect to the longitudinal axis of the neck portion of said stem through said head for receiving a flexible member, said bore having an enlarged portion remote from said stem; and a plurality of spacer washers on said neck portion of said stem, said spacer washers each having a central bore for receiving said stem and a side bore communicating with said bore of said head for receiving said flexible member.

7. A hip prosthesis comprising: an elongate stem having an upwardly and outwardly extending upper end neck portion; a substantially ball shaped head on said upper end neck portion, said ball having a bore extending angularly through said head with respect to the longitudinal axis of the neck portion of said stem for receiving a flexible member, said bore having an enlarged portion remote from said stem, said stem having a reduced lower end curved in the direction of said head, said lower end being threaded to receive a nut; and a plurality of spacer washers on said upper end neck portion of said stem, said spacer washers each having a central bore for receiving said stem and a side bore communicating with said bore of said head for receiving said flexible member.

8. A hip prosthesis comprising: an elongate stem having an upwardly and outwardly extending upper end portion; a substantially ball shaped head on said upper end portion; a flexible securing member; said ball having a bore extending angularly through said head with respect to the longitudinal axis of the upper end portion of said stem and receiving said flexible member, said bore having an enlarged portion remote from said stem; and a keeper member secured to the end of said flexible member remote from said stem.

9. A hip prosthesis comprising: an elongate stem having an upwardly and outwardly extending upper end neck portion; an elongate flexible member; a substantially ball shaped head on said upper end neck portion, said ball having a bore extending angularly through said head with respect to the longitudinal axis of the neck portion of said stem and receiving said flexible member, said bore having an enlarged portion remote from said stem, said stem having a reduced lower end curved in the direction of said head, said lower end being threaded to receive a nut; and a keeper member secured to the end of said flexible member remote from said stem.

10. A hip prosthesis comprising: an elongate stem having an upwardly and outwardly extending upper end neck portion; an elongate flexible member; a substantially ball shaped head on said upper end neck portion, said ball having a bore extending angularly through said head with respect to the longitudinal axis of the

neck portion of said stem and receiving said flexible member, said bore having an enlarged portion remote from said stem; a plurality of spacer washers on said upper end neck portion of said stem, said spacer washers each having a central bore for receiving said stem and a side bore communicating with said bore of said head for receiving said flexible member; and a keeper member secured to the end of said flexible member remote from said stem.

11. A hip prosthesis comprising: an elongate stem having an upwardly and outwardly extending upper end portion; a substantially ball shaped head on said upper end portion, said ball having a bore extending angularly through said head with respect to the longitudinal axis of the upper end portion of said stem for receiving a flexible member, said bore having an enlarged portion remote from said stem; and a plurality of spacer washers on said upper end portion of said stem, said spacer washers each having a central bore for receiving said stem and a side bore communicating with said bore of said head for receiving said flexible member, at least one of said washers having non-parallel sides and a second side bore oppositely disposed to said first mentioned side bore.

12. A hip prosthesis comprising: an elongate stem having an upwardly and outwardly extending upper end portion; and a substantially ball shaped head on said upper end portion, said ball having a bore extending angularly through said head with respect to the longitudinal axis of the upper end portion of said stem for receiving a flexible member, said bore having an enlarged portion remote from said stem, said stem having a lower end portion provided with a plurality of longitudinal rows of broach teeth.

13. A hip prosthesis comprising: an elongate stem having an upwardly and outwardly extending upper end portion; a substantially ball shaped head on said upper end portion, said ball having a bore extending angularly through said head with respect to the longitudinal axis of said stem for receiving a flexible member, said bore having an enlarged portion remote from said stem, said stem having a lower end portion provided with a plurality of longitudinal rows of broach teeth; and a lateral flange on said stem between said ball and said lower end portion, said flange having a lateral slot for receiving said flexible member.

14. A hip prosthesis comprising: an elongate stem having an upwardly and outwardly extending upper end portion; a substantially ball shaped head on said upper end portion; a flexible securing member; said ball having a bore extending angularly through said head with respect to the longitudinal axis of the upper end portion of said stem and receiving said flexible member, said bore having an enlarged portion remote from said stem, said stem having a lower end portion provided with a plurality of longitudinal rows of broach teeth; a lateral flange on said stem between said ball and said lower end portion, said flange having a lateral slot for receiving said flexible member; and a keeper member secured to the end of said flexible member remote from said stem.

15. A prosthesis for hip joints including: an elongate stem having an angularly disposed neck, a ball shaped head on said neck, and flexible securing means connected with the head of the prosthesis and having means for connecting it with the os coxae to hold the head in movable conjugated position in the acetabulum.

16. A prosthesis for hip joints including: a body adapted to be mounted on the upper end of a damaged femur, said body having a substantially ball-shaped surface adapted to be disposed in the acetabulum of the os coxae of the hip joint, said body having a bore extending transversely of the ball surface of the body and having one end adapted to lie in the acetabulum socket, and its other end terminating at a point on the body adjacent the upper end of the femur; locking means securable to said

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os coxae; and a flexible member connected to said locking means and extending through the bore of said body and being connectable to said femur whereby the ball surface of the body may be held against dislocation from the acetabulum.

17. A prosthesis of the character set forth in claim 16 wherein the bore extending transversely of the body is flared outwardly at the end adapted to lie in the acetabulum socket.

18. A prosthesis for hip joints including: a body having means for mounting it on the upper end of a damaged femur, said body having a substantially ball-shaped surface adapted to be disposed in the acetabulum of the os coxae of the hip joint; and means providing a passageway extending substantially transversely of said body from a point adapted to lie within the acetabulum socket to a point adjacent the upper end of the femur.

19. A prosthesis for hip joints including: a body having means for mounting it on the upper end of a damaged femur, said body having a substantially ball-shaped surface adapted to be disposed in the acetabulum of the os

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coxae of the hip joint; means providing a passageway extending substantially transversely of said body from a point adapted to lie within the acetabulum socket to a point adjacent the upper end of the femur; and a flexible securing member disposed in said passageway and having means for securing it at one end to the os coxae and at its other end to the femur.

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