

## POSTERIOR CHAMBER LENS IMPLANT

### BACKGROUND OF THE INVENTION

This invention relates to a posterior chamber lens implant which is made of a soft material.

Posterior chamber lens implants which comprise an optical part or lens and two or more holding arms or loops or flanges are known. For example, these lens implants are disclosed and described in European Patent Specification No. 0106488, U.S. Pat. Nos. 4,476,591 and 4,701,181. The arms function to hold the lens implant in place in the capsular bag or the posterior chamber between the posterior capsule and the iris, after the lens implant has been inserted in the eye.

These lens implants are usually made of polymethylmethacrylate (PMMA) which is a hard material which imparts sufficient rigidity to the arms to prevent them from flopping or buckling during or after implantation.

Hydrophilic and silicone rubber materials are however softer and more flexible and do not possess sufficient rigidity to prevent the arms of a lens implant made from such a material from flopping or buckling during use. Thus, to date, lens implants made from a soft material have been provided not with holding arms, but with two opposed flaps for holding the lens implant in place in the eye. For example, these lens implants are disclosed and described in South African Patent No. 84/6570. These flaps do not however provide the same advantages as arms or loops, because forces applied to the flaps are transmitted to the optical part of the lens causing buckling of the lens.

There is thus a need for a new design of lens implant made from a soft material.

### SUMMARY OF THE INVENTION

According to the invention there is provided a posterior chamber lens implant formed of a soft material which comprises a lens; a pair of opposed flexible and resilient holding arms formed integrally with and projecting from the periphery of the lens and lying in substantially the same plane as or in a plane substantially parallel to the plane of the lens, each arm having a first end formed integrally with the lens and a second end 45  
50  
55  
60  
65  
70  
75  
80  
85  
90  
95  
100  
105  
110  
115  
120  
125  
130  
135  
140  
145  
150  
155  
160  
165  
170  
175  
180  
185  
190  
195  
200  
205  
210  
215  
220  
225  
230  
235  
240  
245  
250  
255  
260  
265  
270  
275  
280  
285  
290  
295  
300  
305  
310  
315  
320  
325  
330  
335  
340  
345  
350  
355  
360  
365  
370  
375  
380  
385  
390  
395  
400  
405  
410  
415  
420  
425  
430  
435  
440  
445  
450  
455  
460  
465  
470  
475  
480  
485  
490  
495  
500  
505  
510  
515  
520  
525  
530  
535  
540  
545  
550  
555  
560  
565  
570  
575  
580  
585  
590  
595  
600  
605  
610  
615  
620  
625  
630  
635  
640  
645  
650  
655  
660  
665  
670  
675  
680  
685  
690  
695  
700  
705  
710  
715  
720  
725  
730  
735  
740  
745  
750  
755  
760  
765  
770  
775  
780  
785  
790  
795  
800  
805  
810  
815  
820  
825  
830  
835  
840  
845  
850  
855  
860  
865  
870  
875  
880  
885  
890  
895  
900  
905  
910  
915  
920  
925  
930  
935  
940  
945  
950  
955  
960  
965  
970  
975  
980  
985  
990  
995

By a "soft" material there is meant a hydrophilic material or a silicone rubber material or the like.

The two arms preferably lie in a flat plane which is the plane containing the periphery of the lens or a plane parallel thereto, but they may alternatively be in planes which are inclined to this plane by a small angle of up to 10° and it is this that is meant by saying that the arms be substantially in the plane of the lens or in a plane substantially parallel thereto.

Preferably, each web stretches between the periphery of the lens and the inner edge of its associated arm to fill the entire region between the periphery of the lens and the inner edge of its associated arm.

Preferably, the arms are C-shaped.

Preferably, the cross-sectional thickness of the web is substantially less than the cross-sectional thickness of the arms. For example, the arms preferably have a thickness of about 0.3 mm while the webs may have a thickness of about 0.1 mm.

Preferably, the arms include peripheral reinforcement, for example, a rib, arranged along and formed integrally with the outer edge of each arm. The ribs preferably have a thickness of about 0.4 mm.

### DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic front view of a posterior chamber lens implant of the invention;

FIG. 2 is a sectional side view along the line A—A of the lens implant of FIG. 1; and

FIG. 3 is a sectional side view along the line B—B of the lens implant of FIG. 1.

### DESCRIPTION OF EMBODIMENTS

Referring to the drawings there is shown a posterior chamber lens implant 10 consisting of a lens 12, two C-shaped arms 14, 16 and two webs 18, 20. Each arm 14, 16 has a first end 22 attached to and formed integrally with the periphery of the lens 12 and a second end 24 15  
20  
25  
30  
35  
40  
45  
50  
55  
60  
65  
70  
75  
80  
85  
90  
95  
100  
105  
110  
115  
120  
125  
130  
135  
140  
145  
150  
155  
160  
165  
170  
175  
180  
185  
190  
195  
200  
205  
210  
215  
220  
225  
230  
235  
240  
245  
250  
255  
260  
265  
270  
275  
280  
285  
290  
295  
300  
305  
310  
315  
320  
325  
330  
335  
340  
345  
350  
355  
360  
365  
370  
375  
380  
385  
390  
395  
400  
405  
410  
415  
420  
425  
430  
435  
440  
445  
450  
455  
460  
465  
470  
475  
480  
485  
490  
495  
500  
505  
510  
515  
520  
525  
530  
535  
540  
545  
550  
555  
560  
565  
570  
575  
580  
585  
590  
595  
600  
605  
610  
615  
620  
625  
630  
635  
640  
645  
650  
655  
660  
665  
670  
675  
680  
685  
690  
695  
700  
705  
710  
715  
720  
725  
730  
735  
740  
745  
750  
755  
760  
765  
770  
775  
780  
785  
790  
795  
800  
805  
810  
815  
820  
825  
830  
835  
840  
845  
850  
855  
860  
865  
870  
875  
880  
885  
890  
895  
900  
905  
910  
915  
920  
925  
930  
935  
940  
945  
950  
955  
960  
965  
970  
975  
980  
985  
990  
995

lie in a plane substantially parallel to the plane of the lens 12. It can be seen that the two arms 14, 16 follow a step-vaulted line which is first 10° to 20° inclined to the plane of the lens 12 and then is parallel to the plane of the lens 12.

Each arm 14, 16 includes a rib 28 at its outer edge for reinforcing purposes and to prevent buckling.

Referring to FIG. 2, it can be seen that the cross-sectional thickness of the arms 14, 16 is substantially greater than the cross-sectional thickness of the webs 18, 20.

The lens 12, the arms 14, 16 and the webs 18, 20 are all formed integrally with one another from a suitable soft material such as HEMA 38% water, which is a hydrophilic material, or a silicone rubber.

The webs 18, 20 are designed firstly to hold the arms 14, 16 in position to prevent them flopping about during implantation and use of the lens implant 10. However, the webs 18, 20 are formed of a flexible material and thus it is still possible to compress the arms 14, 16 towards the periphery of the lens 12 to assist in insertion of the lens implant 10 into the capsular bag or the ciliary sulcus of the eye. When the lens implant 10 is in place in the capsular bag or the ciliary sulcus, the arms, 14, 16, being resilient, spring outwardly again to hold the lens implant 10 in place in the capsular bag or the ciliary sulcus.

I claim:

1. A posterior chamber lens implant formed of a soft material which comprises:

a lens;

a pair of opposed flexible and resilient holding arms formed integrally with and projecting from the periphery of the lens and lying in substantially the same plane as or in a plane substantially parallel to the plane of the lens, each arm having a first end formed integrally with the lens and a second end 55  
60  
65  
70  
75  
80  
85  
90  
95  
100  
105  
110  
115  
120  
125  
130  
135  
140  
145  
150  
155  
160  
165  
170  
175  
180  
185  
190  
195  
200  
205  
210  
215  
220  
225  
230  
235  
240  
245  
250  
255  
260  
265  
270  
275  
280  
285  
290  
295  
300  
305  
310  
315  
320  
325  
330  
335  
340  
345  
350  
355  
360  
365  
370  
375  
380  
385  
390  
395  
400  
405  
410  
415  
420  
425  
430  
435  
440  
445  
450  
455  
460  
465  
470  
475  
480  
485  
490  
495  
500  
505  
510  
515  
520  
525  
530  
535  
540  
545  
550  
555  
560  
565  
570  
575  
580  
585  
590  
595  
600  
605  
610  
615  
620  
625  
630  
635  
640  
645  
650  
655  
660  
665  
670  
675  
680  
685  
690  
695  
700  
705  
710  
715  
720  
725  
730  
735  
740  
745  
750  
755  
760  
765  
770  
775  
780  
785  
790  
795  
800  
805  
810  
815  
820  
825  
830  
835  
840  
845  
850  
855  
860  
865  
870  
875  
880  
885  
890  
895  
900  
905  
910  
915  
920  
925  
930  
935  
940  
945  
950  
955  
960  
965  
970  
975  
980  
985  
990  
995

a flexible web associated with each arm, each web stretching between and being formed integrally with the periphery of the lens and the second end