

## LENS DESIGNED FOR IMPLANTATION INTO A LENS CAPSULE OF A HUMAN EYE

This is a continuation, of application Ser. No. 134,892 filed Mar. 28, 1980, now abandoned.

### BACKGROUND OF THE INVENTION

#### 1. Field of the Invention

The present invention relates to a lens designed for implantation into a lens capsule of a human eye, which may be surgically implanted and to a method of performing said implantation.

#### 2. Description of the Prior Art

In the prior art lenses have been used in an operation for surgically implanting a lens in the anterior eye chamber after having evacuated impure aqueous humor. The flat back side of a planoconvex lens made e.g. from polymethylene methacrylate is positioned directly before the iris of the eye whilst from the back side of the lens, supporting loops extend outwardly in a radial direction from the lens and get engaged behind the iris. Efforts have also been made to implant a lens into the posterior chamber of the human eye, but these have not been successful up till now as the manner in which these lenses were secured either damages the cornea or also deformed the pupil since the edges of the iris came to lie in between the implanted element and the loops.

West German Offenlegungsschrift No. 2,717,706 entitled: "Lens for implanting into the lens capsule of the eye", in the name of Leonhard Klein, issued on Oct. 26, 1978, teaches a lens for implantation in the lens capsule of the eye, the periphery of the lens comprising two or a plurality of soft and elastic supports in the form of rings being positioned remote from the inner circumference of the capsule. In this type of lens the support rings functioning as centering rings have to be implanted alternately whilst the implantation proper of the lens takes place by means of sucking with an elastic precision sucker. The difficulty with this type of lens is that an alternate positioning of the support rings and an implantation and securing of the lens by means of sucking may damage the eye capsule and the tissues thereof, whilst furthermore a rigid anchoring of the implanted lens which is secured by means of sucking, is not entirely ensured, whereas a plurality of support rings cannot be inserted through the opening made in the capsule. It would be far better to use two diametrical supporting loops facing each other instead of rings, said loops being inserted into an element forming the optic component and to obtain capsular pockets into which the supporting loops are anchored, the element being implanted in the remaining portion of the capsule.

U.S. Pat. No. 4,056,855 entitled "Intraocular lens and method of implanting same", issued on Nov. 8, 1977 to Kelman, describes an intraocular lens and a method of its implantation through an incision in the eye. The assembly includes a lens member and a supporting wire initially in disassembled condition and adapted to be introduced independently through a small incision in the eye. The supporting wire has a base portion, which is adapted to fit and be mounted behind the iris of the eye and has a pair of resilient legs projecting from the pupil, forward of the iris, said legs being adapted to receive a lens therebetween, snapped into position by resiliently parting the legs while both components are located in the eye and thereby assembling and mounting the intraocular lens in position in the anterior chamber

of the eye. The difficulty with this type of lens is that in first instance it is not integral so that a shifting or turning of the assembly may nevertheless take place, while a position in the anterior eye chamber is unnatural and may create a problem in the restoration of accurate binocular vision. Further the lens in the anterior chamber is not adjacent to the hyloid membrane for supporting the vitreous humor whilst the pupil further looses its original round shape which may also form an objection to accurate vision.

U.S. Pat. No. 4,071,343 entitled: "Method of making intraocular lenses", issued to Walter P. Sigmund teaches the production of optical sections (lenses) of pseudophakoi, having tangential holes without drilling operations. Said lens is adapted to be positioned in holes in a lens. The difficulty with this product is that it does not form an initial assembly so that a continuous anchoring of same is not ensured whilst rods or prongs have to be fixed in the lens proper which may damage said lens while moreover a shifting or turning over of the relative product could cause an inflammation and thus an erosion of the iris so that the binocular vision could be hampered. Moreover the pupil will loose its original round shape.

U.S. Pat. No. 4,110,848, entitled: "Intraocular lens for implantation into the posterior chamber of a human eye", issued to Ronald P. Jensen on Sept. 5, 1978, teaches an intraocular lens for implantation into the posterior chamber of a human eye including a planoconvex lens, adapted to be inserted into the posterior chamber of the eye within the capsular membrane thereof. The lens includes two supporting loops being mechanically coupled to the peripheral edge of said lens and being disposed at an angle in the range of 0° to 25° to the plane surface of the plano-convex lens. The end portions of the supporting loops are below the plane surface of said lens. One supporting loop is so designed that it comprises a notch which is disposed between the peripheral edge of the plano-convex lens and its end portions so that a temporarily securement to the iris of the human eye may be accomplished. The difficulty with a lens of this type is that it is anchored in the capsular membrane formed by the anterior and posterior membranes gathering together. It would be far better to have the supporting loops anchored in capsular pockets formed by leaving a portion of anterior membrane, so that a rigid anchoring is ensured. The lens as described further provides one supporting loop which includes a notch, said supporting loop being disposed between the peripheral edge of the plano-convex lens, only ensuring a temporarily securement to the iris of the eye until a capsular fixation occurs, a position which might be dangerous since in this case the said securement could be hampered, thus involving a shifting or turning over of the respective lens and an inflammation of the iris.

### SUMMARY OF THE INVENTION

In view of the foregoing factors and conditions of the prior art it is a primary object of the present invention to provide a lens which is to be positioned in the posterior chamber of the human eye and which is anchored securely in the capsular pockets, formed by perforating the capsule and evacuation of the affected lens portion.

It is another object of the present invention to provide a lens which comprises two diametrical supporting loops facing one another, one loop of which extends circularly and toward a radial direction of the lens ele-