30 lying behind the iris, is provided with an opaque, e.g., blackcolored layer 34, in order to achieve a screening of the light penetrating through the lens. With the lens according to FIG. 6, the annular toruses 32' or 33' on the annular discs 29', 30' are not continuous, rather they are provided with interruptions 35.

Although the lenses constructed according to the present invention generally require no further fastening or fixation, since they are adequately held in place in the pupillary aperture of the iris of the pupil, it may at times be desired, or particularly after injury to the iris of the pupil necessary, to secure the lens which has been inserted into the operated eye of a patient additionally in its predetermined position.

In lenses which were hitherto commonly used, such an attachment is usually made by suturing to the highly sensitive and mechanically not very stable iris. In consequence of the above mentioned drawbacks of the prior art lenses, undesirable harm may be caused to the iris, and in the worst case, the suture may come apart or tear out.

These disadvantages can be avoided, according to the present invention, by fixing the two ends of a thread or wire attached to the lens in that part of the sclera through which the incision for the eye operation was made. The grafting in of this supporting thread as the wound heals results in a particularly stable fixation.

For this purpose, in a further embodiment of the lenses according to the invention, a part 41 of a surgical connecting material (yarn, thread or wire) 42 is embedded in the material of the front disk 43 of the lens 44, outside the path of light of the peripheral rays penetrating the lens body 45, approximately along a secant 46. This thread 42 must of necessity be made from a material which, over a long period inside the eye chamber, is not subject to any kind of corrosion or similar fluctuations, and does not alter its physical/mechanical properties. It is therefore proposed to preferably use a silk or similar thread, which, particularly when embedded in a silicone rubber or silicone resin material, is impregnated and/or coated with the same material in such a way that its flexibility and elasticity is not impaired. A thread prepared in such a way ensures absolutely safe anchoring in the material of the lens disc 43.

Another form or embodiment of the implant lens has been found to be particularly expedient and advantageous. This form or embodiment has important advantages especially for handling by the operating surgeon when inserting it into the pupil opening of the iris. Due to the smallness of the objects, i.e., of the parts of the human eye concerned, and of the implant lens itself, the operation can only be performed with instruments, and even then only under a stereo-microscope. Since, in addition, the material of the implant lens is itself highly transparent and the space between the annular discs or supporting elements supporting the lens, and in which the inner edge of the iris comes to rest, is only very narrow and measures considerably less than 1 mm, the task of inserting the lens is considerably simplified by the arrangement of a cross-bracket on the rear, dorsal side of the lens, extending beyond the edge of the front, ventral annular disc, and the position of the lens in the pupil of the iris is also substantially improved thereby.

FIGS. 8 to 10 show a preferred embodiment of the implant lens, according to the present invention, which is described in detail below.

The implant lens has a central, cylindrical lens body 51, whose front and rear surfaces 52 and 53 respectively are convexly curved. At the front, ventral end of the lens body 51 is an annular disc 54, whose outer diameter measures approx. 5.5 to 8 mm, preferably approx. 6 to 7 mm. The convexly curved front surface 52 of the lens body 11 merges at the sides into the surface 55 of the annular disc 54. The outer diameter of this convex curve is slightly larger than the diameter of the cylindrical lens body, so as also to permit passage of peripheral rays, into the lens body at a wide angle of incidence.

On the inner side of the annular disc, which faces the iris, there is a torus 56, which may be continuous or partly discontinuous, and which prevents the edge of the iris from resting fully on a corresponding lens surface. It is in fact desirable to maintain a certain space in which there is aqueous humor to keep the iris constantly moist. At the rear, dorsal end of the dioptrically effective lens body there is an approximately rectangular, oval or elliptically-shaped cross bracket 57, whose length exceeds, preferably by about 2 mm, the diameter of the front, ventral annular disc, and whose width corresponds approximately to one and a half times the diameter of the lens body 51. On its side facing the iris, and parallel to its outer edges, the cross-bracket has a continuous or partly discontinuous ridge 58. Preferably, the ridge 58 is formed with discontinuities 59 in the center of the longitudinal edges, and at the corners of the rectangular cross-bracket 57, or at corresponding positions of a differently shaped cross bracket, these discontinuities likewise serving to supply the capillary gap between the iris and the surface of the cross-bracket which is facing the iris with aqueous humor. The entire rear, dorsal surface 60 of the cross bracket 57 has a spherically convex curvature, so that the stability of the cross-bracket is improved thereby. Although this causes the cross-bracket to be somewhat thicker, in view of the preferred material used, i.e., silicone rubber, this is not disadvantageous, as the specific gravity of this material in relation to that of the aqueous humor is so favorable, that the slightly increased mass of the material does not have a significantly increased gravitational effect.

If due to the flexibility of the material used, a further improvement in stiffness of the annular disc 54 or the cross bracket 57 is required, it is advantageous to provide toruses 61 or 62 and 63 on the outer surfaces, which run closely along the outer edges. Radial ridges 64 and 65 can possibly be provided in addition, in order to ensure the required stiffness of the parts of the implant lens in question.

FIG. 11 clearly illustrates how the implant lens is placed in the eye by an operation after removal of the natural lens.

The foregoing is considered as illustrative only of the principles of the present invention; since numerous modifications and changes will readily occur to those skilled in the art, it is not intended to limit the invention to the exact construction and operation shown and described, the appended claims encompassing any suitable modifications and equivalents of the present invention.

What is claimed is:

1. A lens of transparent material as a substitute for a surgically removed natural lens in the eye of a living being, comprising:

a central lens body having front and rear ends, and

two discs adapted to overlap the edge of the iris which surrounds the pupil, for being attached to the iris, and disposed at said front and rear ends of said central lens body, respectively, an annular