part 2 with the lens 4 are connected with the elastic element 3 realized as a spring.

FIG. 4 presents a section through the intraocular optical system, where the front part 1 and rear part 2 of the insert 7 are created as rings connected with the elastic element 3 forming elastic ring. The lens 4 and 5 are inserted into inner slots. The whole system is placed in the capsula lentis 6.

The intraocular optical system, which sectional view is shown in FIG. 5, consists of the insert 7 from the front part 1 and the rear part 2 having the shape of a part of ellipsoid and the elastic part 3 formed as an equatorial slot provided with a row of holes 9. The lens 5 is inserted into the front segment.

FIG. 6 shows a section of the intraocular system, where the lenses 4, 5 (optical elements) and the insert 7 are monolithic and from a single piece. The hole 8 in the central part of front lens 5 enables the circulation of chamber liquid.

As follows from the drawings, the insert 7 from an elastic and easily deformable material may be provided with central opening, in the front, back, or both sides, or with the equatorial slot with a row of holes letting liquids through, or with a combination of both provisions. The elasticity of the very insert 7 may be replaced or complemented with a centrically placed spiral spring 3 or elastic connection elements 3, where liquids can flow in between. The lens 4 or 5 or the lenses 4, 5 may be fixed in the rear part 2 or front part 1 of the insert 7 or in both parts, or may be held in the eye axis by radial or oblique fibers. The oblique fibers are longer than the straight radial fibers and may be therefore easily elastically stretched.

In the most simple arrangement, the elastic insert 7 may be reduced to two rings 1, 2 connected with the elastic elements 3 and the space enabling the flow of surrounding liquid. These rings have diameter less than 9 mm and the elastic connecting elements may have the form of fibers, strips, spiral or corrugated body so that the capsula lentis is moderately and uniformly tensioned by the said rings. The rings may be replaced with parts of hollow rotation bodies as a sphere, paraboloid, ellipsoid, and the like. They may be made from various biocompatible materials, advantageously elastic material with the shape memory, for example, partially dried hydrogels which may be hydrophilized on the surface, for example, by partial hydrolysis or sulfonation, which may be completed with a partial surface esterification with multifunctional alcohols containing, even after crosslinking esterification, additional free hydrophilic groups, silicone composite, and the like.

It is advantageous to provide an opening in the front part of the insert, which is larger than is the hole in the front part of capsula lentis formed at the extraction of natural lens. The non-uniform edges of the hole are not mechanically stressed in this way.

The insert 7 and/or the lens 4, 5 may contain a drug in their material, which is released after implantation. Such a drug may be cytostatic or antibody liquidating cells on the inner wall of capsula lentis which cause a secondary cataract by producing the lens materials, corticoids, antibiotics, and the like. These drugs disappear after certain time.

The lenses 5 placed in the front part 1 of the insert 7 may be provided in the center with a hole of 0.05 to 1 mm which enables a better communication between the anterior and posterior chamber of eye and prevents from the formation of secondary glaucoma. This hole does not affect the optical quality of image.

The insert 7 of the intraocular optical system may be manufactured in various ways similarly as the lenses, viz. by turning, rotation casting, or dipping.

It is advantageous to prepare the insert 7 in a similar way that the intraocular lens according to the Czechoslovak Patent Application PV 9596-86, so that its glass-transition temperature T_g is from −5° C. to 45° C., the insert is deformed at the temperature above T_g into a form suitable for implantation and cooled in this deformed form. The insert 7, after insertion into capsula lentis 9, relaxes by postswelling and heating to the temperature of eye and thus acquires the desirable final shape.

We claim:

1. An intraocular optical system adapted for insertion into a capsula lentis after removal of a natural lens, said capsula having interior anterior and posterior surfaces, said system comprising an elastically deformable insert whose shape follows generally the interior surfaces of the capsula said insert being adapted for leaning against the interior surfaces of the capsula and keeping the capsula in a moderately tensioned state, said insert comprising a front element, a rear element, an elastic element located therebetween, and being provided with a plurality of openings in its circumference which permit the flow of liquid, and at least one lens adapted for placement along the main axis of the eye and being in communication with said insert, wherein upon insertion into the capsula said front element is adapted for communicating with substantially all of the anterior surface of the capsula and said rear element is adapted for communicating with substantially all of the posterior surface of the capsula.

2. The intraocular optical system according to claim 1, wherein at least one lens is placed outside the geometrical center of said insert and the capsula.

3. The intraocular optical system according to claim 1, wherein said elastic element is hollow.

4. The intraocular optical system according to claim 1, wherein said insert is deformed, before insertion into the eye, into a rod-like shape having a diameter of less than 3 mm.

5. The intraocular system according to claim 1, wherein at least one lens is produced from a synthetic polymer having an index of refraction of at least 1.336.

6. The intraocular optical system according to claim 1, wherein said insert has the shape of a rotation ellipsoid and is provided on the circumference with an equatorial slot having a plurality of holes.

7. The intraocular system according to claim 1, wherein the front element is provided with an opening having a smaller diameter than the diameter of the hole in the capsula.

8. The intraocular optical system according to claim 1, wherein at least one lens is fixed in the axis of said system by an elastic element which is in communication with the circumference of said lens.

9. The intraocular optical system according to claim 1, wherein said elastic element comprises subelements selected from the group consisting of fibers and strips.

10. The intraocular optical system according to claim 1, wherein said insert further comprises drugs which are releasably incorporated therein.

11. The intraocular optical system according to claim 1, wherein each lens in the optical system is provided