

axis, to a radial shoulder or other stop means 49. Such truncation will be understood to provide a degree of key-engagement with adjacent adapter-mount body material, thereby providing resistance against lens-mount rotation about the needle itself. And the shoulder 49 of such truncation will be understood to axially interfere with adjacent body material of the mount, thus enabling a safe measure of axially inward manipulative thrust, without having the needle end cause damage within the posterior cavity of the eye.

FIGS. 11 and 12 illustrate slight modifications of the blank of FIG. 6 whereby manipulative effectiveness may be enhanced when used with a tool as at 13, and whereby at the same time an extended surface area is provided for inscription of serial number or other identification of the lens thereby mounted. In both cases, the extended area is provided by a chordlike edge formation in the contour of the tool-insertion opening defined by one of the outwardly bowed strips 32-33. In FIG. 11, the chordlike edge 50 spans the tool-insertion opening 51 at bowed strip 33, and in FIG. 12, the chordlike edge 52 spans the tool-insertion opening 53 at bowed strip 32. In either of these cases, a keyed engagement results between key formations 48 of tool 13 at the chordlike edge (50 or 52), provided that the needle is initially correctly assembled, and the stop or shoulder formation 49 performs the axial-insertion limitation already described.

In a typical employment of either of the general configurations of FIGS. 1 or 5, a syringe 15 loaded with saline solution is fitted to the pre-assembled tool 13 and lens and lens-mount assembly. After the customary corneal incision and removal or other disposition of the cataracted lens, the tool 13-15 is manipulated to place both of the resiliently bent feet 18-19 (32-33) behind the iris opening, retaining the remaining feet 16-17 (32'-33') in front of the iris opening. Frictional engagement of the implant with the iris may be relied upon to drag the implant as the needle end 12 is withdrawn, and the plunger of the syringe 15 may be actuated throughout the manipulative process so as to flush and fill the eye cavity with saline solution, thereby avoiding the need for a separate filling operation once the needle has been withdrawn. Of course, as the needle is withdrawn from each foot-aperture engagement, the applicable foot is released for iris-stabilizing action, against the posterior side of the iris. The needle is discarded and surgery is then completed according to customary cataract-removal procedures.

The described invention will be seen to have achieved all stated objects with structure which not only can be economically produced in substantial quantity and with great precision but which can also be constructed to such inherent lightness of weight as to enable use of the finest-finished optical-glass lenses, ground to prescription, if so required. This, of course, means greatest comfort and least danger of post-operative trauma for the patient. And the adaptability to a manipulative tool (with the moving parts) which can also provide for saline-solution injection means such a simplification of operative procedures as to permit lens-implant surgery within the manipulative-skill capabilities of vastly expanded numbers of ophthalmic technicians. Furthermore, particularly for the case of the lens-mount configuration of FIGS. 5 and 7, full and continuous circumferential overlap is provided to protect against any edge contact of a glass lens element with eye tissue, and to a limited but effective extent such

protection is also afforded with the embodiment of FIGS. 1 and 3.

While the invention has been described in detail for the preferred forms shown, it will be understood that modifications may be made without departing from the scope of the invention. For example, the reference herein to a syringe will be understood to be but illustrative of, and therefore generically to describe, a manually controllable means for injecting saline solution and when needed or useful during surgery; in other words, a disposable squeeze bottle with packaged saline solution and adaptable to or embodying a disposable tool 13 may be perfect for many surgical situations and is to be understood to be within the meaning of the word "syringe" as used herein. Also, the described procedure involving tool-manipulated insertion of the intra-ocular lens and its mount may not be the procedure ultimately to be preferred for tool-insertion; for example, by using the syringe to fill and effectively float all or most of the cornea and other internal parts of the eye, it may prove most desirable to keep the needle end 12 at all times on the anterior side of the iris, relying upon manipulation of the lens-and-mount subassembly to transiently deflect iris tissue for insertion of feet 16-17 (32'-33') into the posterior region, in which case utmost protection is afforded against undue flexure of the cornea and against tool contact with any tissue.

What is claimed is:

1. As an article of manufacture, an optically finished intra-ocular lens element having a generally circular periphery about its optical axis, and a mounting adapter for said lens element, said adapter comprising circumferentially continuous ring-body means is substantial conformance with and in generally registering adjacency to the periphery of said lens element, said body means including (a) first retaining means engaging said lens element at least at diametrically opposed locations and in retaining overlap over one axial side of said periphery and (b) second retaining means engaging said lens element at least at diametrically opposed locations which are angularly interlaced with said first-mentioned locations and which are in retaining overlap over the other axial side of said periphery, and first and second pluralities of lens-positioning feet integral with said ring body and radially outwardly extending therefrom in angularly spaced and interlaced relation, the feet of at least one of said pairs being flexibly compliant to permit transient resilient inward bending to facilitate operative insertion via an iris opening.

2. The article of claim 1, in which each of the feet of said one pair of feet is a radially outwardly bowed strip integrally formed at its ends with angularly spaced regions of said body means, thereby defining an opening between each strip and the angularly adjacent portion of said lens element whereby an elongate manipulative tool may pass through the two generally diametrically aligned such openings defined by said one pair of feet.

3. The article of claim 1, in which said ring-body means is a single piece of resiliently compliant material.

4. The article of claim 3, in which said first retaining means and said second retaining means respectively comprise first and second pairs of retaining members, and in which each member is an arcuate length spanning its axial side of said lens element for an angular extent which is substantially within a separate quadrant of said periphery.

5. The article of claim 4, in which at least one of said retaining members is of greater radial width than others