

ing, or pupil 17, represented in the drawings in dilated condition.

Referring particularly to FIGS. 1 and 2, a surgical instrument 22 constructed in accordance with the invention comprises a longitudinally extending shank portion 23 and a hooked portion 24, which preferably is curved, at one end of the longitudinally extending shank portion 23. The surgical instrument 22 may be formed from a conventional hypodermic needle and therefore has a bore 25 extending longitudinally along the length thereof from a connector portion 26 at one end of the longitudinal portion and adapted to be connected to a hypodermic syringe, to the tip 27 at the distal end of the surgical instrument. The connector 26 is of conventional type for attachment of a hypodermic needle to a syringe and is therefor not shown in detail. The hook portion 24 of the surgical instrument according to the invention comprises first and second limb portions 28 and 29. As represented in FIGS. 1 and 2, the first limb portion 28 extends transversely to the longitudinal shank portion 23 and together with second limb portion 29 forms a throat 28a having a width "w" of about 0.030 to 0.070, inches but preferably about 0.058 inches.

Second limb 29, first limb 28 and shank 23 preferably lie substantially in a plane, i.e. the plane of the paper as seen in FIG. 1, with second limb 29 preferably inclined with respect to shank 23 at an angle of approximately 45°. Tip portion 27 extends transversely, preferably at substantially a right angle, to the plane in which the shank portion 23 and the limb portions 28 and 29 are located, a distance "l" of approximately 0.020 to 0.040 inches, preferably about 0.030 inches. The tip portion 27 is preferably the tip of a hypodermic needle and thus preferably has an opening 25a therein. Second limb portion 29 has a length upwardly from the first limb 28 such that the depth "d" of throat 28a is approximately 0.050 to 0.120 inches and preferably distance "d" is about 0.085 inches.

The method of using the instrument in accordance with the present invention comprises inserting the instrument 22 through the opening 12 in the eye and placing the tip 27 into an opening 30 of intraocular lens 31 previously inserted in the eye as represented in FIG. 3. Posterior chamber lens 31 includes an optic 34 and a pair of position fixation members 32 and 33 at opposite sides of the optic. The upper position fixation member 32 conventionally has an opening 30 for insertion of a surgical tool. Of course, instead of having an opening 30 the intraocular lens may merely have a depression or indentation (not shown) in the region of its upper seating surface, adapted to be engaged by the tip 27 of instrument 22.

Preferably the lens 31 is inserted through the corneal incision 12 in conventional manner and the lower position-fixation member 33 thereof is passed through the pupil and seated in the lower cul-de-sac 16a formed by the posterior capsule 16. Thereafter, as seen in FIG. 3, the instrument 22 is inserted through opening 12 and the tip 27 of the instrument is inserted in the opening 30 of the upper position fixation member 32 of the lens. The surgeon then moves the instrument generally axially, thus compressing position-fixation members 32 and 33 until they are sufficiently compressed so that the lens will fit through the pupil 17, as seen in FIG. 4. With a slight rotational movement of the instrument 22 about its own axis in the direction of arrow "a", FIG. 4, together with a reverse axial movement of the instrument in a direction away from the lower position-fixation

member (FIG. 5), the surgeon can control the position-fixation member 32 of the lens as it expands into the seating condition thereof shown in FIG. 5. In this position the upper seating portion of the upper position-fixation member 32 is seated in the ciliary sulcus behind the iris and the throat 28a of the instrument is sufficiently deep to permit the iris 15 to be located within the confines of neck portion 24 without substantial contact of the instrument 22 with the iris. In this position of instrument 22 the first limb portion 28 extends through the pupil 17, the second limb portion 29 extends from the end of the first limb portion a distance sufficient for tip portion 27 to reach substantially to the ciliary sulcus 18 of the eye while the shank 23 of the instrument is substantially adjacent the anterior surface of the iris.

A slight rotational movement of the instrument 22 about its own axis in the direction of arrow "b" in FIG. 6, i.e. in a direction reverse to the prior rotational movement, acts to withdraw the tip 27 from the opening 30 in the lens as represented in FIG. 6 in going from the dashed-line to the solid-line position. During this procedure the upper position-fixation member 32 of the lens will tend to maintain its seated position. Since the membranes in the eye are resilient, the shank 23 of the instrument may be moved so that it engages the anterior surface of the iris and acts to press a portion of the iris against portions of the intraocular lens behind it. While the lens is thusly prevented from movement in anterior direction both by position-fixation member 32 being seated and by the shank 23 engaging the iris, the reverse rotational movement of the instrument 22 will permit withdrawal of the tip 27 from the opening 30. Thereafter, with an axial downward movement, i.e. again in a direction toward the lower position fixation member 33 of the lens, the surgeon can move the instrument 22 so that its hook portion 24 will clear the iris and may be withdrawn through the pupil 17 as seen in solid line in FIG. 6. It should be understood that the FIG. 6 representation is diagrammatic only and for the sake of clarity does not show a region of the iris in contact with shank 23 of the instrument while the tip 27 is relatively rotationally moved in a direction into the posterior side of the flexible iris for withdrawal of the tip from the opening 30.

Preferably, a material such as Helon is injected through the bore 25 and the distal opening 25a of instrument 22 into the chamber formed behind the iris when the procedure has approached the stage shown in FIG. 5 of the drawings. The Helon will temporarily fill the space behind the iris and tend to push the iris in anterior direction so as to temporarily enlarge the posterior chamber of the eye bounded by the posterior side of the iris 15 on the one hand and the posterior capsule 16 on the other hand.

While there has been described what is at present considered to be the preferred embodiment of this invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the invention, and it is, therefore, aimed to cover all such changes and modifications as fall within the true spirit and scope of the invention.

What is claimed is:

1. A surgical instrument for seating an intraocular lens in the posterior chamber of an eye, comprising:
  - a longitudinally extending shank portion;
  - a hook portion at one end of said longitudinally extending shank portion having a neck portion and a tip portion, said tip portion extending transversely