the electrical field applied to the material **24** or the amount of electrical power applied to the material **24**. Some materials can be switchable between more than two states, each with a different index of refraction. Other materials will provide a continuously variable index of refraction which may be stable or return to the initial value when the energy is removed. In the alternative, piezo electric material **108** and **110** can be placed in the loops **104** and **106** and connected to the composite material **112** across the optic **102**. The piezo electric material generates energy when pressure is applied against the loops such as by one pressing on the eyeball forcing the loops downwardly or electrical energy is induced into the loops, thereby generating electrical energy and changing the index of refraction of the composite material of the lens of FIG. **10**.

The field across material **24** is created from an external power source **26** feeding a coupling loop **28**, which could be carried in an eyeglass frame, implanted about the eye socket or positioned by the individual or the Ophthalmologist. The lens carries a complementary loop or other energy pick-up device, not shown, for receiving the power. If desired, the loops **14** and **16** could be made of conductive material or carry conductive means **30** and **32** embedded therein. In either case, a connection to the material **24** would be made at the points **34, 36, 38,** and **40** where the loops connect to the lens optic **12**. Suitable conductors, not shown, convey the induced energy to the overlay material **24**. In the event that a material is selected which changes the index of refraction only in response to a d.c. field, rectifier elements may be incorporated in the assembly to convert the a.c. to d.c. It would also be possible to utilize the induced energy to realign the molecular structure of the loop material and increase memory of the loops **14** and **16**. It will be appreciated that suitable conductors, not shown, are included on the sides of material **24** or on the front and rear surfaces to allow the induced power to generate a field in the direction appropriate for alteration of the index of refraction. Such conductive elements would be so small as not to interfere with vision; or, in the alternative, a conductive material could be applied across the surface layers so thin that the light attenuation would be minimal or at least in the range acceptable for normal vision of the user.

If a material having an index of refraction which is alterable by the application of electromagnetic radiation in the visible or ultraviolet spectrum is selected, conductive loops may not be required. This embodiment would advantageously have material in the assembly which would prevent the radiation from damaging the interior of the eye.

FIG. **4** illustrates a top view of a posterior chamber Fresnel lens **42** including a lens optic **44** and two loops **46** and **48** extending therefrom. The Fresnel lens optic **44** includes a plano-convex central portion **50**, as also shown in FIG. **6**, positioned centrally within a plurality of Fresnel rings **52*a*–52*n***. The centers of curvature of Fresnel rings **52*a*–52*n*** vary according to the radial distance from the center of central portion **50** to essentially eliminate spherical aberration and govern refraction. The loops **46** and **48** can be made of PMMA or other suitable material and can be angled at any desired value.

A composite overlay **54** of clear material provides protection for the top edges of the Fresnel rings. The material used for composite overlay **54** should provide a smooth surface and may include a liquid crystal or crystalline lattice material **56** which has an index of refraction alterable by the application of an electric field or other forms of radiation. If the material having an index of refraction alterable through the application of electrical power is selected, a pick-up loop **58** may be embedded in the lens optic **44** and connected to the material **56** at points **53** and **55**. In the event that a d.c. field is required, rectifier diodes could be inserted in the circuit with loop **58** to provide a d.c. voltage to the material **56** through suitable conductors or conductive surface as described with reference to the previously discussed embodiments of FIGS. **1, 2,** and **3**.

FIG. **5** illustrates a side view of the posterior chamber lens **42** of FIG. **4** where all numerals correspond to those elements previously described.

FIG. **6** illustrates a cross-sectional view of the lens taken along lines **6—6** of FIG. **4** where all numerals correspond to those elements previously described. The lens is provided with a composite overlay material **54** and liquid crystal or crystalline lattice material **56** or like material having an alterable index of refraction. In the event that a material is selected which is alterable through the application of electromagnetic energy, an electromagnetic source **59** coupled to a loop **60** can be used to change the index of refraction in the ways previously described.

FIG. **7** illustrates a top view of a Fresnel intracorneal lens **62** including a lens optic **64** with concave-convex central portion **66** and a Fresnel lens portion of Fresnel rings **72*a*–72*n*** including a composite overlay **68**. In contrast to the embodiments earlier described, the anterior surface of concentric Fresnel rings **72*a*–72*n*** conforms to the concave curvature **74**, as illustrated in FIG. **9**, which is a cross-sectional side view of the lens of FIG. **7**. An induction loop **76** positioned within the lower edge of optic **64** connects to the crystalline material as points **82** and **84**.

FIG. **8** illustrates a side view of a corneal inlay with an annular Fresnel lens where all numerals correspond to those elements previously described.

FIG. **9** illustrates a cross-sectional view of the lens taken along lines **9—9** of FIG. **7** where all numerals correspond to those elements previously described. The lens is provided with a composite overlay **64** having a material **70** which has an index of refraction alterable through the application of electromagnetic energy. Such energy can be obtained from a source **78** coupled to a loop **80**.

FIG. **10** illustrates an alternative embodiment of the present invention including a lens **100** utilizing piezo electric material **108** and **110** in the loops **104** and **106**. The loops are connected to the optic **102** by available processes. The piezo electric material connects to the composite material **112**. The composite material is excited when energy is generated by the piezo electric loops. The energy can either be generated by pressure against the loops causing the piezo electric material to generate voltage across the composite material, or in the alternative, electrical energy can be induced into the piezo electric material and the loops causing energy to be communicated to the composite material **112**.

FIG. **11** illustrates a side view of FIG. **10** where all numerals correspond to those elements previously described.

It is claimed:

1. An intraocular lens comprising: