minus 70, and the converging lens 42 will normally have a power of from about plus 10 to about plus 22. The converging lens means (e.g., spectacle lens) will normally have a power of from about plus 25 to about plus 35. The mgnification provided by the above-described lenses can range from about 2X to about 4X, depending on the power and vertex distance of the spectacle lens. The field of vision will also range from about 35° to about 45°, depending upon the magnification selected.

EMBODIMENT OF FIGS. 7-9

A second embodiment of an intraocular lens in accordance with this invention is shown in FIGS. 7-9. The intraocular lens 58 is similar to intraocular lens 30 shown in FIGS. 2-6, in that the optical element 60 comprises first and second portions 62 and 64 that are in the form of a diverging lens and a converging lens and that are positioned adjacent one another, but the first portion 62 is smaller in diameter, partially received in the second portion, and laterally offset from vertical center axis line 2—2. The first portion will normally range in the size from about 3 to about 4 mm, while the second portion will range in size from about 4 to about 6 mm. In this embodiment, the posterior surface 65 of the second portion 64 is substantially flat, and the haptic supports 66 and 68 are both coupled to the second portion 64 so as to be substantially coplanar with its posterior surface 65. Alternatively, it is contemplated that the second portion could be smaller in diameter than the first portion and laterally offset from a vertical center axis line running through the first portion. Other variations of optical elements having adjacent first and second portions are also contemplated by this invention, including for example, substantially equally sized first and second portions that are positioned substantially laterally adjacent along a horizontal center axis line.

EMBODIMENTS OF FIGS. 10-15

FIGS. 10-15 illustrate two additional embodiments of intraocular lenses that can be used in accordance with this invention. These intraocular lenses are similar to that shown in FIG. 1, but instead of adjacent and aligned first and second portions, the second portion is substantially centrally located within the first portion, as shown in FIGS. 10-12, or the first portion is substantially centrally located within the second portion, as shown in FIGS. 13-15.

In FIGS. 10-12, intraocular lens 70 comprises an optical element 71 and a pair of haptic supports 84 and 86 attached thereto. The optical element 71 has a substantially cylindrical peripheral surface 75 and comprises a second portion 74 substantially centrally located within first portion 72. Around the periphery of the anterior side 76 is an annular lip 78. Radially inward from lip 78 and on the anterior side is an annular concave surface 79 of first portion 72. The first portion 72 also includes a second annular concave surface 80 on the posterior side 82. Annular surfaces 79 and 80 form a diverging lens and have substantially semieliptical cross sections, with annular surface 80 being slightly smaller than annular surface 79. The inner side of annular surface 79 defines an outwardly facing convex surface 77 that is part of the converging lens included in second portion 74. The posterior side of the second portion 74 is substantially flat.

FIGS. 13-15 illustrate another embodiment of an intraocular lens 90 in accordance with this invention. In this embodiment, intraocular lens 90 is comprised of optical element 92 and a pair of haptic supports 93 and 94. The optical element 92 comprises first portion 96 substantially centrally located within the second portion 95. The outer surface of second portion 95 is defined by a substantially outwardly facing convex surface 98 on the periphery of the anterior side 100 and a substantially flat surface 99 on the periphery of the posterior side 102, thereby forming a converging lens. The first portion 96 is substantially centrally located within the second portion 95 and has substantially outwardly facing concave surfaces on both the anterior and posterior sides 100 and 102, defining substantialy equally sized recesses 104 and 106 having substantially semieliptical cross sections, thereby forming a diverging lens.

The diverging and converging lenses included in the intraocular lenses shown in FIGS. 7-15 focus light rays in substantially the same manner as diverging and converging lenses included in intraocular lens 30 shown in FIGS. 2-6.

While four advantageous embodiments have been chosen to illustrate the invention, it will be understood by those skilled in the art that various changes and modifications can be made therein without departing from the scope of the invention as defined in the appended claims. For example, rather than forming the first and second portions integrally as one piece, they could be formed separately and then rigidly coupled together.

What is claimed is:

1. An intraocular lens adapted to be implanted in the eye, and used with an external converging spectacle lens to provide a magnified retinal image of a given object, comprising:
   - an optical element having a first portion and a second portion,
     - said first portion including a diverging lens, and
     - said second portion including a converging lens, said converging and diverging lenses being offset from each other in a direction perpendicular to the optical axis of the eye; and
   - means, coupled to said optical element, for supporting said optical element in the eye,
   - wherein use of said intraocular lens in combination with the converging spectacle lens will provide a magnified retinal image of a given object, while use of said intraocular lens without the converging spectacle lens will provide unmagnified and unrestricted peripheral vision.

2. An intraocular lens according to claim 1, wherein said diverging lens has a power of from about minus 40 to about minus 70.

3. An intraocular lens according to claim 1, wherein said converging lens has a power of from about plus 10 to about plus 22.

4. An intraocular lens according to claim 2, wherein said converging lens has a power of from about plus 10 to about plus 22.

5. An intraocular lens according to claim 1, wherein said first portion and said second portion are integrally formed.

6. An intraocular lens according to claim 1, wherein said first portion is positioned substantially adjacent to said second portion.

7. An intraocular lens according to claim 1, wherein said first portion is located substantially within said second portion.