These specifications provide a field of view of about three centimeters diameter at the nominal object distance of about thirty centimeters, and a magnification of about five stated as the ratio between the height of the image formed by the lens system on the retina and the height of an image of the same object at the same distance formed on the retina of a normal eye.

According to a second embodiment of the invention the curves of the air lenses may be constituted by micro-Fresnel grooves and ridges as shown in FIG. 2. In this case, the system is designed to provide the same over-all focal length and magnification as in the smoothly curved embodiment shown in FIG. 1. The system as shown includes a positive element **30** having a bubble **32** with front and rear micro-Fresnel surfaces **32***a* and **32***b*, respectively, and a negative element **34** having a front bubble **36** and a rear bubble **38**.

It is usually preferred in the design of tandem arrangements of Fresnel lenses to mount confronting lenses relatively close to each other, and if this is done in this modified form of the invention, the negative element **34** should include one pair of confronting Fresnel lenses constituting the front and rear surfaces, respectively, of the rear air lens **38**, and providing the major part of the power of the negative element. The element **34** will then include, also, a forward air lens **36** having smoothly curved front and rear surfaces designed to correct aberration introduced by the Fresnel lenses. The size of the forward air lens **36** is selected to provide the desired neutral buoyancy.

In making the optical calculations, especially in regard to the spacing between the pairs of confronting optical surfaces that define the air lenses, account should be taken of the specific gravity of the methyl methacrylate relative to the specific gravity of the aqueous humour, or the artificial solution used to replace it and the vitreous humour. Methyl methacrylate is denser than the aqueous humour, and it is desired that the lens system, or, preferably, each of the elements **14** and **18**, and **30** and **34** have an over-all density approximately the same as the aqueous humour, thereby neutralizing gravitational effects, which would otherwise tend to pivot the system downwardly about its attachment at the front of the eye.

What is claimed is:

1. An intraocular lens system comprising a body of a transparent material of a size and shape for implantation in the human eye and having front and rear surfaces, said body including a plurality of transparent bubbles completely enclosed therein and optically in tandem along the length thereof, the transverse internal surfaces of said body that define the front and rear boundaries of said bubbles being optically curved for refracting light passing lengthwise through said body and said bubbles between the front and rear surfaces of said body, the boundaries of a bubble adjacent to the front surface being curved for positive refraction of light and the boundaries of a bubble adjacent to the rear surface being curved for negative refraction.

2. An intraocular lens system comprising a body of a transparent material of a size and shape for implantation in the human eye and having front and rear surfaces, said body including two transparent bubbles completely enclosed therein and optically in tandem along the length thereof, the transverse internal surfaces of said body that define the front and rear boundaries of said bubbles being optically curved for refracting light passing lengthwise through said body and said bubbles between the front and rear surfaces of said body, the boundaries of the bubble adjacent to the front surface being curved for positive refraction of light and the boundaries of the bubble adjacent to the rear surface being curved for negative refraction.

3. An intraocular lens system according to claim **1** wherein said body includes two longitudinally spaced major portions, and angular spaced connecting portions extending between said major portions, said bubbles lying in said major portions.

4. An intraocular lens system according to claim **1** including two bubbles adjacent to the rear surface both having their boundaries curved for negative refraction.

5. An intraocular lens system according to claim **4** wherein the boundaries of the rear one of the two bubbles adjacent to the rear surface of said body are shaped as micro-Fresnel lenses, and the boundaries of the forward one of said two bubbles adjacent to the rear surface are smoothly curved.

6. An intraocular lens system according to claim **1** wherein said transverse internal surfaces are smoothly curved.

7. An intraocular lens system according to claim **1** wherein selected ones of said transverse internal surfaces are shaped as micro-Fresnel lenses.

8. An intraocular lens system according to claim **1** wherein at least one of said transverse internal surfaces is shaped as a micro-Fresnel lens.

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