illustrated in FIGS. 4–9 are directly applicable, and will produce different and useful embodiments of a multifocal zone plate lens-mirror.

It should be understood, of course, that the foregoing disclosure relates only to the preferred embodiments of the invention, and that numerous modifications or alterations may bemade therein, without departing from the spirit and scope of the invention as set forth in the appended claims.

What is claimed as new and desired to be protected by Letters Patent is:

1. A multiple focal power optical device comprising:
body means having a plurality of alternating odd and even, annular, concentric zones, bounded on the outside of radii r_n, with $n=1,3,5, \ldots$, for the odd zones and $n=2,4,6, \ldots$, for the even zones;
first focal power means within at least some of the odd zones for directing incident parallel light to a first focal point;
second focal power means within at least some of the even zones for directing incident parallel light to a second focal point different from said first focal point;
wherein the radii r_n of said odd and even zones are substantially proportional to square root of n.

2. The invention of claim **1** wherein said body means comprises an optically refracting material.

3. The invention of claim **2** wherein said first and second focal power means comprise a plurality of discrete refracting elements within their respective annular zones.

4. The invention of claim **3** wherein at least some of said optically refracting elements include contaminants imbedded in said body means to achieve the desired focal powers.

5. The invention of claim **4** wherein the discrete refractive elements of the first focal power means occupy every odd zone, and the discreet refractive elements of the second focal power means occupy every even zone.

6. The invention of claim **1** further including a third focal power means within at least some of the annular zones.

7. The invention of claim **1** wherein the body means is designed to act as an ophthalmic bifocal spectacle lens.

8. The invention of claim **1** wherein the body means is designed to act as an ophthalmic bifocal contact lens.

9. The invention of claim **1** wherein the said body means comprises an optically reflecting material.

10. A multiple power optical device, using the principle of interleaving annular Fresnel zones corresponding to different optical powers, wherein the radius r_n, bounding the nth Fresnel zone, is set to substantially approximate the formula $r_n \simeq \sqrt{nK}$, where K is an arbitrary but constant length and $n=1,2,3, \ldots$, and wherein for each specific power, all of the corresponding Fresnel zones are bounded on the outside by radii r_n, with n being either odd for all of the zones or even for all of the zones.

11. A multiple focal length optical lens, according to claim **10**, wherein the Fresnel zones are refracting annular rings bounded by radii r_n, and for each n, the radius r_n is set to substantially approximate the formula $r_n \simeq \sqrt{nK}$, where K is an arbitrary but constant length and $n=1,2,3, \ldots$, and wherein for each specific focal length, all of the corresponding Fresnel zones are bounded by an outer radius r_n, with n being either odd for all of the zones or even for all of the zones.

12. A multiple focal length optical lens, according to claim **11**, wherein only two focal lengths are used, and their corresponding Fresnel zones are presented alternately, so that every zone corresponding to one of the focal lengths is bounded on the outside by a radius r_n with n being odd, and every zone corresponding to the other focal length is bounded on the outside by a radius r_n with n being even.

13. A multiple focal length optical lens, according to claim **12**, wherein it is designed to act as an ophthalmic bifocal spectacle lens.

14. A multiple focal length optical lens, according to claim **12**, wherein it is designed to act as an ophthalmic bifocal contact lens.

15. A multiple power optical mirror, according to claim **10**, wherein the Fresnel zones are reflecting annular rings bounded by radii r_n, and for each n, the radius r_n is set to substantially approximate the formula $r_n \simeq \sqrt{nK}$, where K is an arbitrary but constant length and $n=1,2,3, \ldots$, and wherein for each specific focal length, all of the corresponding Fresnel zones are bounded by an outer radius r_n, with n being either odd for all of the zones or even for all of the zones.

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