When that neutral view segment is displaced so that it looks through a non-neutral segment of the confronted lens element, an anamorphic correction occurs. All other points in the overlapped and confronted lens surfaces will combine to produce that particular anamorphic correction. This is because all other points will have equal but opposite deviations in cylindrical power which will in effect cancel.

It also can be readily understood that the polar coordinate plot of FIG. **1***b* equally applies to the lens displacements of FIGS. **2–6** as it applies to a single lens element having discrete view points taken through it. These view points have been previously correlated with respect to the view paths **60, 62, 64, 66** and **68** taken through lens element of FIG. **1***a*.

Having set forth the operation of the lens element of this invention, some attention can now be directed to ways in which the lens element can be fabricated. FIGS. **7, 8** and **9** illustrate one method whereby lens fabrication can occur. FIG. **10** illustrated another method whereby lens fabrication can occur.

Referring to FIG. **7**, the formation of a lens material between confronted ring molds is illustrated. These ring molds are shown in exploded relation with respect to the lens material.

An upper and outer ring mold **81** is formed from a cylinder having an upper end **82** defined along a plane normal to the axis of generation of the cylinder. The lower end **83** of cylinder **81** varies in depth with respect to end **82**. This variation occurs according to the equation:

$$h = A\,(r^3/3)\ \mathrm{Cos}\ 3\theta + G$$

WHERE:

h is the distance between surface **82** and **83**;

r is the radius of the cylinder;

θ is the angle of rotation from the x axis;

A is a constant that determines the power variation in the lens over the lens surface; and,

G is the desired structural thickness of the cylinder.

Ring mold **84** is fabricated in precisely the same way. It has one surface which is formed along a plane normal to the axis of the generated cylinder **85**. The upper surface **86** is formed at a height of the cylinder **85** sidewalls which varies in accordance with the same equation.

It should be understood that the lens elements of this invention can be formed from confronting a number of ring molds of increasingly smaller dimension. Such smaller ring molds happen to be illustrated in FIG. **7** at **87, 88**. For convenience they are not shown in FIG. **8**.

In the fabrication of the lens element ring molds **81** and **84** are typically confronted towards one another. Thereafter, a solid disc of lens material is inserted between the molds. The molds are then compressed one towards another so that they will confront one another to form a cylinder of constant thickness. Assuming that the disc of lens material **90** is made of optical plastic and confrontation takes place in the presence of heat, a depth formation of the disc of lens material **90** between the confronted elements **81** and **84** will occur. This can be seen in FIG. **8**.

When disc **90** is removed from between the peripheral ring molds **81, 84** it will have the configuration illustrated in FIG. **9**. By cutting and polishing the disc **90** along the plate **91**, two lens elements similar to those shown in FIG. **1***a* may be fabricated. This procedure is usually adequate for lens surfaces which are of moderate power and size. However if very thick plastic sheet must be used, surface shape can be improved by casting a form from the final shape of FIG. **9** and vacuum forming plastic of half the thickness to the casting to achieve a shape close to that of the bisector of **90**. The surface in contact with the mold is then finished by cutting and polishing as previously described.

Following the process of FIG. **9**, it will be noted that two discrete lens elements **94** and **95** are formed. Each of these lens elements is a lens element equivalent to the lens element illustrated in FIG. **1***a*.

It will be remembered that the upper surface of the lens element illustrated in FIG. **1***a* was a surface of a compound curvature. Referring to FIG. **10**, it has been found that if a single ring mold, such as ring mold **81** has an elastic membrane stretched across its lower surface **83** it will define the complex curvature of the upper surface of the lens element illustrated in FIG. **1**. This membrane **97** is fastened at its periphery to the border **83** of the ring mold and stretched across the ring mold at a constant tension.

Providing the membrane **97** is elastic, it has been found that the surface formed with the material is precisely the surface described by the previous lens equation. By the expedient of reinforcing such a stretched membrane and thereafter using this surface as the matrix for a lens mold or simultaneously casting on both sides of the membrane, lenses similar to the lens element shown in FIG. **1***a* can be generated.

It should be appreciated that the lens here illustrated can be used in a number of anamorphic applications. For example, the anamorphic lens may be one where a relatively wide angle of view is desired. If this be the case a lens array illustrated in FIG. **11** has been found to be most satisfactory.

Referring to FIG. **11** three lens elements are illustrated. An upper lens element **101** is formed, a lower lens element **102** and a compound lens element **103** placed therebetween. Compound lens element **103** consists of two discrete lens elements **104** and **105** placed in back-to-back relation at their flat surfaces with their positive x axis of one lens element parallel to the positive x axis of the remaining lens element. Alternately, this lens would be formed of one price of material, by injection molding or casting, for example.

The relative movement of the three lens elements illustrated in FIG. **11** is analogous to that illustrated with respect to FIGS. **2** and **6**. Lens element **101** and **102** are translated in one direction, lens element **103**, consisting of the back-to-back lens elements **104** and **105** are moved in the opposite translational direction. Anamorphic effects are generated as has been previously illustrated, the exception being that the power is increased by a factor of two per unit of translation and a wider angle of view is permissible through the anamorphic lens system.

It should be appreciated that numerous departures from the specifics of the disclosure illustrated here can be made by those skilled in the optic art without departing from the spirit and scope of this invention.

What is claimed is:

1. A lens element comprising: transparent optical media having first and second optical interfaces with said transparent media disposed between said interfaces, the thickness of said optical media between said optical interfaces including a variation of effective opti-