

the center upper point. Bevels 30 and 32 widen (in front elevation view) to their widest point approximately half way down the lens 10, and then narrow again at the bottom. Bevels 30 and 32 increase in steepness and merge with the perimeter of the lens approximately at the center of the bottom of the lens. This bevel structure not only serves to shape the bulge 28, but also helps to keep the lens 10 from rotating on the eye. The close fit and additional surface area against which the lower eye lid 24 will be pushing prevents rotation and helps to center the upward pressure of the lower lid when gazing downward.

A lower bevel 34 on the posterior surface 10b of lens 10 aids in easing lens 10 into the lower fornix of the eye, and also aids in holding lens 10 from translation upward.

The lens 10 of this invention utilizes known characteristics of the anatomy of the eye to assist in the deformation of the lens 10. Upper lid 22 is firmer than lower lid 24, while lower lid 24 is more loose and has slightly less room than upper lid 22. Thus, insertion of the contact lens 10 will cause the space under the lower eyelid 24 to be immediately filled by prism portion 26 of lens 10. Since near vision requires the eyes to move not only downwards but also toward the nasal fornix, this will cause additional pressure to assist in creating bulge 28 on lens 10.

Since the eye blinks by moving only upper lid 22, the lens will not change shape or power during this natural phenomena, thus eliminating one of the problems associated with some translational lenses.

FIGS. 3 and 4 diagrammatically show the changes which occur when the viewer directs his vision from a straight, distant view (FIG. 3) to a downward, near view (FIG. 4). Light rays 36, from a distant source, will pass through lens 10 and focus on retina 38. Thus, lens 10 is manufactured to correct the distance vision of the wearer in its "normal", undeformed shape. In order to view a closer object, the eye is moved downwardly and inwardly until lens 10 has a bulge 28 of the appropriate curvature so that light rays 40 are bent at a steeper angle and focused on retina 38. Thus, the natural movement of the eyes inwardly upon viewing a nearer object will actually help vary the power of the lens to maintain objects in focus. Because the lens 10 is made of a soft, resiliently deformable material, the lens 10 will return to its original shape as the eye gazes straight ahead for distance vision.

It can therefore be seen that an infinite variety of powers and foci are available with this lens 10, making vision clear continuously from distant vision to very near vision. For this same reason, a nearly universal lens is possible with the present invention. Those who need only slight correction need only gaze slightly downward to obtain the necessary correction. Those who need larger amounts of correction could use the same lens by gazing downwardly (and inwardly) at a steeper angle for near vision. Obviously, a more "custom" fit is also possible. For example, for those wearers who need

only a slight correction, the thickness of the prism portion 26 is less than for those who require greater correction.

Because of the thickness, of the prism, lens 10 will help to mask smaller astigmatic errors. For higher astigmatic errors, a toric surface could be made on the posterior surface 10b of lens 10.

It can therefore be seen that this invention fulfills at least all of the above objectives.

What is claimed is:

1. A contact lens for non-rotational, non-translational orientation in the eye of the wearer, comprising, a soft, resiliently deformable ophthalmic plastic material lens;
  - said lens having a posterior surface conforming to the corneal surface of the wearer's eye and having a perimeter area extending upon the scleral surface of the wearer's eye;
  - said lens having a front surface with a radius adapted to correct distance vision of the wearer;
  - said lens having a base-down prism on the anterior surface, with a thickness such that pressure from the lower eyelid, when the eye gazes downwardly and inwardly, will cause the lens to resiliently deform to create a thickened bulge which reduces the radius of the lens near the center of the anterior surface;
  - said lens having a beveled edge on its temporal and nasal sides, said bevels being on the anterior surface of the lens adapted to form a uniform, spheric bulge when said bulge is formed;
  - said lens having a beveled lower edge on the posterior surface for a smoother fit within the lower fornix of the eye.
2. The contact lens of claim 1 wherein the lens material is a high water content gel, with an equalibrated water content of about 79%, and with a resiliently deformable anterior portion.
3. The contact lens of claim 1 wherein the temporal bevel is slightly wider in front elevational view than the nasal bevel.
4. The contact lens of claim 1, wherein the temporal and nasal bevels begin with a steep slope at points which are located spaced away from the center upper point of the lens, the slopes becoming shallower as the bevels widen in front elevational view, and becoming steeper again on the lower portion of the lens, said bevels ending at the lower center portion of the perimeter of the lens, the beginning points of the bevels being separated by a greater distance than the ending points of the bevels.
5. The contact lens of claim 1, wherein the posterior surface has a toric shape for wearers with high astigmatism.
6. The contact lens of claim 1, wherein the lens material is a very soft silicone material.

\* \* \* \* \*