Light Guide Lens #4,275,950

Background
With the energy crisis created by the impact of consumption of non-renewable natural resources, together with a new emphasis on establishing clean standards associated with the usage of such natural resources, a considerable amount of effort has been directed to other forms of energy. Although there are several older forms of energy, the emphasis has been placed on solar energy as the most logical pollution-free recyclable energy source. Consequently, there are on the market many so-called solar focusing lenses.

These prior art devices generally comprise a focusing lens that is limited to a scan angle of sixty degrees (60°), and consequently are not capable of varying the effective angle while directionally focusing or dispersing the incident light radiation. The bulk of lenses of the various types are designed for use with a single stationary light source whether it be a single beam or incident light radiation in planetary array. Accordingly, the problems encountered with a single light source constantly varying its angular position are not appreciably enhanced for those instances where the problem has been encountered. Efforts have been made to have the lens "follow" the source.

In other instances where the light source is dispersed, the incident light rays upon the lens may be insufficient to render practical applications thereof. This has caused the need for others to augment the apparatus becomes extremely large, bulky, and of course expensive.

Summary of the Invention
The invention comprises in its most general aspects a unitary or collector-concentrator lens enclosure that houses a combination of light-guide lenses made up of arrays of light-deflecting lenses that collects, redirects, transfers, and focuses or disperses incident light radiation to a central region irrespective of the angle of the sun during the day or season. The lens system provides a heat source with an extremely larger capacity of high energy than known solar energy and operable to overhang any span for an extended period of time over that of prior art lenses.

The solar collector-concentrator lens configuration includes a plurality of spaced focusing light-guide lenses positioned over a first flare-shaped focusing lens. Beneath the focusing lens is a heat source. Light-guide lenses in similar vertical alignment fill the spaces defined by the perimeter of the transparent outer focusing lens array, in a well-known manner to assist in the engaging and focusing of the incident light, and deflect same into the boundary structure. Each of the light-guides includes a plurality of lens formations that steer light rays from its incoming source. The light-guides having a focusing means made out of one end of different refractive index materials light guide stems. The lens includes deflectors between adjacent formations of adjacent lens means, and may be linearly or non-linearly formed.

The lens can be vertically secured or configured horizontally to a light supporting beam and attached to a thermal chamber. Multiple concentric light guide units may be included in the focal plane on the interior reflective surfaces of the guide member.

Revision #3
Created 2024-10-16 03:52:26 UTC by Chris Bake
Updated 2024-10-16 04:02:30 UTC by Chris Bake