



[54] **SYSTEM AND METHOD FOR COMPUTERIZED EVALUATION OF GEMSTONES**

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[*] Notice: This patent issued on a continued prosecution application filed under 37 CFR 1.53(d), and is subject to the twenty year patent term provisions of 35 U.S.C. 154(a)(2).

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[51] **Int. Cl.⁶** **B44B 5/00**

[52] **U.S. Cl.** **702/35; 364/507; 356/30**

[58] **Field of Search** 364/525, 507; 356/30, 31, 303, 306, 317, 318, 128, 148, 237; 702/35

“Illumination Design With LightTools,” Product Brochure, Optical Research Associates, Pasadena, California, Dec. 1996.

Gilbertson, A. et al., “What Tolokowsky Really Said,” *Rapport Diamond Report*, Jan. 10, 1997, pp. 35 and 37.

“ASAP 5.0 for Windows,” Promotional Circular, Breault Research Organization, Tucson, Arizona, ©1996.

“GLAD—General Laser Analysis and Design Software,” Product Brochure, Focus Software, Inc., Tucson, Arizona.

“LensVIEW™,” Promotional Circular, Focus Software, Inc., Tucson, Arizona.

“Light Tools,” Product Brochure, Optical Research Associates, Pasadena, California.

“OPTICAD®,” Product Brochure, Focus Software, Inc., Tucson, Arizona.

“OSLO Version 5,” Promotional Circular, Sinclair Optics, Fairport, New York.

“ZEMAX Optical Design Program,” Product Brochure, Focus Software, Inc., Tucson, Arizona.

“ZEMAX Optical Design Software,” Promotional Circular, Focus Software, Inc., Tucson, Arizona.

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[56] **References Cited**

U.S. PATENT DOCUMENTS

3,947,120 3/1976 Bar-Issac et al. 356/30

OTHER PUBLICATIONS

“Code V®,” Product Brochure, Optical Research Associates, Pasadena, California ©1993.

Lewotsky, K., “Three-Dimensional Modeling Program Simplifies Optomechanical Design,” reprint from *Laser Focus World*, PennWell Publishing Company, Mar. 1995.

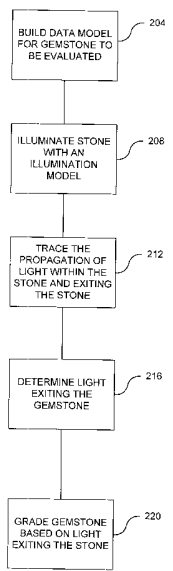
Hayford, M. et al., “A Building-Block Approach to Optical-Design Software,” reprint from *Photonics Spectra*®, Laurin Publishing Co, Inc., May 1996.

Abernathy, M., “Non-Sequential Raytracing: Enlightened Software for Illumination Engineering,” *Optics and Photonics News*, Nov. 1996, pp. 22–26.

[57] **ABSTRACT**

A system and method for computerized grading of the cut of a gemstone. The system includes a gemstone model and an illumination model. The gemstone model defines the cut of the gemstone in three dimensions with reference to the facets of the gemstone. The illumination model defines light projected onto the gemstone. The method includes the steps of determining a beam of light refracted into the gemstone from the illumination model for at least one of the facets, tracing reflections of the beam of light within the gemstone, and measuring at least one light beam refracted out of the gemstone model. The measurements of the refracted light are used to evaluate the gemstone.

74 Claims, 56 Drawing Sheets



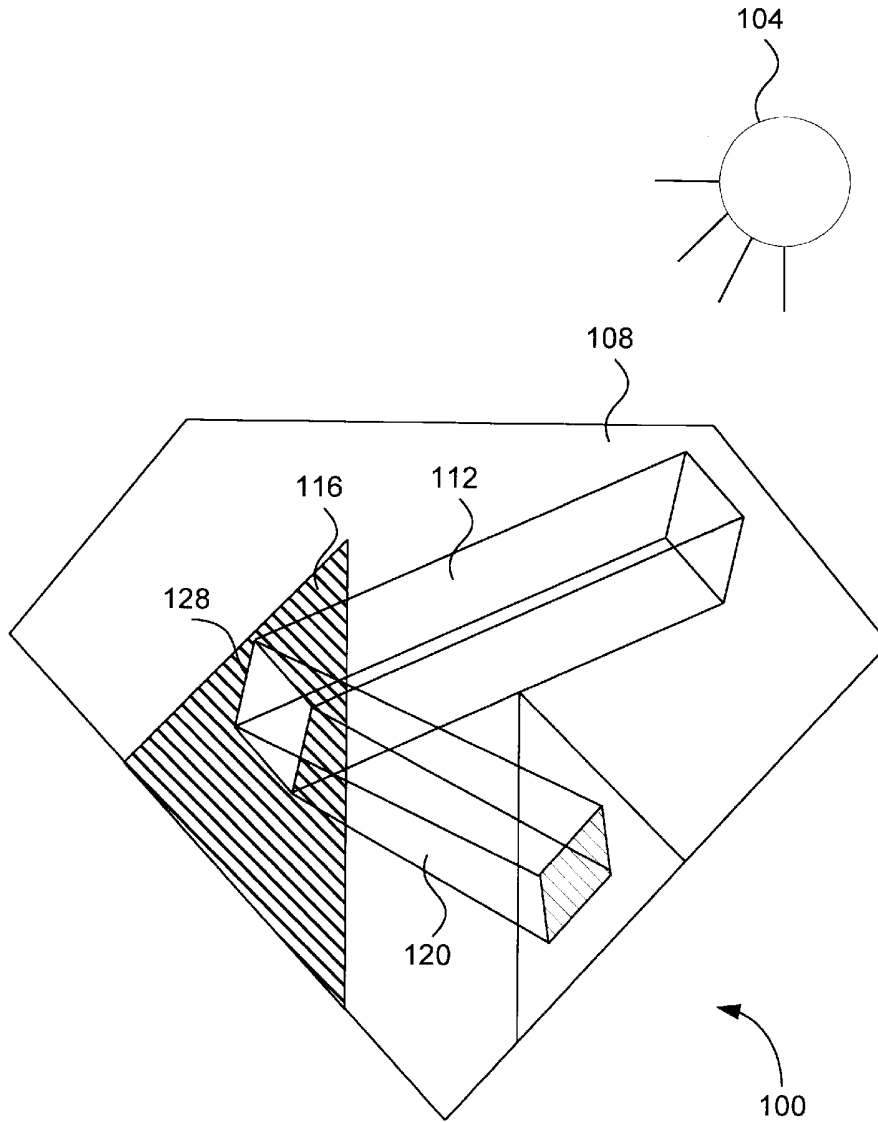


FIG. 1

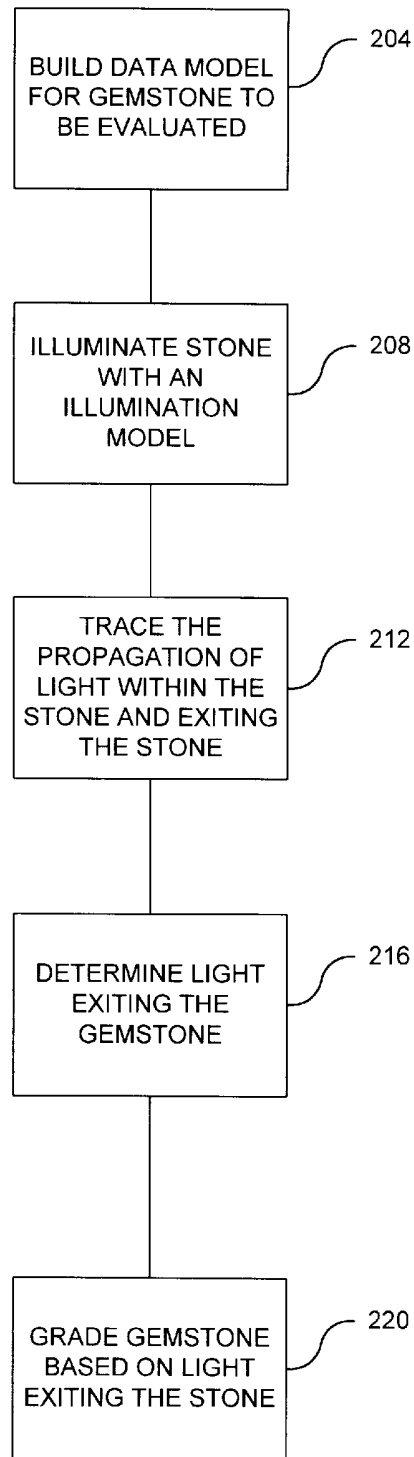


FIG. 2

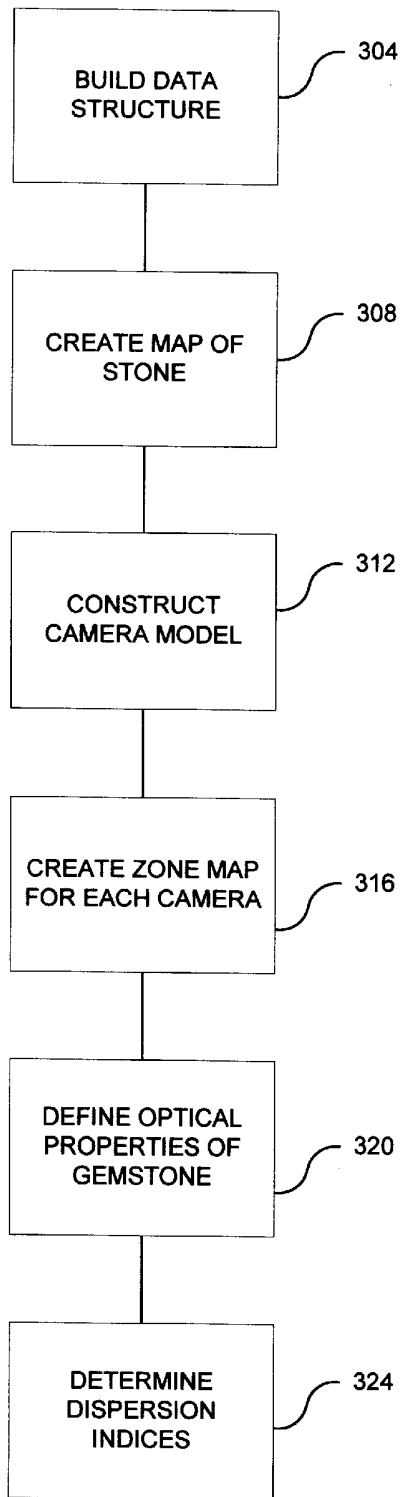


FIG. 3(a)

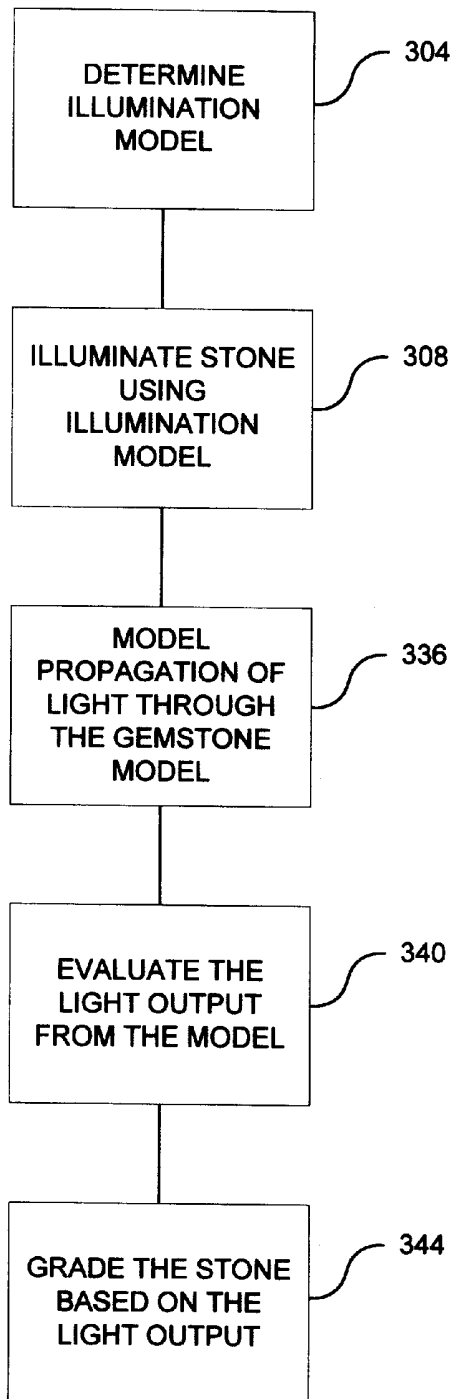


FIG. 3(b)

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