



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

[75] Inventor: **Paul T. Shannon, Sr.**, Macon, Ga.

[73] Assignee: **Diamond Technologies, Inc.**, Macon, Ga.

[*] 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

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Primary Examiner—Thomas Peeso
Attorney, Agent, or Firm—Sterne, Kessler, Goldstein & Fox P.L.L.C.

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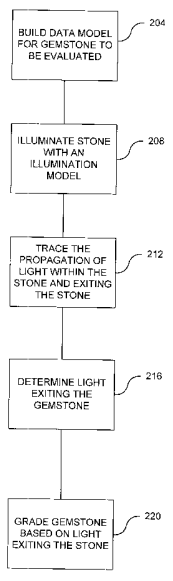
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[57] **ABSTRACT**

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



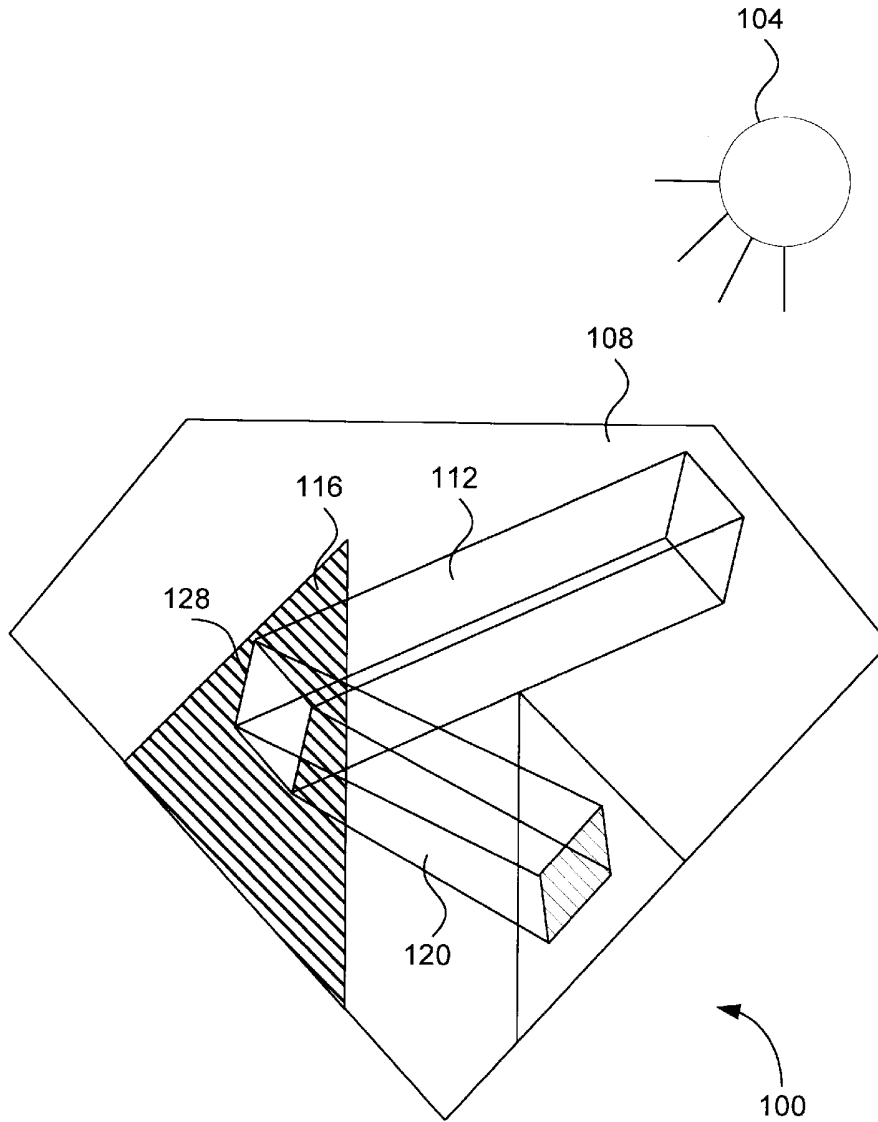


FIG. 1

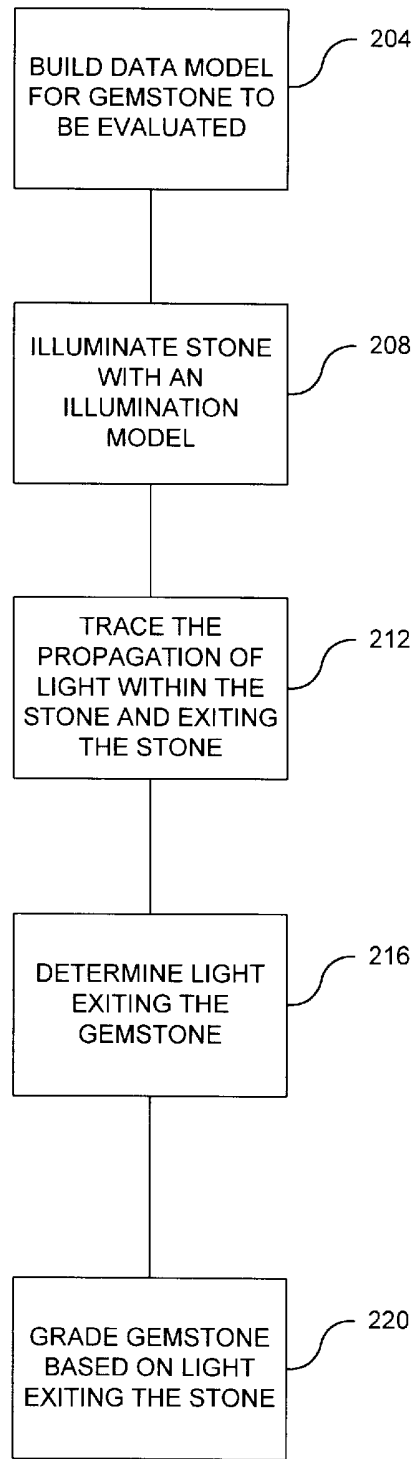


FIG. 2

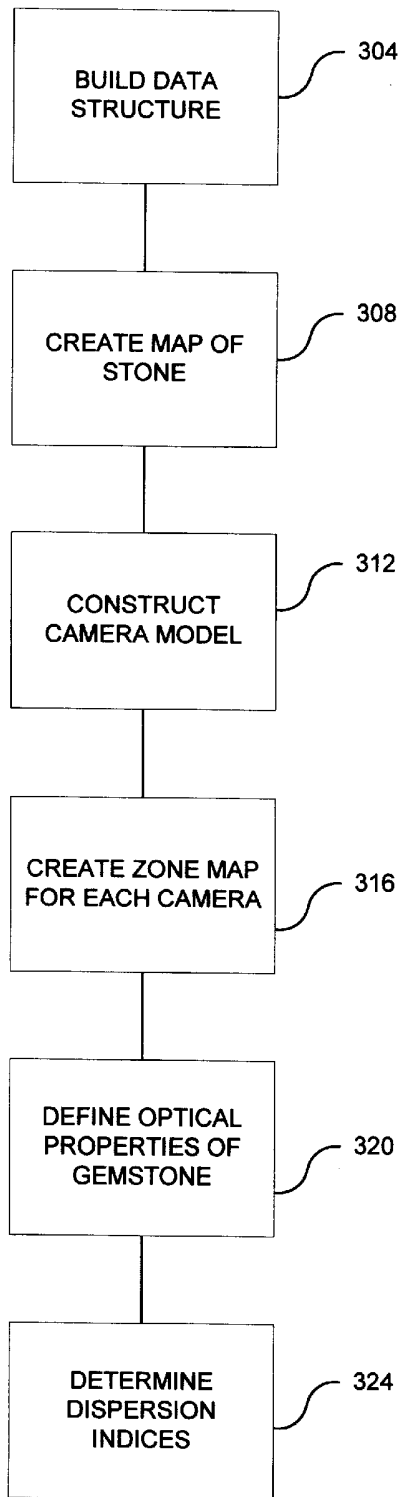


FIG. 3(a)

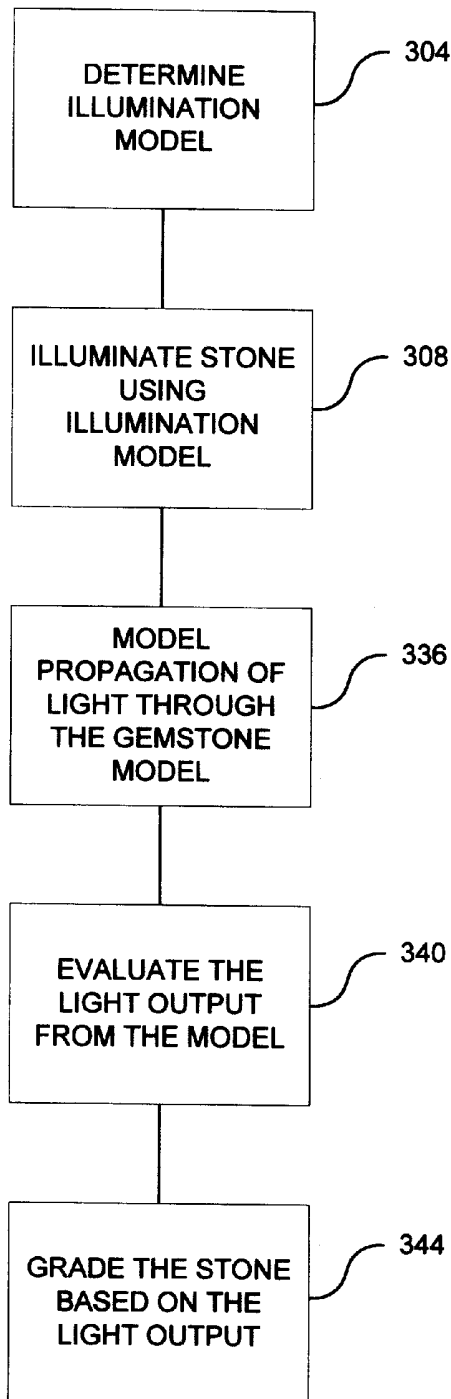


FIG. 3(b)

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