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Durbin et al.

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(54) **METHOD AND SYSTEM FOR IMAGING AND MODELING A THREE DIMENSIONAL STRUCTURE**

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(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 0 days.

This patent is subject to a terminal disclaimer.

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(21) Appl. No.: **09/993,110**

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(65) **Prior Publication Data**

US 2002/0055082 A1 May 9, 2002

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Related U.S. Application Data

(63) Continuation-in-part of application No. 09/696,065, filed on Oct. 25, 2000, now Pat. No. 6,364,660, and a continuation-in-part of application No. 09/726,834, filed on Nov. 30, 2000, now Pat. No. 6,386,867.

(51) **Int. Cl.⁷** **G01B 11/24**; A61B 5/103; A61C 3/00

(52) **U.S. Cl.** **433/214**; 433/29

(58) **Field of Search** 433/29, 213, 214, 433/215

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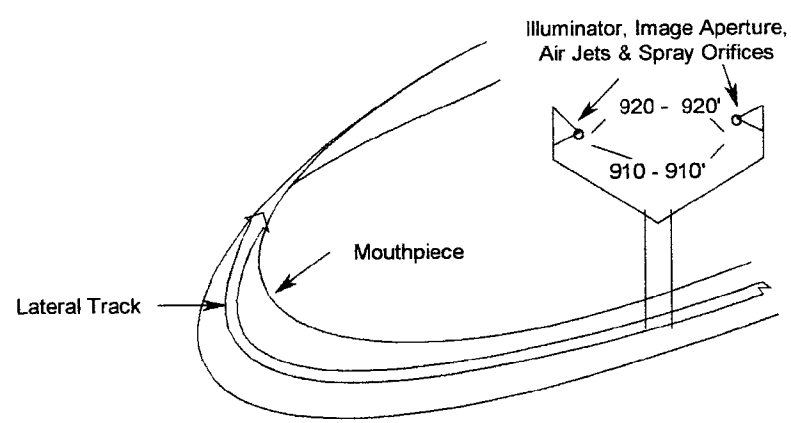
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Primary Examiner—Ralph A. Lewis

(57) **ABSTRACT**

Systems and methods for generating a three-dimensional (3D) model of a structure include coating the structure with a luminescent substance to enhance the image quality, the luminescent substance having an excitation range; and capturing one or more images of the structure through at least one image aperture each having a frequency sensitivity, wherein the frequency sensitivity of each image aperture is maximized for the luminescent material emission range.

22 Claims, 9 Drawing Sheets



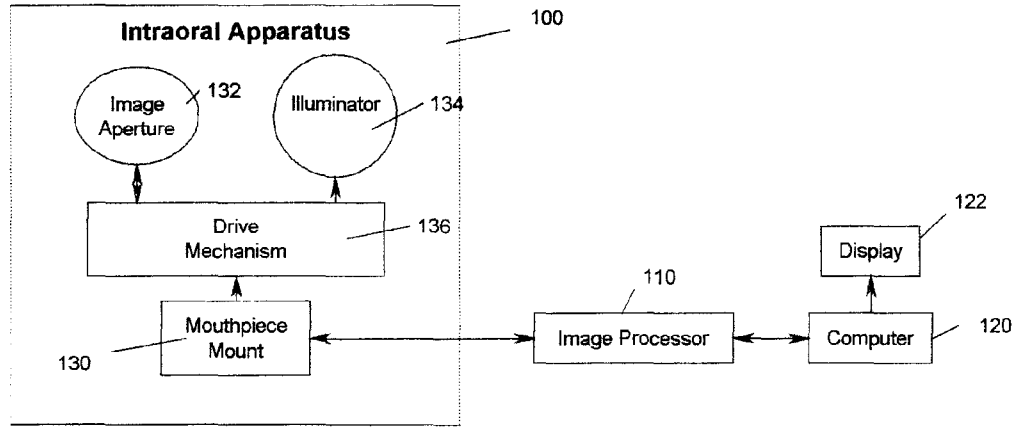


Figure 1

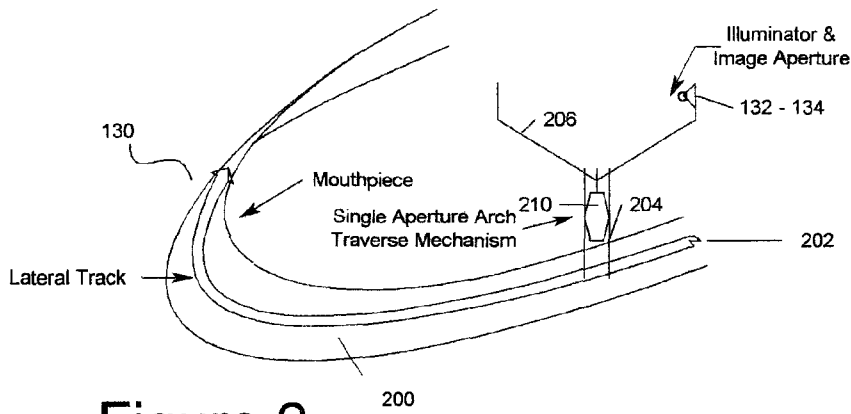


Figure 2

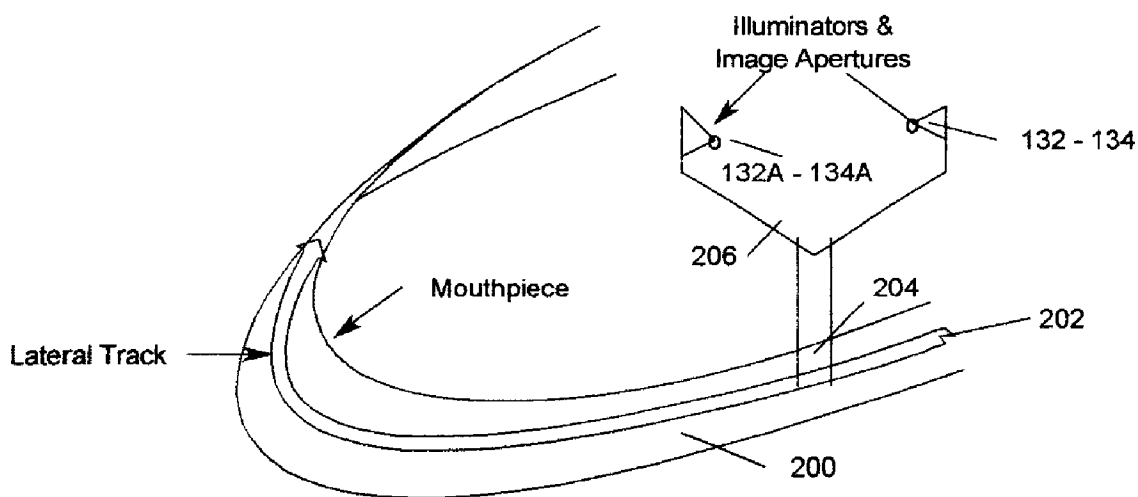


Figure 3

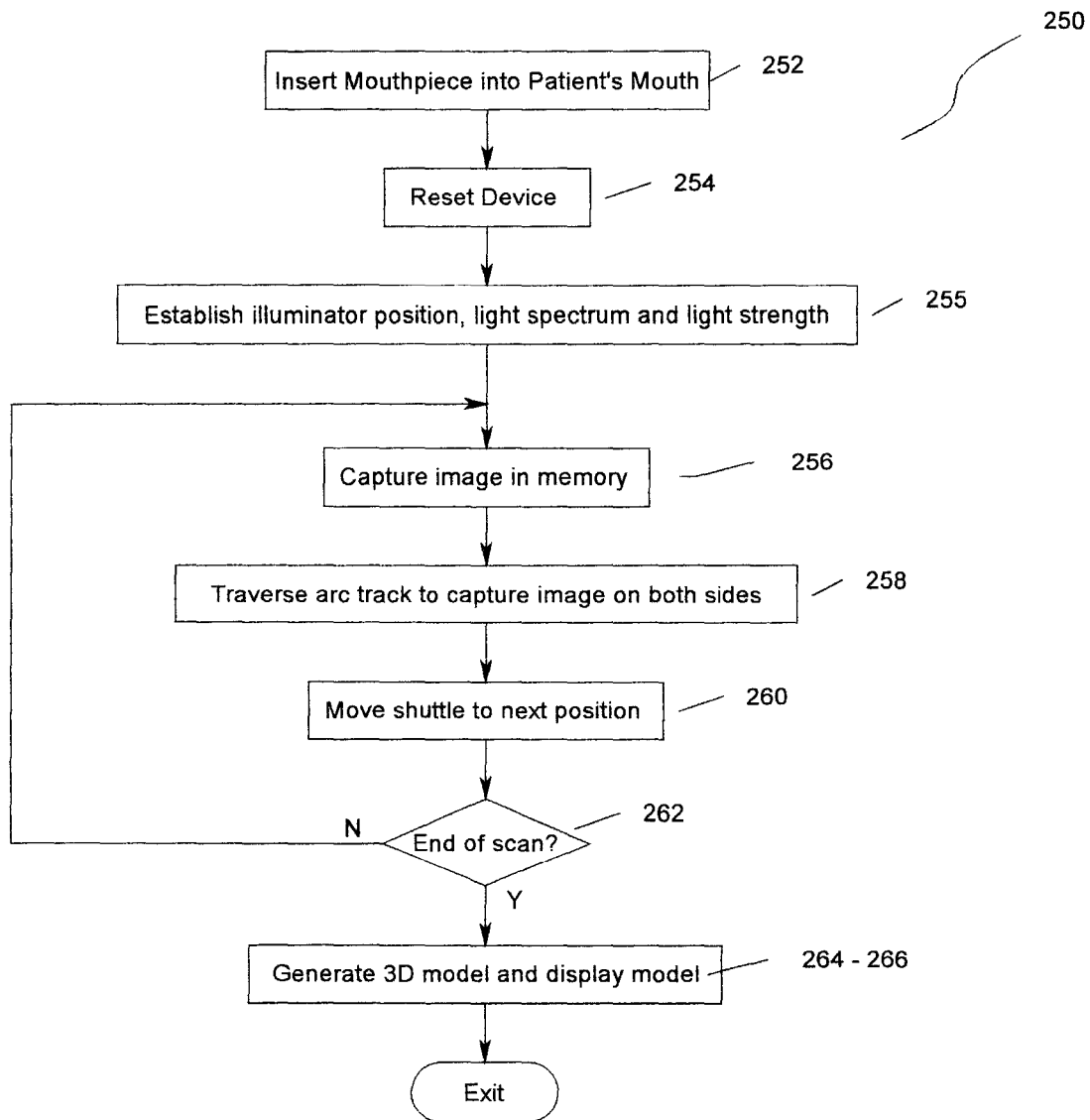


Figure 4

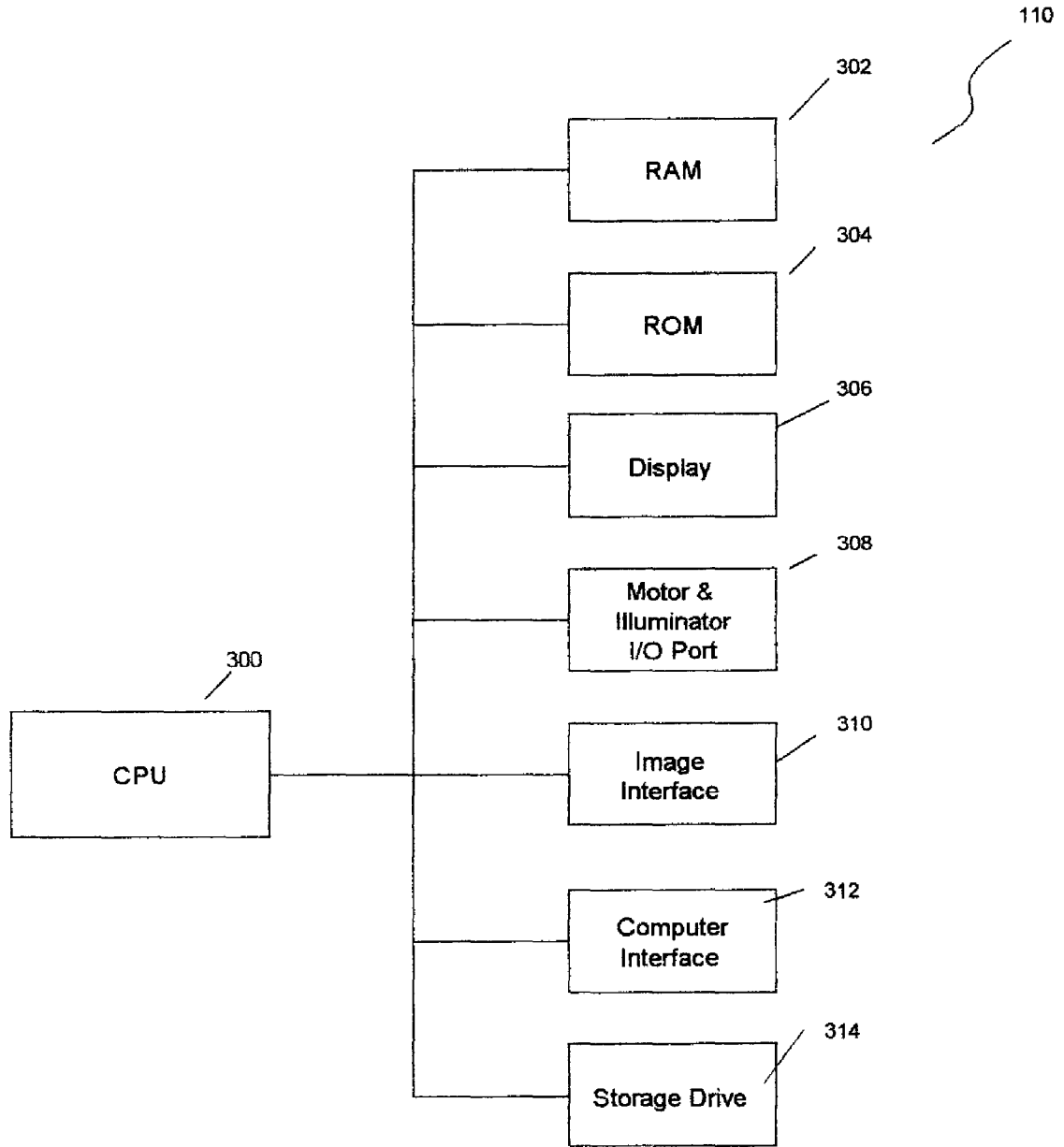


Figure 5

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