

EXHIBIT B

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(12) **United States Patent
Kruglick**(10) **Patent No.:** **US 9,352,833 B2**(45) **Date of Patent:** ***May 31, 2016**(54) **AUTOMATIC FLIGHT CONTROL FOR UAV
BASED SOLID MODELING**USPC 701/2, 3, 11; 244/190
See application file for complete search history.(71) Applicant: **Empire Technology Development LLC,**
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(72) Inventor: **Ezekiel Kruglick,** Poway, CA (US)(73) Assignee: **EMPIRE TECHNOLOGY
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DE (US)(*) 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 dis-
claimer.(21) Appl. No.: **14/574,329**(22) Filed: **Dec. 17, 2014**(65) **Prior Publication Data**

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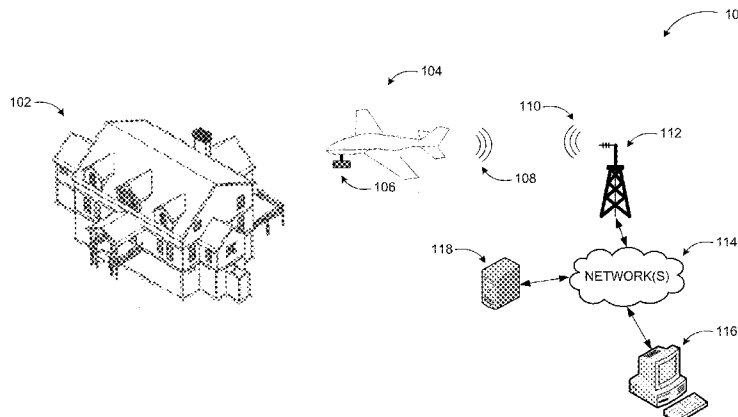
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ABSTRACT

Technologies are generally described for controlling a flight path of a UAV based image capture system for solid modeling. Upon determining an initial movement path based on an estimate of a structure to be modeled, images of the structure to be modeled may be captured and surface hypotheses formed for unobserved surfaces based on the captured images. A normal vector and a viewing cone may be computed for each hypothesized surface. A set of desired locations may be determined based on the viewing cones for the entire structure to be modeled and a least impact path for the UAV determined based on the desired locations and desired flight parameters.

20 Claims, 11 Drawing Sheets

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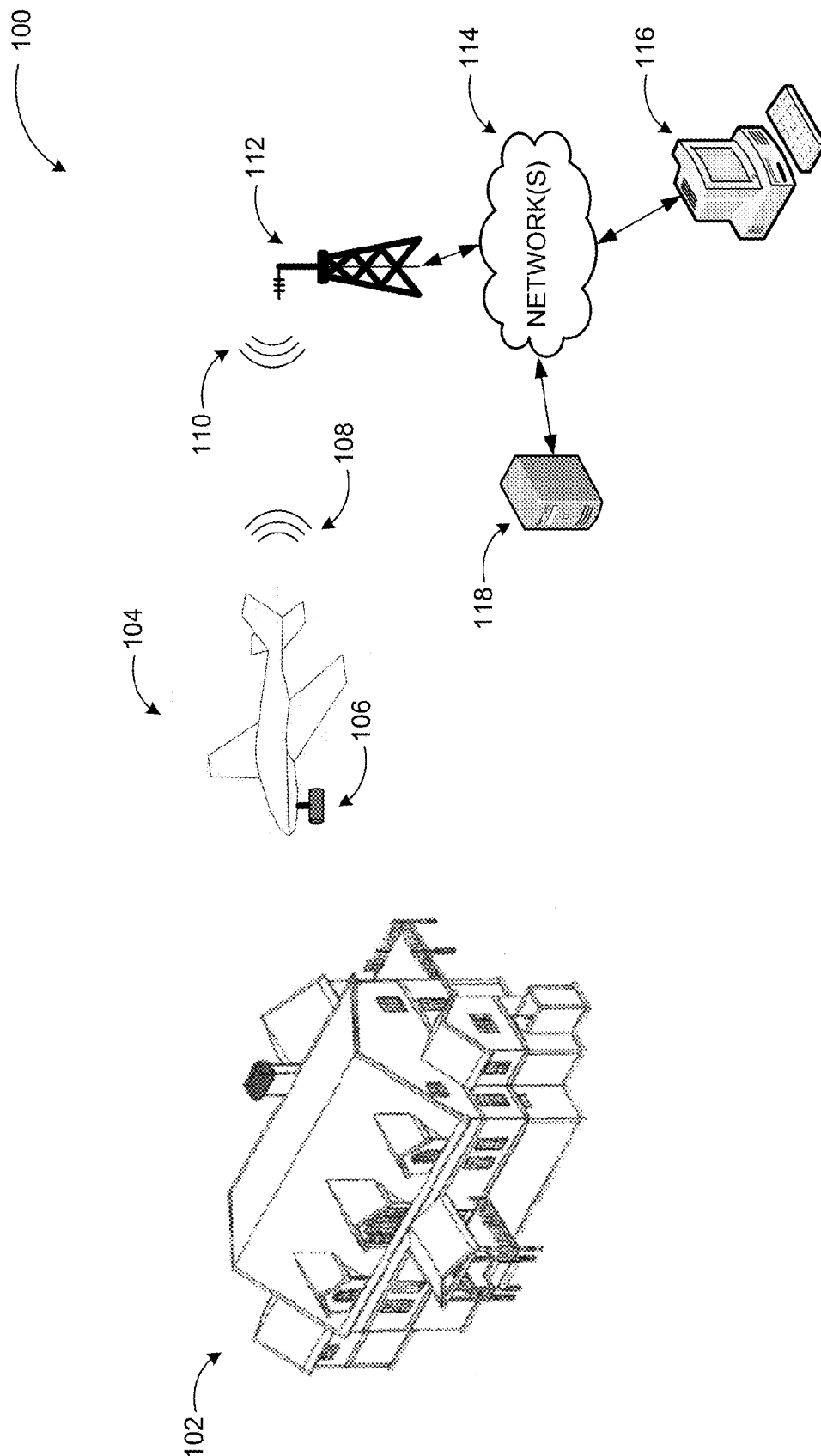


FIG. 1

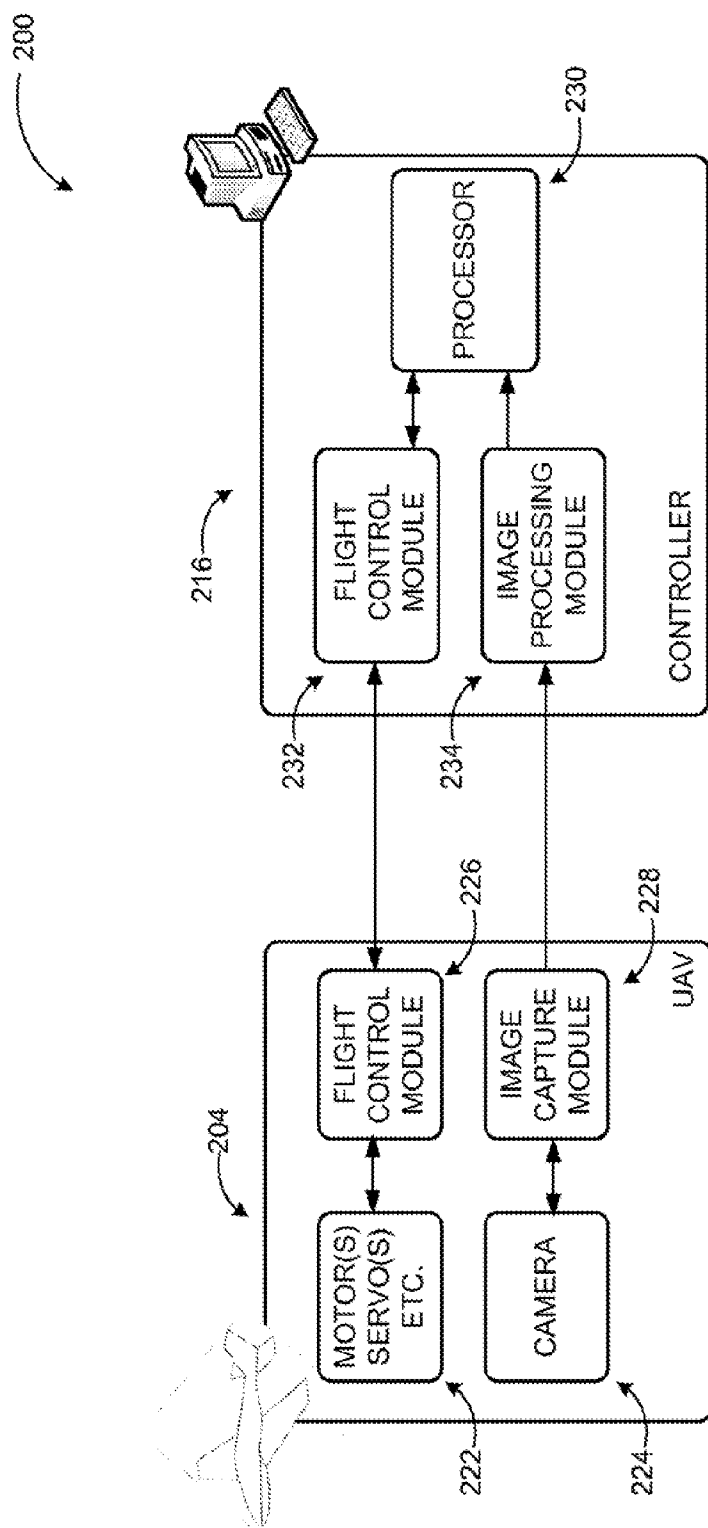


FIG. 2

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