



US008552978B2

(12) **United States Patent**
Ye et al.

(10) **Patent No.:** **US 8,552,978 B2**
(45) **Date of Patent:** **Oct. 8, 2013**

(54) **3D POINTING DEVICE AND METHOD FOR COMPENSATING ROTATIONS OF THE 3D POINTING DEVICE THEREOF**

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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 144 days.

(21) Appl. No.: **13/176,771**

(22) Filed: **Jul. 6, 2011**

(65) **Prior Publication Data**

US 2011/0260968 A1 Oct. 27, 2011

Related U.S. Application Data

(63) Continuation-in-part of application No. 13/072,794, filed on Mar. 28, 2011, which is a continuation-in-part of application No. 12/943,934, filed on Nov. 11, 2010.

(60) Provisional application No. 61/292,558, filed on Jan. 6, 2010.

(51) **Int. Cl.**
G06F 3/033 (2013.01)
G09G 5/08 (2006.01)

(52) **U.S. Cl.**
USPC **345/157**; 345/156; 345/158; 345/173;
178/18.01; 178/18.03; 178/19.01

(58) **Field of Classification Search**
USPC ... 345/156-168, 173-183; 178/18.01-18.04,
178/19.01-19.04

See application file for complete search history.

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Primary Examiner — Lun-Yi Lao

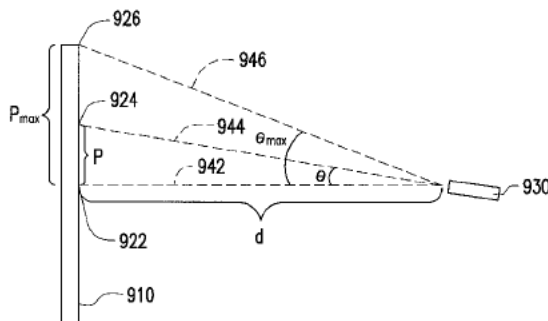
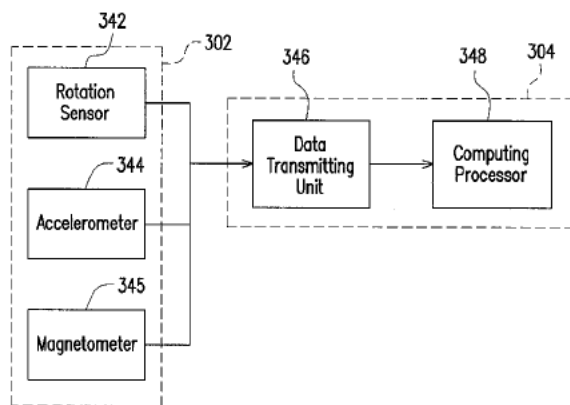
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(57) **ABSTRACT**

A 3D pointing device utilizing an orientation sensor, capable of accurately transforming rotations and movements of the 3D pointing device into a movement pattern in the display plane of a display device is provided. The 3D pointing device includes the orientation sensor, a rotation sensor, and a computing processor. The orientation sensor generates an orientation output associated with the orientation of the 3D pointing device associated with three coordinate axes of a global reference frame associated with the Earth. The rotation sensor generates a rotation output associated with the rotation of the 3D pointing device associated with three coordinate axes of a spatial reference frame associated with the 3D pointing device itself. The computing processor uses the orientation output and the rotation output to generate a transformed output associated with a fixed reference frame associated with the display device above. The transformed output represents a segment of the movement pattern.

18 Claims, 12 Drawing Sheets



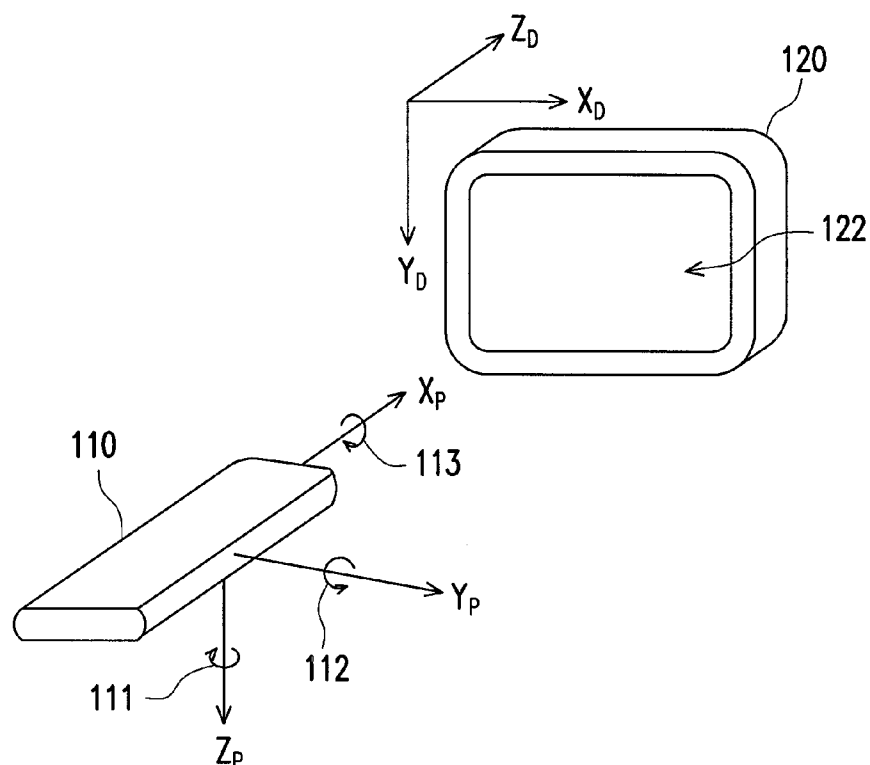


FIG. 1 (RELATED ART)

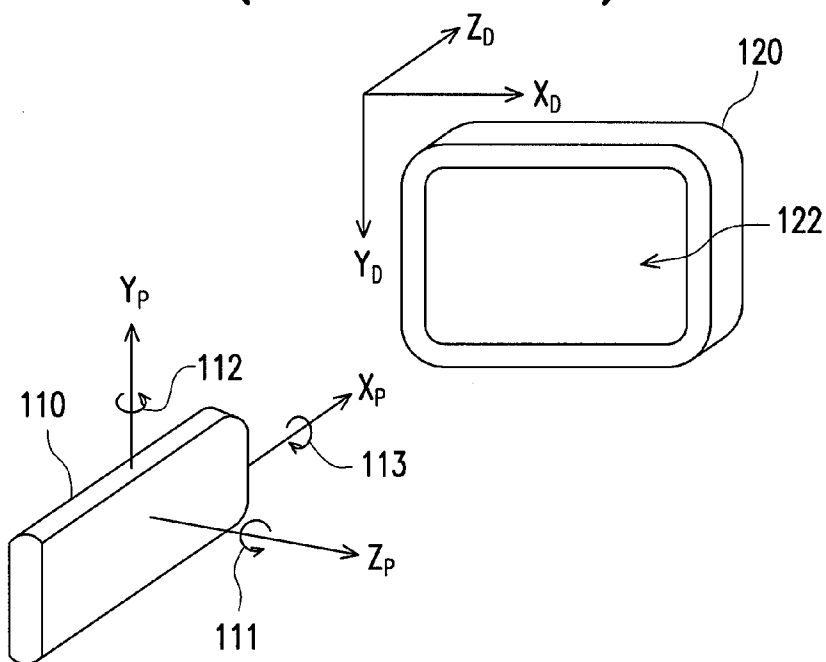


FIG. 2 (RELATED ART)

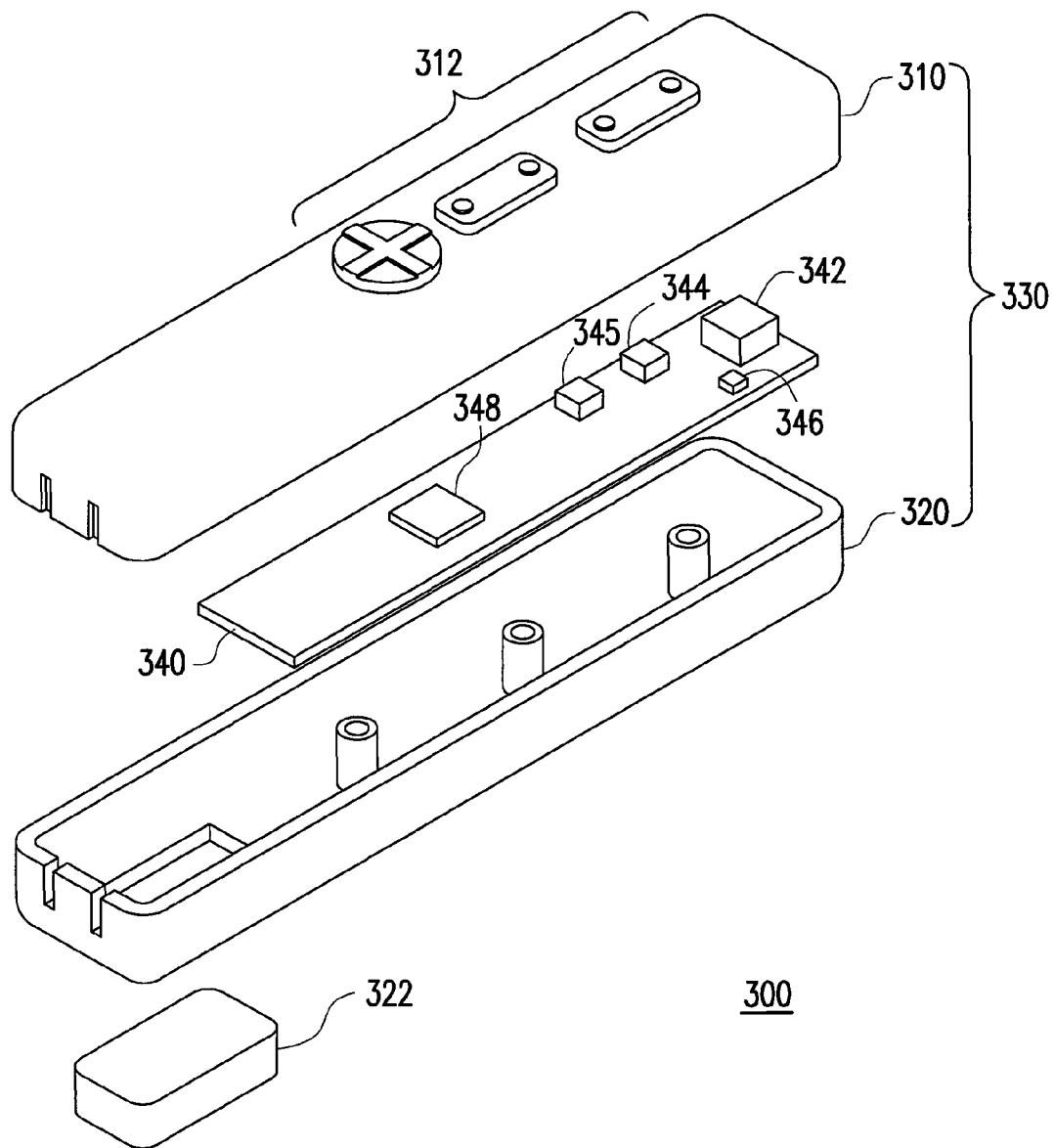


FIG. 3

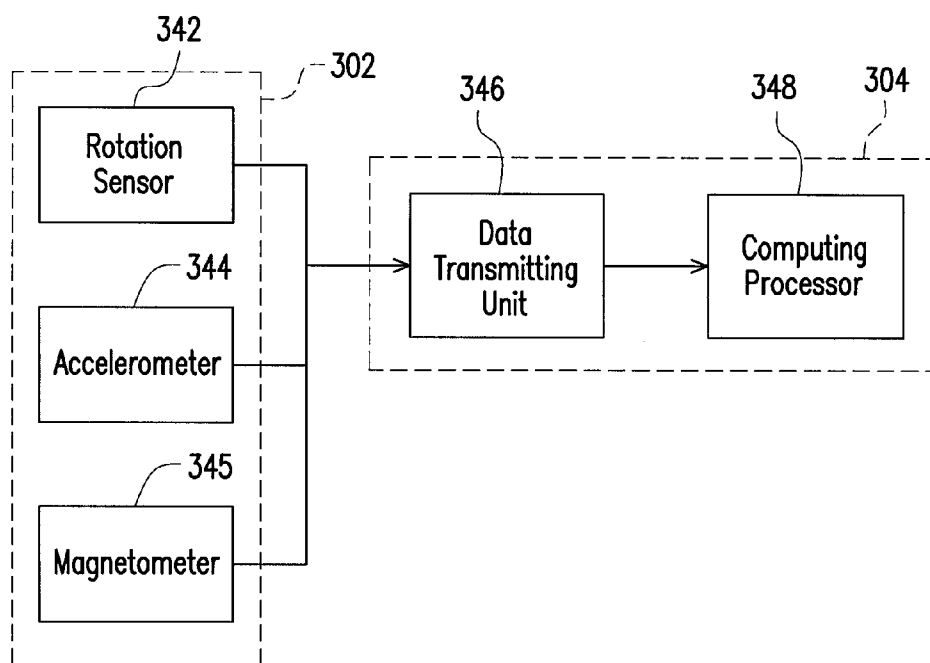


FIG. 4

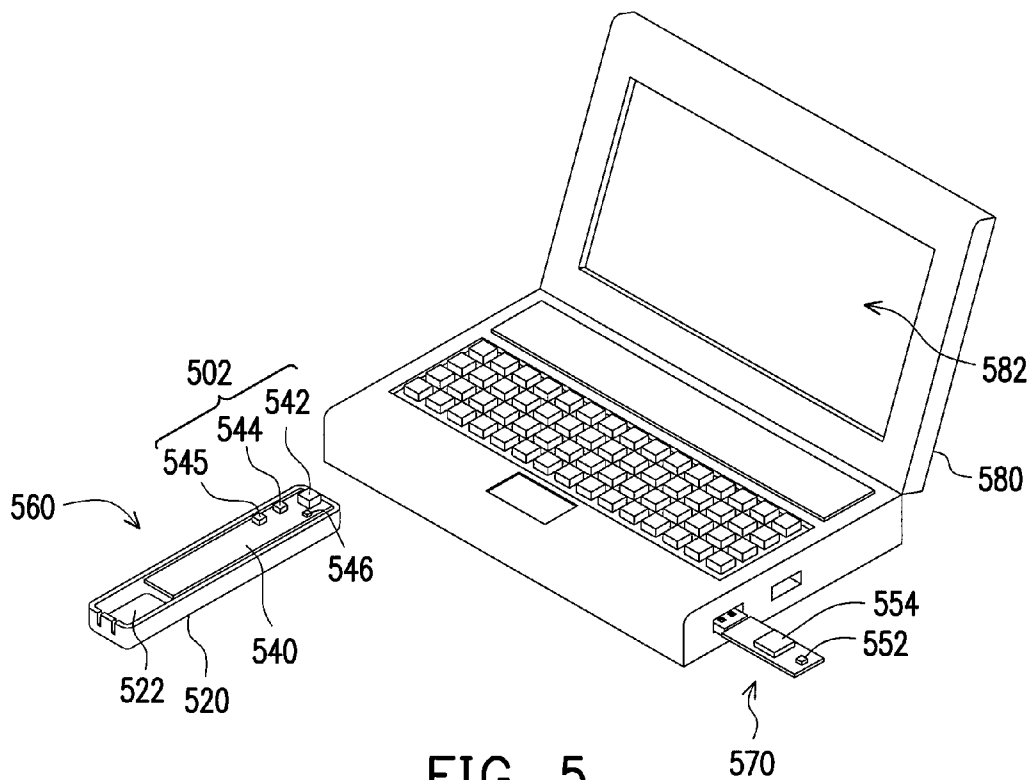


FIG. 5

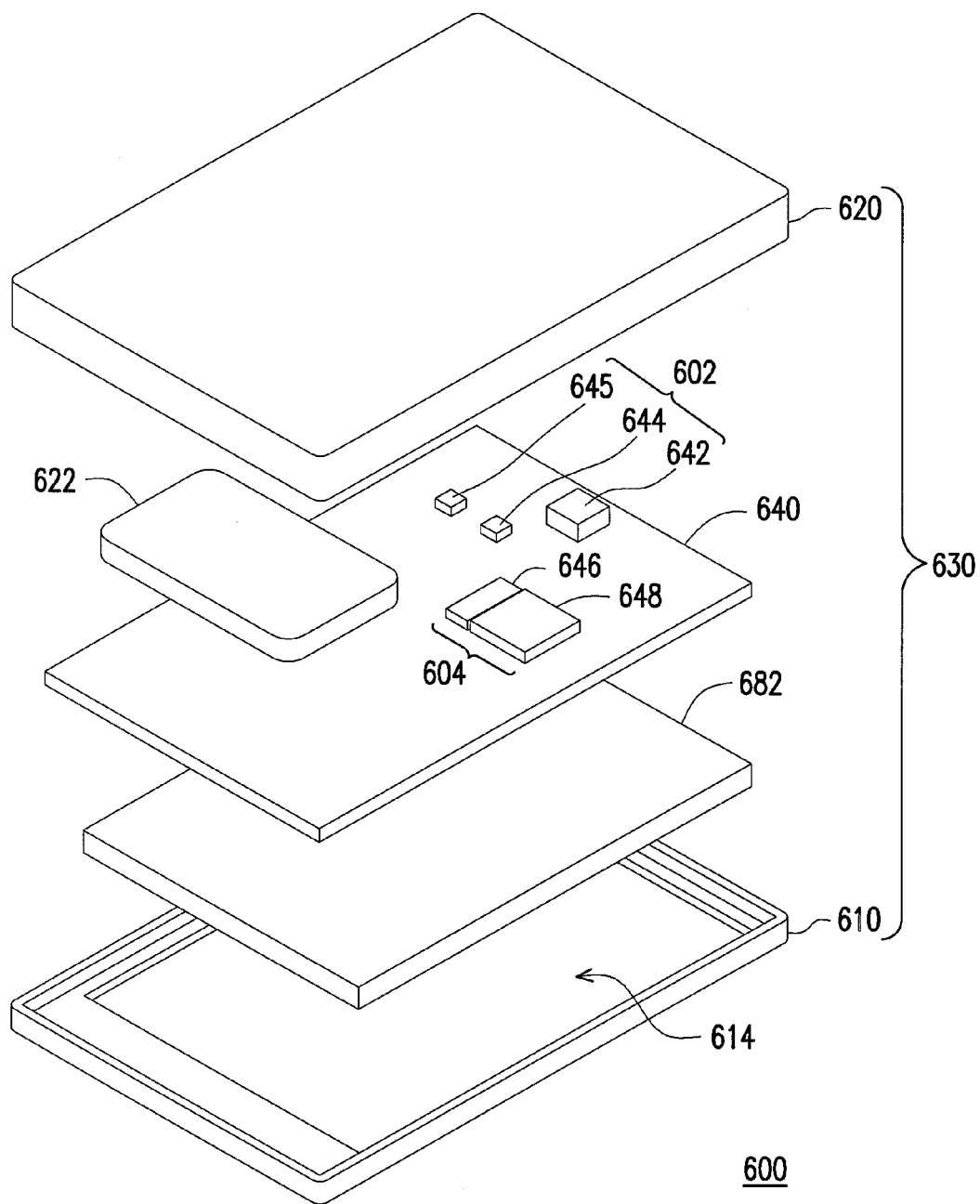


FIG. 6

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