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Ye et al.

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

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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

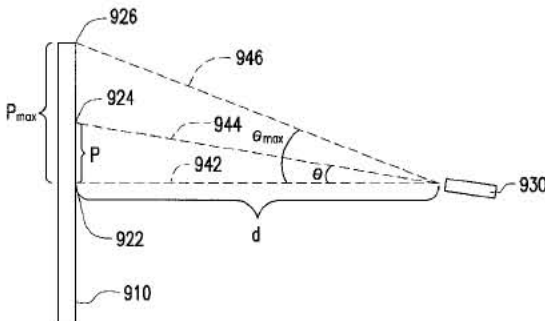
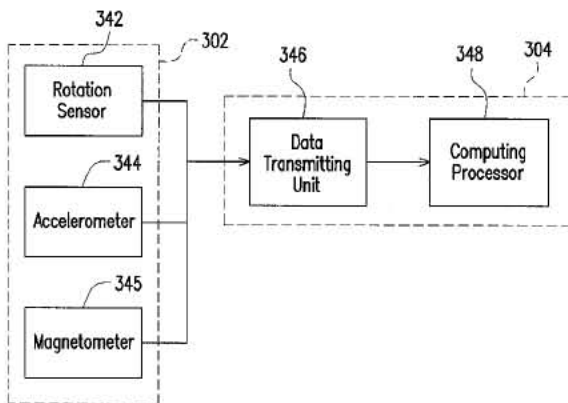
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(57) **ABSTRACT**

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



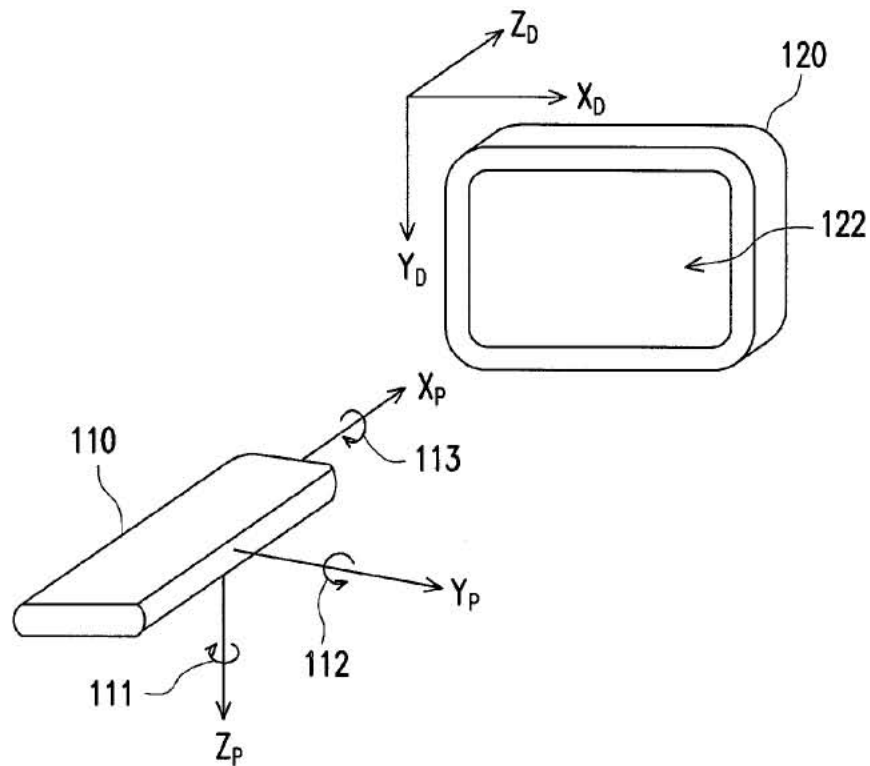


FIG. 1 (RELATED ART)

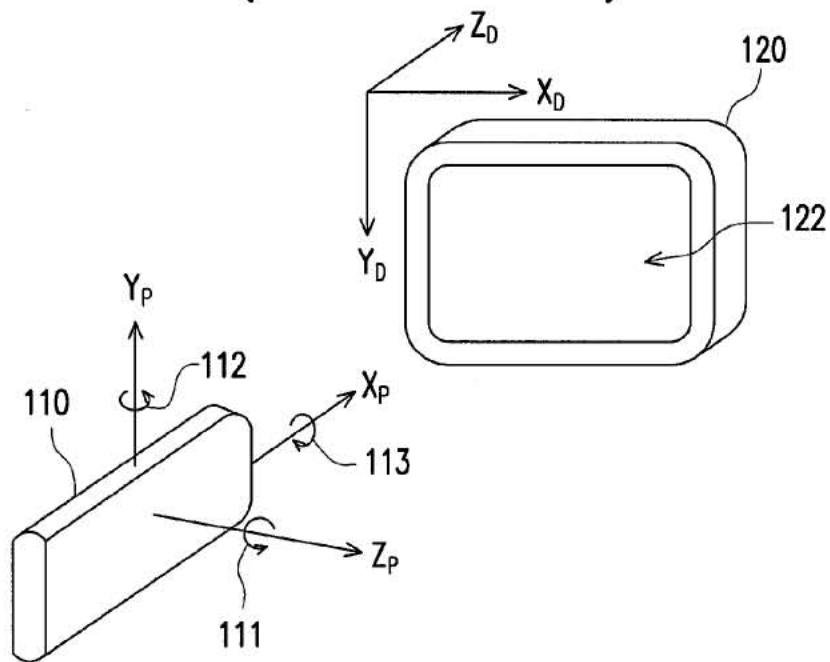


FIG. 2 (RELATED ART)

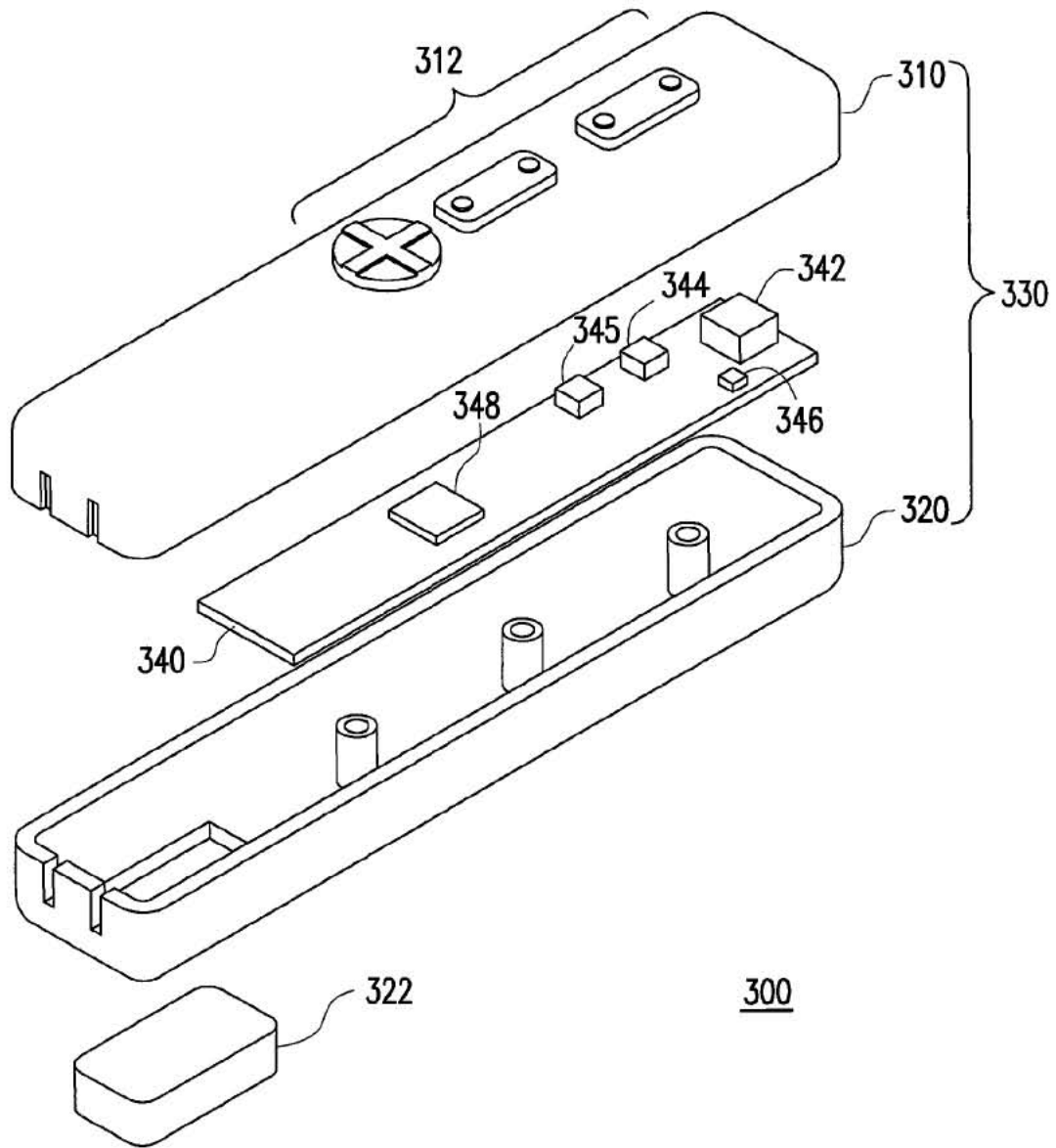


FIG. 3

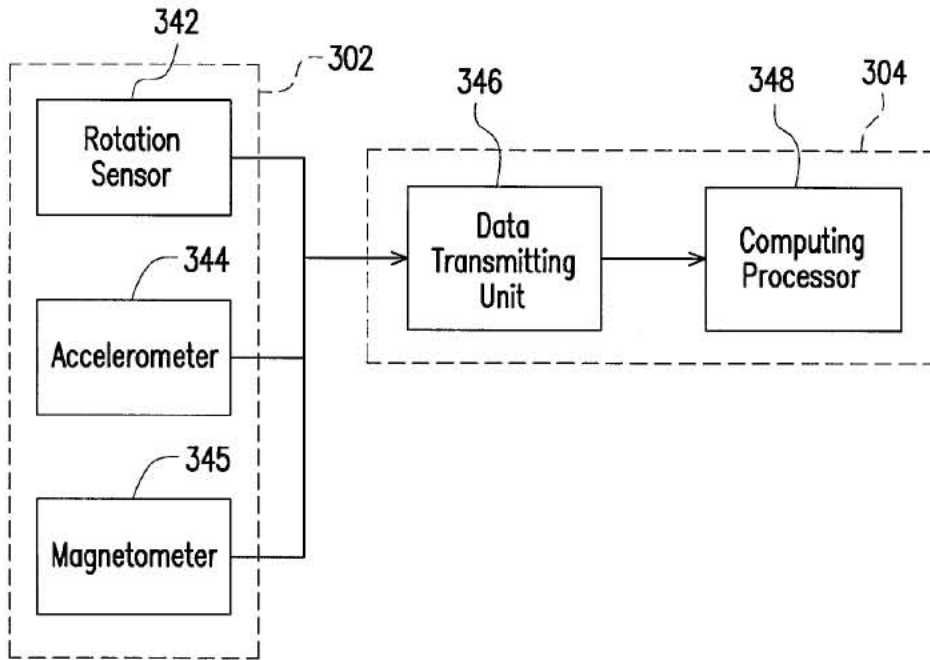


FIG. 4

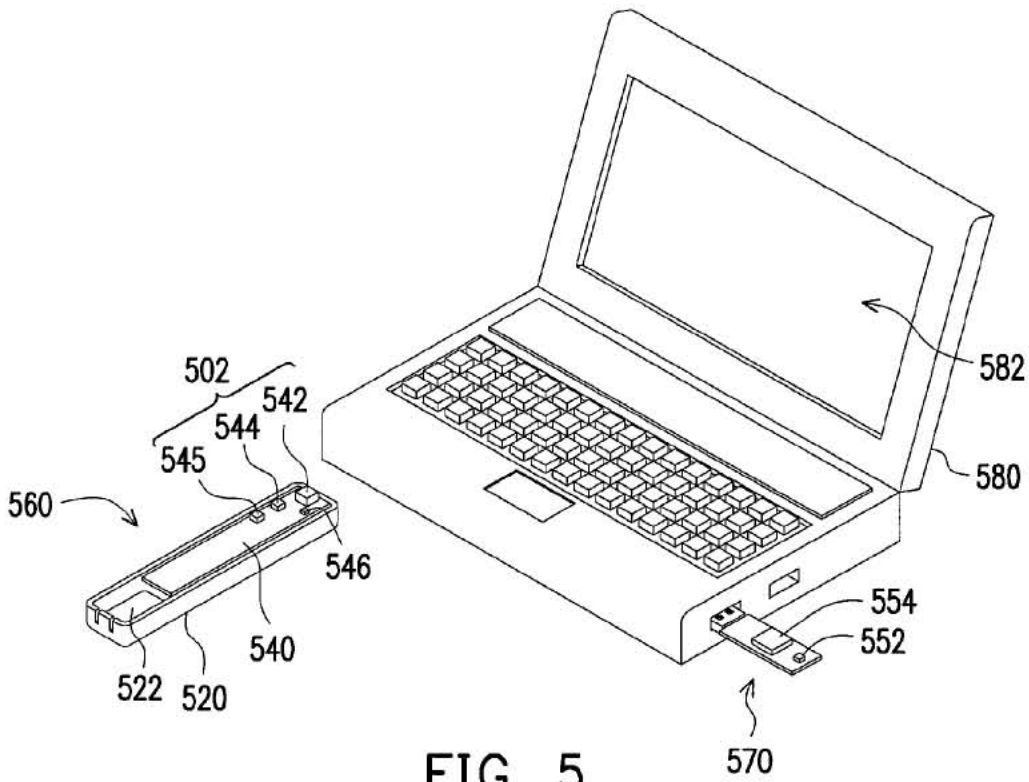


FIG. 5

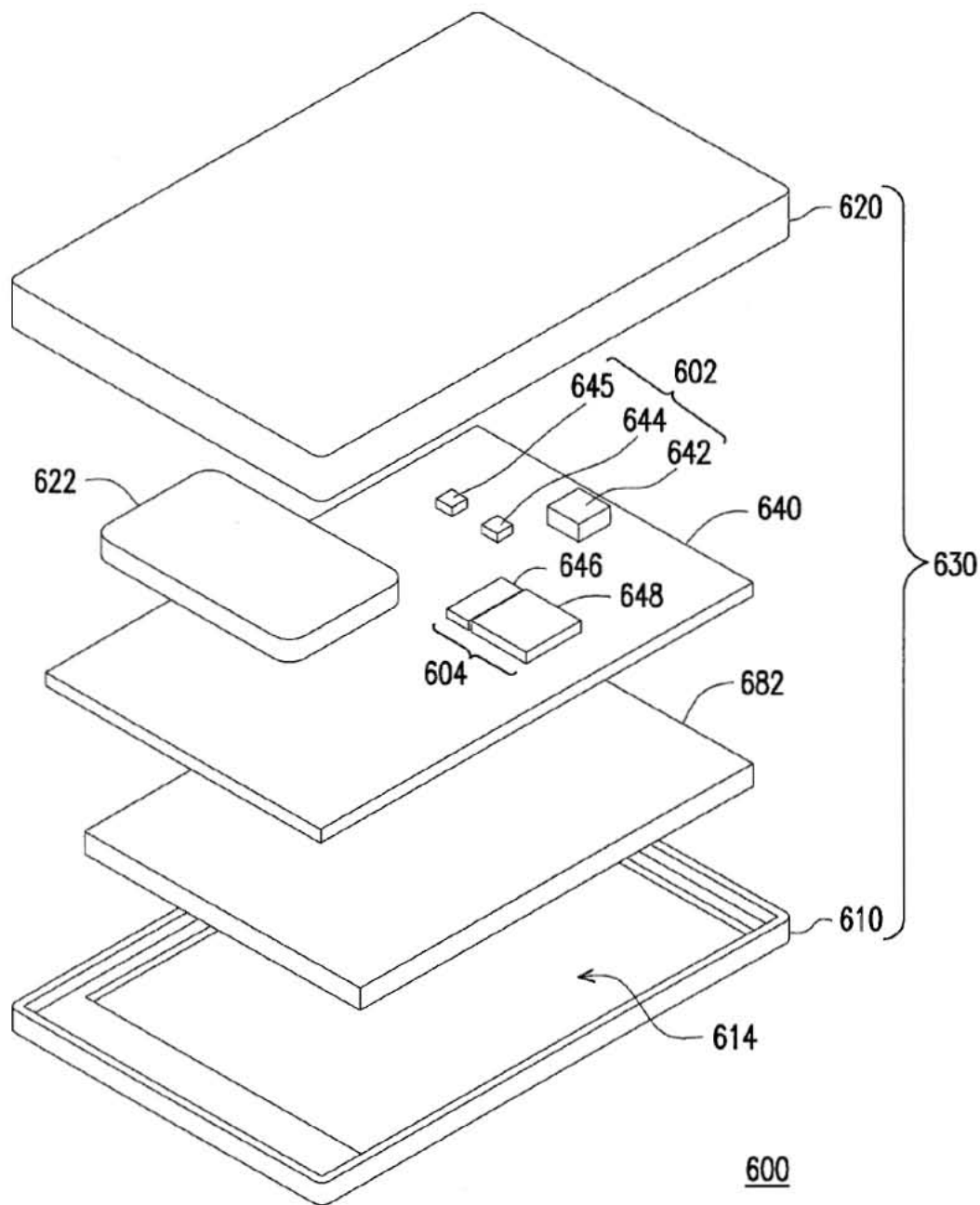


FIG. 6

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