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(12) **United States Patent**
Choi

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(54) **HINGE APPARATUS**

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(73) Assignee: **Samsung Electronics Co., Ltd., Suwon-si (KR)**

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(30) **Foreign Application Priority Data**

Sep. 11, 2001 (KR) 2001-55731

(51) **Int. Cl.**⁷ **E05D 11/10**

(52) **U.S. Cl.** **16/347; 16/293; 16/297; 16/321; 16/337**

(58) **Field of Search** **16/293, 297, 304, 16/321, 337, 343-344, 347**

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(57) **ABSTRACT**

A hinge apparatus disposes a panel to be opened and closed with respect to a body of an appliance. The hinge apparatus includes a fixing bracket fixed on the body, a supporting bracket fixed on the panel and a hinge shaft fixed on the fixing bracket to rotatably support the supporting bracket. The hinge apparatus also includes an automatic pivot unit to cause the panel to be opened with respect to the body by a predetermined free rotation angle when a locking state between the panel and the body is released. Further, the hinge apparatus includes a manual pivot unit to provide a frictional force between the supporting bracket and the hinge shaft. The frictional force restricts the supporting bracket from being automatically rotated by the automatic pivot unit and also fixes the panel, which is opened further from the predetermined free rotation angle, in a fixed position. The hinge apparatus includes a fixing pin connected to one end of the hinge shaft to restrict the hinge shaft, the supporting bracket, the automatic pivot unit and the manual pivot unit from being separated from each other.

15 Claims, 6 Drawing Sheets

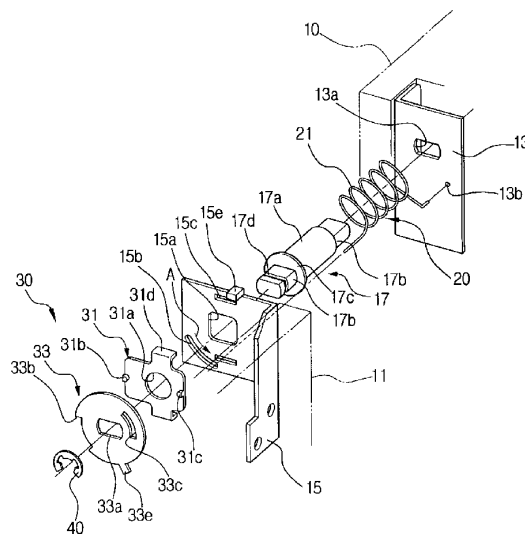


FIG. 1
(PRIOR ART)

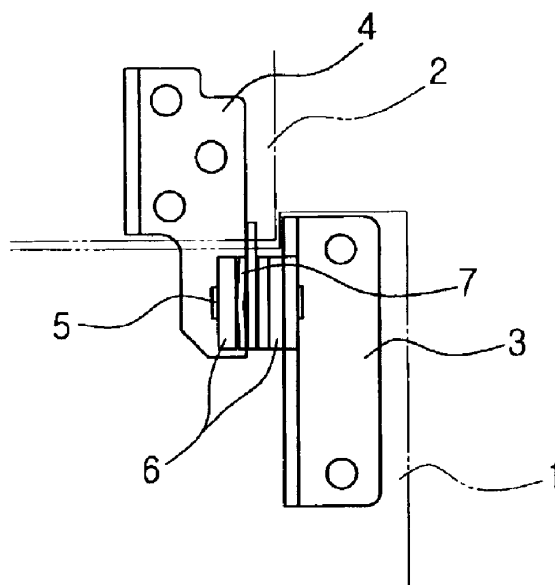


FIG. 2

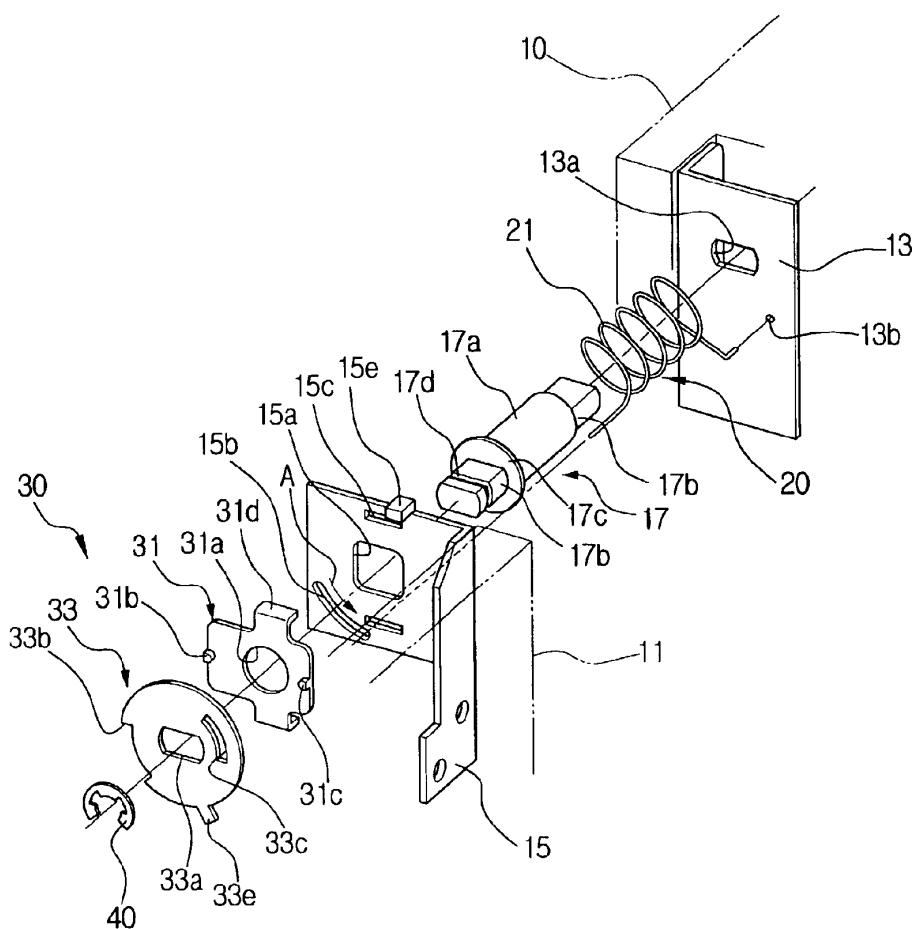


FIG. 3

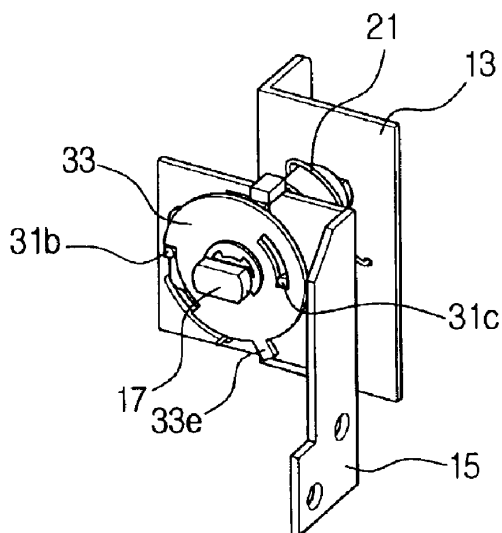


FIG. 4A

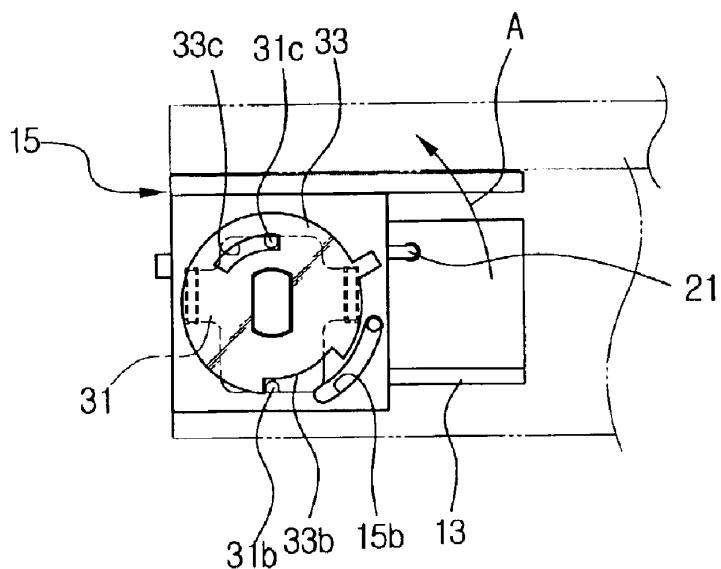


FIG. 4B

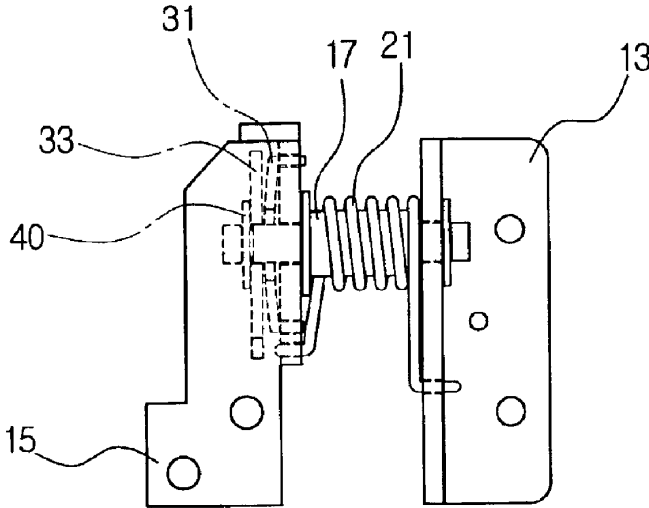
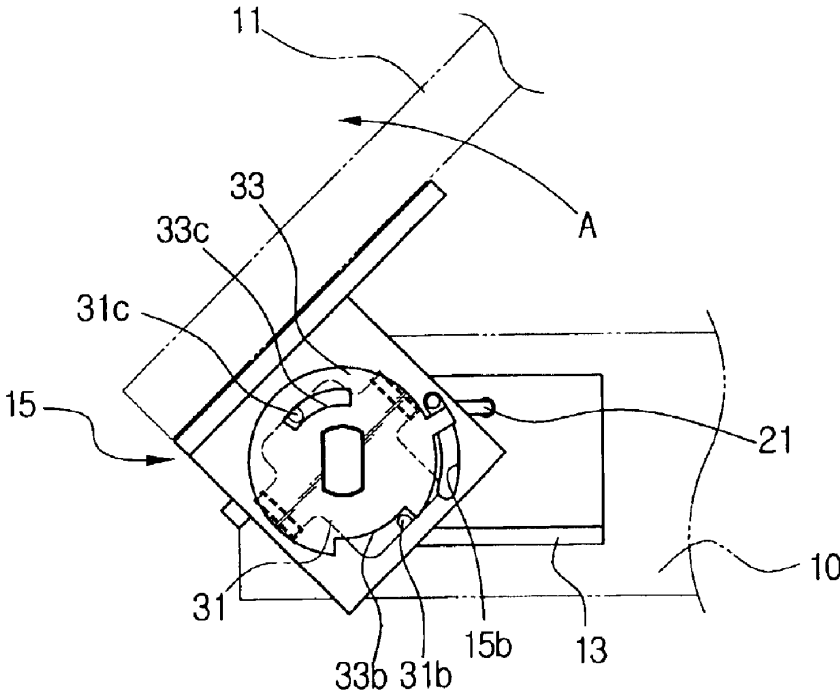


FIG. 5



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