

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

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(54) **RIGID-FLEXIBLE PCB HAVING COVERLAY MADE OF LIQUID CRYSTALLINE POLYMER AND FABRICATION METHOD THEREOF**

(58) **Field of Classification Search** 174/254, 174/259; 361/749-751
See application file for complete search history.

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(56) **References Cited**

U.S. PATENT DOCUMENTS

6,440,542 B1 *	8/2002	Kariya	428/209
7,348,492 B1 *	3/2008	Kawai et al.	174/254
2003/0177635 A1 *	9/2003	Arrington et al.	29/830
2004/0118596 A1 *	6/2004	Fuller et al.	174/255

FOREIGN PATENT DOCUMENTS

JP	2-92976	7/1990
JP	04-026190	1/1992
JP	2000-183506	6/2000
JP	2002-280733	9/2002
JP	2003-264369	9/2003

* cited by examiner

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(21) Appl. No.: **11/440,806**

(22) Filed: **May 25, 2006**

(65) **Prior Publication Data**

US 2006/0213683 A1 Sep. 28, 2006

Related U.S. Application Data

(62) Division of application No. 10/969,407, filed on Oct. 20, 2004, now Pat. No. 7,082,679.

(30) **Foreign Application Priority Data**

Jul. 26, 2004 (KR) 2004-58315

(51) **Int. Cl.**
H05K 1/00 (2006.01)

(52) **U.S. Cl.** 174/254; 361/748

(57) **ABSTRACT**

Disclosed are a rigid-flexible PCB and a method for fabricating the rigid-flexible PCB. Characterized by using a liquid crystalline polymer for the formation of coverlay over flexible regions, the all-layer processing method has the advantage of preventing interlayer delamination, thereby providing a highly reliable rigid-flexible PCB which thus meets the recent requirements of electric appliances for low energy consumption, high frequency adoption, and slimness.

6 Claims, 8 Drawing Sheets

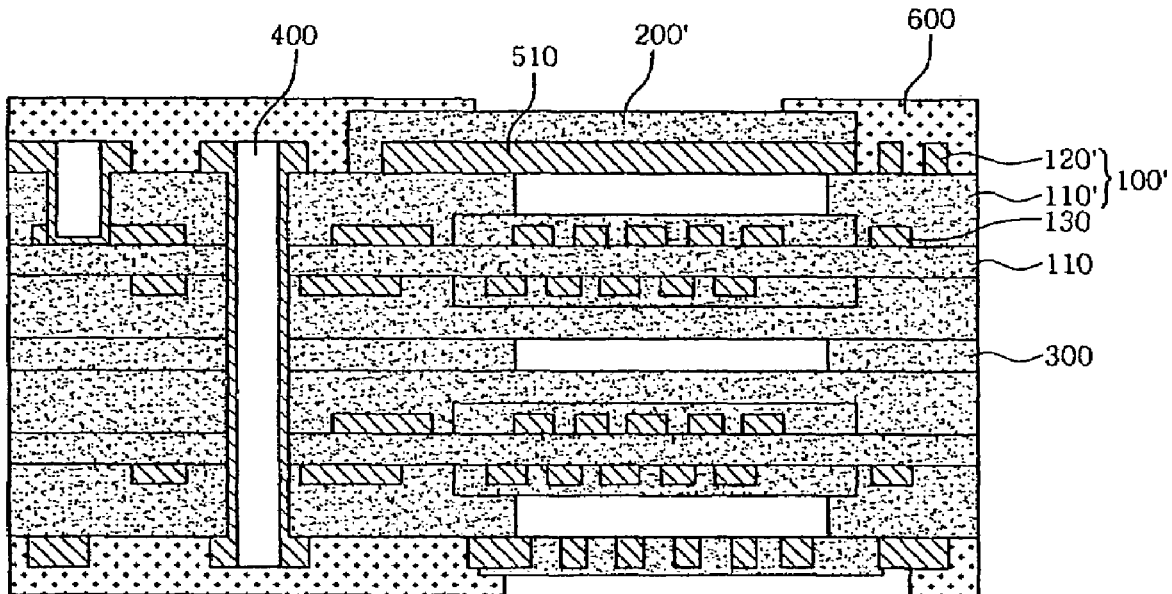


FIG. 1
PRIOR ART

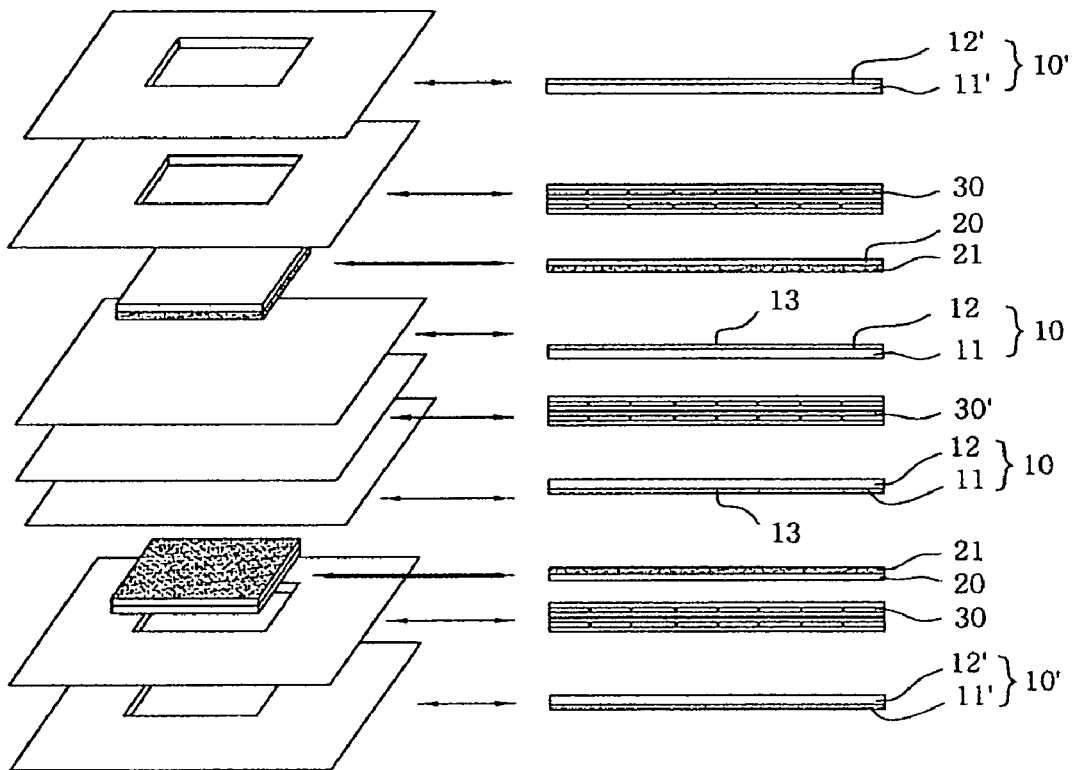


FIG. 2
PRIOR ART

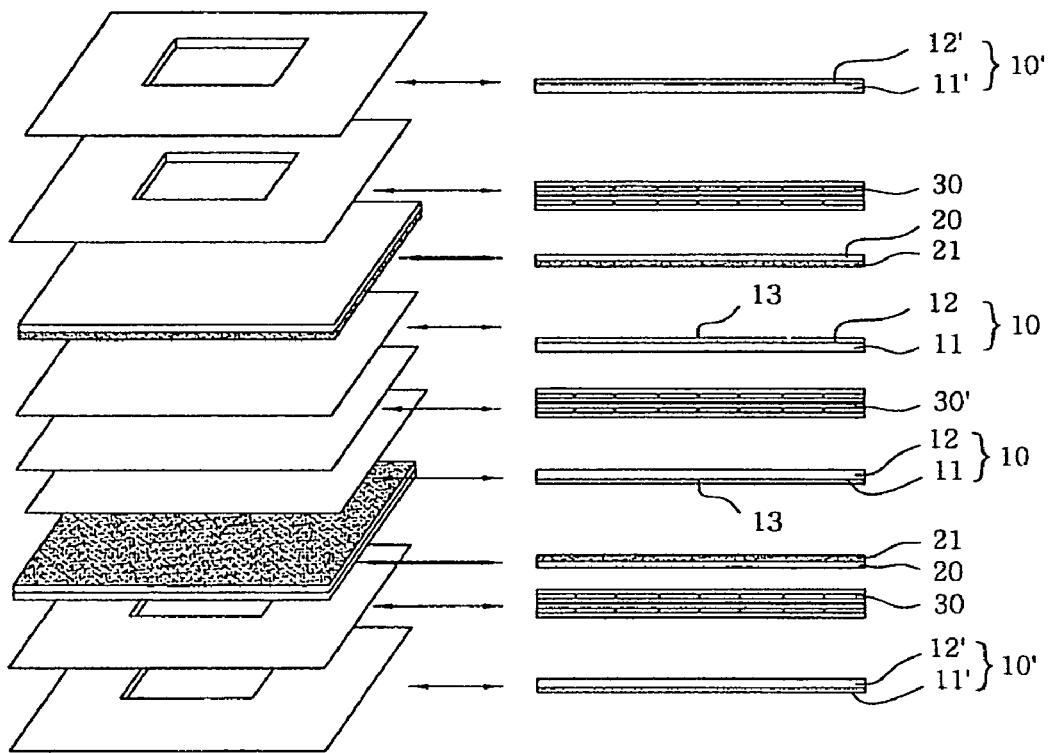


FIG. 3
PRIOR ART

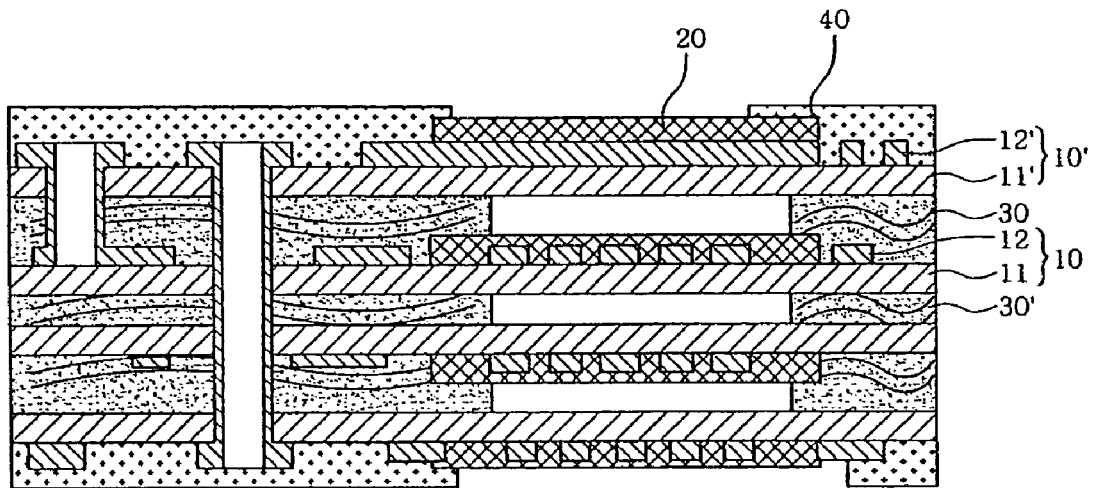
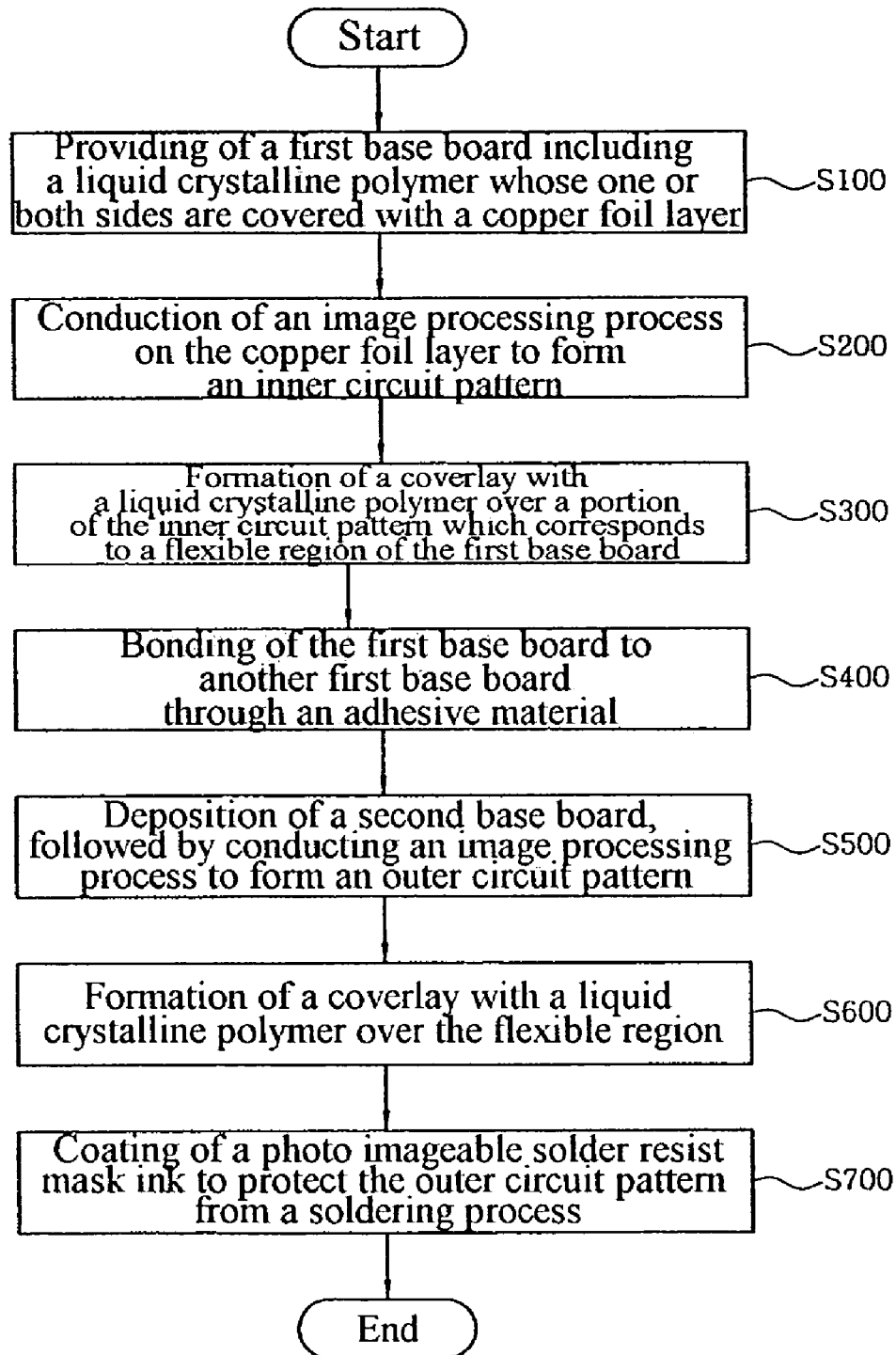


FIG. 4



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