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Ikeda et al.

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(54) **THIN FILM TRANSISTOR AND IMAGE DISPLAY UNIT**

(75) Inventors: **Noriaki Ikeda**, Tokyo (JP); **Kodai Murata**, Tokyo (JP); **Manabu Ito**, Tokyo (JP); **Chihiro Miyazaki**, Tokyo (JP)

(73) Assignee: **Toppa Printing Co., Ltd.** (JP)

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(51) **Int. Cl.**

H01L 23/04 (2006.01)
H01L 31/036 (2006.01)
H01L 27/01 (2006.01)
H01L 27/12 (2006.01)
H01L 31/0376 (2006.01)

(52) **U.S. Cl.**

USPC **257/59; 257/57; 257/72; 257/347; 257/350**

(58) **Field of Classification Search**

USPC 257/59, 57, 72, 71, 40, 296, 535, 257/368, 306, 347, 350, 202, 351, 443
See application file for complete search history.

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Primary Examiner — Chuong A. Luu

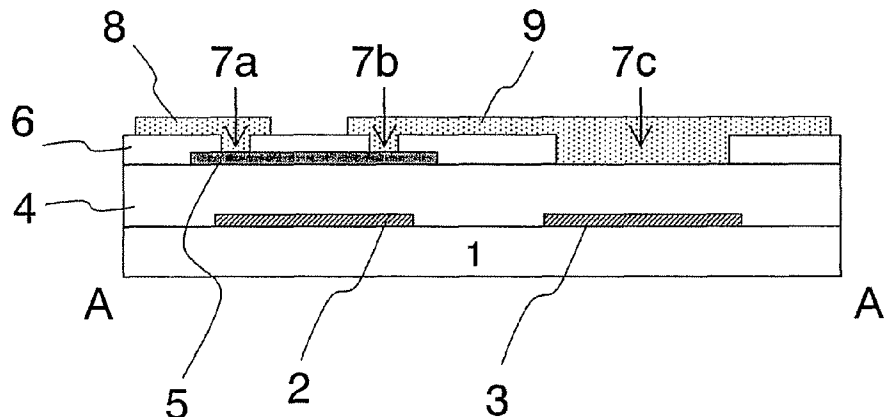
(74) *Attorney, Agent, or Firm* — Squire Sanders (US) LLP

(57) **ABSTRACT**

One embodiment of the present invention is a thin film transistor having a substrate, a gate electrode formed on the substrate, a gate insulating film, a semiconductor layer formed on the gate insulating film, a protective film formed on the semiconductor layer and the gate insulating film and having first and second opening sections which are separately and directly formed on the semiconductor layer, a source electrode formed on the protective film and electrically connected to the semiconductor layer at the first opening section of the protective film, and a drain electrode formed on the protective film and electrically connected to the semiconductor layer at the second opening section of the protective film.

13 Claims, 8 Drawing Sheets

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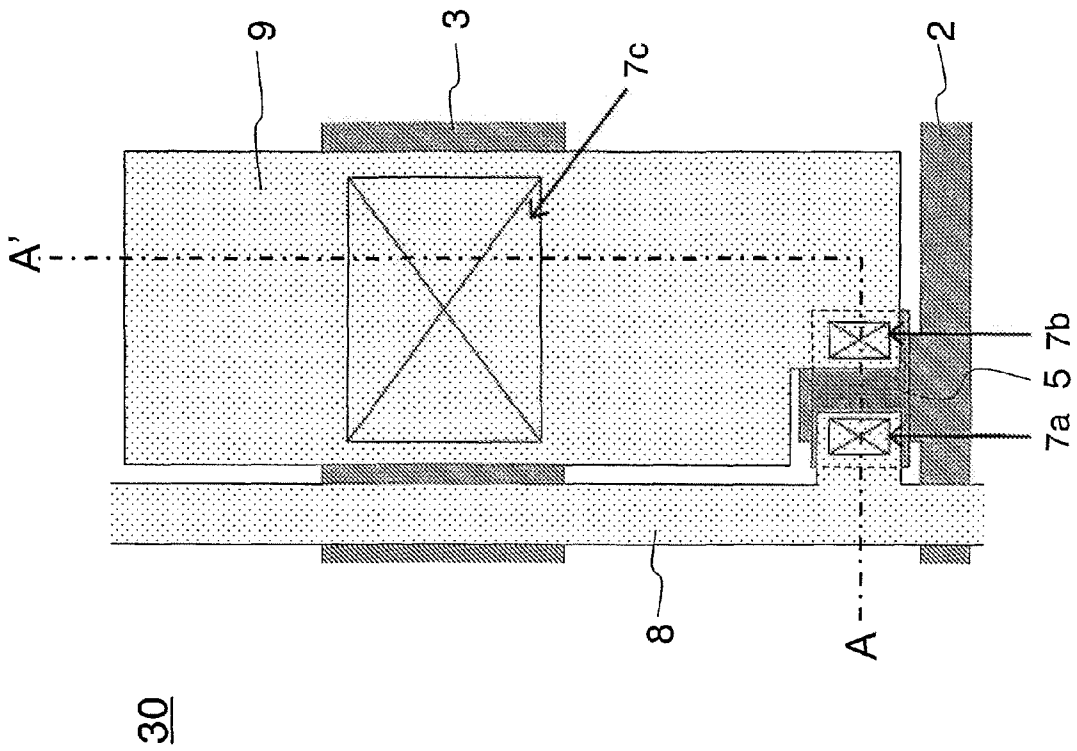


Fig. 1

Fig. 2

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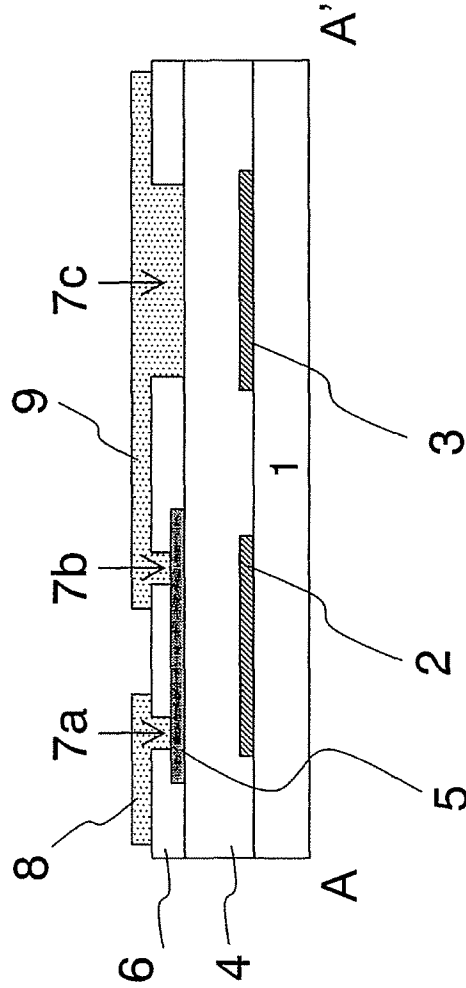


Fig. 3

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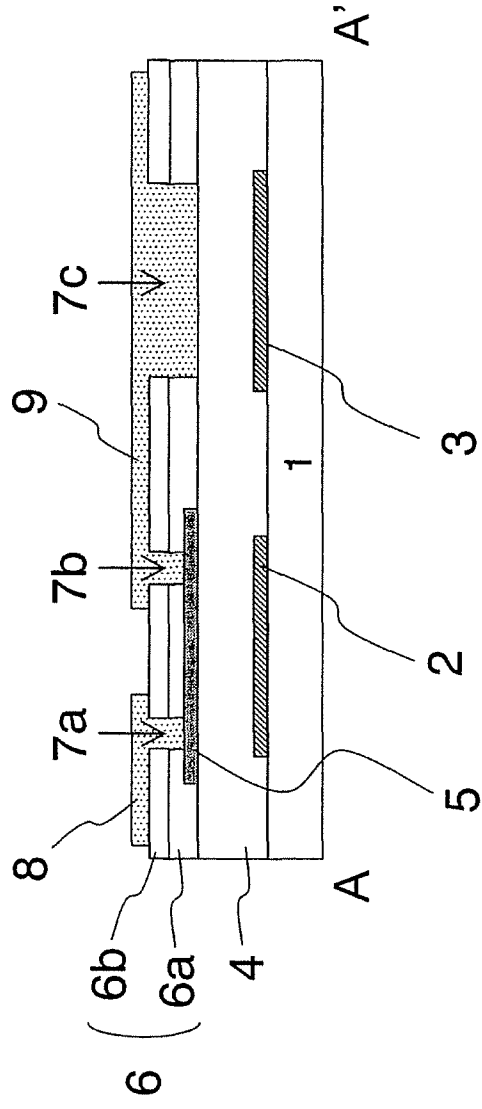
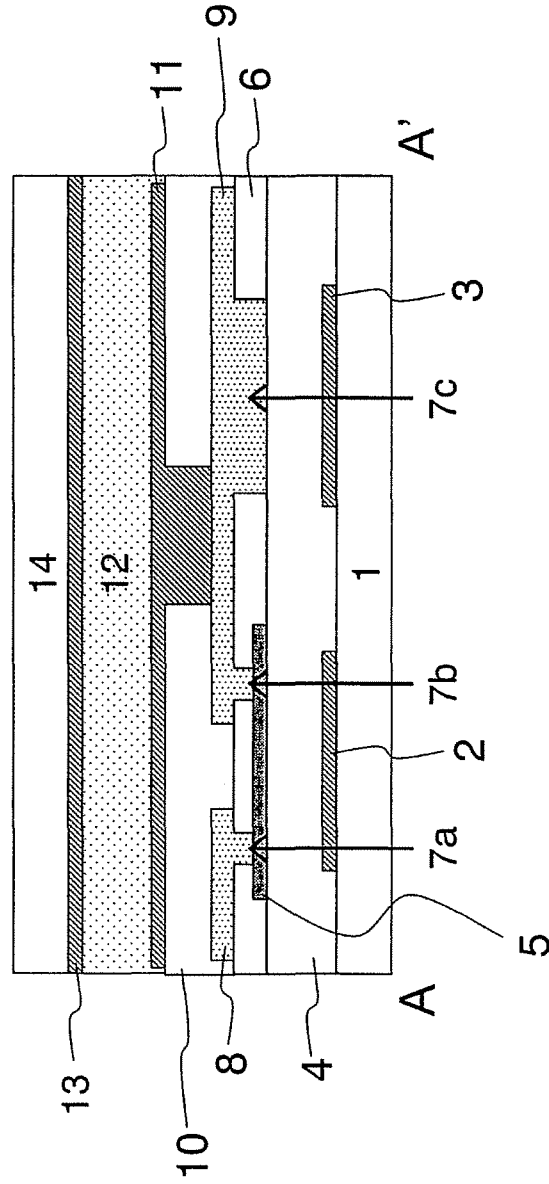


Fig. 4

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