



US006657260B2

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

(10) **Patent No.:** **US 6,657,260 B2**  
(45) **Date of Patent:** **Dec. 2, 2003**

(54) **THIN FILM TRANSISTORS HAVING SOURCE WIRING AND TERMINAL PORTION MADE OF THE SAME MATERIAL AS THE GATE ELECTRODES**

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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 0 days.

(21) **Appl. No.:** **10/078,489**

(22) **Filed:** **Feb. 21, 2002**

(65) **Prior Publication Data**

US 2002/0158288 A1 Oct. 31, 2002

(30) **Foreign Application Priority Data**

Feb. 28, 2001 (JP) ..... 2001-056063  
Sep. 28, 2001 (JP) ..... 2001-302687

(51) **Int. Cl.<sup>7</sup>** ..... **H01L 27/01; H01L 27/12; H01L 31/0392; H01L 29/04; H01L 31/20**

(52) **U.S. Cl.** ..... **257/350; 257/59; 257/72; 257/311; 257/412**

(58) **Field of Search** ..... **257/59, 72, 296, 257/311, 350, 412**

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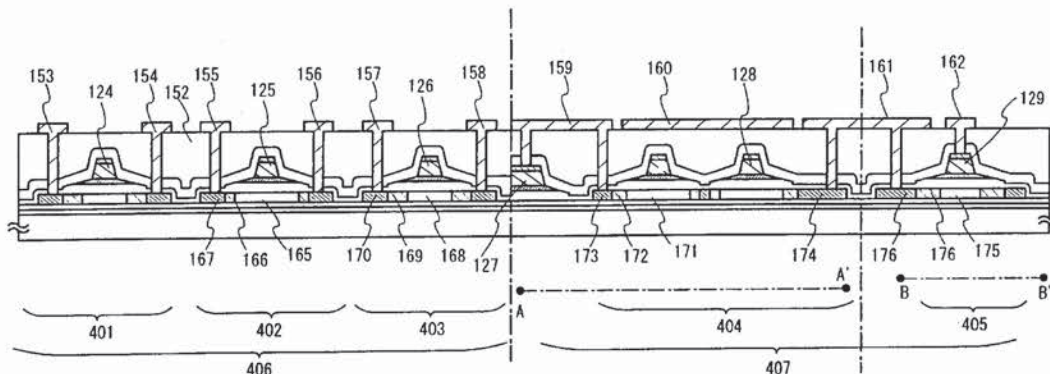
*Primary Examiner*—Ngân V. Ngô

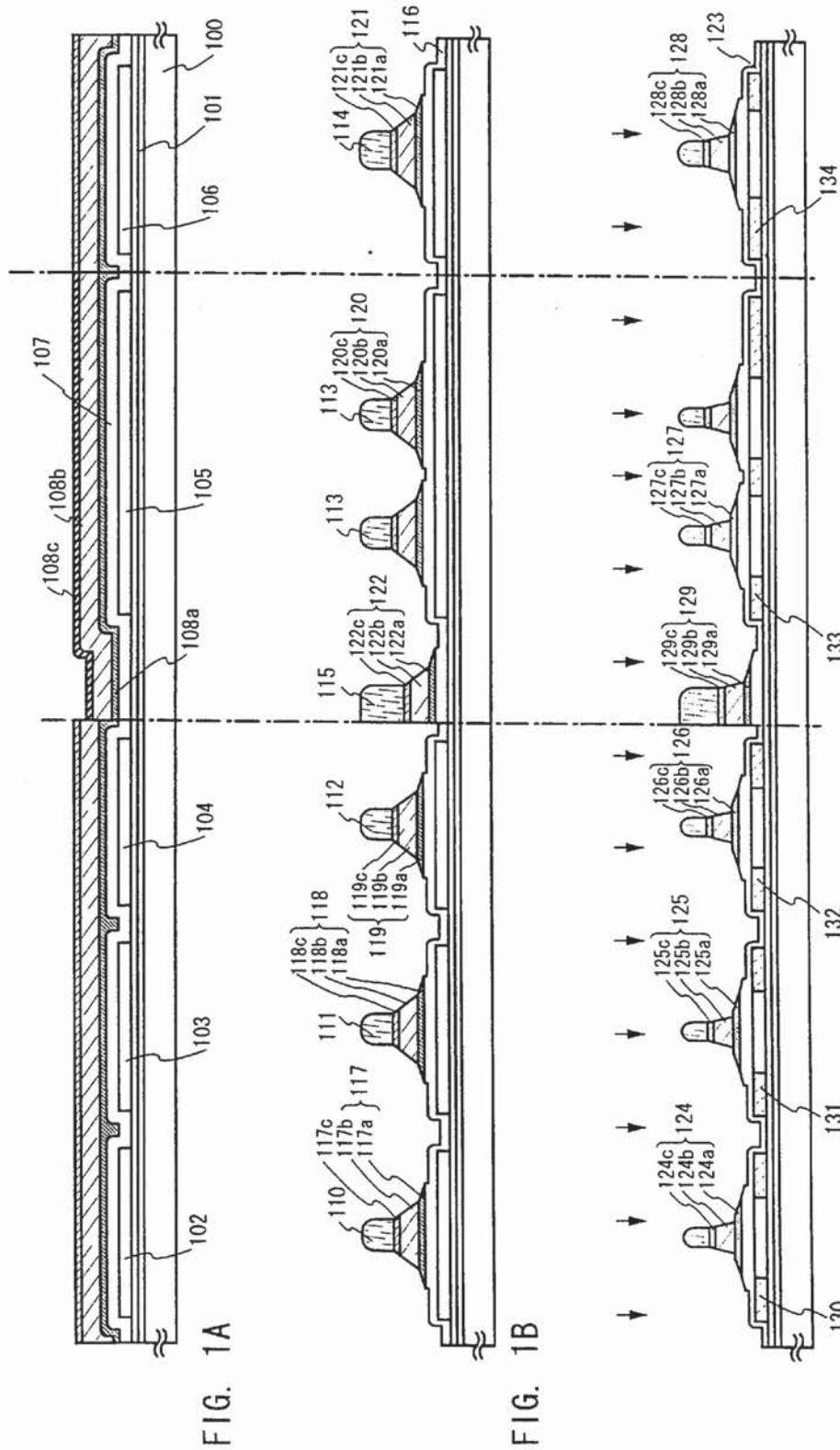
(74) *Attorney, Agent, or Firm*—Fish & Richardson P.C.

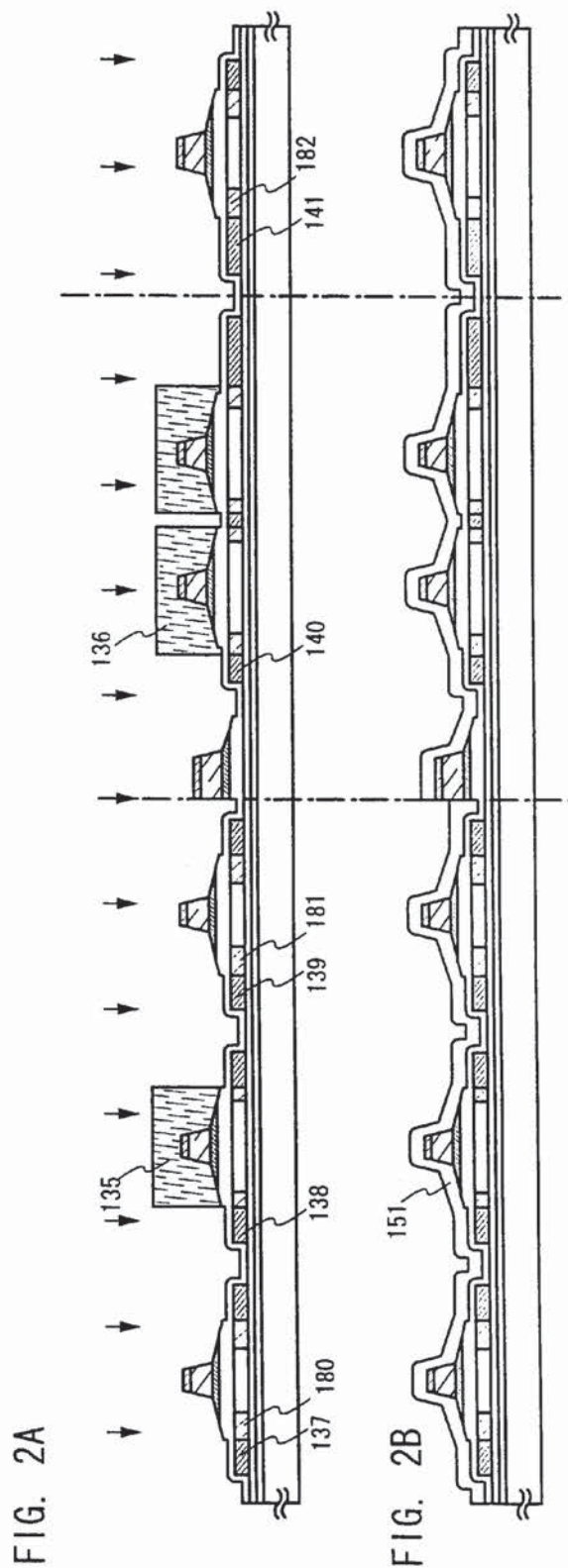
(57) **ABSTRACT**

There are provided a structure of a semiconductor device in which low power consumption is realized even in a case where a size of a display region is increased to be a large size screen and a manufacturing method thereof. A gate electrode in a pixel portion is formed as a three layered structure of a material film containing mainly W, a material film containing mainly Al, and a material film containing mainly Ti to reduce a wiring resistance. A wiring is etched using an IPC etching apparatus. The gate electrode has a taper shape and the width of a region which becomes the taper shape is set to be 1 μm or more.

**29 Claims, 18 Drawing Sheets**







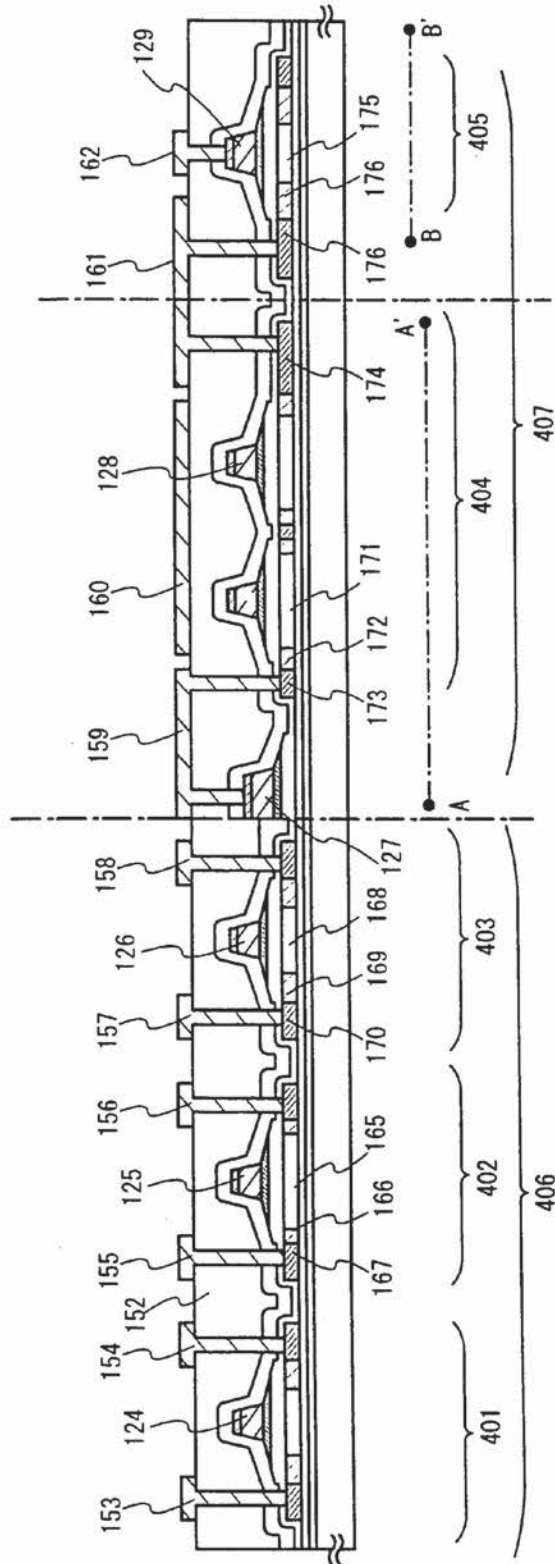


FIG. 3



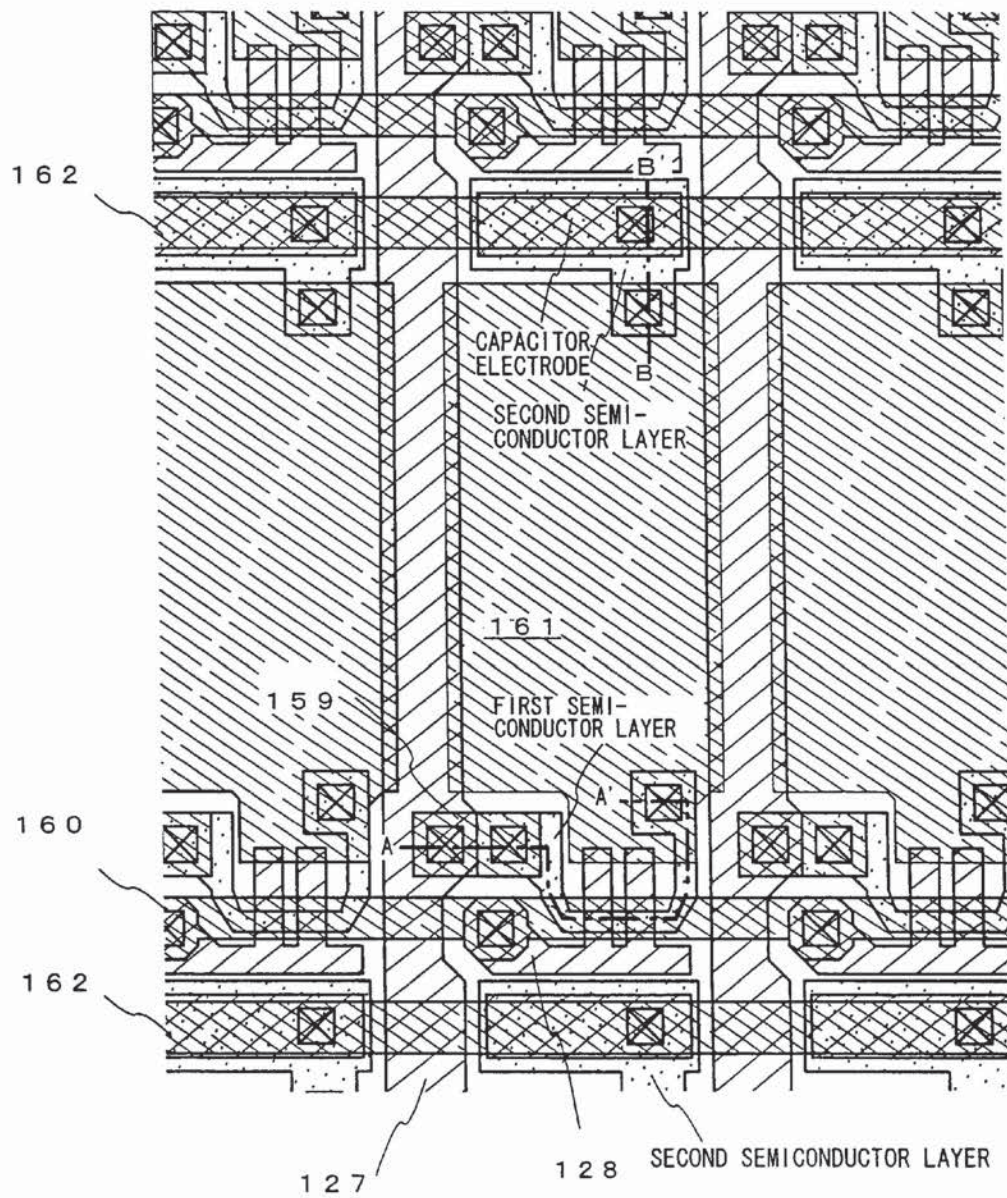


FIG. 4

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