

(19) **United States**(12) **Patent Application Publication** (10) **Pub. No.: US 2004/0217360 A1**

Negley

(43) **Pub. Date:****Nov. 4, 2004**

(54) **LIGHT-EMITTING DEVICES HAVING COPLANAR ELECTRICAL CONTACTS ADJACENT TO A SUBSTRATE SURFACE OPPOSITE AN ACTIVE REGION AND METHODS OF FORMING THE SAME**

**Publication Classification**(51) **Int. Cl.<sup>7</sup>** ..... **H01L 27/15**(52) **U.S. Cl.** ..... **257/79**(57) **ABSTRACT**(76) Inventor: **Gerald H. Negley**, Carrboro, NC (US)

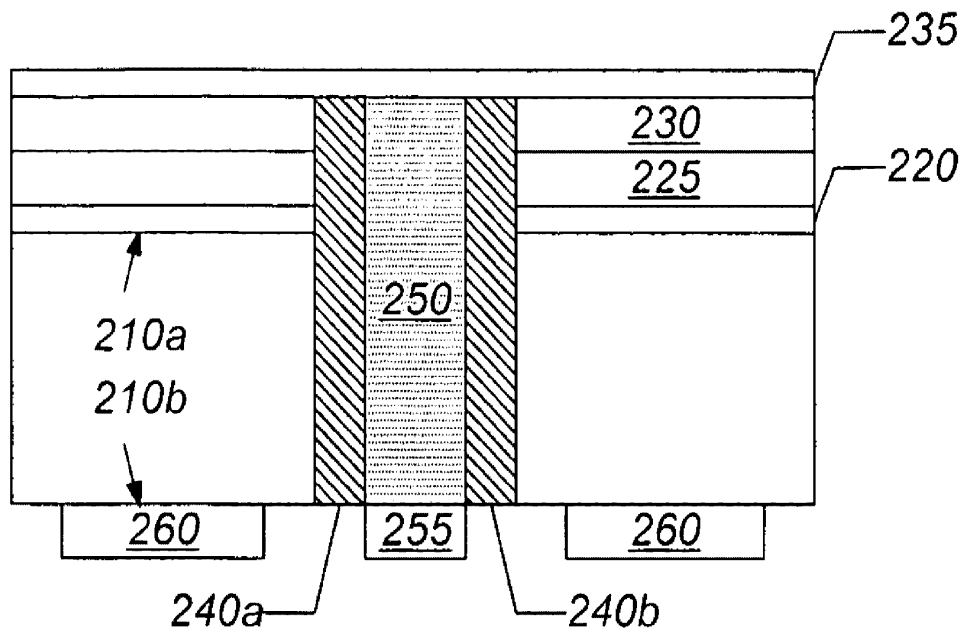
Correspondence Address:

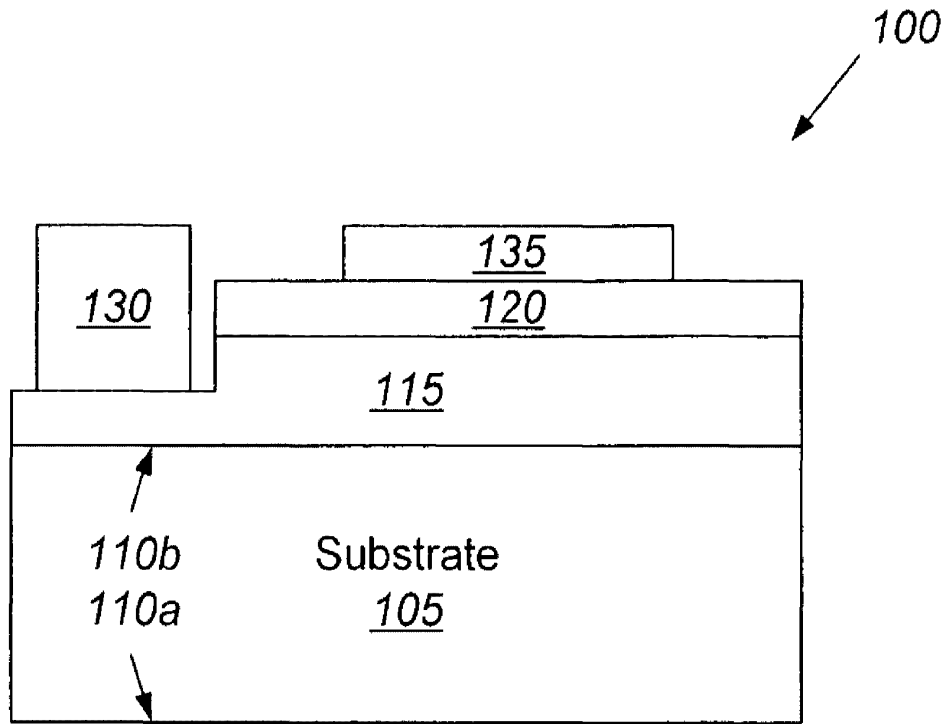
**MYERS BIGEL SIBLEY & SAJOVEC****PO BOX 37428****RALEIGH, NC 27627 (US)**

A light-emitting device includes a substrate having first and second opposing surfaces. An active region is on the first surface and first and second electrical contacts are adjacent to the second surface and are conductively coupled to the active region. In other embodiments, a light-emitting device includes a substrate having first and second opposing surfaces. An active region is on the first surface and includes a first active layer having a first conductivity type on the first surface and a second active layer having a second conductivity type on the first active layer. A first electrical contact is adjacent to the second surface. A contact plug extends through the substrate and the active region and couples the first electrical contact to the second active layer. A second electrical contact is coupled to the substrate at the second surface.

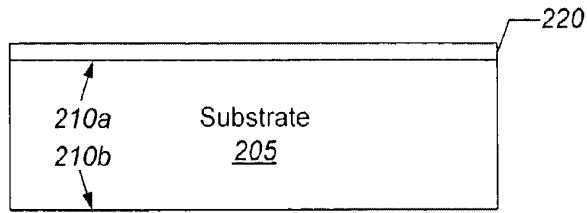
(21) Appl. No.: **10/818,592**(22) Filed: **Apr. 6, 2004****Related U.S. Application Data**

(60) Provisional application No. 60/466,635, filed on Apr. 30, 2003.

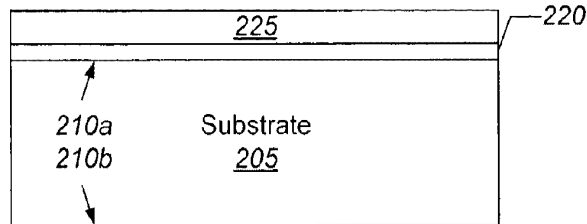




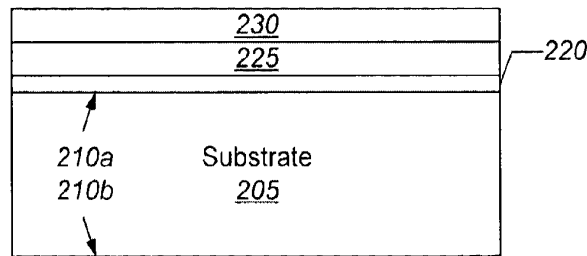
**FIG. 1**  
**(PRIOR ART)**



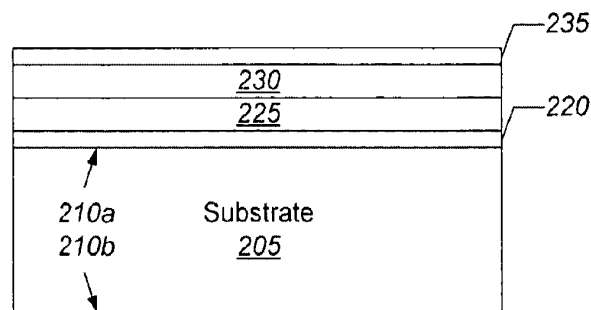
**FIG. 2A**



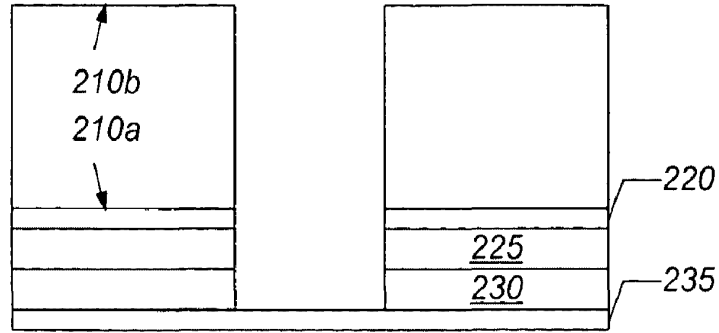
**FIG. 2B**



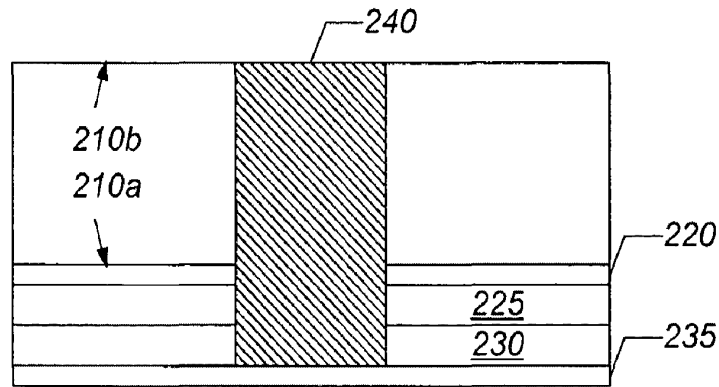
**FIG. 2C**



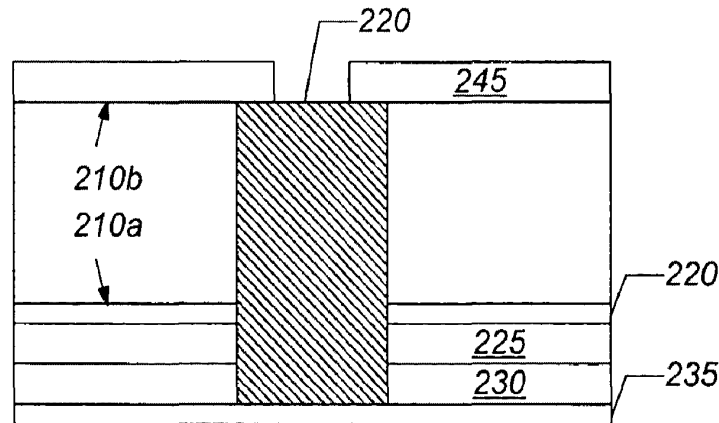
**FIG. 2D**



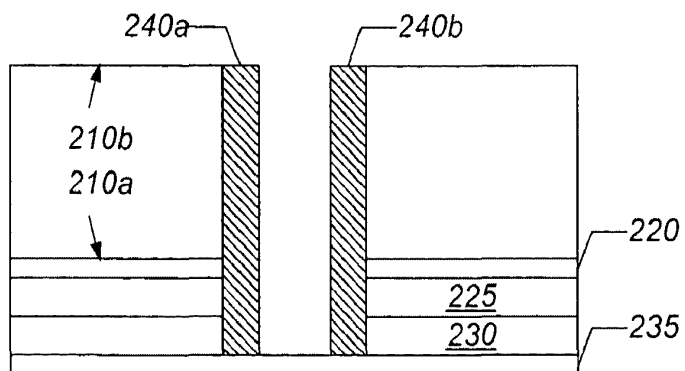
**FIG. 2E**



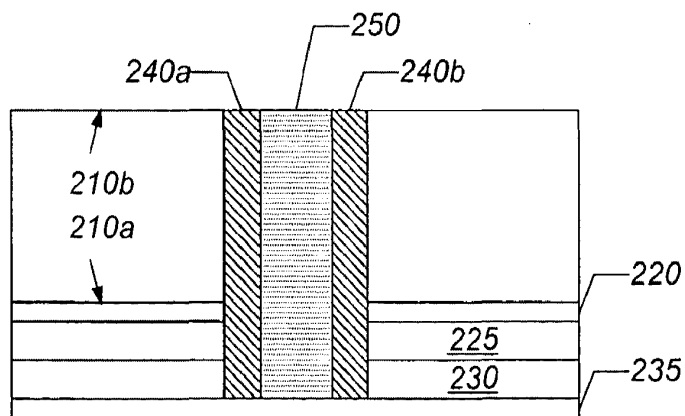
**FIG. 2F**



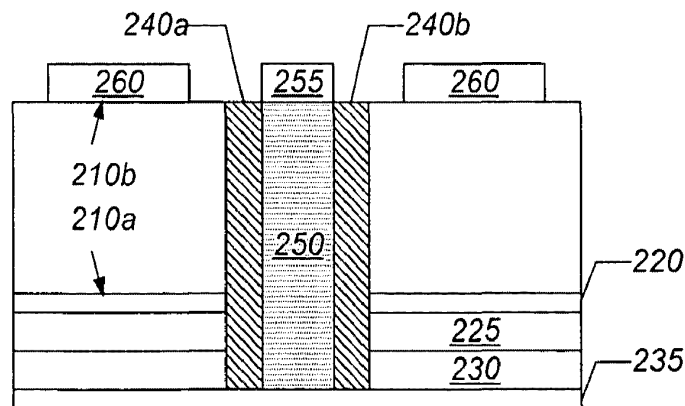
**FIG. 2G**



**FIG. 2H**



**FIG. 2I**



**FIG. 2J**

# Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

## Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

## Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

## Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

## API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

## LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

## FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

## E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.