US008590338B2

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

(10) **Patent No.: US 8,590,338 B2**
(45) **Date of Patent: Nov. 26, 2013**

(54) **EVAPORATOR WITH INTERNAL RESTRICTION**

(75) Inventors: **Damien Boesch**, Mountain View, CA (US); **Martin Rosenblum**, Menlo Park, CA (US)

(73) Assignee: **Samsung Mobile Display Co., Ltd.**, Yongin, Gyunggi-do (KR)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 730 days.

(21) Appl. No.: **12/650,586**

(22) Filed: **Dec. 31, 2009**

(65) **Prior Publication Data**

US 2011/0154854 A1 Jun. 30, 2011

(51) **Int. Cl.**

F25B 41/06	(2006.01)
F25B 39/02	(2006.01)
F16L 5/00	(2006.01)
F24C 7/10	(2006.01)
A21B 1/00	(2006.01)
A62C 31/02	(2006.01)

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

USPC **62/527**; 165/911; 62/515; 62/517; 285/201; 285/205; 285/208; 219/386; 219/399; 219/597; 239/589; 118/726; 118/727; 427/248.1

(58) **Field of Classification Search**

USPC 165/911; 62/515, 517, 527; 285/201, 285/205, 208; 219/386, 399, 397; 118/726, 118/727; 427/248.1

See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

2,382,432	A	8/1945	McManus et al.
2,384,500	A	9/1945	Stoll
3,475,307	A	10/1969	Knox et al.
3,496,427	A	2/1970	Lee
3,607,365	A	9/1971	Lindlof
3,661,117	A	5/1972	Cornelius et al.
4,061,835	A	12/1977	Poppe et al.
4,098,965	A	7/1978	Kinsman
4,266,223	A	5/1981	Frame
4,283,482	A	8/1981	Hattori et al.
4,313,254	A	2/1982	Feldman et al.
4,426,275	A	1/1984	Meckel et al.
4,521,458	A	6/1985	Nelson
4,537,814	A	8/1985	Itoh et al.

(Continued)

FOREIGN PATENT DOCUMENTS

BE	704297	2/1968
CA	2 353 506	5/2000

(Continued)

OTHER PUBLICATIONS

Young-Gu Lee et al., Thin Film Encapsulation of AMOLED Displays with Polyurea/AI203 Hybrid Multi-Layers, Reformable Display Group, Samsung Electronics, Paper, pp. 1457-1459 (IDW 2008).

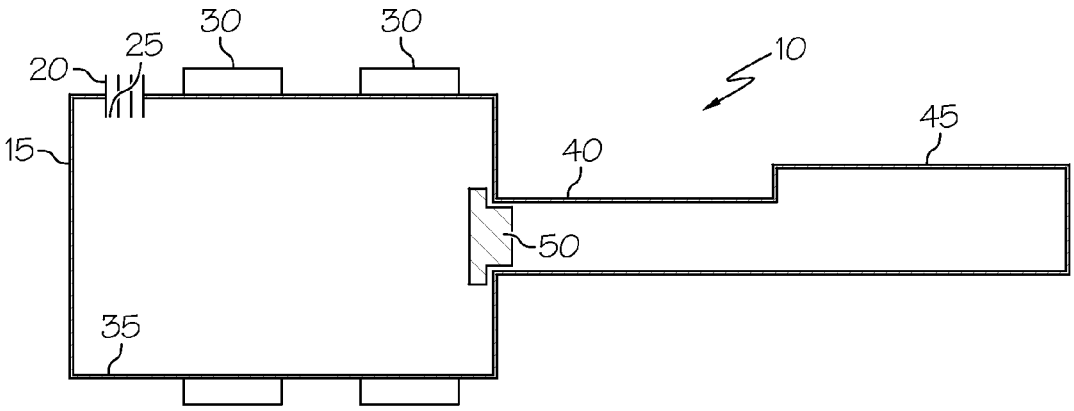
(Continued)

Primary Examiner — Frantz Jules

Assistant Examiner — Erik Mendoza-Wilkenfel

(74) *Attorney, Agent, or Firm* — Dinsmore & Shohl LLP

(57) **ABSTRACT**

An evaporator includes a vaporization chamber having a monomer inlet and a vapor outlet. There is a vapor nozzle in the vapor outlet. The evaporator also includes a collar positioned between the vaporization chamber and the vapor nozzle which increases the pressure in the evaporation chamber while the conductance through the nozzle is substantially unchanged.

15 Claims, 1 Drawing Sheet