



(19) **United States**

(12) **Patent Application Publication**
Kruglick

(10) **Pub. No.: US 2011/0018813 A1**

(43) **Pub. Date: Jan. 27, 2011**

(54) **ELECTRO-OSMOTIC TACTILE DISPLAY**

(52) **U.S. Cl. 345/173**

(76) **Inventor: Ezekiel Kruglick, Poway, CA (US)**

(57) **ABSTRACT**

Correspondence Address:
DORSEY & WHITNEY LLP
INTELLECTUAL PROPERTY DEPARTMENT
SUITE 1500, 50 SOUTH SIXTH STREET
MINNEAPOLIS, MN 55402-1498 (US)

The present disclosure generally relates to tactile display devices that include a reservoir for containing a driving fluid. A plurality of toxel portions may be sensitively drivable by the fluid for causing toxels to be displayed, and a pump member associated with the reservoir and toxel portions may pump the fluid from the reservoir to selected toxel portions to display a tactile image. The pump member may include an electro-osmotic pump configured to pump the fluid electro-osmotically in response to an applied voltage, and may be configured to selectively pump the fluid to generally activate the toxels independently from each other. The toxel layer may include the plurality of toxels as well as an elastomeric membrane that may have a pattern of the toxels, and may be configured such that the toxels may be expandable generally independently of each other in response to increased pressure of the fluid pumped into association therewith.

(21) **Appl. No.: 12/507,683**

(22) **Filed: Jul. 22, 2009**

Publication Classification

(51) **Int. Cl.**
G06F 3/041 (2006.01)

