



(19) **United States**

(12) **Patent Application Publication**  
**Ciesla et al.**

(10) **Pub. No.: US 2012/0206364 A1**

(43) **Pub. Date: Aug. 16, 2012**

(54) **USER INTERFACE SYSTEM**

**Publication Classification**

(76) Inventors: **Craig Michael Ciesla**, Mountain View, CA (US); **Micah B. Yairi**, Daly City, CA (US)

(51) **Int. Cl.**  
**G06F 3/02** (2006.01)  
**G06F 3/041** (2006.01)

(21) Appl. No.: **13/456,031**

(52) **U.S. Cl.** ..... **345/168; 345/173**

(22) Filed: **Apr. 25, 2012**

(57) **ABSTRACT**

**Related U.S. Application Data**

(63) Continuation of application No. 12/652,704, filed on Jan. 5, 2010, now Pat. No. 8,179,377, which is a continuation-in-part of application No. 12/319,334, filed on Jan. 5, 2009, now Pat. No. 8,154,527, which is a continuation-in-part of application No. 11/969,848, filed on Jan. 4, 2008, Continuation-in-part of application No. 13/414,589, filed on Mar. 7, 2012, which is a continuation-in-part of application No. 11/969,848, filed on Jan. 4, 2008, which is a continuation of application No. 12/319,334, filed on Jan. 5, 2009, now Pat. No. 8,154,527, Continuation-in-part of application No. 11/969,848, filed on Jan. 4, 2008.

The user interface system of one embodiment of the invention includes a sheet that defines a surface on one side and at least partially defines a first cavity and a second cavity on an opposite side; a fluid network coupled to the first and second cavities; a displacement device coupled to the fluid network that displaces fluid within the fluid network and expands both the first and second cavities concurrently, thereby deforming a first and a second particular region of the surface; and a touch sensor coupled to the sheet and adapted to sense a user touch proximate the first and second particular regions of the surface. The user interface system of another embodiment of the invention includes a displacement device coupled to the fluid network that displaces fluid within the fluid network and selectively expands one of the first and second cavities.

