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Han

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(54) **CAPACITIVE TOUCH SCREEN**

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G06F 3/041 (2006.01)

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See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

7,355,592	B2 *	4/2008	Hong et al.	345/173
8,111,245	B2 *	2/2012	Jiang et al.	345/173
2002/0149571	A1	10/2002	Roberts	
2005/0280635	A1 *	12/2005	Hinata	345/173
2006/0138574	A1 *	6/2006	Saito et al.	257/417
2008/0316182	A1 *	12/2008	Antila et al.	345/173

FOREIGN PATENT DOCUMENTS

KR	2001-0091312	10/2001
KR	10-2003-0049646	6/2003
KR	10-2004-0031512	4/2004
KR	10-0661000	12/2006
KR	10-2007-0063353	6/2007
KR	10-0787834	12/2007
KR	10-2008-0075804	8/2008

* cited by examiner

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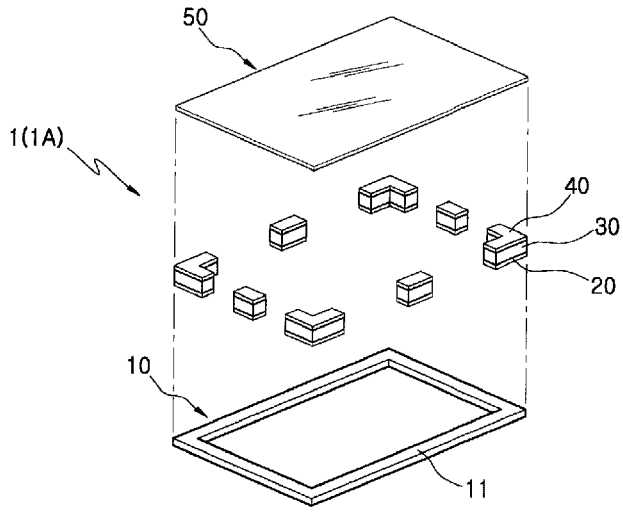
(57) **ABSTRACT**

The present invention provides a capacitive touch screen (**1**) which includes a substrate (**10**), a first electrode plate (**20**), an elastic spacer (**30**), a second electrode plate (**40**) and a transparent panel (**50**). The substrate (**10**) is made of a plate having a rim (**11**). The first electrode plate (**20**) is placed on the rim (**11**) of the substrate (**10**). The elastic spacer (**30**) is interposed between the first electrode plate (**20**) and second electrode plate (**40**). One of the first and second electrode plates comprises four or more electrode plates arranged along the rim (**11**) of the substrate (**10**). When a pressure is applied to the transparent panel (**50**), a distance (d) between the first and second electrode plate changes. Thereby, capacitances are varied at sensing points (S) corresponding to locations of the four or more electrode plates, and a touch location and a touch pressure are determined by variation rates of the measured capacitances.

6 Claims, 6 Drawing Sheets