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(54) **CAPACITANCE SENSING MATRIX FOR KEYBOARD ARCHITECTURE**

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(58) **Field of Classification Search** 341/22, 341/33; 345/156, 168, 173; 178/18.05, 18.06; 324/658-668

See application file for complete search history.

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(57) **ABSTRACT**

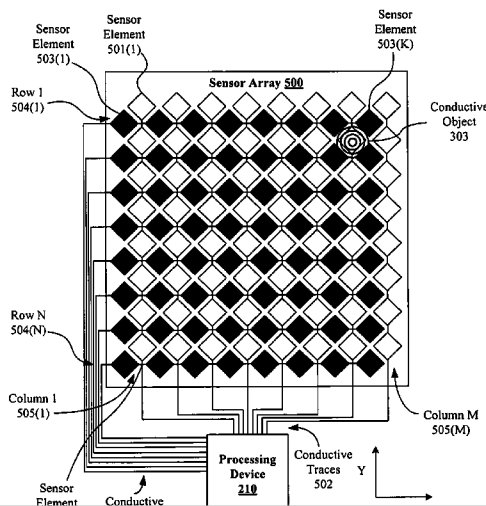
An apparatus and method for selecting a keyboard key based on a position of a presence of a conductive object on a sensing device and a pre-defined area of the keyboard key. The apparatus may include a sensing device and a processing device. The sensing device may include a plurality of sensor elements to detect a presence of a conductive object on the sensing device. Multiple keyboard keys are assigned to pre-defined areas of the sensing device. The processing device is coupled to the sensing device using capacitance sensing pins, and may be operable to determine a position of the presence of the conductive object, and to select a keyboard key based on the position of the conductive object and the pre-defined areas of the sensing device.

26 Claims, 14 Drawing Sheets

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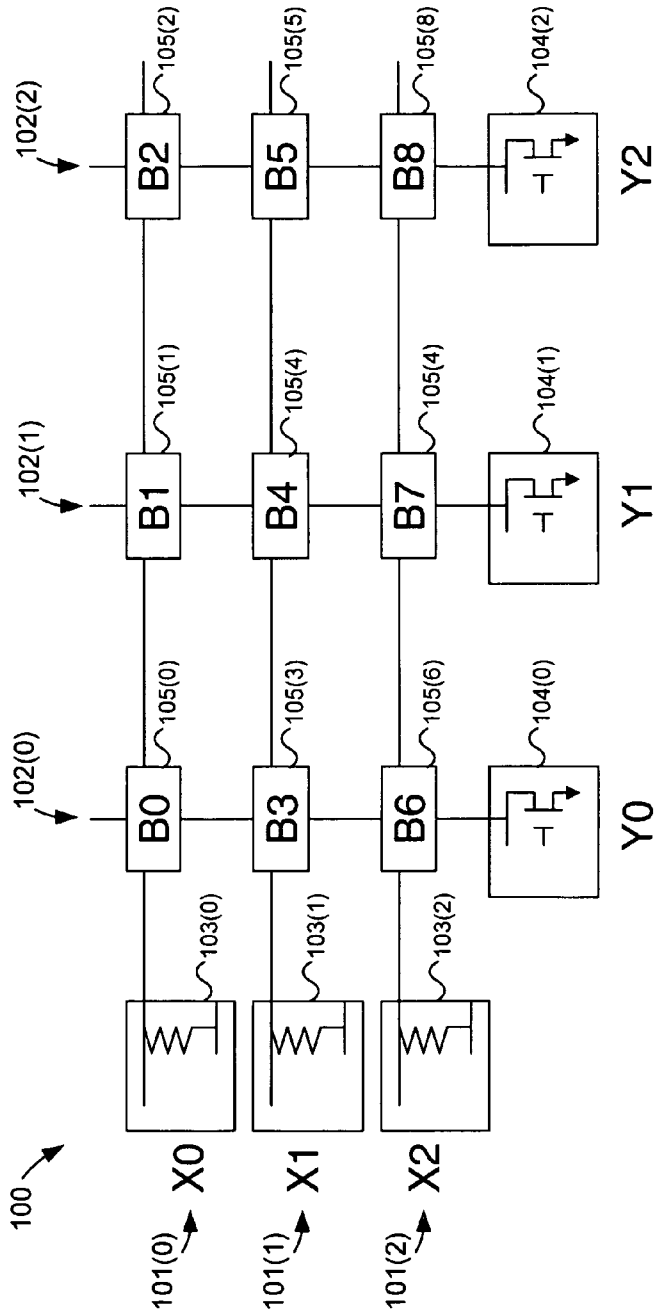


FIG. 1A

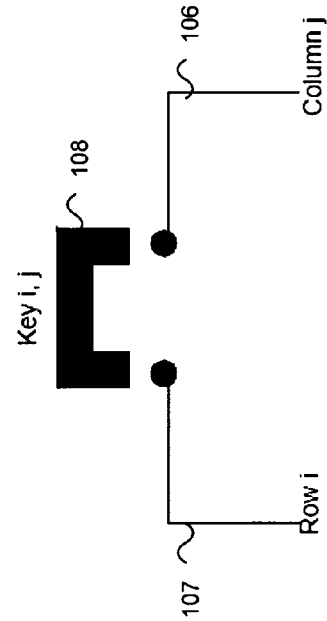


FIG. 1B

	Column 0	Column 1	Column 2	Column 3	Result 0	Result 1	Result 2	Result 3
Row 0					1	1	1	1
Row 1					1	1	1	1
Row 2					1	1	1	1
Row 3					1	1	1	1
Pattern 0	0	1	1	1				
Pattern 1	1	0	1	1				
Pattern 2	1	1	0	1				
Pattern 3	1	1	1	0				

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Scan Results For No Key Press FIG. 1C

	Column 0	Column 1	Column 2	Column 3	Result 0	Result 1	Result 2	Result 3
Row 0					1	1	1	1
Row 1					1	0	1	1
Row 2					1	1	1	1
Row 3					1	1	1	1
Pattern 0	0	1	1	1				
Pattern 1	1	0	1	1				
Pattern 2	1	1	0	1				
Pattern 3	1	1	1	0				

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Scan Results for Key 1,1 Pressed

FIG. 1D

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