



[54] TOUCHSCREEN INTERFACE HAVING POP-UP VARIABLE ADJUSTMENT DISPLAYS FOR CONTROLLERS AND AUDIO PROCESSING SYSTEMS

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[57] **ABSTRACT**

A touchscreen interface for a sound processing system, such as music synthesizers, which has a display panel and a touch sensitive panel overlying the display panel, includes an icon which represents an adjustable parameter used by the processing system. The processing resources supply a variable adjustment display to the display panel in response to a touch on the position of the icon, using pop-up slider or pop-up knob motif. The variable adjustment display overlies the interface display and has a size on the touch sensitive panel larger than the size of the icon to facilitate manipulation of the variable using a finger over a significant range of values. The variable adjustment display pops up when touched to obscure a portion of the graphical display used for the interface. When the variable is adjusted using the touch sequence, the variable adjustment display is removed, and the interface display is left unobscured. This allows the user to manipulate a particular variable while maintaining the window which shows the values of related variables on the screen. By maintaining the current window on the screen, the user is less likely to get lost in a hierarchy of windows used for setting variables.

[73] Assignee: **Korg, Inc.**, Tokyo, Japan

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[51] Int. Cl.⁶ **G10H 1/057**; G10H 1/06; G10H 1/08; G10H 1/46

[52] U.S. Cl. **84/653**; 84/659; 84/660; 84/663; 84/665; 345/173; 395/159

[58] Field of Search 84/600, 615-620, 84/622-633, 653-665, 477 R, 478, 462; 345/173-178; 395/159

[56] **References Cited**

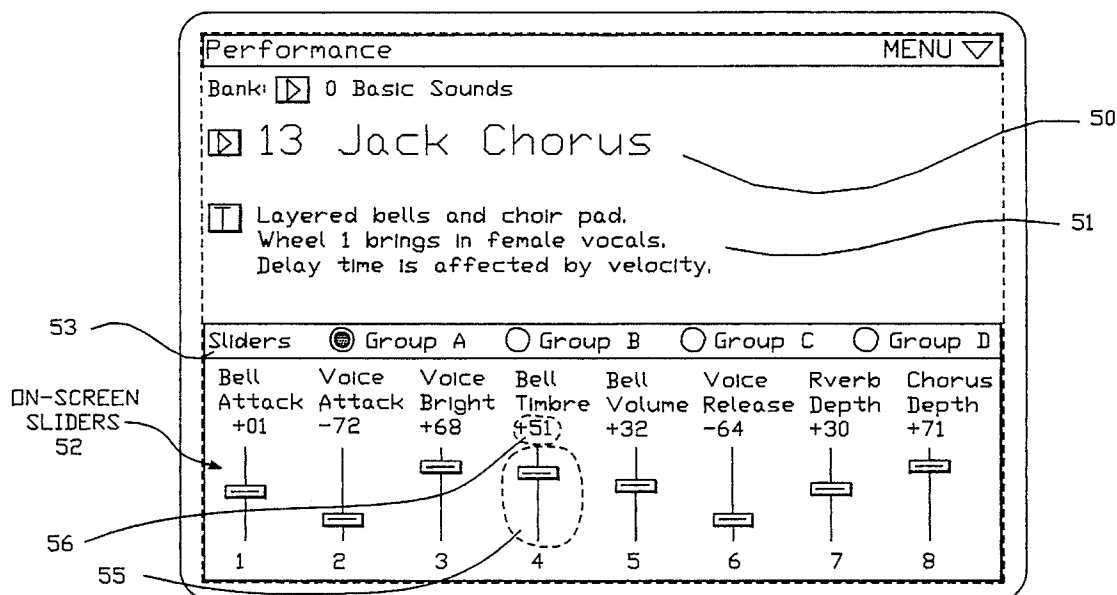
U.S. PATENT DOCUMENTS

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44 Claims, 6 Drawing Sheets



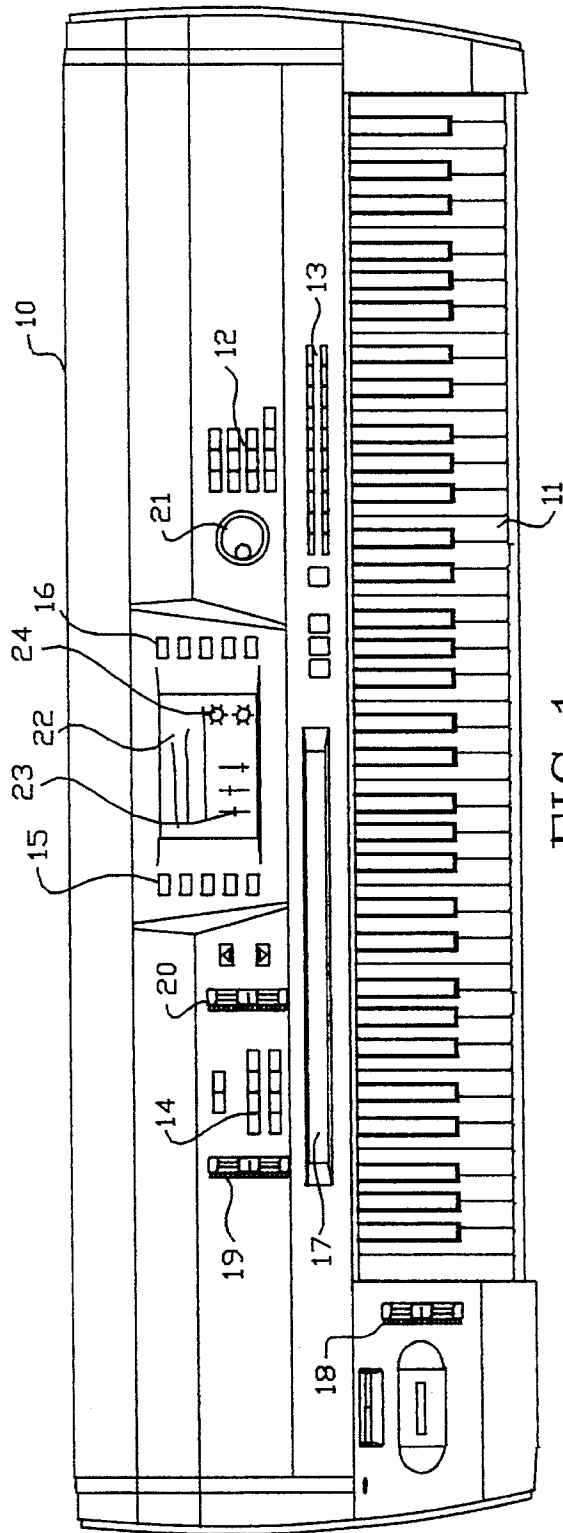


FIG. 1

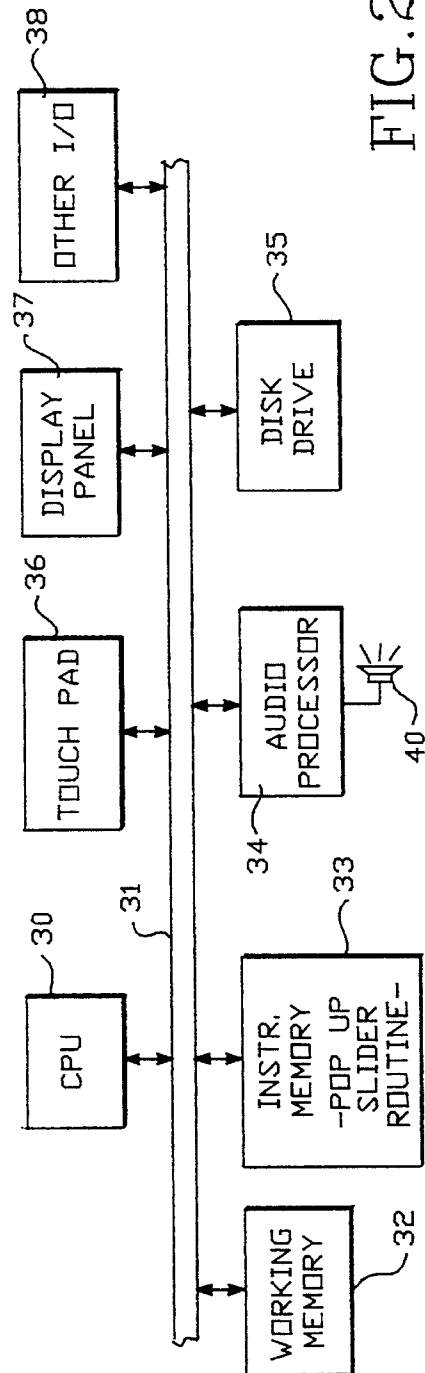


FIG. 2

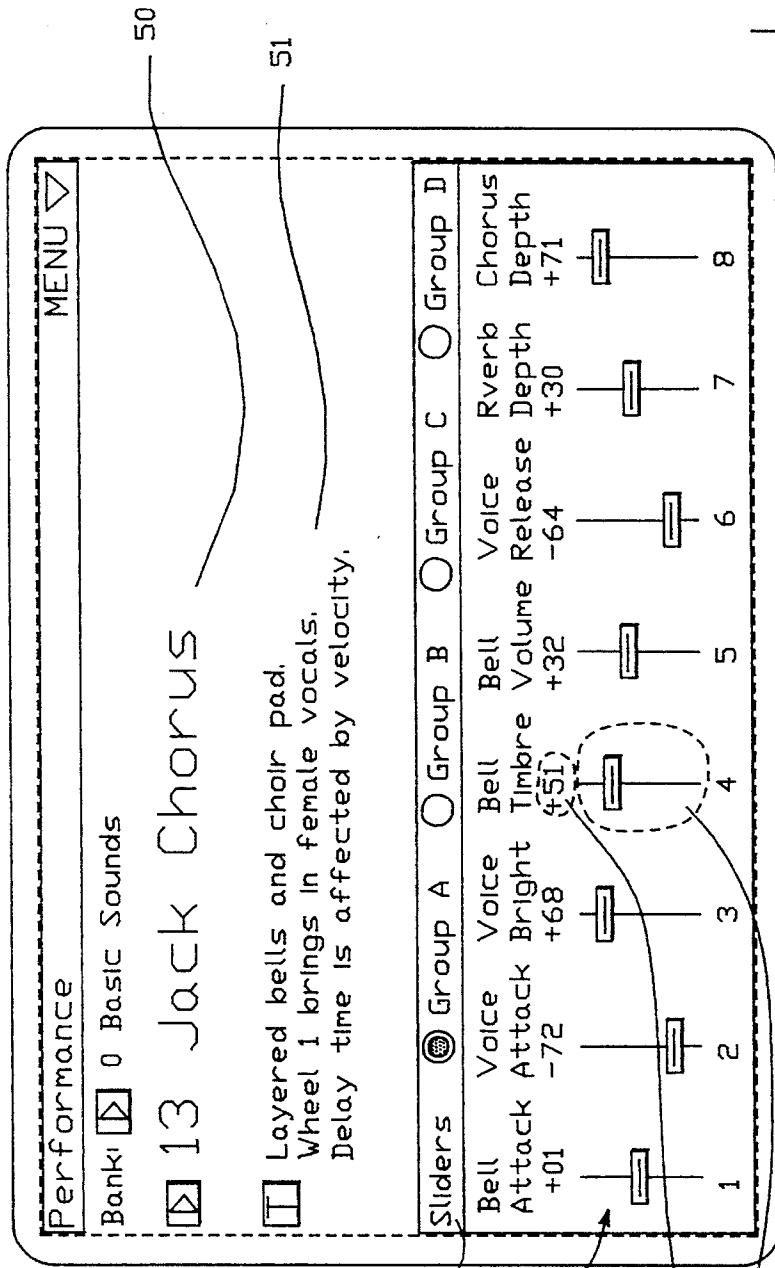


FIG. 3

ON-SCREEN SLIDERS

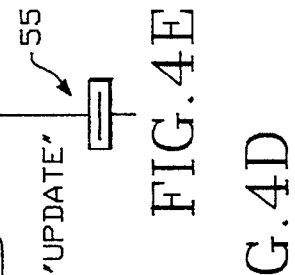


FIG. 4A

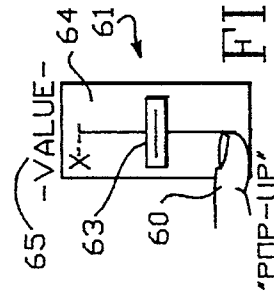


FIG. 4B

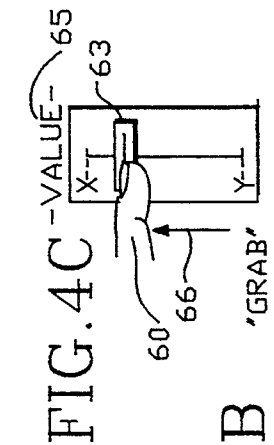


FIG. 4C

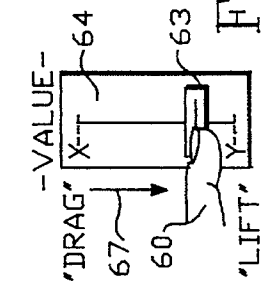


FIG. 4D

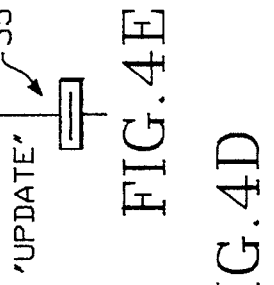


FIG. 4E

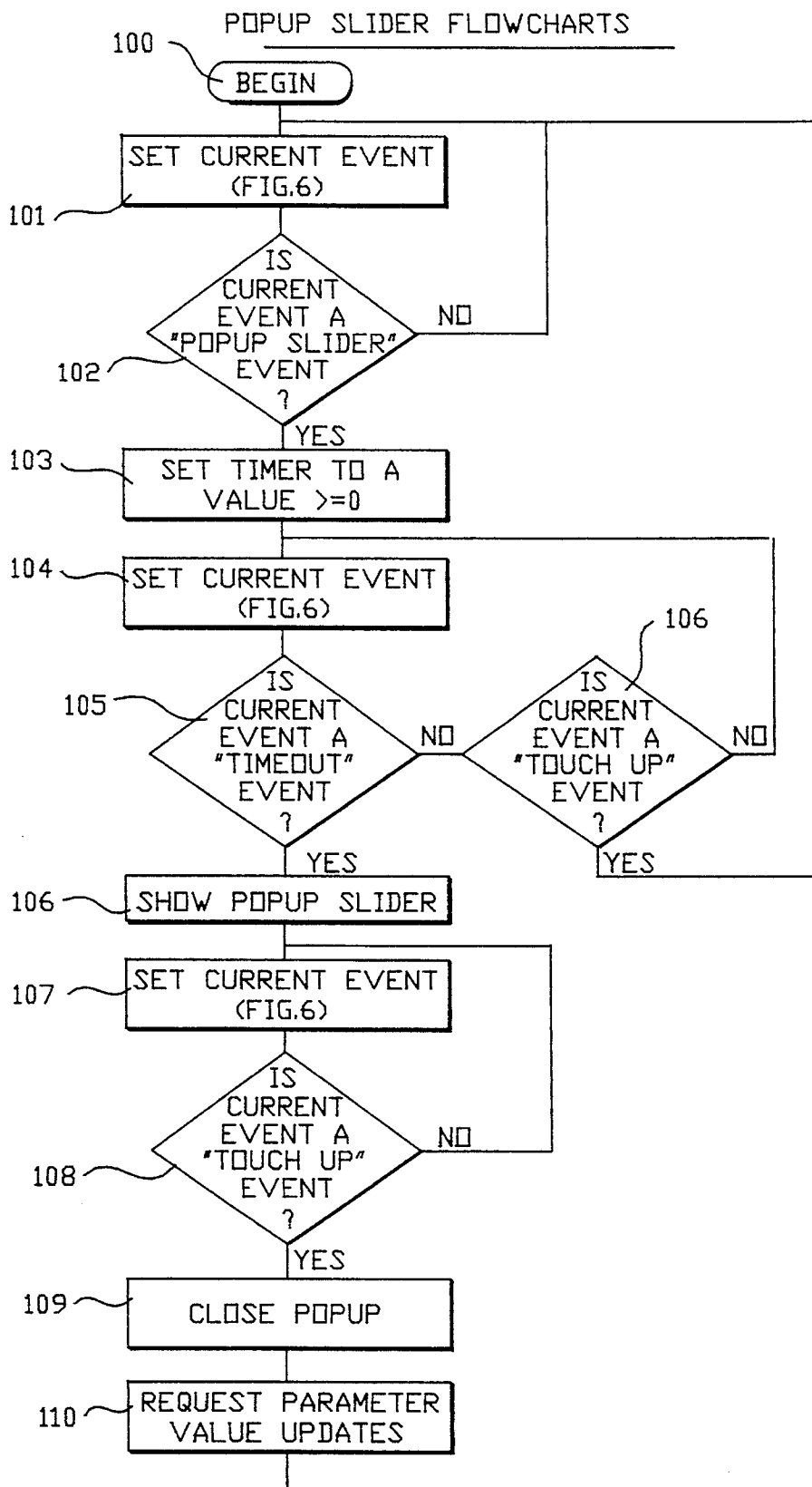


FIG.5

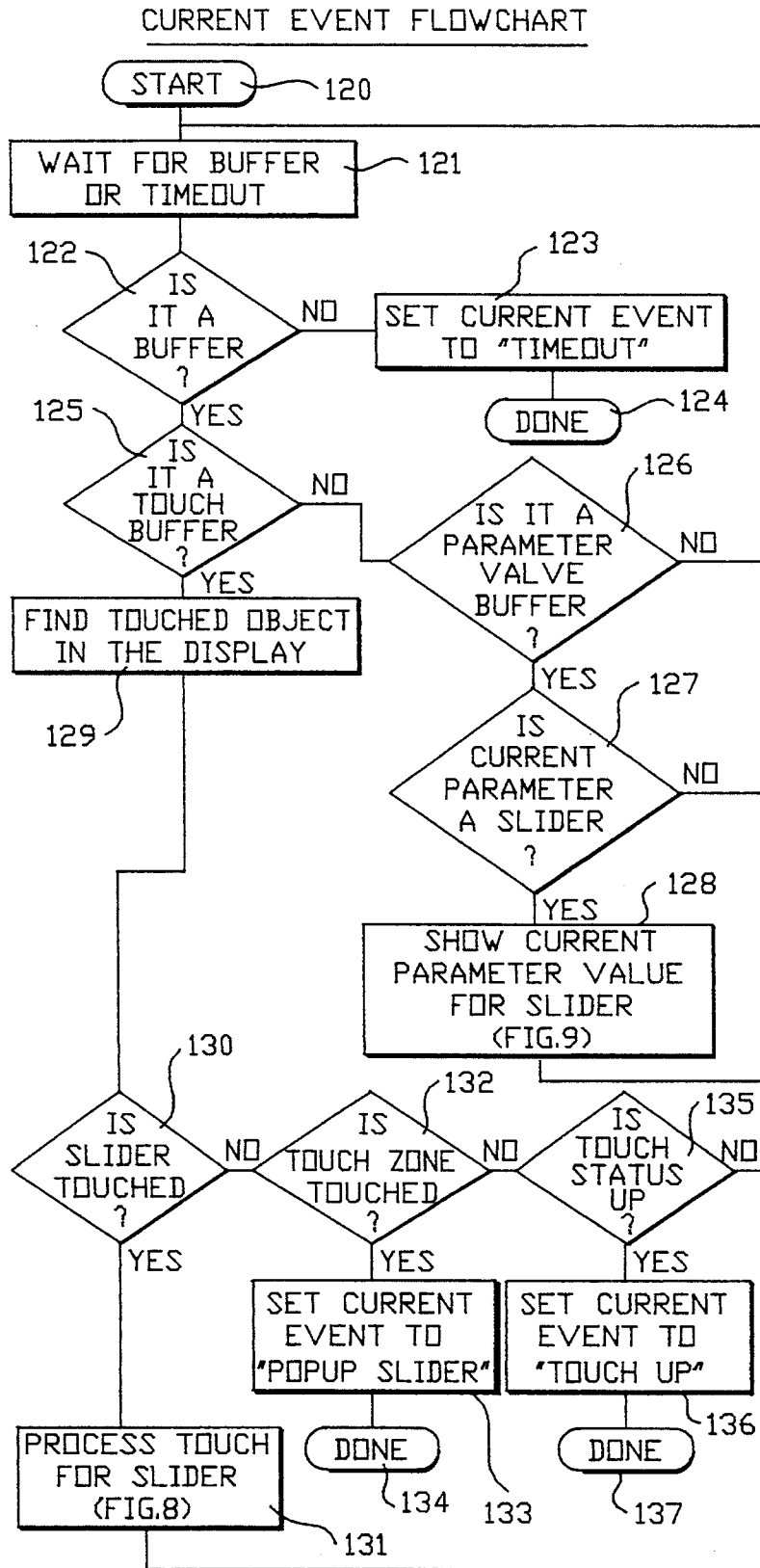


FIG. 6

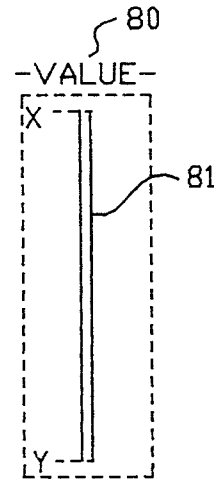


FIG. 7A



FIG. 7B

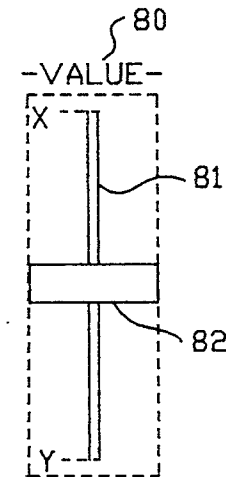


FIG. 7C

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