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(54) METHOD AND APPARATUS FOR MULTI-TOUCH TACTILE TOUCH PANEL ACTUATOR MECHANISMS

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(57) **ABSTRACT**

A method and apparatus of actuator mechanisms for a multi-touch tactile touch panel are disclosed. The tactile touch panel includes an electrical insulated layer and a tactile layer. The top surface of the electrical insulated layer is capable of receiving an input from a user. The tactile layer includes a grid or an array of haptic cells. The top surface of the haptic layer is situated adjacent to the bottom surface of the electrical insulated layer, while the bottom surface of the haptic layer is situated adjacent to a display. Each haptic cell further includes at least one piezoelectric material, Micro-Electro-Mechanical Systems ("MEMS") element, thermal fluid pocket, MEMS pump, resonant device, variable porosity membrane, laminar flow modulation, or the like. Each haptic cell is configured to provide a haptic effect independent of other haptic cells in the tactile layer.