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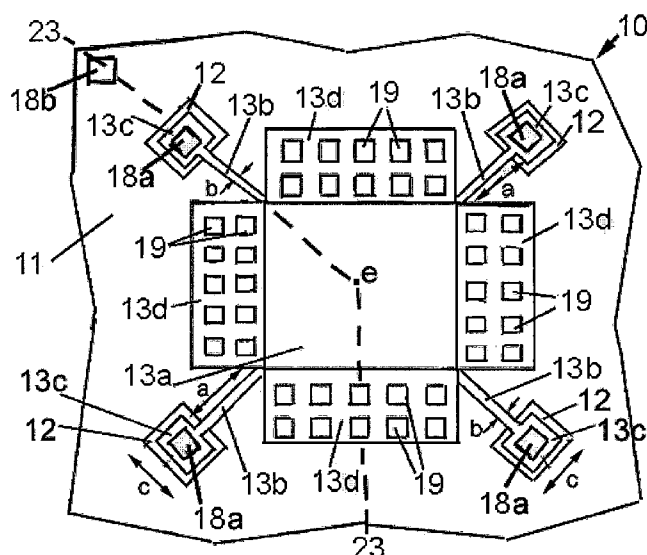
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(54) Title: A BACKPLATELESS SILICON MICROPHONE



(57) Abstract: A silicon based microphone sensing element (10) and a method for making the same are disclosed. The microphone sensing element (10) has a diaphragm (13a) with a perforated plate (13d) adjoining each side or corner. The diaphragm is aligned above one or more back holes (19) created in a conductive substrate wherein the back hole has a width less than that of the diaphragm. Perforated plates (13d) are suspended above an air gap that overlies the substrate. The diaphragm (13a) is supported by mechanical springs (13b) with two ends that are attached to the diaphragm at a corner, side, or center and terminate in a rigid pad anchored on a dielectric spacer layer. A first electrode (18a) is formed on one or more rigid pads and a second electrode (18b) is formed at one or more locations on the substrate to establish a variable capacitor circuit. The microphone sensing element can be embodied in different approaches to reduce parasitic capacitance.

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