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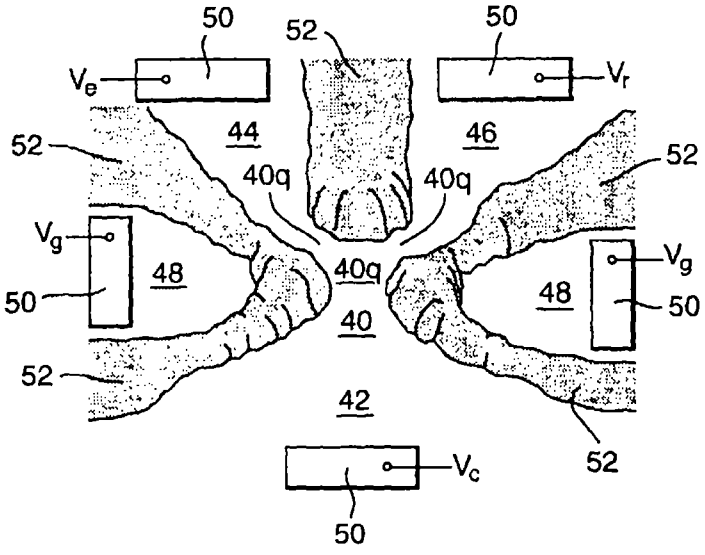
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(54) Title: NANOELECTRONIC DEVICES



(57) Abstract: An electronic device of nanometric dimensions which exhibits non-linear transistor or rectifying action comprises a region (40) fabricated to provide ballistic transport properties for electron flow, with conductance paths (42, 44, 46) having quantum point contacts (40q) formed in region (40), each path having an associated reservoir of electrons, or contact (50), with an electrochemical potential, and a linear-response conductance which depends on the energy of electrons injected into the path. An alternating voltage V_l, V_r is applied across conductance paths (44, 46), and a rectified voltage V_c is developed at conductance path (42). Alternatively, a constant voltage may be applied to terminal (44), to modulate the characteristics of electron flow through conductance paths (42, 46), in a transistor-like manner. The device may perform a logic AND or OR function, or be used as a frequency multiplier.

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