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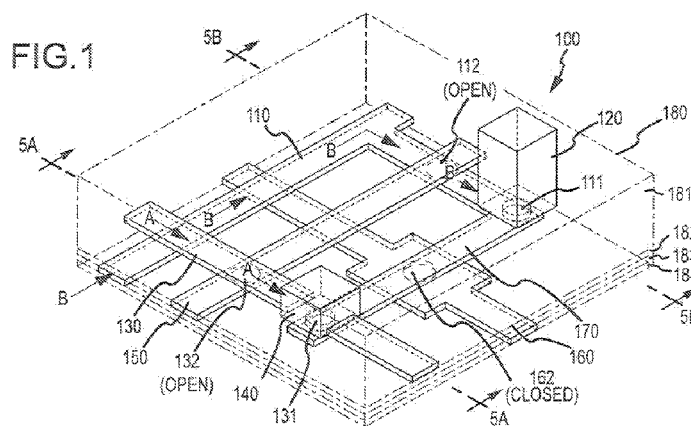
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(54) Title: MULTILEVEL MICROFLUIDIC SYSTEMS AND METHODS



(57) Abstract: Multilevel microfluidic devices include a control line that can simultaneously actuate valves for both sample and reagent lines. Microfluidic devices are configured to contain a first reagent in a first chamber and a second reagent in a second chamber, where either or both of the first and second reagents are contained at a desired or selected pressure. Operation of a microfluidic device includes transmitting second reagent from the second chamber to the first chamber, for mixing or contact with the first reagent. Microfluidic device features such as channels, valves, chambers, can be at least partially contained, embedded, or formed by or within one or more layers or levels of an elastomeric block.