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Gilbert et al.

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(54) **MULTILAYER HYDRODYNAMIC SHEATH FLOW STRUCTURE**

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(52) **U.S. Cl.**
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(58) **Field of Classification Search**
USPC 406/86, 93, 94, 195, 198; 356/246;
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See application file for complete search history.

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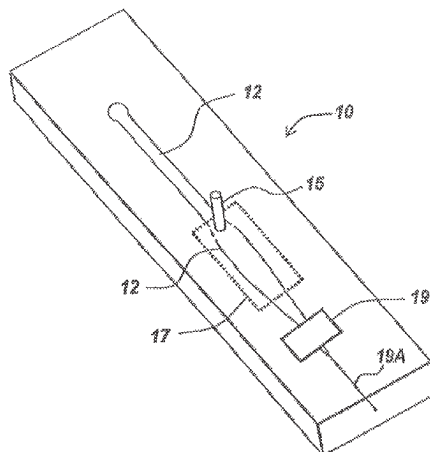
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(57) **ABSTRACT**

A microfabricated sheath flow structure for producing a sheath flow includes a primary sheath flow channel for conveying a sheath fluid, a sample inlet for injecting a sample into the sheath fluid in the primary sheath flow channel, a primary focusing region for focusing the sample within the sheath fluid and a secondary focusing region for providing additional focusing of the sample within the sheath fluid. The secondary focusing region may be formed by a flow channel intersecting the primary sheath flow channel to inject additional sheath fluid into the primary sheath flow channel from a selected direction. A sheath flow system may comprise a plurality of sheath flow structures operating in parallel on a microfluidic chip.

20 Claims, 12 Drawing Sheets



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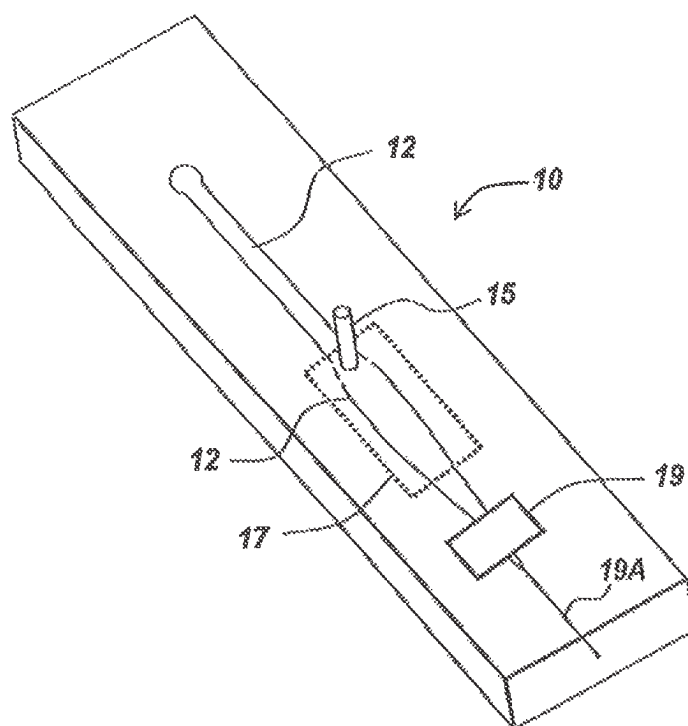
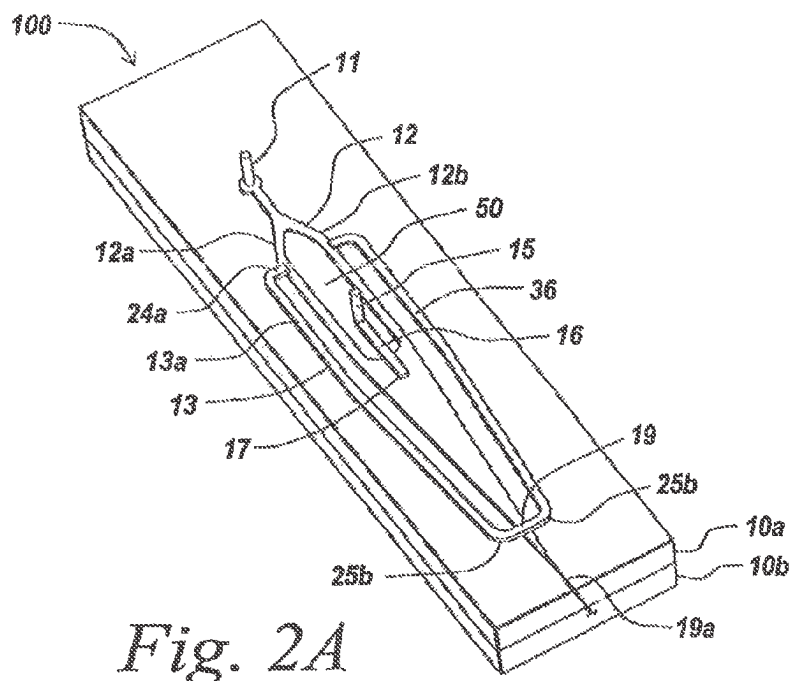
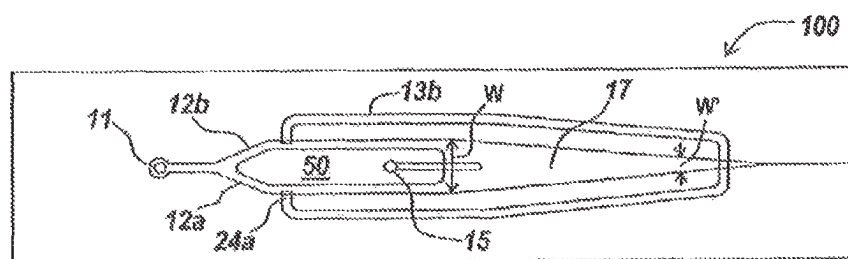
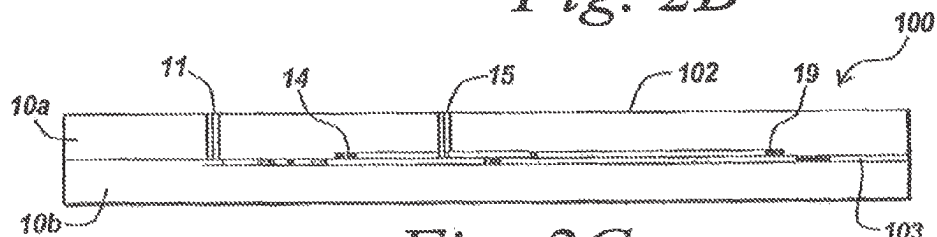
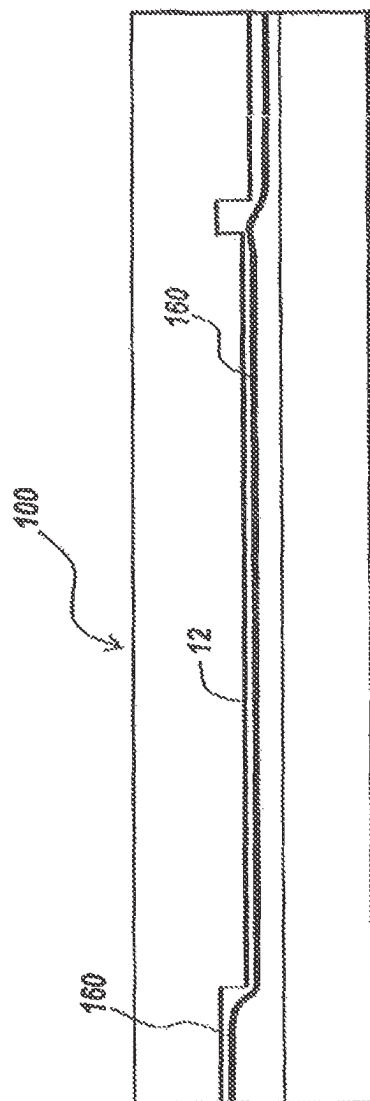


Fig. 1

*Fig. 2A**Fig. 2B**Fig. 2C*





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