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(71) Applicants *(for all designated States except US)*: **PRESIDENT AND FELLOWS OF HARVARD COLLEGE**; 17 Quincy Street, Cambridge, MA 02138 (US). **CHILDREN'S MEDICAL CENTER CORPORATION**; 55 Shattuck Street, Boston, MA 02115 (US).

(72) Inventors; and
(71) Applicants : **YUNG, Chong, Wing** [US/US]; 4651 Rousillon Avenue, Fremont, California 94555 (US). **DOMANSKY, Karel** [US/US]; 17 Monument Sq., Charlestown, Massachusetts 02129 (US). **TERRY, Richard** [US/US]; 285 Cross Street, Belmont, Massachusetts 02478 (US). **KALISH, David** [US/US]; 386 Central Avenue, Needham, Massachusetts 02494 (US). **SCHULTE, Alexa** [US/US]; 479 Commonwealth Avenue, Boston, Massachusetts 02215 (US). **KANG, Joo, Hun** [KR/US]; 170 Brookline Avenue, #816, Boston, Massachusetts 02215 (US). **INGBER, Donald, E.** [US/US]; 162 West Canton Street, Boston, Massachusetts 02118 (US). **SUPER, Mike** [GB/US]; 354 Concord Ave., Lexington, Massachusetts 02421 (US). **COOPER, Ryan, M.** [US/US]; 69 Elm St., #2, Cambridge, Massachusetts 02139 (US).

(74) Agents: **RESNICK, David, S.** et al.; Nixon Peabody LLP, 100 Summer Street, Boston, Massachusetts 02110 (US).

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(54) Title: DIALYSIS LIKE THERAPEUTIC (DLT) DEVICE

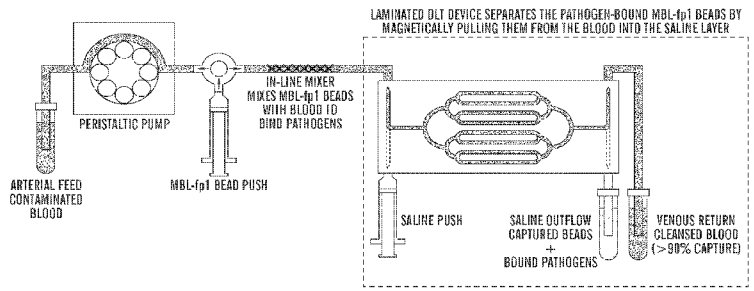

FIG. 17A

(57) Abstract: A dialysis like therapeutic (DLT) device is provided. The DLT device includes at least one source channel connected at least one collection channels by one or more transfer channels. Fluid contacting surface of the channels can be an anti-fouling surface such as slippery liquid-infused porous surface (SLIPS). Fluids can be flown at high flow rates through the channels. The target components of the source fluid can be magnetic or bound to magnetic particles using an affinity molecule. A source fluid containing magnetically bound target components can be pumped through the source channel of the microfluidic device. A magnetic field gradient can be applied to the source fluid in the source channel causing the magnetically bound target components to migrate through the transfer channel into the collection channel. The collection channel can include a collection fluid to flush the target components out of the collection channel. The target components can be subsequently analyzed for detection and diagnosis. The source channel and the collection channels of the microfluidic device are analogous to the splenic arterioles and venules, respectively; the transfer channels mimic the vascular sinusoids of the spleen where opsonized particles are retained. Thus, the device acts as a dialysis like therapeutic device by combining fluidics and magnetics.

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