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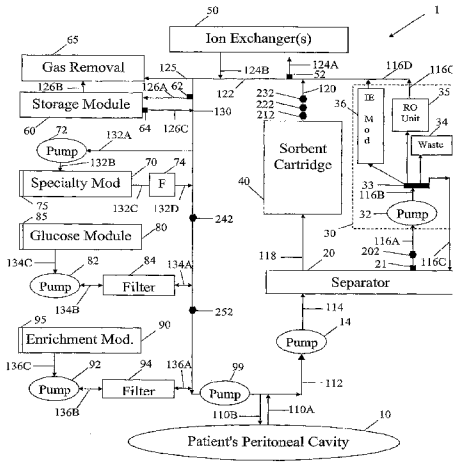
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(54) Title: PERITONEAL DIALYSIS METHODS AND APPARATUS



(57) Abstract: A peritoneal-based ("bloodless") artificial kidney processes peritoneal fluid without need for additional fluids ("waterless"). Fluid is separated into a protein-rich stream and a protein-free stream. The protein-rich stream is regenerated using a sorbent assembly, and its protein composition can be modified by removal of selected protein(s) ("dialysate-pheresis"). It is then reconstituted with additives and returned into the peritoneal cavity, thereby reducing protein-loss and providing oncotic-pressure for ultrafiltration. The protein-free stream is used to produce free water, and an alkaline or acid fluid for optimization of the composition of the regenerated stream. The unused protein-free stream can be used to "reverse flush" the separator to maintain its patency and the excess discarded for fluid-balance regulation. Compared to prior art, immobilization of urease allows more protein rich fluid to be regenerated and re-circulated into the peritoneal cavity for toxin removal and allows practicable development of portable and wearable artificial kidneys.

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