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(54) Title: FLUID DECONTAMINATION APPARATUS

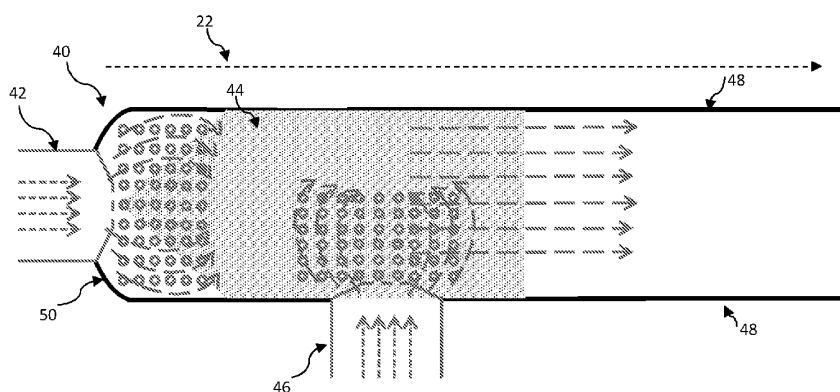


FIG. 2

(57) Abstract: A fluid decontamination apparatus having a container body with a plurality of three-dimensional open structure (3DOS) substrates spaced therein, wherein a contaminated fluid flowing through the container body will contact the 3DOS substrates. Nozzles disposed about the container body, configured to inject the contaminated fluid with/without air to induce hydrodynamic cavitation. The substrates can be porous and permeable enabling the contaminated fluid to flow therethrough, wherein the fluid flow passageway through the pores extends the volume of contaminated fluid exposed to turbulent and cavitation inducing flow conditions. Moreover, the 3DOS substrates may be coated with one or more types of catalysts so as to initiate chemical reactions. As such, the extended exposure of the contaminated fluid to hydrodynamic cavitation forming conditions, along with the chemical reactions earned out on the porous surfaces, enable an increased number of toxic species and unwanted organic compounds to be destroyed and/or altered, thereby enhancing decontamination.



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