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(54) Title: METHOD AND APPARATUS FOR APPLYING PLASMA PARTICLES TO A LIQUID AND USE FOR DISINFECTING WATER

(57) Abstract: The invention provides a method and apparatus for creating plasma particles and applying the plasma particles to a liquid. Liquid feedstock (e.g., water and/or hydrocarbons mixed with biomass) is pumped through a pipeline; the single-phase stream is then transformed into a biphasic liquid-and-gas stream inside a chamber. The transformation is achieved by transitioning the stream from a high pressure zone to a lower-pressure zone. The pressure drop may occur when the stream further passes through a device for atomizing liquid. Inside the chamber, an electric field is generated with an intensity level that exceeds the threshold of breakdown voltage of the biphasic medium leading to a generation of a plasma state. Furthermore, the invention provides an energy-efficient highly adaptable and versatile method and apparatus for sanitizing water using plasma particles to inactivate biological agents contaminating water.



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