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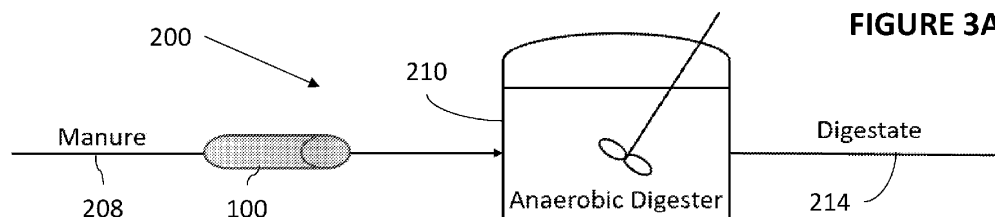


FIGURE 3A

(57) Abstract: Systems and methods for pre-treating organic substrates so as to enhance the efficiency of anaerobic and aerobic digestion of the organic substrates, the system including: a conduit, adapted to have a stream flow therethrough, the stream containing the liquid medium and the organic substrate; an electromagnetic field generator, disposed circumferentially about the conduit, the electromagnetic field generator adapted to induce an electromagnetic field to an interior of the conduit, such that, when the liquid medium flows through the conduit, the electromagnetic field is applied to the liquid medium; and a microwave emitter, attached to the conduit, said microwave emitter adapted to emit microwave radiation into the conduit, such that, when the liquid medium flows through the conduit, the microwave radiation is applied to the liquid medium.

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