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(71) Applicant *(for all designated States except US)*: **BIO-RAD LABORATORIES, INC.** [US/US]; 1000 Alfred Nobel Drive, Hercules, California 94547 (US).

(72) Inventor; and

(75) Inventor/Applicant *(for US only)*: **RAGSDALE, Charles W.** [US/US]; 1336 Vermont Avenue, Concord, California 94521 (US).

(74) Agents: **HEINES, M. Henry** et al.; Townsend and Townsend and Crew LLP, Two Embarcadero Center, 8th Floor, San Francisco, CA 94111-3834 (US).

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(54) Title: ELECTROPORATION CUVETTE WITH SPATIALLY VARIABLE ELECTRIC FIELD

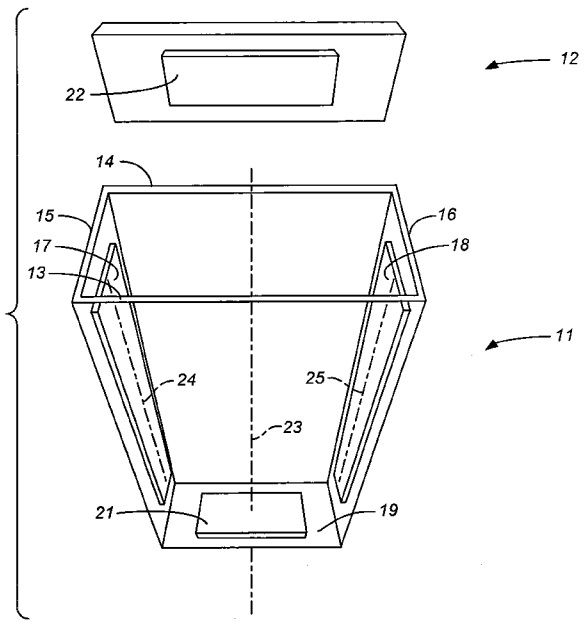


FIG. 1

(57) Abstract: An electroporation cuvette is constructed with electroporation electrodes arranged in non-parallel relation to form a gap whose width varies with the location within the cuvette, plus a pair of positioning electrodes that are arranged to cause electrophoretic migration of biological cells within the cuvette according to cell size. Once the cells, suspended in a solution of the impregnant, are distributed in the cuvette by the positioning electrodes, electric field pulses are generated by the non-parallel electroporation electrodes. Because of their distribution in the cuvette, the various cells will experience voltage differentials across their widths that approach uniformity regardless of cell diameter, since the larger cells will be positioned at locations where the gap between the electrodes is greater and the smaller cells at locations where the gap is relatively small while the voltage drop across the entire gap is uniform along the length of the cell. The voltage differential across the width of the cell is thus roughly paired with the cell diameter, and this reduces the disparity in voltage differential that cells of different sizes would otherwise experience with parallel electrodes.

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