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(54) Title: MOBILE AEROPONIC IRRIGATOR UTILIZING ULTRASONIC NOZZLES

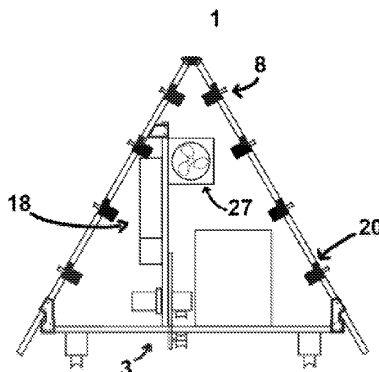


Fig. 1

(57) **Abstract:** The present invention discloses a mobile ultrasonic irrigation apparatus, wherein the apparatus atomizes an aqueous solution at variable rates, in variable droplet diameters, and further, wherein the apparatus may travel by engaging with a plant cultivation structure. Aerosolized nutrient solution can be advantageously used to irrigate crops in controlled environment agriculture. Crops respond more favorably to aeroponic irrigation than to alternative irrigation techniques such as hydroponics. Moreover, aeroponic irrigation enables three-dimensional gains, wherein plant cultivation structures may be arranged as A- Frames, vertical towers, walls and other such structures that provide a significant increase in active cultivation area per available facility floor area. Because aeroponic irrigation is done in intervals, wherein plants may be sprayed for a few seconds every few minutes, beneficially, an aeroponic irradiator may be mobile to eliminate downtime and system complexity and cost. Prior art discloses ultrasonic irrigation nozzles wherein flowrate is restricted to a level that is not relevant in large-scale irrigation. Prior art also discloses mobile pressure-based aeroponic irrigators, wherein high-pressure pumps and fixed-orifice nozzles are engaged with mobile carriages, and wherein inherent pressure-pumping and

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nozzle problems, such as system failures and clogs, and the associated costs, outweigh the potential benefits. The present disclosure enables large-scale mobile ultrasonic aeroponic irrigation in various agricultural scenarios and solves the problems of prior art.