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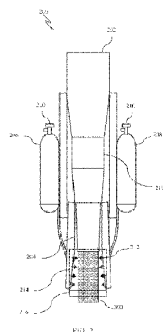
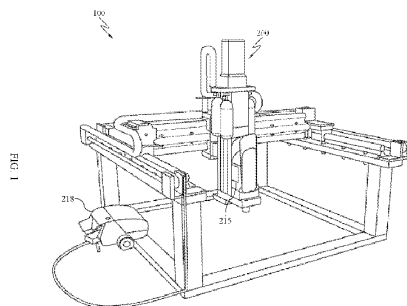
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(54) Title: CEMENTITIOUS PRINT HEAD, 3D PRINTING ARCHITECTURE, AND CEMENTITIOUS PRINTING METHODOLOGY



(57) Abstract: A cementitious print head (200) and a cementitious printing methodology may include a feed barrel (202), a print head nozzle (204), a CO₂ supply (206), a steam supply (208), a selective valve assembly in communication with the CO₂ supply and the steam supply, a plurality of dual use extrusion head injectors (212), and a print head controller (215). The print head controller (215) is operatively coupled to the selective valve assembly and is programmed to execute a CO₂ and steam injection protocol where steam may be selected for injection by the dual use extrusion head injectors (212) into a cementitious composition as it is extruded from the print head nozzle (204) to enhance a hydration reaction and formation of hydroxide in the cementitious composition before CO₂ may be selected for injection by the dual use extrusion head injectors (212) into the cementitious composition as it is extruded from the print head nozzle (204) to enhance a carbonation reaction in the cementitious composition.

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