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(54) Title: DISSOLVABLE DOWNHOLE HYDRAULIC FRACTURING TOOLS COMPOSED OF BULK METAL GLASS AND THERMOPLASTIC POLYMER COMPOSITES

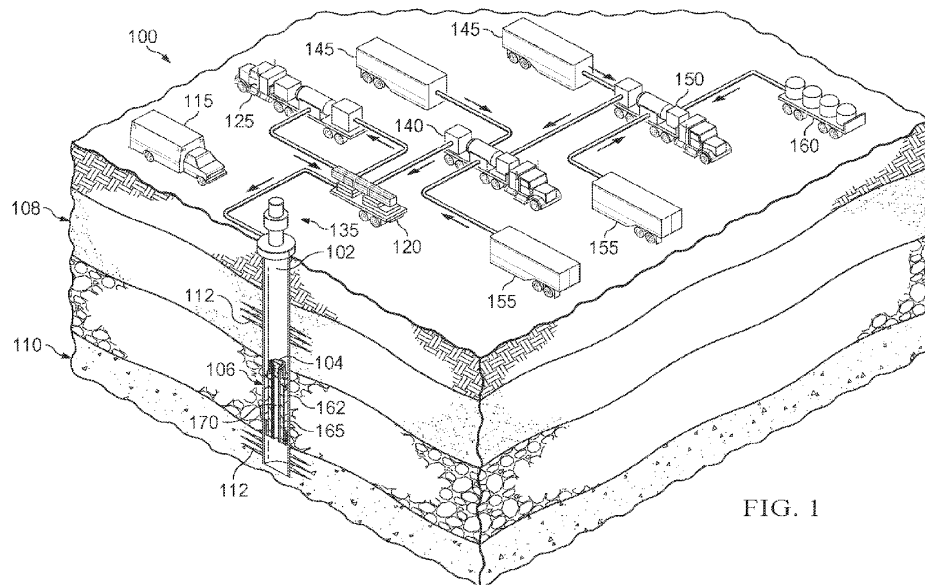


FIG. 1

(57) Abstract: A downhole hydraulic frac tool for use in a hydraulic fracturing system, the frac tool comprising a dissolvable frac tool member that includes a water-dissolvable composition, the composition including: a water-soluble thermoplastic polymer; and water-soluble bulk metallic glass (BMG) particles, wherein: the BMG particles are embedded within a matrix of the water-soluble thermoplastic polymer, the BMG particles have a greater tensile strength than a tensile strength the water-soluble thermoplastic polymer, and the BMG particles have a higher fracture toughness than a fracture toughness the water-soluble thermoplastic polymer. A method of manufacturing a dissolvable downhole hydraulic frac tool member and, a hydraulic fracturing system associated with a wellbore in which dissolvable downhole hydraulic frac tools of the disclosure can be used, are also disclosed.

[Continued on next page]

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