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- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))

(54) Title: MULTIVASCULAR NETWORKS AND FUNCTIONAL INTRAVASCULAR TOPOLOGIES WITHIN BIOCOMPATIBLE HYDROGELS

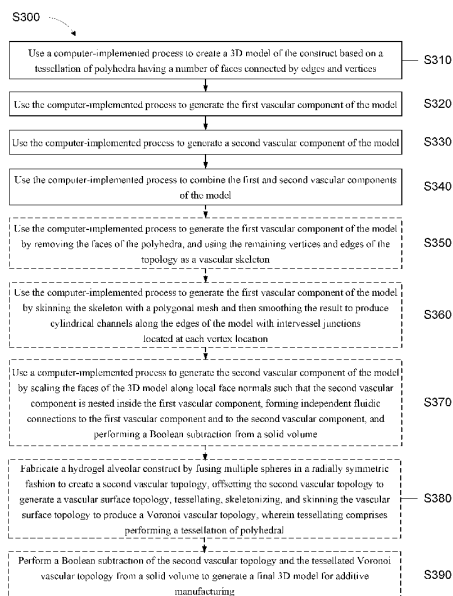


FIG. 22

(57) Abstract: A device made from a hydrogel matrix is provided. The hydrogel matrix includes a photoabsorber with a void architecture in the matrix, having a first vessel architecture and a second vessel architecture that are each tubular and branching, wherein the first and second vessel architectures are fluidically independent from each other. A pre-polymerization solution for forming the device, and methods of fabricating such devices are described. A method of fabricating a 3D hydrogel construct is provided. The method includes using a computer-implemented process to create a 3D model of the construct based on a tessellation of polyhedra having a number of faces connected by edges and vertices, generate a first vascular component of the model, generate a second vascular component of the model, and combine the first and second vascular components of the model.

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