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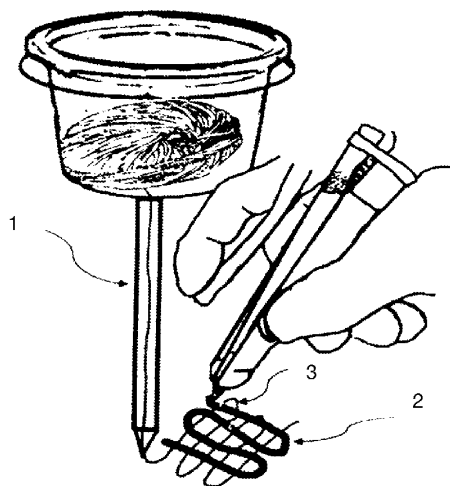
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(54) Title: METHOD OF MANUFACTURING HYBRID ADDITIVE FABRIC, THE FABRIC, AND TOOLS FOR MANUFACTURING FABRIC

Figure 1



(57) Abstract: The present invention relates to a method of manufacturing a fabric, and the fabric made by the method. Fabric made from yarn or filament is currently produced by either a knitting process which involves the interloping of yarn, or a weaving process which involves the interlacing of yarn, or the entanglement of fibre on the surface of yarn. These construction methods have a definite look, texture and functionality. The invention seeks to provide an alternative fabric construction especially for yarn, filament, thread and fine wires or such like. A method of manufacturing a fabric by laying a parallel surface of yarn, such as spun yarn, wire, thread or such like, then a second layer of parallel array of filament at an 90 - degree angle dispensed from a 3D printer or 3D printer pen. Yarn and filament can be layered in a variety of designs and not limited to a parallel array of yarn to accommodate unlimited design shapes and structures. The method can be repeated to create a fabric surface built by multiple layers upon layer. Alternating one layer of yarn or such like and one layer of 3D printed filament. Each layer offers space to embed components such as semi-conductors. Semi-conductors that are an essential component of electronic devices, enabling advances in communications, computing, healthcare, military systems, transportation, clean energy, and countless other applications. In addition, Drug delivery scaffolds that allow for controlled spatiotemporal releases to active compounds can also be accommodated within the layer of spun yarn and 3D filament. The spun yarn or filament can be embedded with conductive yarns or E-yarns to enhance functionality further. The surface of the spun yarn may be brushed to raise the surface fibres, to increase the entanglement and enhance the blending of spun yarn and the fluid filament dispensed via a 3D

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printer or 3D pen. The combination of 3D printing and spun yarn or such like provides an additive manufactured hybrid textile. Therefore, the present invention offers numerous advantages over woven, knitted or parallel layered fibre on yarn entangled fabric surfaces.