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(54) **TEXTILE HEATER WITH CONTINUOUS TEMPERATURE SENSING AND HOT SPOT DETECTION**

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Related U.S. Application Data

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(57) **ABSTRACT**

A soft and flexible heater utilizes electrically conductive threads or fibers as heating media. The conductive fibers are encapsulated by negative temperature coefficient (NTC) material, forming temperature sensing heating cables. One or more heating cables can be formed into heaters of various configurations including tapes, sleeves or sheets providing simultaneous heat radiation and local overheat protection. Such heaters may be connected in different combinations, in parallel or in series. The heater may contain continuous positive temperature coefficient (PTC) temperature sensors to precisely control the temperature in the heater. Such temperature sensors can be made of electrically conductive fibers, metal wires or fiber optical filaments. When required by the heater design, the electrically conductive threads/fibers may have a polymer base, which acts as a Thermal-Cut-Off (TCO) at predetermined temperatures. Electrically conductive fibers comprised of such polymer base can melt between 110° C. and 350° C. thereby terminating electrical continuity in the heater.

12 Claims, 4 Drawing Sheets