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(54) **SINGLE STEP ELECTROLYTIC METHOD OF FILLING THROUGH-HOLES IN PRINTED CIRCUIT BOARDS AND OTHER SUBSTRATES**

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(57) **ABSTRACT**
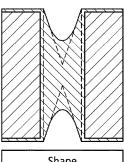
A method of copper electroplating in the manufacture of printed circuit boards. The method is used for filling through-holes and micro-vias with copper. The method includes the steps of: (1) preparing an electronic substrate to receive copper electroplating thereon; (2) forming at least one of one or more through-holes and/or one or more micro-vias in the electronic substrate; and (3) electroplating copper in the at least one or more through-holes and/or one or more blind micro-vias by contacting the electronic substrate with an acid copper electrolyte. The acid copper electrolyte is used to plate the one or more through-holes and/or the one or more blind micro-vias. A first pulse reverse plating waveform sequence is used to create a copper bridge in the center of the through-holes followed by direct plating until metallization is complete.
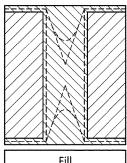
Start   Bridge   Shape   Fill