may be reduced. But, reducing the allowable tolerances of the diameter of the electrical via may increase the cost of manufacturing printed circuits and/or may reduce the number of printed circuits that can be manufactured within a given amount of time.

[0005] There is a need for an EON pin contact that can make a reliable electrical connection with an electrical via having a diameter that may vary over a relatively large tolerance range.

[0006] This problem is solved by an EON pin contact according to ~~claim 1~~ embodiments of the invention.

[0006a] According to an aspect, there is provided an eye-of-the needle (EON) pin contact for being received within an electrical via that includes conductive material , the EON pin contact comprising a compliant segment including two opposing spring arms and an opening defined between the spring arms, the compliant segment being configured to be received within the electrical via such that the spring arms engage the conductive material, and a tip segment extending from the compliant segment, the tip segment being configured to be received into the electrical via before the compliant segment is received into the electrical via, characterized in that: the tip segment comprises broaches that are configured to displace the conductive material as the tip segment is received into the electrical via so as to plow respective paths through the conductive material for reception of the spring arms.

[0007] According to embodiments of the invention, an eye-of-the needle (EON) pin contact is configured to be received within an electrical via that includes conductive material. The EON pin contact comprises a compliant segment including two opposing spring arms and an opening defined between the spring arms, the compliant segment being configured to be received within the electrical via such that the spring arms engage the conductive material. A tip segment extending from the compliant segment is configured to be received into the electrical via before the compliant segment is received into the electrical via. The tip segment comprises broaches that are configured to displace the conductive material as the tip segment is received into the electrical via so as to plow respective paths through the conductive material for reception of the spring arms.

[0008] The invention will now be described by way of example with reference to the accompanying drawings wherein:

[0009] Figure 1 is a partially exploded perspective view of an exemplary embodiment of an electrical connector and printed circuit assembly.

[0010] Figure 2 is a perspective view of an exemplary embodiment of the electrical connector shown in Figure 1.

[0011] Figure 3 is a plan view of an exemplary embodiment of an electrical contact of the electrical connector shown in Figures 1 and 2.

[0012] Figure 4 is a perspective view of a portion of the electrical contact shown in Figure 3 illustrating an exemplary embodiment of an eye-of-the needle (EON) pin of the electrical contact.

~~WHAT IS CLAIMED IS:~~ CLAIMS

1. An eye-of-the needle (EON) pin contact ~~(32)~~ for being received within an electrical via ~~(34)~~ that includes conductive material ~~(42)~~, the EON pin contact comprising a compliant segment ~~(60)~~ including two opposing spring arms ~~(64, 66)~~ and an opening ~~(68)~~ defined between the spring arms, the compliant segment being configured to be received within the electrical via such that the spring arms engage the conductive material, and a tip segment ~~(62)~~ extending from the compliant segment, the tip segment being configured to be received into the electrical via before the compliant segment is received into the electrical via, characterized in that:

the tip segment comprises broaches ~~(82a, 82b)~~ that are configured to displace the conductive material as the tip segment is received into the electrical via so as to plow respective paths ~~(104a, 104b)~~ through the conductive material for reception of the spring arms.

2. The EON pin of claim 1, wherein the tip segment ~~(62)~~ comprises opposite front and rear walls ~~(70, 72)~~ and opposite side walls ~~(74, 76)~~ that extend between the front and rear walls, the broaches ~~(82a, 82b)~~ comprising respective protrusions ~~(84a, 84b)~~ that extend outward on respective said side walls.

3. The EON pin contact of claim 1, wherein the electrical via ~~(34)~~ extends a depth along a depth axis ~~(102)~~, the broaches ~~(82a, 82b)~~ being configured to plow the respective paths ~~(104a, 104b)~~ by displacing the conductive material ~~(42)~~ at least one of along the depth axis or radially outward relative to the depth axis.

4. The EON pin contact of claim 1, wherein the compliant segment ~~(60)~~ is configured to be compressed as the compliant segment is received into the electrical via ~~(34)~~ such that the spring arms ~~(64, 66)~~ are moved towards each other, the respective paths ~~(104a, 104b)~~ plowed by the broaches ~~(82a, 82b)~~ being configured to prevent overcompression of the compliant segment.

5. The EON pin contact of claim 1, wherein the broaches ~~(82a, 82b)~~ are configured to engage the conductive material ~~(42)~~ of the electrical via ~~(34)~~ with an interference fit to displace the conductive material.

6. The EON pin contact of claim 1, wherein the EON pin contact extends a length along a central longitudinal axis ~~(43)~~, each of the spring arms ~~(64, 66)~~ having a respective apex ~~(78, 80)~~ where the corresponding spring arm engages the conductive material ~~(42)~~ of the electrical via ~~(34)~~, the broaches ~~(82a, 82b)~~ have respective apexes ~~(90, 96)~~ where the broaches engage the conductive material, wherein the apex of each said broach is spaced closer to the central longitudinal axis than the apex of the corresponding spring arm.

7. The EON pin contact of claim 1, further comprising opposite front and rear walls ~~(70, 72)~~ and opposite side walls ~~(74, 76)~~ that extend between the front and rear walls, the side walls comprising apexes ~~(78, 80)~~ where the spring arms ~~(64, 66)~~ engage the conductive material ~~(42)~~ of the electrical via ~~(34)~~, and the side walls comprising the broaches ~~(82a, 82b)~~.