Claims

1. An assembly of a fastener and a honeycomb panel, comprising:

    a) a honeycomb panel having a top panel, a bottom panel, and a plurality of internal cells in between said panels and defined by spaced vertical columns with side walls; and

    b) a self-piercing fastener, comprising:

        i) a planar base plate having a top, a bottom, and a peripheral edge; and

        ii) a plurality of prongs fixed to said peripheral edge and extending downward past the bottom of said baseplate, each of said prongs having a central axis and an arrowhead-shaped barb fixed to a distal end, each barb having opposed front edges extending from a tip of the barb, and opposed back edges oriented at a reverse acute angle relative to the central axis of said prong;

wherein said fastener prongs penetrate through said top panel and said barbs engage the columns of said internal cells to rigidly affix the fastener to the top panel of the honeycomb panel.

2. The assembly of claim 1 wherein the baseplate is substantially circular.

3. The assembly of claim 1 wherein the arrowhead shaped barbs of the prongs each have compound tapered front edges that meet at a point.

4. The assembly of claim 3 wherein the front edges of the barbs have two tapered regions, a first region at a distal end of the barb having an included angle of approximately 90 degrees and a second contiguous region above the first region defined by a included angle of approximately 60 degrees.

5. The assembly of claim 1 wherein a second fastener extends upwardly from the top of the base plate.

6. The assembly of claim 5 wherein the second fastener is an externally threaded stud.

7. The assembly of claim 5 wherein the second fastener is an internally threaded nut.

8. The assembly of claim 5 wherein the second fastener is affixed to the base plate by clinch attachment to a receiving hole in the base plate whereby undercuts of the fastener receive the cold flow of metal from the base plate.

9. The assembly of claim 1 wherein the prongs are substantially identical and parallel to each other.

10. The assembly of claim 1 wherein the baseplate is composed of metal.

11. The assembly of claim 1 wherein the prongs are adapted for random radial deflection during installation of the fastener into the panel such that the prongs are not parallel after assembly.

12. The assembly of claim 11 wherein the barbs do not extend below the bottom surface of the panel.

13. The assembly of claim 12 wherein internal column walls of the panel are deflected by the barbs during installation of the fastener into the panel such that corners of the back sides of the barbs resist pull-out forces by direct engagement with the deflected column walls.