Blind Burr

 Designed by Gregory Benedetti, made by Maurice Vicourouz 2012.  
(Purple Heart, 3.25 inches)

Pieces are a small cube trapped in the center, three identical "simple pieces", and three identical "complex" pieces. Assembly is relatively easy, where the three complex pieces and the cube are put compactly together as shown on the left in the figure below (rubber bands keep them together for the photo) and then the three simple pieces slide simultaneously over the exposed corner:

Disassembly requires simultaneous motion to move the three complex pieces together into the "key position" shown on the left below. One first has to identify which three are the complex pieces and then carefully jiggle and push to get all three to push in flush. In the middle is this position lit up from the back (where the serial number of the lower in-out piece can be seen), and on the right is shown the top three pieces coming apart simultaneously. The puzzle's name comes from the fact that when you don't know what is inside this puzzle, disassembly may be achieved by accident when randomly shaking and pulling on the puzzle.

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