

Wrap O-round Weave Five

Carl Hoff, Applied Materials

Puzzle rings are simple mechanical puzzles, with very few parts, that have been well explored by designers over hundreds of years. This paper describes a recent and rare innovation in this field; a puzzle ring in which the weave wraps around its entire circumference. I describe the design and physical manufacture of such a ring, which produced a surprisingly difficult puzzle to solve.

1 Introduction

THERE are many types of puzzle rings and their exact history and origins are debatable. This paper will focus on just the subset of puzzle rings that are composed of three or more bands that are interlinked via a weave pattern. This type of ring has been made for hundreds of years with the number of bands varying from three to twelve or more. The advantage of having the bands interlinked is that the bands always remain together, so a single band cannot get lost or misplaced.

Threesome, from the online store Puzzle Ring Maker,¹ is the first puzzle ring design that I was involved with. The weave pattern was proposed in 2007 by Bram Cohen [1], the inventor of the BitTorrent protocol, but appears to date back much earlier. Oskar van Deventer prototyped this particular ring using the 3D printing service Shapeways.² My contribution was to make some simple design tweaks and to adjust the filleting. The final design, shown in Figure 1, was made by Jeff Bell (alias Vardan) who operates Puzzle Ring Maker.



Figure 1. The Threesome puzzle ring.

The Threesome design typifies the type of puzzle ring that this paper will focus on. The three bands are all interlinked when scrambled, as seen in Figure 2. This interlinking is accomplished through the use of a weave pattern that occupies the *top* (i.e. forward-facing part) of the ring, to give it a decoration or feature that orients the ring when it is worn; the weave itself serves the same function as the central setting on a standard ring. The remainder of the bands are typically simple parallel segments that are rather boring compared to the weave pattern on top.



Figure 2. Threesome in a scrambled state.

2 Background

While the exact origin of puzzle rings has been lost over time, they were popular as early as the 15th century [2, p. 47], and were often used as betrothal and wedding rings. They are mentioned in Robert Herrick's poem *The Jimmalls Ring or True-Love Knot* (1648),³ John Dryden's play *Don Sebastian* (1690),⁴ and two of William Shakespeare's plays: *Twelfth Night*, Act 2 Scene 2 (1601),⁵ and *Othello*, Act 4 Scene 3 (1603).⁶

¹<http://puzzleringmaker.com/index.php?ref=item&id=82>

²<http://shpws.me/Cte9>

³*Thou sent'st to me a true love-knot, but I / Returned a ring of jimmalls to imply / Thy love had one knot, mine a triple tie.*

⁴*A curious artist wrought 'em / With joynts so close as not to be perceiv'd; / Yet are they both each other's counterpart.*

⁵*It is too hard a knot for me to untie!*

⁶*Marry, I would not do such a thing for a joint-ring.*