



Turks Head Pens Tutorial

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Introduction

I was quite surprised to be asked to write this article by Wayne Racinowski of the International Association of Pen Turners, an excellent group maybe not quite as obscure as the International Guild of Knot Tyers (IGKT) but may I say, perhaps equally 'niche.' As I will also give the article to the IGKT for (hopeful) publication I will try to include explanations for both interest groups and hope the resulting article works for all.

After making a couple of pens using Australian hardwoods, I thought I'd attempt one using cordage.

First, while I have turned a few pens using Australian hardwoods on my lathe, I'm not a pen maker but a knot tyer (a mediocre one at that). It wasn't until I started the projects, I'm about to describe that I realised how ignorant I was regarding the complexities of knot tying and the bloody mathematics involved.

The first pen I describe, I made up the process as I went along, and a lot of trial and error was involved in determining the best cord and knot size for the project. For the second pen, I was given a lot of patient assistance by Jim CASWELL, a fellow Australian member of the IGKT, knot tyer, leather braider and by my standards, if not his, a mathematician..... Thanks Jim, very much.

My goal was to create a pen that was both attractive and comfortable to hold and after many trials with different knots and cord diameter I found a wide Turks Head using cord of 1 mm diameter or less was ideal.

A NOTE ABOUT TURKS HEAD KNOTS FOR THE NON-KNOT TYERS: Mike Hickey in his excellent book¹, describes a Turks Head as a "wreath or ring usually tied around a cylinder" and says, "It is like wrapping a flat braid around a cylinder where the ends meet and join."

Looking at image 1, the 'bights' are the loopy bits at the top and bottom of the knot as shown in the image and the 'Leads' are the number of strands contained in the knot. A knot is finished when one full circuit of, as in this case, a 19 Lead by 5 Bight (19L x 5B) is completed. If a second circuit is added, the Turks Head has been 'doubled,' if a third is added, it has been 'tripled' and so on.

For the visual learners, hopefully the attached images will help explain.

NOTE ON THE CORD: I make and sell a relatively hard laid cord under the name 'Blood Knot'² to people whose hobby is traditional knot tying. The cord used is not generally available in a shop but is made on an exceedingly small commercial level by maybe half a dozen people around the world. It is often either natural fibre or a cotton Poly blend and is made traditionally in a twisting process. It is usually three or four strand and it stretches or compresses very little when tensioning the knots.

Making the pens

I have made two pens using cordage instead of the more traditional wood or resin, neither is perfect but I'm teaching myself a technique and I'm learning with each one. The pens are both Fancy Slimline kits from Timberbits Australia³. Each pen consists of two brass tubes approximately 52 mm in length and 6.78 mm in diameter.

¹ [Introduction to Turks-Head Knots](#) (First edition 1996) written under the name Tom Hall.

² Blood Knot website: [Home | BloodKnot.bigcartel.com](http://Home.BloodKnot.bigcartel.com)

³ [Pen Turning Kits Australia - Shop Beginner's Pen Making Kits Online \(timberbits.com\)](http://PenTurningKitsAustralia-ShopBeginner'sPenMakingKitsOnline(timberbits.com))

Pen #1 - Tools and Materials

The first pen which I completed on 24/02/2024 was made using raw cotton cord and the following.

- Fancy Slim line pen kit.
- 2 x 1.8 metre lengths of approximately 1 mm cord
- A mandrel or jig (in this case 6 mm dowel, 75 – 100 mm long with five numbered pins inserted (I used 10mm nails) placed about 2 or 3mm longer than the barrel length markings at either end. See image 1.
- Lacing needle (the cord screws into an internal threaded end)
- Haemostats, an awl or similar for tensioning the knots.
- 1" Masking tape



Image 1 – the mandrel set up. Note the numbered pins.

Pen #1 - Technique



Image 2 – Pen #1 completed with two 'tripled' 19L x 5B Turks Heads.

Each of the two brass tubes were covered using a 19 Lead by 5 Bight Turks Head (19L x 5B) taken from The Turks Head Cookbook Volume 2⁴. The pattern is indicated in the following table diagram.

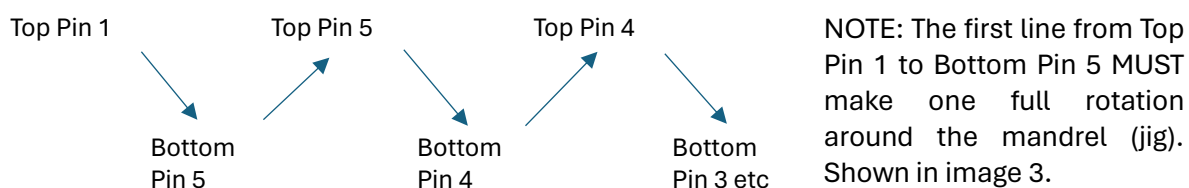


Image 3 – Shows the first line making one full rotation around the mandrel.
From Top Pin 1 to Bottom Pin 5.

The following table shows the full pattern of the knot and indicates all the ‘unders’ and ‘overs’ and the legend should hopefully assist in understanding the table.

LEGEND for table below

‘O’ = Pass over a previous strand,

‘U’ = pass under a previous strand

‘-’ = indicates where no passes (yet) exist

IMPORTANT NOTE ON USING THE MANDREL (JIG): When tying on the mandrel, do not tie the knot tightly on the pins, if you do, as soon as you remove them, the whole knot will ‘shrink’ in length.

⁴ The Turks Head Cookbook, Volume 1 (page 46) by Don Burrhus (Out of Print)

	Blue = cord direction down the mandrel					Orange = cord direction up the mandrel				
	Top row of Pins									
Top Pin #	1	5		4		3		2		1
NOTE: Start at Pin #1 and make one full turn around the mandrel to pin #5.	-	-	-	-	O	-	O	U	O	U
	-	-	-	-	-	O	U	O	U	O
	-	-	-	U	-	U	-	U	O	U
	-	O	-	O	-	O	-	O	-	O
	-	-	O	-	O	-	O	-	O	U
	-	-	-	-	U	-	U	O	U	O
	-	-	-	-	-	U	O	U	O	U
	-	-	-	O	-	O	-	O	U	O
	-	U	-	U	-	U	-	U	-	U
	-	-	U	-	U	-	U	-	U	O
	-	-	-	-	O	-	O	U	O	U
	-	-	-	-	-	O	U	O	U	O
	-	-	-	U	-	U	-	U	O	U
	-	O	-	O	-	O	-	O	-	O
	-	-	O	-	O	-	O	-	O	U
	-	-	-	-	U	-	U	O	U	O
	-	-	-	-	-	U	O	U	O	U
	-	-	-	O	-	O	-	O	U	O
Bottom Pin #	5		4		3		2		1	
	Bottom row of pins									

Once tied, the knot will need to be tensioned. This is the hardest part of the whole project as it is extremely easy to over tension the knot and ‘shrink’ it to a size smaller than the length of the brass tube. This is where placing the pins on the mandrel 5 or 6mm further apart than the length of the brass tubes is helpful and assists a slow and careful tensioning of the knot.

The completed knot is glued to the brass tube using a clear two-part epoxy, I used Gorilla Glue. After gluing the brass tube and sliding on the knot, I taped the knot tightly to ensure it was snug against the tube while the glue dried. The knot was finished with a mixture of shellac and Stockholm tar which I really like. The more coats you use the darker the finished look. The finish dry’s hard, and has a natural feel to it, it also provides great protection to the cordage, and I think gives the pen an aged look that I, at least really like.

Pen #2 – Tools and materials

See # Pen 1 with the following differences.

4 x 1.3 metre lengths of approximately 1 mm cord

A mandrel (I used 6 mm dowel in this, but I think 4 or 5mm diameter would be better, 75 – 100 mm long with the barrel length marked and four pins inserted (I used 10mm nails) placed about 2 or 3mm longer than the barrel length markings at either end.

Pen #2 Technique



Image 4 - Pen # 2 – Each tube has two intertwined (doubled) 9L x 4B Turks Head knots which when complete equate to a completed Turks Head knot consisting of 18L x 8B.

Even though we are intertwining two knots on each tube, the knots on this pen are much easier to tie. The pattern for the for this is, starting from top pin 1 (T1) to bottom pin 2 (B2) and so on.

Knot 1 (Green) see image 4 –

T1 down to B2,

From B2 go under all cross overs up to T2,

From T2 go over all cross overs down to B3,

From B3 go under all cross overs up to T3,

From T3 go over all cross overs down to B4,

From B4 go under all cross overs up to T1.

For the intertwining knot 2

The bights come up between the nails, so we'll call them 1.5, 2.5 etc and the process is the same as the first knot except this one (the red one) goes under everything that's 'under' and over everything that 'over' as indicated in image 5.



Image 5 – indicating overs and unders in the intertwined knots.

The glueing process is the same as in Pen #1 although on a 6mm mandrel, the completed knot won't fit as tightly on the tube as it did in pen #1. I backed the masking tape up by winding string tightly around the knot to ensure proper adhesion to the brass tube. This one was finished using a clear spray lacquer.

Lessons

Do Not tie the knots too tightly on the mandrel pins or the whole knot will end up shorter than you intended when the pins are removed.

If using knots described in Pen #2, consider either making a third pass in one of the colours or using a smaller diameter mandrel (jig). This may not only assist in a knot that fits more firmly on the pen barrel but may allow a more even tensioning of the knot.

LESSON FOR THE KNOT TYERS: After tying the knots on pen 2, I was reliably informed by someone much more knowledgeable than I, the two knots I call 9L x 4B Turks Heads, are in fact intertwined Matthew Walker Knots.⁵

Conclusion

I learned a lot making these pens and even though I cursed and swore more than usual, I did enjoy making them. I hope someone reading this does too.

Mark Delaforce
Australia
18/04/2024

⁵ Thanks to 'Mabel Marble' from the Ropeworks Facebook Group.