

# A"maze"ing Coin Puzzle Box

Apple Ridge Woodturners

September 10, 2015

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# Outline

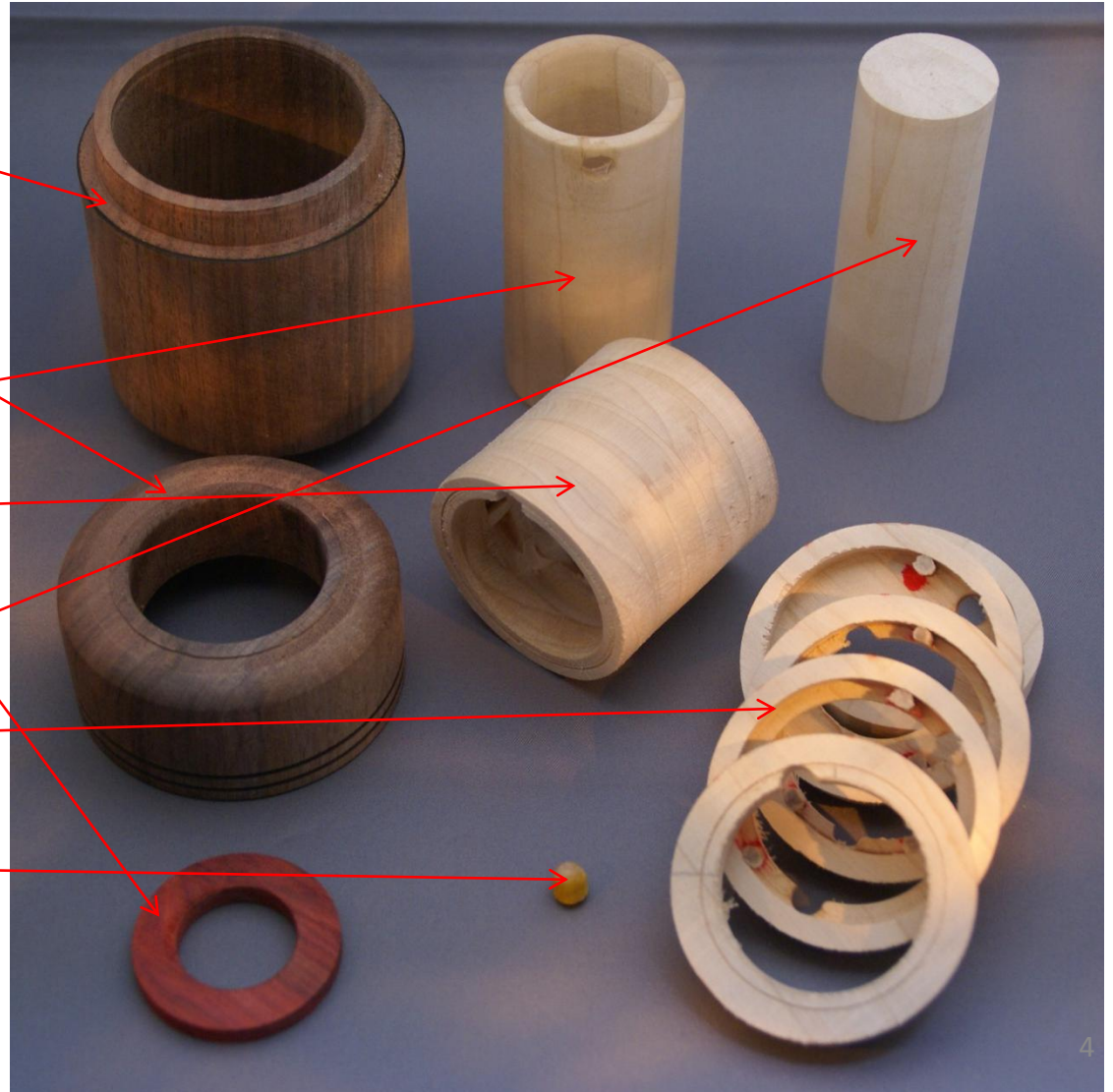
- How I got into coin puzzles
- The components of the Maze Coin Puzzle Box
- What I plan to do tonight
  - Designing the puzzle box
  - Transform a 2D maze into rings
  - Make the rings
  - Make the coin holder
  - Make the pin holder
  - Make the maze block
  - Prepare the lid and base from roughed box blank
  - Put it all together
- Completed Boxes

# How I Got Into Coin Puzzles

- Mike Peace, "Shopmade Threading Jig," *American Woodturner* April 2013 pp30–34.
- John Barkley, *All Screwed UP!* – Turned puzzles and boxes featuring chased threads, ISBN 0941936-93-7
- Focus on coin puzzles
- Designing coin puzzles that did not require threads
- James W. Follette, *New Wood Puzzle Designs – A guide to the Construction of Both New and Historic Puzzles*, ISBN 0-941936-57-0
- Bruce Viney, Green Slidey puzzle
  - Homemade Puzzles
  - <http://homepage.ntlworld.com/bruce.viney/index.html>
- Too easy – Too hard – Just right

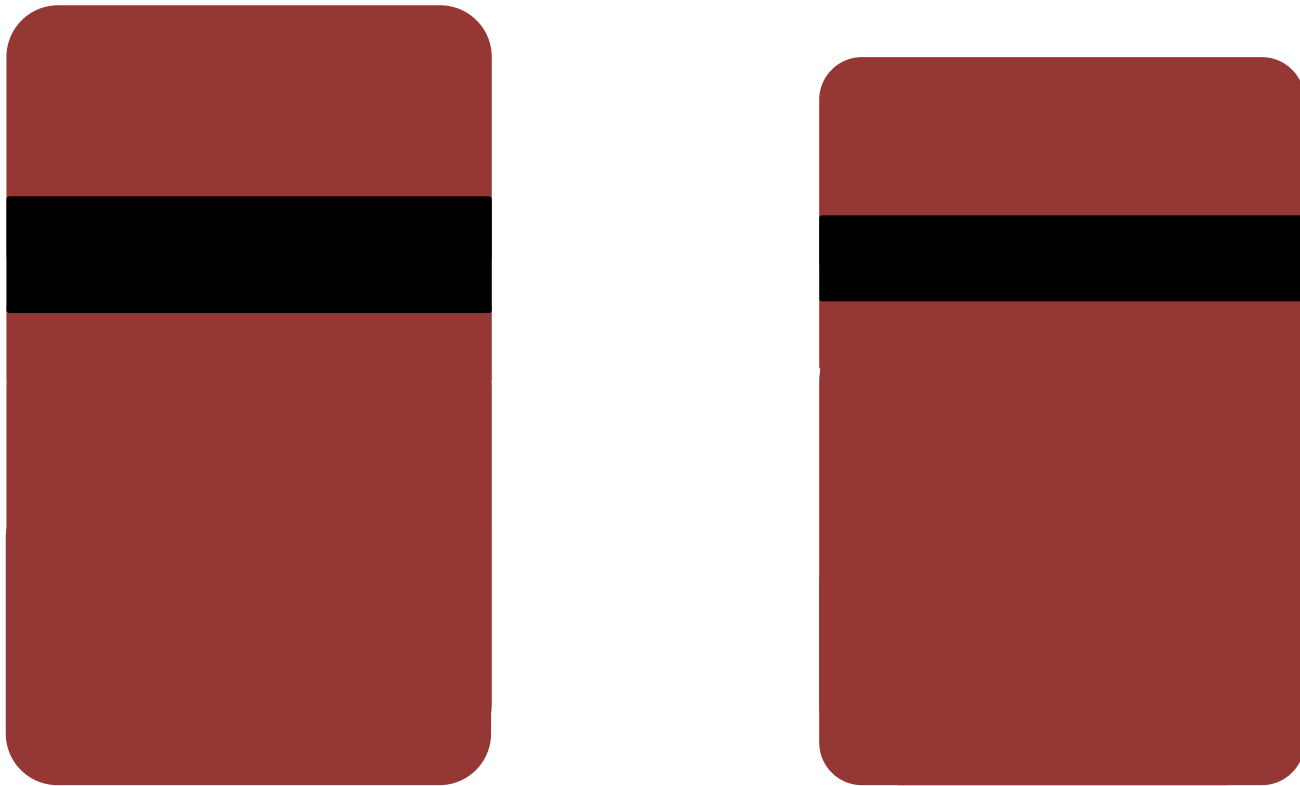
# The Components of the Maze Coin Puzzle Box

- Base
- Lid
- Insert
- Pin holder
- Ring block
- Coin holder
- Rings
- Pin



# Designing the Puzzle Box (1)

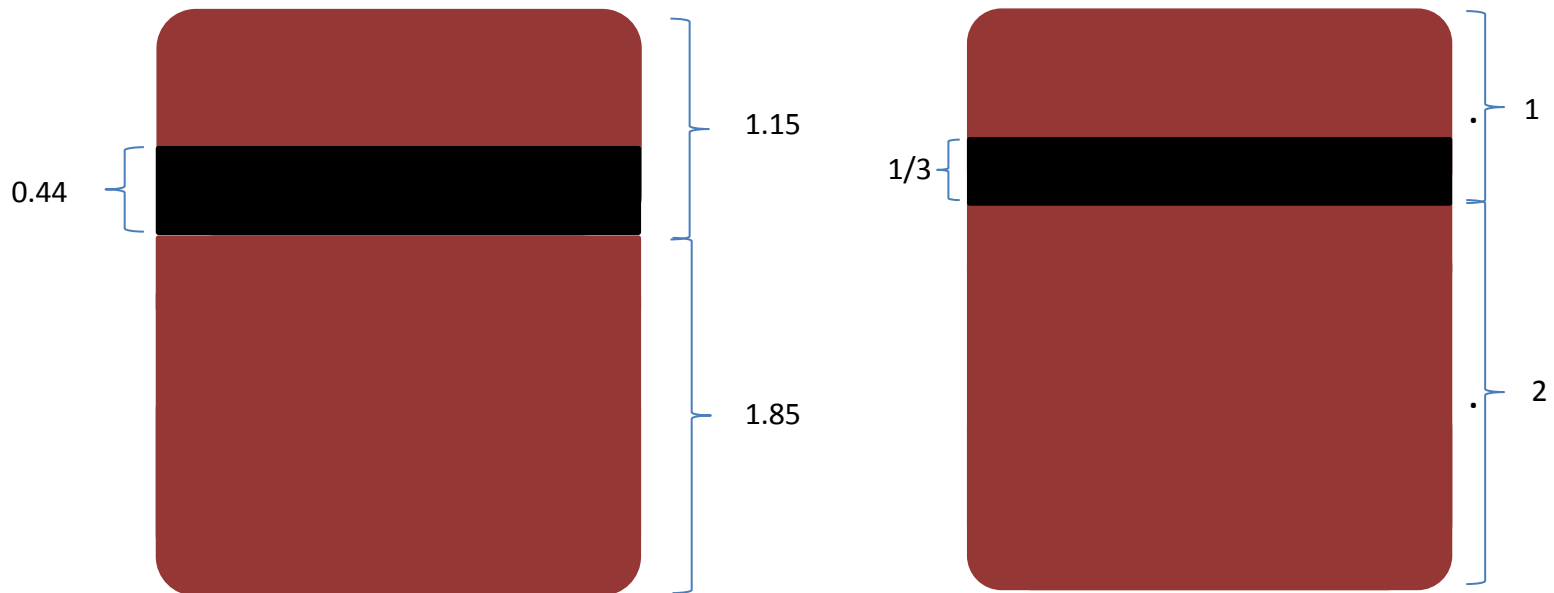
Width = 2.5"



Which Box Looks the Nicest?

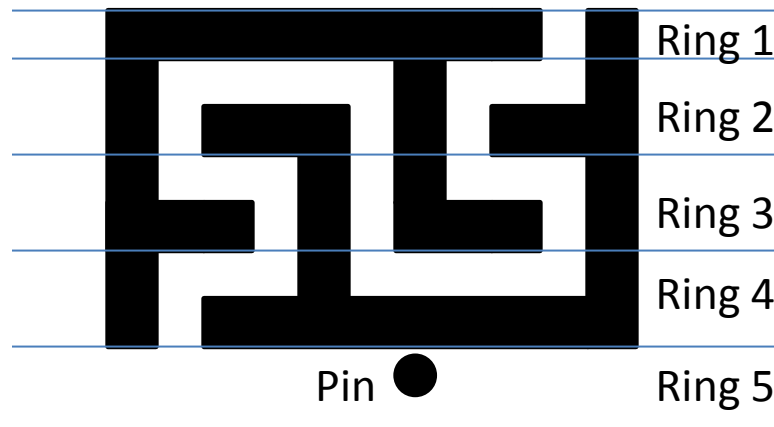
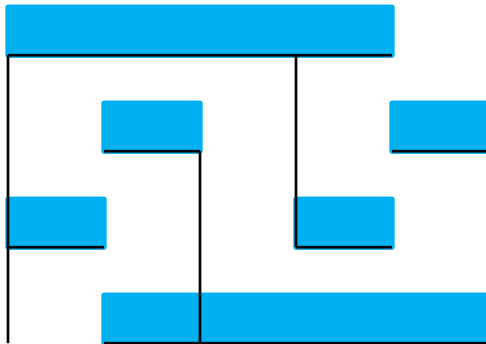
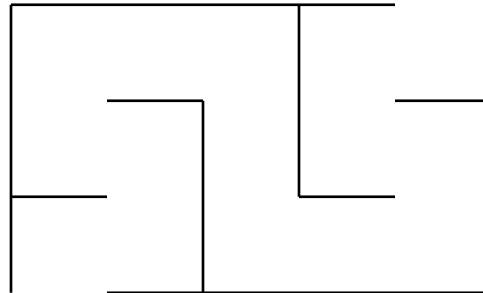
# Designing the Puzzle Box (2)

Width = 2.5" Height = 3"



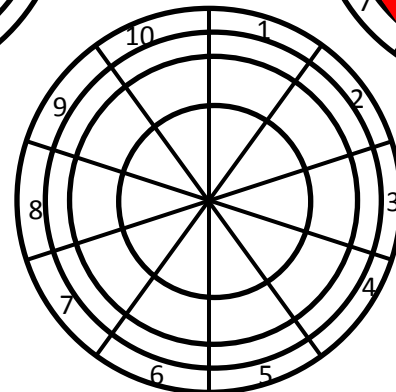
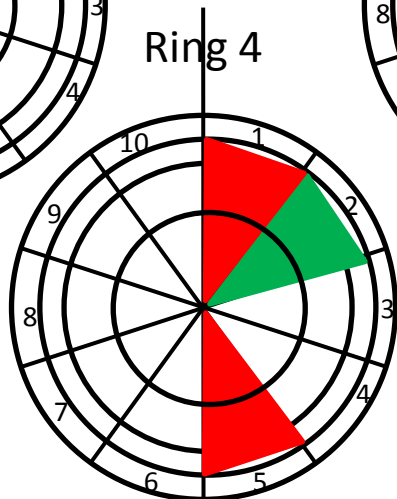
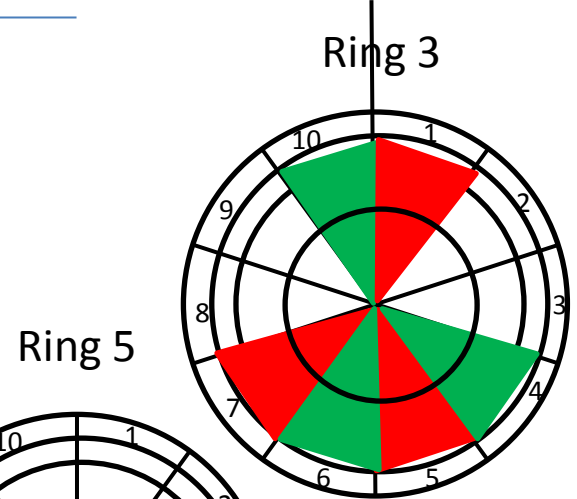
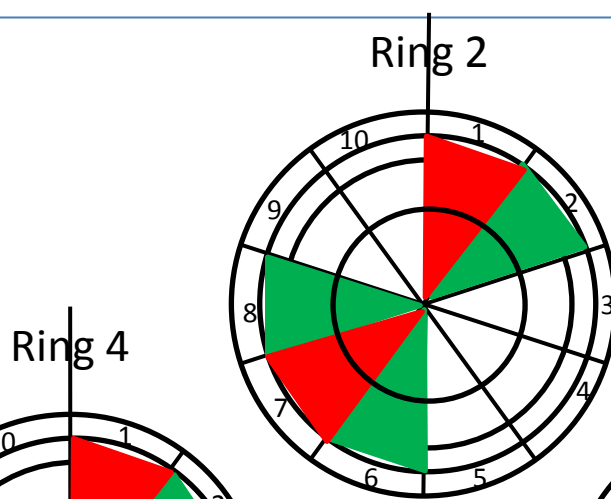
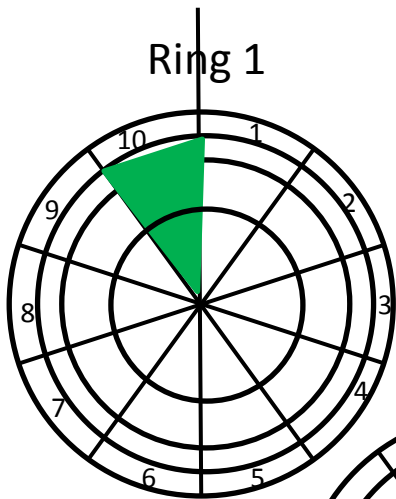
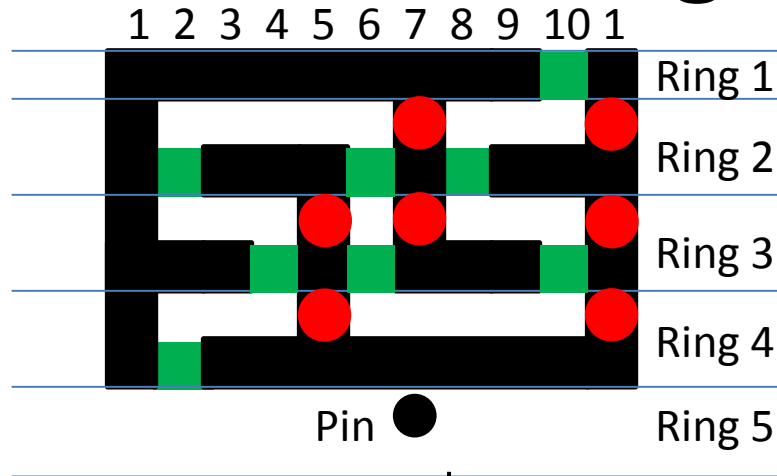
Which Box Looks the Nicest?

# Transform a 2D Maze Into Rings



# Maze & Resulting Rings

- Stop
- Cutout





# Make the Coin Holder

- Choose wood  $1\frac{1}{4}$ " by 4", straight grain & dry.
- Mark center of one end and mount in chuck.
- Bring up revolving center in tailstock.
- Turn to  $1\frac{1}{8}$ " from chuck out.
- Part off at chuck end.
  
- Or just turn between centers to  $1\frac{1}{8}$ ".

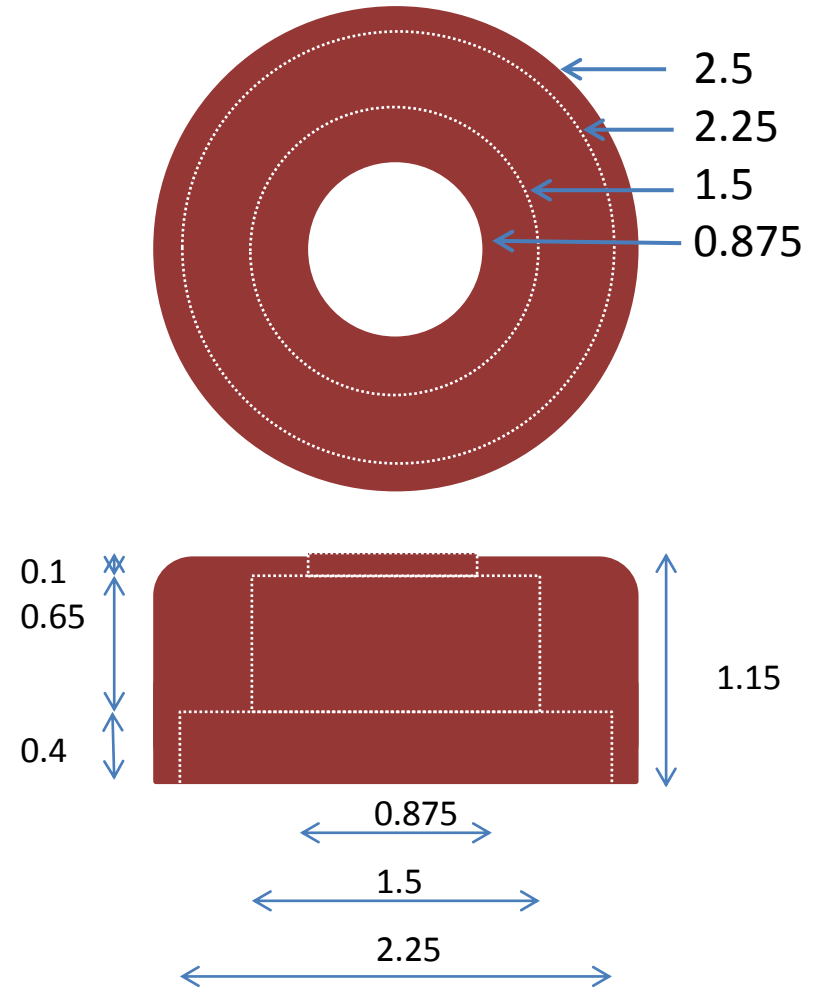
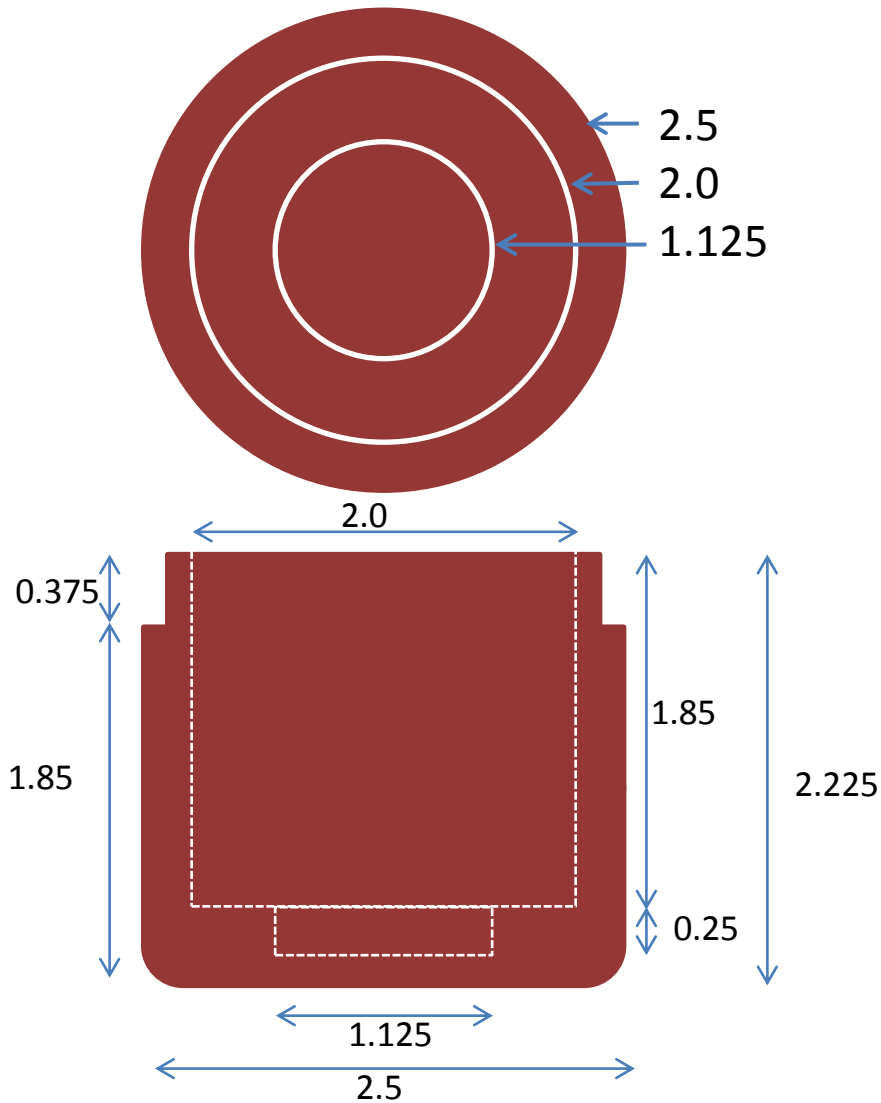
# Make the Pin Holder

- Choose wood 1½" by 4", straight grain & dry.
- Mark center of one end and mount in chuck.
- Bring up revolving center in tailstock.
- Turn to 1½" from chuck out.
- Drill ¼" hole ¼" from the tailstock end for pin.
- Drill 1⅛" hole from tailstock end to chuck end.
- Sand inside and make sure coin holder fits well.

# Make the Rings and Ring Block

- Choose material. (5 pieces  $\frac{3}{8}$ " by  $2\frac{1}{4}$ " inches)
  - End grain, Side grain, Plywood
- Turn round, mark the top, and number the 5 disks.
- Pre-drill the disks to make rings (mark each disk's position in chuck)
  - Disk 1:  $1\frac{1}{8}$ " hole thru and just mark where  $1\frac{3}{4}$ " hole would be
  - Disks 2-4:  $1\frac{1}{8}$ " hole thru and  $1\frac{3}{4}$ " hole  $\frac{1}{4}$ " deep
  - Disk 5:  $1\frac{3}{4}$ " hole thru
- Mark ring 1-4 where stops and cutouts go using 2 colors using slide 8.
- Drill  $\frac{1}{4}$ " holes inside and tangent to  $1\frac{3}{4}$ " hole where there's a cutout.
- Drill  $\frac{1}{8}$ " holes inside and tangent to  $1\frac{3}{4}$ " hole where there's a stop.
- Glue  $\frac{1}{8}$ " dowels in each stop hole letting them extend on top and bottom of ring.
- When glue is dry, sand top and bottom of rings flush smooth.
- Remount rings 1-4 and drill  $1\frac{1}{2}$ " hole thru each.
- Wax the partly turned pin holder and use it to glue the 5 rings together.
- When the glue is dry, turn ring block down to 2" diameter.
- Remove ring block from pin holder, sand wax off pin holder, and part off near chuck.

# General Size of Box Base and Lid



# Prepare the Lid and Base from Roughed Box Blank

- True the tenon on the lid.
- Mount the lid in chuck and true bottom.
- Drill the lid out 2" diameter and about 0.4" deep.
- Turn inside of lid to desired thickness of lip on base, leaving desired thickness of lip on lid. Maybe about  $\frac{1}{8}$ " for base lip.
- True tenon on the base and true top.
- Mount the base and drill out
  - 2" diameter by  $1\frac{7}{8}$ " deep
  - $1\frac{1}{8}$ " diameter by  $\frac{1}{4}$ " deep in bottom
- Turn a  $\frac{3}{8}$ " long tenon on top of base to tightly fit the lid.
- Mount the lid on the base with grain aligned.
- Drill  $1\frac{1}{2}$ " hole thru lid.
- The outside box can be turned and sanded. Leave a extra wood at the top so insert and be turned smooth.

# Putting it All Together

- Glue the coin holder onto the base.
- Wax the pin end of the pin holder and both ends of the ring block and place in base.
- Glue the pin holder to the lid and secure the lid to the base.
- Let glue dry.
- Drill a  $1\frac{5}{8}$ " or  $1\frac{3}{4}$ " hole in the assembled box to about 0.1" below where the top of the box is desired, for the insert.
- Drill a 1" hole in the top of the coin holder about 2mm deep.
- Enlarge the 1" hole so \$1 coin fits, but not too tight.
- Turn an insert to fit the top of the box. Drill a  $\frac{7}{8}$ " hole thru the insert. Glue the insert in the top of the box.
- When the glue is dry, turn the top of the box as desired.
- Remove the lid and turn the tenon on the top of the base so the lid fits well, but not tight.
- Remove the base from the chuck and turn the bottom.
- Turn the pin from  $\frac{1}{4}$ " dowel and glue it in the pin holder.
- Apply whatever finish you want.

# Completed Boxes

