How to make spinning tops

By Frank Hutchison

According to Wikipedia, the top is one of the oldest recognizable toys found on archaeological sites. Spinning tops originated independently in cultures all over the world.

The Inland Northwest Woodturners have in years past asked members to make spinning tops and bring them to the December meeting. There, we have competitions to see who could spin the longest while enjoying the good company, food and drink. Afterwards, the tops would be taken to the local children's hospital to be given to the children who have to spend the Holidays in the hospital.

We are inviting all woodturners to participate this year.

To help you get started, here are several ways to make spinning tops:

The Classical Woodturner's Spinning Top

1. Decide what size you want the spinning top to be – or, rummage through your small-pieces-but-too-good-to-throw-out bin – and select an appropriate size chunk of wood.
2. Mount the wood on your lathe using your favorite means.
3. Turn the top to the approximate shape as shown

The point shouldn't be too sharp – blunt points seem to turn longer.

4. Sand through the grits to 400 grit.
5. Apply your favorite finish.

The Composite Spinning Top

This is a method I learned from a woodturner that produced literally hundreds of tops using this method.

1. This method requires either ¼" or 3/8" dowels and ¾" board stock.

2. Cut disks of out the ¾" board stock slightly larger than the final diameter of the spinning tops and drill either a ¼" or 3/8" hole in the center depending on the dowel size you are using. One way to create these disks quickly is to use a hole saw with a drill press.

3. Glue a 3-4" length of dowel through the disk with at least ¼" extending below the disk and let the glue cure completely. You can sharpen the point of the dowel in a pencil sharpener before you insert it to get a head start on the shape if you wish.

4. Secure the handle of the top in a chuck. The chuck can be a 4-jaw pin chuck or a collet chuck.

5. Shape the disk to the desired shape and put a point on the dowel extending below the disk.

6. Sand through the grits to 400 grit.

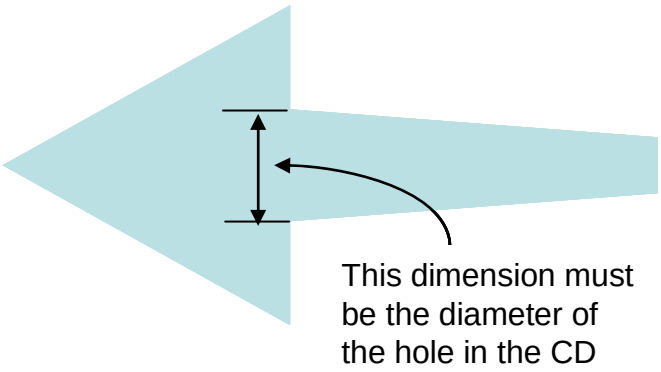
7. Apply your favorite finish.

The Multi-Material Spinning Top

These tops are ideal for long spinning but, the CDs do break and a sharp edge can result. On the other hand, you can using a CD labeling program to create custom spinning tops – the label acts to keep the parts of the CD together in case of it being broken.

1. You can use either a single piece of wood or a composite as in the earlier methods but the diameter needs to be smaller – 1-1 ½" at most. The length of the top will be the same as in the earlier models.

2. Shape the wood to the shape shown with the critical dimension being the diameter of the hole in the CD. The CD should slide over the handle of the top and rest flat on the base.



3. Sand through the grits to 400 grit.

4. Apply your favorite finish.

5. Glue the CD to the wood – I recommend 5-minute epoxy.

Decorating Options

Bonnie Klein offers hands-on classes at the annual AAW Symposium to kids and one of the most popular is the spinning top class. Bonnie has the kids decorate their tops using markers while the top is still on the lathe. She also uses a chatter tool on her tops. The options are many to make each top a distinctive work of art.

Perhaps Bonnie's signature top is the spin top box with a threaded lid:

You can find directions here:
http://www.bonnieklein.com/Library/SpinTopBoxWithThreadedLidColor.pdf

Hints for a Successful Spinning Top

1. The point shouldn't be too sharp – blunt points seem to turn longer.

2. The top will be more stable with a wide disk shape rather than a cone shape. The term used in physics is moment of inertia and is sum of the mass at each point times the square of its distance from the center. The ideal top would have all of its mass on the outer ring – let me know if you achieve this.

   Again, quoting Wikipedia, "The action of a top relies on the gyroscopic effect for its operation. Typically the top will at first wobble until the shape of the tip and its interaction with the surface force it upright. After spinning upright for an extended period, the angular momentum, and therefore the gyroscopic effect will gradually lessen, leading to ever increasing precession, finally causing the top to topple in a frequently violent last thrash."

3. The point where the fingers hold the top should not be too thick – generally a ¼"- 3/8" diameter is best. It allows the user to impart more rotational motion to the top which improves the ability to spin upright. The term used is angular momentum and it increases as the square of the speed – double the speed and the angular momentum increase 4-fold.

4. The surface the top is spun on should be smooth but not slick.