

Making Dreams Come True

Building a Little Great Wheel

BY MARGARET HEATHMAN

FOR THE MEMBERS of the Peachtree Handspinners Guild, our dreams of owning a great wheel were fulfilled when we had a chance to build our very own Little Great Wheels in a hands-on workshop with master craftsman Gene Lurwig. We love that the Little Great Wheel fits in any room in our homes and was inexpensive to build, and we've already spun skein after skein of beautiful yarns on our little wheels.

The Guild asked Gene to present a woodworking workshop for our annual Plying the Arts event. We thought he would have a small project for us—a niddy-noddy or nøstepinne, perhaps. When he asked if anyone would be interested in building a spinning wheel made from parts from the hardware store, the answer was a resounding “Yes!”

Gene went to work designing the wheel. Several weeks before the workshop, Paula Vester, Jim and Kelly Wilson, and I drove to Gene's woodshop on a Saturday

to gauge how much time it would take nonwoodworkers to build the wheel. We came at the project with varying degrees of woodworking and tool knowledge, so it was helpful to see how long each of us took to complete our wheel. Gene had built jigs for drilling the holes in their proper locations to save time. We discovered that, although we had each bought our parts from the same chain of home improvement stores, we had bought them in different locations and they varied in size up to a quarter of an inch. Gene adjusted, measured, sanded, and helped us build our wheels. We needed to be able to build the wheels in three hours. It took us five hours with the adjustments and a break for lunch, so we decided it ultimately could be done in three hours.

In three workshop sessions of the Plying the Arts weekend, eighteen Little Great Wheels were built. The final ses-

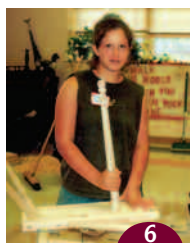
sion of the weekend included the Spinning on Your (Little) Great Wheel workshop so participants could begin spinning with their wheels immediately.

It is relatively simple to make your own Little Great Wheel, especially if you are handy with tools or know someone who is. ☺

MARGARET HEATHMAN is a creativity coach and fiber arts instructor as well as the author of *Knitting Languages*, *Romancing the Wool*, and other knitting design books. When she's not organizing fiber conferences or involved in animal rescues, Margaret spins Georgia cotton on her Little Great Wheel.



A joyful group of Little Great Wheel owners: (in front) Gene Lurwig, (in back from the left) Nancy Ratliff, Betty Jones, Wendy Colbert, Gloria Corbett, Lydia Still, Leda Still. The Little Great Wheel on the floor without legs was built by Gloria Corbett—she uses it on a table in her camper.



1) Pieces for making the Little Great Wheel. 2) Gene is helping Gloria drill the leg holes into the table on the drill press. 3) Lydia and Gene drill the leg holes on her wheel. 4) Gene makes the groove for the drive band with the router in the parking lot. 5) Spindle, maidens, and mother-of-all assembly. 6) Lydia fits the front leg into the table. 7) Heather McCloy assembles the wheel upright into the table.

PHOTOS BY PAULA VESTER

Make Your Own Little Great Wheel

BY MARGARET HEATHMAN AND GENE LURWIG

Read through the instructions completely first as there are tips and tricks that will make the project easier, quicker, or less expensive. Once all the materials are properly prepared, it should take less than two hours to assemble your Little Great Wheel and begin spinning.

Shopping for materials

Before going shopping, drill a $1\frac{3}{8}$ " hole through a piece of scrap wood and take this with you. To drill the hole, you can use a drill press or a power hand drill with a $\frac{3}{8}$ " chuck and a $1\frac{3}{8}$ " Forstner bit.

Take the block of wood with you when shopping for the wheel legs, upright, and maidens. These parts should be available at home improvement stores, hardware stores, or lumber supply stores. We bought ours from a Lowe's Home Improvement center. There are various styles to choose from; we used Early American. You also can use $1\frac{3}{8}$ " dowels cut to size.

Put selected legs in the hole of the piece of scrap wood. Select legs that fit snugly in the hole. Too tight is better than too loose as too tight can be rasped or sanded to fit.

For the mother-of-all and the table, ask about scrap pieces of lumber where you are shopping or ask the foreman at a housing construction site for scraps. Do not buy pressure treated wood.

Building the Little Great Wheel

Remove any bolts, tags, or staples from the ends of all the legs.

Front leg

Measure about 6" from one end of the table. Centering from the sides and using the Forstner bit, drill a $1\frac{3}{8}$ " hole straight down $1\frac{1}{4}$ " deep (see figure 1). Do not drill all the way through the table!

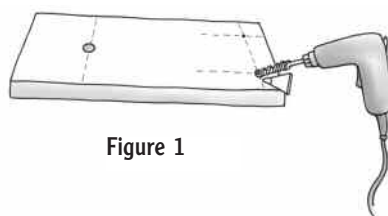


Figure 1

Front leg—drill a $1\frac{3}{8}$ " hole $1\frac{1}{4}$ " deep (do not go all the way through the table!). Drill the back legs at 40-degree angles.

Back legs

For the angled 16" legs, measure 2" in from sides and 2" in from end. These points will be the centers of the $1\frac{3}{8}$ " holes. Cut a piece of cardboard at a 40-degree angle to use as a drilling guide. If using a power hand drill, drill from one corner of the table toward the center; begin drilling vertically, and then slowly angle the drill to a 40-degree angle. Drill slowly until angled side is deep enough to hold legs securely. Do not drill all the way through the table!

Place legs in holes to check fit. If legs are too big for holes, gently rasp bottom $1\frac{1}{4}$ " of legs until legs fit in holes. If legs are too loose, rub glue on bottom $1\frac{1}{4}$ " of legs and roll in sawdust or wrap with wood shavings and let dry. Repeat until legs fit securely. Do not attach legs at this time.

Project Notes

Materials

For spindle: $\frac{1}{4}$ " zinc-plated steel rod, 12" long
For whorl: $1\frac{1}{4}$ " to $1\frac{1}{2}$ " diameter dowel (at least 3" long)
For table: 1 piece of pine, 2" x 8" x 22"
For mother-of-all: 1 piece of pine, 2" x 4" x $5\frac{1}{2}$ "
For wheel: 18" diameter circular pine table top, $1\frac{1}{4}$ " thick
 (1) 22" Early American leg (front leg)
 (3) 16" Early American legs (back legs and wheel upright)
 (2) 8" Early American legs (maidens)
 Scrap piece of hardwood at least 2" x 2" with $\frac{1}{4}$ " diameter hole drilled 1" deep in center
 (2) short pieces of $\frac{5}{16}$ " dowel ($\frac{1}{2}$ " long)
 4" strap hinge
 (3) decorative knobs or drawer pulls (optional)
 $\frac{5}{16}$ " carriage bolt, 3" long (for mother-of-all)
 $\frac{5}{16}$ " carriage bolt, $3\frac{1}{2}$ " long (for wheel shaft)
 (4) $\frac{5}{16}$ " washers
 (2) $\frac{5}{16}$ " nuts
 (7) $1\frac{1}{4}$ " drywall screws
 (2) #8 1" pan-head screws
 Yellow wood glue (carpenter's glue)
 Petroleum jelly
 5-minute epoxy
 Sandpaper, medium
 Masking tape
 Cup of water
 6' cotton string for drive band
 Piece of paper, book, block of wood, or any other square to guide drill straight down
 A cork (to put on the end of your spindle when not in use)

Tools:

Square-sided wood rasp
 Rat-tail file
 $\frac{5}{16}$ " tap, 18 threads per inch
 Wrench (to turn $\frac{5}{16}$ " tap)
 Bench grinder or access to machine shop
 Drill bits: $\frac{19}{64}$ ", $\frac{1}{8}$ ", and $\frac{17}{64}$ " bits and $1\frac{3}{8}$ " Forstner bit
 Drill press or $\frac{3}{8}$ " chuck electric hand drill
 Flat blade screwdriver
 Phillips screwdriver
 Hammer
 1" wide putty knife
 Pencil
 Safety glasses
 Leather glove (to wear when grinding point on spindle)

Wheel upright

Turn table over. At the end that has the two angled leg holes, measure 5" from end of table and 2¼" from edge of table (*Note:* Measure 2¼" from left-hand side if you want a right-hand draw or 2¼" from right-hand side if you want a left-hand draw). Drill one 1⅜" hole straight down for 1¼". Do not drill all the way through the table!

Wheel

Mark the center of the rim on the pine table top, then make the groove (¾" wide and ⅜" deep) in the outer edge of the wheel rim, either by using a router, table saw (see figure 2), or by filing the groove by hand with the rasp. If you are filing the groove with the rasp, make the groove deep enough so that the band doesn't come off (between ¼" and ⅜"). Do not sand the groove.

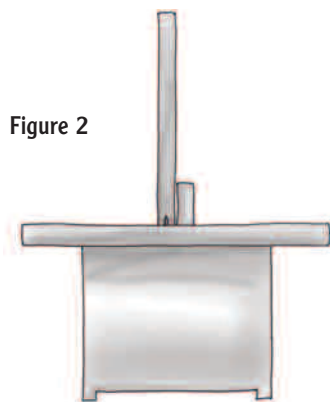


Figure 2

Make a groove along the edge of the pine table top.

Find the exact center of the wheel and mark it. Using a square to guide the drill to be sure the hole is drilled straight (or else the wheel will wobble), drill a ⅝" hole all the way through the wheel. Using one of the 16" legs, measure 4¼" down from the decorative end. Drill a ⅝" hole straight through the leg. Do not assemble yet.

Wheel shaft carriage bolt

Measure 1¼" from the square at the head end of the 3½" carriage bolt. Apply masking tape from this point to the end of the bolt (see figure 3). Mix enough



Figure 3

Cover the end of a carriage bolt with masking tape.

5-minute epoxy to cover the 1¼" of exposed threads. Apply with the 1" putty knife as smoothly as possible. Let dry at least 15 minutes. A second coat may be needed. If necessary, sand smooth to ⅝" diameter after drying. Remove masking tape. The epoxy will keep the threads from chewing up the wood.

Whorl

If making the groove for the drive band by filing by hand, you can cut the piece of dowel to its 1¾" length and hold while filing the groove in the center of the piece. If making the groove with power tools, use the longer piece of dowel to keep hands away from machinery, and then cut to 1¾" length, centering the groove in the piece. Do not sand the groove.

Using a 1⁄64" drill bit, drill a hole end-to-end through the center of the whorl piece. (If using a power hand drill, you may need to make more than one to get one that is straight enough.)

Maidens

Measure 5⅞" from the bottom (non-decorative end) of the maidens. Drill a 1⁄64" hole straight through each maiden. (*Note:* If you are using a dowel instead of purchased legs for the maidens, you will not need to do the following step because there are no holes to fill in the dowel as there are in the ends of the purchased legs.) Using the two pieces of ⅝" dowel, glue and hammer the pieces into the ⅝" holes in the nondecorative ends of the 8" maidens. Cut, file, or sand the dowels until they are flush with the ends of the maidens.

Mother-of-all

Find center of 5½" long piece of 2" × 4" (2¾" is the center). Measure 1⅞" on

each side of center. These points will be the centers of the 1⅜" diameter holes for the maidens. Centering the holes from the sides of the mother-of-all, drill holes to a depth of 1¼" for the two maidens. Now using a ⅛" drill bit, drill a hole through the center of the 1⅜" holes (you will have a hole within a hole).

Spindle

Using the 12" long zinc-plated steel rod, chuck one end into a power hand drill. Wearing leather gloves and eye protection, turn bench grinder on, then turn drill on, and slowly grind 2" of one end of the rod to a gradual sloping point (like a dull pencil point). While grinding, occasionally dip end of rod in cup of water to cool. (If you know someone with a bench grinder at a machine shop, you might ask them to do this step for you.)

Assembling mother-of-all

Temporarily place maidens in holes on mother-of-all. Turn assembly upside down and, using the ⅛" drill bit, drill a hole into each of the maidens about ½" deep. Turn assembly right side up. Place whorl between maidens. There should be about ⅛" of end play. If whorl is too tight between the maidens, sand or grind ends of whorl until play at each end is satisfactory.

Now place the point of the spindle into any scrap of hardwood. Center whorl on blunt end of spindle shaft and, using a hammer, drive whorl down until flush with end of shaft. Place the 2" × 2" block of hardwood with ¼" diameter hole drilled in it on top of the whorl and drive whorl down 1" past end of shaft.

Remove maidens from mother-of-all. Place one maiden on each side of whorl. Return maidens to mother-of-all, making sure that assembly faces proper direction for your choice of right- or left-hand drafting. (If whorl does not spin freely, remove maidens from mother-of-all and from whorl assembly and file maiden holes using a rat-tail file until spindle and whorl spin freely.) When spindle and whorl spin freely, remove

maidens from mother-of-all and whorl assembly and rub petroleum jelly onto the spindle on each side of the whorl. Re-assemble whorl/maiden assembly and place maidens in mother-of-all. Turn the entire piece upside down and, using the two #8 1" pan-head screws, screw through bottom of mother-of-all into ends of maidens. Do not glue maidens!

Wheel upright assembly

Following figure 4, assemble wheel upright as follows:

1. Place washer at head end of $3\frac{1}{2}$ " carriage bolt.
2. Place carriage bolt and washer assembly through the $\frac{5}{16}$ " hole of the wheel.
3. Place one washer, one nut, and another washer on end of carriage bolt.
4. Place through wheel upright.
5. Place remaining washer and remaining nut on end of carriage bolt.
6. Spin wheel, check alignment, and adjust, if necessary. Tighten all bolts.

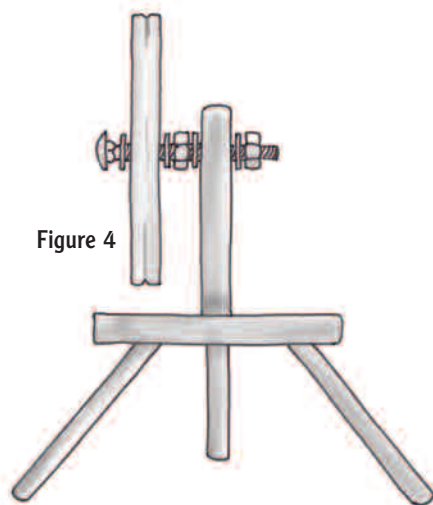


Figure 4

Assemble the wheel upright.

7. If desired, place decorative knob on end of bolt.

Leg assembly

Put glue on end of legs or in leg holes of table. Place legs in proper holes (22" leg goes in single hole at one end, 16" legs go at opposite end). For each 16" leg, drill a $\frac{1}{8}$ " hole at a 45-degree angle

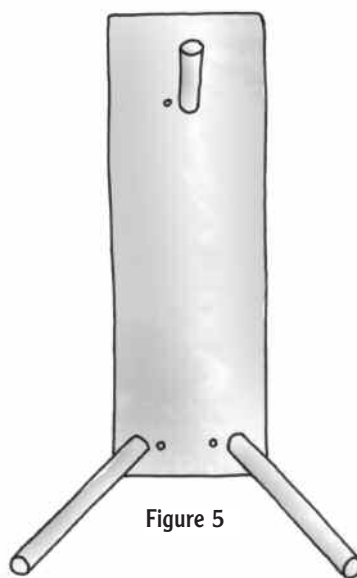


Figure 5

Leg assembly—drill guide holes for the screws that hold the legs in place.

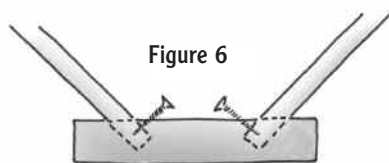


Figure 6

Screw the 16" legs into the table.

through the table into the leg (see figure 5). Now using two $1\frac{1}{4}$ " drywall screws, screw the 16" legs into the table (see figure 6). Set table assembly upright.

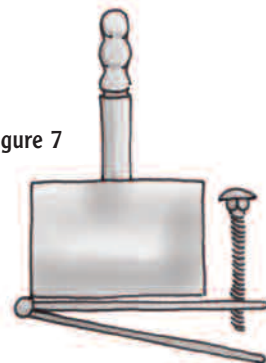
Adding the wheel upright assembly

Standing over the wheel, tap the wheel upright gently into its hole in the table, keeping the wheel parallel with the edge of the table. Wheel upright must fit snugly.

Adding the mother-of-all assembly

Using the $\frac{5}{16}$ " tap, tap one hole in one end only of the strap hinge. Screw 3" carriage bolt into tapped end. Open strap hinge and center mother-of-all on top of carriage bolt side of strap hinge having hinge pin at back edge of mother-of-all and having tensioning carriage bolt toward wheel (see figure 7). Secure strap hinge to mother-of-all with two 1" dry-

Figure 7



Attach the strap hinge to the mother-of-all.

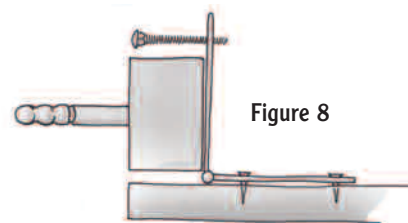


Figure 8

Open the strap hinge so that the back edge of the mother-of-all rests on the table and is flush with the end of the table.

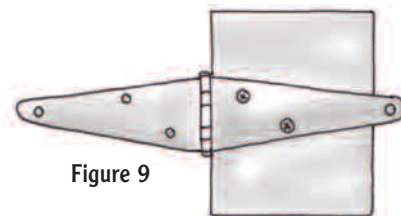


Figure 9

Secure strap hinge to mother-of-all with two drywall screws.

wall screws (see figure 8).

Place assembly on table and align groove in whorl with groove in wheel. Holding assembly in aligned position, open strap hinge so back edge of mother-of-all rests on the table and is flush with the end of the table (see figure 9). Holding the strap hinge tightly against the table, secure strap hinge with three 1" dry-wall screws in the predrilled holes of the hinge. Close hinge, loosen tensioner carriage bolt, and install drive band.

If desired, you can glue a decorative knob or drawer pull to top of tensioner carriage bolt and/or side of wheel to use to turn wheel when sitting down.

Place cork on end of spindle when not in use. ☺

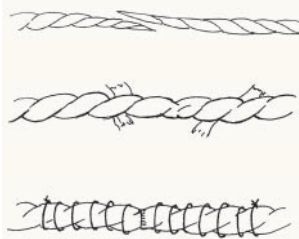
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GENE LURWIG builds and repairs spinning wheels and the many tools that spinners need in his woodworking shop. When he is not working with wood, Gene builds steam trains and pilots a boat to the Gulf of Mexico. For those who would like to make a Little Great Wheel but would like to use only a screwdriver and some wood glue, kits are available. Kits are \$200 (includes postage in the continental United States). Send your check or money order payable to Gene Lurwig to: Gene Lurwig, 455 Stagecoach Wy., Danielsville, GA 30633; (706) 795-5564.

Drive Bands

Drive bands are most often plied cotton twine that will not stretch or fray. Some manufacturers provide a continuous polymer cord that stretches to move between whorls.

Splicing a drive band



If the maiden tilts for tensioning the drive band, position it at the halfway point. Stretch twine around the drive and flyer whorls (spindle and bobbin whorls on a double-band wheel), and mark the location for the join; cut the twine about 2 inches longer.

Remove the twine from the wheel and unply each end. Cut away equal strands from each side on a slant. Twist remaining plies together and whipstitch with sewing

thread for a smooth, strong join.

Some synthetic bands should not be cut; follow manufacturer's directions. Heat-fusible synthetic cord can be cut and the ends heated and joined while hot.

If you tie a band together, use as flat a knot as possible.



reef knot



fisherman's knot

Figure 10. Reprinted with permission from Bobbie Irwin, *The Spinner's Companion* (Loveland, Colorado: Interweave Press, 2001).

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