

PROJECT PLAN - SPIRAL COFFEE TABLE



This fascinating design for a spiral coffee table, was among the first furniture pieces designed and made by Kevin Inkster the Founder of Arbortech Pty Ltd that utilised the Arbortech Woodcarver.

This Project Plan has been spread over four pages to make loading time faster.

Despite its complex appearance the key to construction is surprisingly simple. 13 Sections of $5' \times 1\frac{3}{4}"$ are threaded onto a $\frac{1}{2}"$ steel rod, each piece is given a slight 'twist' like fanning a pack of playing cards.

This produces the spiral effect. Wedge shaped quarters are then glued in to form the table top. Three wedge shaped boards are also glued onto the sides of the base section to create a firm stand.

Note: Read through the entire plan first, before beginning and remember that safety is **YOUR** responsibility - think **SAFETY FIRST** and ensure that you are wearing correct safety gear and dust protection.

Cutting List.

For the spiral column and two cross boards numbers 1 to 14 at Fig 7

$4 \times 3' 3\frac{1}{2}" \times 1\frac{3}{4}"$

There are 22 wedge shaped sections used for the table top and base support, any TWO are cut from one length of $1' 6" \times 5" \times 1\frac{3}{4}"$

$1' 6" \times 5" \times 1\frac{3}{4}" = \text{Total required to cut 22 wedges}$
 $16' \text{ of } 5" \times 1\frac{3}{4}"$

Note. Two of the wedge sections in the base are very narrow and could be cut from one wedge piece but 22 full wedges allows a comfort margin.

Also required: $1 \times \frac{1}{2}"$ steel rod, $1' 8"$ long threaded each end, 2 nuts & $1"$ dia washer. ($\frac{1}{8}"$ thick)

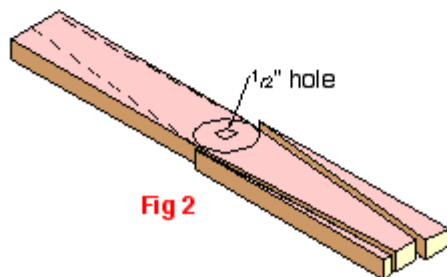


Fig 2

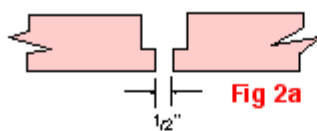


Fig 2a

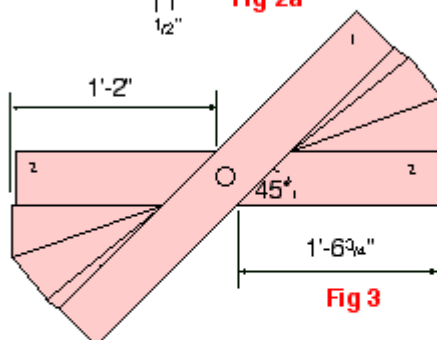


Fig 3

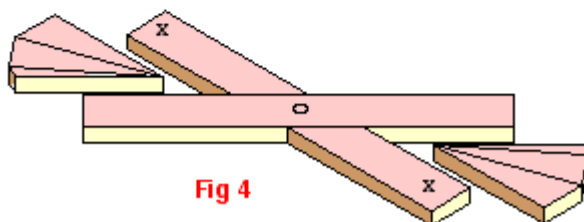


Fig 4

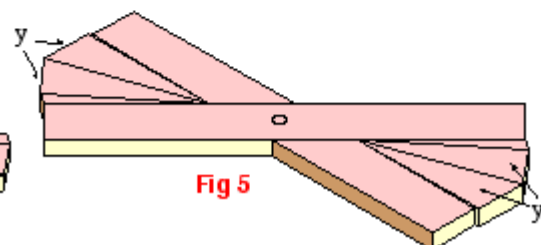


Fig 5

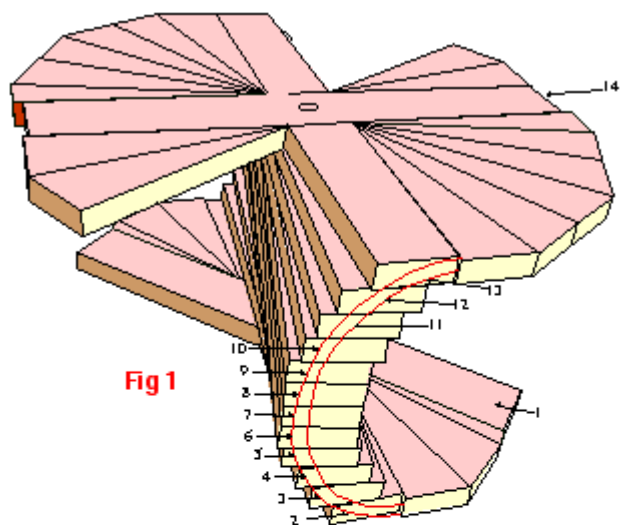


Fig 1

Method

1. Saw to length and dress 4 sides of the 14 lengths of 3' 3 1/2"x 5"x 1 3/4". These lengths are shown and numbered at Fig 1. 1 - 14

2. Drill No. 1, 3 to 12 & 14 with a 1/2" hole clean through in the centre middle see Fig 2.

3. Counter drill a 1" dia hole, 1" deep, on boards No. 1 and 14 ONLY. See Fig 2.a This allows the nuts & washers to be counter sunk in the top and bottom boards. Board 14 must be neatly drilled with a forstner bit, with no tear out as this hole will later be plugged.

4. Board No 2 is now measured and cut into halves with a 45° to one end each and 90° to the other ends. See Fig 3. Cut accurate faces as these two halves will be butt jointed to the sides of board No 1. Prepare biscuit joints on these end faces (dowel if you prefer).

5. Saw board No. 13 into two lengths, 17 1/4" long. The 5" of waste represents the thickness of the cross board No 14. *There is the option to mortise and tennon the two halves of 13 into board 14 or even an accurate halving joint, equally biscuit joints or dowels can be used as it is supported by being glued to the length of board No. 12.

6. To reduce the amount of rotary shaping time later, some waste material can be sawn away from the spiral timbers (ie Nos 3 - 12) This is drawn onto the ends of the boards and as shown at Fig 2, a cutting line is transferred to the board face ready for sawing. This is optional as the waste can be shaped away after gluing.

7. Thread nut then washer to one end of the steel rod, place on level flat floor, with rod standing

up and thread on first the base board No 1, (counter drilled 1" hole downwards. Position the two halves of board No 2 as shown at Fig 4 x, then thread on boards No 3 to 12. Loosely position the two halves of board No 13.

This dry run should look like the drawings at Fig 7 and Fig 9. Fig 6 shows side elevation view without boards No. 1 and No 2.

8. Now take your time to fan out the ends of these boards as shown in the drawings. Tighten the top nut and washer to hold the many pieces firm. Take close note that board No2 (now sawn in half) and No 13 occupy the full 5" width of the board so no waste material there can be sawn away but rather shaped away later.

9. Now mark clearly onto the end sections the curving spiral. Mark both ends! Allow a waste/error margin. Finished thickness should be about 1 3/4" so that the spiral edge flows into and matches the wedge shaped edge thickness. (After shaping is completed, the edge can be bevelled to lighten the appearance. See Fig 13 a).

10. Fig 2 shows how lines are transcribed onto the face of most boards to show the waste sawing line. Every saw line runs back to the middle outside edge so that a propeller shape emerges on each board in the spiral. Later when shaping, you can, if you wish, accentuate this hub shape. Of course the steel rod is contained in

the middle of this hub.

11. Now disassemble the spiral, mark on the waste lines, and saw to waste where appropriate. Note that when clamping the spiral together, which is done in sections, the clamp jaws will require the square edge of the boards to get a grip for tightening. Look at the drawing Fig 1 and plan where you will position the clamps ahead of time.

Preparing The Wedge Shaped Sections.

Fig 10, 11 & 12 shows the make up plan for the wedges which make the top of the table. Fig 4 & 5 also show how three wedges each are used to make the base. The wedges are first glued up oversize then accurately sawn and planed to fit.

12. Prepare the wedges to the measurements shown at Fig 12. Good quality rub joint faces are required. Biscuits or dowels can be used to reinforce the joint line. Fig 10 shows the plan view of the table top segments glued in position, Fig 8 shows another perspective of the wedges used to build the top. Also prepare the two sets of fan segments shown at Fig 4 and Fig 5 for the base. Again, allow these to be oversize.

Note that the wedge sections are all shown over length. After the table has been glued together, a radius is drawn as shown at Fig 10a and the waste material is

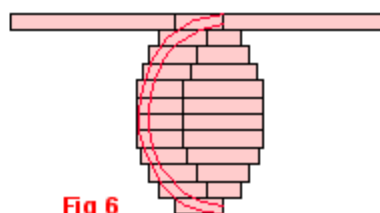


Fig 6

Assemble the pieces before carving and draw on Spiral Curve

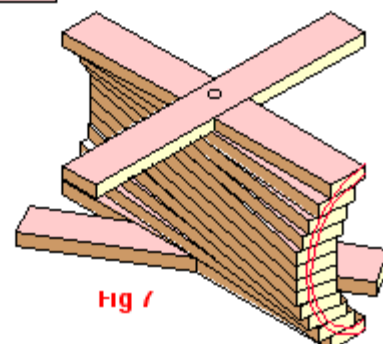


Fig 7

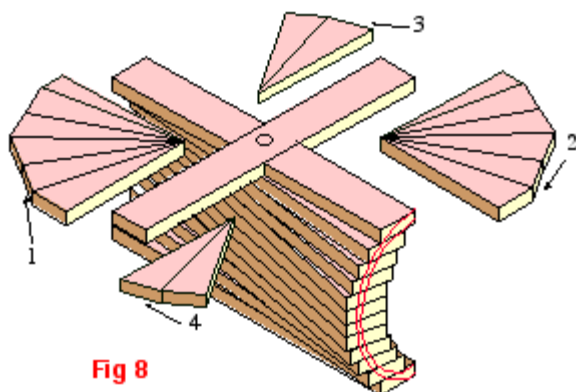


Fig 8

trimmed away with a router to provide a round table top.

13. Now that all the sections of wood have been prepared, the shaper blank can be progressively glued together.

Note. Always clean up excess glue whenever possible.

a. Glue the two halves of No 2 to the sides of No 1 see Fig 4

b. Insert threaded steel rod with nut and washer assembly into section No 1, and progressively glue on top of each other, sections No's 3 to 12. Glue as many at one time as you feel comfortable with and have appropriate clamps for.

c. Glue in position section No 14. Find the correct location by loosely positioning the two halves of section 13.

Fit the washer and nut with a plug spanner, this assists in the clamping process. This top nut should be locked in position as later it will be plugged over. All future adjustments will be made via the nut in the bottom of the table.

14. Glue in position the two halves of section No. 13 with chosen joint (see Method No 5).

15. Glue the base wedges shown at Fig 5. y into position. Ensure close fitting rub joints are achieved. Pull these wedges into each other thus tightly into the corner with a sash clamp position from y to y at Fig 5

16. Glue in position the four wedge shaped sections shown at Fig 8. items 1,2,3, & 4. Biscuit jointing is ideal. Glue wedges 3 and 4 at Fig 8 first with F clamps and then wedges 1 and 2. It is important that wedges 1. and 2. at Fig 8 fit exactly into the 90° positions. Which ever method you use to

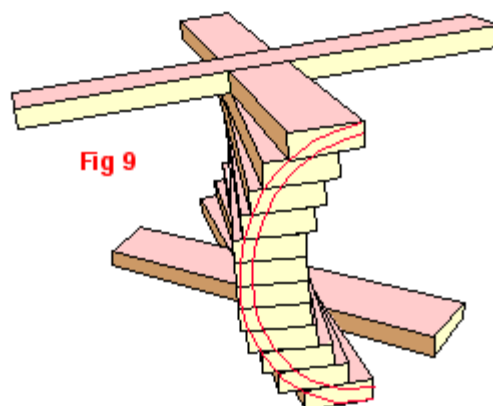


Fig 9

saw them to size, allow final size cuts with a sharp lightly set No 4 smoothing plane. As with the base wedges, a sash clamp positioned diagonally across can pull both wedges in at one time. The shaper blank is now complete.

17. Make a 1" dia plug from the same timber either with a plug cutter or turned on the lathe.

Shaping

Shaping is confined to the spiral column and the base section. It does not really matter where you start to shape. However, it is better to shape smaller amounts of wood away all over the surface rather than trying to finish shape one particular area ahead of the rest. By shaping 'overall' you will slowly bring out a more balanced profile.

A common fault, is NOT to shape DEEP enough. Try not to be over cautious about removing the waste material. That hub shape surround-

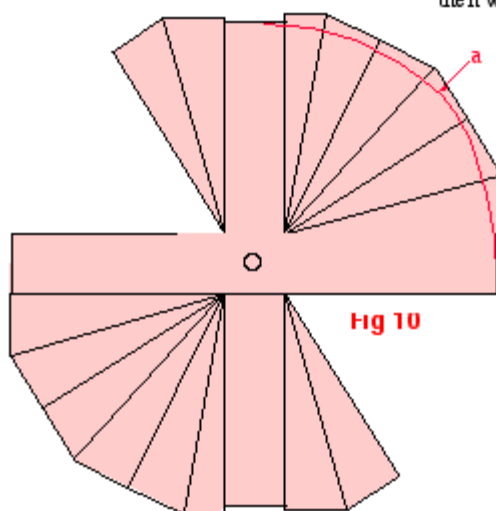


Fig 10

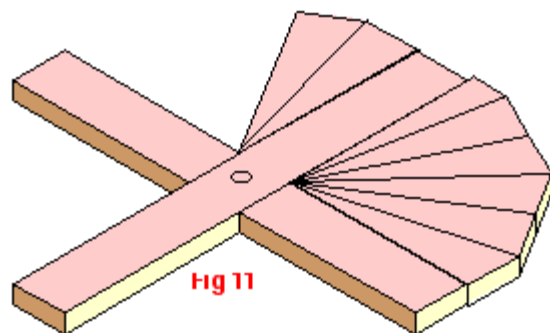


Fig 11

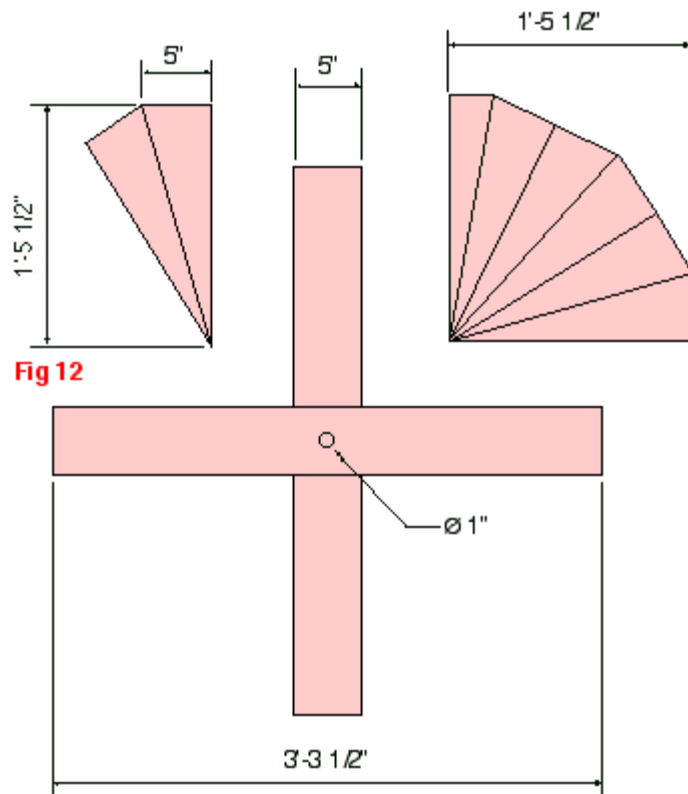


Fig 12

Fine sand, either with an off set orbital sander, or by hand with 80 grit, reducing to 120 grit. Finish by hand sanding with an appropriate grit.

Finishing

This table was sprayed with Miroton, rubbed back with fine wire wool dabbed in furniture wax.

ing the steel rod should be well emphasised. Stop frequently and view from different angles.

As the final shape appears, use a coarse 40 grit abrasive fitted to an angle grinder back up disk (rubber pad) and with long bold sweeping actions, sand away the small uneven lumps, bumps, hollows and tool marks. This is a very fast procedure because the angle grinder turns so quickly. By doing a 'rough' smooth all over you will immediately see where there is still too much wood and where it needs removing. This grinder sanding procedure is very important and absolutely necessary to bring up the finished profiles.

Continue this process of shaping and coarse sanding until the desired shapes, forms and profiles are

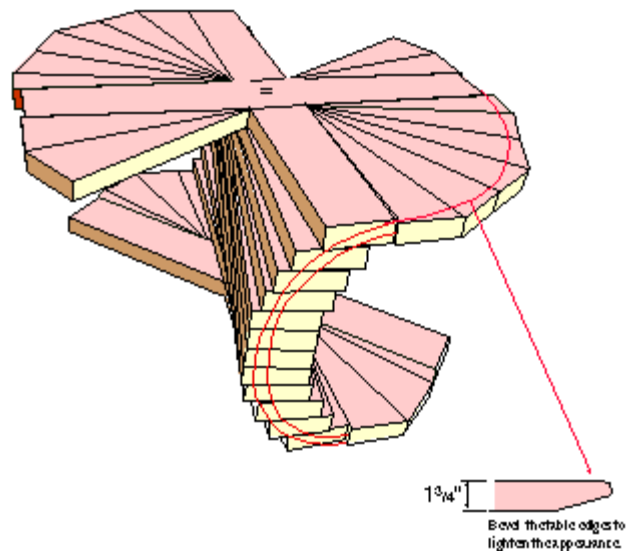


Fig 13