Photo 1-7. American Windsor side chair. The crest is American white ash, the seat European beech and the spindles are made from hard rock maple. The stain is oil based brown mahogany followed by one coat white shellac sealer and two coats of French polish. A third coat of French polish was applied to the seat and crest. The water based stain shown in photos 1-1 and 1-2, also mahogany brown, gives a reddish tinge to the finished chair. But the oil based stain in this photo provides a colour that can be described as a rich brown.

Photo 1-8. American Windsor side chair.

8b) Stage 2. Trim the depth bands to the approximate shape of the taper, and stop just before the band lines disappear from view.

Use the 19mm roughing gouge and trim the individual Parts of the depth band rings to form a rough taper from Q to P.

Leave the nib at the 3mm point near Q until the next stage.

Start the work immediately after the 3mm point near Q, and work toward P.

Stop just before the band lines disappear from view.

8c) Stage 3. Trim the taper to the finished diameters shown in Figure 2-9 and photo 2-7B.

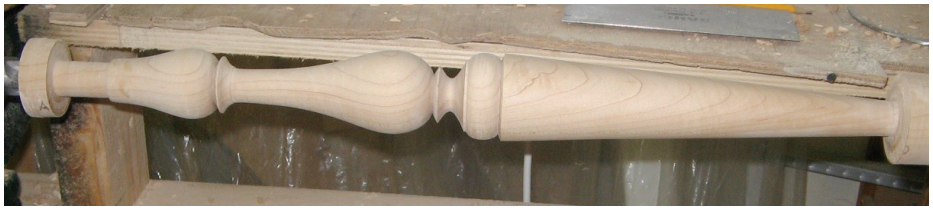


Photo 2-7B. The completed leg.

8c(i)

Place a straight edge on the taper and identify the high spots along its shaft excluding the nib. Mark these so they stand out when the lathe is turning.

Using the 19mm roughing gouge (the straight part of the cutting edge), trim the high spots.

Next, using the skew in the scraping cut, straighten the taper`s line. Carry out two or three passes by drawing the tool along the length of the workpiece, starting at Q, and working through to P.

After completing these initial passes stop the work and carry out a diameter check.

8c(ii) Carry out a diameter check.

Mark out the workpiece at all nine positions and measure each location using the vernier gauge.

Position the gauge to the right of the line, except at P, where the vernier should be placed on the left of the mark.

Make a note of the diameter at each location, and compare this with the finished diameters in Figure 2-9. Make another note as to the amount of wood that needs to be removed at each location to get down to the finished sizes.

3d) Stage 4. Trim the large bulb to its finished diameters, as shown in Figure 2-14 and photo 2-10E.

Photo 2-10E. The completed large bulb on the baluster spindle.

3d(i) Mark all eight locations on the workpiece as shown in Figure 14.
Measure the diameters achieved so far and compare these with the finished sizes shown in Figure 14. Make another note as to how much wood is to be removed from each location.

d(ii) Trim the bulb to its final diameters using the 10mm spindle gouge and the skew in the scraping cut.

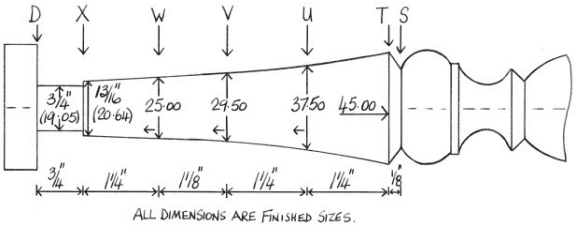
The Finished diameters taken from Figure 2-14 are:
B2=34mm. B3=39mm. B4=45.50. B5=44.50. A4=40.50. A3=34mm. A2=26.50.
Reduce all locations to slightly bigger than their finished diameters ready for sanding.

Sand the bulb smooth.
Use the same sanding procedure as mentioned under item 3e of forming the vase moulding in chapter 3, for making the leg. This is briefly, P180, P240 and P 400 silicon carbide paper. Avoid using P120 red oxide paper due to the deep scratches this leaves in the wood.

e) The tolerances with regard to the finished diameters of the large bulb shown in Figure 2-14.
Should some depth band positions finish at diameters which are slightly different to the diameters shown in Figure 14, then provided these are not excessive, the final shape of the bulb should look okay.

5. Form the coniform, and tenon from T to D, as shown in Figure 2-16.

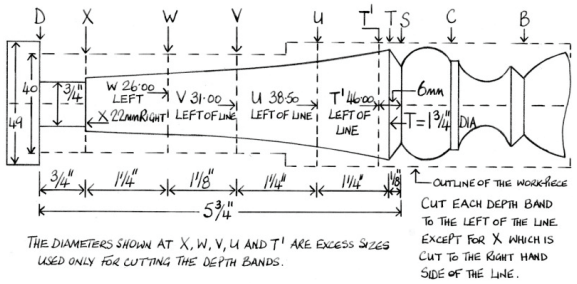
This procedure involves five stages. Stage 1 is cutting the depth bands, stage 2 is trimming the depth bands, stage 3 is shaving out the depth band lines, stage 4 is trimming the nib at T1 and forming the tenon, and stage 5 is trimming the coniform to the finished dimensions.



Conversion: 1/8=3.18. ¾=19.05. 13/16=20.64. 1.1/8=28.58. 1.1/4=31.75mm.

Figure 2-16. Forming the coniform. All dimensions are finished sizes.

5a) Stage 1. Cut the depth bands as shown in Figures 2-16A, 2-16B and photo 2-10F.



Conversion: 1/8=3.18. ¾=19.05. 1.1/8=28.58. 1.1/4=31.75. 1.3/4=44.45. 5.3/4=146.05mm.

Figure 2-16A. Stage 1. Cut depth bands to form the base work of the coniform and tenon. The diameters shown are excess sizes.

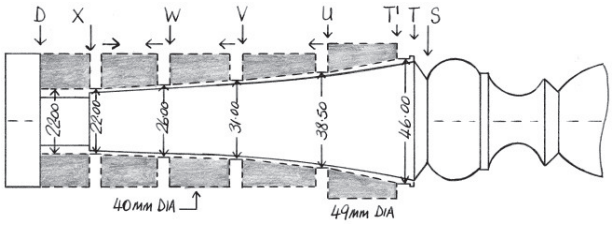


Figure 2-16B. Stage 1. The coniform after cutting the depth bands. The shaded areas are removed under stage 2 to create the coniform`s rough shape.
The diameters shown are excess sizes.

5e(iii) Commence trimming location T.

Trim the edge of the coniform at T, shaping this into a bell shape using the straight edge of the 19mm gouge. Start the cut at T and draw the cutting edge toward U.
Stop trimming when T is 45.50mm diameter.

5e(iv) Trim locations U, V and W.

Trim these locations using the straight edge of the 19mm gouge or the 10mm spindle gouge, and reduce to diameters that are slightly bigger than the finished sizes, for sanding.

5e(v) Sand the coniform to a smooth finish.

Use the same sanding specification as carried out for the finishing of the vase moulding on the leg in chapter 3, item 3e.
This is briefly, P180, P240 and P400 silicon carbide abrasive paper. You can also use P120 red Oxide abrasive paper for rapid removal of wood if required.

5e(vi) About the nib at T, which is completed in stages 4 and 5. See Figure 2-16B and photo 2-10H.

The nib at T1 which was formed from cutting the first depth band is there to help achieve a good crisp arris where the coniform and the groove meet.
This edge and arris can be inadvertently rounded by the tool on too many occasions during the shaping of the coniform. To ensure that the arris and edge ends up with a sharp cusp, this item is dealt with in the latter stages of forming the coniform.

Photo 2-10J. The completed coniform on the baluster spindle.

Photo 3-43. The finished seat. (European beech).

21. Comparing two seats of different depths.

The finished hollow in photo 3-43 as completed to the levels shown in Figure 3-31. The finished hollow of another seat completed by the author and shown in photo 3-44, was finished to the deeper levels of Figure 3-33.

a) Comparison of the two seats provides an indication as to the aesthetic qualities of the deeper depression when compared with a seat not so deep. The maximum depth of the hollow in photo 43 is 23mm and in the deeper hollowed seat of photo 44, the maximum depth is 26mm.

Photo 3-44. The Figure shows another seat made in European Beech, completed in accordance with the same procedures of these chapters, but with the hollow finished to the deeper levels of Figure 33, with a maximum depth of 26mm.

Part 4
Making the crest piece

The steamed and bent crest piece in American white ash.

The crest piece made from three pieces of oak glued together.
See chapter 18 of this part for making a crest piece without the need to steam and bend.

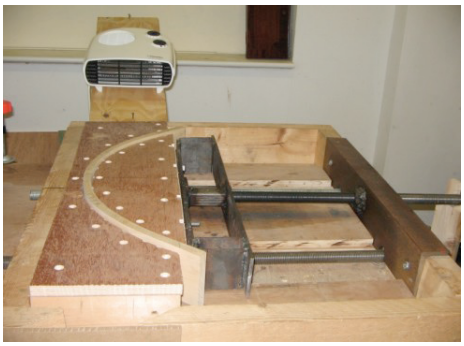


Photo 4-2. The ash workpiece moments after completion of bending. The drying of the workpiece begins immediately using a fan heater as shown, for 7 days while clamped in the former.

Procedures.

1. Preparing the American white Ash workpiece.

a) Cut and plane the Ash to a finished size of 800 long x 89 wide x 16mm thick (31.5 inches x 3.5 inches x 5/8ths of an inch). Select and mark the best face for the front and bottom edge. The top edge is cut to a wavy line.

Also mark the centre line across the full width of the workpiece on the two faces and the edges. This centre line is essential for lining up the centre of the workpiece with the centre of the former at the start of the bending.

b) The back face should be sanded smooth as no further work is required to this side.

c) The front face of the crest is shaped and sloped, but this takes place much later in the procedures, so for now just smooth the front face so that the pencil glides a little easier when marking out the shape.

d) The edge that is chosen to be the bottom edge should be sanded smooth ready for when the spindle holes have to be marked out, which is done after the bend is completed.

2. Steam the Ash workpiece.

a) Pre-heat the steam chest for at least 30 minutes immediately prior to commencing steaming. Place the workpiece inside the steam chest on blocks to raise it off the floor of the chest and steam for 6 hours. See photo 4-3.

Reminder: Make sure that the inside face of the workpiece as selected earlier, is well marked, as you really don`t want to be working out which way it should be placed in the former during the 60 seconds or so that you have for bending the wood from when you remove it from the steam chest. The centre line of the workpiece must also be prominent on this side.

Also pre heat the former with the warm air blower 15 minutes before bending commences.

2b) Commence bending the ash workpiece in the former.

Remove the ash workpiece from the chest after steaming for 6 hours and place in the former.

Line up the centre line of the workpiece with the centre line on the former.

Once everything is lined up, bend the workpiece to shape within 60 to 80 seconds from the moment the piece leaves the steam chest to completion of the bend.

The workpiece must be kept clamped in the former for at least seven days after bending. Drying should commence immediately.

Photo 4-3. The workpiece is placed inside the steam chest and raised off the base ready for 6 hours steaming. The boiler shown holds 30 litres of water which generates a constant flow of steam without requiring replenishment during the 6 hours steaming period.

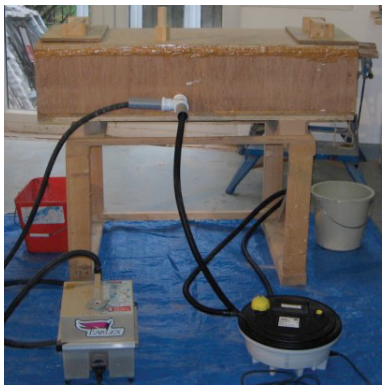


Photo 4-4. Two domestic steam cleaners are used in this set up for the generation of steam. Use one steamer at any one time which lasts for about 1 hour. The second steamer (shown for illustration purposes) takes over while the first steamer is replenished with water and made ready with steam.

For more information on making the steam chest and steam apparatus see chapters 16 and 17.

Part Four. Making the crest.
Chapter 18. An alternative method of making the crest piece without steaming or bending the wood.

These procedures explain about the making of a crest from separate pieces of oak glued together instead of making a former and steaming and bending the wood.

Photo 4-26. The completed oak crest piece made from three cut-out`s of 30mm thick sawn oak board. The three pieces were glued up to form the workpiece (See photo 4-30) from which this crest was made.

P1. Making the crest piece from three timber cut-out`s.

The cut-out`s are made from oak board or a similar strong hardwood and are glued together to make a workpiece of between 85mm and 95mm in height.

The height of the workpiece is important as this is directly related to the thickness of the timber chosen for making the crest. See Figures 4-38 and 4-39.

The thickness of plank available from the timber supplier needs to be taken into account for reasons given in the two examples that follow.

a)

If 25mm thick sawn board is used, then four individual cut-out`s when glued together would form a lamination of about 93mm in height. This height is after sanding and trueing. Unfortunately, with this arrangement the joint lines relative to the wavy top of the crest is not the best correlation. See Figure 4-38.

The height of the completed crest is 2 and ¾ inches (70mm).

b)

If three cut-out`s were to be used from 30mm thick sawn board, this arrangement would give about 85mm in height after trueing and sanding. The correlation between the joint lines and the outline of the crest`s wavy top is a far better arrangement as shown in Figure 4-39 than that shown in Figure 4-38.

Photo 5-4. The set-up now includes the MDF leg ties with the spirit level, packed up on blue packers, to 16.5 inches (419mm) above the seat across the front legs.

3. Set the legs to the correct centres using the leg ties, as shown in photo 5-4.

Firstly, check the legs for blemishes and where required turn the blemish to face inwards of the chair.

Next, draw a 50mm long vertical line on the face of the bulb and another line on the seat. These two lines when lined up together will ensure the leg is put back in its original position and orientation after removing for cutting etc.

a) The centres of the front legs.

The front legs are 20 inches (508mm) centre to centre at the feet. This has to be measured centre to centre at a point 16.5inches (419mm) above the surface of the seat as follows.

Firstly, check that each front leg is 10 inches (254mm) from the centre line as drawn on the seat earlier.

Do this by setting the spirit level in the vertical position between the front legs as shown in photo 5-5, so as to transfer the centre line on the seat up to the higher level.

Now check if the front legs do actually work out at 10 inches (254mm) from the centre line for both the front legs.

As the legs are currently longer than required, remember that the 10 inches centre of the leg from the centre line is at a point 16.5 inches (419mm) above the seat for the front legs, and 15.75 (400mm) for the back legs.

If the centre to centre dimension is different for each side of the centre line, the leg is probably leaning one way, so adjust this by fixing string ties to pull it over.

The next area to be stained/polished.

Continue applying the finish to the top of the seat, around the edge and to the underside of the seat. Make sure that no over brushing of the top of the legs occurs, by using the child`s paint brush to apply the finish at the junction of the legs and seat.

The next area to be stained/polished.

This is to the legs and stretchers, which are fairly straight forward. The only thing to mention is to avoid over brushing onto the stretchers when finishing the legs for the same reasons as mentioned above.

Photo 5-31. A close up of the upper spindles and crest, after completing the staining and French polishing.

Photo 5-32. A close up of the lower half of the chair, after completion of staining and French polishing.

End of chapter 6. The assembly.