CHIPPENDALE-STYLE SIDE CHAIRS – PART 5

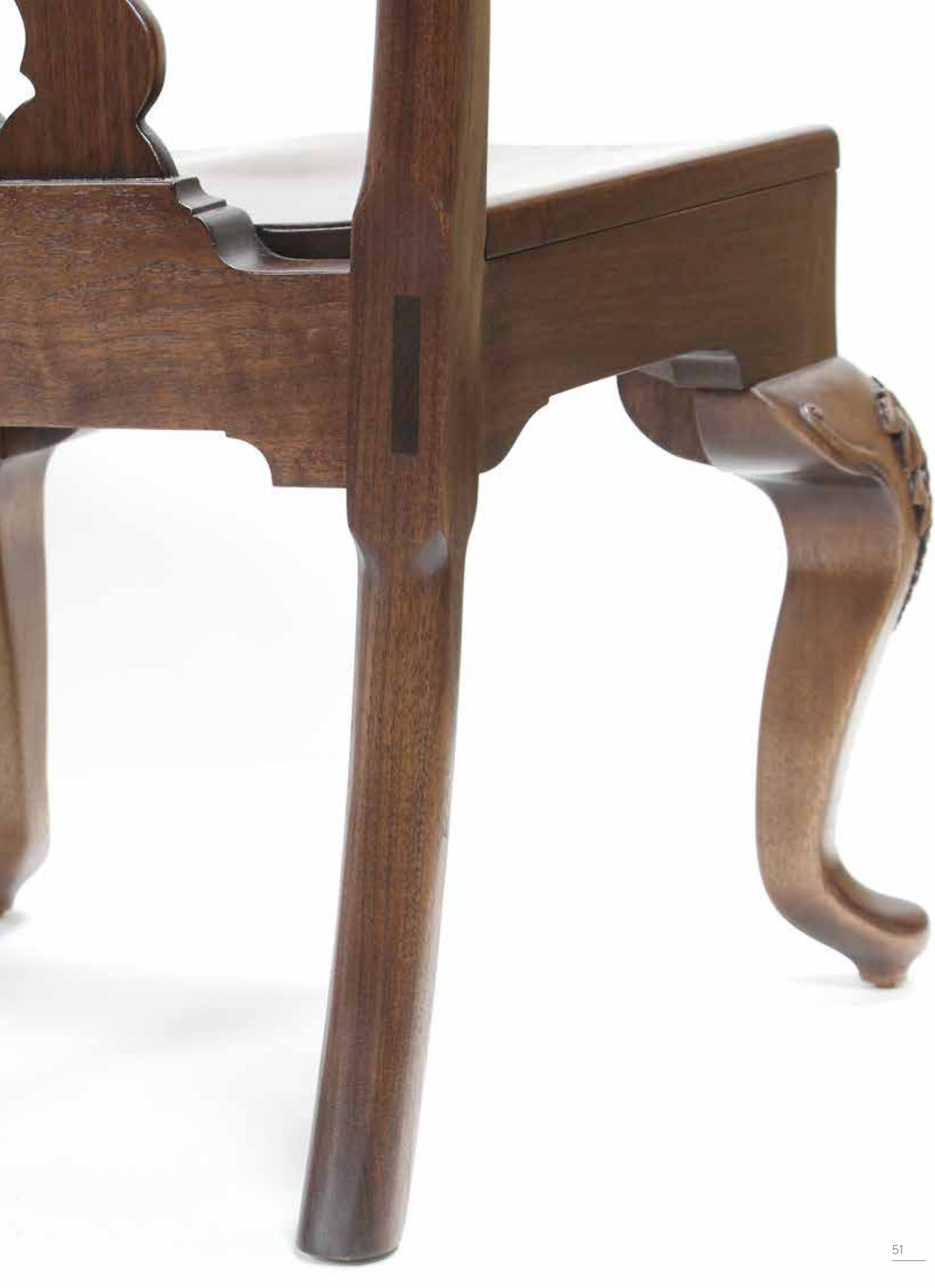
DENNIS ZONGKER COMPLETES HIS BESPOKE CHAIR PROJECT

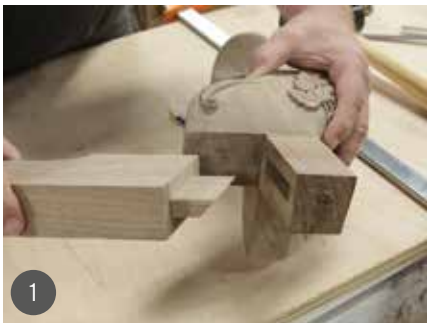
In my previous article (see *F&C* 318) I explained how to make the cabriole legs for these chairs by cutting out the shape on a bandsaw, then how to hand carve the grapes, leaves and scrolls into the legs. In this article I will explain how to make the side rails that join the front and back sections of the chairs together by making a compound through tendon, gluing the chair together. Then I'll make the solid walnut seat with a grinder to shape the seat profile.

The focus of my article revolves around the creation of compound through tenons that are visible on the back side of the chairs, specifically on the back legs. These tenons not only add a visually appealing detailed joint to the chairs but also contribute to their strength and durability. In the case of the two Chippendale side chairs I am discussing, the side rails feature compound tenons that pass through the back legs.

The tenons on the side rails are designed with a double angle, known as a compound angle. One angle aligns with the 5° angle of the back legs, while the other matches the 6.5° angle between the side rail and the square section of the back legs. Despite the complexity of these angles, cutting them accurately is more manageable than one might initially assume. This precision in cutting is crucial to ensuring the structural integrity and longevity of the through compound tenon joint.

Ultimately, the through compound tenon joint represents a high-quality furniture construction technique that enhances the overall quality of the chair. By incorporating these detailed joints, not only are the chairs aesthetically pleasing, but they also boast a level of durability and strength that is essential for furniture intended for regular use. The careful consideration and execution of compound tenons contribute significantly to the longevity and stability of the chairs, making them a worthwhile investment for anyone seeking quality craftsmanship.

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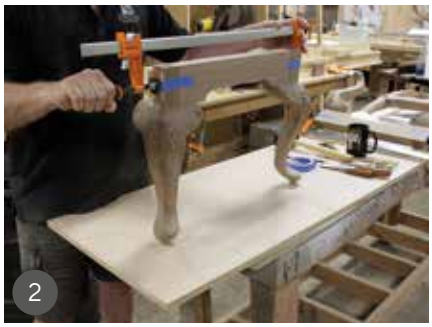
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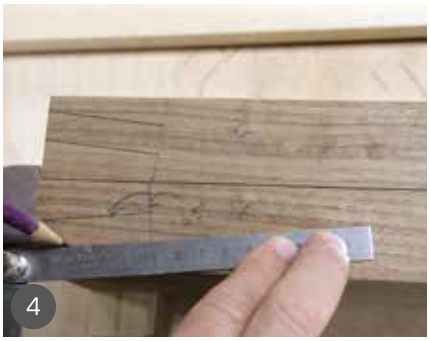
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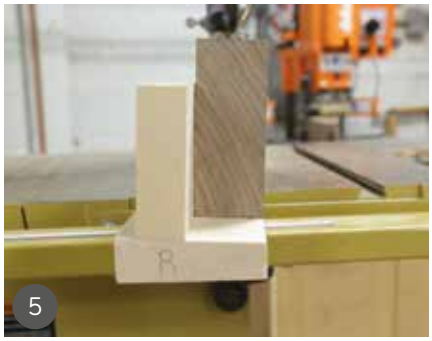
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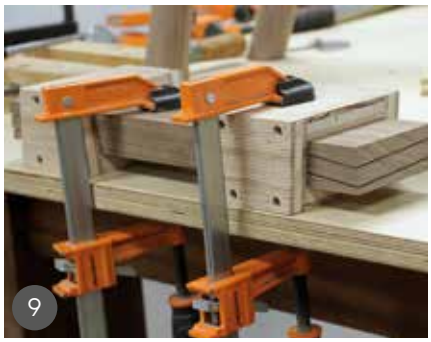
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PHOTOGRAPHS BY DENNIS ZONGKER

The careful consideration and execution of compound tenons contribute significantly to the longevity and stability of the chairs, making them a worthwhile investment for anyone seeking quality craftsmanship.

GLUE THE FRONT RAIL AND LEGS TOGETHER

1 In *F&C* 316 I explained how to make the front rail with the back rail. The tendons need to be mitred at a 45° angle meeting up to the side rail tenon, which will also have an opposing 45° angle. Both tenons will fit into the mortises chiselled into the top sections of the cabriole leg.

2 With a front rail and a pair of cabriole legs, I glue the front section of the chair together using a bar clamp and applying a good amount of pressure to assure a good glue bond.

MAKING A TEMPORARY FRAME

3 I make a frame out of scrap plywood to the exact distance from the front and back of the chair that will equal the same length of the side rails excluding the size of the tenons. Then I use small bar clamps to clamp the frame together to the front and back sections of the chair. This will help me figure out the exact angle and length of the side rails.

MARKING AND MAKING THE ANGLED JIG

4 With a protractor I draw in the front and back tenons on both side rails. The front tenons have only one angle at 6.5°, while the back tenons have a compound angle: one at 5° matching the angle of the back legs and one at 6.5°matching the angle from the front cabriole leg to the back leg.

5 To cut the tenons on the bandsaw I first have to make a one-angled cutting jig. With a tablesaw I cut one long board 3in wide, then with a mitre saw I cut to length two pieces 24in long. Next, I set the tablesaw blade at a 5° angle and cut the angle onto the face of one board. The last step to making this simple jig is to screw the straight board on the edge to the face of the angled board. Then with a pencil I mark both the ends, one with a left and the other with a right. When cutting the left rail I have the left mark facing the blade. Then the right mark facing the blade with both the rail and the right mark facing the bandsaw blade.

CUTTING THE TENONS

6 This angled jig will be used to cut the back compound tenons only. The front tenon goes into the cabriole leg by just using the bandsaw table straight into the blade.

7 Close-up view of cutting the compound tenon with the 5° angled jig.

8 Close-up view of cutting the 6.5° angle of the through compound tenon.

SIZING THE TENONS

9 I hand cut the face of the tenons by making two small jigs that wrap around the rails. The 6.5° angle is cut into the edges of the jigs. This way I can clamp the rail into the jigs for an accurate cutting edge.

10 With a Veritas 14-TPI Crosscut hand saw riding the face side of the saw against the angled edge of the jig, I cut out both the front and compound tenons.

11 I use the same jig as a guide to cut off the top and bottom of the tenons.

12 For an accurate tight fit, I use a bench vice to clamp the rails for cutting off the waste wood of the tenons.

RASP AND FIT THE TENONS

13 I smooth out all the bandsaw cuts on the tenons using a Japanese saw rasp. These types of saws have a coarse and a fine cutting face. I like to use the fine side to rasp the tenon to the exact size for fitting through the back leg mortise.

14 Before I can dry fit the tenon into the mortises, I check frequently with a calliper until my exact thickness has been reached.

15 Once I have a good fitting joint, I draw the 5° angled line onto the edge of the rail to where it hangs over the back legs. Then I rasp and blend the rail to match up flush to the chair's back legs.


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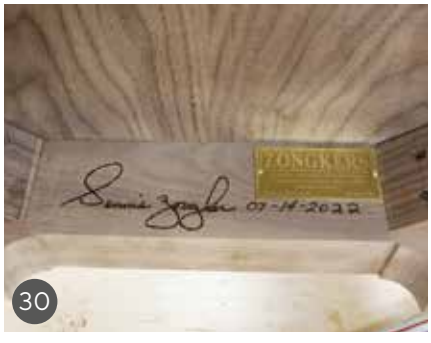

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DRY FIT

16 A dry fit showing the through compound tenon joint protruding out the back face of the back leg.

GLUING THE CHAIR

17 Once both side rails have been dry fitted together, it's time to glue the chairs together. Both side rails must be glued together at the same time. I like to use Gorilla Glue on chair joints because of its incredible holding power and filling any voids. If there are any small spaces at the top and bottom edges of the tenons where it meets the mortise. I make small shims and tap them into the gaps making the tenons super tight. Then with bar clamps I clamp the chair together.

18 I use a damp rag to wipe off all the excess glue.

RASP THE TENON AND RAILS

19 After the glue dries, I flush the through tenon to the back of the leg using a Japanese saw rasp.

20 The front corners of the cabriole legs also need to be rasped smooth to the front and side rails.

21 To smooth out the rasp cuts, I use a random Orbit sander with 150-grit sandpaper.

CORNER BLOCKS

22 The corner blocks are a very important part of the chair because they add strength and longevity to each corner joint. To add them, I apply glue then screw through the blocks into the rails.

MAKING LEG PINS

23 I made some pins to go through the upper legs into the tenons for extra strength and also for a decorative appearance. I cut a piece of walnut on the tablesaw that was 5⁄16in and 24in long. This will be enough to get 12 pins, six for each chair.

With a pocketknife I whittle the tip of the walnut stick to be approximately 2in long. Then I snip off that piece and repeat until I have all 12 pieces.

24 Next, I measure and mark the location of each pin, then use a ¼in diameter drill bit to drill into the leg. A small brush is used to spread glue into the hole and on the peg. Then with a hammer I can lightly tap the pin into the leg and tenon. After the glue dries, I cut off the excess pin with a small handsaw then sand the pins flat to the legs.

MAKING THE SEAT

25 The first thing to do is to glue up the size of the seat, just a little larger than the exact size needed. Then by setting the seat on top of the chair to trace a pencil line on the bottom face for the front and sides of the chair. Next with a bandsaw I cut out the shape of the seat with just a ⅛in overhang on the front and both sides.

26 To grind the shape of the seat, I make a frame out of plywood and fasten to my workbench. Next, I place the seat into the frame and draw in the seat profile needed for grinding. With a coarse grinding wheel to shape the seats highs and lows.

27 Next, I use a Random Orbit sander and 150-grit sandpaper to sand out all of the grinding marks.

28 With a fine rasp and sandpaper, I round the edges and blend together the top of the seat to all the corners.

29 To connect the seat to the chair corner rails and corner blocks I use figure-of-eight fasteners.

30 Before finishing the table and two side chairs I always sign and date my work and I also screw on my company name plate. Thank you for following along with this series of articles covering the bespoke hallway table and side chairs.