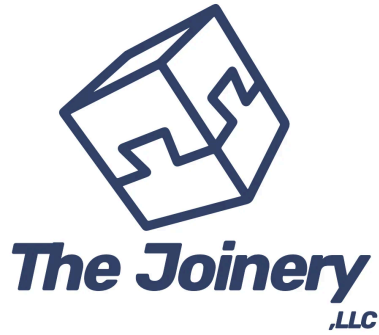




THE JOINERY

*Woodworking Shared Shop and Learning Community*

# *Craftsman-Style Bench*

## Project Plan

*An Arts & Crafts Slat Bench Built with Festool Domino Joinery*

Estimated Build Time: **Multi-Session (12–16 shop hours)**

Skill Level: **Intermediate**

Finished Size: **43" L × 20" D × 27¾" H**

Revision 1.0 | July 2026

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## Welcome

Welcome to the Craftsman-Style Bench. This is our advanced take on a timeless Arts & Crafts form—tall slatted end panels, gently arched rails, and a solid wood seat—rebuilt around modern Festool Domino joinery. It is a step up from the beginner bench and cabinet classes: more parts, more repetition, and joinery that has to line up across a large frame.

The original design comes from WOOD magazine (October 2010, “Arts & Crafts-Style Bench”). We have reworked it in two meaningful ways: every biscuit joint is now a Domino loose-tenon joint, and the upholstered plywood seat has been replaced with a drop-in solid wood slat seat. The result is stronger, more repairable, and far more satisfying to build.

### About This Guide

I'm Steven Ricks, co-owner of The Joinery, a woodworking shared shop and learning community in Middleton, Wisconsin. Throughout this guide you'll see callout boxes labeled “Thoughts from Steven.” That's where I share the things that don't fit neatly into steps—the reasoning behind a technique, the mistakes I've watched students make, and the judgment that separates frustration from a finished piece.

#### *Thoughts from Steven*

Books and videos tend to present one right way to do everything. There isn't one. There's what works, what doesn't, and a lot of gray area in between. My job is to give you the principles and the confidence to make good decisions at the bench—not to turn you into a robot following instructions.

## Project Overview

You'll build a bench from quartersawn white oak: two slatted end panels joined by arched front and back rails, topped with a lift-out slat seat. Along the way you'll practice milling and dimensioning a lot of parts consistently, laying out and cutting repeatable Domino joinery, cutting clean arcs, chamfering leg tops, and gluing up a large frame square.

#### *Thoughts from Steven*

Treat your first one as a prototype. When I build something for the first time, I think of it as practice for the real piece—it takes the pressure off and lets me focus on the process instead of protecting the work. You may find, as I often do, that the “prototype” comes out good enough to keep.

This is a bigger project than the tote or the side table. Don't try to do it in one marathon. Break it into sessions, let glue-ups cure overnight, and come back fresh.

## Skills Covered

- Milling and dimensioning many parts to consistent thickness and width
- Repeatable Domino loose-tenon joinery in two cutter sizes (8 mm and 5 mm)
- Laying out and cutting clean arcs on rails
- Chamfering leg tops cleanly
- Building and squaring slatted panels
- Gluing up a large frame flat and square
- Fitting a solid wood slat seat

## Understanding Your Material

This bench is built in quartersawn white oak—the classic Arts & Crafts wood, and worth understanding before you cut into it.

### What Is Quartersawn White Oak?

When a log is sawn so the growth rings meet the face near 90°, you get “quartersawn” boards. In white oak this exposes the medullary rays as dramatic “ray fleck”—the shimmering figure that defines Arts & Crafts furniture.

Beyond looks, quartersawn stock is the most dimensionally stable orientation: it moves less across its width than flatsawn wood. That stability is why it was the material of choice for this style. Orient your best fleck to the outside faces—legs and end panels especially.

Wood still moves. It expands and contracts across the grain (width) as humidity changes, not along its length. For a piece this size the movement is small, but the slat seat is designed with gaps so individual slats can breathe without fighting each other.

### *Thoughts from Steven*

“Wood will do what wood wants to do.” A tree spent decades under tension and weather, and that stress is locked inside every board. When we mill and cut, we release some of it—and we don't always know when. Sharp tools, careful technique, and respect for the material are the parts you control. Focus there.

## **Materials**

### **Primary Stock**

- Quartersawn white oak, roughly 12–14 board feet (see cut list). Plan for 8/4 stock for the legs, or glue up legs from 3/4" stock.
- 3/4" stock for rails, seat slats, and ledgers
- 1/2" stock for the side-panel slats

### **Making 1½" Legs from 3/4" Stock**

If you don't have 8/4 lumber, rip 3/4" stock a little over 1½" wide, glue two pieces face-to-face with one edge flush, then rip and joint the glue-up to a clean 1½" square. Orient the glue line so it lands on a less-visible face.

### **Hardware & Consumables**

- Festool Dominoes: 8 × 22 × 40 mm (qty 24) and 5 × 19 × 30 mm (qty 16)
- Wood screws for the seat ledgers and slats (#8 × 1¼"), plus glue
- Wood glue (yellow PVA such as Titebond Original or II)
- Sandpaper: 120, 150, 180 grit; card scraper
- Finish of choice (see Finishing)

## **Tools Required**

### **Milling & Dimensioning**

- Jointer — flattens one face and one edge of rough stock
- Planer — brings stock to consistent thickness

- Miter saw — accurate crosscuts to length
- Table saw — rips to width; glue-ups for legs

## Joinery & Shaping

- Festool Domino DF 500 with 8 mm and 5 mm cutters
- Bandsaw or jigsaw — cutting the rail arcs
- Router with  $\frac{1}{8}$ " round-over bit and a chamfer bit (or hand plane) for leg tops
- Spokeshave, rasp, or sander for fairing the arcs

## Assembly & Measurement

- Bar or pipe clamps (6–8), including a pair long enough to span 43"
- Combination square, tape measure, marking gauge, pencil
- Card scraper
- Arc template or flexible batten (see Shop Drawings)

### About the Festool Domino

The Domino cuts an oval mortise into both mating parts; a football-shaped loose tenon is then glued into both. It's a fast, accurate, modern stand-in for traditional mortise-and-tenon joinery.

We use two sizes on this bench. The 8 mm tenons carry the frame—every rail-to-leg joint. The 5 mm tenons register and reinforce the side-panel slats, whose  $\frac{1}{2}$ " thickness is too thin for an 8 mm cutter.

## Cut List

All dimensions are finished sizes in quartersawn white oak. Cut parts slightly long where noted, and—above all—make like parts match each other.

| Part            | Qty | T               | W   | L    | Notes                                   |
|-----------------|-----|-----------------|-----|------|-----------------------------------------|
| Leg             | 4   | 1½"             | 1½" | 27¾" | $\frac{3}{8}$ " chamfer around top edge |
| Top end rail    | 2   | $\frac{3}{4}$ " | 4"  | 17"  | —                                       |
| Bottom end rail | 2   | $\frac{3}{4}$ " | 5½" | 17"  | arched bottom, ~1½" rise                |
| Front/back rail | 2   | $\frac{3}{4}$ " | 5½" | 40"  | arched bottom, ~1½" rise                |
| Outside slat    | 4   | $\frac{1}{2}$ " | 2½" | 14½" | —                                       |

| Part        | Qty | T  | W   | L    | Notes                    |
|-------------|-----|----|-----|------|--------------------------|
| Center slat | 2   | ½" | 4"  | 14½" | —                        |
| Seat ledger | 2   | ¾" | ¾"  | 40"  | glued & screwed to rails |
| Seat slat   | 13  | ¾" | 2½" | 17¾" | ⅛" round-over top edges  |

### Thoughts from Steven

Consistency matters more than precision. If every one of your seat slats is 2-7/16" instead of 2-1/2", nobody will ever know—as long as they all match and your spacing adjusts. Problems come from parts that vary from each other, not from parts that miss the number together. Set a stop, cut them all, move on.

## Domino Joinery Schedule

Forty Dominoes hold the frame and panels together. Batch your work by cutter size: set up and cut every 8 mm mortise first, then switch to the 5 mm cutter once and cut all the slat mortises. Reference the Domino fence off a consistent show face on every part so the joints register flush where it counts.

| Joint                          | Domino         | Per joint | Total | Plunge (each side) |
|--------------------------------|----------------|-----------|-------|--------------------|
| Rail-to-leg (all frame joints) | 8 × 22 × 40 mm | 2         | 24    | ~20 mm             |
| Outside slat-to-rail           | 5 × 19 × 30 mm | 1         | 8     | ~15 mm             |
| Center slat-to-rail            | 5 × 19 × 30 mm | 2         | 8     | ~15 mm             |

### Reading the Schedule

Festool sizes read thickness × width × length. "8 × 22 × 40" is an 8 mm-thick, 22 mm-wide, 40 mm-long tenon. Split a 40 mm tenon roughly 20 mm into each part; a 30 mm tenon, roughly 15 mm each side.

The seat slats are the exception to "everything gets a Domino"—they're glued and screwed to the ledgers from below, so no fastener shows on top. The ledgers themselves are glued and screwed to the rails; you can't safely bury a deep Domino into ¾"-thick rail stock, and a long-grain glue line here is plenty strong.

### *Thoughts from Steven*

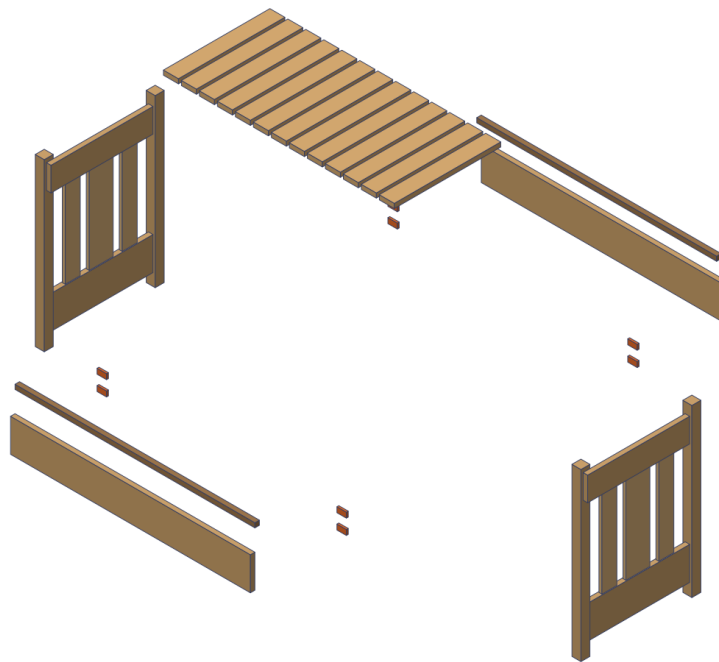
Always run a joinery setup on scrap before you touch good wood—same thickness, same fence setting. One test plunge tells you whether your reference face and depth are right. It costs thirty seconds and saves a \$12 board.

## **Shop Drawings**

Reference drawings for layout. Dimensions are nominal—trust your own parts and keep like parts matching.

### **Exploded View — Frame Assembly**

End panels pull apart · long rails pull out · seat lifts off · tenons in orange

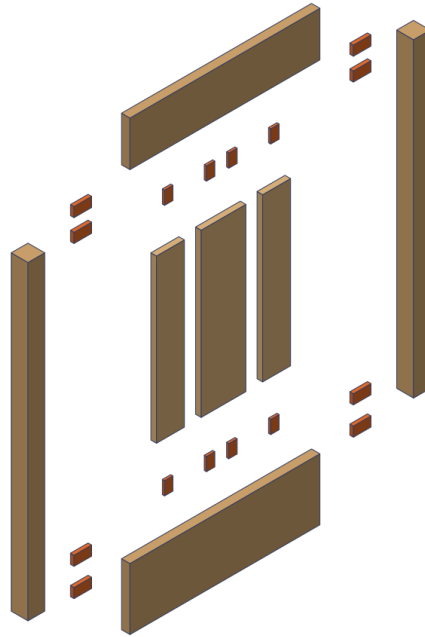


*Exploded view — frame assembly. The two end panels pull apart to the sides, the front and back rails pull out, and the seat lifts off. The eight orange tenons are the 8×40 mm Dominoes joining the long rails to the legs.*



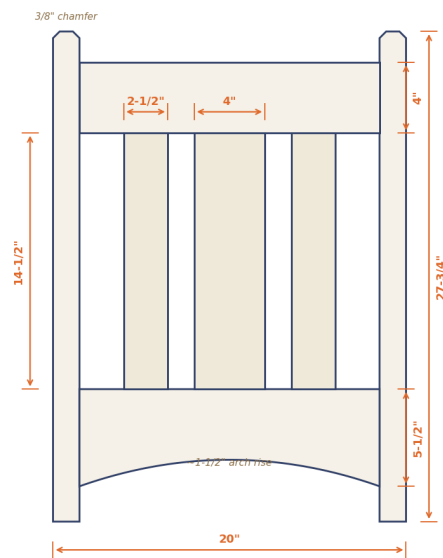
### Exploded View — End Panel (build two)

Top rail up · bottom rail down · legs out · 8×40 mm and 5×30 mm tenons in orange



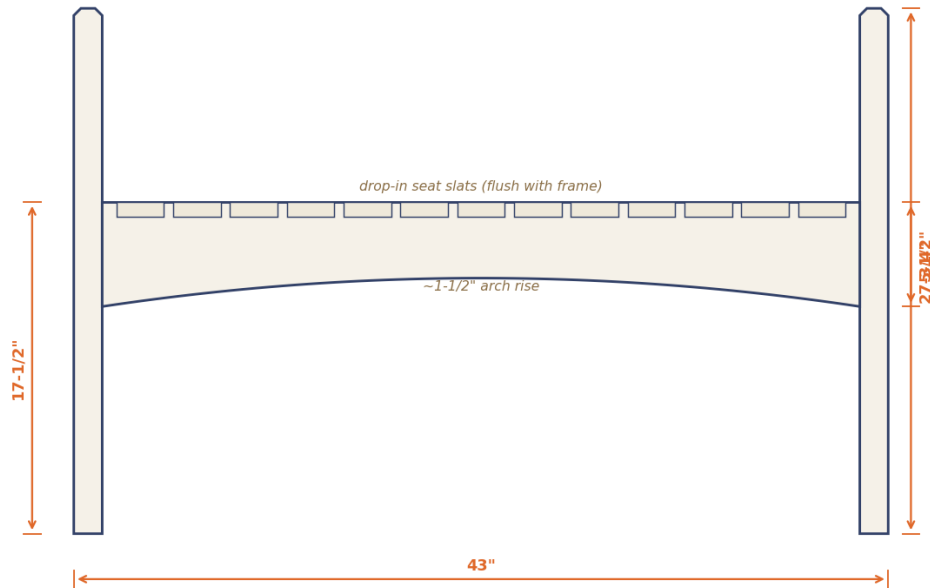
Exploded view — end panel. Build two of these. The top rail lifts, the bottom rail drops, and the legs pull outward; 8×40 mm tenons join the rails to the legs, and 5×30 mm tenons join the slats to the rails.

### End Elevation — Slatted Side Panel



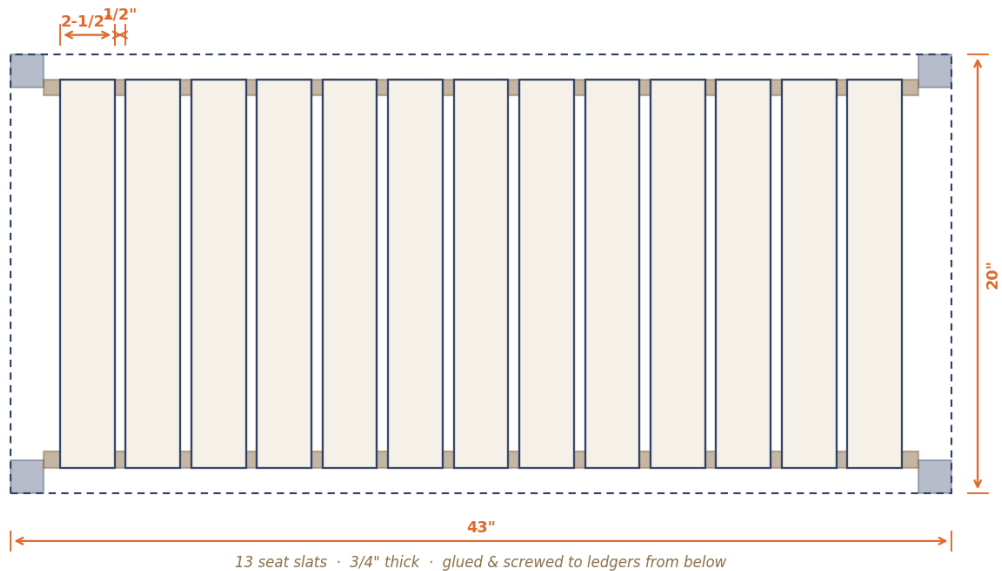
End elevation — the slatted side panel. Two of these form the ends of the bench.

### Front Elevation



Front elevation. The seat surface sits at 17½"; the end panels rise above it.

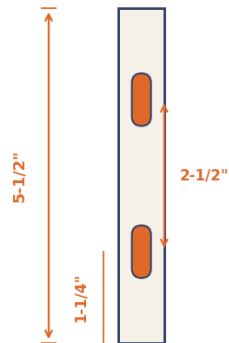
### Seat Plan — Slats Run Front-to-Back



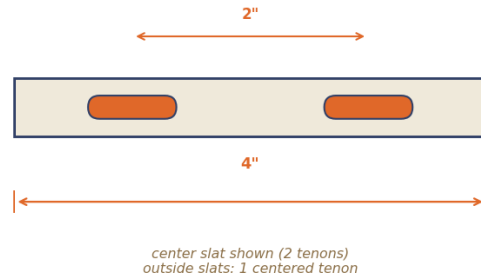
Seat plan. Thirteen slats run front-to-back on a ½" spacing.

## Domino Mortise Layout

Frame joint · 2 × 8 × 22 × 40 mm



Slat joint · 5 × 19 × 30 mm



*Domino mortise layout for the two joint families.*

### About the Arcs

Both the bottom end rails and the front/back rails get a shallow arc on their lower edge that leaves “feet” at the corners. To lay one out, spring a thin batten between the two end marks and pull it to a center mark ~1½” up, then trace. Cut on the waste side and fair to the line with a spokeshave or sander.

## Safety Guidelines

Woodworking is rewarding but involves real risk. These guidelines keep the shop safe.

### The Joinery's 2-3-12 Rule

**2 — Two Control Surfaces:** Every tool has two control surfaces. Know what they are and use them the way the manufacturer intended.

**3 — Three Inches:** Keep hands and fingers at least 3” from any blade or cutter at all times.

**12 — Twelve-Inch Gut Check:** If the board you're cutting is 12” or shorter, gut-check whether you're using the right tool. If your gut says no, use a different one. This matters on the slats and short rails.

### General Shop Safety

- Wear safety glasses with every power tool; hearing protection around the planer, router, and table saw

- Remove loose clothing and jewelry; tie back long hair
- Never reach over or behind a spinning blade or cutter
- Keep the workspace clear of offcuts and dust; know where the E-stops are

### Tool-Specific Safety

- Jointer/Planer: use push blocks; never place hands over the cutterhead
- Miter saw: hands 3" from the blade; let it stop before raising
- Table saw: use the guard and splitter; never stand directly behind the blade
- Bandsaw: keep fingers to the side of the blade, never in front
- Domino & Router: start and stop off the workpiece; clamp small parts

## Build Process

The build breaks naturally into sessions. Let major glue-ups cure before moving on.

### Session 1 — Milling & Stock Preparation

- Mill leg stock to 1½" square (or glue up from ¾" stock, then joint square).
- Mill rail and seat/ledger stock to ¾"; mill slat stock to ½".
- Rough-cut all parts slightly long. Label every part—tape and a pencil save you later.

#### *Thoughts from Steven*

Mill everything you can in one session, from the same setups, keeping the same face against the fence. That's how you get parts that actually match. If you mill the slats on Tuesday and the rails on Saturday with the planer bumped in between, you'll chase discrepancies for the rest of the build.

### Session 2 — The Legs

- Crosscut four legs to 27¾".
- Chamfer the four top edges ⅜" (router chamfer bit or a hand plane), leaving a flat square top.
- Choose orientation: put your best ray fleck on the two outward faces of each leg, and mark each leg's front/back/inside faces so joinery lands correctly.

### Session 3 — The Side Panels (build two)

- Cut top rails (4") and bottom rails (5½") to 17"; cut slats to 14½" and rip to width (4" and 2½").

- Lay out and cut the arc on each bottom rail; fair to the line.
- Cut Domino mortises: 8 × 40 into the rail ends (and matching leg faces); 5 × 30 into the rail edges and slat ends. Cut all 8 mm first, then switch to 5 mm.
- Dry-fit each panel. Then glue: slats between top and bottom rails, then that assembly into its two legs. Clamp, check square, set aside to cure.

#### Layout for the Slats

The center slat sits on the panel centerline; the two outside slats are set in from the rail ends with even gaps. Mark centerlines on the rails and slats, align them, and check the reveals before cutting mortises—this is much easier to fix on layout lines than after plunging.

### Session 4 — Long Rails & Frame

- Cut front and back rails to 40"; lay out and cut their arcs; fair to the line.
- Cut 8 × 40 mortises into the rail ends and the matching leg faces.
- Dry-fit the whole frame—both side panels plus the two long rails. Confirm it stands square and sits flat with no rock.
- Glue up the frame. Clamp, measure diagonals (equal = square), and sight for twist before it sets.

#### Thoughts from Steven

The frame glue-up is the moment beginners panic. Don't. Ten to fifteen minutes of open time is longer than it feels. Dry-fit until it's boring, stage every clamp and caul within reach, put glue in the mortises (not on the tenons), and move with purpose. If something fights you, stop and find out why instead of forcing it.

### Session 5 — The Seat

- Cut two ledgers (¾" sq × 40"). Glue and screw them to the inner faces of the long rails, with the ledger top set ¾" below the rail's top edge so the slats finish flush with the frame.
- Cut 13 seat slats to 17¾"; round over their top edges ⅛".
- Lay the slats across the ledgers with ½" spacers, then screw them up from below (into the ledgers or a pair of cross battens). The whole panel lifts out.

#### Why a Lift-Out Slat Seat?

Replacing the original upholstered plywood with solid slats makes the bench all-wood, more durable, and fully repairable—and it keeps the joinery honest. Because it lifts out, you still have the option to drop a loose cushion on top later if you want one.

## Session 6 — Finishing

- Ease or round-over any remaining sharp show edges  $\frac{1}{8}$ ".
- Sand to 150–180 grit; card-scrape the figured faces to pop the ray fleck.
- Apply your finish (see below), and reinstall the seat.

### *Finishing*

Quartersawn white oak rewards a finish that brings out the ray fleck. You have a few good options:

#### **Oil**

A penetrating oil (such as Tried & True, Danish, or tung oil) is the easy, repairable choice—wipe on, let it sit, wipe off, repeat. It brings out the figure and touches up easily when the bench inevitably gets used.

#### **Dye or Fumed**

For the classic warm Arts & Crafts tone, a water-based dye followed by a clear topcoat evens out the color and deepens the fleck. Traditionalists fume white oak with ammonia—dramatic, but it demands serious ventilation and care; a dye gets you most of the way with far less hazard.

#### *Thoughts from Steven*

I'm a lazy finisher, and proud of it—I want a finish that lasts and repairs easily. On oak I lean on a card scraper first: it leaves a surface no sandpaper matches and makes the fleck jump. Then a simple oil. If it gets a ring or a scratch down the road, I sand the spot, re-oil, done.

### *Tips for Success*

- Take your time at each step—rushing makes mistakes that are hard to undo.
- Label parts as you cut them; keep the same face against the fence when machining.
- Check every measurement against the cut list before cutting—it's easy to mix 17" and 14½".

- Sand and pre-finish flat parts before assembly; inside corners are miserable afterward.
- Practice any unfamiliar cut on scrap first.

### *Thoughts from Steven*

Don't fall in love with the work until it's done. I've watched students freeze on the next cut because they're afraid to ruin what they've got—and that fear is exactly what causes the slip. Stay engaged but detached. If you mess up, it's wood. There's more wood.

## **Glossary**

**Quartersawn:** Lumber sawn so growth rings meet the face near 90°; the most stable orientation, and the source of ray fleck in white oak.

**Ray Fleck:** The shimmering medullary-ray figure exposed on quartersawn white oak; the signature look of Arts & Crafts furniture.

**Domino:** A loose-tenon joinery system (Festool) that cuts oval mortises for football-shaped tenons.

**Loose Tenon:** A separate tenon glued into mortises in both mating parts, rather than cut integral to one part.

**Chamfer:** A flat bevel cut on an edge or corner—here, on the top edges of the legs.

**Ledger:** A strip fastened to the inside of a rail to carry the seat slats.

**Crosscut / Rip:** Cutting across the grain (shorter) versus along the grain (narrower).

**Snipe:** A slightly deeper cut at the ends of a board from the planer's feed rollers.

## **Next Steps**

Congratulations—this bench pulls together everything the earlier classes taught: milling, repeatable joinery, shaping, and a large, square glue-up. From here, The Joinery offers advanced furniture classes, tool-specific workshops, and open-shop membership so you can keep building.

### *Thoughts from Steven*

Every piece of furniture you'll ever build uses these same moves: mill, mark, cut, join, finish. The projects get more ambitious, but the fundamentals hold. Master them here and the rest is variation on a theme.

## ***The Joinery***

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