

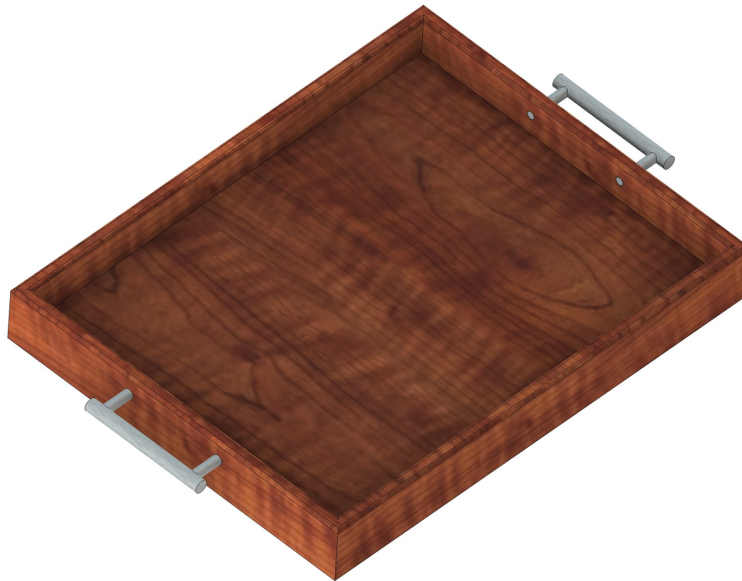
The Joinery
LLC

THE JOINERY

Woodworking Shared Shop and Learning Community

Serving Tray

Project Plan



A Walnut Frame with Rabbeted Corners, a Walnut-Ply Bottom, and Bar-Pull Handles

Finished size: 18³/₄" L x 14³/₄" W x 2¹/₄" H

Estimated Build Time: **About 3.5 Hours**

Skill Level: **Beginner**

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Adapted from a This Old House design for The Joinery's curriculum

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Welcome

Welcome to your serving tray project. This guide walks you through building a clean, functional tray with a walnut frame, rabbeted corner joints, a walnut-veneer plywood bottom, and a pair of stainless bar-pull handles. It's a great next step after a first build: simple, repeatable joinery and a little hardware, with a result that looks like real furniture.

The tray is a great teaching project because it packs a lot of fundamental skills into a small, finishable object – precise milling, repeatable joinery, a clean glue-up, and a little hardware – without the time commitment of a large piece. You'll walk out with something you'll actually use, or be tempted to give away.

About This Guide

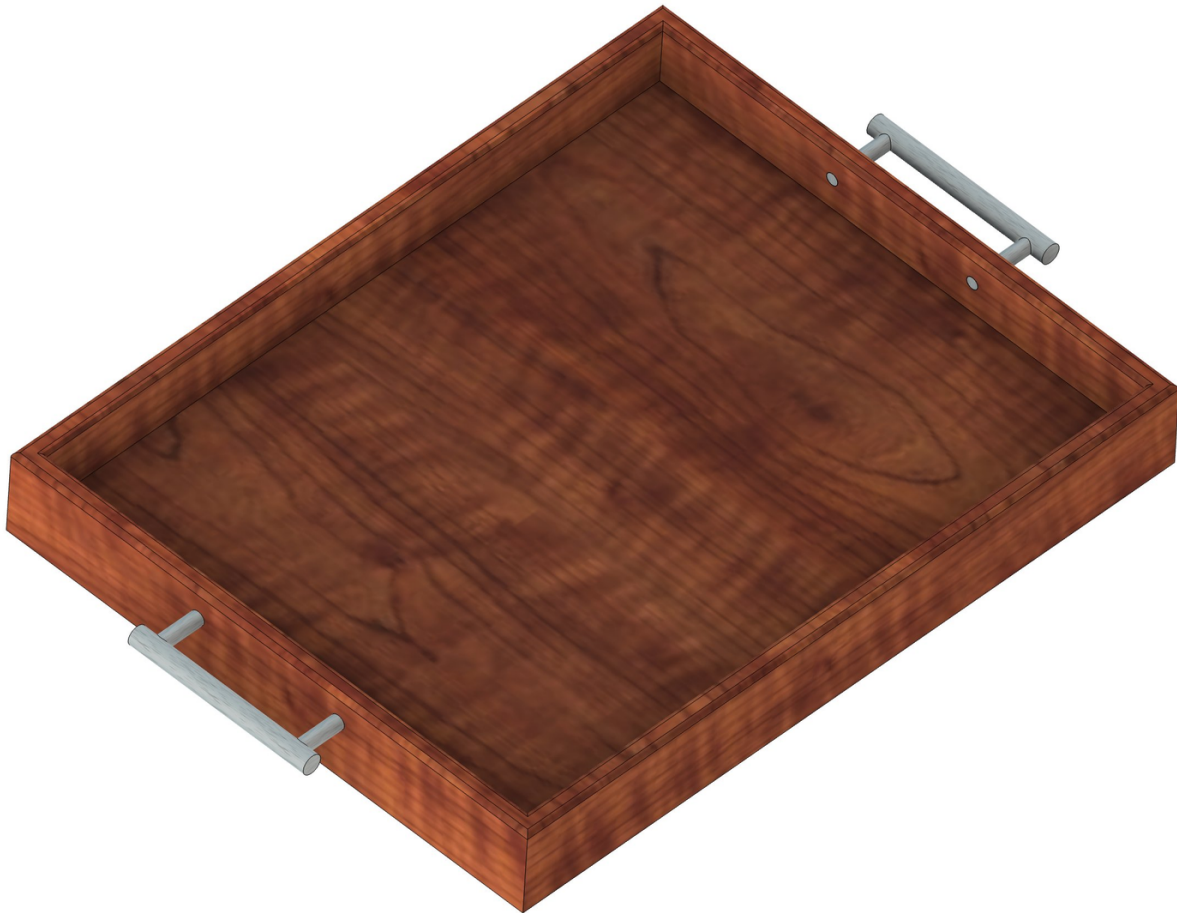
I'm Steven Ricks, co-owner of The Joinery, a woodworking shared shop and learning community in Middleton, Wisconsin. I've taught hundreds of people to work with wood, and I've written this guide to share not just the steps, but the practical wisdom that makes the difference between fighting the wood and working with it.

Thoughts from Steven

Throughout this guide you'll see boxes labeled "Thoughts from Steven." That's me talking to you the way I would if we were standing at the bench together – the stuff that doesn't fit neatly into numbered steps. The why behind a technique, the mistakes I've watched plenty of students make, and the occasional bit of conventional wisdom that's safe to ignore.

The numbered steps will get you a tray. These boxes are where the actual woodworking lives.

Project Overview



The finished tray: walnut frame, walnut-ply bottom, and stainless bar-pull handles.

This project guides you through building a serving tray with a solid walnut frame and a walnut-veneer plywood bottom. The four sides are the same height; a single $\frac{1}{4}$ " plywood panel drops into a groove cut around the inside; and a stainless bar pull mounts to each end for carrying.

The corners are joined with rabbeted butt joints – the two end pieces get a rabbet (a stepped notch) cut into each end, and the long sides seat into those rabbets. The rabbet adds glue surface and a built-in shoulder that helps everything line up square. No special jig required, which makes this a friendly project for your first real casework joints.

Thoughts from Steven

Here's the thing about a serving tray: it's the first project on our ladder that people immediately want to give away. That raises the stakes in your head, and high stakes make hands shaky. So do what I do – call your first one a prototype. You're practicing rabbets and a glue-up, not crafting an heirloom.

Build it from a cheaper board if the pressure feels real. Funny how often the “prototype” turns out nice enough to wrap up anyway.

Skills Covered

- Milling and dimensioning stock to a consistent thickness and width
- Repeatable crosscutting and ripping to a cut list
- Cutting rabbeted butt joints for clean, strong corners
- Cutting a groove to capture a plywood bottom
- Dry-fitting, gluing, and clamping a box for square
- Routing a continuous round-over edge
- Mounting hardware (bar-pull handles)
- Applying a food-safe finish

Understanding Wood

Before cutting anything, it helps to understand how wood behaves. Unlike metal or plastic, wood is a natural material that keeps responding to its environment long after the tree comes down.

Grain Direction

Long grain runs the length of the board, parallel to the trunk. This is the strong direction and the direction you generally want your joinery to pull against.

End grain is exposed where you cut across the fibers. It's weaker and drinks up finish faster than the faces.

Face grain is the wide, decorative surface – the part people see and the reason you chose the board you chose.

Why Wood Moves

Wood expands and contracts mainly across its width, not its length, as it gains and loses moisture with the seasons. A wide solid panel can move a surprising amount – enough to crack a glued joint or push a tray out of square. That's exactly why this tray uses a plywood bottom instead of a solid one: plywood is built from thin layers glued cross-grain, so it stays flat and barely moves. You can trap it in a groove on all four sides and never worry about it.

Why a Plywood Bottom?

Plywood's cross-laminated layers cancel out seasonal movement, so a ¼" panel stays flat and dimensionally stable. That lets you capture it in a groove on all four sides for a solid, rattle-free floor – something you couldn't safely do with a solid-wood panel of the same width without inviting a crack.

It also gives a clean, continuous bottom and keeps the project simple and quick.

Thoughts from Steven

The frame of this tray is solid walnut, and solid wood always wants to move – “wood will do what wood wants to do” is one of my favorite sayings around the shop. The bottom is plywood, and that's the whole point: plywood is the one sheet good that doesn't fight you that way, so you can lock it into a groove and forget about it.

Knowing which parts move and which don't is half of woodworking. Let the solid stuff breathe; pin down the stable stuff.

Materials

Primary Stock

- Walnut for the frame — enough for four pieces at $\frac{1}{2}$ " thick $\times$ $2\frac{1}{4}$ " wide (two at $18\frac{1}{4}$ ", two at $14\frac{3}{4}$ "); a $\frac{1}{2}$ " $\times$ 6" $\times$ 48" board or equivalent works
- One $\frac{1}{4}$ " walnut-veneer plywood panel for the bottom, at least 15" $\times$ 19" to start

Why Walnut?

Walnut is a joy to work and one of the most rewarding woods to finish — it cuts cleanly, takes an oil finish beautifully, and has a deep chocolate-brown color with plenty of figure. Using solid walnut for the frame and a walnut-veneer plywood bottom keeps the whole tray unified: the grain and color carry straight through from the sides to the floor.

Any stable hardwood works for the frame if you'd rather substitute. For a true prototype, a cheaper board or even poplar is perfectly fine.

Hardware & Consumables

- Two stainless bar pulls ($\emptyset\frac{1}{2}$ " $\times$ 5", 4" centers) — one per end
- Four #8 $\times$ $\frac{7}{8}$ " stainless flat-head screws (to mount the pulls)
- Wood glue (yellow PVA such as Titebond Original or II)
- Sandpaper: 120 and 220 grit
- A food-safe finish (mineral oil, walnut oil, or a hardening food-safe oil/varnish such as Tried & True)

Tools Required

Milling & Dimensioning

- Jointer – flattens one face and one edge of rough lumber
- Planer (thickness planer) – brings stock to a consistent thickness
- Miter saw – accurate crosscuts to length
- Table saw – rips parts to width and can cut the rabbets and bottom groove

Joinery & Shaping

- Dado set or a router with a straight bit – to cut the corner rabbets and the bottom groove
- Router with a 1/8" round-over bit – to ease the top edge after glue-up

Assembly, Hardware & Measurement

- Bar or pipe clamps (4)
- Measuring tape and combination square
- Drill with a #8 countersink bit, and a driver for the screws
- Pencil and a damp rag

What Is a Rabbeted Butt Joint?

A butt joint is simply one board's end set against another's face or edge. On its own it's weak and shows a lot of end grain. A rabbeted butt joint improves it: you cut a rabbet – an L-shaped step – into the receiving piece so the mating piece seats into it. On this tray, each end piece gets a rabbet that receives a long side. That gives more glue surface, a shoulder that registers the corner square, and a cleaner look with less exposed end grain.

Cut List & Bill of Materials

Mill and cut your parts to the dimensions below. Sizes are listed as thickness × width × length. Finished tray dimensions are 18¾" long × 14¾" wide × 2¼" tall (the bar pulls add to the overall footprint).

Tray Parts

Component	Material	Qty	Size (T × W × L)
Long Sides	Walnut	2	½" × 2¼" × 18¼"
Ends	Walnut	2	½" × 2¼" × 14¾"
Bottom Panel	Walnut ply	1	¼" × ???????

Hardware

Item	Qty	Specification
Bar pull (stainless)	2	Ø½" × 5" long, 4" centers
Flat-head screw (stainless)	4	#8 × 7/8"

Joinery: 1/4 x 1/4 groove, 7/16 up from bottom, all four inner faces. Ends rabbeted 1/4 x 1/2 to receive the long sides.
Top edge: 1/8 round-over, continuous, after glue-up. Cut the panel ~1/16 small for clearance; veneer grain runs the length.
Hardware: brushed-stainless bar pulls, 4 in centers; four #8 flat-head screws countersunk flush on the inside faces.

BILL OF MATERIALS

ITEM	QTY	PART	MATERIAL	SIZE (in)
1	2	Long side	Cherry	1/2 x 2 1/4 x 18 1/4
2	2	End	Cherry	1/2 x 2 1/4 x 14 3/4
3	1	Bottom panel	Walnut ply	1/4 x 14 1/4 x 18 1/4
4	2	Bar pull	Stainless	Ø 1/2 x 5, 4CC
5	4	FH screw	Stainless	#8 x 7/8

SERVING TRAY

Exploded assembly & bill of materials
Finished: 18-3/4 L x 14-3/4 W x 2-1/4 H
Cherry frame, rabbeted corners, 1/4 in ply bottom

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Exploded assembly and bill of materials (The Joinery shop drawing).

Confirm These Against a Prototype

These dimensions come from the shop drawing and are the current spec, but rabbet and groove fits depend on your exact blade, bit, and setup. Treat the joinery dimensions as targets to dial in on scrap before committing your good walnut.

Cut the plywood bottom last: dry-assemble the tray, measure groove-to-groove in both directions, then cut the panel about 1/16" small for clearance. Run the veneer grain along the length.

Safety Guidelines

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

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 your hands and fingers at least 3 inches from the blade or cutter at all times.

12 – Twelve-Inch Gut Check: If the board you're cutting is 12 inches or less, do a gut check – are you using the right tool for the job? If your gut says no, use a different tool. Most cuts can be made more than one way.

General Shop Safety

- Always wear safety glasses when operating any power tool
- Wear hearing protection around loud machinery (planer, router, table saw)
- Remove loose clothing and jewelry, and tie back long hair
- Never reach over or behind a spinning blade or cutter
- Keep your workspace clean and clear of sawdust buildup
- Know where the emergency stop buttons are

Tool-Specific Safety

- Dado set / rabbeting: keep the workpiece tight to the fence, hands well behind the blade path, and never reach over a stacked blade while it's running
- Table saw (grooves): use the fence, keep hands clear of the blade path, never stand directly behind the blade
- Miter saw: keep hands 3" from the blade and let it stop fully before raising
- Drill: clamp the workpiece and back it with scrap to prevent blow-out when drilling through
- Router: start and stop off the workpiece, and let the bit cut at its own pace

Thoughts from Steven

Safety rules aren't arbitrary – every one of them is somebody's bad day, written down so it doesn't have to be yours. The dado set deserves extra respect: it removes a lot of material at once and sits close to your hands, so keep your fingers well behind the blade, use the fence, and if a cut ever feels wrong, stop.

Nobody has ever been embarrassed by asking. Plenty of people have been embarrassed explaining a trip to urgent care.

Before You Begin

This guide assumes you have a dado or router setup ready for the rabbets and groove, and your bar pulls and screws on hand for final assembly.

Read through all the phases once before you start cutting. Rabbets and grooves reward a little planning: decide which edge is the bottom and which face is the inside before your first cut, and keep that orientation consistent so every part goes together the same way.

Mark Your Reference Edges

Before any joinery, mark the bottom edge and inside face of every side piece with a pencil. The bottom groove and the corner rabbets are all referenced from those surfaces – keep them consistent and the parts can't help but go together right.

Build Process

Phase 1 – Stock Preparation (20 minutes)

Mill your board to a consistent ½" thickness so every part matches. Flat, equal-thickness stock is the foundation of clean joinery and tight corners. The plywood bottom needs no milling.

1. **Inspect the board** for cracks, knots, and warp. Plan your layout so any defects fall in offcuts.
2. **Find the grain direction** and feed the board into machines with the grain to minimize tear-out.
3. **Joint one face and one edge** flat to create reference surfaces.
4. **Plane to ½" thickness** in light passes, keeping the same reference face down.

Note for This Class

Stock provided for class has already been milled to thickness. We'll review milling for your reference, but you can proceed directly to cutting parts to size. When buying lumber for future projects, ask the mill to surface the board and add a straight-line rip – it saves real time in the shop.

Phase 2 – Cutting Parts to Size (25 minutes)

Rip and crosscut your four walnut sides to the cut-list dimensions – all four are 2¼" tall. Leave the plywood bottom slightly oversized for now; you'll trim it to fit the assembled tray later.

1. **Crosscut to length** at the miter saw: Cut one length at 14¾", cut the remaining length at 18¾".
2. **Rip to width** on the table saw: rip all four sides to 2¼" tall.
3. **Rough-cut the plywood bottom** a bit oversized (about 15" × 19"). Set it aside; you'll cut it to its final size in Phase 5.

Thoughts from Steven

Consistency matters more than precision. If both ends match each other and both long sides match each other – even if a dimension drifts slightly from the plan – the tray goes together well. It's variation between like parts that causes grief. Set the fence once and cut the matching parts without touching it.

Phase 3 – Cutting the Corner Rabbets (25 minutes)

Each corner is a rabbeted butt joint. You'll cut a rabbet into both ends of the two end pieces, and the long sides will seat into those rabbets. Set up a dado stack or a router with a straight bit, and cut a test rabbet on scrap first.

1. **Mark the bottom edge and inside face** of every side so you cut and assemble in a consistent orientation.
2. **Set up the rabbet** – ½" wide (to receive the full ½" thickness of a long side) and ¼" deep, leaving a ¼" lip. Confirm the setup on scrap: a long side should seat fully into the rabbet with a clean shoulder.
3. **Cut both ends of each end piece** with the same setting, so all four corners match. A backer board behind the cut helps prevent tear-out.
4. **Dry-fit a corner** to confirm the long side seats square into the rabbet with no gap before cutting the rest.

One Setting, Four Corners

Cut every rabbet without changing the setup. As with all repeatable joinery, matching parts matter more than hitting an exact number – if all four rabbets are identical, the box comes together square even if your depth drifts a hair from the plan.

Thoughts from Steven

Rabbeted corners are honest, simple joinery: easy to cut, plenty strong for a tray, and that little shoulder does you a favor at glue-up by holding the corner in alignment while you clamp. You're not fighting four loose butt joints trying to skate around – each piece drops into its step and stays put.

Cut a test rabbet on scrap and seat a long side into it before you touch your good walnut. Two minutes there saves an afternoon of regret.

Phase 4 – Groove for the Bottom Panel (20 minutes)

A ¼" groove runs around the inside of all four sides to capture the plywood bottom. Cut it with a ¼" dado or straight bit (one pass), or with a standard blade in two passes. Keep the groove the same distance up from the bottom edge on every piece so the floor sits flat.

1. **Set the groove ¼" wide** to match your plywood, and ¼" deep.
2. **Position it 7/16" up** from the bottom edge. With the inside face toward the fence and the bottom edge riding the fence, run all four inner faces so the groove lands consistently.
3. **Run the groove the full length** of each side; the grooves meet at the corners to form a continuous channel for the panel.

Test the Groove on Scrap

Mill a sample groove in a scrap of your ½" stock and check that a piece of your ¼" plywood slides in snugly with no slop. Plywood often runs slightly under its nominal thickness, so dial the width to your actual sheet before grooving your real parts.

Phase 5 – Dry Fit, Glue & Assembly (35 minutes)

With the sides rabbeted and grooved, fit the tray together – dry first, then for real. The plywood bottom gets cut to size now, against your actual assembly.

1. **Full dry assembly** – seat each long side into the rabbets of the two ends and check that the tray is square and sits flat. This is your last chance to adjust.
2. **Cut the plywood bottom to fit** – measure groove-to-groove in both directions on the dry assembly, then cut the panel about 1/16" smaller in each direction for clearance. Run the veneer grain along the length. Confirm it drops into the grooves and lets the corners close fully.
3. **Sand the inside faces and the bottom panel now**, while everything is still easy to reach.
4. **Glue three corners** – apply glue to the rabbets on both ends of one end piece and the mating ends of the long sides, then bring them together with the grooves facing in.
5. **Slide in the bottom panel**. Since plywood is stable, you can glue it in for a rigid floor or leave it dry – either works.
6. **Add the final end piece**, closing the box around the panel.
7. **Clamp and check for square** by measuring the diagonals – equal diagonals mean a square tray. Sight across the top for twist.
8. **Wipe squeeze-out** with a damp rag before it dries. Dried glue won't take finish.

Glue-Up Tips

Have everything ready before the cap comes off the bottle – clamps open and set, parts in order, damp rag and dry rag at hand. Apply clamp pressure gradually and evenly; you want firm pressure, not crushed fibers.

Thoughts from Steven

The rabbet shoulders do you a quiet favor here: they hold each corner in alignment while you get clamps on, so you're not wrestling four parts at once. Still, have everything within arm's reach before you start, and move with purpose, not panic – you've got more working time than your nerves think.

On the bottom panel: it's plywood, so it won't move with the seasons the way a solid floor would. That means you get to choose – glue it in for a solid, rigid tray, or leave it floating for simplicity. There's no wrong answer here, which is a nice change.

Phase 6 – Edge Treatment (15 minutes)

Once the glue has set, soften the top edge with a router. This is a small detail that makes the tray feel finished and comfortable in the hand.

1. **Install a 1/8" round-over bit** in the router and set the bearing to ride the edge.
2. **Round over the top edge** in one continuous pass all the way around. Move the router left to right (against the bit's rotation), starting and stopping off the corners where you can.
3. **Ease any remaining sharp edges** lightly by hand so nothing is uncomfortable to pick up.

Finishing Your Tray

After the glue has cured (at least an hour for handling, overnight for full strength), sand and finish. Because this tray will likely carry food, choose a food-safe finish.

Start at 120 grit and work up to 220, paying attention to the corners so the joints come flush. Then apply your finish per the manufacturer's directions, allowing drying time between coats.

Food-Safe Options

Mineral oil: The simplest choice – inexpensive, food-safe, easy to apply, and easy to refresh whenever the wood looks dry.

Walnut or other food-safe oils: Bring out the grain with a natural, low-sheen look.

Hardening food-safe finishes (e.g., Tried & True): An oil-and-resin finish that builds a little more protection while staying food-safe and easy to repair.

Thoughts from Steven

This one goes in a kitchen, so the finish has to be food-safe – not “probably fine,” actually food-safe. Plain mineral oil is the no-brainer: cheap, food-safe, wipe it on, buff it off, redo it whenever it looks thirsty. Walnut oil or a hardening finish like Tried & True work too.

I'm a lazy finisher and proud of it. I want something that looks good, shrugs off a water ring, and fixes with a rag and ten minutes – not a refinishing project.

Mounting the Handles

Mount the bar pulls last, after the finish has dried, so you're not finishing around metal. Each end gets one stainless bar pull, fastened from inside the tray with two #8 × 7/8" flat-head screws.

1. **Mark the screw holes** on each end: the two holes are 4" apart (the pull's center-to-center spacing), centered left-to-right on the 14¾" end, at the height shown on the drawing.
2. **Drill clearance holes** through each end for the #8 screws, backing the cut with scrap to prevent blow-out.
3. **Countersink on the inside face** so the flat heads sit flush against the inside of the tray.
4. **Attach each bar pull** by driving the screws from inside into the pull's posts. Snug, not gorilla-tight – you're threading into the hardware, not the wood.

Measure From the Drawing

The pulls are ½" diameter, 5" long, with 4" between mounting centers. Lay out the holes from the drawing so both ends match, and dry-hold a pull in place before drilling to confirm the position looks right to your eye.

Tips for Success

- Mark a consistent reference edge and face on every part before cutting joinery. Almost every corner mistake traces back to losing track of orientation.
- Test every joinery setup on scrap first – the rabbets and the groove both reward a trial cut.
- Label your parts as you go (“Long A,” “End 1”) so the dry fit and glue-up stay organized.
- Cut and fit the plywood bottom to your actual assembly, not to the printed dimension – measure the dry-fit tray and cut to that, then take off 1/16" for clearance.
- Mount the hardware after finishing, so you're not working a finish around the metal pulls.
- Don't fall in love with your work until it's done – staying a little detached keeps you making confident cuts. If you mess up, it's wood. There's more wood.

Glossary

Butt Joint: a joint where one board's end meets another's face or edge; rabbeting it adds glue surface and a registration shoulder.

Countersink: a cone-shaped recess that lets a flat-head screw seat flush with the surface.

Crosscut: cutting across the grain to shorten a board.

Dado Set / Stacked Dado: a stack of saw blades that cuts a wide, flat-bottomed groove, rabbet, or notch in one pass.

Groove: a channel cut to capture a panel (cut with the grain it's a groove; across the grain, a dado).

Kerf: the width of material a saw blade removes.

Rabbet: an L-shaped step cut along the edge or end of a board; here, the ends are rabbeted to receive the long sides.

Rip: cutting along the grain to narrow a board's width.

Round-over: an edge profile that rounds a sharp corner to a radius; here a 1/8" round-over softens the top edge.

Snipe: a slightly deeper cut at a board's ends from a planer's feed rollers; minimize with support and light passes.

Next Steps

Congratulations on your serving tray. You've now cut real joinery, captured a panel, finished the wood, and mounted hardware – the same skills bigger furniture leans on, just at a size you can finish in an afternoon.

Ready to keep building? The Joinery offers classes at every level, plus open-shop membership:

- More beginner projects (cutting boards, small boxes, shelves)
- Intermediate furniture (side tables, cabinets)
- Advanced joinery (the Japanese Contemplation Bench)
- Tool-specific workshops and open-shop membership

Thoughts from Steven

A tray uses nearly every skill the big stuff leans on – milling, repeatable cuts, real joinery, a clean glue-up, and a little hardware – just fewer of them and smaller. Get comfortable here and a cabinet stops looking like a different sport. It's the same moves, more of them.