

WOODWORKING PLANS · FREE PLAN

The Shaker

Peg Shelf



1 SPLINTER

Beginner friendly

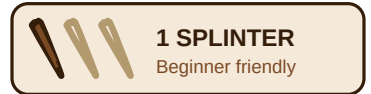
A 34 in Shaker wall shelf with a peg rail: a top, two curved brackets, a rail and nine pegs. A great first project. Free from M2.

Size	34 L x 3-1/2 D x 9-3/4 H in (make it any length)
Lumber	4/4 hardwood, about 3 bd ft
Joinery	Screws and wood plugs
Shaping	One curve per bracket
Price	Free plan from M2 Lumber

Questions while you build? Call us. 1-864-GOT-WOOD (468-9663)
Mon-Fri 9 am-5 pm, Sat 8 am-3 pm (Eastern)

Read This First

The Splinter Scale, our shop standards and how to use these drawings.



The Splinter Scale

Every M2 plan is rated 1 to 3 splinters so you know what you're getting into before the first cut.



1 SPLINTER · Beginner friendly <- this plan

Straight parts, square cuts and simple joinery.



2 SPLINTERS · Some skill needed

Curved or shaped parts, more joints and tighter fits.



3 SPLINTERS · Advanced

Drawers, doors, casework or complex shaped joinery that has to fit just right.

Why this plan is rated 1 splinter

Straight parts, a single simple curve on each bracket and dowel joinery. Beginner friendly.

M2 shop standards (apply to every part)

- **Edges.** We ease every edge about 1/8 in (sandpaper or a small roundover bit). Sharp corners splinter and chip, so don't leave them, even where a drawing shows a sharp corner.
- **Except at joints.** Never round or ease an edge where two parts meet. Keep joint lines crisp: ease edges after the part's joinery is cut, and skip any face that becomes a joint face.
- **Feet.** Where wood touches the floor, round the bottom edges 1/8 to 1/4 in so the feet don't splinter out when the piece is moved.
- **Curves and templates.** A single gentle curve can be cut by hand: bandsaw or jigsaw just outside the line, then sand or spokeshave to it. Parts with a series of curves are cut with a template and a flush-trim bit, and we strongly recommend our CNC-cut templates for those. The shop-drawing views are drawn to scale, so you can also enlarge and print them and trace your own paper template, but then you're making your own template: check it against every dimension before you cut.
- **++ means rough it out oversized.** On shaped parts, a dimension marked ++ is the FINISHED size of the part. Rough-cut the blank well oversized (about 1 in wider and 3 in longer than the ++ size), trace the template, saw about 1/8 in outside the line, then flush-trim to the template for the final size. Don't cut a shaped blank to the ++ size before templating.
- **Dimensions govern.** Always work from the numbers, not by measuring the drawing. Cut one part, test the fit, then cut the rest.
- **Joinery.** We join parts with Festool Domino loose tenons wherever two parts meet. Dowels, pre-drilled screws with plugs, or traditional mortise and tenon all work in their place (see the Joinery sheet). Pocket screws work but are weaker.
- **Thick parts are glued up.** We don't stock 16/4. For anything thicker than 1-3/4 in, glue up two 8/4 boards: plane each a little over half the final size (about 1-5/8 in for a 3 in part), glue, let it dry, then plane to the final size. Always leave extra width, thickness and length to do your final sizing after a glue-up.
- **Anything wider than 12 in.** Most shops have a 12 to 13 in planer and a 6 to 8 in jointer. Flatten and thickness boards before glue-up, glue wide parts in sections narrower than your planer, plane each section, then join them and level the seams with a hand plane, router sled or sander. Wide shaped parts are glued up from boards about 5 in wide and cut to shape afterward.
- **Tops.** Table tops finish 1-1/2 to 1-3/4 in thick unless noted, and attach with Z-clips in slots cut with a biscuit joiner (2 to 3 per side) so the top can move with the seasons.
- **Knock-down bases.** Stretchers attach with connector hardware so the base can come apart for moving. If you glue instead, make sure you have room to move one solid base.



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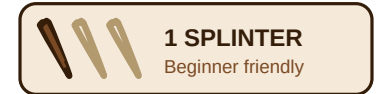
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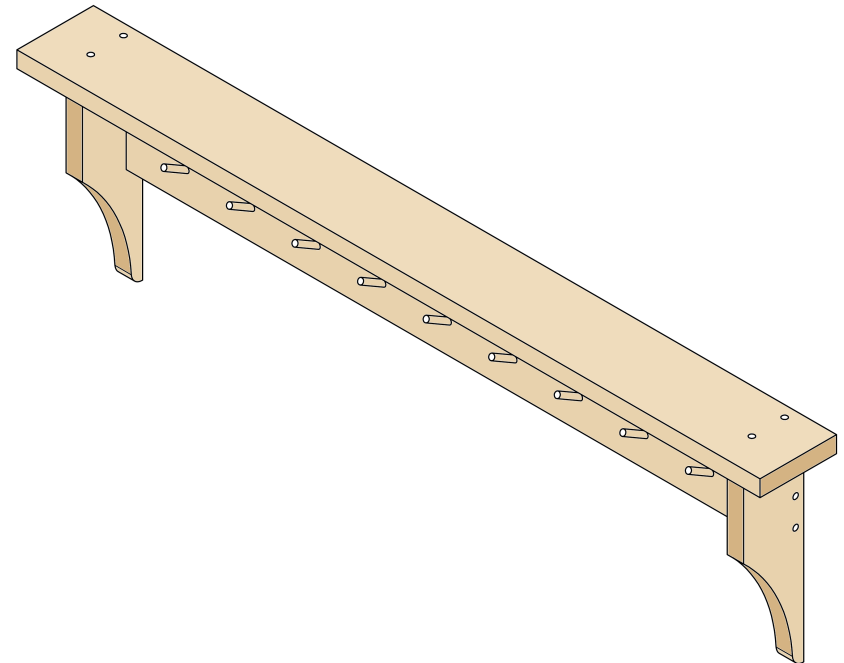
2 / 15

Notes for This Design

Read these before you cut. They come from how we build it in our shop.

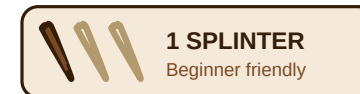


- Everything is 3/4 in thick. The parts are screwed together and the screw holes plugged.
- The bracket curve is one simple arc: cut it by hand with a jigsaw or bandsaw and sand to the line.
- **Pegs:** plain 1/4 in dowels (or turned Shaker pegs) in 1/4 in holes drilled through the 3/4 in rail at an angle, sticking out about 1-1/2 in. Make a simple angled drilling guide from scrap so every peg is at the same angle. It's hard to do freehand.
- **Any length:** keep the 3 in peg spacing and add or drop pegs.
- **Hanging:** keyhole slots routed in the back, a drilled hole, or picture-frame hardware for light loads. For heavy loads, screw it straight into studs and plug the holes.



Materials, Board Feet and Cost

What to buy. Board feet include 20% for waste and defects.



Lumber to buy

3 board feet of 4/4 lumber

Approximate lumber cost (at the drawn size)

Species	4/4 price	Lumber cost
Black walnut	\$10.99	\$33
White oak	\$9.99	\$30
Sapele	\$8.99	\$27
Hard maple	\$6.49	\$19
Hickory	\$4.59	\$14
Cherry	\$4.99	\$15
Ash	\$4.99	\$15
Ambrosia maple	\$4.29	\$13
Red oak	\$4.59	\$14
Poplar	\$2.99	\$9

M2 Lumber prices per board foot on 10/21/26; check m2lumber.com or call for today's price. Plans are free with \$800 or more of lumber.

Also needed

- #8 wood screws and 3/8 in wood plugs
- 1/4 in hardwood dowel for pegs (or 9 turned Shaker pegs)
- Wood glue
- Keyhole hardware or picture-frame hangers, or screws into studs
- Finish

Tools

- Saw (table, circular or hand)
- Jigsaw or bandsaw
- Drill, 1/4 in bit, 3/8 in Forstner or plug cutter
- Angled drilling guide (scrap)
- Clamps
- Sander



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A draft, 10/21/26

SHEET

4 / 15

Rough Milling: From Board to Blank

Every part before any shaping, templating, angles or joinery, shown for the 34.0 x 3.5 in shelf. Not to scale.



1. ROUGH CUT FROM LUMBER

2. MILL AND GLUE UP

3. READY FOR SHAPING / JOINERY

SHELF TOP make 1

*joint, plane and rip to
3/4 x 3-1/2*



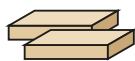
1 pc 4/4 x 4 x 36



3/4 x 3-1/2 x 34

BRACKET make 2

*joint and plane to 3/4 thick;
keep the full width and length for the template*



2 pcs 4/4 x 3-3/4 x 12



3/4 x 3-3/4 x 12 blank, ready to trace
the template (2-3/4 x 9 finished)

PEG RAIL make 1

*joint, plane and rip to
3/4 x 2-3/4*



1 pc 4/4 x 3-1/4 x 32



3/4 x 2-3/4 x 29-1/2

Why rough out oversized: wood moves when it's cut and glue lines never line up perfectly, so every blank starts thicker, wider and longer than it finishes. Shaped parts are roughed out about 1 in wider and 3 in longer so the template and flush-trim bit cut them to size. Plane laminated blanks to final size only after the glue is dry. Sizes that change with your table are on the Cut List.



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SHEET

5 / 15

Cut List

Finished sizes at the drawn size, and rough sizes to cut before milling.



1 SPLINTER
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Part	Qty	Finished T x W x L (in)	Rough size to cut	Lumber	Shape	Notes
Shelf top	1	3/4 x 3-1/2 x 34	4/4 x 4 x 36	4/4	Straight	
Bracket	2	3/4 x 2-3/4 x 9	4/4 x 3-3/4 x 12 ++	4/4	Template / CNC	One curve; mirror pair
Peg rail	1	3/4 x 2-3/4 x 29-1/2	4/4 x 3-1/4 x 32	4/4	Straight	
Peg	9	1/4 x 1/4 x 2-3/8	-	dowel	Turned	1/4 in dowel

Rough sizes add about 2 in to length and 1/2 in to width. ++ **shaped parts** are roughed out well oversized (about 1 in wider and 3 in longer) because the template and flush-trim bit cut them to the finished size; the finished size is the ++ size on the drawing. Laminated parts: see the part sheet. Cut the longest parts first so offcuts can cover the short ones.



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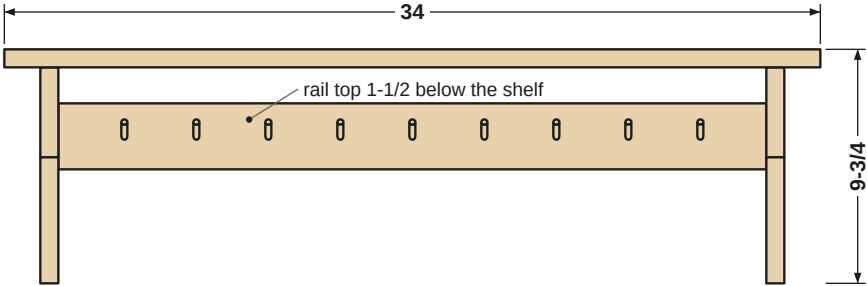
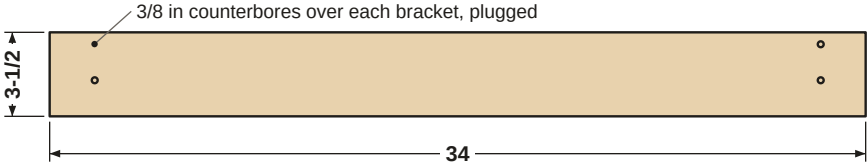
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6 / 15

Assembly Views

Drawn at 34 in long x 3-1/2 deep x 9-3/4 tall. Dimensions in inches.

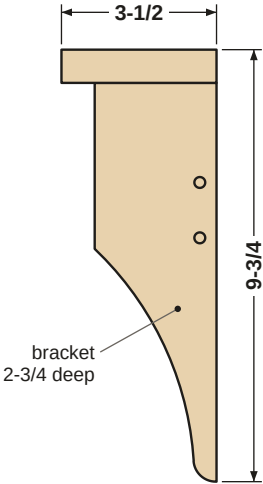


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Top view (counterbores over the brackets)

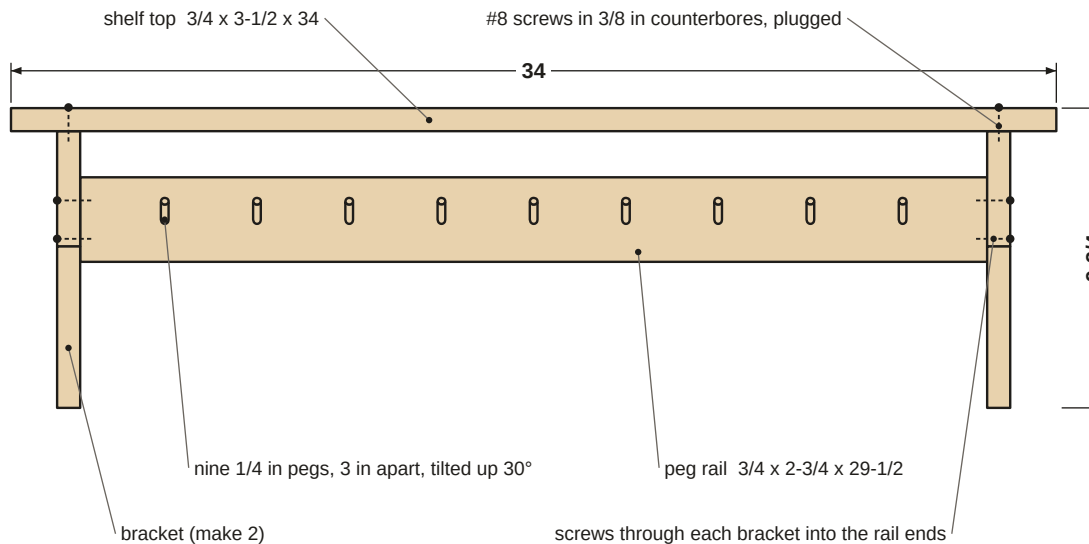
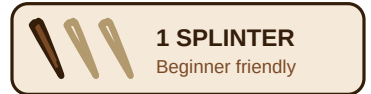
Front view (nine pegs, 3 in apart)



Side view (end)

Front Assembly

The rail is screwed between the two brackets, the top is screwed down onto them, and the pegs are glued into the rail.



Joints

- **Rail to brackets:** glue plus two #8 screws through the outside of each bracket into the rail end, 2-1/4 and 3-1/2 in down from the top, 3/8 in from the back edge.
- **Top to brackets:** glue plus two #8 screws down into each bracket, 1-7/8 in from each end of the top, 1/2 and 2 in from the back edge.
- Every screw sits in a 3/8 in counterbore, 1/4 in deep, filled with a glued wood plug trimmed flush.

Pegs

Drill the nine 1/4 in holes before assembly, all the way through the rail, tilted up 30°. The first is 2-3/4 in from the end, then every 3 in. Make an angled guide block from scrap so every peg matches. Glue in 1/4 in dowels (or turned Shaker pegs) so about 1-1/2 in sticks out.

Glue-up order

Screw the rail between the brackets first, flush with their back edges, and check it's square. Then screw the top on, flush at the back, with 3/4 in overhang at the front. Plug, trim, then glue in the pegs.

Hanging it

- Keyhole slots routed in the back of the rail, on screws in the wall.
- Picture-frame hardware (D-rings) on the brackets, for light loads.
- For heavy coats and bags: screw through the rail into the studs and plug the holes.

Part: Shelf top



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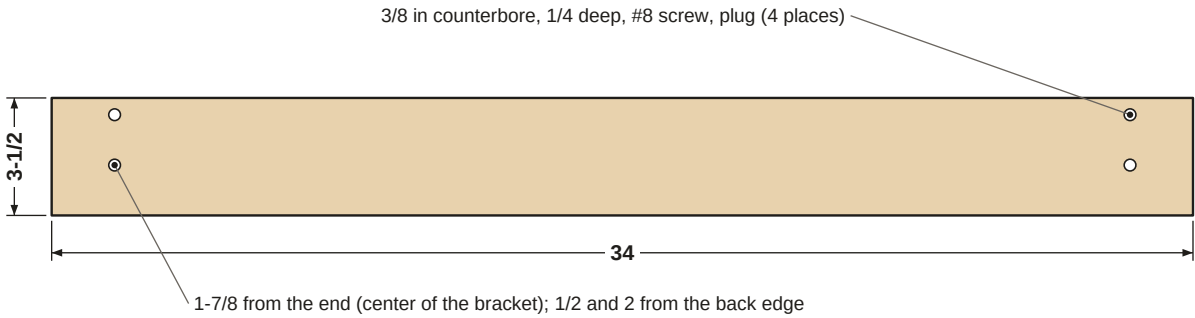
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Quantity	1
Finished size	3/4 x 3-1/2 x 34 in
Lumber	4/4

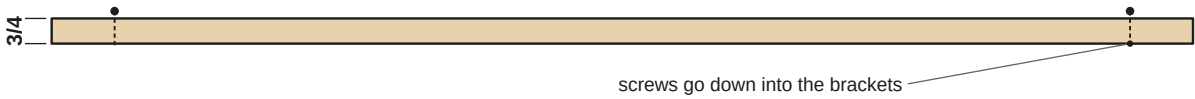
How to make it

- Drill 3/8 in counterbores 1/4 in deep, 1.88 in from each end, and screw down into the brackets. Plug the holes.

TOP VIEW (BACK EDGE AT THE TOP)



FRONT EDGE



Dimensions in inches. '++' = finished size of a shaped part; rough it out oversized.

Part: Bracket (make 2)



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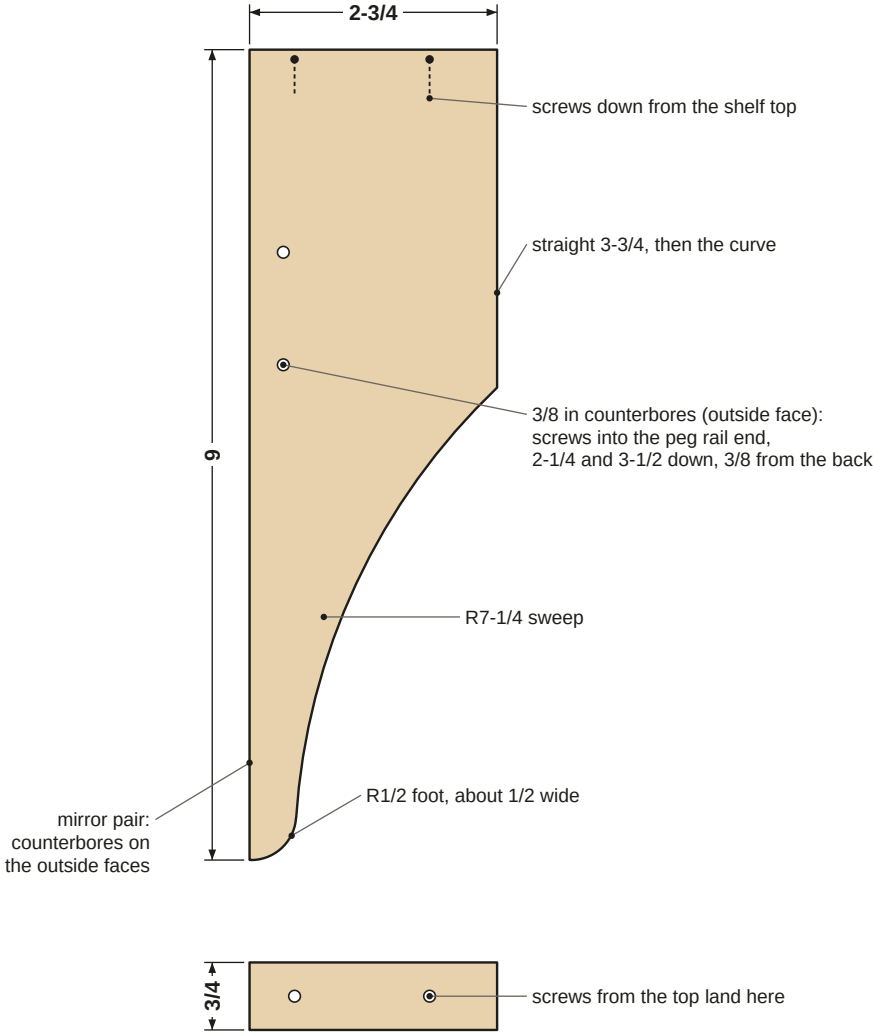
Beginner friendly

Quantity	2
Finished size	3/4 x 2-3/4 x 9 in
Lumber	4/4
Rough blank ++	3/4 x 3-3/4 x 12 in (oversized; trim to template)
Cutting	Template + flush-trim bit (CNC template kit recommended)

How to make it

- Trace the curve from the drawing, cut just outside the line, sand to it.
- Shaped part: make or buy a template, rough cut 1/16 in outside the line, then flush-trim to the template.

FACE VIEW (BACK EDGE ON THE LEFT, AGAINST THE WALL)



TOP EDGE

Dimensions in inches. '++' = finished size of a shaped part; rough it out oversized.

Part: Peg rail



1 SPLINTER

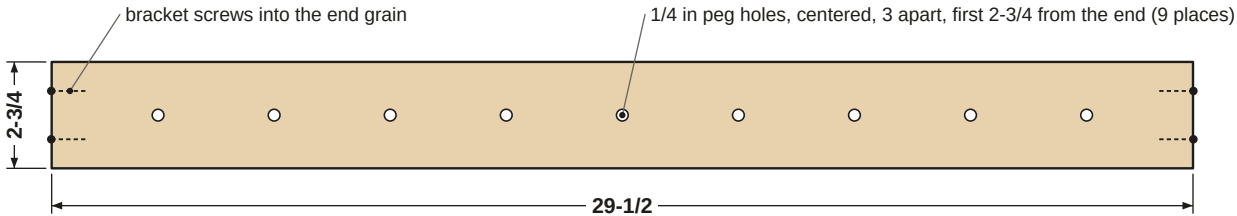
Beginner friendly

Quantity	1
Finished size	3/4 x 2-3/4 x 29-1/2 in
Lumber	4/4
Angles	peg holes 30 deg

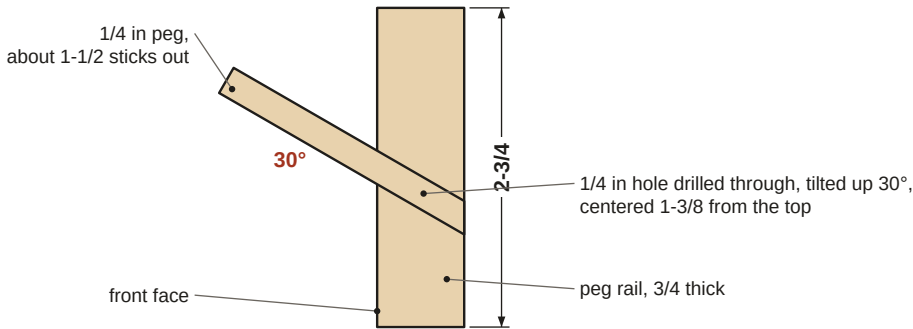
How to make it

- Drill the 9 peg holes 1/4 in, all the way through the 3/4 in rail, 3 in apart at the angle shown, starting 2-3/4 in from each end. Use your angled guide.
- Glue in 1/4 in dowels so they stick out about 1-1/2 in.

FRONT FACE



SECTION THROUGH A PEG HOLE (DRAWN 3x LARGER)



Dimensions in inches. '++' = finished size of a shaped part; rough it out oversized.

Part: Peg (make 9)

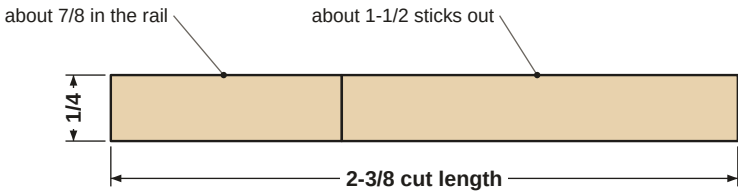


1 SPLINTER

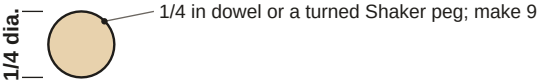
Beginner friendly

Quantity	9
Finished size	1/4 x 1/4 x 2-3/8 in
Lumber	dowel

SIDE VIEW



END VIEW



Dimensions in inches. '++' = finished size of a shaped part; rough it out oversized.



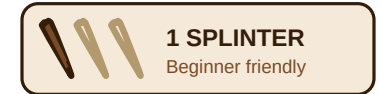
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Joinery and Hardware

How the parts go together, with alternatives if you don't own a Domino.



How we join it

- Top to brackets and brackets to rail: glue and #8 wood screws in 3/8 in counterbores, plugged with wood plugs and trimmed flush.
- Pegs glued into the rail.

Alternatives to Dominos

- **Dowels:** two 3/8 in dowels per joint with a doweling jig, 1-1/4 in deep each side.
- **Screws and plugs:** pre-drill, counterbore 3/8 in, glue a face-grain plug and trim flush.
- **Mortise and tenon:** the traditional joint. Add tenon length to the parts (not detailed here).
- **Pocket screws:** work, but they're the weakest choice for a piece that gets used hard.

Assembly tips

- Screw the rail between the brackets first, then add the top.
- Hang into studs or with rated hardware; plug any screw holes in the face.



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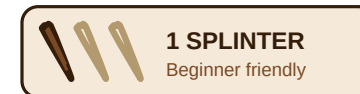
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13 / 15

Choosing Lumber and Grain

Good boards and careful layout matter more than any tool.



At the lumber rack

- Buy everything for one piece from the same species and, if you can, the same bundle so the color matches.
- Kiln-dried, 6 to 8% moisture. Let it sit in the room where you'll build for 1 to 2 weeks before milling.
- Sight down each board. Pass on heavy twist or cup; a little bow is fine since parts get cut shorter.
- Avoid the pith (center of the tree) and long cracks. Small end checks get cut off.
- Buy the board feet on the Materials sheet. The extra 20% lets you be picky about grain.

Shaped and structural parts

- Run grain the long way on the top and rail, vertically on the brackets.

Board-foot math

Board feet = thickness x width x length (inches) / 144. 8/4 counts as 2 in thick, 4/4 as 1 in.



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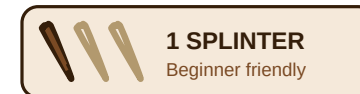
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SHEET

14 / 15

Milling, Build Sequence and Finishing

Work in this order: mill, cut and shape, joinery, glue-up, finish.



Milling

- **Cut the longest parts first**, then the shorter ones from what's left.
- Cut every part to rough size (cut list) and let them sit overnight.
- Flatten one face, square one edge, plane to thickness taking wood off both faces.
- Mill matching parts at the same time so they come out identical; cut to length with a stop block.

Shaping

- Cut the bracket curve with a jigsaw and sand smooth.

Build sequence

#	Step
1	Mill 4/4 stock to 3/4 in.
2	Cut parts to size; cut bracket curves.
3	Make the angled drilling guide; drill the peg holes.
4	Drill counterbores; glue and screw together.
5	Plug, trim flush, glue in the pegs.
6	Sand, ease edges, finish.
7	Hang it.

Finishing

We use a 1K water-based polyurethane in satin: 3 coats on surfaces that get wear, 2 elsewhere, scuffing with 320 grit between coats. Finish both faces of a top the same.

Stuck? Give us a call

Call **1-864-GOT-WOOD** (864-468-9663) Mon-Fri 9-5 or Sat 8-3 (Eastern) with your sheet number handy.

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