



Fold up Pine-Stepping Stool

This versatile step stool is both practical and visually pleasing, as perfect for reaching a high shelf or serving as a table and seat for a small child as it is for displaying plants or framed photographs. We used pine in our project, except for the hardwood dowels, but maple or oak would also be fine choices.

What You'll Need

Materials

- sand paper 1230-386
- wood glue 2020-903
- 1" #8 wood screws 2174-284
- 1-1/4" wood screws 2174-346
- 1/2" hardwood dowel, 4 feet 2624-271
- 7/8" hardwood dowel, 5 feet 2624-020 (6 ft length)
- legs (4) 1" x 2" x 23" pine
- seat 8" x 15" pine
- steps (2) 4-1/2" x 9-1/2" pine
- seat brace 3" x 8-1/4" pine
- step sides (2) 1" x 10", 4 feet pine
- 5/16" flat head plugs (1 pkg. 20) oak/birch 8296-649/612



Tools

- mitre saw 1347-787
- table saw or bench saw 1346-620
- measuring tape 1048-832
- framing square 1070-085
- adjustable angle square ("squangle") 1070-209
- clamps 1022-930, 1023-190
- drill 1239-074
- 1/2" drill bit 1214-377
- 7/8" drill bit 1242-382
- drill press (optional) 1334-372
- sander 1262-378/877
- jig saw 1268-504
- combination drill bit/countersink 1227-915



- Robertson #2 screwdriver 1055-529
- hammer 1030-556

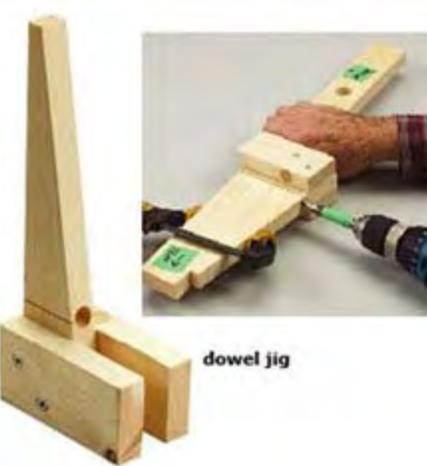
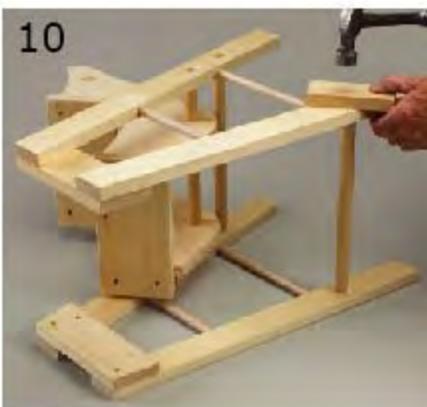
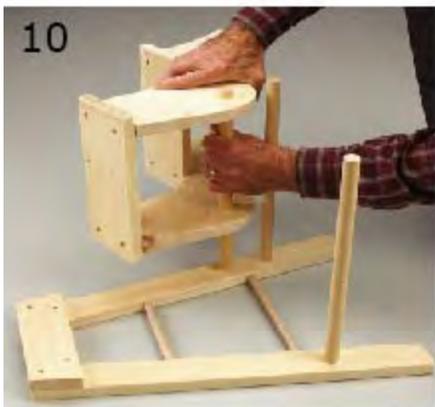
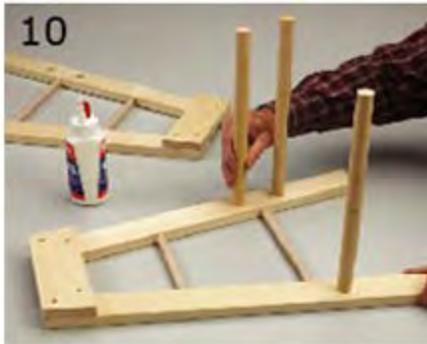
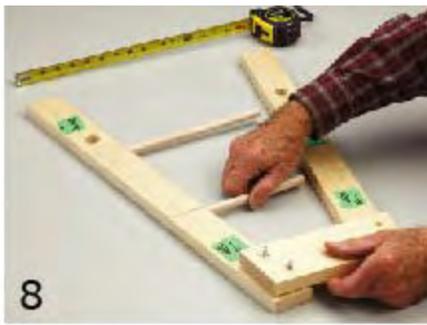
The construction uses hardwood dowels for support "rungs". The larger dowels pass completely through pine pieces for interesting colour contrasts, and employ early construction techniques. One of the 7/8" diameter dowels (step axle) joining the legs is a quarter inch shorter than the other two, causing the legs to splay slightly at the sides. The legs also taper out 10 degrees at the front and back of the stool. This is not difficult to achieve with a drill press and adjustable table, but a simple jig, described below, will also do the job of hand-drilling the half inch holes for dowels at the proper angle. Use forstner bits for drilling to produce clean holes with no splintering. If using the 10-degree drilling jig, use a half inch solid shank or brad point wood bit which will fit snugly into the hole of the jig.



Some of the pieces look very similar, so label the pieces with tape for assembly purposes, e.g. "front leg, right", and indicate "top" etc. Pre-drill and countersink all screw holes in order to "set" the screws at least a quarter inch with a Robertson screwdriver. This means that you can just tap the hardwood wooden plugs flush with the wood surface, instead of sanding them down after they are installed.

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Step By Step

1. Using the drawings provided, cut out all the pieces for constructing the stool. Carefully precut all the dowel pieces to length. Be sure to follow the template carefully, and make accurate cuts on all the pieces. The ends of the legs are mitered at 10 degrees. Fine sand all the pieces before assembly to make finishing easier. Clamping the two side pieces for the step assembly together for sanding will make them uniform.

2. Build The Steps:

Clamp together the two side pieces for the steps, and using a 7/8" forstner bit, drill the upper and lower holes as shown in the template. Carefully recheck the hole locations before drilling.

- Using a little glue, insert the lower dowel piece through the sides until it exits flush with the outside surfaces.
- Before the glue on the dowel sets, centre and install the lower step piece. Pre drill the holes, and use 1 1/4" wood screws and glue. Before securing the step, check the outside distance at the top of the step assembly. It should be the same as the installed lower dowel, 8-1/4". Remember to set the screws a quarter inch. Clean any excess glue from surfaces with a damp cloth.
- Centre and install the top step as in #4.

6. Build The Sides:

Place together the two front legs of the stool, and drill the two 7/8" holes required through the legs, as shown in the diagram. Do the same with the 7/8" hole required in the rear pair of legs.

- Drill the holes for the 1/2" dowels into the inner sides of the legs as indicated in the diagram. The holes should be one inch deep, and drilled at 10 degrees. Check carefully to ensure that the holes will be on the inner edges of the legs. Pre-mark the hole locations with pencil on the sides of the legs. If you have a drill press, tilt the bed at 10 degrees. If you are using the drilling jig, align the jig with the pencil line on the side of the leg, and clamp it for drilling.
- Assemble one side. Place a little glue in each of the four half inch holes, and insert the long and short dowels into the holes with the short dowel closest to the top. The precut seat brace will determine the proper spacing for the top of the leg assembly. The outside bottom measurement should be 14-3/4". Using a scrap piece of wood to protect the legs, tap above the dowels until the spacing is correct. Go slowly, so that you don't have to reverse the procedure, which is difficult. Use a protective scrap of wood if this becomes necessary. When the distances are correct, centre and install the upper seat brace. Use glue and 1" wood screws in the seat brace in order to prevent them from exiting on the outside finished surface of the legs after they are set.
- Assemble the other side in the same way.

10. Complete The Assembly:

Place a little glue into each of the six 7/8" dowel holes in the leg assemblies. Place the two longer dowels into the two lower holes of the one side assembly, and the shorter dowel, which will be the step assembly axle, into the higher hole of the front leg. Insert the step assembly over the shorter dowel (be sure it faces the right direction), and inset the dowels into their respective holes in the other side assembly. Using a scrap piece of wood to prevent bruising, tap the sides until the two bottom dowels are flush with the outside surfaces of the legs.

- Wait a few minutes until the glue starts to set, and using a clamp on the seat braces, slowly draw the top in until the step "axle" dowel also becomes flush with the outside of the front legs. This will give the stool a slight taper as viewed from the front or back. Leaving the clamp in place, centre the upper seat piece, and secure with glue and 1-1/4" wood screws into pre-drilled holes. Set the screws a quarter inch.
- Install hardwood plugs with a little glue, and give a final fine sanding.
- Complete the stool with the finish of your choice.
- Building The Dowel Jig:**

Drill a clean half inch hole at 90 degrees, through the width of a 10" piece of leg material (1" x 2"), 2-1/2" from one end. Draw a reference line along the centre of this hole on both sides of the 1" x 2". (Line up this reference line with the lines marked for drilling on the leg pieces.)
- From one corner, draw a line at 10 degrees along the length of the piece of wood. Cut the wood

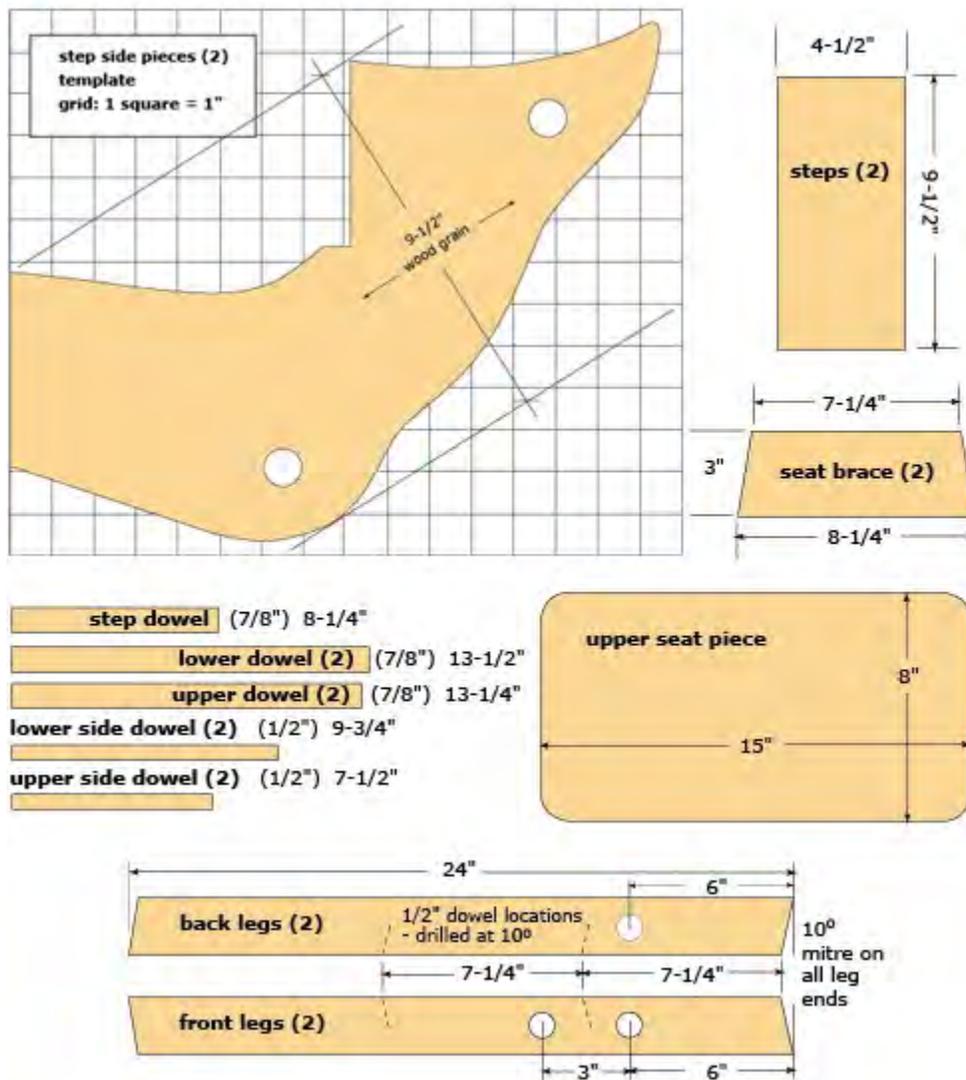
along this line.

- Fasten two 4" pieces of 1" x 2" at 90 degrees at the wide end of the angled piece, using glue and 1" wood screws. These two short pieces will hold the jig in place on the leg material.

In our project, the stool was finished with Home wood conditioner, stained with Home fine wood stain "Cherry" and sealed with Wood Shield Quick Dry satin finish clear coat.

- Home wood conditioner 1874-706
- Home fine wood stain "cherry" 1876-161
- Wood Shield quick dry clear coat "satin" 1877-311

Plan



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