Built with the aid of 20th-century technology, Effinger's stately mahogany tall clock captures the graceful proportions and crisp carving of the 18th-century Rhode Island original. The dial face was hand painted by Judith W. Akey.

Newport-Style Tall Clock

Tackling the tricky details

by Robert Effinger

When I moved to Maine in 1970, I left behind a career as a tool-and-die maker. Working with wood instead of metal, I managed to eke out a living selling my turned bowls and wooden novelties to tourists who drove through town in the summer. One day a local gentleman stopped in to ask me if I could make a tall clock. I'd never attempted anything that ambitious before but I took the job. Since then, I've turned out quite a few. Along the way I've developed some methods that make short work of the details; I'll explain several of these in this article.

The clock shown is based on an 18th-century mahogany tall clock attributed to Newport, R.I., cabinetmaker John Goddard (1745-85). I scaled up the plan from a measured drawing in Wallace Nutting's book, *Furniture Treasury: Vol. III* (1933, MacMillan Publishing Co.).

I'm not a period purist so my clock isn't built exactly like the Goddard original. I'll improve on the old construction methods if I can. For example, unlike many old clocks, mine are built to allow for seasonal wood movement in places where the old clocks might have nails, glue blocks and, more often than not, cracks. The most radical change I've made is in the supports for the seat board—the horizontal board that supports the clockworks. On old clocks, the waist sides extended up into the hood and the seat board was nailed across them. My adjustable seat-board assembly slides up or down until the movement's at the correct height, then screws tight against the waist sides.

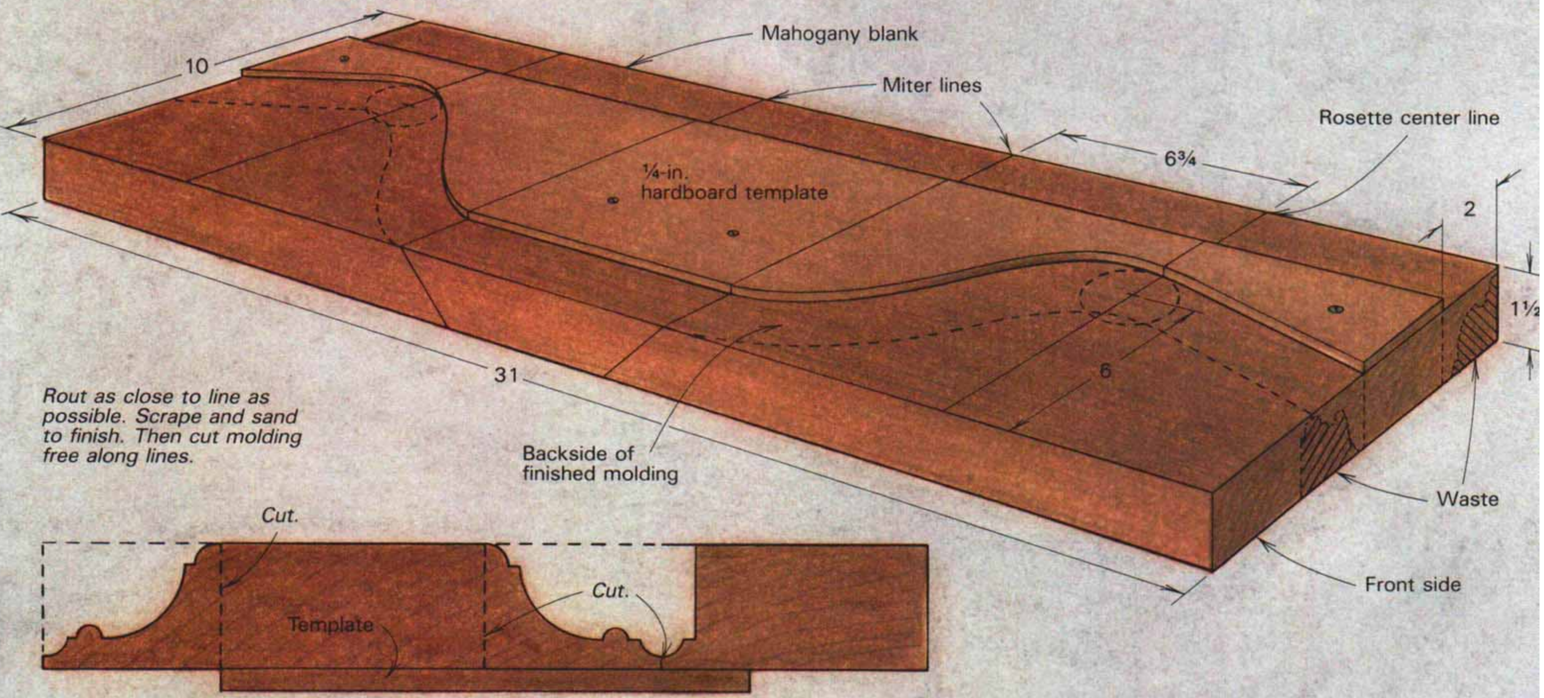
The ¼-in. plywood bottom of my clock is another break from tradition. Old clocks had a thick bottom that was often dovetailed to the base sides. This construction works fine until a weight cable breaks and the cast-iron weight wrecks the bottom, feet and sides of the clock. A falling weight will smash through my thin plywood bottom, without damaging the rest of the clock.

Buy the movement and make the dial before you start cutting anything. The depth of the movement determines the depth of the case and the dial must be made to fit the hood or vice versa. It's easier to make your own dial than it is to redesign the Goddard hood around a store-bought dial. Some of the fancy old engraved dials were made from brass, but I cut mine from 16-gauge sheet steel and sent it out to be hand painted. The sources of supply on p. 78 lists a few of the many companies that sell movements. The movement I used in this particular clock is a cable-wound, nine nested-bell movement (No. 213) from the Concord Clock Co., 96 Main St., Plaistow, N.H. 03865.

Think of the clock case as three separate sections: the base,

Photo this page: Schopplein Studio

Fig. 1: Setup for routing hood moldings



waist and hood. Figure 3 (p. 81) and figure 4 (fold-out section) show how these sections are built and how they fit together. The waist sides screw to the base while the hood just rests on the waist. The hood slides off the front to allow access to the works. The ¾-in. pine back ties all three parts together, as shown in figure 4. In general, the waist must be about ¾ in. wider inside than the swing of the pendulum. Most old clock waists measure 13⅞ in. across the outside and 7 in. to 8 in. from front to back. I increased the depth of my clock case because modern musical movements are larger than the old ones.

I made the special one piece hinges for the hood door from ⅛-in.-thick sheet brass. These hinges screw to the top and bottom of the door and pivot on ⅝-in. #2 woodscrews in the scroll board and hood molding. The waist door also requires special hinges with an offset to match the ¼-in.-thick lip on the hinge stile as shown in the detail, figure 4. Ball and Ball is the only company I've found that makes these hinges.

The curved goose-neck, or swan-neck moldings at the top of the hood are often the most intimidating part of a tall clock case. In the old days they were shaped by carving and scraping, but I prefer to make them with a pin router. My method of pattern routing cuts both of the curved moldings and both of the return moldings that run along either side of the hood at the same time, from the same piece of mahogany.

To make the moldings, I've converted my drill press into a pin router (see *FWW* #37, pp. 26-27). My setup guarantees that the moldings will match up perfectly at the corner miters.

Start with a mahogany blank 1½ in. thick, 10 in. wide and 31 in. long. Make a template by drawing the molding curves on a 6-in.-wide piece of ¼-in. hardboard, as shown in figure 1 and bandsawing to shape. On this template, mark off the miter lines and the center lines for the rosettes.

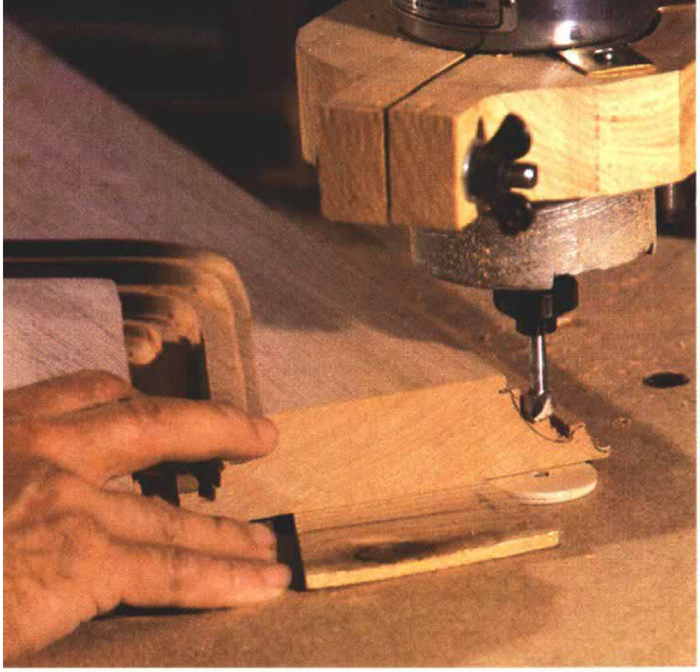
Place the template on the bottom of the mahogany blank and transfer the miter lines and rosette center lines to the blank. With a square, extend these lines across the width of the blank, extend the line of the curve over the end of the blank. Fasten the template to the mahogany with small screws making sure that the template marks line up with the lines drawn on the blank. Draw the molding profile on the ends of the blank as shown in the drawing. You'll set your router bit against this profile.

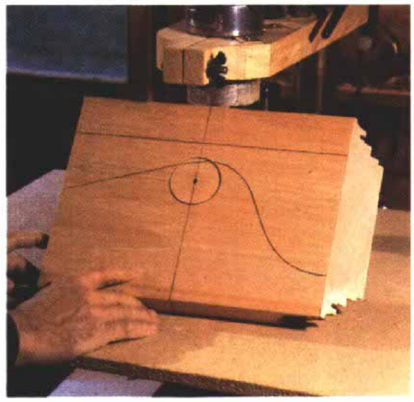
One-quarter-in.-thick wooden discs in increments of $\frac{1}{16}$-in. in diameter fit over a pin in the auxiliary drill-press table directly underneath the bit. With the template side of the blank down on the table, I select a disc that positions the bit where I want it against the profile on the blank end, adjust the bit to the right height, then guide the template against the disc to make the cut, as shown in the photo, p. 77. One pass hogs the straight return moldings, another pass at the same setting cuts the curves. Next I switch to a smaller disc to move the stock closer to the bit or a larger disc to move the stock away. The idea is to rout as close as possible to the molding profile you've drawn on the end of the blank. I do as much hogging as I can with a ⅝-in. straight bit then I switch to smaller straight bits followed by whatever curved bit gets closest to the line. After routing, I scrape and sand out any imperfections in the molding.

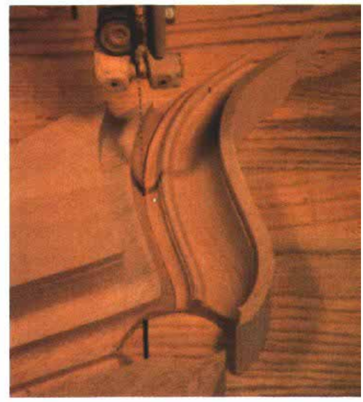
After routing, trace around the template on the back side of the blank. This line will become the cutting line for the top edge of the molding. Remove the template, set the tablesaw blade to 45° and cut the blank along the miter lines.

To mark for the rosette, score about ⅛ in. deep with a 2½-in.-diameter hole saw on the back of the blank. This gives you a definite line to follow later on the bandsaw. Rip the return molding off the blank along the straight template line. Now, with the back side up, bandsaw along the curved template line that marks the top edge of each goose-neck molding, including the radius marked by the hole saw. Flip the molding over. The cutting line for the bottom edge of the molding lies at the lowest point of the radius, as shown in figure 1. If you run a pencil along the bottom of this groove, it's easier to follow with the bandsaw.

Drawings: Lee Hov







With his drill press converted to a pin router, Effinger routs out the pediment moldings. The template rides against a wooden disc over a pin under the work. Bit height is adjusted against the molding profile drawn on the end of the blank (above). After a pass along the straight molding, the goose-neck molding gets a pass at the same setting (top right). After sawing the miter, the rosette location is scored with a hole saw (right), then the goose-neck is bandsawn from the blank. After sawing the top edge and the rosette, the blank is flipped over and the lower molding edge is bandsawn free (far right).

The moldings are now ready to glue to the scroll board.

The smaller scroll-board arch moldings can be made using the same technique, but I find it easier to mount a router on a cobbled-up pivot to cut the semi-circular part and guide the hand-held router against a straight edge to cut the straight sections. You could also turn the semicircular molding on the lathe.

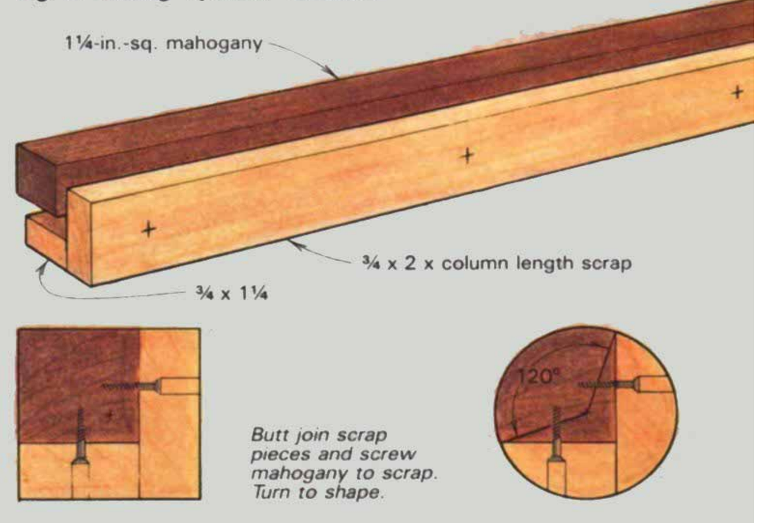
The quarter columns on the waist of old clocks were just that, ¼ of a circle. To my eye, these look sort of flat. I thought that the effect would be more dramatic if the columns were just slightly more than ¼ of a circle. Here's the method I developed to turn a "quarter" column that's really a 120° section of a circle.

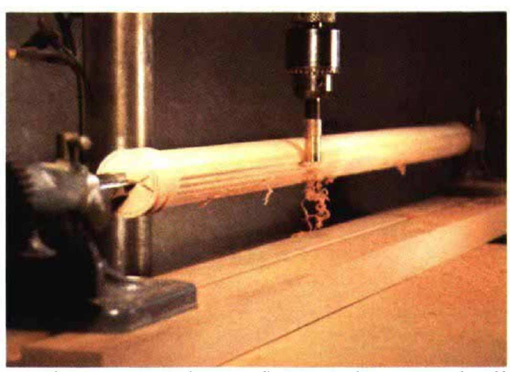
Make a fixture from two pieces of ¾-in. scrap stock as long as the column. Rip one piece 2 in. wide and one 1¼ in. wide and butt glue them to make an L-shaped fixture, as shown in figure 2. Cut a 1¼-in.-square piece of mahogany for the column. Screw this square blank into the L-shaped piece as shown. Make sure that your screws are recessed enough that you don't turn into them later. Lay out the center on each end, remove the corners on the tablesaw, if you prefer, and turn the column and the jig to shape. A new L-shaped jig must be made for each quarter column.

If your lathe has an indexing head, you can rig up a router box and cut the flutes right on the lathe with a small veining bit in a router (see *FWW* #37, p. 34 and #38, p. 40), but I have a different method. I have an old indexing jig that holds the column between centers and allows me to slide it across the drill-press table against a cutter chucked up in the drill press. My cutter is a 5/32-in. Woodruff key seat cutter that I've ground to a radius as shown (available unground from Manhattan Supply Co., Inc., 151 Sunnyside Blvd., Plainview, N.Y. 11803). A bronze sleeve over the shaft acts as a bushing and limits the depth of cut.

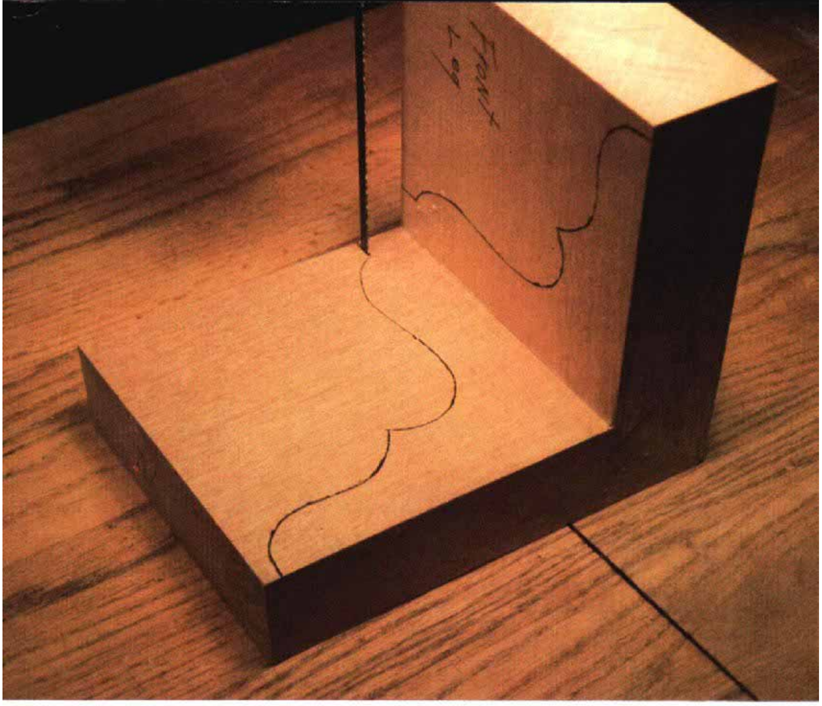
There are lots of ways to make ogee bracket feet but I think that my method is the easiest. I cut and glue up the joints while the stock is still square. By clamping the glued-up foot to a small

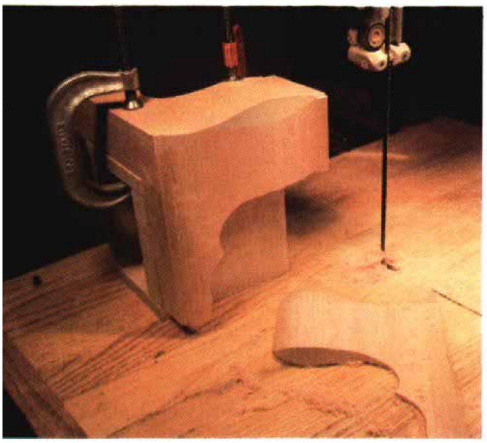
Fig. 2: Turning "quarter" columns



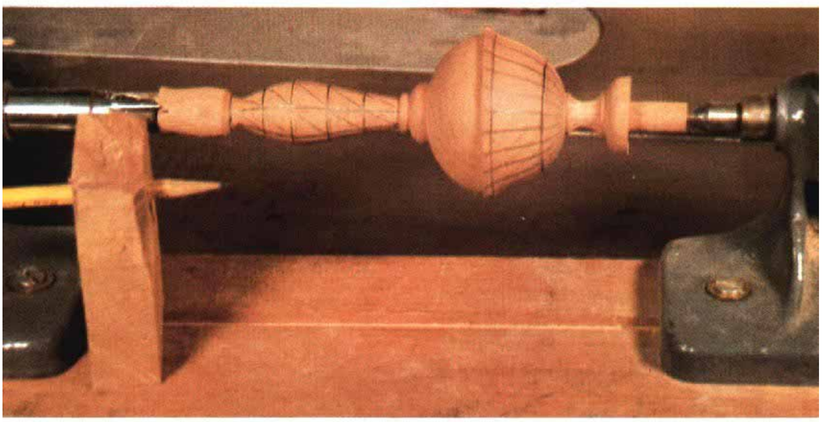


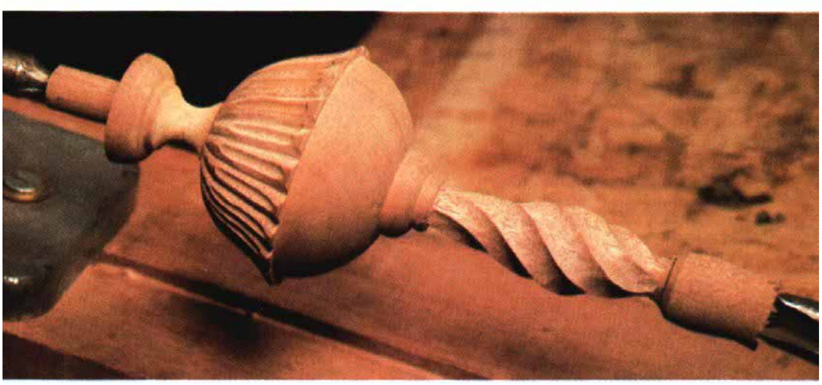
Author cuts column flutes with a Woodruff key seat cutter ground to a radius and chucked up in the drill press. Indexing jig rests on drill-press table and slides by cutter. Sleeve on cutter limits depth of cut.





Ogee bracket feet are glued up while square then cut to shape on the bandsaw. Supporting the foot over a wooden box allows the ogee profile to be cut on the bandsaw (left). Finial is lathe turned, then flutes are marked out in indexing jig and carved by hand. To lay out the flame, divide flame into six longitudinal sections and five latitudinal sections to form a grid (below). Connect points on the diagonal to form spiral lines. Pencil holder shown marks out axis lines.





wooden box for support, as shown in the photo at left, I cut the ogee curve on the bandsaw.

The front feet are joined with a splined miter. I cut the spline slot on the tablesaw with the blade at 45°. The back feet are joined with half-blind dovetails. The rear section of the back feet is made from thinner stock and left flat to allow the clock to sit closer to a wall.

The flame finials that crown the hood are turned from 3 in.-square blocks about 8½ in. long. Turn the finial in the middle of the stock leaving about 1 in. of waste on each end, as shown in the photo. For now, just turn the flame section to shape—carving comes later. On the bottom of the urn, mark off 24 divisions for reeding and stop fluting. If your lathe has an indexing head, you can mark and carve the finial between centers. I carve the reeds with a V-tool working from larger diameter to smaller diameter. Tipping the tool to the left and right, I take off the sharp edges to round over the reed. About ⅛ in. down from the top of the reeding I mark a line around the circumference and another line about ¾ in. from the first. This designates the lengths of the shallow flutes within the reeds. I carve these with a small gouge.

On old clocks, the flames on the outside finials spiral in opposite directions. To lay out the flame spiral, I draw lines parallel to the finial axis that divide the circumference of the cylinder into six equal sections. Then I draw lines around the circumference, spaced ½ in. apart, to form a grid. I connect the intersections with diagonal lines to form the spirals. Carve between the spiral lines with a small gouge. After the flame has been carved, cut the waste off and finish to a point. I sand the completed finial with a 220-grit flap sander chucked up in the drill press.

One other detail worth specific mention is the shell carving on the waist door. Some of the old ones were glued onto the'door panel after carving. I like to make the door panel and shell from one board as thick as the combined thickness of the shell and panel. I set the thickness planer to remove ⅛ in. and I stop the planer before the shell area goes through. The finished shell is about ⅛ in. higher than the panel and overhangs each edge by ⅛ in. I set the jointer for a ⅛-in. cut and joint the panel edge stopping when I get to the shell area. □

Robert Effinger makes period furniture in Fryeburg, Me.

Sources of supply

These firms sell tall-clock movements, clock supplies and hardware, except as noted.

Selva-Borel, 347 T3th St., P.O. Box 796, Oakland, Calif. 94604.
Mason & Sullivan Co., 586 Higgins Crowel Rd., West Yarmouth, Mass. 02673.
Turncraft Clock Imports Co., 7912 Olson Highway 55, Golden Valley, Minn. 55427.
Klockit, P.O. Box 629, Highway H, North, Lake Geneva, Wisc. 53147.
Craft Products Co., 2200 Dean St., St. Charles, Ill. 60174.
Ball and Ball, 463 West Lincoln Hwy., Exton, Pa. 19341 (authentic reproductions of hood-door hinges, offset waist-door hinges and clock hardware).
Judith W. Akey, 173 Harbourton Rd., Pennington, N.J. 08534 (hand paints clock dials).
The Dial House, Rt. 7, Box 532, Dallas, Ga. 30132 (custom dials and hand painting).

Fig. 4: Newport-style tall clock

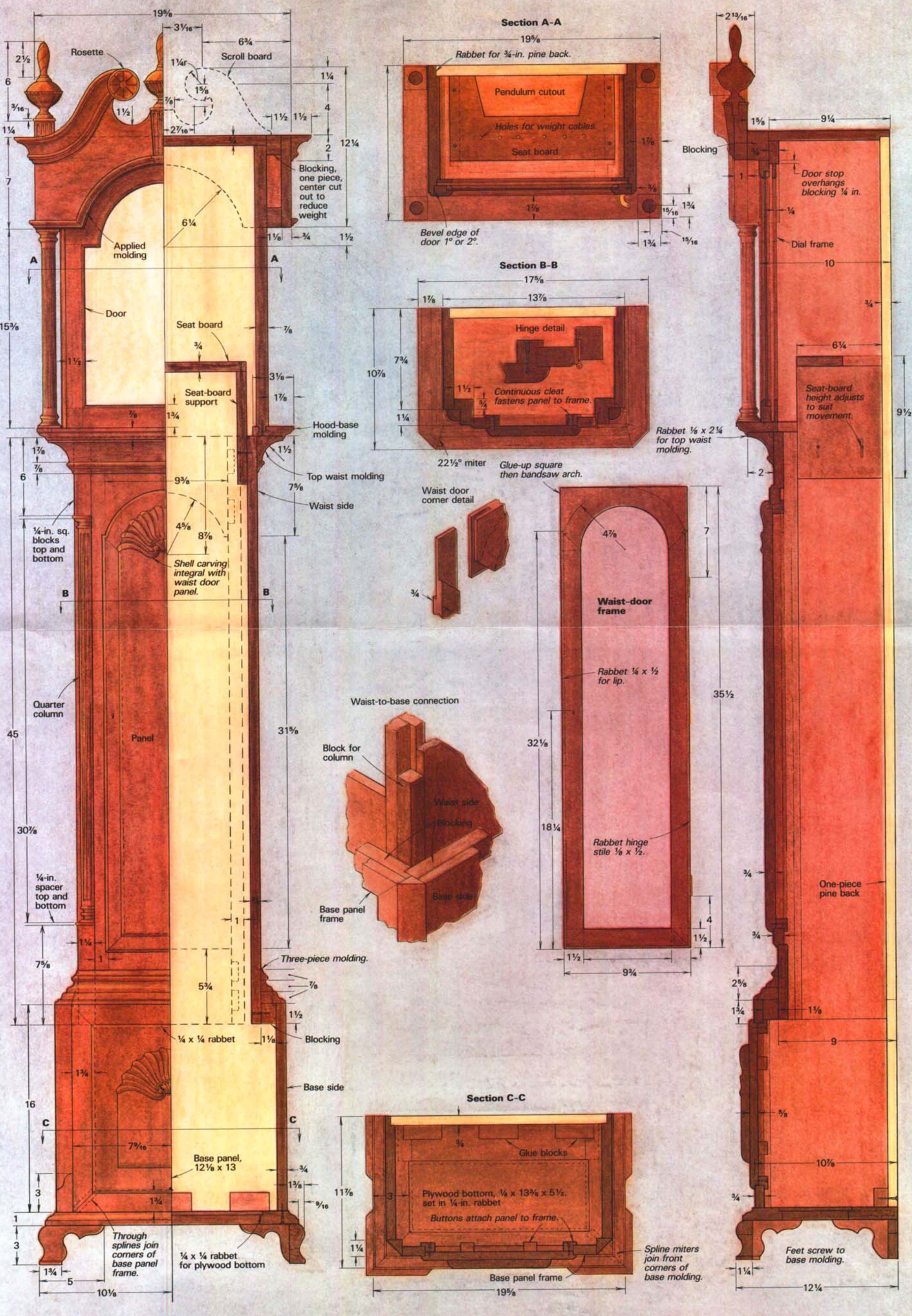


Fig. 3: Hood construction