

Production-Line Jamb Setting and Door Hanging

Time-saving techniques from the tracts

by Larry Haun

I went to work as a carpenter in 1949. A craftsman in white overalls taught me the trade I practice to this day, from foundation to finish work. In those early days, my crew and I would build two or three houses a year.

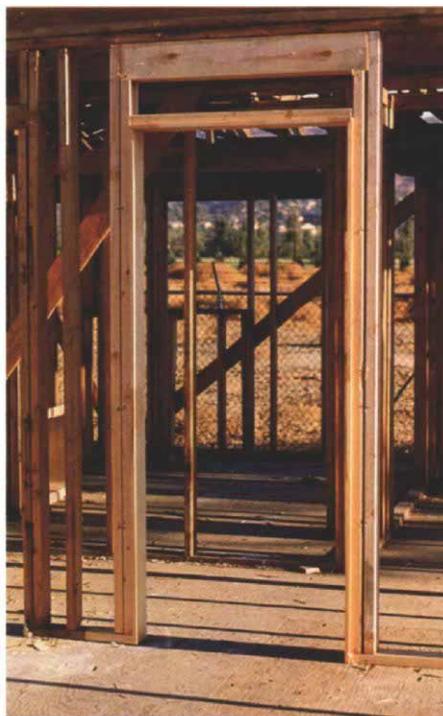
But post World War II America was booming. Good jobs with good wages were available to anyone who wanted to work. Veterans could take advantage of home loans under the G. I. Bill. Literally hundreds of thousands of people needed, wanted and could afford to own a new home. Instead of building one home at a time, carpenters needed to build 5,000 at a time, and as a result, we had to come up with more efficient construction methods.

And that's just what we did. It wasn't long before we were constructing a house in days instead of months. But even though these new methods were considerably faster than the old tried-and-true procedures, they proved to be just as effective.

Everything seemed to change. Hammers gave way to nail guns. Power tools became commonplace. And most important, housing production became an assembly-line process. Those who framed the walls no longer cut and stacked the roof. Those who set the jambs no longer hung the doors.

The new assembly-line methods generated an incredible increase in production. In 1950, we were expected to hang a door an hour and eight doors a day. But in 1953, a friend of mine, a door-hanging specialist, was hanging 80 to 120 doors a day with assistance from a helper. Not only was he fast, he was accurate; the quality of his work far exceeded that of carpenters who hung only a few doors a year.

Clipping the trimmers—Traditional methods of setting door jambs are quite effective, yet they require considerable measuring, sawing, nailing and shimming. A faster, but equally effective way to build door jambs is based on a technique called *clipping*. Clipping eliminates the need for shims—nails alone hold everything securely in place. Clipping even eliminates the need for door cripples (photo above), except for jambs in which pre-hung doors are being used.



A clipped-trimmer door jamb stands in the foreground of southern California's Local 409 instructional framing project. Note how the header is just below the top plate, eliminating the need for cripples. The trimmers have been plumbed, straightened and clipped to the king studs, and the jamb has been affixed to the trimmers without shims. The portion of the sole plate that used to be between the trimmers has been removed and installed as drywall backing above the head jamb.

Because you already know the stud length, there is no need to go from opening to opening, measuring each one. The length of each door header is equal to the width of the door plus 5 in. To set a door jamb using the clipping method, begin by pre-cutting all the necessary trimmers. Cut the trimmers about $\frac{1}{8}$ in. oversize to ensure a snug fit. The next step is to put a trimmer under each end of every header. Halfway down its length, secure each trimmer to its king stud with a 16d nail.

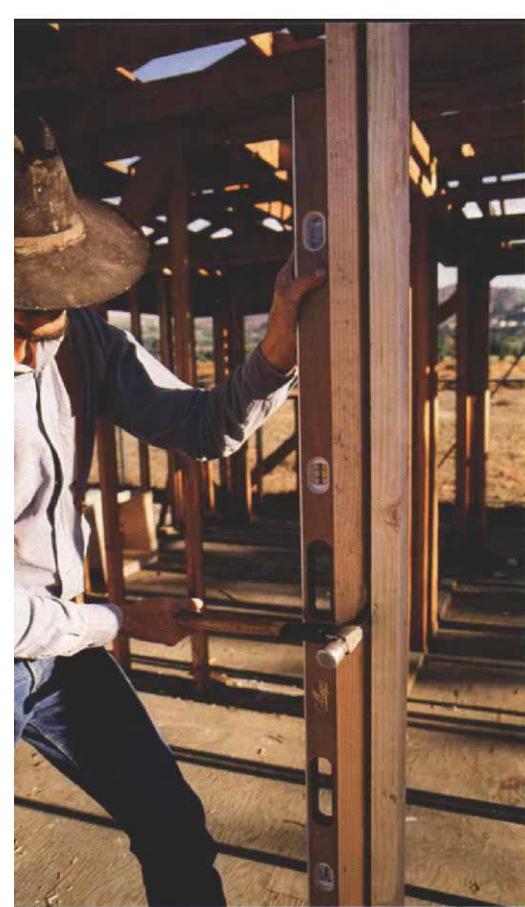
Using a 6-ft. level, begin to plumb the trimmer. The level indicates which end of the trimmer doesn't have to move. Toenail that end into the header or bottom plate with one 8d nail in the center. No other face nail is necessary. Then use a straight-claw hammer to pull the un-nailed trimmer end out from the king stud. Once the trimmer is plumb, toenail this end with 8d nails.

Even though the trimmer is now roughly plumb, it will probably have a bow in it. Now it's time to straighten the trimmer (this part of the job eliminates shims). Hold the 6-ft. level on the trimmer (top left photo, facing page) and use the hammer's claws to lever the trimmer away from the king stud so that it's flush with the edge of the level. The 16d nail in the center of the trimmer temporarily holds it straight.

At this point, clip the trimmer to the king stud. Begin by driving a 6d or 8d nail partway into either the trimmer or king stud. Bend this nail back onto the other upright. Then drive and bend a second nail over the head of the first (detail photo, facing page). An experienced jambsetter can drive and bend this nail with one swing. Install three clips per side. This holds the trimmer true for the life of the building. Some jambsetters use a wide staple in place of regular nails to tie the trimmer to the king stud. This is a good method that further simplifies the process.

Use a "spreader gauge" to plumb the second trimmer. Assemble a door jamb, measure the width at the head from outside to outside and cut a 1x4 to this length. Place this spreader gauge up against the already-plumbed trimmer at the top and pull the unset trimmer against the gauge. Secure the second trimmer to the header with 8d nails. Do the same at the bottom. Then straighten and clip this trimmer just like you did the first one.

Now you are ready to cut out the bottom plate. To do this I use a worm-drive saw fitted with an arbor extension that allows me to make a cut that's flush with the saw's base. The one I've got is called a Close Cut, and it costs about \$35 (Western Saw Inc., 1842 West Washington Blvd., Los Angeles, Calif., 90007). The Close Cut has a guard on top,



Trimmers are fastened with the help of a single 16d nail connecting the trimmer and the king stud (top left photo). Here the author levers the two members apart slightly while keeping an eye on the level bubble and the gap between the trimmer and the level. The friction of the nail will hold the trimmer and king stud in the correct relationship while the two are clipped together. Clamping a level to the head jamb allows you the freedom to hold a ½-in. thick block along the edge of the side jamb, approximating the wall-sheathing thickness (photo above). A pair of 8d nails that have been bent over to clip the trimmer and the king stud can be seen in the photo at left.

but it lacks the retractable guard common to circular saws. Because of this, I use it only in flush-cutting situations where the direction of cut is down and away, and I'm careful never to set the tool down while the blade is still moving. If you haven't got a saw fitted with one of these, a chainsaw or a reciprocating saw will do the job. Set aside the cut-out piece for later use as drywall backing.

Installing the jamb—Pick up the assembled jamb and insert it into the framed opening, making sure that it fits snugly. The side jambs will eventually be nailed directly to the trimmers, with no need for shims.

To level the head jamb, use a short level and clamp it to the jamb (top right photo). This frees your hands to do other things. Now use a small block of wood to represent the thickness of the wall covering. Typically, the block is a piece of ½-in. plywood that rep-

resents the most common wall covering—½-in. drywall. Place the gauge against the trimmer in order to hold the jamb out the required distance from the face of the wall.

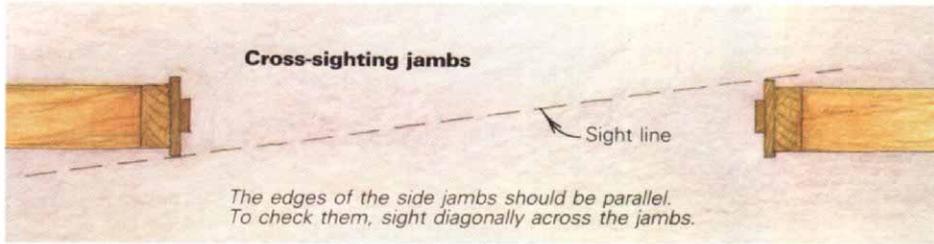
Next, working from bottom to top on the trimmer, nail in five pairs of 6d finish nails into one side jamb. Keeping the pairs of nails separated by 3 in. prevents the jamb from cupping. Larger nails need to be used in jambs holding heavy doors.

Now check the head jamb for level. If the other side jamb needs to be picked up a bit, do so, and then nail it off. You may have to cut off uneven side jambs with a backsaw. This happens, for example, when you want side jambs to sit directly on hardwood flooring. If you are using carpet or vinyl, a small gap under a side jamb will be covered by the finish flooring material.

At this point, retrieve the bottom plate. This plate is the exact length needed to fit on

top of the door jamb, where it now becomes drywall backing. It is fixed in place by toenailing through the backing into the trimmer. The backing eliminates the need for header cripples, provides backing for drywall nailing, and makes the head jamb extra secure.

The last step is to cross-sight the side jambs to ensure that they are parallel to each other. If cross-sighting is not done accurately, the door will hang improperly. Cross-sight by eye instead of using the time-consuming method of holding a string diagonally from corner to corner. Stand along the wall and sight along the side jambs to see if they line up with each other (drawing next page). If they don't line up, tap the out-of-line jamb into place by hammering on the bottom plate of the wall until both sides line up. If the building's frame has been properly plumbed and lined, very little correction will be needed to ensure that the jamb sides are in perfect cross-sight.



Once you have accurately cross-sighted the side jambs, the door jamb is completely set and ready for its door. The entire jamb-setting operation takes only five or six minutes.

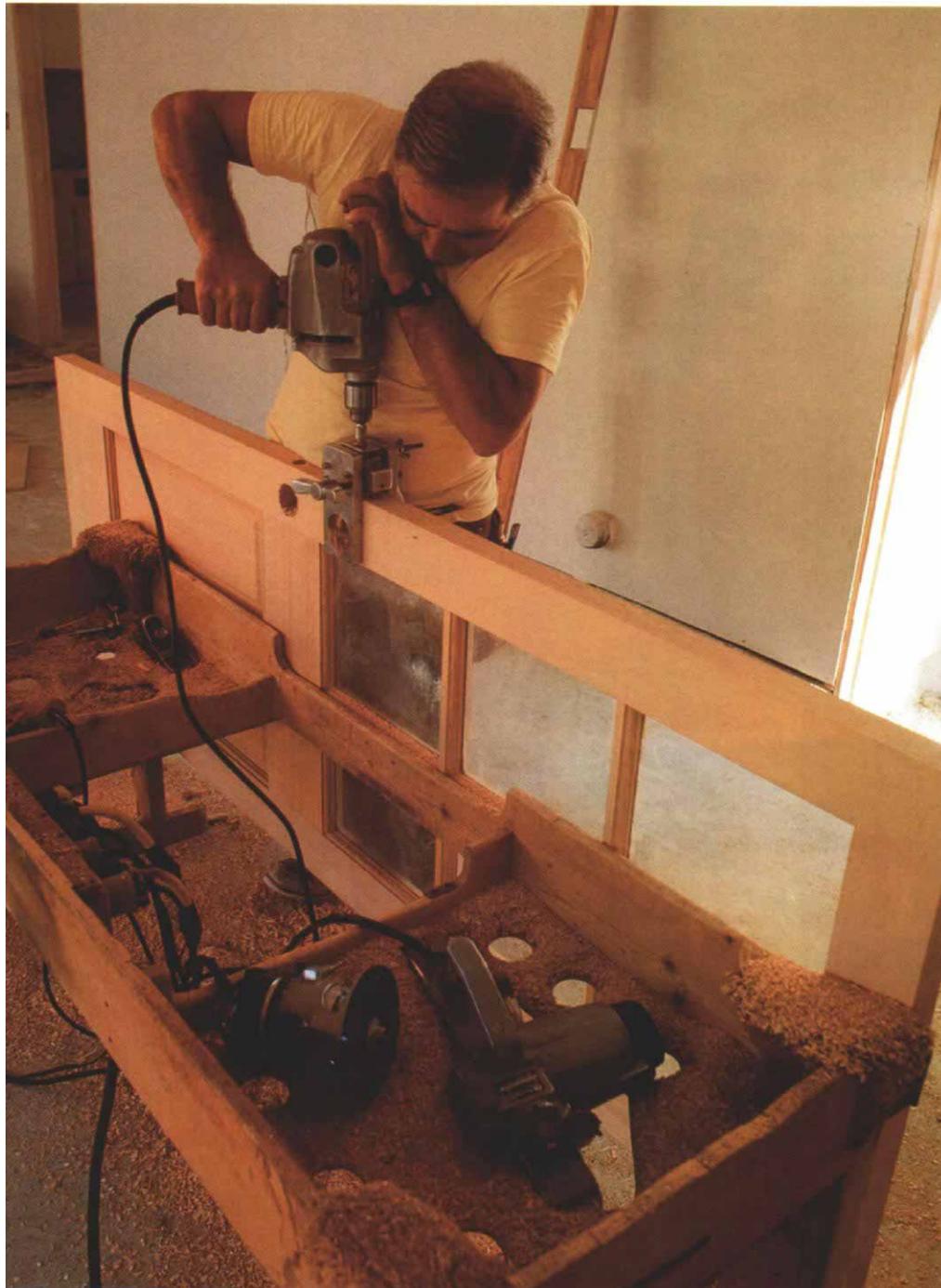
The door hanger's bench—The door hanger's most prized possession is his bench, an ingenious work station that is easy to carry from one job to the next (photo left). While no two benches are exactly alike, they will share certain features. Note how the four corners are covered with carpet to protect the door when it is laid flat. Dowels slide through the legs of the bench to support doors of different widths while they recline on edge. A metal hook at one end of the bench keeps the door from falling sideways, and the corners of the bench are wrapped down the sides with carpet to protect the doors where they lean against the bench.

Inside the bench are bins that contain a router, circular saw, electric plane, electric screwdriver, ½-in. drill and lock jigs. Every tool needed to hang a door is close at hand. And on one side of the bench there are multiple electrical outlets to service all the power tools, eliminating time-consuming plugging and unplugging.

Hinge template—Once the drywall is on the walls, the first step in doorhanging is to rout out the hinge gains (mortises) on the jambs. Production door hangers like Royal Schieffer do this with a hinge template guide (bottom photo, facing page) and a router. One-piece hinge templates can be purchased (see *FHB* #31, pp. 28-31), but door hangers prefer to make their own. Before it can be used, the commercial template has to be secured to the side jamb or door edge with two small pins or nails. Royal's homemade template eliminates this step because it can easily be held in place on the jamb by foot, or on the door edge by hand. When routing hinge gains on the jamb, the template's metal tabs register against the door stop to align it in the horizontal position. The template is shoved against the head jamb, where a round-head screw driven into the top of the template's body acts as a spacer to hold the template ⅛ in. away from the jamb. The spacer gives the door proper clearance between itself and the head jamb.

To rout the hinge gains on the jamb, Royal simply holds the template in place with his foot and runs the router bit around in the hinge guide. Royal uses a ¾-hp router fitted with a collar that rides along the inside edges of the template. The two-flute ½-in. carbide bits that he prefers are made by Paso Robles Carbide (731 C Paso Robles St., Paso Robles, Calif. 93446). Remember that a router is a high-speed power tool and throws out wood chips. Always protect yourself against eye injuries.

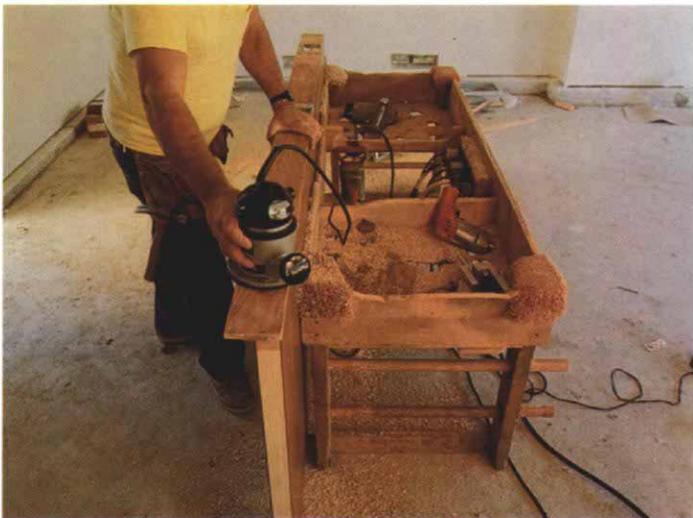
Interior doors require two 3½-in. butt hinges. The top of the top hinge is 7 in. from the head jamb. The bottom of the bottom hinge is 11 in. from the bottom of the door. If



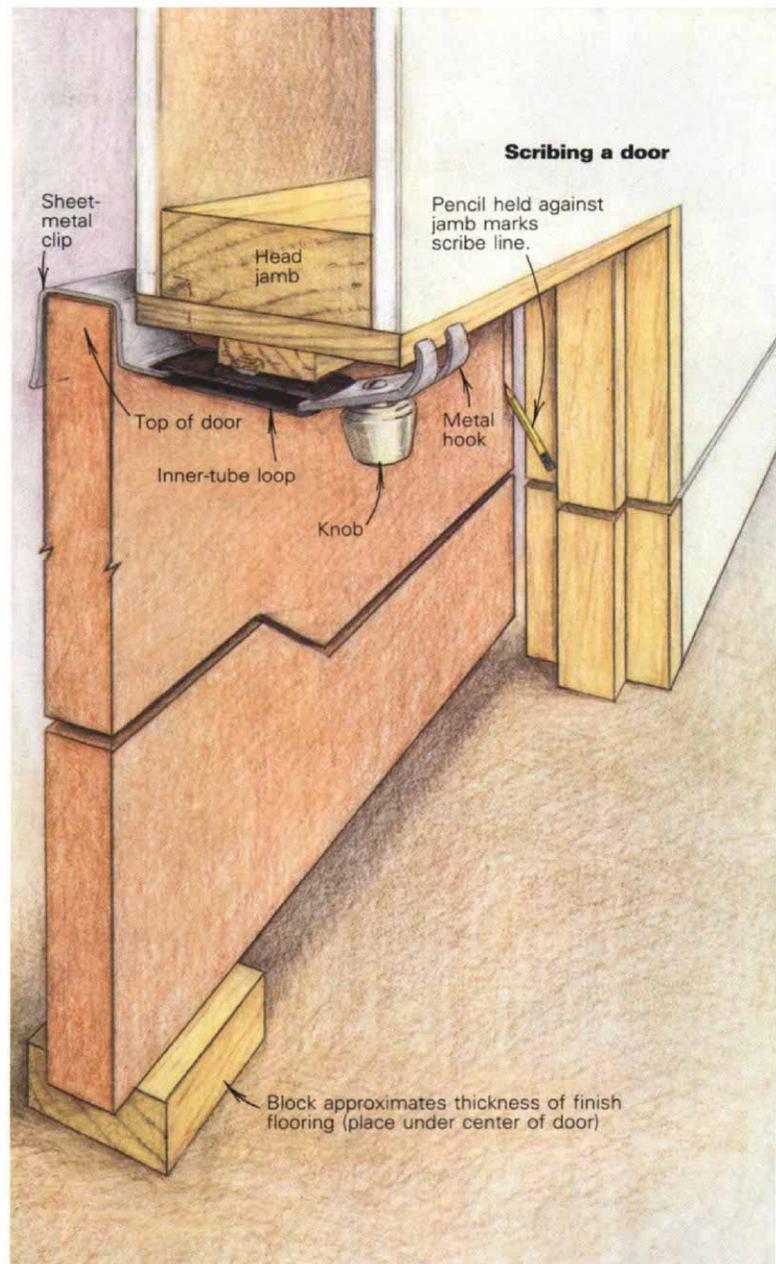
A door hanger's workbench contains all the tools necessary to do the various parts of the job, along with places to support the door while it's being worked (photo above). Here Royal Schieffer uses a ½-in. drill and a lockset jig to make short work of the holes needed for locksets and dead bolts. Just below the lockset jig are two registration marks drawn in pencil on the bench rail for locating the jig's positions. The hollow in the center of the bench allows one person to stand inside it and easily lift it from job to job.



To protect fragile door skins, Royal Schieffer's saw has a piece of plastic laminate contact-cemented to its base. The bent end of the metal flange to the left of the blade holds the wood fibers in place during the cut.



The same template used to rout the gains in the jambs is used to rout the gains in the edge of the door. The end of the template is flush with the end of the door. Note the template's round-head screw: it ensures 1/8-in. clearance between the door and the head jamb.



called for, a third hinge is centered between them. Heavy doors need three 4-in. butt hinges. Once the jambs are routed, it's time to fit the doors.

Fitting a door—Experienced carpenters usually don't need to check the blueprints to see which way a door swings. For example, a bedroom door most often swings in. Check the location of the electric switch. When the door is open, you must have easy access to this switch. If you have any doubts, check the plans and then make a mark on the floor indicating which way the door opens.

At this point set the door in place in the opening in preparation for scribing it to fit. The door is set on a block prior to scribing. Interior doors typically are lifted 1/2 in. off the floor if vinyl will be the finish flooring, 3/4 in. for hardwood flooring, and 1 1/2 in. for carpet. Many door hangers carry a 2x4 block that has been cut into 1/2-in., 3/4-in. and 1 1/2-in. steps for just this purpose.

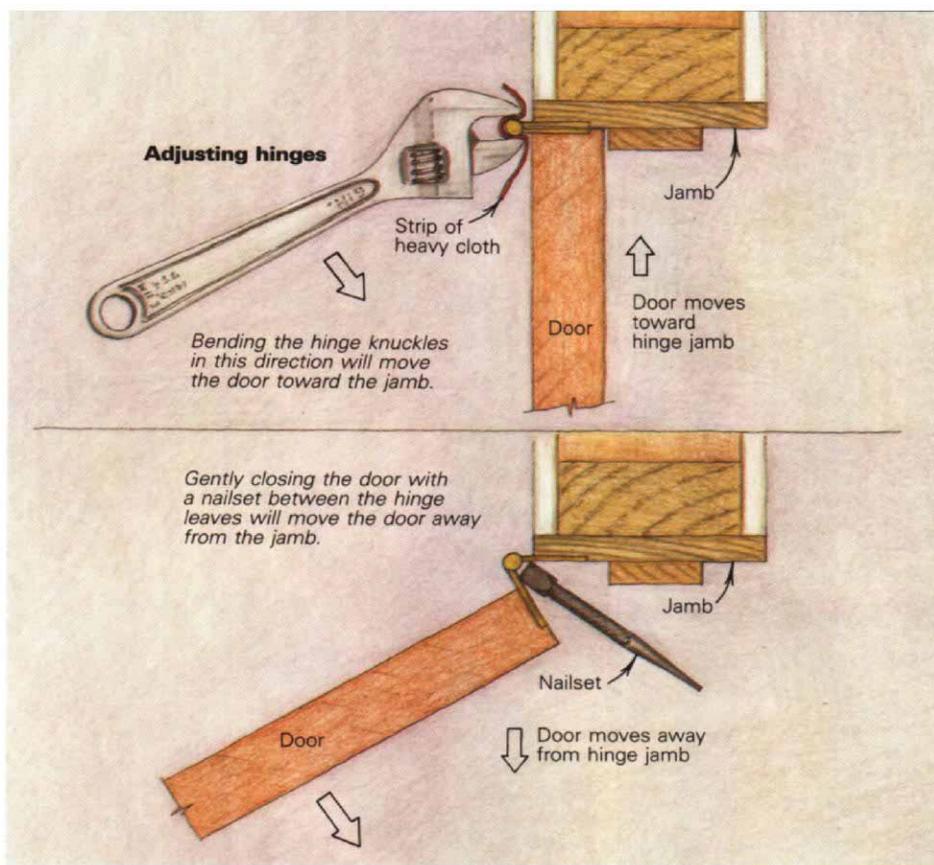
Royal holds the door in place with a homemade door anchor placed over the top of the door and hooked on the inside of the jamb (drawing above). This tool isn't on the market, but it's easy to make and it's indispensable to a door hanger. It holds the door firmly in place, freeing your hands to complete the scribing process.

The easiest way to scribe a door is with a short, round pencil or a flat carpenter's pencil. Hold the pencil on the jamb and make a mark on both sides and on the head of the door. Unless your door has stiles that extend beyond the bottom rail, there is no need to scribe the lower end of the door. The door can be shortened by removing the excess from the top, requiring only one cut, not two. Mark the hinge location on both the jamb and the door and place the door flat on the bench.

Cross-cutting a door—Cutting across the vertical grain of a door has always been a touchy process. Done incorrectly a saw blade

can break slivers loose from the door's veneer, resulting in a ragged cut. One way to avoid "tearout" is to lay a straightedge across the door and score the cutline with a sharp knife. This works quite well, but it's time-consuming. Another way to make the cut is with a saw fence we call a "shoot board." This is a straightedge with a fence screwed to it. The distance between the straightedge and the fence is exactly equal to the distance between the left side of the saw blade and the left edge of the saw's base. Clamp the straightedge to the cutline. It holds down the veneer as the fence guides the cut. A third method is to modify a saw with a homemade flange that is affixed to the top of the saw's base (photo above left). The flange is adjacent to the saw blade, and it rides lightly on the door during a cut, preventing the veneer from lifting. It really works.

Running a metal saw base over a door often damages or scratches the finished wood. A way to avoid such damage is to glue a



piece of plastic laminate to the base of your door-hanging saw. It's also a good idea to attach laminate to the fence of the electric plane. Rubbing a little paraffin on the laminate makes these tools float over the work.

When you cut the top of the door, bevel it about 2° to the inside. Do this for two reasons. First, it eliminates problems that occur from paint buildup over the years. Second, once the door is hung, you may have to take a bit off the top in places to ensure proper clearance all the way across. It's easy to do this with a block plane without removing the door. All you have to do is take a bit off the high edge—it's unnecessary to plane the entire head. The bevel gives plenty of clearance on the stop side. Hangers refer to this process as "fine-tuning the door."

At the bench—Once the door has been crosscut, it's time to place it on edge at the bench. The doorhanger now fits and bevels each side with a power plane. Doorhangers typically set the fence of the plane at 3° to achieve the proper bevel. Everyone knows that it's necessary to bevel the lock side. But it's also important to bevel the hinge side to prevent difficulties with paint buildup. And what's more, if the jamb is cupped, you won't have problems with hinge bind.

The amount of clearance between the door and the jamb depends on the region in which you live. In most situations, leave a little less than a 1/8-in. gap at the top and on the sides. You'll automatically do this by removing the scribe line with the plane set at the 3° bevel. If the house is in a humid climate where the door is going to absorb moisture, take off another 1/16 in. to keep it

from sticking when it expands. In dry climates, the clearance can be less.

As you cut to the scribe line, keep a thumb on the front lever of the plane. Watch ahead of the plane, raising or lowering the cutter to the required depth. If there is an excess of material to be removed, you may have to make two or three passes with the plane.

Now turn the plane so that its cutter is at a 45° angle to one of the door's edges and put a slight chamfer on the edge. Done properly, all the door's edges can be dressed with the plane to make them look like factory edges. A pass or two with sandpaper puts the finishing touch to this stage of door hanging.

Routing for hinges—The next step is to rout the hinge gains on the door and install the hinges. Hold the template flush with the top of the door and cut the hinge gain with the router (bottom photo, previous page). Contemporary hinges have rounded corners so there is no need to chisel out the corners of the gains. Place the assembled hinges in position and drive in the screws with an electric screwdriver. Pilot holes are unnecessary unless you're installing a hardwood door. With a little practice, you should be able to install the hinge perfectly (all of this is done right at the bench).

When you're finished on the hinge side, flip the door over to the lock side. The position of the locks—36 in. from the floor for the door knob, 42 in. for the dead bolt—is marked on the bench. There's no need to measure each door individually. Simply register the jig to the marks, clamp it in place (photo, p. 40) and bore the holes for the cylinder and the latch.

Hanging a door—Like many other carpentry techniques, door-hanging gets easier with practice. An experienced door hanger doesn't have to pull the pins and split the hinge leaves—even with heavy, solid-core doors. A typical installation takes about five minutes.

Take the door, along with your battery-powered screw gun, to the opening. Place the bottom of the door on the end of your foot so that you can insert the top hinge in the jamb gain. Once the door is in position, secure the top hinge into the jamb with one screw. Next, swing the door back parallel with the wall. Put your toe against the bottom edge, push the door plumb and, like magic, the other hinge should drop into its gain. Now it's just a matter of driving home the remaining screws.

Before doing anything else, check the door for fit. The door should fit almost perfectly, with little need for fine-tuning. Because the top and sides of the door are beveled, it's easy to shave the door a little with a block plane to make the clearance the same all the way around the door.

Sometimes the door will be the correct size, but the hinge keeps it too close to one side. Carpenters used to correct this by putting a piece of cardboard behind the hinge, but nowadays there's an easier way.

Over the years, door hangers have noticed that hinges vary from case to case. Hinges from one box may hold the door just a little closer to the jamb side than hinges from the next box. To adjust for this you can spring the hinges slightly. To move the door away from the jamb, stick the butt end of a nailset in the hinge and close the door gently (bottom left drawing). This opens the hinge a bit. To move the door closer to the jamb, use an adjustable wrench on the hinge knuckles (top left drawing). To keep from marring a hinge, use a piece of heavy cloth with the wrench. At times, I've heard criticism that this isn't craftsmanlike. Personally, I think the problem isn't with the craftsman, but with the variations in hinges. If your client is providing you with first-quality hinges, this problem shouldn't arise.

With the hinges adjusted, it's time to make one last check by cross-sighting the jambs. Other tradesmen can sometimes bump a wall and knock jamb sides out of parallel. The finished door, when closed, should be flush with the jamb on all three sides. If it's not it can usually be corrected by moving the wall a little. You can do this by placing a block against the drywall at the bottom plate and tapping the block until the door is flush with the jamb. To make sure that the wall stays in the desired position, drive a small wedge under the bottom plate. The weight of the building will keep everything in place. The door is now ready for a lock, stops and casing. □

Larry Haun lives in Los Angeles and is a member of local 409, where he teaches carpentry in the apprenticeship program.