



Woodsmith[®] PLANS

ADJUSTABLE TAPER/RIPPING JIG



ADJUSTABLE TAPER/RIPPING JIG

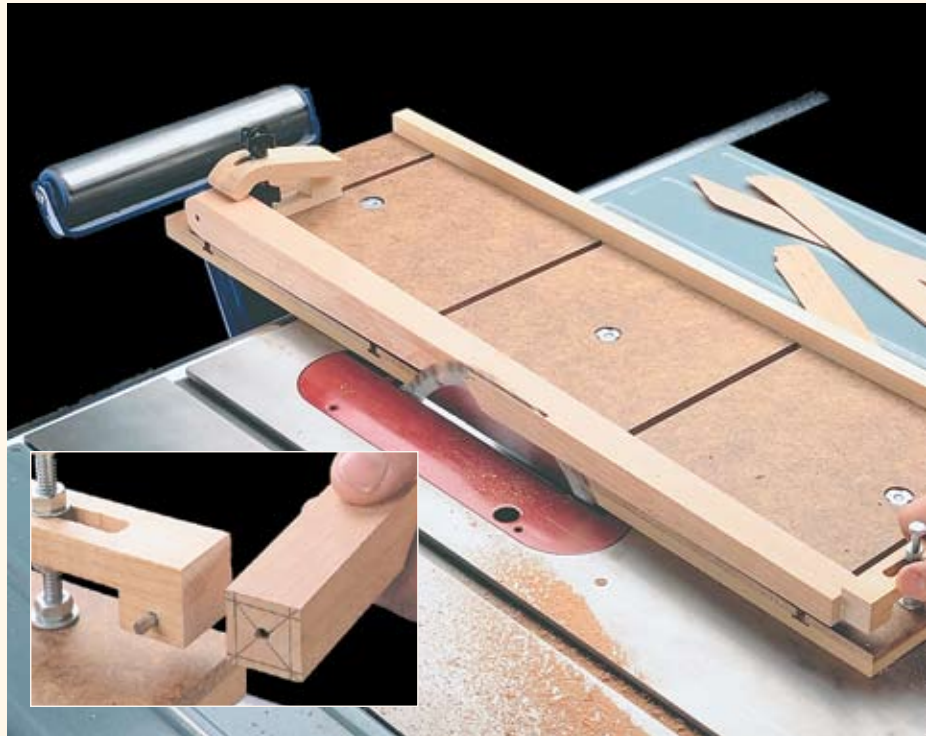
One simple jig allows you to rip a straight edge on rough lumber or cut a perfect taper with ease.

Sometimes a jig turns out even better than expected. That is exactly what happened with this adjustable taper/ripping jig.

It started out quite simply — a platform that slides across the table saw and carries the workpiece past the blade. But it ended up as a jig that can do much more.

ADJUSTABLE. The first improvement was a built-in system that allows you to adjust the size of the taper. It's really nothing more than a piece of hardwood and a steel pin (see inset photo). But it makes it easy to remove the exact amount of material you need to form the desired "footprint" on the bottom end of the leg.

Once the jig is adjusted, you can cut four identical tapers in a matter of minutes — without changing the basic setup of the jig.



ANGLED CUTS. But as easy as it is to cut tapers, you'll probably use this jig just as often for another job. With two simple hold-downs clamping a workpiece securely in place, you can make long, angled cuts safely and

accurately (see photos below left).

STRAIGHT-LINE RIPPING. These same hold-downs can be used when ripping a straight edge on a piece of rough-sawn lumber (see photo and inset directly below).



▲ **Angled Cuts.** Two adjustable hold-downs clamp work securely in place when making angled cuts.



▲ **Ripping.** To rip a straight edge on a rough board, just remove the runner and use the rip fence to guide the jig.



And if the workpiece is particularly long (or wide), you can remove the adjustment system and the runner that rides in the miter gauge slot and use the rip fence.

PLATFORM

The main part of this jig is a platform with four T-shaped slots. These T-slots serve as tracks for the adjustable hold-downs.

T-SLOTS. An easy way to form these T-slots is to make the platform out of two pieces and cut part of the slot in each one.

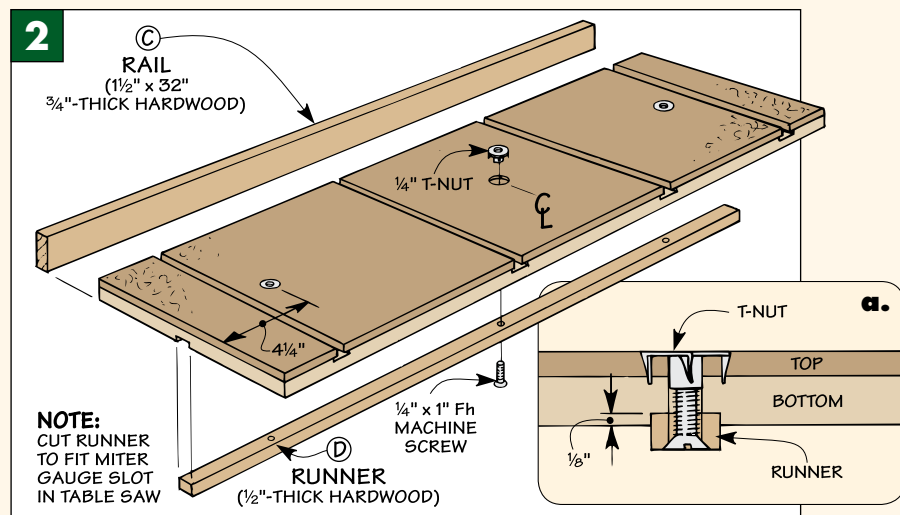
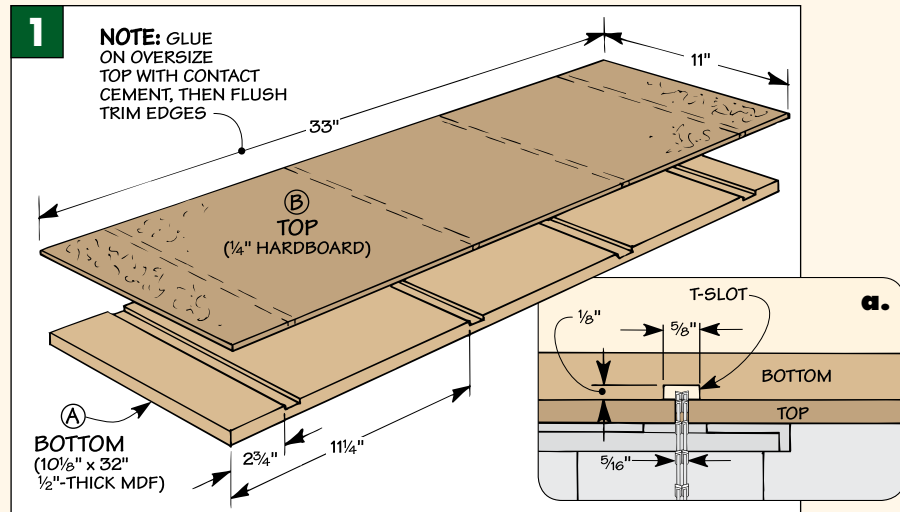
The bottom (A) has four wide dadoes cut in it to accept the head of a toilet bolt (Fig. 1). Then, after gluing on a hardboard top (B), complete the T-slots by cutting narrow dadoes for the shank of the bolt (refer to Fig. 4 on page 4).

RAIL. To ensure that the platform remains flat after it's built, I added a hardwood rail (C), see Fig. 2. It's simply glued to the edge of the platform.

RUNNER. The platform is guided by a hardwood runner (D) that slides in the miter gauge slot of the saw table, see Fig. 2. To avoid any "play" in the platform, you want the runner to fit snug in the slot, yet not so tight that it binds.

GROOVE. Once you're satisfied with the fit, the next step is to cut a groove in the bottom of the platform to accept the runner. Since the runner determines the position of the jig on the saw table, the location of this groove is important.

What you want is to locate the groove so when you install the runner later, there's some waste

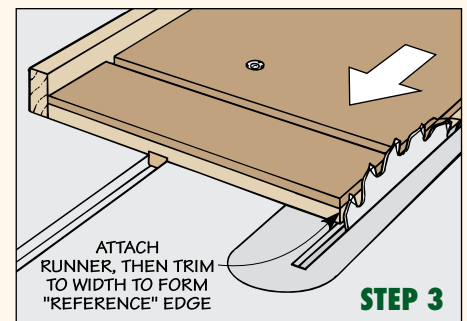
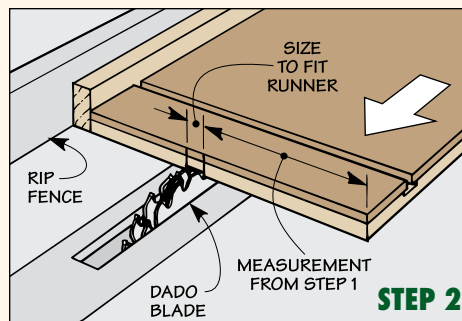
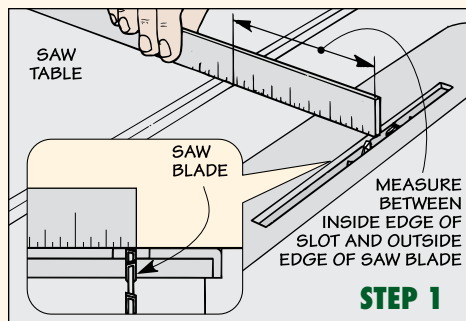


on the edge of the platform. This waste will be trimmed off when you make your first pass.

REFERENCE EDGE. At this point, the edge of the platform becomes a reference edge that indicates the path of the saw blade. So, to make an accurate cut on a workpiece, all you'll need to do is align the layout

marks with the reference edge.

THREE STEPS. An easy way to create this reference edge is to use a simple three-step process, as shown in the drawings below. But before trimming the edge of the platform (Step 3), you'll need to attach the runner with machine screws and T-nuts, see Figs. 2 and 2a.



Adjustment Bar

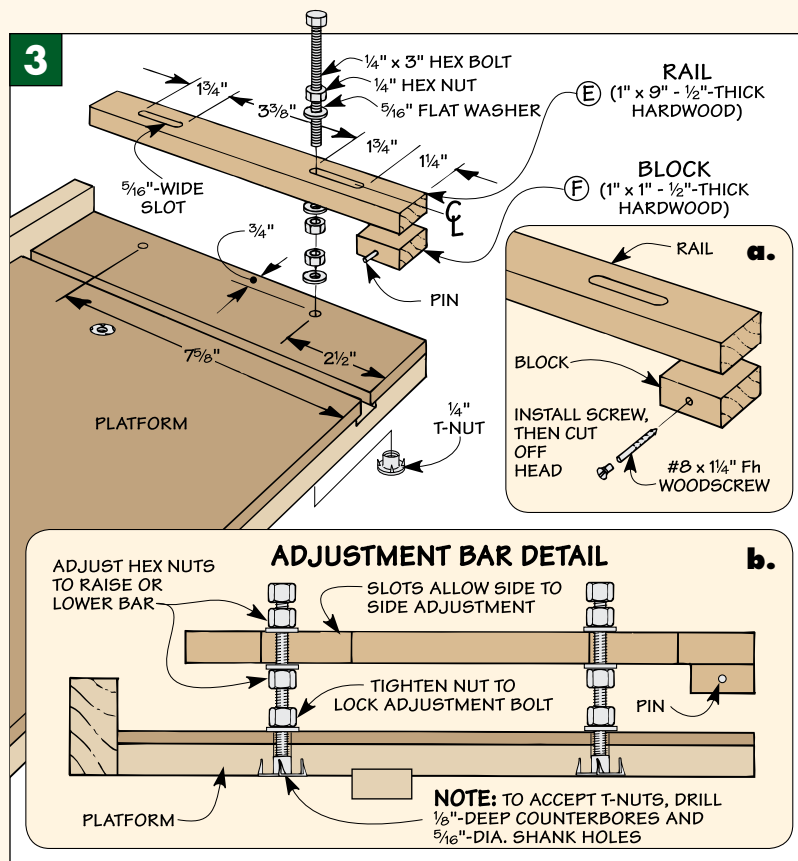
The most unique thing about this taper jig is the adjustment bar. It's just a slotted wood strip and a block with a metal pin, see Fig. 3. But it does two important things.

First, it makes it easy to adjust the size of the taper. Second, it provides a way to cut perfectly identical tapers.

SIZE. The secret is a pin that fits in a centered hole in the end of the leg. This pin determines the position of the leg on the platform. By adjusting the bar, you can move the pin (and the leg) in two directions: side to side and up and down.

Say you want to cut a $\frac{1}{4}$ " taper for instance. Just slide the bar to the side so the leg overhangs the reference edge by $\frac{1}{4}$ ". To allow for pieces of different thicknesses, simply adjust the height of the bar.

IDENTICAL TAPERS. The pin also makes it easy to cut identical tapers without changing the setup of the jig. That's because it's centered on the end of the leg. Since the cut is referenced off a center-point, all you need to do is rotate



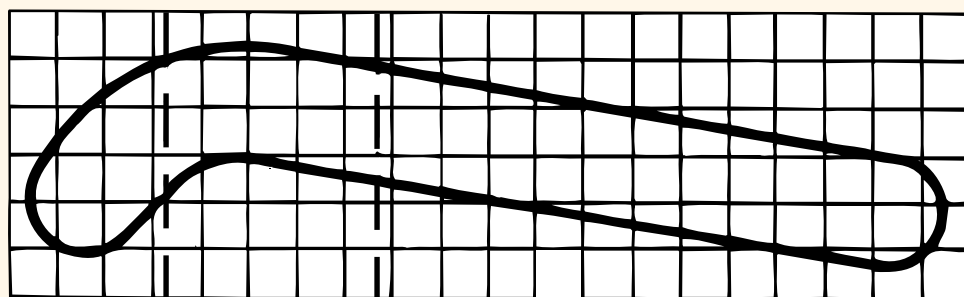
the leg between each pass.

CONSTRUCTION. The adjustment bar is simple to make. After cutting slots in the rail (E), the block (F) is glued on. And a cutoff screw serves as the pin.

The adjustment bar is attached

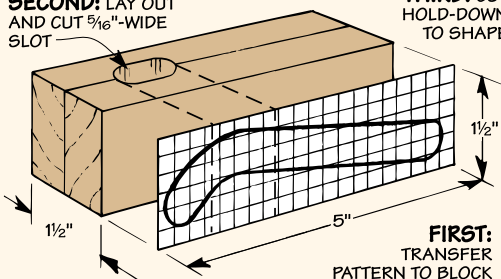
to the platform by means of two bolts that thread into T-nuts, see Fig. 3b. A pair of nuts "capture" the bar on the bolts. And tightening a single nut against the platform holds the bolts in place.

FULL-SIZE PATTERN (GRID LINES ARE $\frac{1}{4}$ " APART)



→ SLOT LOCATION ←

SECOND: LAY OUT AND CUT $\frac{5}{16}$ "-WIDE SLOT



THIRD: CUT HOLD-DOWN TO SHAPE

FIRST: TRANSFER PATTERN TO BLOCK

Hold-Downs & Stop

All that's left to complete the taper jig is to add a pair of wood hold-downs and a simple stop.

HOLD-DOWNS. Like their name implies, the hold-downs clamp work securely in place as you make a cut. By sliding them along the T-shaped slots in the platform, you can clamp different size pieces.

The unusual thing about the hold-downs is their angled shape, see pattern and drawing at left. This shape allows the long, straight end to rest on the platform and the short, angled end to apply pressure on top of a workpiece.

The clamping pressure is produced by tightening a knob on the

HARDWARE

- (5) $\frac{1}{4}$ " T-Nuts
- (3) $\frac{1}{4}$ " x 1" Fh Machine Screws
- (2) $\frac{1}{4}$ " x 3" Hex Bolts
- (6) $\frac{1}{4}$ " Hex Nuts
- (9) $\frac{5}{16}$ " Washers
- (1) #8 x $1\frac{3}{4}$ " Fh Woodscrew
- (3) $\frac{1}{4}$ " Knobs
- (2) $\frac{1}{4}$ " x $3\frac{1}{2}$ " Toilet Bolts
- (2) Aluminum/Wooden



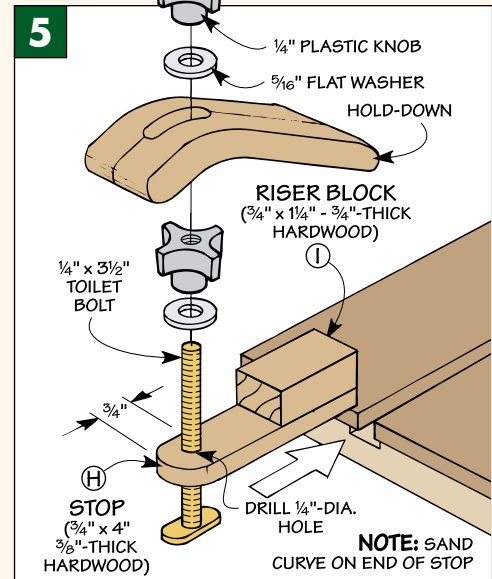
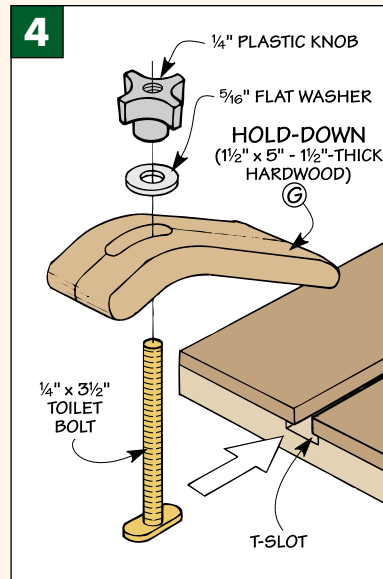
ALUMINUM HOLD-DOWN

end of a toilet bolt that slides in the T-slot, see Fig. 4.

BLANK. Each hold-down (G) starts off as a $1\frac{1}{2}$ "-square blank, see drawing on page 3. (I glued up two pieces of $\frac{3}{4}$ "-thick maple.) Then a pattern of the basic shape is transferred to the side.

Note: Before cutting the hold-down to shape, it's easiest to lay out and cut a slot for the toilet bolt.

STOP. Next, I added a hardwood stop (H), see Fig. 5. In use, the curved end of this stop butts against the top (untapered) end of the leg, see Step 5 below. This lets you



reposition the leg at the same place between each pass.

The stop is locked in place by tightening a knob on the end of a toilet bolt. To provide clearance for this

knob when you use the hold-down and the stop together, you'll need to glue on a small riser block (I). It acts as a platform for the "foot" of the hold-down to rest on, see Step 6.

Using the Jig



1 After laying out the tapers on the end of the leg, drill a centered hole to fit on the pin.



2 With the leg in place, adjust the hex nuts up or down so it sits flat on the platform.



3 Next, align the mark for the taper with the edge of the jig and tighten the adjustment nuts.



4 Now lay out the starting point of the taper and align the mark with the edge of the jig.



5 Slide the stop against the leg and lock it in place. Then tighten the hold-down on the leg.



6 After cutting a taper on one side, rotate the leg and repeat the process for each side.