Sawhorse

A traditional approach to the simple trestle

by Tom Law

When I was an apprentice, the old-timers I worked with referred to sawhorses as trestles or trestle benches, and many a new man on the job had his skill tested, and longevity determined, by the task of sawhorse making. I was given that test a time or two and had the results closely scrutinized by some good, but notoriously grumpy, old carpenters.

Spanned by a pair of sturdy planks, trestle benches can be used as work platforms (scaffolding), and as work tables when topped off with a plywood panel. The top members, sometimes called cross beams, and the legs can be made of thick stock when they're required to support heavy loads. When used for scaffolding, tops are usually made of on-edge 2x6s or 4x4s. If extra stability is needed, tops can be made of 2x8s flatwise, with 2x4 or 1x8 legs.

In most situations, lightness and portability are virtues, and I continue to make sawhorses the way I learned from my first textbook. These sawhorses, like the one in the drawing at right, are strong and fairly easy to move around. Detailed instructions for making them are not included in most new textbooks, but they used to be, and the old *Audels* even explained how to figure the length of the leg using trigonometry.

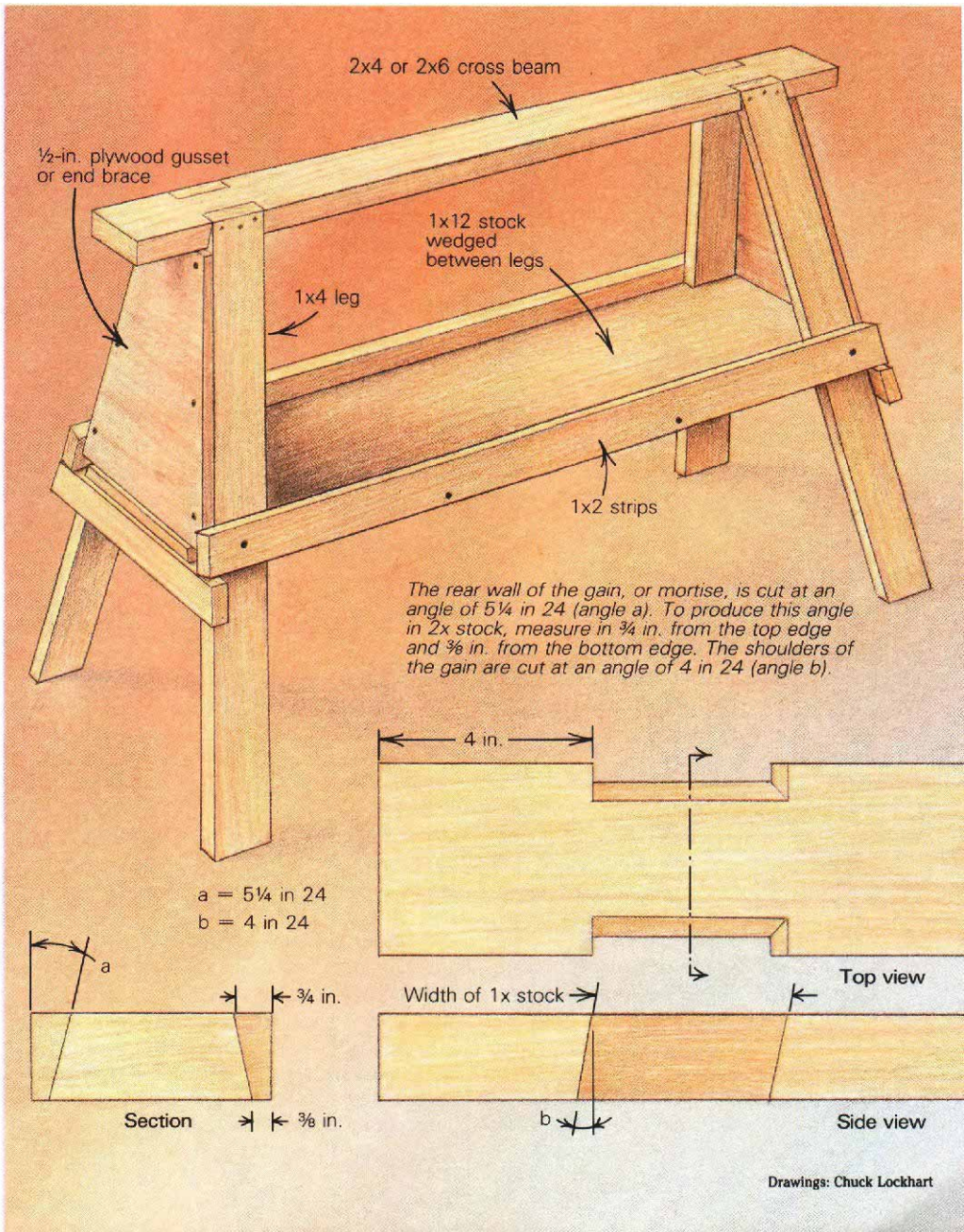
A sawhorse should be knee high, which is typically about 2 ft. In the old days, when most lumber was cut with a handsaw and the stock was held down with one knee, this was a good height to deliver the thrust from the saw. Some horses had a long slot in the top that was used for ripping. The material to be cut was fully supported by the top, and the saw would pass through the slot. These days most lumber is cut with circular saws, but 2 ft. continues to be a convenient height.

Sometimes I make horses with longer legs to use as scaffolding to reach high ceilings, and later cut the legs to normal height. Sometimes I cut the legs even shorter so the top is only about 12 in. high. A plank laid across low sawhorses will put me at the right height for working close to the ceiling for installing crown moldings or door and window trim.

It's also helpful to have a shelf in at least one horse. I use a length of 1x12 for the shelf and wedge it evenly between the legs. Then I add 1x2 strips along the sides (to keep tools from rolling off the shelf). The strips are screwed to the legs and to the edges of the shelf. Aside from holding tools and materials, the shelf strengthens the horse by preventing the legs from spreading laterally. The only problem with a shelf is that it makes the horses harder to stack. I put the ones with shelves on the bottom and stack the others on top.

To make a stable work platform, the legs of a sawhorse must splay in two directions. To lay out these splay angles, I keep in mind two sets of figures for the framing square: 4 in 24 and 5¼ in 24. Setting the leg 4 in. from the end of the top and having it angle out so its bottom end is plumb with the end of the top is the basis for the 4-in-24 figure. It makes the horse very stable, and even the full weight of a worker standing right on the end of the cross beam won't cause the horse to tip over. The angle of splay across the width of the horse is 5¼ in 24.

I begin making a horse by preparing the cross beam. First 1 select a straight, clear piece of 2x4



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or 2x6 and cut it to a length of 42 in. The legs of a well-made trestle have to be let into the cross beam, so the next thing I do is lay out the four mortises, or gains, that will receive the tops of the legs. Because the legs splay in two directions, the shoulders of the gain slope in one direction and the rear wall of the gain in another (bottom drawing, facing page).

To locate the outer shoulder of the gain, I measure 4 in. in from the end and square a line across the top. Then I lay the framing square across the edge of the beam, hold the figures 4 on the tongue and 24 on the body (making sure the figures are on the same edge of the square) and mark the angle. All the succeeding angles could be laid out in this way, or once the first angles are marked, the rest of them can be reproduced with a sliding T-bevel (drawing below, top right). I use a piece of the leg stock to mark the width of the gain.

The depth of the gain is ¾ in. on the top surface and ⅜ in. on the beam's bottom. I use a combination square in depth-gauge mode to lay out these lines (drawing below, top left) After the layout is done, I make a series of sawcuts spaced about ⅜ in. apart to the depth of gain (drawing, bottom left), then chip them out and clean up the gain with a chisel.

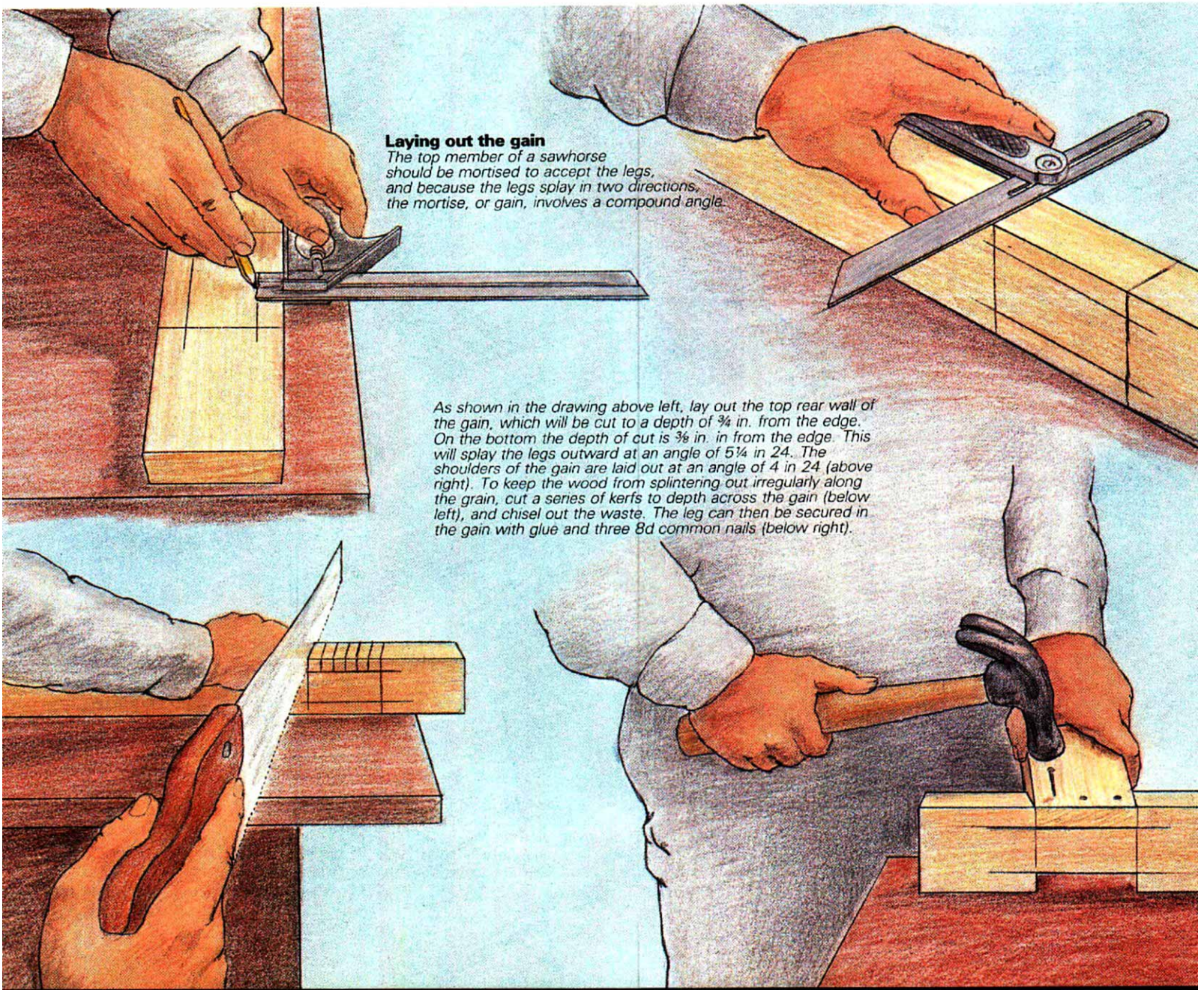
The cuts on the tops and bottoms of the legs are parallel and form a compound angle, 4 and 24 on the flat and 5¼ and 24 on the edge. Cutting this angle is a good exercise in the precise use of a handsaw, but the angle can be cut with any power saw with its shoe set to the proper bevel angle. Since the leg is angled, it has to be longer than 24 in. to make the top 24 in. high. If you work out the length mathematically, you'll find that it comes to about 24⅝ in. But when I'm making the legs I don't spend much time with math—I just cut them 26 in. long. The extra height suits my frame.

Next I secure the legs in their gains. The fit should be snug, but not so tight that you have to pound them in. I squirt glue on the rear wall of the gain, tap in the top of the leg and fasten it with three 8d nails (drawing, bottom right).

Before the glue has time to dry, I attach trapezoidal gussets, or end braces, made from scraps of ½-in. plywood. Their non-parallel sides are laid out and cut at the angle of 5¼ in 24. When the braces are applied (I like to use glue and drywall screws here), the legs should be made to conform to their angle, since they may be out of line due to a miscut mortise. When the legs are attached and braced, the sawhorse should stand on a flat floor without wobbling.

As an aside, let me say that it's never a good idea to use drywall screws in load-bearing situations. Used in conjunction with glue in non-load-bearing applications, as in the gussets here, they will do just fine. But unlike nails, which are made of ductile steel, drywall screws are made of brittle, hardened steel, and they can snap off when loaded. Whenever you're building scaffolding or making structural connections in a frame, avoid the temptation to use drywall screws.

A sawhorse is a fairly simple tool, but one that eases the burden of building. It can be made in about an hour's time, and will last for years if given reasonable care. I sometimes cover the top of mine with a piece of scrap plywood to take the numerous sawcuts. If you do that you should glue the plywood on, not nail it. The probability of a new sawblade finding a nail is surprisingly high. □



Laying out the gain
The top member of a sawhorse should be mortised to accept the legs, and because the legs splay in two directions, the mortise, or gain, involves a compound angle.

As shown in the drawing above left, lay out the top rear wall of the gain, which will be cut to a depth of ¾ in. from the edge. On the bottom the depth of cut is ⅜ in. in from the edge. This will splay the legs outward at an angle of 5¼ in 24. The shoulders of the gain are laid out at an angle of 4 in 24 (above right). To keep the wood from splintering out irregularly along the grain, cut a series of kerfs to depth across the gain (below left), and chisel out the waste. The leg can then be secured in the gain with glue and three 8d common nails (below right).