

Holding Your Work

Simple and efficient solutions for keeping your work steady

BY GARRETT HACK

A good workbench is one of the most important tools in any shop. It doesn't need to be fancy or have vises to be useful, just a nice, flat work surface and a base sturdy and heavy enough to stay put. The challenge then becomes how to hold your work securely and easily, so you can concentrate your energy on controlling your tools, not on work slipping around.

Furniture parts come in a huge variety of sizes and shapes. Take, for example, a chair. To plane the straight seat rails, you must hold them flat on a bench. To shoot

their edges you need to support them upright. To shape back legs that are curved, you need a different solution, as you might for carving the crest rail or for holding any of these parts when chopping mortises.

Fortunately, for every kind of holding problem, there are at least a few solutions: stops, holdfasts, bench hooks, miter blocks, clamps and more. The best are quick, positive and easily put to work.

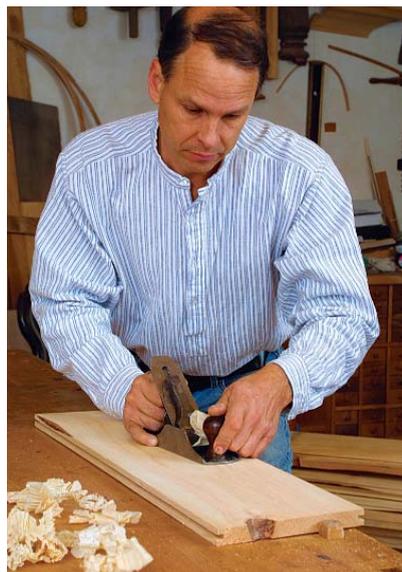
Stops are quick and simple

In an average day, I plane all sorts of parts held flat on my bench. Some are narrow,



BENCH-DOGS

Made of ash, oak or similar hardwood, benchdogs are easy to make and replace, as necessary. A wood spring helps hold it in place.



Planing against a single point. The easiest way to hold a board when planing is to use a single benchdog.



Use two points of pressure with wide stock. Multiple stops help keep wider stock from moving sideways during planing.

STOPS FOR THIN WORK

For thin work, a quick, simple jig can hold the stock for planing. Small brass pins (or tacks) can also hold thin stock in place.



Planing thin, straight stock. This jig is simply a piece of plywood with thin, perpendicular fences. Butt the jig against a benchdog to hold it in place.



Planing thin, curved stock. A brass escutcheon pin tacked into a flat board serves as a ministop for smaller workpieces. Because brass is soft, it won't damage your tools if you run into it.



some wide, some long and some short. By far the simplest way to hold them (and plenty of other pieces that aren't flat) is to use a single, solid stop of some kind.

I use wood stops because they are easy to make and to customize for holding an odd-shaped part, and they won't damage my tools if I run into one. The stop I use most often is a simple hardwood benchdog dropped into one of the holes on my benchtop. While this gives me flexibility in positioning a workpiece anywhere along the bench, a fixed stop either mortised into the benchtop or securely screwed to it can be just as useful in the same situations.

It's ideal to be able to adjust the height of your benchdog just barely above the surface for planing thin drawer sides or sticking out a few inches for larger work. If you mortise a benchdog into your bench, fit it snugly so that it requires only a tap to move it up or down. Because I am often moving my benchdogs (I use them in pairs with my tail vise), I've fitted them with ash springs that keep them in their holes. Lee Valley makes similar brass dogs that drop into round holes easily drilled into a bench.

I can make a new wooden stop to fit almost any need, such as cutting a V-groove into the face to hold parts with mitered ends. I have a dog with a brad in the face that pricks



Three dogs. Adding pins or V-grooves to your dogs helps them hold thin or mitered stock.



VERSATILE BLOCKS

To chamfer or put a lamb's tongue on a square leg, make two blocks with a deep V-cut and place it against a benchdog. The blocks hold the legs in the best position for working the corners with a chisel.

BIRD'S-MOUTH STOPS

A bird's-mouth stop holds a board on edge and allows you to plane, sand or carve the edge safely without the use of a vise.



Locking the workpiece in the bird's mouth. A bird's mouth holds stock remarkably steady, but a wedge offers extra stability yet with a quick release.



Edge-planing curved work. Butt the end of the stock into a bird's mouth and the middle against a benchdog. Steady the work with your left hand.

into small pieces to hold them better. But a stop with a nice, square face is still the most useful, and a little planing dresses it up when it gets worn.

There are times when a single stop does not provide enough support, such as when planing wide stock aggressively. In this case I use a benchdog and clamp an additional stop to my bench to prevent sideways movement (see the bottom right photo on p. 76). Or I clamp a board across the entire end to work against.

Stops for thin work—To plane thin stock, I set up a jig that's simply a flat piece of plywood with thin pieces of wood tacked down to it. One piece of wood acts as a stop; the other piece acts as a fence (see the top left photo on p. 77). The whole assembly is butted against a benchdog on my bench.

To plane a piece that is curved and very thin, one of my favorite solutions is to tack a small brass escutcheon pin on a flat board and butt the piece against it. It's best to use brass because it's a soft metal and will cause less damage to your plane blade should you hit the pin.

Bird's-mouth stops—Planing a board on edge is a common-enough task that it's worth making either of two simple wooden jigs to hold the board securely on your benchtop. One is a thick board with a bird's mouth cut into the end that is clamped to the bench. It works easily not only as a stop, but it also offers some vertical support. A slightly more elaborate version has a wedge to lock the part in place (see the top photos at left).

To plane a short apron I butt the piece against a bird's-mouth stop and use a hand alongside the plane to steady both the apron and the plane. This technique is simple, quick and, with practice, not difficult. Where I want a little more support, say, for a thin board, I clamp the end away from the stop in a wood hand screw laid flat on the bench. I've held longer boards in two or three such hand screws. Merely clamping a board upright with bar clamps also works for a task such as cutting a mortise, but when planing they get in the way.

Stops for curved work—Much of the furniture I build has a lot of curved parts. Some of the curves are shallow enough that I can hold the part on the bench as I

would a flat piece. When shooting edges, for example, I butt the workpiece against a stop and work carefully to keep the piece balanced and steady.

For more shapely parts that don't balance easily against a stop—the curved apron of a demilune table, for example—I still use a stop but with one or more support boards clamped to my bench. These outriggers, as I like to call them, are scraps about 2 in. wide clamped in such a way that they provide sideways support at two or more points.

Holdfasts provide a quick, tight hold

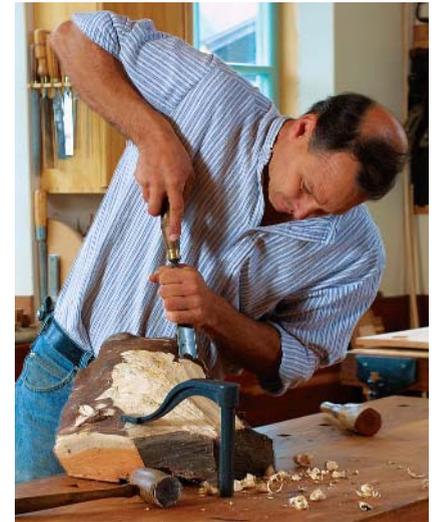
Ancient Roman benches had no holding aids besides a simple stop and iron holdfast. A holdfast is simply an upside-down L-shaped bar that wedges into a hole in the bench with a slight rap on the top. Rap a few more times for firmer downward pressure, or from behind to loosen it. Holdfasts are useful for holding work of almost any shape flat on the bench (flattening out any bow as well). They can also be driven into holes in the front of a bench for holding long boards and wide panels upright, as if they were in a vise.

A holdfast offers quick and secure clamping pressure. The more you drive the holdfast into the hole in the bench, the more



HOLDFASTS

One smack, and the work is secured. The shaft of a holdfast wedges into a hole in the workbench. Be sure your benchtop is at least 2 in. thick or the holdfast may split the top.



Odd shapes are no problem. A holdfast and a stop are all that's needed to hold this burl because it has a flat bottom. If your work doesn't have a flat bottom, use wedges to level the piece.

Holdfasts—what's out there

Most of the traditional holdfasts come in two sizes: 5 in. and 8 in. The smaller models can hold stock up to 1 in. thick. Choose a larger model for use with thicker or irregular stock.

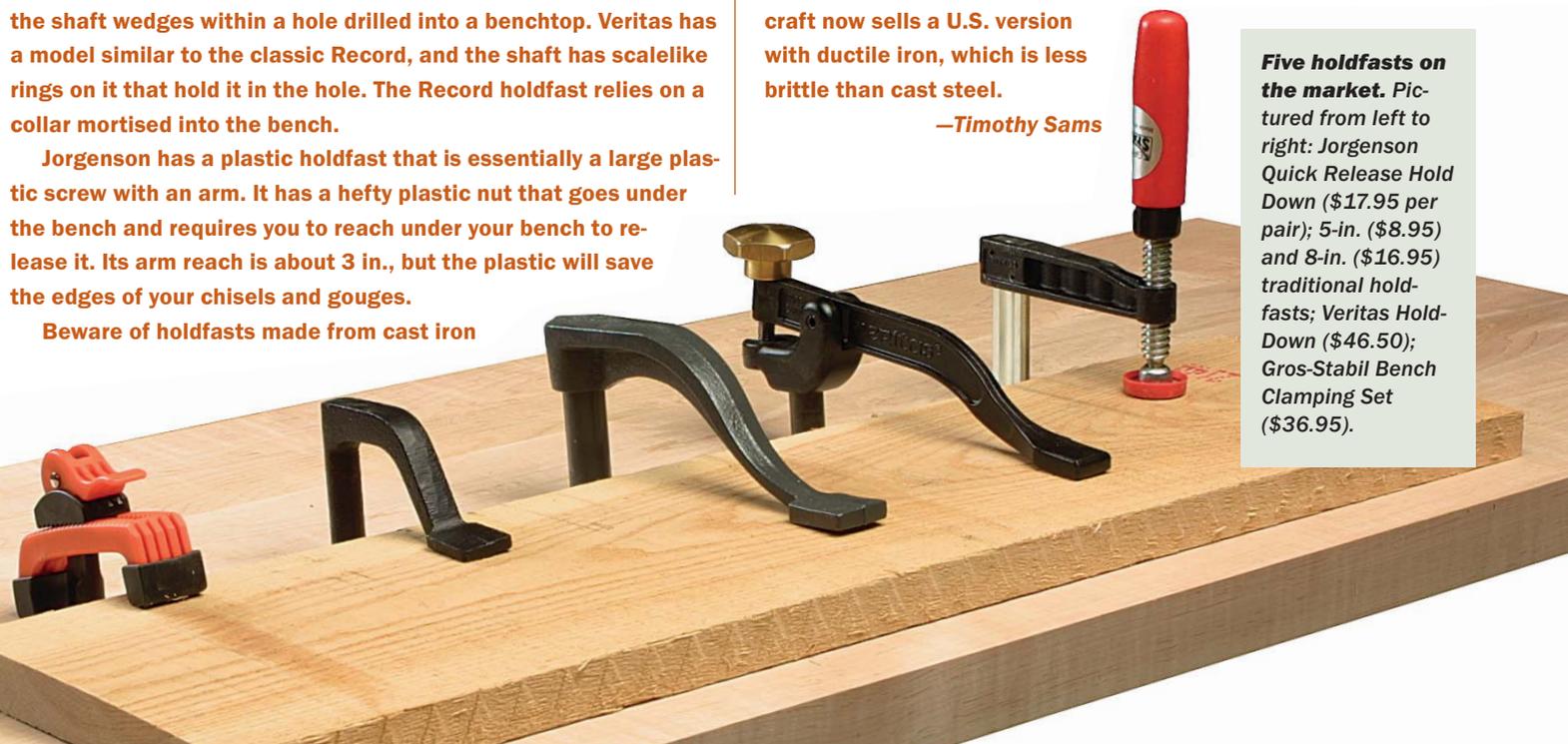
Newer holdfasts incorporate a screw at the top of the arm. These holdfasts are not hit with a mallet. By tightening the screw, the shaft wedges within a hole drilled into a benchtop. Veritas has a model similar to the classic Record, and the shaft has scalelike rings on it that hold it in the hole. The Record holdfast relies on a collar mortised into the bench.

Jorgenson has a plastic holdfast that is essentially a large plastic screw with an arm. It has a hefty plastic nut that goes under the bench and requires you to reach under your bench to release it. Its arm reach is about 3 in., but the plastic will save the edges of your chisels and gouges.

Beware of holdfasts made from cast iron

because the shafts are brittle and can crack and break when placed under stress. The material of a holdfast should have some flex to it. Some of the cast-iron varieties are being redesigned with a steel shank. Most of these holdfasts are made in Taiwan, and while they're pretty rough looking, they will do the job. Woodcraft now sells a U.S. version with ductile iron, which is less brittle than cast steel.

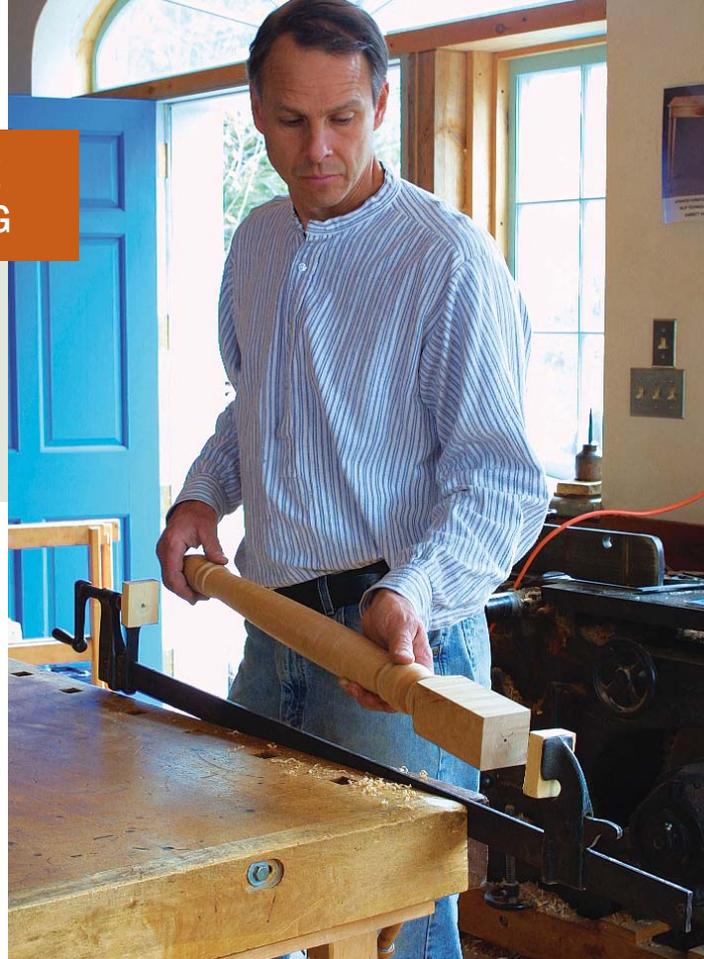
—Timothy Sams



Five holdfasts on the market. Pictured from left to right: Jorgenson Quick Release Hold Down (\$17.95 per pair); 5-in. (\$8.95) and 8-in. (\$16.95) traditional holdfasts; Veritas Hold-Down (\$46.50); Gros-Stabil Bench Clamping Set (\$36.95).

CREATIVE CLAMPING

To secure irregular shapes, use clamps in unconventional ways and combine them with vises, stops or other clamps.



Holding turned legs with a bar clamp. Glue small blocks with protruding nails onto the jaws of the clamp.



Wood hand screw holds long boards on edge. For longer, more unwieldy stock, use a hand screw clamped to the bench.



Tenon shaping on curved work. Use two wedges plus a clamp to keep the piece in place. If the larger block wants to move, place a benchdog behind it.

tightly it wedges in, providing more clamping pressure. A light rap from behind with a wooden mallet quickly releases the clamping pressure. With a model that has a screw on top, insert the holdfast into its hole, place it on the work and tighten the screw until snug.

A holdfast may come loose if lateral pressure is placed on the workpiece. Often, using a holdfast together with a benchdog is one of the fastest ways to hold your work

and keep it in place. I try to use the holdfast to steady the work and then work against the dog.

Installing a traditional holdfast is fairly straightforward: It requires one or more holes in your bench $\frac{1}{8}$ in. larger than the diameter of the shaft. The problem is where to drill the holes without turning your bench into Swiss cheese—and getting past the emotional hurdle of actually drilling those holes. I suggest at least three

evenly spaced holes 14 in. to 18 in. from the front of the bench.

Clamps are versatile mechanisms

I use both light-duty bar clamps and heavier ones with a jaw reach of about 5 in. Unless the piece is small, two clamps always hold more securely than one; both hold the piece in place and work together to prevent slippage from side to side. The problem is that the clamps are typically placed somewhere along the front edge of the bench, where they get in the way.

Nevertheless, clamps can be the best method to hold work on top of the bench: irregular shapes, large work such as big tabletops or jigs for working specially shaped pieces. By placing the clamps along the sides or back of my bench, I get them out of the way of my prime work surface along the front edge. I try to make jigs large enough to get the clamps well out of the way. Clamps also have better holding power if spread far apart. Whenever possible, I try to use a benchdog as a stop somewhere along the bench and eliminate one of the clamps.

For larger pieces that don't fit on top of the bench so comfortably, I regularly clamp these upright along the front edge of my bench, with bar clamps going across the bench, if necessary.

When chopping tenon shoulders on a curved apron, I place a block underneath to add stability under the workpiece and to break up the fibers I am chopping. I butt one end against a stop and use a single clamp to hold everything in place.

Legs, carvings and irregular work—

Table and chair legs can be difficult to hold flat on the bench. A workable method is to first clamp the leg lengthwise between the jaws of a bar clamp and then clamp the assembly to the top of the bench with wooden hand screws.

You can also chamfer the edges on a square, tapered leg by securing it to the bench with V-blocks and a benchdog. I don't see a particular need to clamp the piece to these blocks, but if it becomes unstable while working on it, I do.

Clamping odd-shaped stock requires a good bit of creativity. There are products that may help, but for the most part they work on the principle of wedging the piece between two or three points to keep it stable. I try to use benchdogs and either

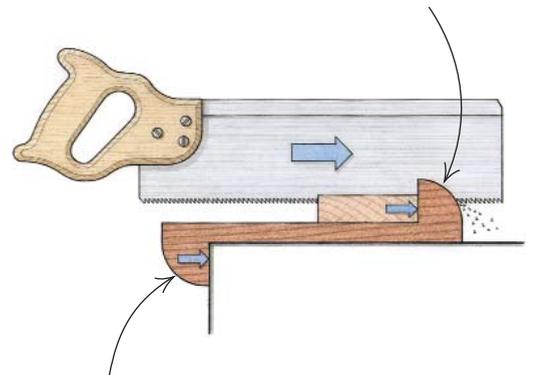


BENCH HOOKS AND MITER BLOCKS

A bench hook holds the work steady for both cutting with a push saw and shooting the end of a board with a handplane.

HOW A BENCH HOOK WORKS

Push stroke of the saw forces the workpiece against the bench hook.



Edge of the bench acts as a stop for the bench hook.



Use a miter block with thin stock. Held in a vise it allows smaller stock to be held securely for cutting.

a clamp or a holdfast just because they are the most efficient for me. Don't be afraid to experiment, but there is no reason to make it too complicated.

Bench hooks and miter blocks can secure small stock

I use bench hooks and miter blocks when stock is too small to clamp or hold against a benchdog.

A bench hook is an ancient device—a flat board with blocks on opposite sides. One block locks over the edge of the bench; the other holds the workpiece. The bench hook is good for holding small stock for

making repeated sawcuts or for planing the end of a board. Used to shoot end grain, a bench hook not only supports the board but also backs up the fibers at the end of the cut, preventing them from tearing out. Pairs of bench hooks of various sizes are useful for holding long boards or wide panels flat on the bench.

For even smaller stock, I use a small miter block—a 1½-in.-thick block of wood with a rabbet cut into it. Held in the vise, this block can make it easier to cut delicate inlay work, veneer or other small strips of wood. I cut 90° and 45° angles (and other angles) into the block to guide my saw. For

a backsaw I place the block in the vise with the rabbet facing me. For a pull saw I orient the rabbet away from me.

A bench, no matter how complex, is only as useful as you make it. I respect my bench, but it's not precious. For common, everyday holding problems drill a few holes in your bench if need be, and set yourself up with a dog, clamps, holdfasts or whatever. A simple, secure hold-down lets you concentrate all of your efforts on controlling your tools, allowing you to do better, safer, more enjoyable work. □

Garrett Hack is a contributing editor.