A Boatbuilder's Slick

A massive chisel you can build

Text and photographs by Harry Bryan
Photographs by Bryan Gagner

I try not to be what is called a "tool cultist." I take that to be someone for whom amassing a set of all the most-sought-after tools becomes more important than getting the job done. A boat can be built with a handsaw, a smoothing plane, a couple of chisels, a few drills, and a hammer. On the other hand, there is no denying the pleasure of using a tool that makes quick and pleasant work of what formerly was an onerous task.

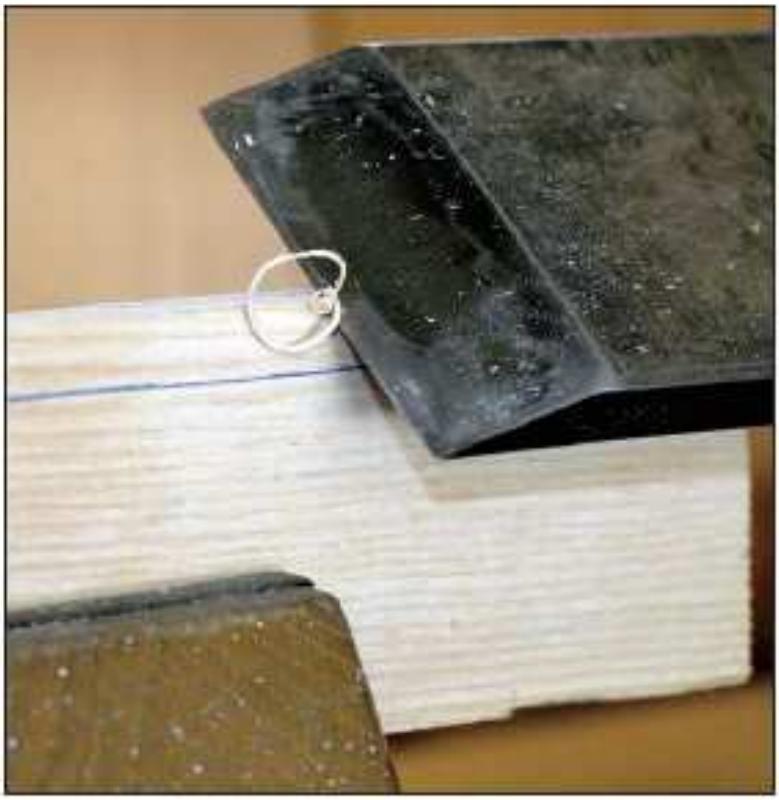
The slick falls into the category of tools you don't absolutely need, yet my own slick does not gather dust while waiting to impress someone touring my shop. I have come to appreciate its unique virtues and will risk detailing them here as long as you promise to start your boat anyway, even without a slick.

A slick is a large chisel (perhaps huge is a better adjective). Mine is 3" wide by 30" long, and weighs over 4 lbs. As you will see, this large size and weight all work in the tool's favor.

Width is convenient when the tool is used like a plane, bridging the low spots and cutting the high ones. When a heavy cut is made, you can work in from one side using a corner and only part of the blade's width. This imparts great pressure to the shortened cutting edge while the extra blade width skims along the newly created surface,

***Above*—A slick is basically an oversized and weighty chisel, usually about 3" wide. It has myriad uses in the boatshop. Boat builders commonly employ it for cutting plank scarfs (as shown above) and for a variety of jobs that require paring on a large scale.**

A slick's large size doesn't mean that it isn't adaptable. Even the largest ones, when properly sharpened, can render a very thin shaving (right) and give the builder a great deal of control in his work.



assuring that the cut is progressing in the desired plane.

The length of the tool (blade and handle combined) gives precise control. I first realized this while comparing screwdrivers. A short, stubby screwdriver is a miserable tool if you don't need its short length. The inevitable wobbling of your hand when force is required causes the driver head to jump out of the slot with annoying frequency. The same wobbling with an 8"-long screwdriver causes little misalignment at the tip. With the 30" length of a large slick, you can choose to take a heavy cut or a gossamer shaving with confidence. It often surprises those not familiar with a slick how precise and delicate such a large tool can be.

The slick's weight is its real secret. Once you get it going, it takes a lot to stop it. It is a push-by-hand tool, so striking with a mallet (unless it was absurdly huge) would have much of the energy of its blow absorbed by the mass of the blade.

The following are a few of the jobs in our shop where the slick seems just the right tool. When we start planking a boat dory style, we begin with the boat upside down and its framing in place. The fore-and-aft-planked bottom comes next, followed by the garboards, which are hung overlapping the bottom, and left proud. Trimming off this extra wood would be ideal for a drawknife except that its grips prevent its cutting flush with the bottom. The slick doesn't have this problem, and its wide blade assures that the cut progresses parallel with the bottom until nearly flush. A few passes with a smoothing plane will help you finish the job.

Although we cut most of a rabbeted stem with a 1" mortising chisel and mallet, much of the final smoothing is done with a slick. Here, the weight of the tool helps in paring the surface of the tough oak, while the long length helps us see that the slick's blade is coming at the rabbet just as the plank will.

A favorite job, and one that justifies having a slick if we did nothing else with it, is cutting plank scarfs. Our procedure is a common one. Set the two pieces to be joined one atop the other, their ends offset by the length of the scarf. The length of the scarf is also marked on the upper piece. Wood must now be removed to change the step-down from the upper to the lower plank into a straight, sloped cut. Starting at one side, use the corner and about 1" of blade to remove half the depth of wood. Move the slick sideways an inch or so at a time until that same amount of wood has been removed across the board's width. Repeat the process as necessary, removing one half the remaining depth each time until you dare go no farther. You should be less than ⅛" from creating a feather edge on each piece before you abandon the slick. Finish with a good, sharp smoothing plane.

There is a steady demand for secondhand slicks; they are scarce and the price is often high. I would expect to pay the best part of $100 for a secondhand slick in good condition. I have listed some sources for buying good-quality new slicks at the end of this article.

I own two slicks. One, I bartered for. It is a "Fulton," a brand name once used by Sears, Roebuck and Company. My 1908 Sears reprint catalog lists it for $1.04, so you see, you shouldn't have waited so long to get one. My second slick is handmade. If you don't count the oak handle that I made from an offcut, the total cost was about $10 for labor at the local welding shop. It works as well as the commercial equivalent in every way.

A slick can remove a great deal of material in short order. No doubt, this is one of its most satisfying uses. It can be used to peel off huge and bulky shavings (left) without chipping or tearout.

If you're lucky, you might come across a used slick like the top one (the author's "Fulton") at a flea market or an antique tool shop. Alternatively, you can make one yourself from a piece of broken truck spring and wood scrap.

Making the Slick

MATERIALS
Blade: 7/16" × 3" × 10" piece of a truck spring
Handle: 2 1/4" × 2 1/4" × 24" hardwood
Fastenings: Three 1/4" × 1", 10–24 flathead machine bolts

The blade for this tool is made from a piece of broken truck spring. A city of any size will have a spring shop where broken truck springs are repaired. There will undoubtedly be a pile of broken springs you can hunt through to find a piece or two that can be trimmed to the dimensions above. Most springs are bowed, which is good. This curve will give clearance for the handle when the slick is used on a flat surface. It should not be hard to find a piece with about 1/8" of bow over 10" of length.

The next step is to cut the blade to length by making square cuts across the spring, 10" apart. A hacksaw will cut spring steel, but it is a good deal of work. It will be far easier to cut it to length with a cutoff wheel at the local welding shop. Likewise, the bevel can be hand-sawn, which is how I did the first one. The second time around I was more than happy to have the welding shop grind the bevel with a powerful, handheld angle grinder. You will likely be paying for any work by the hour, and will therefore save money by drawing cut lines and the limit of the bevel ahead of time. If you are able to find a piece of spring that is 7/16" thick, a bevel ground 1" back will give the proper angle of 25 degrees. Grind the corners of the spring at the opposite end from the cutting edge so there will be a nice transition from the blade into the handle.

Back at your own shop, refine the bevel with a file, and then sand the whole blade to a nice finish. It is much easier to bring the blade to its final shape now, while it is still soft enough to file; any overheating due to grinding is not an issue. Any shaping with a grinder after hardening and tempering will have to be slow, cautious work. Next, you'll want to make a handle.

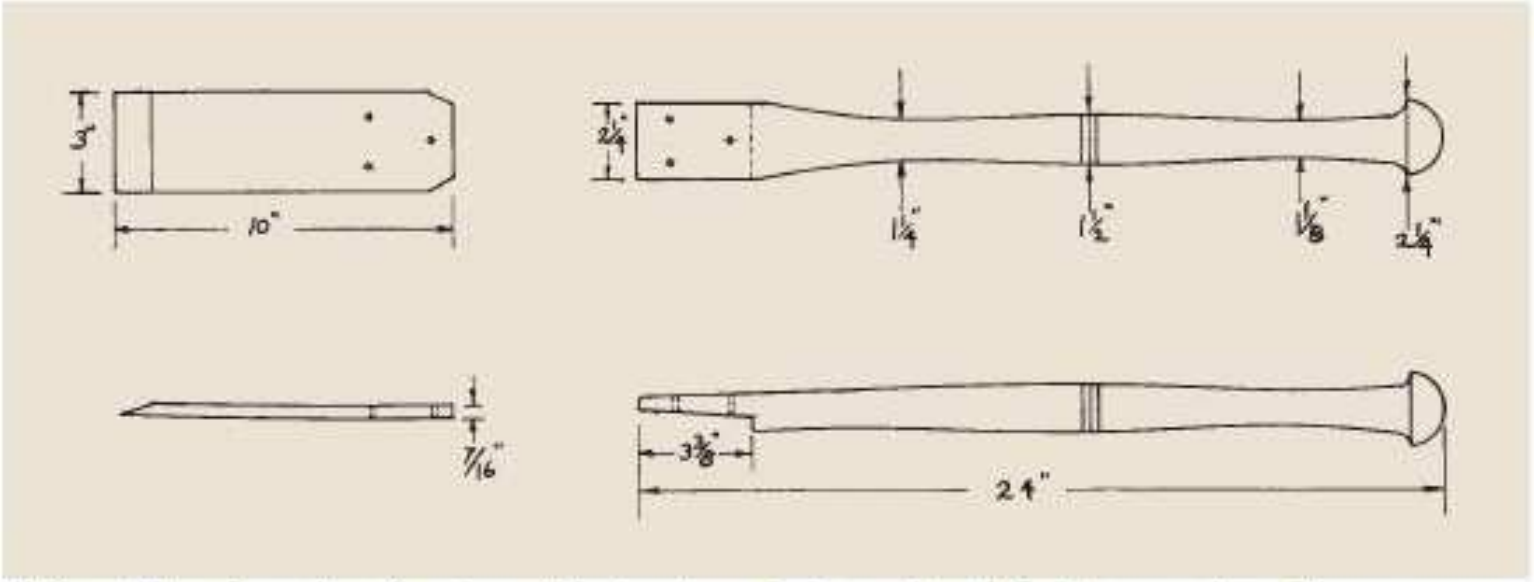
If you have a wood-turning lathe, chuck a piece of hardwood 2 1/4" × 2 1/4" × 26" and turn it to the dimensions shown on the drawing (facing page), then trim it to length. If you don't have a lathe, lay out the dimensions on one face, then saw and finish opposite faces to the line. Turn the stock 90 degrees, lay out the shape again, then saw and finish it so the handle is accurate but square in cross section. Use a spokeshave to take the corners away until the piece is accurately eight-sided. Proceed to 16 sides, and then sand it until it is round and smooth.

With the handle made, saw out the half-lap where it overlaps the blade, mark the bolt pattern on the handle, clamp the two parts together, and drill down through all with a 13/64" drill bit. This is a pilot hole. The holes in the wood will be enlarged to 1/4" and they will be countersunk to accept the bolt heads.

The 13/64" holes in the steel blade are actually a little oversize for a 1/4"–20 tap because the spring steel is quite tough. The large pilot hole reduces the chance that the tap will break. If tapping is still difficult (even using plenty of cutting oil and properly backing the tap as you go), the pilot hole can be enlarged to 7/32". This leaves a very shallow thread in the blade. Nonetheless, there is little strain on these fastenings and they will have sufficient strength.

Although the blade can be sharpened and used as is, it is likely you will find the edge too soft, so it requires frequent resharpening. The hardening and tempering required for this tool are, in theory, dead simple. Step one is to heat the blade (or at least 2" of the beveled end) to a red heat, then drop it into a bucket of water deep enough to cover it. Next, transfer the blade to a 500-degree oven until the blade reaches that temperature. Then, turn the oven off and remove the blade when it is cool. That's the theory, but let's break the process down and look closer at each step.

We are trying to achieve an intermediate hardness, hard enough to stay sharp for a reasonable length of time, but not so hard as to be brittle and chip when hitting a tough knot. Steel cannot be gradually increased in hardness to something between soft and fully hard. It can only



Making a slick requires only rudimentary metalwork and some simple woodwork. If you have access to a lathe, you can make quick work of turning the handle. Trim all pieces to the dimensions shown and assemble as directed for a slick that is balanced-feeling and fun to use.

be fully hardened and then gradually softened to the desired hardness. Therefore, the first step is to fully harden the slick's blade. There is no need to harden more than 2" of the blade, as a lifetime of boatbuilding would be unlikely to wear away more than ½".

Heat the beveled end until it is bright red. Orange is too hot. When the desired temperature is reached, a magnet will no longer stick to the metal. I use my shop woodstove for most of this work. Rake a deep bed of hardwood coals near the draft. Place the end of the blade in the coals and put more dry wood on top. Have a full bucket of room-temperature water next to the stove.

After about 10 minutes, when the end of the blade has reached a bright red heat, pull the blade to the door with a poker, then pick it up using a gauntleted glove and large locking pliers. Fully immerse the blade in the water and swirl it around until it stops hissing. It is crucial to make the transfer to the water quickly while the blade is still in the bright red, non-magnetic heat range.

The blade should now be glass-hard. With the hardened point of an awl or steel scriber, pick at a spot at the far end from the bevel where you did not achieve red heat. Pushing at the slick's blade with this point, you should be able to feel it stick slightly into the metal surface. Try the same thing at the bevel. If you successfully hardened the blade, your hardened point will only skid on the surface. If the point sticks in, try a file. If you can file the end that was heated, your hardening job was unsuccessful. Either you did not get the blade hot enough or you did not cool it fast enough.

Lacking a suitable stove, you can take the blade to a welding shop and have them heat the end of the blade with an acetylene torch. Bring a magnet with you to help define the critical temperature. An automotive magnet is a good choice here.

The important points here are: first, get the blade hot enough (it will not harden if you don't); and second, fully immerse the blade. I broke my first attempt by only partly immersing it. You may be advised to use oil for hardening, and that has advantages. The oil cools the steel a bit more slowly so there is less chance of cracking the blade. Peanut oil is a good choice, as it has a high flash point. However, a bucket of peanut oil is fairly expensive (although I suppose you could sneak most of it back onto the pantry shelf if you're careful—just don't get caught). With oil there can be a lot of smoke and the risk of fire, so I'd stick with water.

The blade is now too hard to be a practical tool. Its edge would crumble or chip in tough going. We need to temper the hardness. This tempering or softening is done by raising the temperature of the blade to a predetermined level, then allowing it to return to room temperature. As the temperature of the steel rises above 300°F, its hardness begins to decrease. With this comes a consequent increase in toughness. Between 475 and 500 degrees, most hardened steels reach a balance of hardness and toughness that is suitable for woodworking chisels. The easiest way for an amateur to bring the slick's blade to this temperature is in the kitchen oven. Put the blade in the oven, then set the temperature between 475 and 500 degrees. Leave the blade in for at least an hour to be sure it has reached that temperature. Then turn the oven off and let it cool. In this age of energy awareness, I would feel happier if you were to have some friends over for pizza while you do this, as the temperature is suitable for both operations.

The blade, which you once had nice and shiny, will be dirty gray/blue from the oxides formed during the heat-treating process. But it will be easy to restore its sheen with fine sandpaper, a Scotchbrite pad, or a buffing wheel. Attach the blade to the handle; hone the edge, and the slick will be ready for use.

Harry Bryan is a contributing editor to WoodenBoat.

Woodcraft is a good source for a new slick. Theirs is made in England and has a 3⅜" blade. <www.woodcraft.com>

Woodbutcher Tools has a 2½"-wide model by Barr and a 3"-wide slick by Sorby. <info@shelterinstitute.com>