



A Visit to the Sharpening Doctor



Two readers hone their skills with help from our expert

BY STEVE SCOTT

For decades, *Fine Woodworking's* tradition has been to offer expert guidance from great woodworkers, helping readers learn new techniques and avoid mistakes. But try as we might, we can't always anticipate which parts of a woodworking task will trip a reader up.

So we stopped trying to guess.

Late last year, we experimented with a brand-new kind of article. In "A Trip to the Dovetail Doctor" (*FWW* #201), we let you follow along and learn from a fellow reader's mistakes as he struggled with one of woodworking's most familiar but challenging tasks. Contributing editor Gary Rogowski corrected his flaws in technique and answered his questions, letting us pinpoint some often lingering misconceptions.

Now the experiment continues.

We sought new patients for the woodworking doctor, asking readers which tasks—despite careful study and practice—continue to frustrate them. The most common cry for help came from readers who've fallen in love with hand tools but can't quite master the dance of getting them sharp.

To make sure we would encounter a broad range of problems, we chose two patients: Aaron Petersen of Grand Rapids, Mich., and Marco Cecala of Phoenix.

"My sharpening skills have been built on reading articles in your magazine and on-

line, watching videos, and trial and error—mostly error," Petersen told us. "Without understanding what it's like to use a truly sharp edge, it's hard to know if I'm doing it correctly."

Both Petersen and Cecala are longtime power-tool woodworkers who started using hand tools in the last couple of years. Each man was frustrated by inconsistent sharpening results. And, with our help, both traveled to Rogowski's school in Portland, Ore., to figure out why.

The doctor reviews the symptoms

We met at the Northwest Woodworking Studio on a chilly February morning. As Petersen and Cecala unpacked their tools, the brightly polished backs and bevels said both had worked hard on sharpening. Still, a quick test in end-grain pine showed that the edges weren't quite right. Softwood end grain is a great gauge of sharpness. Instead of slicing cleanly, a dull edge will push over the pliable fibers, tearing and crushing them and leaving a rough surface.

Petersen's chisels—the chief focus of his frustration—cut inconsistently, fighting him at first and then slicing suddenly forward. Cecala's plea for help centered on his handplanes: They turned end grain to dust instead of shavings. On edge and face grain, the planes took a shaving but

WHAT IS SHARP?

The truest test of an edge is how well it cuts wood. A sharp chisel pares end-grain pine cleanly. A plane with a well-honed iron can take thin shavings and leave a glassy surface.





Flatten the back

Bad news. After watching Petersen struggle to make this chisel cut, Rogowski used a straightedge to show the back was not flat. Cecala's technique of polishing on a hard felt buffing wheel tended to give his tools rounded backs, like this one (right).



Flattening. To flatten, rub the last inch or so of the tool's back on a flat abrasive surface such as a waterstone. Sandpaper, glued to a flat surface, works too. Be sure to hold the back dead flat.

GOOD **The result.** A mirror polish is one goal, but not the only one. The back has to be flat as well.

left unacceptable tearout. And after feeling the silky, unblemished surfaces left by Rogowski's planes, Cecala was starting to see room for improvement.

"I always thought 'if I'm taking a shaving, then I'm doing OK,'" Cecala said.

"You are doing OK," Rogowski answered, "but you could do a whole lot better."

Throughout the next two days, Rogowski watched as each student demonstrated his own sharpening techniques, stepping in to offer coaching in each phase of sharpening—flattening and polishing the tool's back, grinding the bevel, and honing it.

Make sure the back is flat—Possibly the biggest discovery for both students involved the very beginning of the sharpening process—flattening the tool's back. Creating a sharp edge involves making two polished surfaces intersect. For chisels and plane irons, these two surfaces are the tool's beveled tip and flat back.

Flattening and then polishing the back is tedious but crucial work that, thankfully, has to be done only once. You must flatten first to ensure that the polishing abrasive will reach all the way to the cutting edge, where it matters most. The good news is that once it's polished, all you'll ever have to do with the back is rub it with your finest abrasive to remove the burr created by honing the bevel. For chisels, a flat back is important for controlling cuts, because it acts as a reference surface that keeps the chisel on a straight, predictable path.

All of this was clearly on Rogowski's mind as he watched Petersen struggle with his $\frac{3}{4}$ -in. paring chisel, working to coax it into a cut with a slight lift of the handle.

"We need to find out how flat the back of this tool is," Rogowski said. With that, he laid a straightedge against the chisel's highly polished back and held them up to the light, revealing an inch-long gap of light that grew wider at the cutting edge.

"I was very surprised," Petersen said. "I had previously flattened them on sandpaper and thought they were flat."

Petersen then showed Rogowski his sandpaper technique. As Rogowski watched, he cautioned Petersen to avoid lifting the tool's handle as he worked it across the abrasive.

Cecala used a diamond plate and waterstones to flatten and polish the backs of his plane irons, and Rogowski saw no glaring flaws in his technique. But as it turned out, Cecala's final step in the entire process—polishing the bevel and back on a hard felt



Grind the bevel

Bench grinder is aggressive. It will form a fresh bevel quickly, but Rogowski recommends a white abrasive wheel, a light touch, and careful technique.



BAD

Precarious grip. Cecala tried to keep the iron square to the wheel by registering his fingertips in the tool rest's horizontal grooves. The grip made it tough to grind a nice, straight edge on the iron.



GOOD

Positive grip. Rogowski demonstrated how to hold the tool flat with his thumbs while running one finger against the bottom of the tool rest as a guide.

buffing wheel—undid much of this work.

“If you’re having troubles with inconsistency, I think that final step is the one that’s causing the problem,” Rogowski explained, adding that the wheel would quickly round the tool’s back at the cutting edge. This tends to blunt the edge slightly and prevent the cap iron from seating flatly against the iron’s back, resulting in tearout. The sim-

Online Extra

For a free video of this sharpening clinic, as it happened, go to FineWoodworking.com/extras.

plest improvement, he told Cecala, would be to avoid the buffing wheel religiously.

Mastering the hollow-ground bevel—The next step in sharpening is to prepare the bevel for honing by grinding it to the proper angle. This must be done each time the honed portion of the bevel becomes too wide to polish efficiently. Like Rogowski, both men used a grinding wheel with a tool rest for this step. In the process, the wheel’s radius scoops out a hollow be-

tween the bevel’s heel and the edge.

As Cecala began grinding his plane iron, Rogowski eyed his grip. When the sparks started flying, he spoke up.

“Stop, please! How do you know you’re going to get a nice straight cut across there?” Rogowski asked, pointing to the tool’s edge. Cecala explained that he kept the edge square to the wheel by registering his fingertips against one of the horizontal ridges in the face of the tool rest. Rogowski raised a skeptical eyebrow.

He urged Cecala to adopt a more secure grip, riding the outside of his right index finger under the bottom edge of the tool rest to act both as a depth stop and a brace, keeping the iron square to the wheel. He used his left hand to control the tool’s side-to-side movement, pressing down lightly on the tool with his thumbs. As he demonstrated, Rogowski said the grip allowed him to keep the tool flat against the tool rest, pressed lightly against the wheel, and tracking in a straight line. The grip also proved helpful to Petersen, who found himself lifting his chisel during grinding, re-

Good grind. Leave a very thin band of the old bevel to ensure an even grind and avoid burning the tip.

sulting in a multi-faceted bevel.

Like many of us, Cecala was grinding the hollow all the way to the tip, until he could feel a consistent wire edge across the back. Rogowski strongly discouraged that practice. A thin band of unground steel at the tip provides a visual reference to help ensure a square, consistent grind. It also helps prevent the thin steel at the cutting edge from burning on a high-speed grinder. Rogowski recommended leaving $\frac{1}{64}$ in. or so, which can quickly be honed away later.

He also demonstrated a simple way to check the positioning of the tool rest: He set the tool in place, turned the wheel by hand, and then checked the scratches



Hone the edge

A JIG MAKES IT EASY

A honing jig helps you maintain a precise, consistent angle so you know the finest abrasives are reaching the very tip of the tool.



BAD

Catch a wave. Petersen's loosely stacked sandpaper bowed up in front of and behind the cutting edge.



GOOD

The alternative. Rogowski suggested setting up a station like this, with individual strips of sandpaper held in place with spray adhesive.

on the bevel to see where the wheel was meeting the steel.

Hone the edge—The third phase in sharpening involves honing the tip of the bevel with successively finer abrasives until it is as polished as the back. Petersen honed his chisels on sandpaper and plate glass, using a honing guide and working his way through 2,000 grit.

When Petersen switched to a finer paper, Rogowski frowned. Petersen laid the next sheet on top of the previous one, relying on the abrasive underneath to hold it in place. But the layered sandpaper rolled up like a wave in front of and behind the edge, rounding the bevel and preventing subsequent grits from reaching all the way to the cutting edge.

Rogowski stopped him and recommended using a single sheet at a time, gluing each sheet to the plate glass with spray adhesive. He also suggested that Petersen try waterstones, saying they offer a flatter surface if maintained properly, and he demonstrated how to flatten a stone by rubbing it on a diamond honing plate.

After several more honing strokes on the sandpaper, Petersen paused. As they examined the bevel and its honed tip, it

appeared that Petersen was honing at a steeper angle than he had intended. The discrepancy suggested that he needed help in setting the angle of the honing guide accurately and consistently. For better results, Rogowski suggested using a shopmade jig for setting the angle or switching to a guide like the Veritas Mark II, which comes with a reliable angle-setting attachment.

But Rogowski also urged Petersen to try honing freehand. He demonstrated how a hollow grind makes it possible to maintain a consistent angle when honing because it affords two distinct contact points at the edge and the heel of the bevel.

Cecala was already a freehand convert. He honed his plane iron carefully and without apparent trouble on waterstones, stopping at 8,000 grit. This would have been plenty sharp for most woodworking tasks. Of course, Cecala's work would have then been marred by the buffing wheel—had Rogowski allowed him to go there.

Instead, Rogowski demonstrated a different way to take an edge a step further for the most demanding tasks, such as planing difficult grain. He suggested taking a few final honing passes on a leather strop charged with very fine abrasive compound. To demonstrate, he placed Petersen's chisel dead flat on the strop (to avoid rounding) and drew it toward him for several strokes. Next, he flipped the tool to work the bevel with several quick pull strokes.



A jig for consistent angles. For any given honing angle, the blade must extend a specific distance from the guide. Rogowski suggested a simple jig like this one, which will deliver the exact same angle every time.



Precision honing. By setting the jig slightly steeper than your grinding angle, you polish just the tip of the tool.



Lock the arms to lock in the angle. Rogowski showed Cecala how to concentrate pressure on the blade's tip while keeping his arms rigid to help maintain the honing angle.

Rogowski's strop is a simple 2½-in.-wide strip of thin leather, mounted suede-side-up on a piece of ¾-in. hardwood.

After a final pass on the back, the group moved to a bench to test their edges on end grain. The result? Buttery shavings and a clear, glossy surface. Cecala contrasted the strop technique to his own efforts with the buffing wheel. "So I had the right idea, but the wrong execution," he concluded.

"That's it exactly," Rogowski said.

On the road to recovery

Late on the second day, Petersen's chisel roll was spread out on one of Rogowski's

student benches. He was still hard at it, lapping the backs of his tools.

Cecala described Rogowski's tips on flattening the back and honing on the strop as "a couple of revelations" that gave him greater confidence about getting sharp edges.

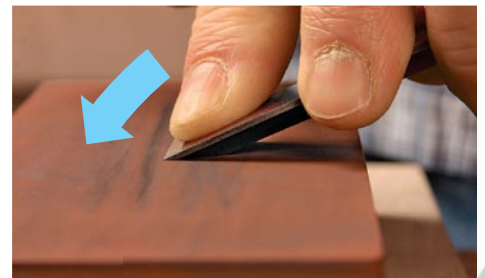
Petersen agreed.

"I wasn't sure exactly what I'd get out of it," he said. "But now I have a really good understanding of what a sharp tool is, what it looks like, and how to get there." □

Steve Scott is an associate editor.

FREEHAND IS FAST BUT TAKES SKILL

You save setup time when working freehand, but it takes practice to maintain the angle.



Plant the heel, then set the toe. When honing without a guide, keep a consistent angle by riding both the heel and tip on the stone. Start with the tool resting on the bevel's heel and rock the bevel forward until both heel and tip are in solid contact with the stone.

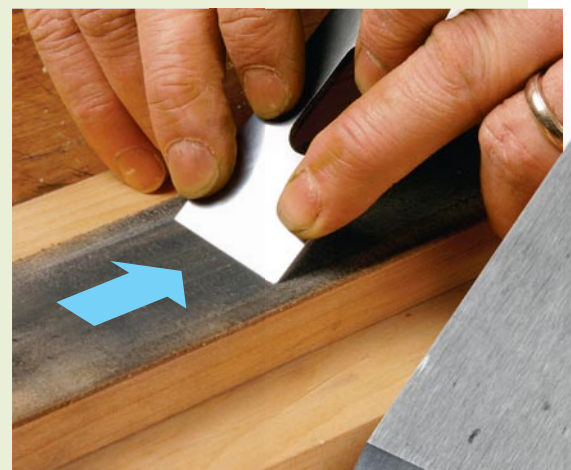
An edge honed by hand will show two polished bands where the heel and tip meet the stone.



FOR THE FINEST EDGE, TRY A STROP



Keep the back flat. Pull the tool toward you for several strokes. Don't push: This will dig the tool into the leather.



Maintain a proper angle on the bevel. Again, pull the blade toward you. The finished edge will be amazingly sharp.