Make a Bargain-Basement

Even a pauper can own a prince of a plane

BY ROLAND JOHNSON

Smoothing a board with a handplane is one of the most pleasurable processes in a woodworking shop. I love the feel of a well-tuned plane gliding across the surface, with whisper-thin shavings rising from the tool's throat. And there is no faster way to create a glass-smooth, dead-flat surface for finishing.

A common misconception among many new woodworkers is that you need an expensive plane to get the job done. But you don't need to spend a fortune to catch the hand-tool wave.

Rejuvenating an old Stanley Bailey plane, whether it's a garage-sale find or an eBay purchase, is a great way to get started handplaning without breaking a slim woodworking budget. Tearing a plane down to its bare chassis and building it back to blueprint specs not only creates a great performing plane, but also gives you an insight into how these wonderful bench mates work.

I have rebuilt dozens of Bailey planes for friends and for myself, and I've given more than 100 seminars on the subject. With my step-by-step approach, you'll turn a clunker into a classic. Best of all, you don't need special tools to get the job done.

Why Baileys are a bargain

Stanley was making two styles of bench plane in the late 19th and early 20th centuries: the Bailey and the Bedrock. The Bailey came first. It was considered a working-man's plane, so it was produced in significant numbers and had a lower price point. The more refined Bedrock followed and because there were fewer made, the tool was more expensive than the Bailey. Today,

Photos: Thomas McKenna (action); John Tetreault (planes)

Plane Perform Like Royalty

that price differential remains. While you'd be hard-pressed to get a Bedrock for under $100, you can purchase a restorable Bailey plane for under $40, including shipping. So with a small investment in labor, you end up with a great tool at a great price.

When a bargain becomes a bummer—A used handplane is a bargain only if it's serviceable. Inspect the plane for obvious flaws. Buying from an online source such as eBay is tricky because you have to rely on photos and the honesty of the seller. Some damaged or missing parts, such as knobs, totes, chipbreakers, and lever caps, can be replaced easily (see "Where to buy," below). A lot of the tools will have some rust, which often is easy to remove and repair. But if it's so bad that parts have seized up or are seriously pockmarked, you may want to pass on the tool.

Take a close look at the castings. If you see cracks in the plane body, especially on the sole in the area around the throat, walk away from the tool; it will be more useful as a paperweight. You also should be real cautious about buying a plane in which the body has obvious welds or repairs.

Small nicks around the throat are signs of normal aging and wear and are easy to file away. But avoid a tool that has nicks larger than, say, ⅛ in., because the plane body is probably toast.

Start with a cleaning

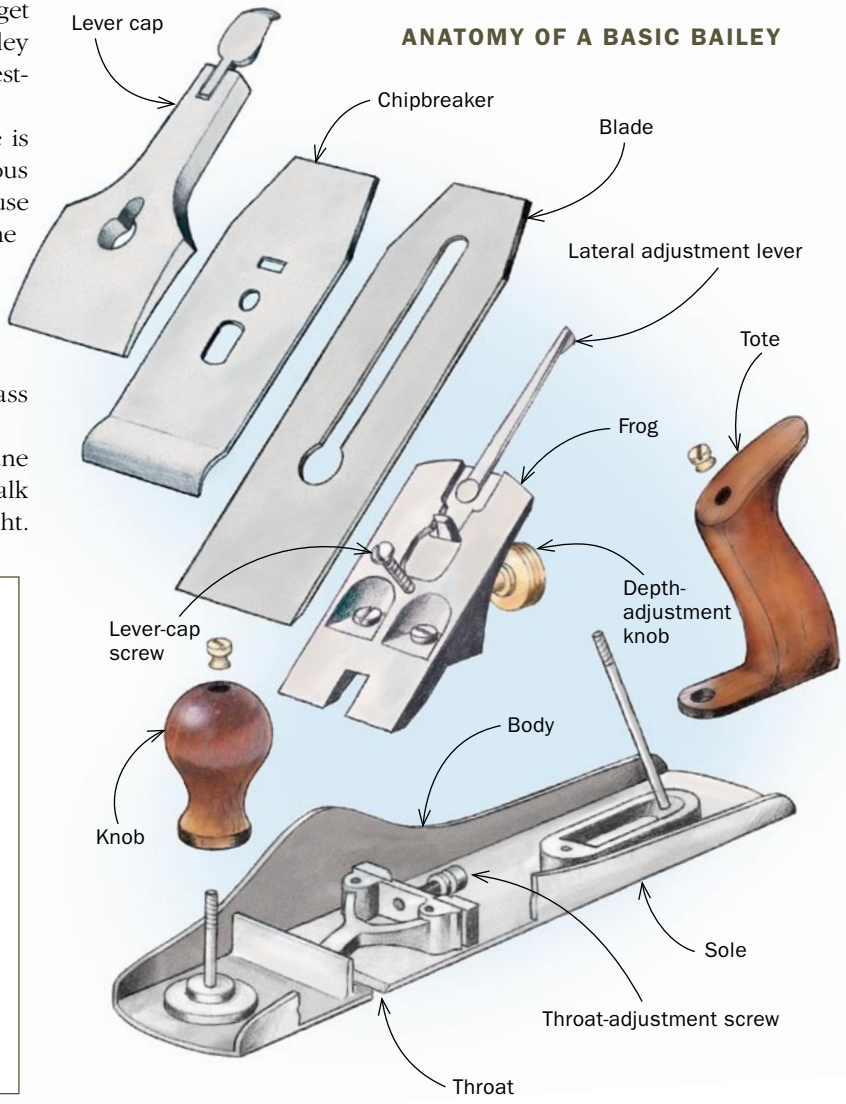
You can get that used Bailey performing like a star with just a few hours of work. Start

WHERE TO BUY REPLACEMENT PARTS

HIGHLANDWOODWORKING.COM
Blades, chipbreakers, knobs, and totes

ANTIQUE-USED-TOOLS.COM
A wide assortment of original and replacement Stanley parts

STJAMESBAYTOOLCO.COM/STANLEY.HTML
Reproduction Stanley plane parts



TAKE IT APART AND CLEAN IT UP

Naval jelly sinks rust. *Be sure to get it into crevices and even threaded areas. Let it sit for 10 to 15 minutes, then rinse off the parts in water.*

Follow with an alcohol bath. *Soak and scrub all the parts in denatured alcohol. Dry and then lubricate threaded parts with camellia oil.*

Drawings: Kathleen Rushton

by dismantling the plane. If the plane is rusty, slather on some naval jelly (Amazon.com), a rust-removal product. Then give all the parts a thorough washing and scrubbing in denatured alcohol. Let them dry, and then coat them with a light oil such as camellia oil.

You can refinish the knob and tote, if they are in a bad way. I use shellac, simply because it is easy to repair or refresh and wears well.

TUNE UP THE FROG

Solid frog makes a solid plane

The frog of a bench plane supports the blade assembly in the plane body. The frog in a Bailey-style plane rests on four points. If there is any inaccuracy in the machining of the frog or the plane body, the frog, and in turn the blade assembly, will not be fully supported and could move slightly under cutting pressure, which will cause blade chatter.

To seat the frog precisely and firmly to the bed of the plane, first coat the mating surfaces of the frog

SEAT IT

Seat the frog on the body. *Apply valve-grinding compound to the four mating surfaces where the frog meets the body (left). Rub the frog fore and aft (above).*

Grind until it shines. *Check your progress as you go. You're finished lapping when an even rub pattern shows on all the contact points.*

FLATTEN THE TOP

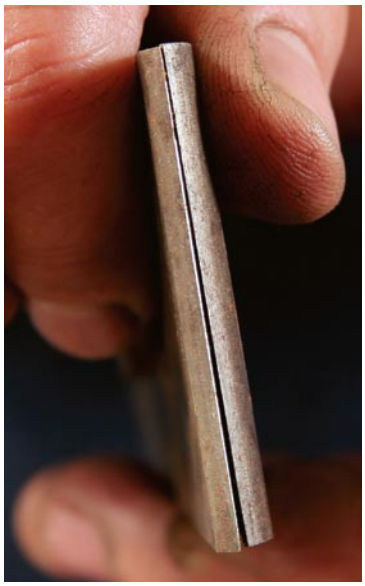
A flat frog is a good frog. *Flatten the area from the lever-cap screw to the bottom. Johnson starts with 120-grit paper glued to a granite plate with spray adhesive. He works through to 220 grit until all the high spots are removed.*

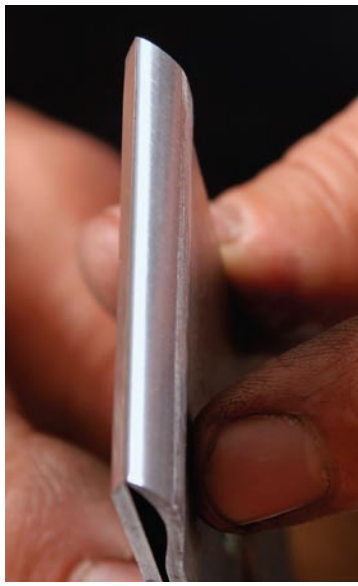
and the plane body with valve-grinding compound (Permatex 80037, available at most automotive-supply stores). Then simply rub the frog fore and aft in the plane body, keeping even, moderate pressure on the frog, until all four points mate evenly and firmly. Clean off the grinding compound using denatured alcohol and a small, stiff brush.

The frog also must be flat across the top. The best approach to flattening it is to rub it on sandpaper adhered to a dead-flat surface, such as a granite block, a piece of plate glass, or a cast-iron tabletop. Begin with 120-grit paper and work through to 220 grit. If needed, you can start with a more aggressive sandpaper and work up through the grits.

Use compressed air to blow out any filings or grit from any threaded holes (do this after you flatten or bed any parts to prevent debris from ruining threads as you reinstall the screws). Coat the fresh surfaces and threaded parts with camellia oil and wipe off the excess. Now you can reinstall the frog on the plane body.

POLISH THE CHIPBREAKER





Mind the gap. *Any gaps between the chipbreaker and blade (left) will catch and jam chips. Holding the chipbreaker so that its end is below the tip, rub the bottom of the front edge on 220-grit sandpaper adhered to a flat surface (above). The goal is a knife edge that meets the back of the blade all the way across (right).*

Flatten and sharpen the blade

In my experience, the blades on these planes are good quality steel. Most often you just need to clean them up and sharpen them. But if the blade is really beat up, particularly if it has lots of deep rust pockmarks, forget the salvage job and buy a replacement. Note that a replacement blade may not fit correctly in a Bailey plane, so check with the blade manufacturer for tips on fitting their blade to your plane.

Flatten both sides of the blade and then sharpen it. When flattening the back, or heel side of the blade, you don't need a polished finish. I usually start with 120-grit paper and work up to 320 grit. Concentrate on the area from the keyhole to the bevel. The front, or toe side, of the blade should be polished to as fine a surface as the bevel.

Fine-tune the chipbreaker

The chipbreaker does just what its name implies—it breaks chips. Positioned directly behind the cutting edge, the front of the chipbreaker forces the shavings to break or curl up and away from the throat, preventing them from clogging it. The constant breaking/curling action also works to prevent tearout.

For it to work properly, the chipbreaker must be tuned to meet the back of the blade perfectly. The goal is a knife edge so that the chipbreaker body exerts maximum spring pressure along the entire width of the blade when the chipbreaker and blade are secured together.

Start tuning by sanding the bottom of the front edge flat. I use 220-grit sandpaper on a granite stone. If the bottom is in bad

Smooth the curve. *Polishing the top front of the chipbreaker helps chips slide by smoothly.*

shape, you may have to start with coarser paper. To check your progress, put the blade and chipbreaker together and hold the assembly in front of a white sheet of paper or light background. Look for any gaps between the blade and chipbreaker; keep working until they are gone.

Once you're finished working the bottom, polish the top front of the chipbreaker, which will help the curls of wood glide over the curved surface.

FLATTEN THE SOLE

Reassemble and lube. *Assemble the plane before you flatten the sole. Be sure to lubricate threaded parts and the lever cap as you go.*

Tweak the lever-cap screw

Make sure the bottom surface of the head on the lever-cap screw is smooth. Often a pair of pliers has been used on the screw sometime during its life, creating a rough edge. Remove any small burrs; otherwise, the lever cap won't slide easily past the screw nor will the head hold the lever cap accurately. After smoothing out the burrs, lubricate the parts with camellia oil.

Tension the plane before truing the sole

The final steps are to flatten and fix up the sole of the plane. At this point the plane should be completely assembled; be sure the blade is backed off inside the body. Cast iron is slightly flexible and can move a bit from pressure exerted on it, so having the plane assembled and "tensioned" will ensure accuracy during this step.

Get the sole flat by running the plane over sandpaper glued to a flat substrate. If the bottom is scarred and badly out of flat, start with 80 grit. Otherwise, begin with 120 grit, then move up through the grits to 400.

Once you have the sole flat, ease all of the edges with a mill bastard file.

Rub-a-dub-dub. *Retract the blade so it doesn't protrude, then run the sole of the plane over sandpaper glued to a flat substrate. Skew the plane both ways as you work.*

Progress is easy to see. *Work the sole until all high spots (above) are removed. When you're finished (below), lubricate it with a light oil, such as camellia oil.*

Rough throat? Smooth it with a file

The throat area must be flat with a crisp, straight edge to help hold down the grain of the board in front of the blade while making a pass. If the plane has small nicks or a wear curve at the front edge of the throat, the blade could lever up the grain, causing tearout.

Use a mill bastard file to dress the edge flat, carefully holding the file perpendicular to the bottom of the plane body (sole).

Once that's done, add a light coat of camellia oil on the sole, which will keep the new surface slick and free of rust.

Some tips on setup

After you've finished rehabbing the plane, hone the blade

REFINE THE ROUGH SPOTS

Soften the edges. *After flattening the sole, ease the corners with a mill bastard file.*

Remedy for a rough throat. *If the throat has small nicks, dress the edges carefully with a mill bastard file. Be sure to hold the file perpendicular to the sole.*

READY FOR TAKEOFF

Dial in the throat opening. *When reassembling the plane, adjust the frog to create a tight opening between the blade and the front of the throat. For most work, 3⁄32 in. is plenty.*

to perfection. When reassembling the blade and the chipbreaker, set the chipbreaker about 1⁄16 in. or less from the tip of the blade.

Now adjust the throat opening. First, just break the screws loose so that the frog can move. Place the blade assembly on the frog, and add the lever cap with the lever in the down position. Tighten the lever-cap screw until it just touches the lever cap, and then give it about a quarter turn more. The lever should be easy to open and close but will still offer sufficient pressure to keep the blade assembly in place.

Now turn the frog-adjustment screw, which is located behind the frog, to move it forward or backward. For most work, a throat opening of about 3⁄32 in. between the tip of the blade and the front of the throat will be sufficient. A narrower opening will help you tackle more difficult woods. When the desired opening is reached, remove the lever cap and blade assembly and tighten the frog-holding screws just enough to hold the frog securely in place.

Now, with a carefully restored plane and a razor-sharp blade, you're ready to tackle any wood like a pro. And you'll have a reliable tool for life. (For more tips on setting up and using a smoothing plane, see Fundamentals: "Handplaning 101," *FWW* #204.) □

Roland Johnson is a contributing editor.

All the work pays off. *Carefully adjust the depth of cut to create feathery shavings. Now you have a tool that performs perfectly, and you didn't have to take out a loan to get it.*