

10 STEP PLANE RESTORATION

By Bob Garay

I have been restoring antique and vintage planes since before I became a shop teacher over 36 years ago. I picked up old tools while going to college to be a shop teacher to equip my shop. When teaching I found restoring older tools was a good way to get quality tools for my school shop. This turned into selling some on eBay in 1998 to help purchase collectible antique tools I wanted. I found that restored ready to use vintage tools were highly sought after by many woodworkers and selling these tools became a rewarding business.

A finely tuned Stanley Bailey plane is a wonder to use. It is a plane that went thru many modifications over its 100 year history and is copied by today's plan makers. As many of today's woodworkers are looking for good quality tools without the expense, why not tune-up a vintage plane. Here is my 10 step process to bring a plane to top user condition.

1 - BODY BOTTOM LAPPED FLAT AND SIDES CLEANED - Flatten bottom surface, remove scratches in bottom & sides. This is the first thing I do to a plane before I take it all apart. Retract the cutter and sand the bottom of the plane with 100 grit sandpaper on a flat machined surface like a table saw, plate glass or machinist plate. Leaving the plane together allows the plane to be lapped in its "true state" of flex when all the components are assembled. It also allows you to use the tote and front knob to hold the plane while doing so. If rusted badly start with 80 grit and work your way to finer paper usually ending with about 220 grit. Mark your sole with a felt-tip pen to help reveal the low spots. Planes with corrugated (grooved) soles have less metal to remove than planes with smooth-bottomed soles, so they're easier to flatten. The area in front and around the mouth are the most important area of the bottom to flatten. Also clean the sides of the plane using sandpaper, always sanding with the grain of the plane, front to back.



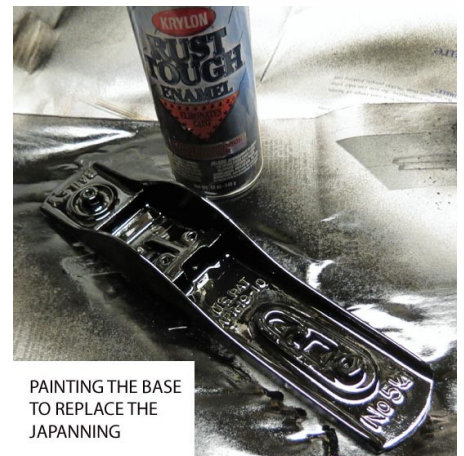
2 - ALL PARTS DISSASSEMBLED AND CLEANED - Remove rust, clean threads, oil moving parts. I use a fine wire wheel to remove rust and dirt from all parts including every screw and washer. Of course getting every screw loos-



ALL PARTS CLEANED & READY

ened is sometimes a chore. Soaking in oil and even a little torch heat may be required for loosening fused screws like the frog adjuster screw. A small wire brush and soaking parts remove the toughest muck. I use OZ cream polish to help with cleaning of japanning and metal preservative.

3 - JAPANNING CLEANED OR REPLACED If the original japanning is good I clean it and apply paste wax. If the japanning is spotty and/or it looks bad, I scrape off the old japanning and replace it with a spray on enamel called Rust Tough by Krylon. I use an old chisel to scrape off all the old japanning and wire wheel the metal. Then I soak with cider vinegar and let the mild acid remove any rust in the metal pores, before washing the metal with hot soapy water and a small wire brush. I then dry quickly with a heat gun. Tape off machined areas and clog screw holes with paper before spray painting 3-4 coats. Clean



PAINTING THE BASE TO REPLACE THE JAPANNING

all machined areas and overspray on uncoated areas.

4 - HAND LAPPING ALL FROG AND BASE MACHINED SURFACES. *Lap machined areas on frog top and bottom to ensure good cutter/bed contact.* I sand the frog machined surfaces on a small machinist table or a notched piece of ply to allow the lateral lever to fit while the frog sits flat. I glue sandpaper to its top and lap machined areas perfectly flat top and bottom.

5 - BASE FROG MATING SURFACES CLEANED & SCRAPED.

On the base of the plane clean and flatten mating machined areas. A small file and a little lapping compound is used for this.



The lapping compound is applied to base and frog mating surface and rubbed together to lap smooth.

6 - CUTTER SHARPENED & LAPPED. *Hollow ground with 25 degree secondary bevel, face lapped flat to polish.* The iron needs to be cleaned and sharpened. I sand the entire blade with medium grit sandpaper then fine sandpaper to clean it. Make sure the blade is flat - tapping on a small anvil will straighten bent irons. I then shape/square and sharpen the iron using a medium stone grinder



to get a beveled hollow edge. Being careful not to overheat the iron I quench frequently in a water cup next to the grinder. The face is lapped with rough to fine stones to get a sharp edge. I also lap the bevel up side as this side needs a good flat mating surface to the frog you lapped. I use an ellipse guide to aid with sharpening the cutter, as it is quick and accurate for a constant 25 degree secondary bevel. I start with diamond stones and fin-

ish with Japanese water stones. For larger size cutters I use sandpaper glued to glass for the medium to fine grits. After polishing on 8000 grit water stone it is leather stropped with green rouge to remove burr edge.



7 - CHIPBREAKER DRESSED TO FLATNESS AND FIT TO CUTTER. Edge of chip breaker lapped flat to fit cutter & top smoothed and polished. Also make sure the chip breaker has a slight bend to it to lock down the cap edge on the irons edge. The chip breaker should have a good "FLAT" at this edge - if not, use a stone to get a flat edge so you do not see and light gaps when looking under the cap iron. This is important as wood fibers will get caught in any gaps and tend to clog the iron. Lock in cap about 1/32" from cutter edge.

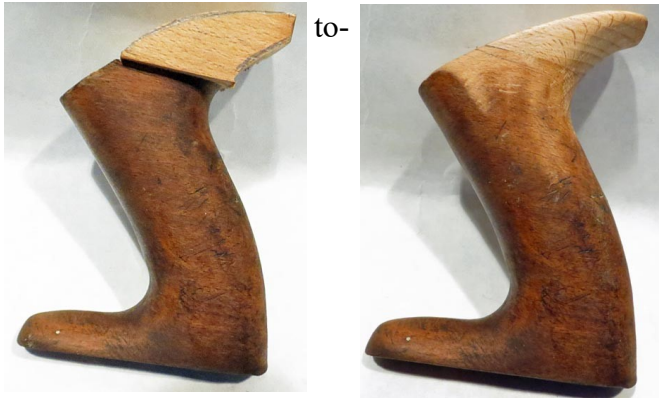
8 - WOOD TOTE & KNOB REFINISHED

Rosewood cleaned and refinished with French polish. For most of the Stanley years they used rosewood for their handles and knobs. This is a great wood with a spectacular look. Of course if your plane has a broken handle another wood of your choice can be used. If the handle is cracked as many



are it is an easy job to re-glue the handle and still use it, as it will hold up to more use after a good glue job. I like using Gorilla glue. It works well to separate the two broken parts and clean out the cracked edges with alcohol to get them ready to glue. After applying glue it often works to reapply the bolt through the handle and tighten it to the base while being glued. If this does not work some large rubber bands will often hold the two parts

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Above left is handle with replaced glued on horn. On right the horn has been filed and sanded to shape. Staining and finish will put the handle back into use.

gether while the glue is setting. Often I can use my woodworkers vise or wood parallel clamp. Re-sand and finish to your taste. For finishing I will stain the new wood to match using an aniline dye. Then hand buffing a couple of coats of French polish like Lacover by Mohawk Products.

9 - BASE MOUTH OPENING FILED FOR PROPER FIT. Front and rear edges of the mouth are filed gently to straighten and clean surface edges. I use a fine mill file to gently straighten the mouths opening. If uneven use layout fluid or a marker and mark along the mouth. Then scribe where you want to file to, using a square. The forward edge of the mouth can be angled



Gently clamping the plane in a wood vise angled back 15 degrees so you can hold the file level to file the front of the mouth.

about 10-15 degrees to help chip clearance. (See photo below.)

10 - WHOLE PLANE COATED WITH WAX RUST INHIBITOR. Paste wax applied to all metal surfaces to protect from rust. I use Butchers paste wax on all plane parts, it protects the bare metal and enhances the japanning and rosewood. This should be done often if you work in a garage, basement or humid environment.

Setup and use

Screw down the frog assembly tightly. Assemble the rose wood making sure to tighten firmly. If loose you may need to shorten the screw stud a little and reassemble. Then assemble the cutter and lock in the lever cap. The cap should be snug but not too tight as this may make it hard to turn the depth adjustment. Look at the clearance of the cutter to the front of the mouth. If you want fine shavings adjust the frog close. If you want thicker shavings move the frog back a little. Try the plane out on a medium hard wood and see how it cuts. Move the lateral lever to get full width shavings. Practice is important to perfect your planing performance. I hope you, like me, find restoring old planes enjoyable and useful.

