

Pen Assembly Press

A Shopmade Tool that is Free and Easy

by James Duxbury

Inventing does not mean that you wake up in the morning and say to yourself, “I think I will invent something really new and useful today. Something everyone will want. And best of all, I will sell it and instantly become a millionaire—or maybe even a multi-millionaire.” Good luck!

Usually ideas come to you while using a tool, a process, or a machine, which, for the moment, does not work in the way you would like. Or in the case of this pen press, I needed it right away and did not want to purchase another device that had only one specific function.

This pen press can be adapted to your lathe and is a quick, low-cost solution. After making the first one, I really liked the function of a screw action press over the more popular lever action devices. I find the screw action provides a smoother, more controlled, pressing pressure. Adjustment for different size pen parts is quick (and easy as well). By just moving the tailstock in or out, many different size pieces can be pressed together in a matter of minutes.

DESIGNING

My pen press is designed around a Delta mini lathe with standard spindle turning centers. If you use a different brand, the dimensions might have to be changed to suit your particular lathe. My shop has the usual scrap pile of cut-offs that just cannot be burned, in which a 3/4" x 3/4" x 7"-long blank of straight-grained hardwood was quickly found. I selected maple because it is hard and light in color so the black lines show up, but other species of wood will work as well.

The drawing (**Diagram A**) of the proposed pieces should be copied, full size onto the blank (see **Fig. 1**). Start with about a 1/8" space centered on the 7" length. Draw

SUPPLIES

Wood: one piece 3/4" x 3/4" x 7"-long straight-grained hardwood (maple is shown—persimmon would be excellent, but most hardwoods will work fine)

Tools: Delta mini lathe with standard spindle drive centers, small calipers, 1/16" cut-off tool, 1/4" spindle gouge, 3/4" oval skew
Assorted grits of abrasive paper

both pieces in opposite hand, from there outward. The pressing surface is about 1/2" long. A No. 2 Morse taper can be copied off any lathe drive or tailstock center.

TURNING

Set the lathe speed at about 3700 RPM. Mount the blank in the lathe between centers, and with a cut-off tool, make straight cuts to define the pieces (see **Fig. 2**). Once this is completed, size the large end and the small end of the Morse taper with the aid of calipers and the cut-off tool (see **Fig. 3**).

Using these cuts as a reference, turn a straight, connecting surface between them. I used a 3/4" oval skew (see **Fig. 4**). This tool works well for me, but a roughing or spindle gouge would also work, if you'd rather not attempt the skew. The cut shown in **Fig. 4** is a smoothing cut and is made by running the skew point forward from the large end of the taper toward the small end. This leaves a surface smooth enough for what is required and does not

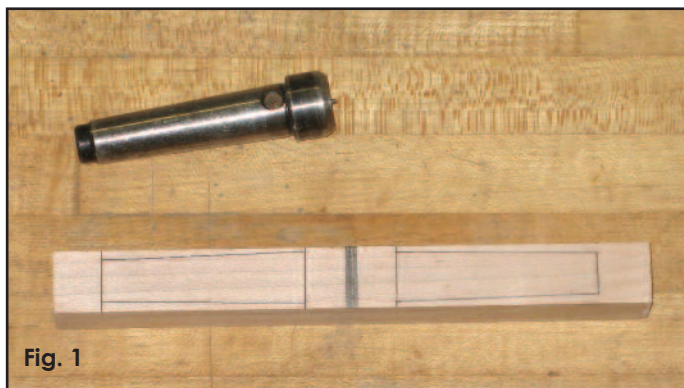


Fig. 1

Draw the full-size shape directly on the blank.

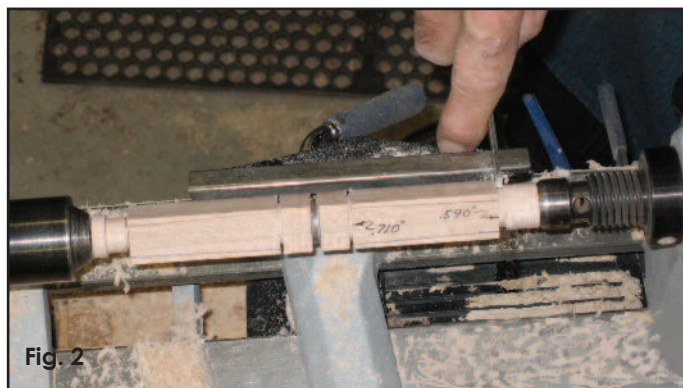


Fig. 2

Define the ends of the piece with a parting tool.

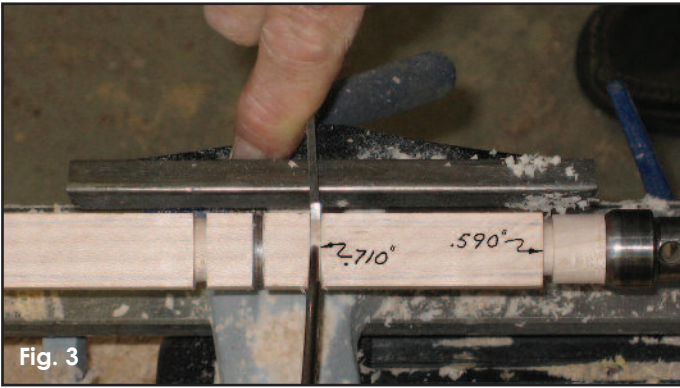


Fig. 3

Size the ends of the Morse taper with calipers and a parting tool.



Fig. 4

I formed the taper with an oval skew.

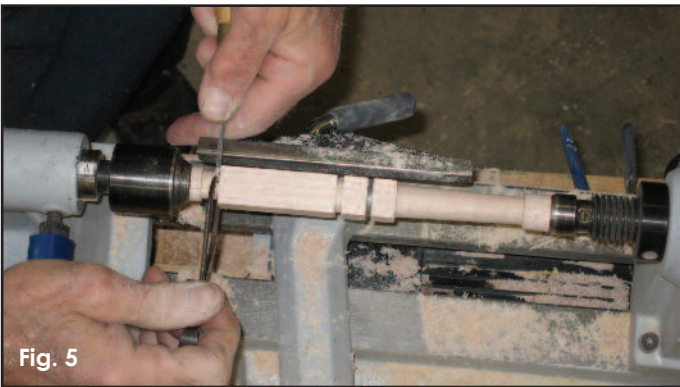


Fig. 5

Make both ends a mirror image of each other.

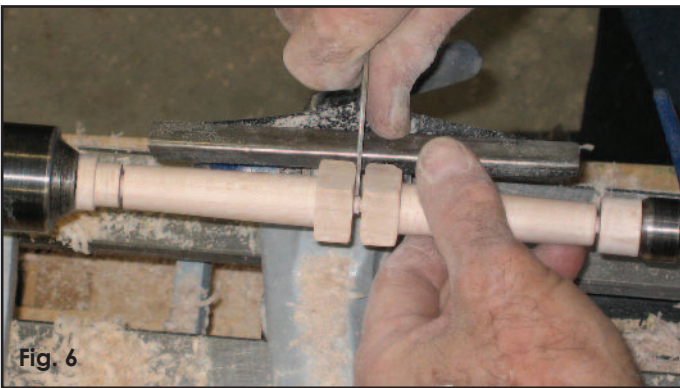


Fig. 6

Part the two pieces off.

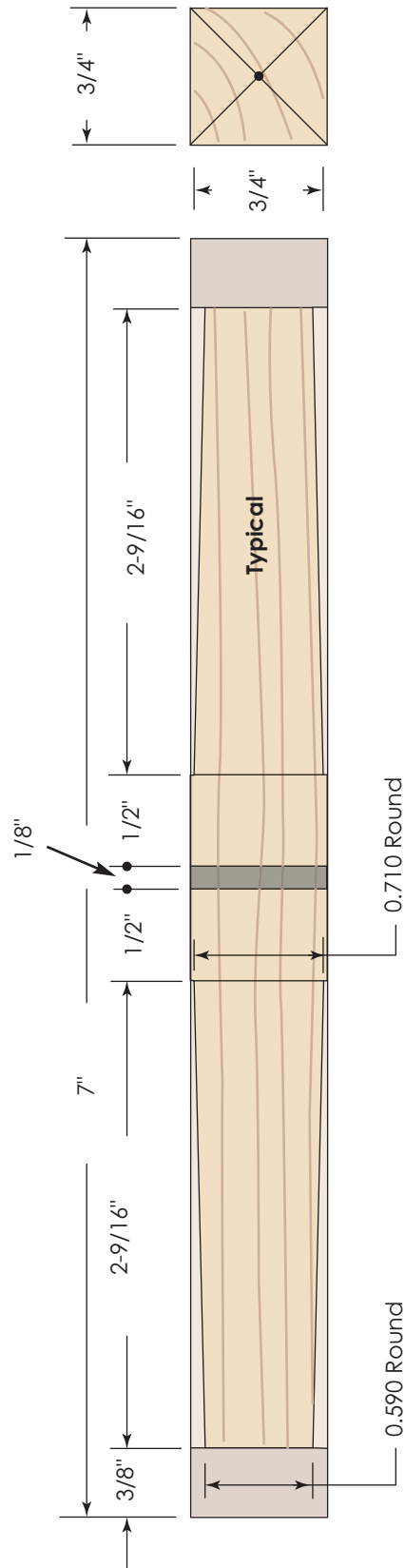


Diagram A

Pen press with No. 2 Morse tapers
Drawing of the finished part (full scale)

need sanding. Duplicate these cuts on the other Morse taper (see Fig. 5). Final sand if needed and part the pieces off (see Fig. 6). Trim the scrap off both small ends so the two parts resemble those shown in Fig. 7.

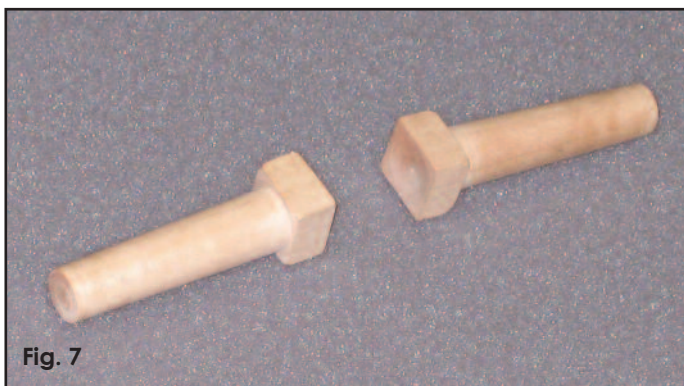


Fig. 7

Your parts should resemble these.

TEST FIT

Press one piece into the drive sockets on both the headstock and tailstock. They should fit securely with about 1/2" of the Morse taper exposed. These do not rotate in the drive sockets, so if they are a little too tight they can be sanded down or touched up. If they are too small, start over.

The pressure surface of these pieces can be left flat and just sanded smooth, but I have found that a slight concave turned into the surface makes the pen pieces center better. This can easily be accomplished by pressing one piece at a time into the headstock drive taper, and with a 1/4" spindle gouge, shape the end as desired (see Fig. 8). About a 1/16"-deep depression appears to work well. Remember to ride the bevel of the spindle gouge while pressing inward, so that the tapered piece does not come out of the drive taper. Your pen press is now completed.

DIRECTIONS FOR USE

Install both of the new pieces after first UNPLUGGING THE



Fig. 8

Turn a concave surface on the faces of both parts.

LATHE! Simply hold the pen parts to be pressed together against the headstock pressing surface, bring the tailstock up with the quill extended about 1/4", and lock it in place. Turn the quill inward to press as needed (see Fig. 9). As you can see, the parts assemble quickly and easily. Note: You can read the scale on the quill to get exact extension, if needed.

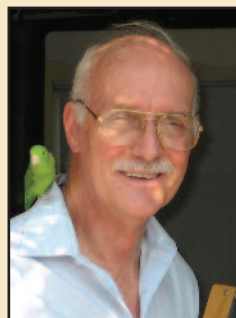


Fig. 9

The jig is simple and easy to use as shown.

RENEW SURFACE

After extended use, the pressing surfaces will become dented and out of shape. They can quickly be renewed by pressing each one into the drive taper and reshaped with the 1/4" spindle gouge.



James Duxbury

James Duxbury, woodturner and inventor, is the kind of guy who thinks and creates "outside the box." His turnings are unique and he seldom turns the same thing twice. With the help of his pet parrotlet, Coco, creativity abounds. Jim makes all sorts of fine turnings from small bottle stoppers to bowls, bud vases, trays, furniture, kaleidoscopes, turned wooden hats, and even a working Foucault Pendulum.

Jim's kaleidoscopes are a signature item, custom designed, and the recipient of numerous blue ribbons. Although Jim quit working in 1996 and claims to be retired, he has since obtained two U.S. Patents and has a third one in progress.

The inventor of particulate dust respirators, his company, Duxterity LLC, markets both the Resp-O-Rators™ and Elegant Creations, his gallery of fine wooden objects. Both can be seen on his website at www.duxterity.com/ec. Jim welcomes your questions and comments and can be reached by e-mail at cyberdux@bellsouth.com.