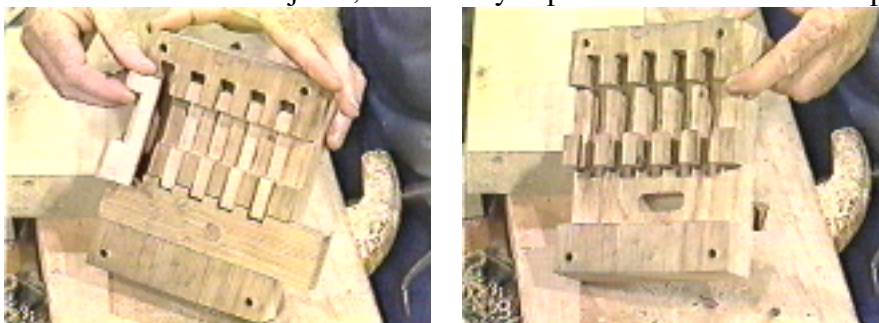


19 Wooden Lock and Key

People sometimes ask me how I became interested in woodworking. Well, it's like this. My Uncle John used to keep his outhouse locked with a wooden lock to keep out the riff-raff. The only way to pull back the bolt and open the door was to insert a toothed walnut key into a slot on the side and lift it up. Uncle John told me that only when I learned how to make a lock like his, then I would gain entry to the privy chamber.

Although I actually first saw these locks described in a book, they are of a quite ancient design, going back to ancient Egypt and still used within living memory. It's easy to see how when mass production techniques made iron and brass locks cheap enough, they would quickly replace these simple wooden devices. Few such locks survive, but you see them on occasion at open-air museums.

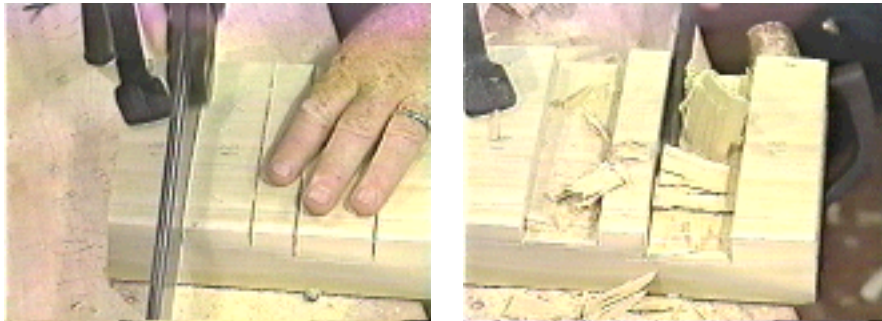
Before I begin with a description of the lock, clarify in your mind the orientation of the pieces, as they are unlike those of the familiar iron lock with a rotary key. In a rotary iron lock the key is usually at right angles to the action of the bolt. Here, all the parts are in the same line as the face of the door. The lock casing fastens directly to the face of the door. The bolt extends into the door jamb, and the key slips in above it in the same plane. The bolt extends into the door jamb, and the key slips in above it in the same plane.



Unfastening the lock from the door, you can see how five pins drop down into notches on top of the bolt. These pins prevent the bolt from sliding back, until they are lifted clear of the bolt by the key. Just to make sure that the properly notched key is present, rather than just a flat stick, the pins are protected by shoulders in the lock case called wards.

Now, not that this is any kind of precision device, but it is made of wood and exposed to the weather, and could be prone to seizing up at the most inconvenient times. Walnut is a good hard wood that does not swell and shrink excessively, doesn't rot and is easy enough to work. I have made a lock for the tool shed with a white oak case and bolt, and dogwood pins, because that is what I had around at the time. But thinking about it, walnut would probably be better for the whole thing.

In any such project, once you have the wood and a plan for the spatial dimensions you also need a plan for the temporal dimensions, or, in what order will you proceed? This decision is usually based on what will make the work easier or faster as well as what will reduce the potential for accidental damage to work. These two are related, in that if your work order put you in a situation where you have to be extremely careful not to damage the previous work, your work will be slowed by the requisite caution. Here we have a number of slots cut at right angles to one another with islands of wood remaining in between. These islands are the fragile parts, so your step by step plan must keep them safe as long as possible.

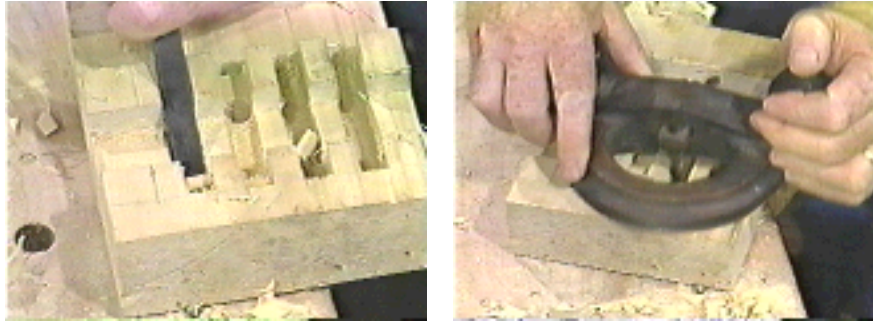


Start with the case for the lock, cutting out the rectangular block with the grain oriented vertically, in the same direction as the pins, and at right angles to the travel of the bolt and key. Lay out the slots for the bolt and key with lines across the grain, saw down both sides of the slots and chisel out the wood in between.

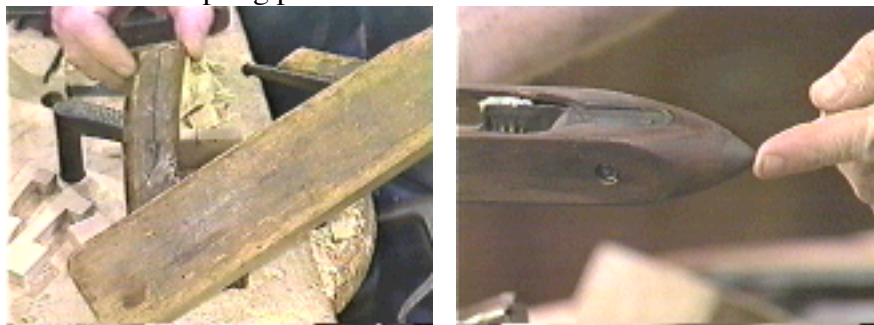


Now lay out the slots or "ways" for the pins. You can make these slots easier to chisel out if you bore holes at both ends and in the middle. These fifteen holes (three for each of the five pins) all need to reach the same depth, in my case, 1 1/4 inches deep. You can mark this depth on the side of the auger, but you may also find that you can do just as

well by counting turns of the brace. This works only for the screw-pointed augers that became common after 1820. I know from experience that four turns of my half-inch auger takes it down 1/4 inch. Thus to reach 1 1/4 inches deep, I put twenty cranks into the brace and I know I'm there. Drive the chisel to chop out the slots and finish the bottoms with a router plane if you have one handy. Otherwise, just do a careful job with your chisel.



The pins need to be from a very tough hard wood. Ironwood springs to mind (but would ironwood rust?), and would actually be a good choice. But I have always had better luck with a similar sized tree, dogwood. (Easy to identify by its bark.) Dogwood is hard, tough, smooth and has the property of becoming even smoother as it wears. One of my best planes has a replacement handle or toat made from unsplittable dogwood. You also find dogwood used for making industrial spinning shuttles. There is hardly enough wood in a shuttle to make it worth using, but the metal points on either end of the shuttle are handy for making the centers for spring pole lathes.



In any case, you will find the pieces easier to hold when you saw them out if you leave the branch or board long, just as a blacksmith leaves iron work long to have something to hold on to as they work. Saw down the length of the grain to block in a number of pins and make the cross grain cuts for the notch so that when you make the final rip and crosscut to free the piece, everything will be done except for chiseling out the remainder of the notch and trimming of the sharp edges so that the pins will drop freely.



The key and the bolt are opposites, where the bolt has notches, the key has teeth. The teeth on the key need to be a bit longer to ensure that the pins are lifted completely free of the bolt. The bolt knob, a simple dowel, runs in a slot cut through the face of the lock case. The slot is simply two holes bored through and the waste in between removed with a saw. Finally, because this whole lock works on the force of gravity, and because wood swells with humidity, and because it is used outdoors, make the whole thing with plenty of tolerance.

This sort of lock works well on doors, but you can use some imagination and see how it could be applied to making puzzle boxes that will only open when you turn them upside down and allow gravity to pull the pins out of the way. Note that this is seldom a problem with an outhouse except on the windiest days.