

The Archivist's Tool Chest: Thinking Inside the Box

By Mattias Hallin



When I was in Covington for a chair class in 2022, Megan kindly lent me a Dutch Tool Chest (DTC) for temporary storage of all the tools I'd brought, and I found that I really liked working out of it. At the same time, I got a good, close-up look at Chris's and

Megan's full-size Anarchist's Tool Chests (ATC), and decided there and then to one day build an ATC myself (and a DTC, but that's a different story) – except, in my case the A stands for Archivist, as that is what I do for a living, while I have nary an anarchic bone in my body.

And now I have built that chest.

This blog post, though, is not about the chest build as such, which, bar some personal tweaks and touches, is pretty much straight out of 'the literature' ([The Anarchist's Tool Chest](#) and its addenda [here on the blog](#) and in Megan's videos on [the ATC interior](#) and [a travelling ATC](#)). Rather, it is about how I approached designing the tool storage, and the ideas and solutions I came up with in that process, as these offer some ideas not suggested in TATC.

The Chest: Some Basic Facts

Before diving into my big box, though, just a few words about its general construction.

It is mainly built out of *Pinus strobus*, i.e. Eastern White or (as it is usually known over here) Weymouth Pine. Runners and till bottoms are oak (*Quercus spp*, probably *robur*). Sliding till walls and tool racks are hard maple (*Acer saccharum*), and finally there's some boxwood (*Buxus sempervirens*) for boxing the lid stay slots, while the block plane cubby is pear (*Pyrus communis*).

Dovetailed carcass and skirts as per TATC. Through-tenoned lid frame, as per same. Bottom boards nailed on, as per, etc. and so forth.

The hardware (except a set of vintage cast iron casters, bought online) is blacksmith made, designed and forged by the fantastic [Tom Latané](#).

The finish is [Ottosson](#) linseed oil paints on the outside, and their oil/wax paste on the tills and racks.

The internal space of the empty shell is 36-11/16" long, 22-1/8" wide and 23-15/16" high. Nothing magical about those oddish numbers: they're simply what aiming for 36-½ x 22-¼" x 24" ended up as.

Mock 'em Up!

I barely know my way around SketchUp et al., and while I think I can safely say I'm not bad at figuring stuff out just in my head, for many things I also like to check that thinking by mocking them up. This is particularly true for anything three-dimensional.

Planning for tool storage in my chest began with a considered decision on the dimensions of the basic shell. The larger that shell, the more tool storage potential, so bigger may seem better. That, however, is not the whole story. For starters, a larger chest eats up more space in your shop and becomes more unwieldy to move about. Also, if it is too wide and/or too deep, it becomes hard to reach the bottom or the rear corners. And Chris and Megan warn from experience that the longer the chest, the more likely it is the sliding tills will rack.

So, my initial instinct to throw space at the problem and go large was quickly reined in.

The simplest way forward would have been to just go with the measurements from TATC, but in order not to box myself in too soon, I decided to make the rough panels well over size by some 5" or so in both length and width. This let me show them to one another and get a much better feel both for how large different sizes of chest would be and how well (or not) I would be able to reach into them.



Showing the oversized panels to each other already at the rough stage gave me a feel for what might – and mightn't! – be suitable dimensions and proportions.

(Here, by the way, is as good a place as any to say that I mostly don't work to a cut list and try to use as few measurements as possible. I do almost all stock prep and dimensioning with hand tools, so usually work to the largest thickness commonly available between a set of parts and make them to fit each other rather than be exactly some pre-defined size.)

Other than overall size and internal reachability, I also knew already at this stage that I wanted:

- for the sliding tills to measure at least just over 8" in internal width (because my woobie box is 8" long);
- to have full access to two sliding tills at a time with no overlap; and
- to hang my backsaws between the front wall and the front tool rack.

I did not yet know the exact outer dimensions of the sliding tills, or the thickness of the surface-mounted hinge leaves, nor would I for quite a while, but to get 8-and-a-bit" internal would likely mean 9"-9-½" external width per till, so 18"-19" for two tills open with no overlap.

Add to that at least 2" for the front rack with room behind for saws, plus a margin for the hinges, and I suspected that the 20-1/8" internal width in the drawings in TATC would be a tad on the tight side.

For final dimensions I therefore decided that all four panels should be 24" high (same as in the TATC), the front and back 38-½" long (so ½" more than in the book) and the ends 24" wide (so 2-1/8" more). Everything else would follow from there.

Thinking Inside the Box: Basic Premises



Lesson learned: when you plan to bevel a dovetail, don't undercut the middle (cf. lower skirt right-hand corner). Filler and paint are your friends, if you do.

While things followed, and the basic carcass came together, I had plenty of time to think ahead and consider the basic premises for how I would want to organize the tool storage. On the one hand, I have a strong tendency towards *a place for everything, everything in its place and the skates go in the fridge*. On the other hand, I had no wish to French fit the

interior. To use an extreme comparison: I am in great awe and admiration of the Studley tool cabinet, but I wouldn't have it if you paid me to.

In daily practice I will most likely put a tool back in more or less the same spot where I picked it up, but over time where that spot is may well move around.

Basic Premise #1: Tool storage should be flexible.

That said, my tool set is by now quite stable. I have acquired most of the tools I need or see a future need of. I have also sold or given away a number of tools that I either upgraded or didn't expect ever to use (again). By now, I think what I have left are the keepers.

I will not be able to fit every single keeper into this chest, but then I never expected to. There are, however, keeper tools that I am as certain as makes no difference will live in this chest for the rest of my days. Some of those tools may as well have a permanent place specially fitted to them.

Basic Premise #2: There can be duly motivated exceptions to Premise #1.

Notwithstanding tool set stability, I am no exception to the general rule when it comes to mental shopping lists. That is to say, I have one. Mine may be much shorter than before (cf. stable tool set), but there are tools I know I shall want to get in the coming years. If I know that now, and that I shall want to store them in the chest, I might as well plan for that.

Basic Premise #3: Try to think ahead.

But then again, you never know, so racks and tills should be as easy to replace as is commensurate with safe and solid storage while they're in use.

Basic Premise #4: Don't over-fix the fixtures - they may have to come out.

Finally, no matter the solution selected for individual tools, they should come out and go back in easily, blocking each others paths as little as possible. The more frequent the use, the easier the access should be. Edges shall be protected, as shall fingers, hands and arms when rummaging through the depths of the chest. Space should not be wasted, though, but a happy medium sought between efficient storage and effective use.

Basic Premise #5: Aspire to conduct a well-balanced tool ballet.

With these premises clear in my mind, I could start to purposefully mockup dummy versions of the fixed racks and tills and put my ideas and these premises to the test.

Front Tool Rack

The first questions to which I sought answers were, what distance should there be between the front wall and the front tool rack to best store my backsaws, and how high should the rack be above the floor?

My longest backsaw is an 18" tenon saw. It will live in the saw till on the chest floor, but I still wanted to make sure it could also hang behind the front tool rack if needed. On the other hand, that tool rack should not sit any higher than necessary for that to work. In part because some tool handles are rather long, but mostly to make sure there will be room enough above the rack to fit a crab lock to the inside of the front wall.



While it would have been possible to measure the saw handles and plates and calculate the answers, I am wary of that method, as mistakes won't be caught early. A mockup with some scraps is quickly cobbled together, and this one let me test different distances and heights by adding or removing spacer blocks.

It turned out that 5/8" was the ideal distance between wall and rack, and that with the top of the rack at 16-1/4" above the floor my biggest backsaw would fit with 1/8" to spare. I made a careful note of these figures.

I also wanted to know how wide the tool rack should be, what distance from the outer edge holes would be best for tool holes, and what sizes and shapes of holes would best work for different tools, in particular those that would have a permanent place?

Again, dummy racks made from pine offcuts was the perfect method for me. They were easy to run up from an ample supply of material left over from the panel prep, so I could test as many possibilities as I wanted. The 'standard' tool hole suggested in the literature has a 1/2" diameter and is drilled with the center point 1/2" in from the edge. The latter I found held good, but a 1/2" hole is too small to hold certain tools as well as I wish. Thus,

the socket of a Lie-Nielsen chisel seats perfectly in a 14 mm (or 9/16") hole, while a Blue Spruce chisel needs a 5/8" (or 16 mm) hole for the ferrule to go in deep enough that it won't wobble in the rack. And for my set of Barr Tools cabinetmaker's chisels, that have larger sockets, the perfect size hole turned out to be 19 mm (3/4").

(While I mostly work in customary/imperial units these days, I drilled some of these tool holes in the closest metric equivalent if that was the best drill bit for the job I had to hand.)

For my pigsticker mortise chisels, I tested elongated holes in different lengths and widths until I found the particular sizes that would best fit each one of them, taking into account the tapered undersides of the bolsters. And for my two paring chisels I went fully bespoke – but I'll come back to that in the Photo Gallery below.

I also experimented a fair bit to find the ideal distance between centers but won't go into any detail on that; suffice to say that, depending on the tools involved, it varied between 1-1/2" and 2-1/4".

As for the width of the rack, 1-3/8" turned out to be right, giving a total width of 2" including the space for saws. While that does not leave much room between the saw handles and the handles of tools stored in the rack, I tested the set-up thoroughly and concluded I would be happy with it. I was in any case anxious not to have the front rack extend more than really needed in order to minimize potential interference with the saw till on the floor below.

Saw Till

Speaking of the saw till, it took a fair bit of experimentation to find the right configuration. For starters, how many saws should it hold? I currently have two handsaws – a 26" rip and a 24" crosscut – and as already mentioned, I also wanted to store the 18" tenon saw in this till. That's three saws. However, on my shopping list are two short – 18" or 20" – handsaws, a rip and a crosscut, so I decided on a five slot till.

With that made clear, there still remained a number of issues to sort out. The till needed to be roomy enough for ease of operation without gobbling up too much floor space. What would that mean in terms of distance between slots? On testing, I found 3/4" too tight to allow the easy grab of a saw, 1" fine but unnecessarily roomy, so 15/16" turned out to be the Goldilocks number.

And would I want to store stuff below the saws? There's potential space there, but only accessible by removing the saws, which is not very handy. I first thought it would be a good spot for my roll of saw files, which don't come out all that often, but found that idea overridden by a more important consideration: the placement of the slotted till uprights should be in function of where the backsaw blades will hang.

The front rack has four spacer blocks to create the 5/8" slot for backsaws, one at either end and two somewhere in the middle, through which the rack is also screwed to the chest wall. The two middle ones I located to optimize the available room to fit my particular set of backsaws, not forgetting to leave room in the middle for the crab lock.

The saw till uprights were then best placed immediately below the two middle spacer blocks to keep them from obstructing the space available for hanging saws. This turned out to mean an off-center placement, with the two uprights too close together for the file tool roll to fit, even on the diagonal. In the end I decided to leave 2-1/2" underneath

the saws: high enough that e.g. a Trusco box will fit in there if needs be, but not conceived to be a major storage space.

There is still about 1-½" clearance between the top of the saw handles and the underside of the bottom sliding till, so in theory I could have gone an inch or so higher. But then that would have had an unwanted effect on the interplay between the innermost slot and the tool rack above. For a saw to come out and go in with full clearance from longer tools in the rack, the slot has to be about 2-¼" out from the chest wall. Starting a set of five slots from there, though, would have made the whole till go a full 7" into the central well.

I bought the 18" tenon saw for my bench build. It did a great job on the massive tenons involved in that but is not in any way a daily user on furniture-size projects. I am not getting rid of it, but it can certainly be stored in a harder-to-reach spot. Thus, I decided to have the innermost slot at but 1-¼" from the wall, in effect between the hanging backsaws and the tools in the rack. To get a saw in or out of there, any long tools must first come out of the rack, but for the very occasional use of the 18" tenon saw, that's not a problem. The other four slots have good clearance, and the whole saw till, including the bracing rails, ends at 6-1/8" into the central well, giving me a full 12" of width for storing bench planes between the till and the molding plane corral.



The finished saw till, with the uprights in line with two middle spacer blocks behind the front rack above. The top cross brace is much shorter than what's suggested in the literature, for a reason. Having it go all the way out to the side walls would not make the construction meaningfully stronger, but it would interfere with tool storage in the side racks.

Side Racks

By any strict interpretation of TATC, I have too many chisels. Were I starting out today as that contradiction in terms, 'a beginner with knowledge and experience', I might well buy fewer. But I'm not, I did buy them, and I don't intend to get rid of any. So, I knew that if I were to hang them from the front tool rack, they would gobble up all the storage there. This called for more racks. I also realized that hanging shorter chisels all along that front tool rack would leave their edges out in the air around the middle of the chest, with potential risk of damage both to them and any passing fingers. So, any additional racks should be lower down.

There is 12" of space between the floor and the underside of the bottom till. Most of my chisels are less than 12" in length. This gave me the idea of installing racks against each side wall, at a suitable height that the edges don't hit the floor while the sliding till clears the tops of the handles. As the handles also have to clear the runners for that till, which stick out from the wall by 1-1/16", I found that I needed to make the side racks 2" wide.

It should be noted that the two side racks are not the same height above the floor, with each one placed to fit the set of chisels intended to be stored on that side.

Along the bottom of each rack, I also installed guard rails, to keep chisels and bench planes apart.



Part of the left-hand side tool rack: the handles clear the runner and till bottom, and the edges are protected behind the guard rail.

These guard rails furthermore serve as anchor points for the saw till bottom cross brace, and for the molding plane corral wall, both of which are secured with screws from behind the guard rails.

Molding Plane Corral

This feature is in most ways quite close to what's shown in TATC: a 4" high divider set at a suitable distance from the back wall to hold molding planes set on their toes.

I have a quarter-plus (the evens, #2-#12) set of hollows and rounds, three wooden rabbet planes and a 3/16" beading plane. I don't expect to add to this set in a foreseeable future.



Divided they stand.



Instead of pocket screws.

When a few are taken out of the corral, the remaining ones tend to slip and slide a bit, so I decided to add a divider to help steady them, and stop them from crashing into whatever's stored at the other end of the corral. The divider also helped pull straight a small bow in the corral wall. To screw the divider to the chest wall, I first drilled holes almost all the way through, large enough for the screw heads to pass, and then, for the final $\frac{1}{2}$ " or so, clearance holes for two 40 mm long dome-head screws.



All visible screws are, of course, slotted ones, but for the hidden ones that secure the corral wall and saw till cross brace through the side rack guard rails, I opted for torx head screws instead, as those were much easier to drive with a small bit and ratchet in the quite limited space available.

The remaining length of the corral is to all intents and purposes just a small well at the bottom of the chest. Currently it holds a moving fillister, a shoulder plane and two tongue-and-groove planes.

Central Well

The central well is what remains of the floor space between the saw till and the molding plane corral. At 32-11/16" long by 12" wide, it stores all the bench planes, the shooting board plane and a few joinery planes. I did consider making a cubby complex to divide the space to fit these planes, but in the end decided against it.



A thin layer of added protection.

Instead, I added a simple 3/32" high half-lapped lattice grid. This is not fixed in any way as the weight of the planes is more than sufficient to hold it down. Its primary purpose is

to stop any extended plane iron from digging into the bottom boards when the plane goes in.

Excessive? Sure. It's a tool chest. It will get knocked about. But if a simple thing like this grid adds protection it won't hurt and it was good fun to make. I suspect I may in the future replace it with a nice 32-11/16"x12" piece of wool felt, if and when I find some. That would add a splash of color, wick away any moisture and protect the bottom boards very nicely indeed.

Sliding tills

The three sliding tills are constructed as per TATC: dovetailed walls (albeit hard maple rather than pine; the Fancy Lad™ will out); two-piece, ship-lapped oak bottoms, nailed on with cut nails; oak runners. Only the bottoms are fitted to the runners. The bottom till in any case needed some good clearance, as the handles are attached with clenched nails, so I made the other two tills with side clearance to visually match. As the carcass is not perfectly square, I found I needed to fit both bottom boards as a unit for the best result. A tad finicky, but achievable enough with the judicious use of blue tape to hold them in the desired position until they were nailed on. And they all slide nice and smooth with no racking, so a big 'whew' from me on that!



With the tills the only significant deviation from TATC is that I didn't add ring pulls to them. I'm pretty sure that even were there pulls I would just grab the tills themselves like I do now, so the lack of pulls is deliberate.



Top till with block planes, woobie box (red), favorite (my Vesper square and Blue Spruce forged marking knife!) or often used smaller tools and pencil box (blue)



Middle till with hammers and measuring tools.



Bottom till with everything else – coping saw, spokeshaves, scorp, travisher, drawknife, brace, froes, 2” bench chisel, bandanna box (yellow) and more – in a big (and heavy) jumble. I don’t make chairs on a daily basis, so am fine with having to rummage for the tools in this till.

At either end of the till runs, I installed leather-padded stop blocks, to make the tills stop at 2-½” from the front and 5/8” from the back wall.



This far but no further. No knocking the tools, please.

That way, they won't run into either the tools in the front rack or the surface-mounted hinges at the back. Also, those 5/8" at the back are just right and very convenient for getting one's fingers in there to move a till forward.

Finally, the block plane cubby does double duty: it stores these planes in a neat, tidy and safe way but it also covers the point of a cut nail that went in skew-whiff when the bottom was nailed on and now pokes out through the till wall. The cubby is not fixed in any way, just a loose press fit.



No nail to see here. Move on.

Lid Stay

Although a wall can indeed be what Chris says – a very convenient lid stop – I wanted something that would hold the lid open no matter how far from a wall the chest would be. So, a lid stay. I also wanted that stay to stop the lid both from opening further and from closing. Not a chain or strap, thus, but something rigid. I wanted it out of sight when the lid is closed but deployed when it's opened. It should open and close, lock and unlock with a minimum of faff or fiddling. It should not interfere with any of the tool storage, in particular the sliding tills. And it should match the rest of the hardware.



Stay! That's a good lid!

After much thinking and many an e-mail between Tom Latané and me, we settled on a forged iron stay, let into slots and mortises in the chest top skirt and the lid dust seal respectively.

The stay arm is 13-½" long, ½" wide and a ¼" thick. Both ends are rounded into a semicircle and have a 3/16" hole drilled through the center of that semicircle. It pivots on a permanent pin in the lid dust seal, secured by and hidden behind a decorative cover plate. The pin is bronze and its hole lined with brass.



The locking end of the lid stay with stay arm, mortise, strike plate and loose pin.

With the lid is closed the stay arm is housed in the two mating slots, both fully boxed against wear with boxwood. As the lid opens, it slides back in the lower slot, until it drops into a mortise, which has been filled with shaped boxwood blocks to stop the arm aligned with the brass-lined hole for a loose pin. When the loose pin is inserted its knob stops against a strike plate that matches the fixed pin lock plate, the stay is locked, and the lid is held open at precisely 95°.

To close the lid, the pin is pulled back out and stashed away in the top sliding till before the arm is lifted out of the mortise onto the slotted track where it glides smoothly into its housed position.

There is of course a small risk that the loose pin could one day disappear, which would be a shame as it is forged very prettily by Tom. I am, however, a creature of strong habits, and have already formed one to always drop the pin into a tray in the top till when closing the lid. Once there is also a lock on the chest, that pin will be as secure in there as any of the tools. And when its at work, the pull of the open lid creates enough friction between stay arm and pin that the latter will only come out if the lid is pulled back a fraction. So the risk of it ever falling out is low indeed. And finally, any rod of 3/16" diameter would serve in a pinch.

Rack mountings

The tool racks, both front and side, rest against blocks of wood stood on either a runner or the floor, and secured to the chest walls with a single, countersunk dome-head screw.



Clearance holes with room for movement.

The clearance hole through the block is oversized to mitigate any cross-grain wood movement between the wall and the block. The side racks are not fixed to the walls at the ends, but the front rack is, again with dome-head screws and over-size clearance holes.

Adding braces to these belts, the front rack is furthermore supported by two cleats. These are not fixed to the rack, only to the chest wall, again with a single screw.



Are those cleats really necessary? No. But I added them anyway.

Picture Gallery



Top view of the empty chest showing the internal fittings.



The same view, now with the sliding tills also in place.



The front tool rack with backsaws hanging behind it.



The central well looking towards the right-hand side rack.



Going through 180° to face the left-hand side rack.



Plenty of margin for no overlap between the sliding tills.



The saw till and central well from above.



The rear of the central well and the molding plane corral. Why do I have two #5 planes? The Stanley is set up as a true jack and the Lie-Nielsen as a short jointer. They may look alike but do different jobs.



Fitted holes for two paring chisels and a too-large-for-the-side-rack 1-½" Lie-Nielsen chisel in the right-hand corner of the front tool rack. Just as in the side racks larger socket chisels have the same size hole as the smaller ones, but also a slot through which they move in and out. Although these chisel edges are potentially exposed, because they are deep down into the corner, they're out of the way enough for that not to be an issue. I can grab and move any tool here with minimal risk to either fingers or edges.



Elongated hole for a pigsticker mortise chisel in the left-hand corner of the front tool rack. Because these chisels are shorter and have exposed edges, the corner space directly below is a no-tool area.

Concluding Remarks

If you are one of those people who can juggle three dimensions in your head and always be sure what will fit where and how, or if making measured drawings in CAD or on paper is your forte, I suspect you will find but little use for mockups.



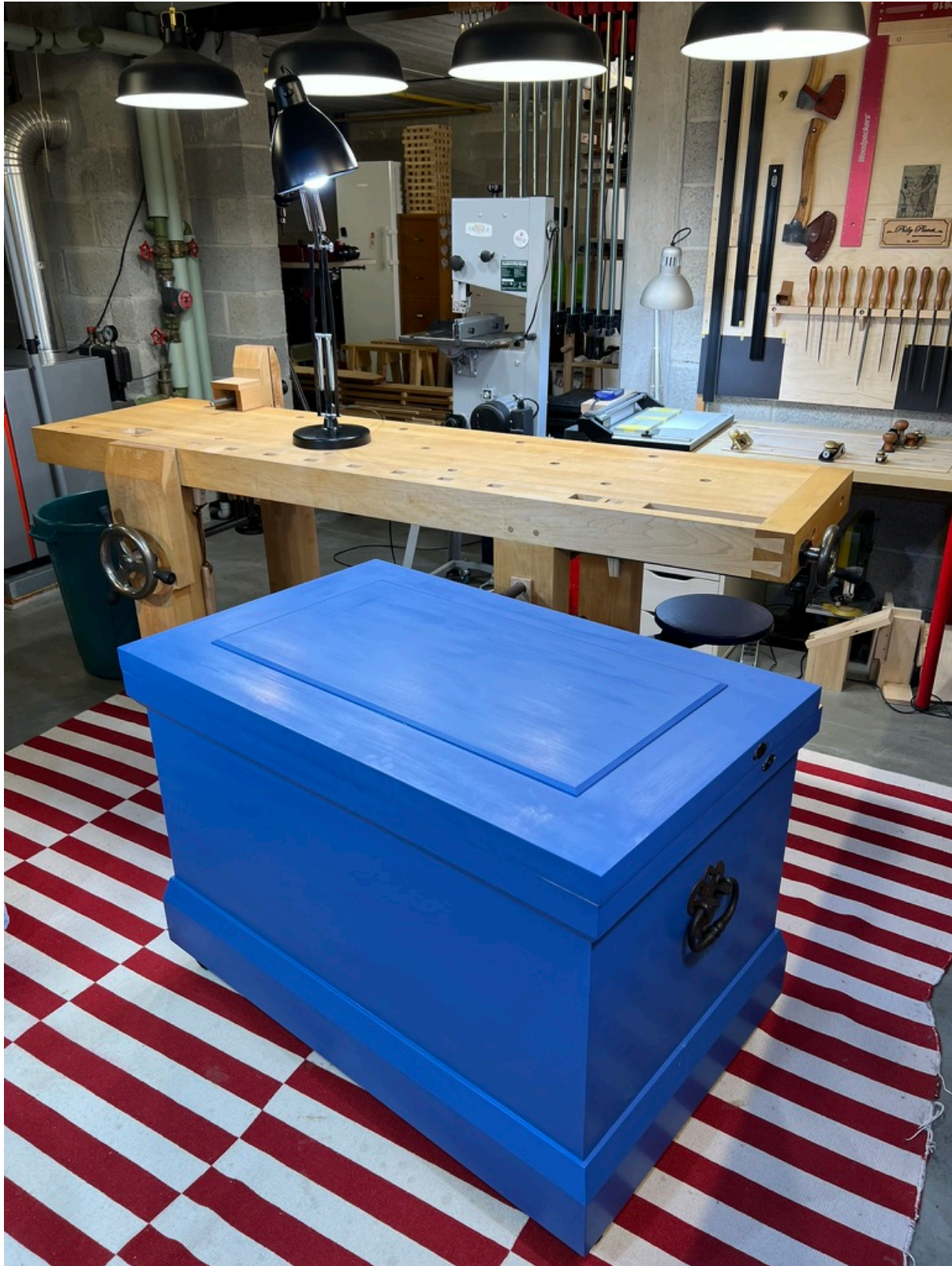
The mock-up dummies after the real racks and tills were installed, and just before they became firewood. It was well worth the effort to do these thorough tests.

Are you anything like me, though, I truly recommend it and find it well worth the extra time spent. It's a great way to test processes and verify dimensions – and to catch

potential errors and mistakes well before they waste your best wood or force you to do a job all over again.

No matter how you prefer to plan and design your work, though, I hope you have at least found some useful ideas for tool storage in this post.

With that, it's time to close the lid on the Archivist's Tool Chest!



The top of the lid needs one more coat of paint to fully match the chest.