



# MULE CHEST

## Chapter X

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*It's a six-board chest, with drawers.*

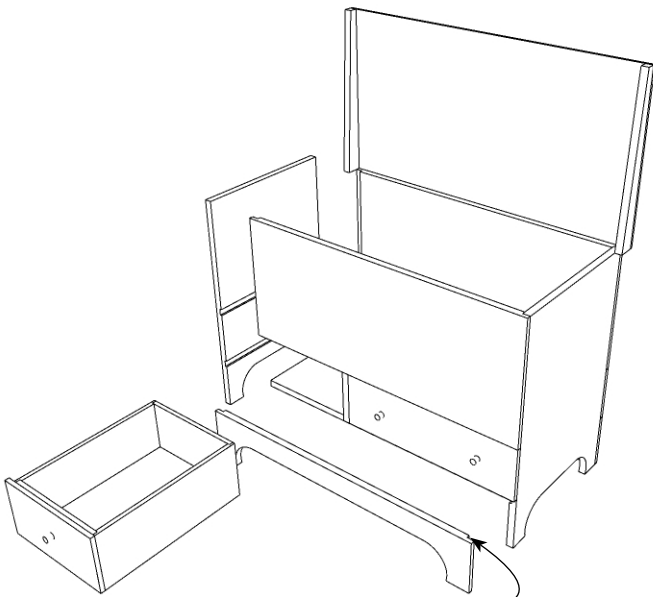
The mule chest is the slightly more complex cousin of the six-board chest. Like the six-board, its carcass is assembled with rabbets, dados, nails and glue. The only significant difference is that you add a drawer or two at the bottom of the chest.

The drawers improve the chest in two ways. First, the addition of the drawers makes the entire chest taller so you don't have to bend down as far to reach the chest's lid and its contents. Second, the drawers are convenient for storing things you need to get to frequently. Simple chests have to be thoughtfully packed with the most-used items at the top and in the till (if the chest has a till). So, the mule chest is a more flexible, friendlier furniture form. It's not stubborn at all (like its name suggests).

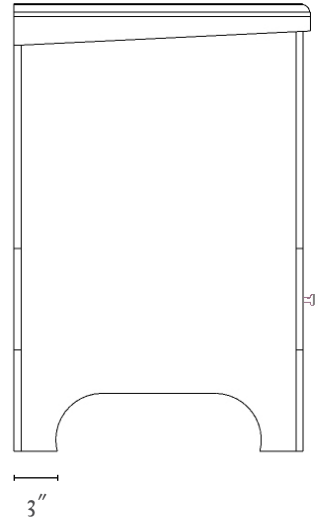
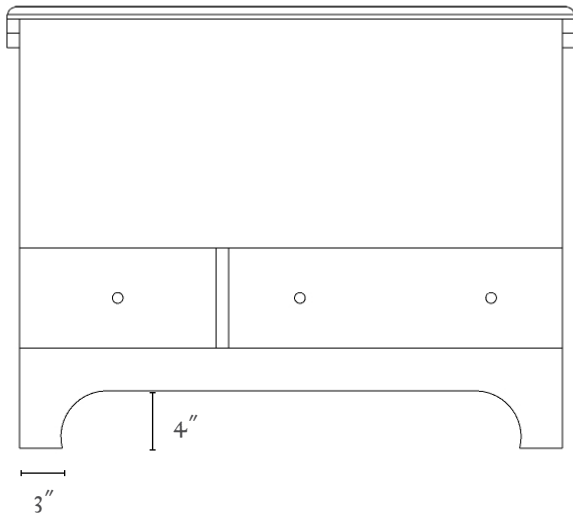
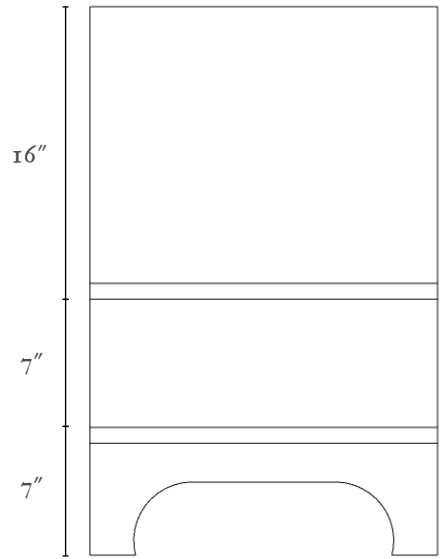
Much ink has been spilled on the origin of the word "mule" in relation to the chest. While the furniture form is old – examples abound from the 17th century – the term "mule chest" is not. It appeared in our language about 1911, according to the Oxford English Dictionary.

Most accounts claim that "mule" refers to the idea that it looks like a hybrid between a chest of drawers and a simple chest. This seems the most likely explanation, especially when you consider the alternatives.

# Mule Chest



$3/4" \times 1/4"$   
rabbets throughout



- The drawers were good for storing women's slippers, which were called mules. The word "mules" was indeed used for women's slippers from the 16th century on. But it seems unlikely to name a piece of furniture after one very particular item of footwear. Contrast the general terms "blanket chest" and "linen press" with a Queen Anne jockstrap box.

- Peddlers would strap this sort of chest on both flanks of a mule, allowing the roaming merchant to get at goods in the drawers without removing the chests from the animal. That would be quite a rigging job, and I've yet to see an image or description of the practice that wasn't in the "theory" section of a furniture book.

- The chest had secret compartments, allowing you to hide or "mule" items. (This is the least likely explanation because the term "mule" as it relates to contraband didn't emerge until the 1970s.)

Despite the murky explanations and sketchy origin of the word, I still like to call this form a "mule chest." If anything, it's shorter than saying "a chest with drawers below."

### *Construction Details*

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Many of these chests were painted, so feel free to use any inexpensive softwood for all the components. I used white pine because it is inexpensive and easily available in wide widths. While sorting through your stock, look for boards that are 8" to 11" wide. Those will give you the most efficient yield when gluing up panels.

The overall construction of the chest is simple, especially if you've ever built a six-board chest. The chest's bottom and the panel that supports the drawers sit in dados in the chest's side pieces. Then you rabbet the front, backboards and plinth and nail them to the sides. Then you nail in a divider between the two drawers and build the drawers (I use nails or dovetails). For the lid, battens keep it flat; hinges allow it to open and close.

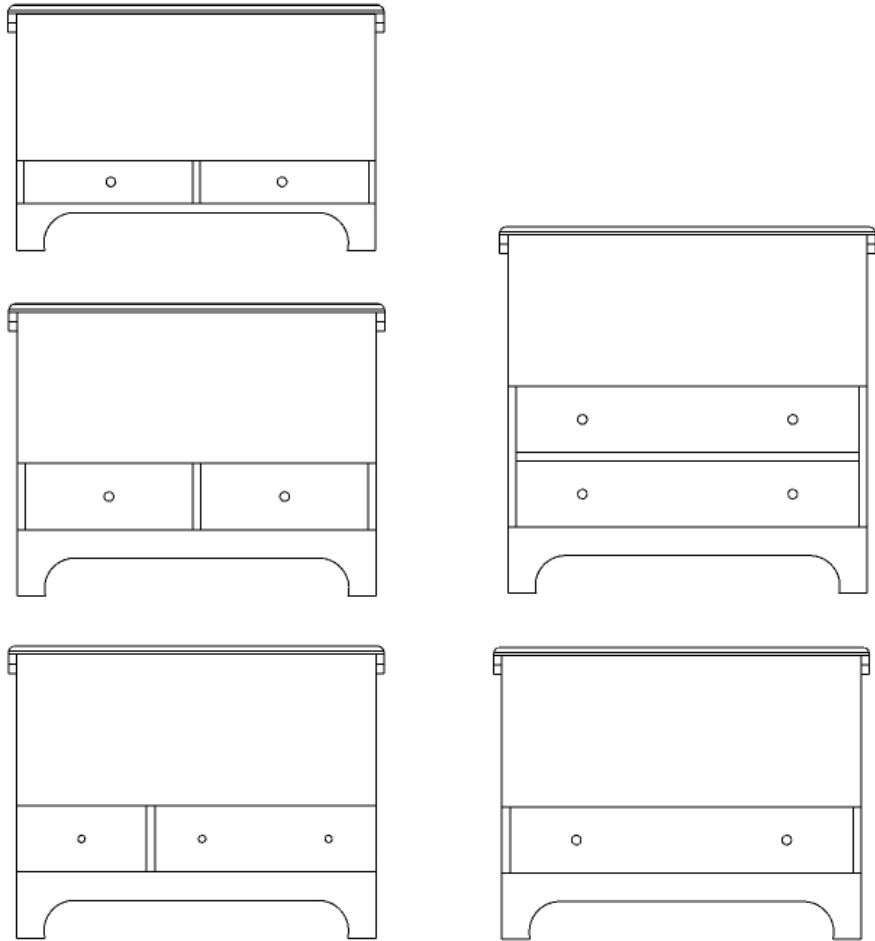
### *Panels & Dados*

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Glue up your panels all a little oversized (1" over-long and 1/2" over-wide). Then cut only the side pieces and two interior panels to finished size. You might have to make adjustments to the sizes of the other components as you go, so don't cut a part to finished size until you must.

Layout the locations of the 1/4"-deep dados on the inside faces of

## MULE CHEST



*Many mules. Here are some of the sketches I made while designing this mule chest. You can vary the drawer height and arrangement to suit.*

the side pieces. Use a knife and darken the lines with pencil lead. Saw out the walls of the dados.

Here's a tip that took me many years to learn. If you are right-handed, saw the right-hand wall of the dado. Use your left hand to guide the saw (which will obscure the left hand-wall). Then turn the piece 180° and – bingo – you have another right-hand wall that is easy to saw without



*A little crutch. If you lack sawing confidence, you can clamp a batten to the work to help guide your saw. If you are only minorly insecure, a small block of wood pressed against the sawplate can help keep the tool at 0°.*

obscuring your lines with your hand.

Remove the bulk of the waste using a chisel. I start at the ends of the dados with the chisel bevel-up. Then I work the vast middle with the tool bevel-down. Feel uncertain? It's easy. After your first dado you'll be an expert who can direct chunks of work at the walls or your coworkers.

To complete the dados, clean their bottoms with a router plane. Work from the outside edges of the side panel and into the middle. This strategy avoids spelching (aka splintering or "blowing out the backside").

Fit the panel into its dado. If it's too tight, plane off a little material on the underside of the panel. If it's too loose, vow to drive wedges into the joint at glue-up to fill the gap.

### *Shape the Feet*

Layout the shape of the feet using a compass and straightedge. If you are finicky (I am) then repeat the layout on both the inside and outside faces of the sides. Saw the feet to shape and clean up the cuts with a coarse cabinet rasp. The extra layout step will help with the rasping.

Repeat this process on the front and back plinth panels. You can do it now or wait until the joinery is all cut on the plinth panels.

MULE CHEST				
NO.	PART	SIZES (INCHES)		
		T	W	L
2	Internal panels	3/4	18-1/2	37
2	Ends	3/4	19	30
1	Drawer divider	3/4	6	7
1	Drawer divider scrap	3/4	3	11
2	Plinths	3/4	7	38
2	Front and back panels	3/4	16	38
1	Drawer cavity panel	3/4	7	38
2	Lid battens	7/8	2	20-1/2
1	Lid	3/4	20-1/2	39-3/4
Small drawer: overall dimensions of drawer box: 7 x 13 x 18				
1	False front	1/2	7	13-3/4
Large drawer: overall dimensions of drawer box: 7 x 22-3/4 x 18				
1	False front	1/2	7	23-1/2



*Guided by wrist. Raising or lowering your wrist controls how deep the chisel will cut. Find the right bite, then lock your wrist against the work and drive the tool forward with a mallet.*



*Press and push. After you clean the bottom of the dado, you can also clean up the joint's sidewalls by pressing the cutter of the tool against the wall and pushing. The bevel of the cutter will scrape the sides of the joint.*





*Sawing alone. My grandfather taught me to use a coping saw (and bowsaw) in the vertical position. The work is horizontal. This might be an echo of some Sloyd education somewhere in my family tree. I find this method makes it easy to keep the cut 90° to the faces.*

### *Assemble the Sides & Panels*

**P**lane up the panels. I use a jack on the interior faces and a smooth plane on the exterior. (Confession: I personally prefer the texture left by a jack plane on the exterior faces as well.)

Check the fit of the panels in their dados. If things are too tight, jack off the underside of the panel – just at the ends. If the joints are too loose, say a blessing to the nails and the glue.

To assemble, first paint a thin coat of liquid hide glue on the end grain of the interior panels. This will seal the end-grain pores and increase the strength of a questionable joint. Then apply glue to the dados. Put the pieces together and clamp.



*Correcting pressure. Here I am shifting a clamp to pull the rear of the case square. By applying the pressure above one dado and below the other, the case changes its shape. This is handy when clamping across the case diagonally isn't an option.*

Check the assembly for square both at the front and the back of the carcass. Shift the clamps around to pull it square.

### *Add the Nails*

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**A**fter the glue is dry, drive in some headed nails to secure the ends to the interior panels. I used 1-1/2"-long nails. I usually create a template for drilling the pilot holes using some blue masking tape. I lay out the pilot holes on the tape and then move the tape where it needs to be.

### *Drawer Divider*

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**N**ow is the best time to add the divider between the two drawers (if you want two drawers). The divider is a scrap piece of pine that is 7" long and as wide as you can find in your scrap pile. Nail it in place between the two interior panels. Examine the photo for a tip on keeping



*Template tape. Blue masking tape helps guide you as you drill your pilot holes. Once you finish one row of nails, pull up the tape and move it to the next location.*



*Two squares. The divider has to be square to the front of the carcass and dead square up and down between the internal panels. Use two squares to position the divider. Drive one nail in, then correct the divider's positions using the squares to guide you. Then add more nails.*



*Guides the drawers. Clamp the low divider in place, then affix it with screws from below. Done.*

the divider square.

After the divider is nailed in, hunt up a scrap of pine to finish the job at the back of the carcass. The scrap can be narrow – its width doesn't matter. It is just keeping the drawers on track. Affix this scrap with glue and screws. The pine won't move much in service, so wood movement really isn't a problem here. Promise.

### *Cutting Rabbets*

All the boards that are attached to the carcass – front, back, plinths etc. – are rabbeted on their ends. The rabbets add quite a bit of strength to the assembly from racking forces. Don't skip them.

All the rabbets are 1/4" deep x 3/4" wide. There are a dozen ways to cut them. Among the hand-tool options are using a moving fillister plane, a wooden rabbet plane or a shoulder plane. The moving fillister is tempting here because it has a fence and a depth stop.

If you don't have a moving fillister, the next best option is to mark out each rabbet with a gauge and then clamp a batten to your work to guide a wooden rabbet or shoulder plane. The batten keeps the plane vertical.



*Batten down the rabbit. Here I've clamped a batten to the end of a plinth. The rabbit is marked in with a cutting gauge. And I've relieved the end of the cut with a bevel to prevent the "spelch."*



*Can't miss. A simple wooden rabbit plane hogs off material. The only tricky part is learning to stop. After a couple rabbets you'll get good at spotting the gauge line.*



*Clean rabbet. The batten helps ensure the shoulder of the joint is crisp and square. If it's a tapered mess, clean it up with the rabbet plane run on its side.*

Your eyeball tells you when to stop.

No matter what method you use, I have two words of advice: Always relieve the wood at the far end of your cut so you don't splinter (some say splinch) the exit area of the cut. And know that you'll have to adjust the rabbets (or the rest of the board) to get the boards fitting correctly on the carcass.

### *Attach the Panels*

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**F**it all the rabbeted boards, adjusting the rabbets and the interiors of the panels to make things fit. Then glue the front, back and plinth boards to the carcass. The laws of wood movement decree that gluing the 16"-wide front and back boards is a recipe for disaster. In theory, yes, you shouldn't glue that much wood cross-grain. But when it comes to the white pines (and many other softwoods), these rules are flexible.

White pines simply do not move much in service after they have reached equilibrium with their environment. I've had joints such as this survive for many years with no problems when I used white pine. And



*All glued. Despite the data and despite the dramatic cross-grain construction, I've glued all the rabbets. Experience tells me that the chest will survive just fine.*



*Read the tape. I lay out the nails' locations on a piece of masking tape. Then I can transfer the tape to other parts of the project. This greatly reduces the time setting out the nails' locations.*

I've seen them self-destruct when it was a hardwood such as oak, walnut or cherry.

So, I've taken to gluing the entire joint when I have a white pine chest, even with the dramatic cross-grain. All I can say is to follow your own path and keep your mind open that you might be wrong (or right).

### *Add the Nails*

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**W**hen you nail things up near the ends of boards, things get dicey fast. Driving in the nail can bust out the end grain of the topmost board. Splitting the end grain does not signify the commencement of the burn pile. But it isn't ideal. And if all the nails result in splits...

Years ago, I came up with a trick to reduce this splitting and have written about it quite a bit. I've caught flak from people who say it's not true. So much so that I've been doubting my own shop experience.

Here's the problem: Driving a tapered nail is a delicate balance. You need the nail to bite hard, so you don't want to use a cavernous or too-long pilot hole. But if you use a pilot hole that is too small or short, the nail will split the work and spoil the joint. Oh, you also have to account



*One clamp. Clamping the end grain – hard – helps prevent splits.*





*No clamp and with clamp. Without a clamp, the nail dislodged the end grain and split the work. With the clamp pressed hard against the end grain, there was no problem. There are limits to this trick, I'm sure.*

for the wood species and how thick it is.

It's a balance of factors to get a good joint. (And that's why I recommend you make a test joint before nailing together anything – especially if you've never worked with a particular brand of nail or species of wood.)

All this is a lot of set-up for...

### *Here's the Trick*

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**I**f you apply a bar clamp across the end grain of the joint, you can reduce the tendency of the wood to split out the end grain. The clamp has to apply significant pressure for this to work.

I tried a variety of strategies as I nailed together this mule chest using 40mm Rivierre nails. All the joints were in Eastern white pine. All the pilot holes were the same diameter (7/64") and depth (7/8"). And all the holes were located the same distance (7/16") from the end of the board.

Without a clamp, about half of the joints busted out the end grain (good thing I started at the rear of the chest). When I added a clamp and applied hard clamping pressure – what you would use to close a joint – the failure rate dropped to zero.

I wondered if I needed to have the clamp at full pressure. What if the clamp's pad simply acted as a wall to prevent the end grain from fracturing? Nope. Clamp pressure – lots of it – was important to keep the joint intact while driving the nail.

I have all sorts of thoughts on why this hard clamp pressure works. But I am weary of theories. Let's just say it works. Prove me wrong.

Nail the plinths, front and back in place. This will leave an open space at the rear of the mule chest at the drawer cavity. I temporarily screw the drawer cavity panel in place back there as I might have to make some adjustments in the drawer cavity before it's all over. When I'm done with the project, I'll replace the screws with nails.

### *The Lid*

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**T**he lid of the chest is a simple panel with hardwood battens attached at the ends – these keep the lid flat and help keep out dust. The decorative details of the lid are up to you. I cut a 1/4"-deep x 3/4"-wide rabbet on the top edge to reflect the rabbets throughout the project (all hail Mr. Rabbet). You can skip this.

The hardwood battens are 7/8"-thick ash leftover from some chair-making. Each batten is 2" wide at one end and 1" wide at the other. All that seems normal, but how I attach them is non-standard.

Usually battens are nailed or screwed from the underside of the batten. This gives you a clean look (no fasteners are visible on the lid), but getting everything to hold right is an effort.

For this mule chest, I screwed the battens in place through the top of the lid. Why? It's stronger. The screw threads are in the hardwood instead of the softwood top. But isn't it distracting seeing the screw heads? Maybe. But there are 40 nail heads showing on the outside of this carcass. A few more fasteners aren't going to ruin things.

What about wood movement?

Ah, the most deflating expression I know. Wood movement is real. I believe in it. But you can become a sycophant. In the white pines, wood movement is minimal (look it up). Plus, its soft fibers crush against metal fasteners. So, you can nail and screw pine projects tightly and (usually) they hold up fine.



*Hold it. A couple F-style clamps hold the batten and lid in place while you drill the pilot and clearance holes for the screws. Here I used four No. 8 x 1-1/4" screws in each batten.*

So I didn't ream out the clearance holes for the screws or make any accommodations for wood movement. I merely screwed the battens down as best I could.

### *Attach the Lid*

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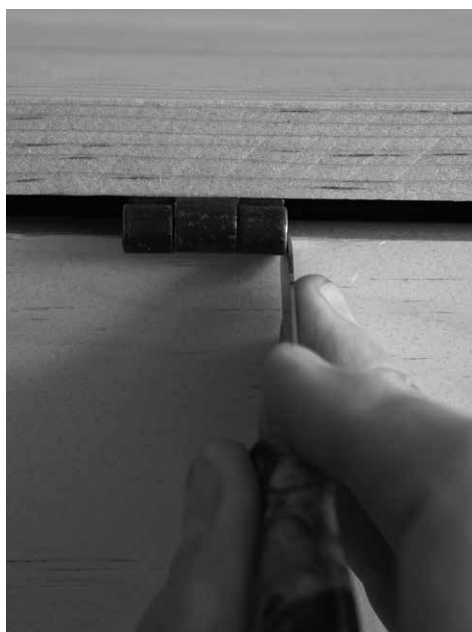
I attached the lid using some inexpensive steel strap hinges. No matter what hinges you use, here's how I recommend you attach them.

First, screw the hinges to the underside of the lid, pressing the barrel of the hinge to the back edge of the lid. (If you are using butt hinges, mortise the hinge into the underside of the lid with the hinge barrel tangent to the back edge of the lid.)

Position the lid on the carcass. Shift it around until it is centered on the carcass and the hinges' barrels are tangent to the back of the carcass. Use a knife to mark the hinge locations on the carcass. Take care not to bump the hinge or lid. Small shifts will ruin your day.



*Lid first. I prefer to attach the hinges to the lid first, then transfer the hinges' location to the chest's carcass. It's just my habit.*



*A little nick. I use a marking knife to nick the carcass on either side of the hinges. Then I remove the lid to mortise the carcass.*

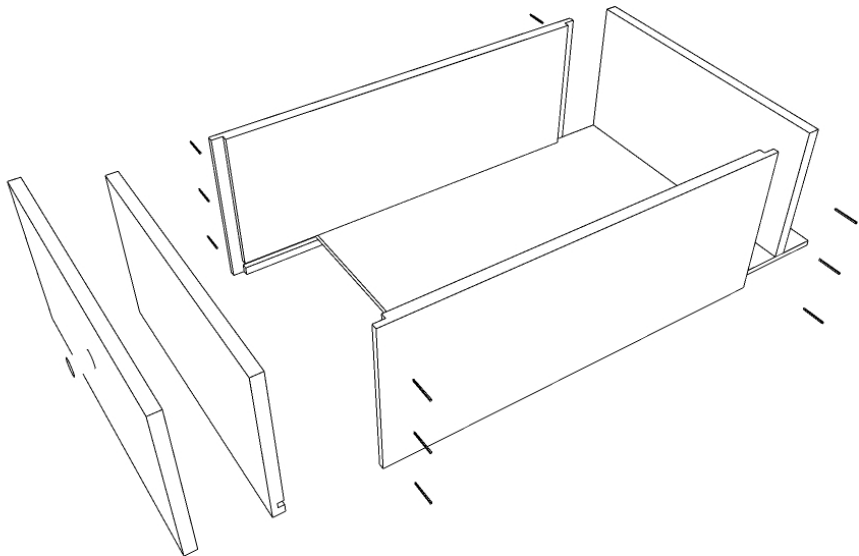
Remove the lid and lay out the mortise to receive the hinge in the carcass. Cut this out with a saw, chisel and router plane. Then screw the hinges to the carcass.

### *Onto the Drawers*

I tried to avoid dovetailed drawers in this book because they intimidate many beginners. But I've been cutting dovetails for so long (since the early 1990s), that they are many times the easiest and fastest joint for me. Note: I'm not special. Most woodworkers get this way after being at the craft for a while. You will, too (if you want that).

So, I built my drawer boxes with through-dovetails, then glued on a false drawer front to each. Why? To fill in the open spaces at the ends of the drawers. To be honest, I made the drawers more complex than necessary. This was in servitude to my sketch. I wanted the front of the mule chest to be a smooth and unbroken façade. You don't have to do this.

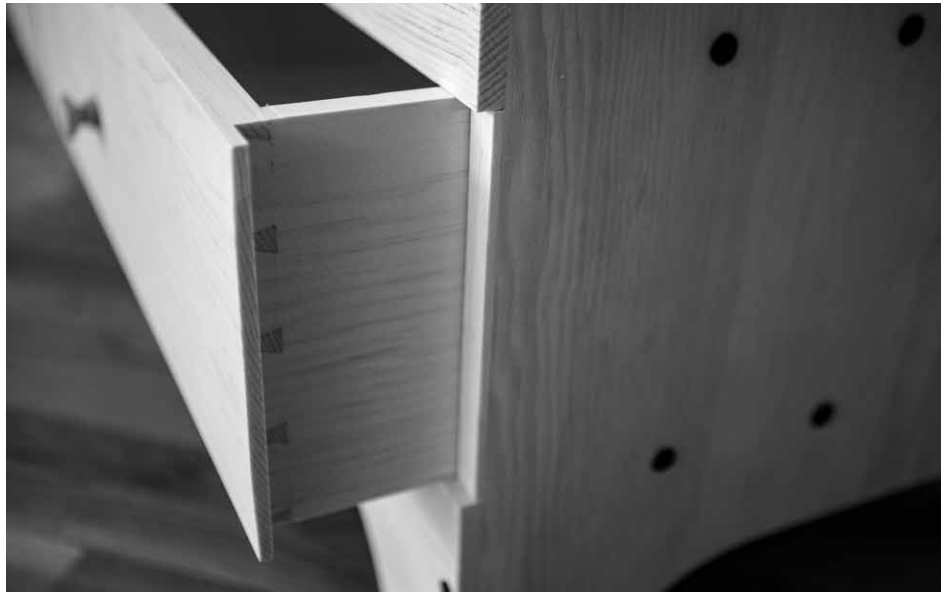
To skip the dovetails, assemble the drawers with rabbets, glue and nails. Use the drawing as a guide. Rabbet the drawer sides and affix them



*Realistic drawer. Skip the dovetails and assemble the drawer using rabbets and headed nails. The drawer bottom slides into grooves in the side and front pieces.*



*False front. Here you can see one dovetailed drawer with a false front glued and clamped in place. The false front creates a rabbet that fills in the empty area between the plinth and the chest's front (also seen in the background).*



*A scab. You can see the thin filler piece I added to the carcass to make the drawer sit flush and tight when closed. This error was caused by making the false drawer front too thin.*



*Another scab. I added the vertical divider between the drawers with some glue and headless brads. My original plan was to have the drawers' false fronts fill in this area, but I changed my mind and decided I wanted a vertical element to break up the façade.*

to the front and back of the drawer with glue and nails.

The bottom sits in a 1/4" x 1/4" groove that's plowed in the drawer sides and drawer front. The drawer bottom – also rabbeted – slides into these grooves and under the drawer's back. You can glue on a false drawer front to fill in the gaps in the chest's façade. Or you can glue on some little scraps to the carcass to fill in these gaps.

With the drawers assembled and fit to the carcass, attach some wooden knobs or pulls to the drawers. My knobs are inexpensive commercial ones in oak – this chest is going to be painted.

In the name of style, here are two mistakes I made as I worked my way through this design. I made the drawer divider flush with the interior panels – not flush with the plinth and front panel. I made a little 3/4" x 3/4" x 7" filler block to make the façade look correct. Also, I made the false drawer fronts a little too thin. So, I added 1/8"-thick filler blocks to the carcass to correct this problem.

### *Finishing*

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Most mule chests end up painted at one time or another. Like their six-board cousins, the paint job could be a bit wild. Grain painting was common. As was a variety of swoopy patterns in multiple colors.

I opted for a boring darkish blue paint with some yellow pinstripes. Even worse, I took the chicken route on the pinstripes and masked them in using painter's tape.