Build Lighter, Stronger Furniture

Use thin parts and innovative joinery to make light, durable pieces

BY GARRETT HACK

I think many woodworkers forget how strong wood truly is, especially the hardwoods. This leads them to make furniture that is unintentionally stout and heavy. Muscular furniture can be attractive, but I prefer the grace of pieces that are visually more delicate. To achieve that appearance, I take advantage of the wood's strength, designing in a way that pares down the physical and visual weight of a piece without compromising its strength. It's an economical way of building where each joint and every part is used to its full potential to strengthen the piece as a whole.

Through the years I've developed several strategies for building light and strong. One way to shed visual weight without losing strength is to make a part thin and wide rather than thick. You can also minimize the number of parts in a piece by making one part do many jobs rather than having many parts that do one job each. Or you can replace one big part with two or more smaller ones. Another approach is to redesign the joinery to be stronger—make the top and bottom shoulders of a tenon smaller, for example. I'll explain these strategies and a few others. Of course, I don't use every one in every piece of furniture that I make, so I'll show you four different pieces and explain how I was able to make each one more delicate and graceful without compromising its strength.

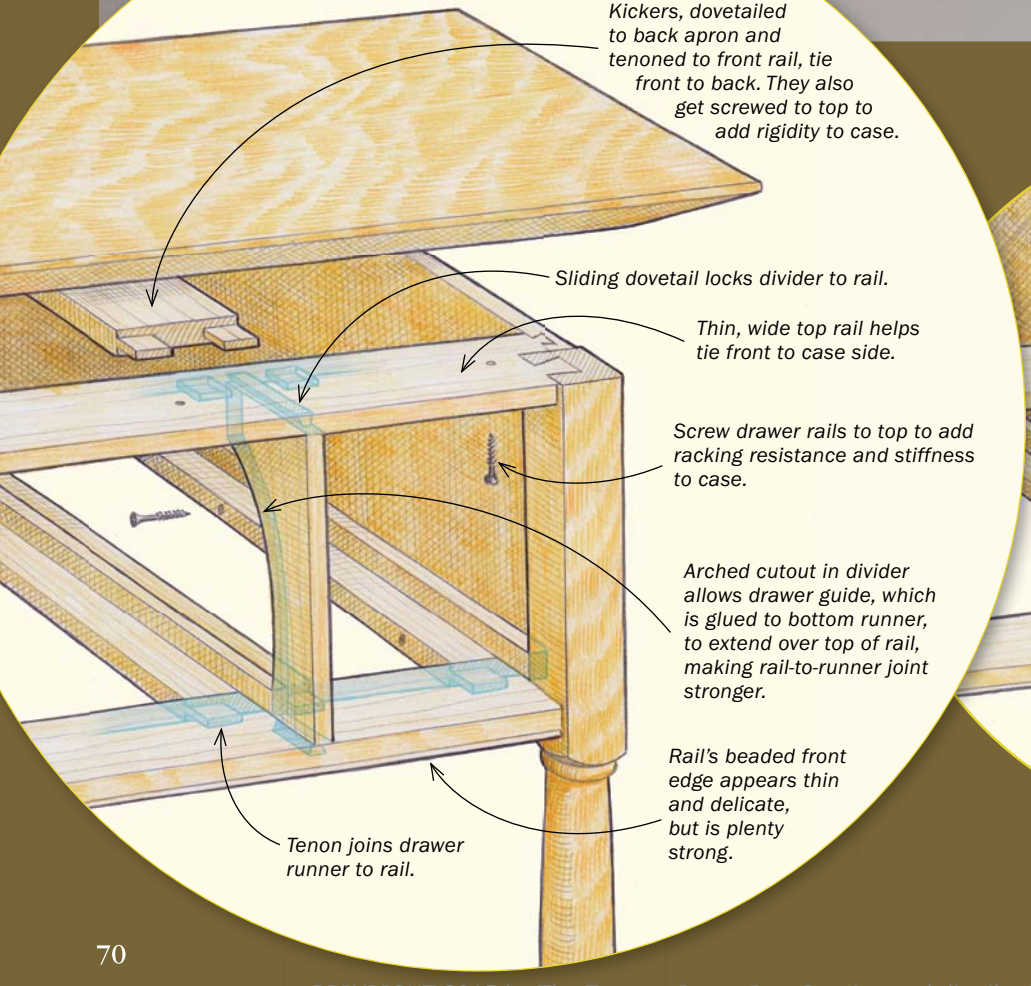
Garrett Hack is a contributing editor.

Photo, this page: staff

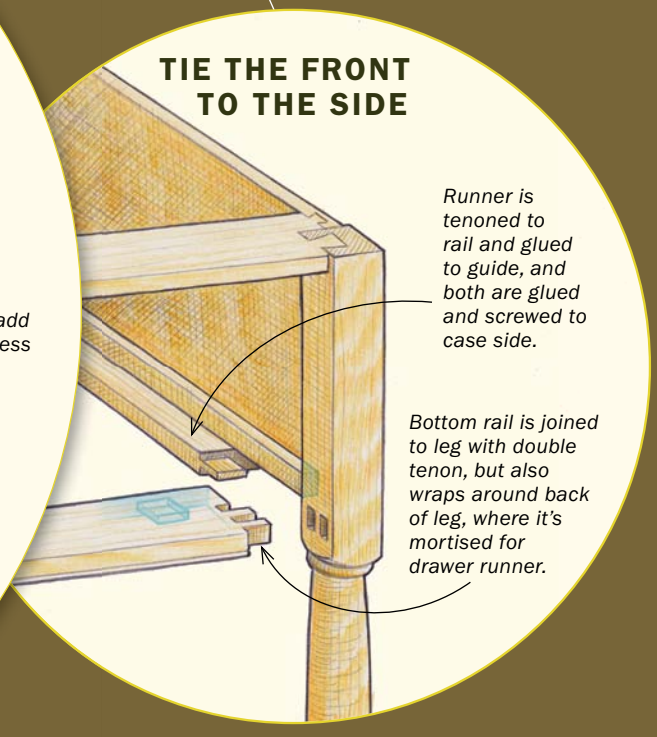
Make skinny stronger

Case pieces have many parts, such as drawer rails, that have only one visible edge. These parts can be made to look more delicate by making them thinner. To maintain their strength and stiffness, make them wider. As you never see the part's width, this doesn't affect the case's visual weight. Casework can also be made stronger by integrating the parts more effectively. This might mean creating a better connection between drawer rails, runners, and guides, or using the guides and runners to reinforce the connection between the case front and sides.

GO THINNER AND WIDER



TIE THE FRONT TO THE SIDE

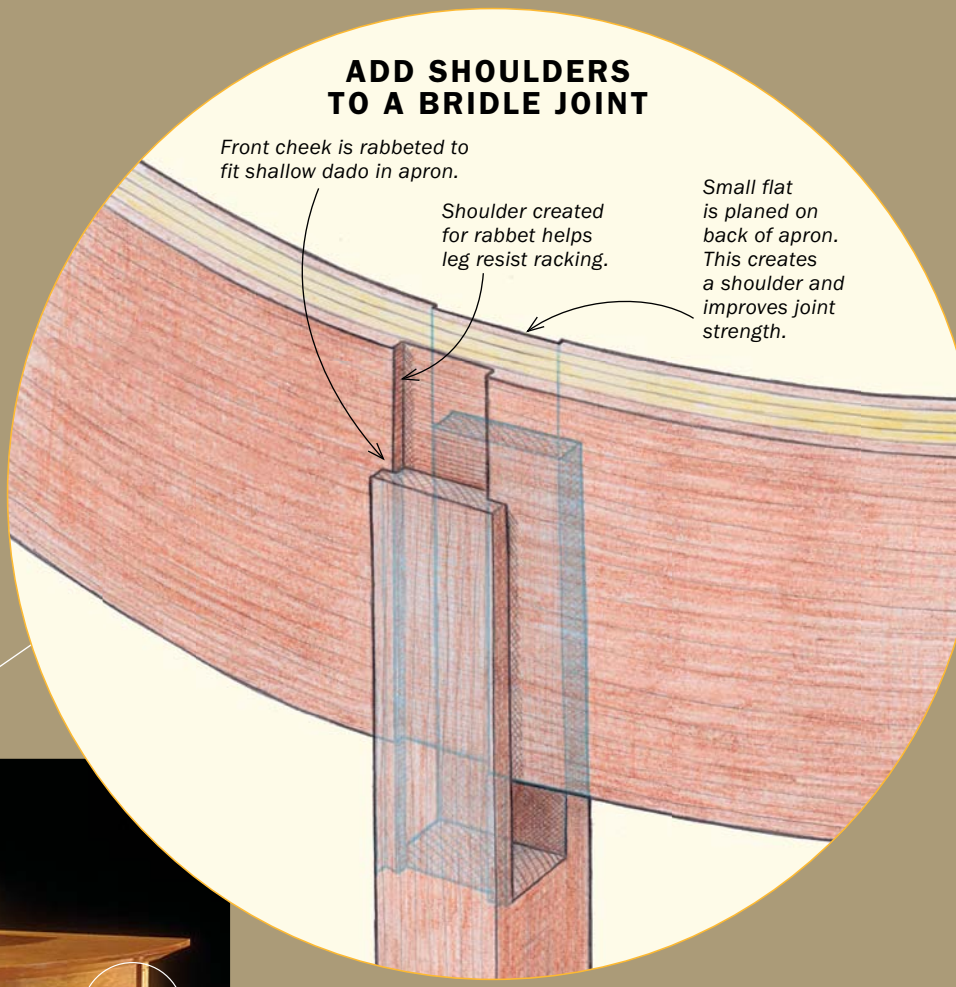


Drawings: John Tetreault

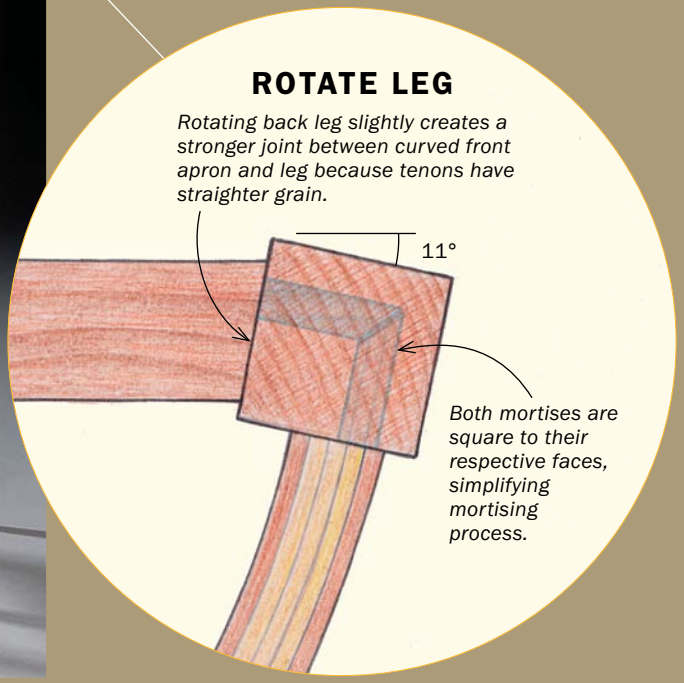
Get more muscle from joinery

Sometimes all it takes is a slight change to greatly improve a joint's strength. For instance, add shoulders to a bridle joint and it resists racking much better. And if the joinery is stronger, the parts it joins can be lighter.

ADD SHOULDERS TO A BRIDLE JOINT



ROTATE LEG



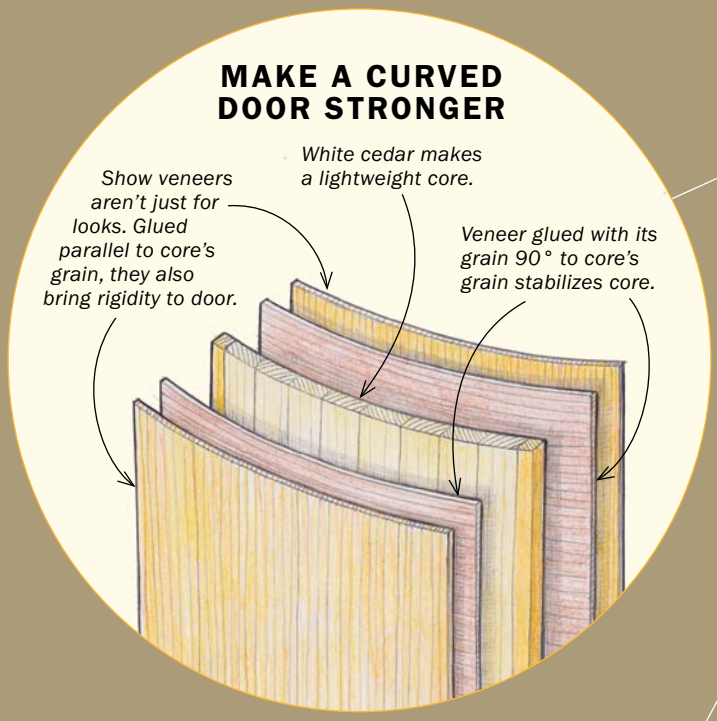
Photos, except where noted: Bill Truslow

Force one part to do many jobs

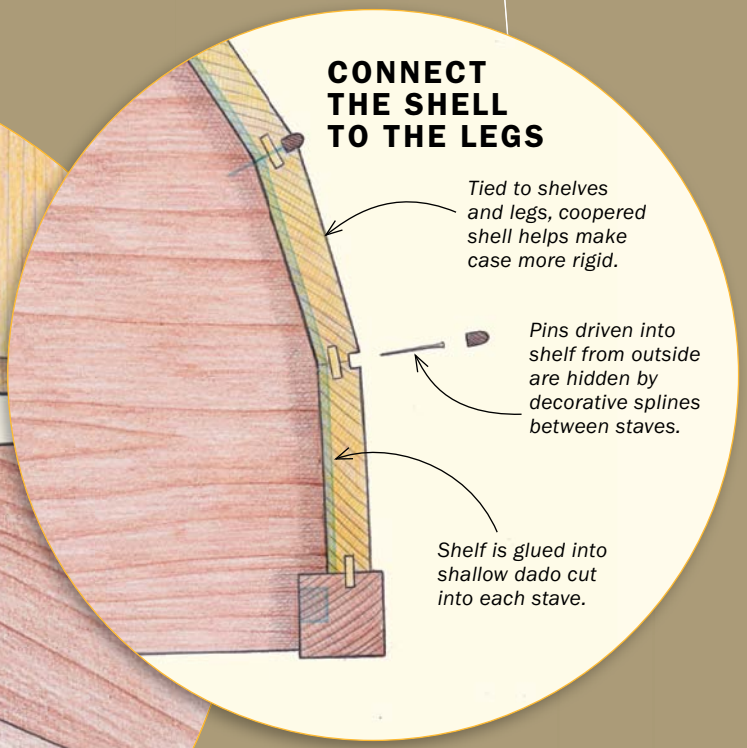
An effective way to shed visual weight from a piece of furniture is to reduce the number of parts in it. Instead of having one part for each job, make one part do several jobs.

Not only does center shelf serve as top rail of drawer pockets, but it's also integrated with shell and legs, adding strength to case.

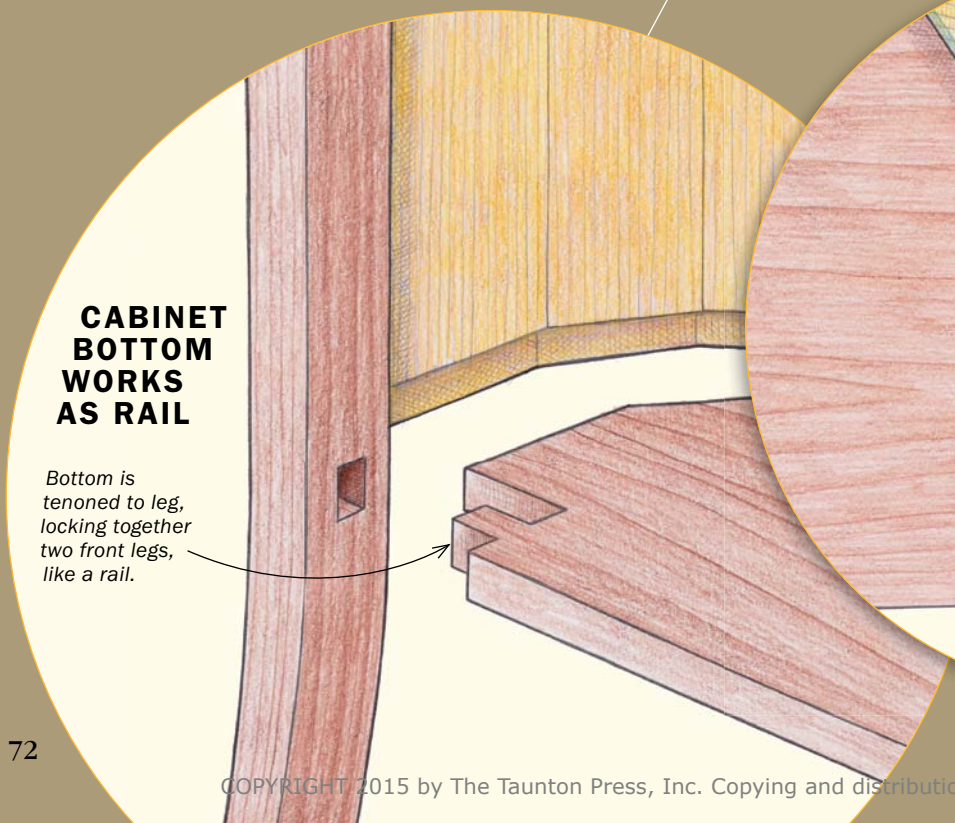
MAKE A CURVED DOOR STRONGER



CONNECT THE SHELL TO THE LEGS



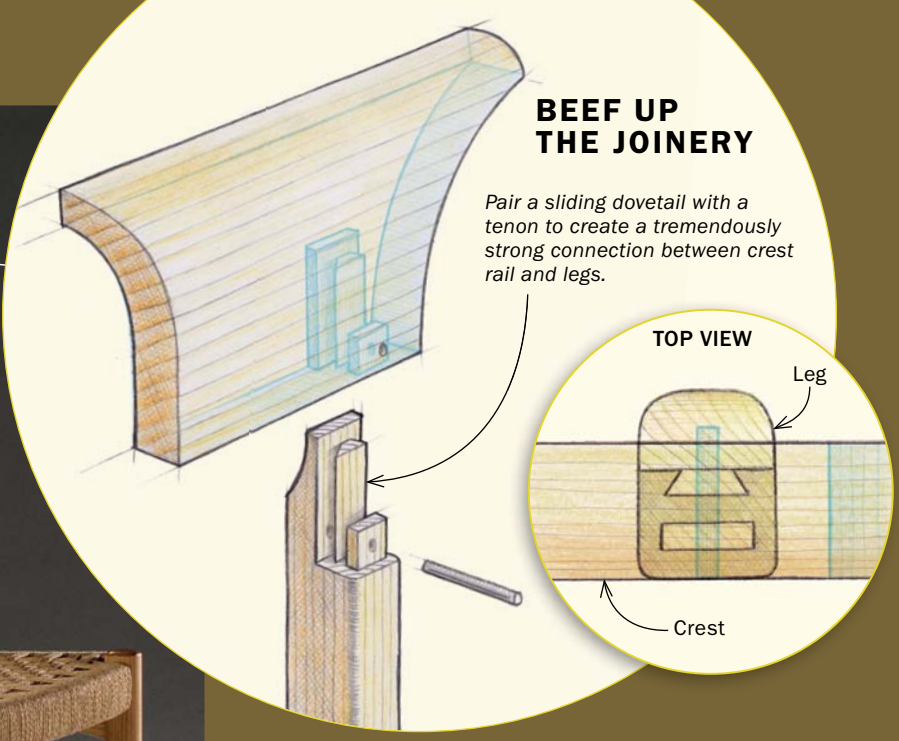
CABINET BOTTOM WORKS AS RAIL



Lumbar supports, back seat rail, and crest are all light parts but work together to make a strong and stiff "backbone" for chair.

BEEF UP THE JOINERY

Pair a sliding dovetail with a tenon to create a tremendously strong connection between crest rail and legs.

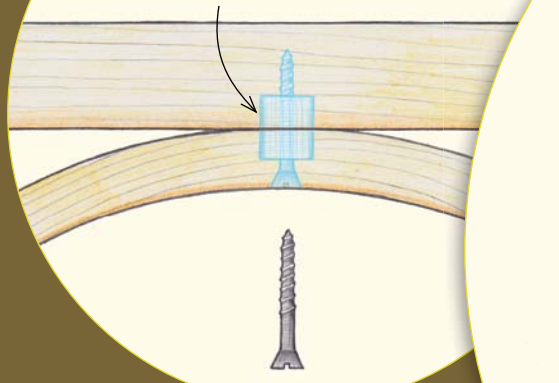


Make lightweight parts carry a bigger load

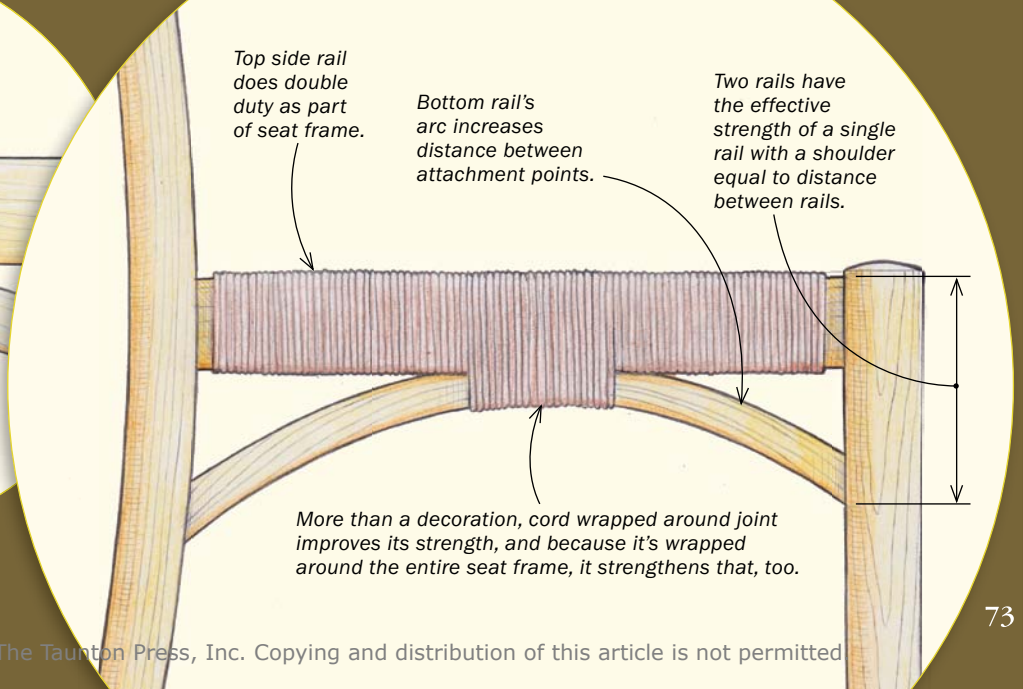
A joint's strength doesn't come from the overall mass of the parts it holds together. Use this to your advantage by breaking up a single part into two (or more) smaller ones. Two narrower aprons are just as strong as one wide one as long as they are spread apart far enough.

ADD REINFORCEMENT

Slip tenon, reinforced by a screw, creates single rail from two.



TURN SMALL PARTS INTO BIG SHOULDERS



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