



Fortify Your Joinery

Hidden corner blocks add great strength where it's needed

BY GARRETT HACK

Repairing furniture has taught me many lessons about what joints, woods, and techniques survive decades of use. One technique I see often in well-made work is the use of corner blocks to strengthen connections or hold parts in position. Often you'll find these small blocks glued behind bracket feet and crown moldings or under drawer bottoms and chair seats.

Corner blocks are simple, but for them to be effective, it's important to choose the right wood, use the right glue, orient the grain direction appropriately, and allow for wood movement.

White pine, poplar, and basswood are my first choices for most corner blocks because they shape easily and provide adequate strength. For chairs, I prefer cherry, walnut, or mahogany blocks, which are harder woods but still can be fitted easily with planes and chisels. With the exception of an occasional brad or screw to hold a block in position, corner blocks planed to fit can be glued into place using a rub joint. Apply glue and rub the block back and forth until the glue grabs, holding the block in place—there's no



need for clamps. I use yellow glue because it is strong, grabs quickly, and allows a tiny bit of creep or movement. I try to orient the grain of the block in the same direction as the grain of the wood to which it's attached, but sometimes one face of the block will be joined across the grain. In these cases, glue with a little flexibility is useful.

I think of corner blocks as points of strength, spaced apart from each other in much the same way as I use screws or nails. The short length of corner blocks, between 2 in. and 3 in., makes them easy to fit, especially when shaped into curved places. More important,

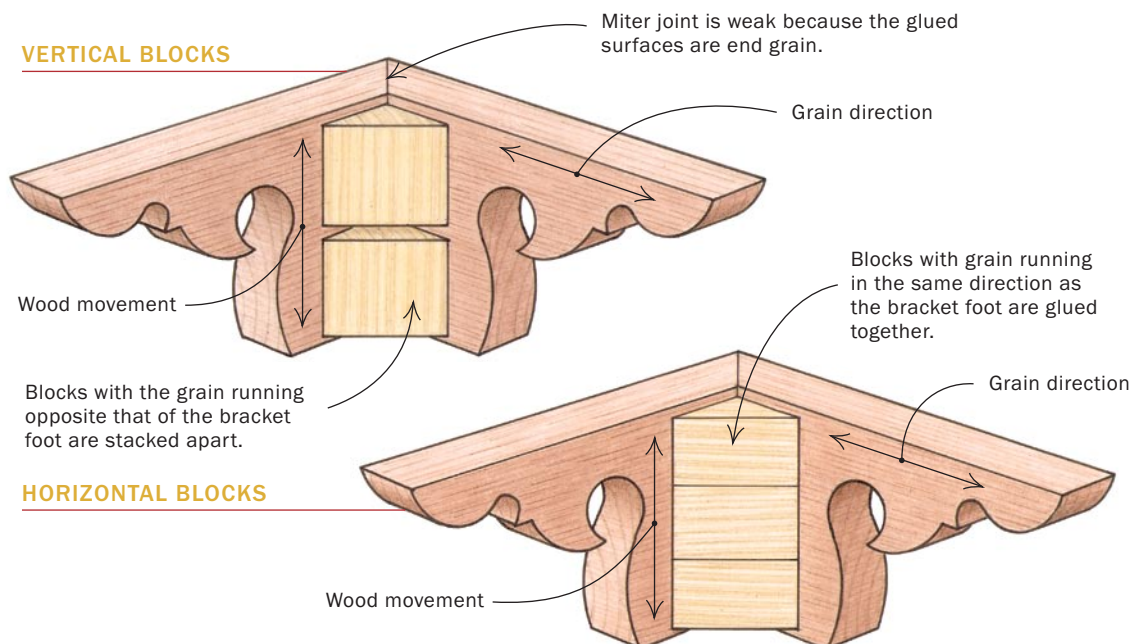
compared with screws or nails, short blocks are less affected by wood movement in the piece to which they're attached.

Blocks reinforce case-work joinery

Typical case-work construction is full of joints and other places suitable for corner blocks. I have seen case tops secured by corner blocks alone that are still holding after a century or longer. While I wouldn't use corner blocks in this manner (too much potential wood movement on all but the smallest tops), they are ideal for

Two ways to strengthen bracket feet

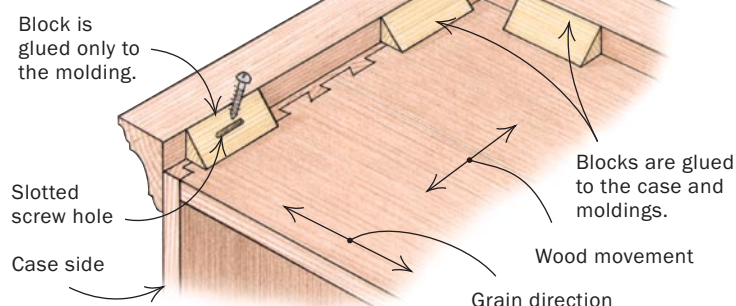
Corner blocks for bracket feet can be made of white pine, poplar, or basswood. The grain of bracket feet generally runs horizontally, and the grain of corner blocks can run either vertically or horizontally.



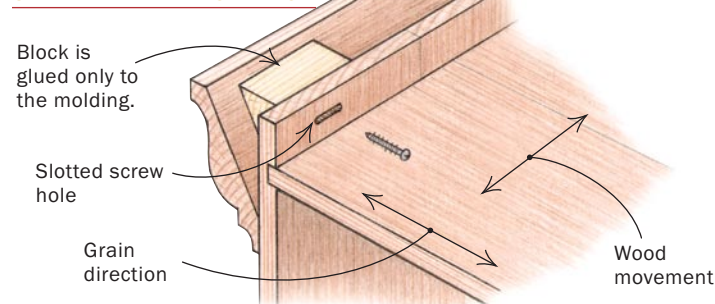
Short blocks support moldings at the top of a casepiece

Corner blocks strengthen the joinery between the case and large moldings. Blocks at the front of the case are glued to the case and molding; at the rear of the sides, they are glued only to the molding and secured with screws in slotted holes to allow for movement.

PROJECTING MOLDING



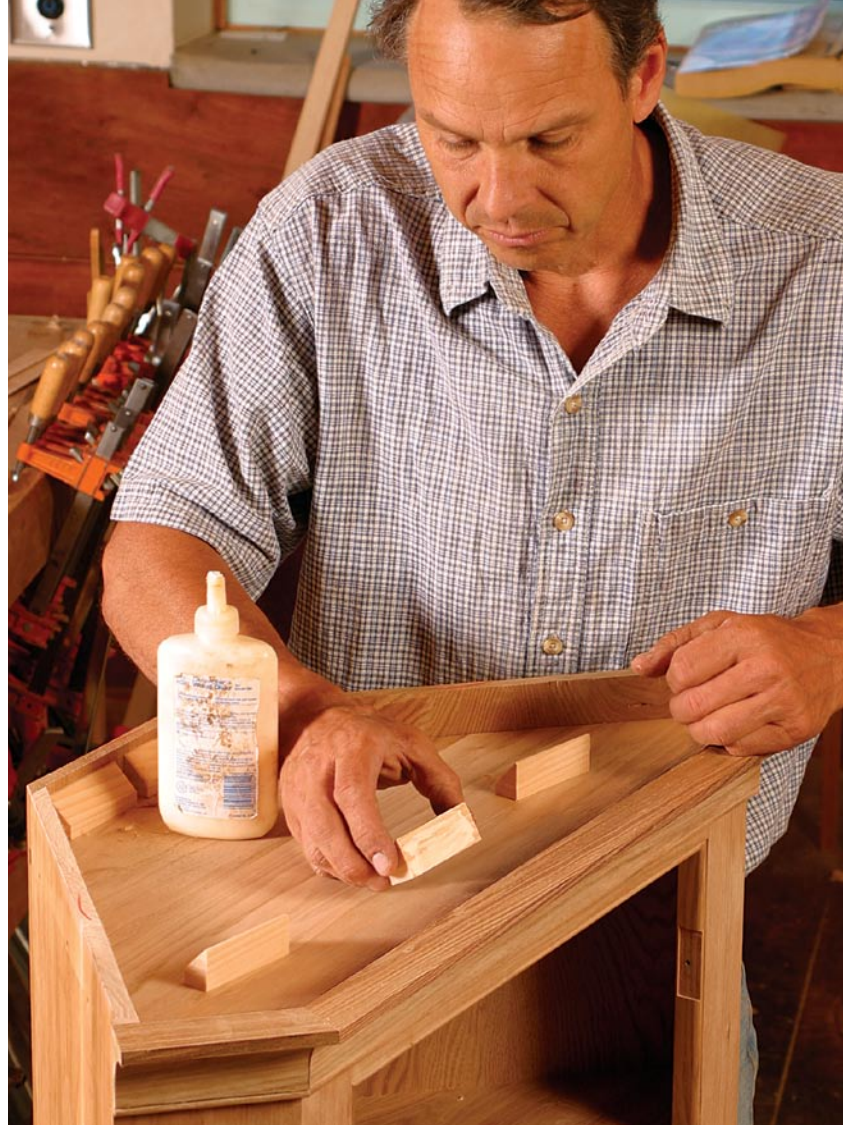
CANTILEVERED MOLDING



reinforcing bracket feet, the knees of cabriole legs, or the connection of the base to the case.

Attractive bracket feet often are mitered at the corners with the grain running horizontally, making for a weak joint. Vertical-grain legs, as in the butternut chest on p. 50, are only slightly stronger because the glue surfaces of the miters are long grain.

Corner blocks behind a bracket foot can run horizontally with the grain of the foot or vertically against it (see the drawings on



p. 51). Run horizontally, the blocks can be stacked and glued together so they shrink and swell along with the foot; however, the glued surfaces are weak short grain. Run vertically, the blocks are strong because the glued surfaces are long grain. But you need to keep the blocks short and spaced apart so that each can move as the foot shrinks and swells. I tend to run blocks vertically because they are easier to fit.

Corner blocks also can strengthen the connection of base to case, or bottom to case sides (see p. 50). Where the sides and bottom meet and the corner blocks run cross-grain, the blocks must be short enough, about 2 in., to stay attached as the wood under them shrinks or swells.

Small blocks brace drawer bottoms

Corner blocks can be glued to the underside of drawers to provide rigidity to the sides and to keep the bottom secure in its groove.



Blocks are used to attach molding

When designing crown molding for a cabinet, I often include a bead or a similar detail to hide the brads used to attach the molding. However, brads alone are not sufficient support for a large molding, or even a smaller one, that projects above the carcass top. Corner blocks are an ideal way to strengthen this connection as well as any joints in the molding.

Thick blocks reinforce chair rails

Made of cherry, walnut, or mahogany, corner blocks add considerable strength to a chair. These blocks generally are glued and screwed into place (right).



FITTING A BLOCK TO CURVED RAILS

Slip a piece of carbon paper between the block and the rail, and shift the block slightly to mark any high spots (top left). Then remove those spots with a block plane (left).



Run the grain of the blocks in the same direction as the molding. Grain movement is a concern only along the sides of very deep cases, where the molding runs cross-grain. Instead of gluing blocks to the case top, use screws in slotted holes, and glue only the joint between the blocks and the molding (see the drawings on the facing page).

To avoid wasting expensive, thick stock, crown molding often is cut out of a board or built up of separate parts and therefore must be angled (or cantilevered) away from the case. Corner blocks, cut to fit between case and molding, help secure the molding at the proper angle and greatly strengthen the connection.

Blocks stabilize deep, narrow drawers

A well-engineered drawer shouldn't need corner blocks, although I have seen the underside of drawers with many blocks stuck between sides and bottom and between drawer face and bot-



tom. In these cases, the drawer sides and face were quite thin, and the groove holding the bottom was too shallow or worn to hold it securely.

On small drawers, especially deep, narrow ones with thin sides that can flex in or out slightly, the addition of a few tiny corner blocks under the bottom and against the sides will make the drawer more rigid and keep the bottom from popping out. Place the blocks near the middle of the drawer sides so the bottom can move slightly forward and back from them. Another option is to place the blocks between the drawer face and bottom to keep them well engaged and to direct any movement of the drawer bottom to the back only. Orient the grain of the blocks in the same direction as the sides or face of the drawer they're glued to.

Blocks strengthen hard-working chair joints

Corner blocks add measurably to the strength of a chair. Not only do they make the seat more rigid and help support the seat frame, but also they strengthen the vital leg-to-rail joints.

Fit and secure the corner blocks individually after the chair has been glued. For strength, make each block as thick as possible and about 5 in. long, with the grain running horizontally and parallel with the length of the block (see the photos above). Positioned at roughly 45° across the joint, a block ideally fills an entire corner, tying adjacent seat rails to each other and butting against the leg.

Fitting is a process of trial and error; first plane one side of the block for a tight fit and then the other. For maximum strength, glue the block in place and drive one or two screws through it into each seat rail.

The use of hidden corner blocks is a simple technique for adding considerable strength to certain joints. I use them anytime they fit the need. □

Garrett Hack is a contributing editor.