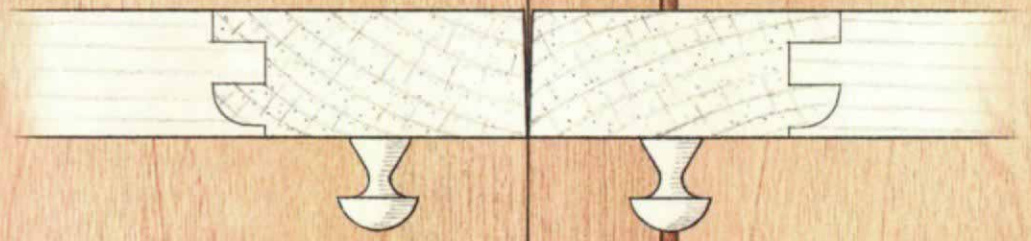
Where Door *Meets* Door



Minimizing the gap between stiles, choosing and installing appropriate hardware

BY STEVE LATTA

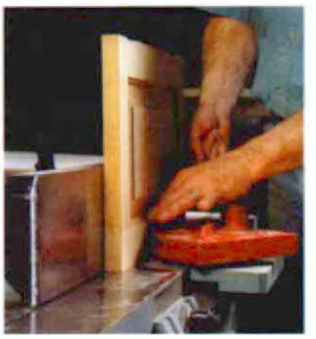
Double doors may be found on cabinets large or small, but the one constant that shouldn't change is the hairline gap between the center stiles where they meet. Ideally, the door stiles should hang in the same plane with a heavy 1/32-in. gap running between them. Wood movement or other problems may thwart this scenario, but fortunately, there are a few tricks to hide or at least disguise imperfections.

Double doors may be lipped (overlapped), where the center stiles are both rabbeted, or unlipped, meaning no rabbet is present. Both styles of doors can be made with or without a bead. Unlipped doors can be plain or fitted with an astragal, an applied molding that covers the center gap. My approach to teaching students how to make these doors begins by asking them to consider the following questions early in the design of a cabinet.

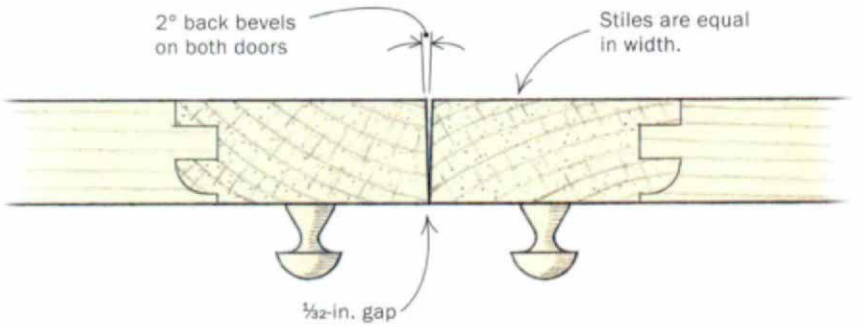
1. **Will the doors require locks?**
2. **Will the cabinet have glass doors?**
3. **Should access to the cabinet be easy; i.e., should the doors swing open independently?**
4. **If the cabinet is a period piece, what traditional details ought to be incorporated?**

UNLIPPED DOORS

Use when both doors need to be opened independently of one another.



Back-bevel the edges of the center stiles. *A 2° bevel will prevent the stiles from scraping when a door is opened.*



To avoid any confusion, when I refer to lipped doors, I am not talking about how they fit to the opening, as in the case of lipped overlay doors that are rabbeted along all of their outside edges, but rather how they fit to each other. The examples in this article all incorporate inset doors, and the cabinets do not have center dividers.

Traditional cabinets, such as secretaries or those designed for valuables, require locking doors, which are usually lipped along the center stiles. Glassed cabinets may or may not require a lock, but their doors should be lipped or covered with an astragal to keep light from peeking through the two center stiles.

Doors that open independently of one another are preferred for units that are used primarily for storage. That rules out lipped doors, except in the most traditional designs.

Careful stock preparation can prevent problems

Regardless of the style of door, take precautions at the start of the project to reduce the possibility of the doors twisting. It is a horrible feeling to see your carefully selected mahogany parts peeling off in every direction as you rip them to size.

To minimize such mishaps, lay out all of the pieces for the entire project on rough stock at the same time. Also, pay close attention to the grain, and make sure all of the rails come from a single piece of stock with the grain flowing door to door. The center stiles should be cut from one board ripped in half. Mill this piece long so that you can adjust the grain match up or down to get the best transition across the stiles.

Door stock should be milled in two steps. Rough-cut all of the parts ¼-in. oversized. Then sticker them to relieve any stresses and allow the stock to acclimate. Then mill the stock to final thickness and machine the joints. Make the doors about ⅛-in. oversized in length and width and fit them to the case opening. This extra ⅛ in. comes in handy for a case that may be out of square.

Unlipped doors have their place

As much as I like the aesthetics of lipped doors, they don't make a lot of sense in a case with doors that don't latch or lock to each other or for pieces that are more functional than formal. Quite frankly, most of the things we place in cabinets don't need to be locked up anyway. And it is awkward having to open one door and unlatch the second to retrieve a plate or book.

If executed properly, unlipped doors look very clean. To minimize the gap, back-bevel the inside edges of the center stiles so the doors can swing without hitting each other. The back bevel is slight, about 2°, and is shaped using a jointer, edge sander or handplane. Final sanding should open it up to a heavy 1/32 in.

A lot of hardware is available for cabinetry. The European hardware, particularly 35mm cup hinges, offers three-way adjustment, which allows for a lot of fudging when aligning a wall of doors. For furniture, I prefer traditional brass hardware, which allows for a little adjustment as well if mounted properly. For more on mounting catches, see the story on pp. 76-77.

Hiding the gap with an astragal

An astragal is a piece of molding added to an unlipped door to cover the center gap. Astragals are usually found on full-sized French doors where they serve as both a design detail and as a doorstop. On cabinetry, they are sometimes added to prevent light from shining through a gap between doors. Although I generally think they look like an afterthought, astragals have their place. An astragal should be centered over the gap between the two stiles and glued to the front (right) door.

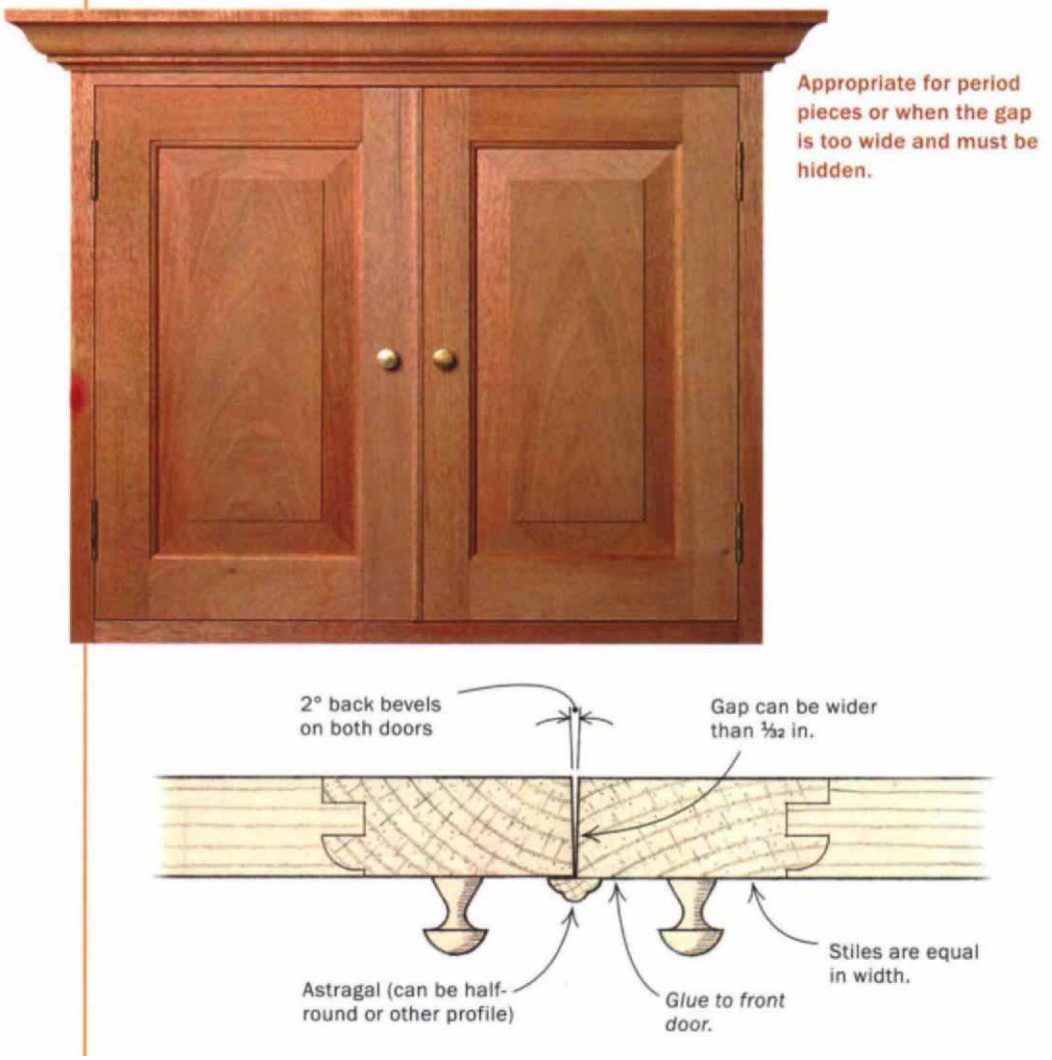
Lipped doors are traditional

I really like the look and action of lipped doors. For sophisticated pieces such as secretary desks or breakfronts, lipped doors are the rale, and I wouldn't build these pieces any other way. A lip is essential on a cabinet with glass doors and interior lighting. Light shining through the gap between the center stiles looks like a detail the cabinetmaker simply forgot to consider.

Lipped doors should be set up so that the rear door (the one that opens last, generally the left door) is secured to the cabinet by

Photos: Anatole Burkin; drawings: Vince Babak

UNLIPPED DOORS WITH AN ASTRAGAL



Astragals can be milled on the router table. *The shape can be a simple half-round or a more complex shape as shown here. Use a wide board for better control when shaping, then rip off the molding.*

Glue the astragal to the front (right) door. *An astragal will hide an oversized gap or a slight twist in the doors.*

a flush bolt or elbow catch. The front door (typically the right one) opens first and should lip over the rear door and latch or lock to it. This arrangement keeps the hardware from getting mangled or from scratching the doors,

It is essential to calculate the lip into the initial dimensions of the piece. When the doors are hanging, the width of both stiles should look the same. Because the rear door is partially covered by the front, the rear door's center stile must be about ¼ in. wider than the front door's center stile. The rear door should receive a rabbet ¼ in. wide by half the thickness of the stock. The front door should have a corresponding 5/16-in.-wide rabbet cut into the back of the center stile. The extra 1/16 in. allows for final fitting and keeps the doors from binding.

After trimming the doors to fit the opening, mount them so that the front door hangs up slightly on the rear door. Make the final fit using a block plane. Shave away until there's a 1/32-in, gap down the center, back-beveling the edge about 2°. If the doors bind on the inside, shave a tad off the rear door using a rabbet plane.

The rear door needs some sort of catch—An elbow catch or a flush bolt can be used to secure the rear door to the case. For a really clean look, locate a flush bolt at the top and bottom of the door. Flush bolts can also help hold the doors true should a slight twist ever develop.

Elbow catches typically mount to a fixed shelf located toward the bottom of the opening. Give some thought to the placement of the catch to prevent it from chipping china or stemware. Don't skimp on the hardware; opt for cast brasses. Cheesy, stamped and plated hardware detracts from the entire piece.

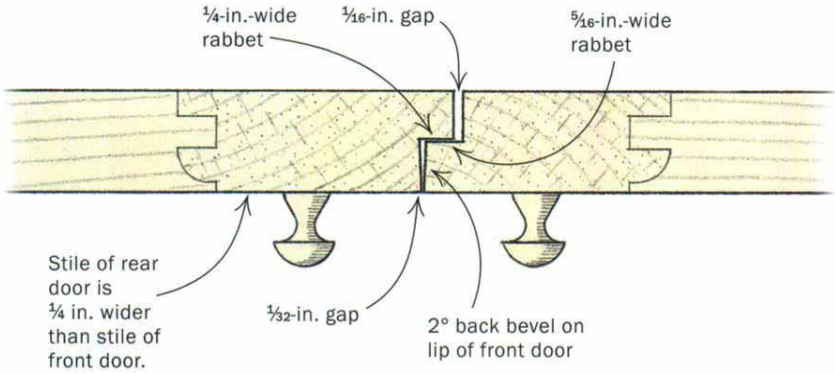
Regardless of the catch, I always mount a little stop block to prevent the doors from swinging into the opening. I either mount a small block at the top of the case or mortise a small half-moon into the bottom shelf.

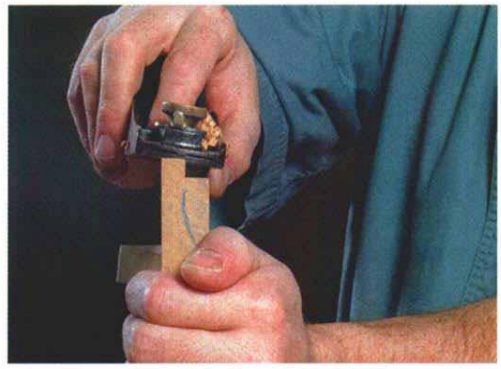
When choosing a lock, pick one that fits the character of the piece. For period work or fine furniture, I typically use a surface-mount lock, not a mortised lock. For a mortised lock to work properly, a very unattractive notch needs to be cut into the rear door. Not so with surface-mount locks. Choose the lock by width so that the keyhole ends up near the center of the stile. As

LIPPED DOORS

The traditional approach for period pieces or when the cabinet has glass doors and light would shine through the gap between center stiles.

The lips may be milled on the tablesaw using a dado blade. *Make the lips half the thickness of the stile stock.*

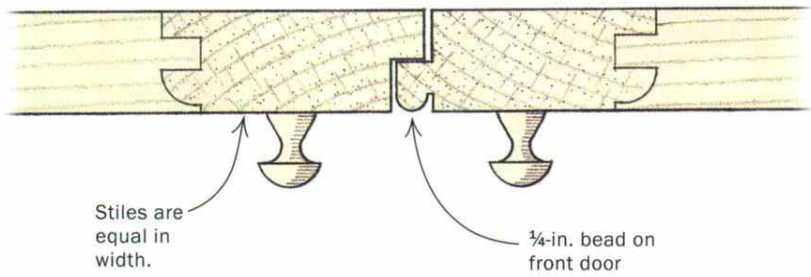




Plane the lip of the front (right) door with a slight back bevel. *Keep stock oversized so that parts can be planed to fit for a fine gap.*

ADDING A BEAD

Use as a design element or to help draw attention away from doors that are slightly twisted.



Fine beads are best made using a *beading tool.* *Router bits usually leave a wide groove or quirk. The bead goes on the front (right) door.*

an alternative to locks, pivoting knobs with catches work well, too.

A few good reasons for beads

In terms of design, a bead can tie to other details on a piece or stand alone. A bead will break up a pair of two wide stiles and bring balance to a piece. A bead can also help if the grain match between the center stiles is less than ideal.

When two doors meet in the middle, it looks sloppy if the doors don't close flush to each other. A bead is a good way to hide a little twist. If you're using a router to cut beads, pick a small bit. I prefer to grind a scratch stock (see *FWW#134,* p. 42) for my beading tool to create a fine bead with a very narrow quirk or groove. Most router bits cut a rather wide quirk.

With lipped doors, I always put the bead on the front (right) door. By doing so I can make both center stiles the same width. (The front bead is the same width as the rabbet on the rear stile.)

To keep the width of the front stile looking the same, the width of the bead needs to be considered from the very beginning. It's not a good idea to add a bead at the last minute to compensate for twist. But there has been a time or two when I needed to hide a twist on a set of doors that didn't call for a center bead. I took an equal amount off each door to keep things balanced. I then filled the gap by gluing a bead onto the front door. Not the best strategy, but it solved a problem!

The approach depends on the project

The strategy for a single piece of furniture is very different than for a room full of cabinets. For a fine piece of furniture, I lip the doors and use a pair of flush bolts with a lock or pivoting latch. I usually buy my hardware from Londonderry Brasses because the company produces historically accurate hardware. I'll add a bead if it's part of the design or if I have to hide some twist. For a less formal piece, I may or may not lip, depending on the customer's storage and lighting needs. It always comes down to those original four questions: Is a lock needed? Will the cabinet have glass doors with light coming through? Should the cabinet be easy to access? And is it a formal, period piece? □

Steve Latta is an instructor at the Thaddeus Stevens College of Technology in Lancaster, Pa.

Installing bolts/catches and locks

Traditional hardware requires precise mounting and doesn't offer the user very much in the way of follow-up adjustments. There are, however, a few tricks to simplifying installation. And some hardware can be modified slightly to allow for a little tweaking.

DOUBLE-BALL CATCHES

Use a double-ball catch when doors need to be opened independently of one another. This type of catch also acts as a doorstop. Ball catches are available in a number of sizes. I prefer to use only the smallest catches, no matter the size of the door, because the larger units are too clunky.

A ball catch has two parts; the teardrop male plate mounts to the door, and the female half, which contains a pair of spring-loaded bearings, mounts inside the case. In many instances, a block must be added at the top of a case to mount the hardware. The female part has a pair of screws for adjusting the spring tension.

To mount a ball catch, first place a piece of double-sided tape on the back (the face that will mount against the door) of the male piece, then engage it with the female part. Mount the female part to the case with screws. Close the door, then back off the adjustment screws to allow the parts to disengage easily. The tape will hold the male part in position. Drill the holes for the male plate and attach it. Do the same for the other door.

If a catch closes too abruptly, open the body cylinder and clip a bit off the spring. If you have several to install, buy lighter-duty springs, available at hardware stores.

Double-ball catches can be used with lipped or unlipped doors. *The female part, shown with the male half engaged, is screwed to a block inside the top of the* case.

Temporary fastener. *Double-sided tape on the male half will hold it in place on the door so that accurate pilot holes may be drilled.*

WOODEN STOPS

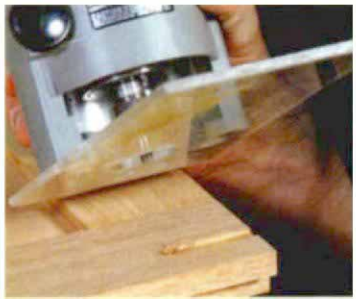
Flush bolts and bullet catches won't stop a door from swinging in and banging against a shelf. Doors with this type of hardware require a stop. I use stops on most doors regardless of the hardware. I usually make my own, *a* simple half-round button slightly tapered at the base. It fits into a mortise chopped into the base of the case and is held there by a drop of glue. The button is centered and acts as a stop for both doors.

Doors *with latches and elbow catches require a* doorstop. *Mortise the stop into the base of the case, keeping it centered.*

FLUSH BOLTS AND ELBOW CATCHES

A flush bolt goes on the rear (left) door, the one that opens last. Install the bolt first. Mark the location using a knife, then rough out the mortise with a chisel or laminate trimmer and finish off with a chisel. To locate the mortise for the pin, put a piece of masking tape in the general vicinity of where the pin will strike. Then place a drop of machinist blue or correction ink on the tip of the bolt, retract it, close the door and extend the bolt, which will leave behind an accurate mark. Then drill the hole a hair toward the back of the case. Last, use a small chisel to enlarge the hole just enough toward the front of the case until the pin fits snugly.

The alternative to a flush bolt, for less formal applications, is an elbow catch. It is easier to mount because it attaches directly to the surface of the door and to a fixed shelf or bottom of the case. No mortises are required. Just close the rear door, lay the parts in place and drill pilot holes for the mounting screws. Always use a wooden stop with these.



Flush bolts require a mortise to be cut on the inside face of the door. *Hog out most of the material with a router, then chisel to fit.*

Locate the hole for the bolt using correction fluid or ink. *Paint ink on the end of the bolt, then close the door and press the bolt against the case, leaving a mark.*

An elbow catch is easy to mount. *It is flush-mounted on the rear (left) door.*

HARDWARE

BALL AND BALL
(800) 257-3711

BRUSSO
(248) 674-8458

NORTON BRASSES
(800) 754-9127

LEE VALLEY TOOLS
(800) 871-8158

LONDONDERRY BRASSES LTD.
(610) 593-6239

ROCKLER WOODWORKING
(800) 279-4441

WHITECHAPEL LTD.
(800) 468-5534

WOODWORKER'S HARDWARE
(800) 383-0130

BULLET CATCHES

The only bullet catches worth using are made by Brusso. I generally use their smallest model. I mount the half with the spring-loaded bearing (bullet) to the case and the socket to the door. I prefer to mount the hardware to the bottom of the case so that drag marks aren't visible. The bullet is mounted first. Measure carefully and drill a hole into the case to the correct depth. Follow up with a narrower drill bit and counterbore the hole all the way through the case. That way you can use a drift to pound out the hardware and shim it up (or drill deeper), if necessary, to achieve a perfect fit. Without the counterbore, the bullet cannot be removed without damaging the surrounding wood. The bullet need only be pressed into place. No glue is required.

Before mounting the socket, cut a shallow slot in it with a hacksaw that fits the blade of a screwdriver. Then put a piece of tape on the bottom of the door and swing it to the closed position. The drag mark left by the bullet shows where the hole for the socket should be located. Mount the socket a little to the side of the bullet. This allows you to cam the door a little in or out by pivoting the socket with a screwdriver. These are a bit tricky to mount. Figure out your hole size on a piece of scrap, and take it slow.

Bullet catches require precision. *Drill the hole for the bullet into the case at the precise depth, then extend the hole all the way through the* case using a *narrower bit.*

The through-hole allows the bullet to be knocked out without damaging the case. *After removal, the hole can be deepened or shimmed, if necessary, to adjust the fit of the bullet.*

Locate the position for the socket. *Tape the bottom corner of the door and swing it into the bullet, which will leave a mark.*

The socket is mounted to the underside of each center door stile. *By adjusting the angle of the socket, the door can be moved in or out about ⅛ in. to correct a minor twist or hide an imperfect installation.*