

Pocket Doors

Should you buy a kit or build your own?

by Kevin Ireton

When I asked one architect about pocket doors—doors that slide into a wall, rather than swing on hinges—he said he avoided them like the plague. Another told me he used them only as a last resort. One builder simply said, "They're stupid. Don't use them." Modern-day pocket doors have a reputation for creating flimsy walls on either side of the pocket, for using lightweight hardware that's easily misaligned and rollers that jump off the track, and for needing repairs that are impossible without tearing open the wall.

But blaming pocket doors for these problems is like blaming a circular saw for not cutting straight. Having installed a few pocket doors myself, and having recently spoken to builders all over the country about pocket doors, I've learned that, properly installed, some commercially available frame kits work just fine. I also discovered a great system for building your own pocket-door frames.

Sliding versus swinging—To swing 180°, a standard 2-ft. 8-in. door needs over 10 sq. ft. of clear floor space. A typical house—three bedrooms, two baths—might have nine or ten swinging doors whose collective door swings lay claim to 100 sq. ft. Half of that figure represents the space directly in front of the door, which has to remain clear anyway. But the other half is usable space—50 sq. ft. of it—that could be reclaimed through the use of pocket doors.

Pocket doors are commonly used for two specific reasons: either because the space and traffic pattern demand it, such as in a half-bath off a hallway where it would be awkward to have a swinging door; or because you want the option of occasionally closing off a room without having to sacrifice space in return. An example of the latter would be pocket doors used between kitchens and dining rooms. Such doors are going to be in the pocket 90% of the time, but when you want to hide the dirty dishes after Thanksgiving dinner, you can pull them shut.

One advantage of pocket doors is that the two sides can be painted different colors, or even milled differently, to match the rooms they face. A swinging door, on the other hand, shows both sides to the room it swings into—one side when the door is open, the other side when it's closed.

Structurally, pocket doors have the disadvantage of requiring a header that's twice as

long as that of a swinging door. The problem is magnified with converging pocket doors—a pair of pocket doors that slide toward each other. For example, if you have a 6-ft. opening between two rooms and you're debating double swinging doors versus converging pocket doors, the latter will require a header that's nearly 13 ft. long. Another disadvantage of pocket doors is that if they're used in a 2x4 wall, you don't have room for an electrical outlet or switch in the area of the pocket. None of these problems is insurmountable, though, and if you don't have room to swing a door, sliding it into a wall may be your best option.

Pocket-door frame kits—Two types of pocket-door frames are available off the shelf, for use in 2x4 walls (though they can be furred-out for thicker walls). One type comes sized

for specific doors and includes two preassembled wall sections and a header/track assembly. The wall sections are ladder-like affairs made of 1x stock, with two vertical pieces connected by three or four horizontals.

Nobody I've talked to likes these kinds of frames. The tracks are usually light-gauge steel with single-rollers on the door hangers, and they're rated only for 50-lb. or 80-lb. doors. (Although most standard interior doors weigh less than 50 lb., the weight rating offers some indication of how easily the door moves on the rollers.) The lumber used in these units is of poor quality, seldom straight, and the installed wall sections are flimsy. Even one of the manufacturers I talked to (who also makes the other kind of door frame) told me it wasn't a good frame.

The better frames are "universal" pocket-door frames, available now from a number of



Universal-type pocket-door frame. The header/track assembly (top left) is nailed to the end studs, not to the framing header, which allows the header to sag a bit without bending the track. Wrapped with steel on three sides, the pocket-door studs are screwed or nailed to the sides of the header/track assembly at the top (top right), and at the bottom, slip over prongs on a metal bracket nailed to the floor (bottom right). A rubber bumper, attached inside the pocket (bottom left), limits the travel of the door and prevents it from banging into the end stud.

companies (see chart, facing page). They cost around \$40 or \$50 (not including the door) and can accommodate most doors that are 2 ft. to 3 ft. wide and 6-ft. 8 in. high (some companies offer frames or extension hardware for doors up to 5 ft. wide and 7 ft. high). The frame kit includes a header/track assembly, two door hangers and four 1x2 studs. The studs are wrapped with steel on three sides to stiffen the wall and prevent nails and screws from penetrating into the pocket (top right photo, previous page). The tops of the studs should be nailed into the side of the header/track assembly, but the bottoms slip over the prongs of a metal bracket nailed to the floor (photos previous page, top and bottom right), which lets the floor sag a bit without the studs pulling the track down and bending it.

The door hangers supplied with these frames

have at least three nylon rollers (some have four), and the tracks are shaped so that the hangers have to be slipped over the end of the tracks, which makes them virtually "jump-proof." Most of the universal frames now come with a two-piece hanger. The roller unit is one piece, and it slips into the track with a threaded stud that hangs down. The other piece is a bracket that you attach to the top of the door.

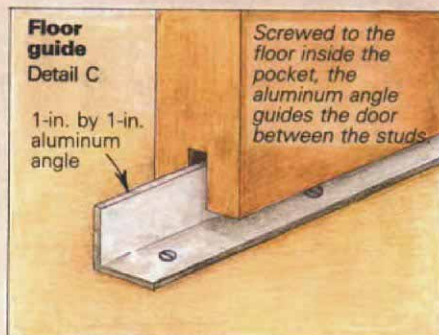
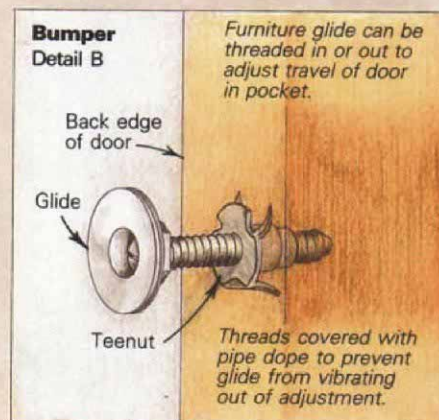
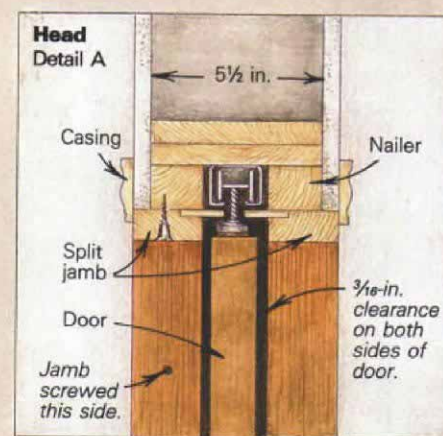
When you attach the brackets, be sure to place them far enough from the end of the door that both screws go into the top rail, not into the end grain of the stile. After the brackets are attached, the door is lifted into place, the bracket engages the stud and is usually locked by a little plastic gate that you swing shut. The door can be adjusted by screwing the stud in or out of the roller housing with a special wrench included with the kits.

One of the criticisms of pocket doors is that you have to tear out the wall if something goes wrong, but some of the manufacturers (Johnson, Sterling and Acme, for instance) have designed their tracks so that you can remove them for repair or replacement without disturbing the wall. After taking down the door, you remove the mounting screws in the section of track above the doorway. The remaining screws, inaccessible in the pocket, sit in keyhole-shaped slots; simply pull the track toward you a fraction and the track will slip over the screws. Before installing the track, check that these screws are not too tight or you'll never get the track out later.

Most of the universal kits are rated for 100-lb. or 125-lb. doors. Some companies offer heavier duty hardware if you need it. Acme has a universal frame rated for 250-lb. doors.



The Woodmeister Corp. builds pocket-door frames as a unit in the shop and ships them to the job site squared and braced. Above, Jeff Ham plumbs the strike-side of the pocket-door frame. The plywood plate running across the doorway will be cut out after the frame installation.



And Johnson Products has a set of optional ball-bearing hangers rated for 200-lb. doors. With a 125-lb. door and Johnson's standard rollers, the folks at Johnson say it takes between 6 lb. and 7 lb. of pull to slide the door out of the pocket. With a 200-lb. door and Johnson's ball-bearing hangers, it only takes 3 lb. of pull.

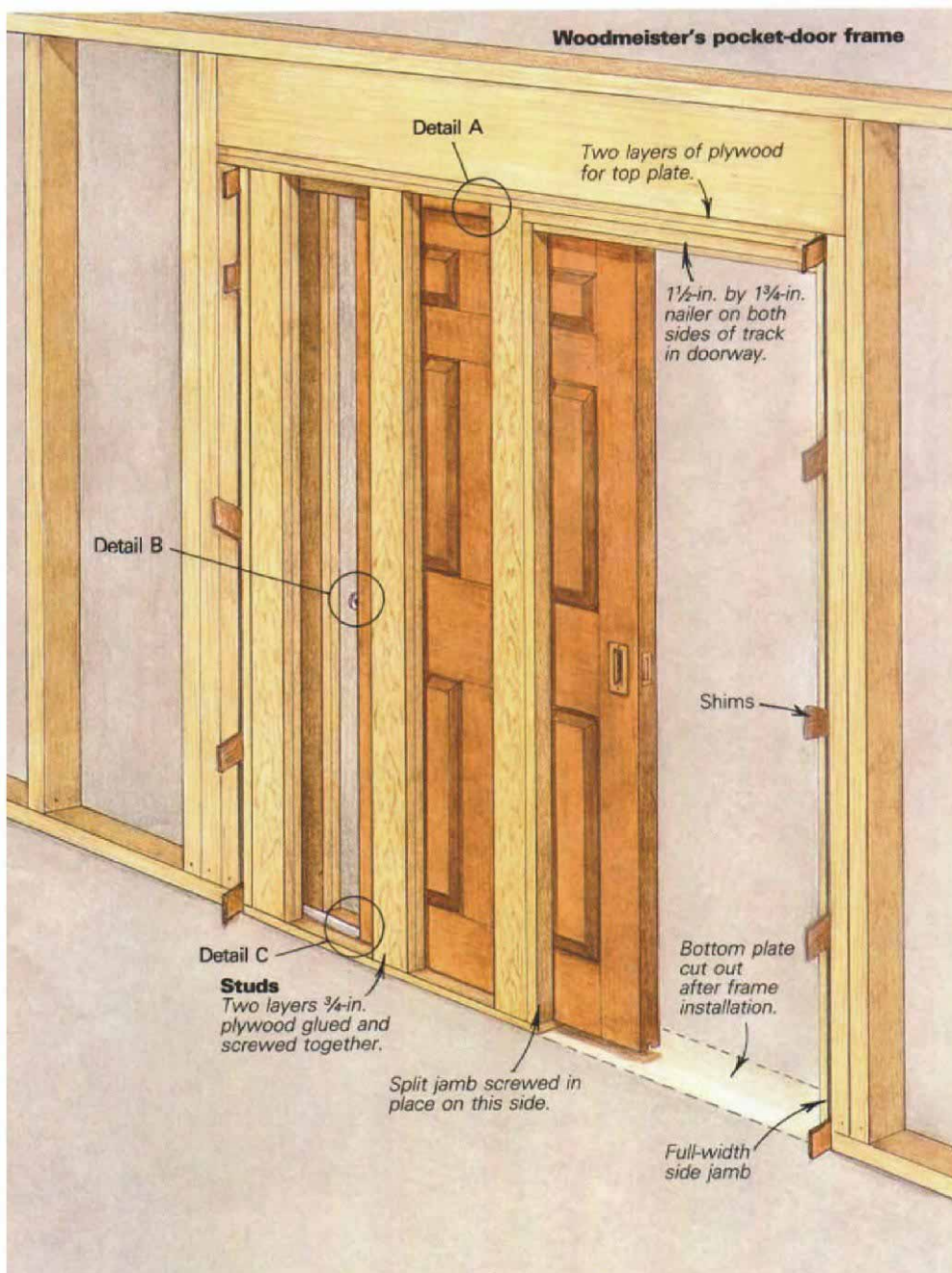
When I asked if the ball-bearing hangers would hold up any better, the folks at Johnson said that they didn't think so. They've cycle-tested their standard rollers using a 150-lb. door, and after 100,000 trips in and out of the pocket, all they got for their trouble was a black stripe around the white nylon wheel.

Frame installation—Installing a universal pocket-door frame is not difficult, but you have to be careful. The trouble is that pocket

doors must be installed while you're framing the house, before drywall, and in a mood to work quickly rather than carefully. The manufacturer's instructions explain the basic installation, but here are some things to keep in mind.

The track should be nailed between the trimmer studs on either side of the rough opening. The track is not attached to the framing header, so there should be a space between them (top left photo, p. 63). This allows the header to sag a bit without bending the track.

Before you install the studs, site down their length. Three out of four studs in the last frame I bought had a 1/4-in. bow in them. You can straighten them with your hands, which indicates how easily they can be knocked out of alignment. The studs should be carefully



Manufacturers of pocket-door frame kits and hardware

Pulls and latches

Tracks and rollers

Frame kits

Acme General Corp.
Div. of the Stanley Works
300 East Arrow Highway
San Dimas, Calif. 91773

Baldwin Hardware Corp.
841 E. Wyomissing Blvd.
Reading, Pa. 19611

G-U Hardware, Inc.
11761 Rock Landing Dr.
Suite M6
Newport News, Va. 23606

Grant Hardware Co.
High St.
West Nyack, N. Y. 10994-0600

Hafele America Co.
3901 Cheyenne Dr.
P.O. Box 4000
Archdale, N. C. 27263

Iseo Locks Inc.
260 Lambert St.
Suite K
Oxnard, Calif. 93030

L. E. Johnson Products, Inc.
2100 Sterling Ave.
P.O. Box 1126
Elkhart, Ind. 46515

Lawrence Brothers, Inc.
2 First Ave.
P. O. Box 538
Sterling, Ill. 61081

Merit Metal Products Corp.
242 Valley Rd.
Warrington, Pa. 18976

National Manufacturing Co.
1 First Ave.
Sterling, Ill. 61081

Quality Hardware Manufacturing Co., Inc.
12705 S. Daphne Ave.
Hawthorne, Calif. 90251

John Sterling Corp.
11600 Sterling Parkway
Box 469
Richmond, Ill. 60071-0469

Wing Industries, Inc.
1199 Plano Rd.
Suite 110
Dallas, Tex. 75238

plumbed in both directions, especially the two at the end of the pocket that will support the split jamb. It's a pain in the neck to shim the split jamb to make it plumb.

After you've installed the frame, insert a couple of temporary spacers (1x stock, cut to the width of the pocket) horizontally in the pocket to prevent the studs from bowing inward while the drywall is hung. Even with the spacers in place, though, whoever is hanging the drywall should be careful not to bear down so hard on the screwgun as to knock the studs out of alignment. Shorter screws should also be used.

Be sure the full-width side jamb that the door closes against is plumb. If this piece and the split jamb opposite it are not both plumb, then you can't adjust the door so that it both closes properly and rests flush with the split jamb when open.

To allow access to the hangers (in case you have to remove the door later), you'll need to screw one side of the head jamb in place rather than to nail it. This means you should put the side jambs up first; otherwise they'll trap the head jamb. Also, remember not to nail the casing into the head jamb that's screwed in place.

Make sure that the door you use is straight and flat, and that it's sealed on all sides, including the bottom. If the door warps, it will hit the studs in the pocket and won't open or close. Remember, too, that more than one pocket door has gotten scratched or nailed in place by a carpenter who forgot (or didn't know) that he was nailing into a thin wall. It won't hurt to remind subcontractors about the pocket door, either.

Building your own—If you have to install a pocket door in a 2x4 wall, you might as well use a kit. Although I've spoken to some builders and architects who think otherwise, most agree that the kits work pretty well. On the other hand, if you can afford to beef up the finished wall thickness to 6½ in. (2x6 framing), you're probably better off buying the hardware and building your own frame. This is especially true if you're using bigger than average doors. Besides letting you construct stiffer walls on either side of the pocket, a 2x6 wall gives you enough room to install shallow electrical boxes.

The best system I've seen for building your own pocket-door frame is the one worked out by the people at the Woodmeister Corp. (drawing previous page), an architectural woodworking company in Worcester, Mass. They start with heavy-duty tracks and rollers (Woodmeister uses Lawrence hardware, but Grant and Acme also make some pretty rugged stuff). Then they build the frame using ¾-in. cabinet-grade veneer-core plywood (poplar or birch) rather than solid lumber, because it's more stable.

The entire frame is assembled in the shop. It's built as a unit to fit the pocket-door's rough opening (photo, p. 64). The top and bottom plates run the full length of the rough

opening, with a 5½-in. wide stud at each end. The bottom plate, which is continuous across the door opening, is cut out later. The studs are made up of two layers of plywood, each 3½ in. wide. Before the layers are glued and nailed together, the fabricator sights their length and orients the pieces so that any bow in one is countered by the bow in the other.

In addition to the overhead track, Woodmeister uses a continuous floor guide inside the pocket that centers the door and prevents it from hitting the studs. A piece of 1-in. by 1-in. aluminum angle, running the length of the pocket and extending about ¼ in. past the last stud, is screwed to the bottom plate (bottom drawing, p. 64). A corresponding groove is routed in the bottom edge of the door to receive the angle. After assembling the frame, the fabricator squares it up and screws a full-length diagonal brace across it before shipping it to the job site.

Installation is straightforward. As with the off-the-shelf frames, the top is not attached to the header of the rough opening, and the important points are that the track is level and the studs plumb in both directions. Woodmeister's installers shim the frames and screw them in place to avoid the possibility

of repeated hammer blows knocking the frame out of alignment.

The standard frame kits supply you with a little rubber bumper to nail on the end stud in the pocket to cushion the blow from the door hitting it (bottom left photo, p. 63). Woodmeister installs a teenut and an adjustable plastic floor glide (like the kind used on the legs of office furniture) in the back edge of the door (middle drawing, p. 64). This cushions the blow of the door but also allows adjustment of the travel of the door into the pocket. Before installing the floor glide, pipe dope is smeared on the threads of the glide to keep it from vibrating loose over time.

When installing the split jamb, the folks at Woodmeister screw one side of both the side and head pieces to the plywood studs. This makes removal of the door easier.

Most people don't use any kind of door stops on a pocket door. The leading edge of the door simply butts into the jamb. Woodmeister has tried cutting a ¼-in. deep rabbet into the full-width side jamb to receive the door edge. But while this looks nicer when the door is closed, it doesn't look as good with the door open. Also, the use of a rabbet or stops can lead to trouble if the door warps at some point down the road.



The edge pull is used to get the door out of the pocket, and the flush pulls, installed on both sides of the door, are used to open the door (photo above). But with this setup, there is no way to latch or lock the door. The unit shown in the top photo combines face pulls, edge pull and privacy lock all in one. To install it, you simply cut a notch in the edge of the door; no mortising is required.

Pulls and latches—During the Victorian period—probably the heyday of the pocket door—some wonderful decorative hardware was available for pocket doors, including ornate recessed pulls for the face of the door and great locksets with edge pulls that popped out when you pushed a button. Unfortunately, no one that I know of is reproducing them, so you'll have to shop the salvage yards if that's what you're after.

Here's an overview of today's options. You can use an edge pull in the edge of the door (a nice one is available from H. B. Ives, A Harrow Co., P. O. Box 1887, New Haven, Conn. 06508) and a pair of flush pulls (available from various companies) on both sides of the door (bottom left photo). Or you can get a lockset that includes flush pulls, edge pull and a privacy latch in one unit (top left photo). The ones I've seen were made by Quality Hardware Manufacturing Co. (see chart on p. 65 for address). There's no mortising with this unit. Instead, you cut a 2¼-in. by 1¾-in. notch in the edge of the door. Such a big bite, though, could affect the integrity of some doors, especially hollow-core doors, and perhaps lead to warping. In any case, this type of lockset will likely void any warranty on the door.

Some of the companies that make frames (Lawrence and Johnson, for instance) sell latches and face pulls that fit the holes for standard swinging-door locksets. If you want real security, Baldwin, Hafele, Merit and Iseo (see chart for addresses) make case-style locksets available with key cylinders. □

Kevin Ireton is an associate editor of Fine Homebuilding.

About old pocket doors

by James Boorstein

I cannot put a date on the earliest use of pocket doors in this country, but I know they were used in the 18th century. As American architecture evolved beyond its rustic and purely functional roots and grew increasingly grand, large pocket doors became quite common. Possibly it was an easy way for some builders to deal with huge doors without having to use massive hinges and heavy framing. Pocket doors were used to separate the more public rooms of the house—the parlor, library and dining room—from each other. Rarely were they used on the upper floors to separate bedrooms.

Most of the early domestic pocket doors had wheels on the bottom and rode in a track on the floor. Not until the middle of the 19th century were overhead tracks and rollers available. The switch to an overhead system was probably made as hardware technology advanced. The overhead track was out of sight and was less susceptible to problems resulting from dirt in the track and from the floor settling.

The older, more traditional pocket doors were almost always used in pairs (photo below). Each door rolls on two wheels that are either solid or spoked and 4 in. to 5 in. in diameter. Most are seated in a permanent housing called a "sheave," which looks somewhat like a window-sash pulley. Many of the wheels, especially those found in the southern U. S., can be very decorative, even though they aren't seen. Some of the sheaves are just long enough to house the wheel itself, other sheaves are two or three times the diameter of the wheel with a horizontal slot that allows the axle of the wheel to move forward or backward as the wheel rolls and the door moves. I'm not sure of the exact function of this. It certainly reduces the wear of the axle on the housing and perhaps changes the balance of the door, making it easier to move.

The sheave is mortised into the lower rail of the door (drawing below right), shimmed and fastened with wood screws to allow the door to sit level. Only about $\frac{1}{4}$ in. of the wheel protrudes below the edge of the door. The edge of the wheel is grooved to fit over a ridge in the metal track, which is often bronze or brass, and sometimes steel. The floor track is often surface-mounted, but is sometimes recessed into the finished floor. In many older homes the floor track appears to be raised. This is usually a result of the floor around the track being sanded away over the years. Lowering the track would affect the operation of the door.

To keep the door vertical, two hardwood pegs (often oak) are mortised into the top rail of each door. Even on the finest doors these pegs are fairly crude. They protrude 2 or 3 in. up into a wooden track. The track has two recesses. The top edge of the door extends into the first recess, and the hardwood pegs ride in the second. There must be adequate clearance above both so that the doors can be lifted up and over the floor track for installation and removal. Occasionally the wooden upper tracks were constructed in such a way that they float

and actually lift up as the door is being lifted.

Converging pocket doors have a center stop, generally a sturdy piece of cast hardware screwed to the upper track and shaped to receive the leading edge of both doors. This must be removed to take the doors out. The leading edges on a pair of converging pocket doors were often milled to fit into each other, like a shallow tongue and groove.

There is also a stop, or bumper, on the trailing edge of the door so that the door will come to rest at the proper place when it is slid into the pocket. This stop, which is never seen, is often a very crude block of wood attached to the door at approximately the height of the pulls.

It is common to see traditional round door knobs on pocket doors; the stop keeps these doors 4 in. to 6 in. out of the pocket or just less than the width of the rail. Usually the knobs are fixed and act only as pulls to open and close the door. Locks and latches on the old doors vary, but they all work on the same principle: a curved metal bolt arcs out of the lockset in one door and down into a receiving plate on the other door or on the wall. These locks are often operated by a short, decorative key that works from either side of the door. On doors that rest fully recessed into the pocket when open, flush with the jamb, I've seen an array of ingenious pulls and spring-loaded pop-out handles that are flush until called into action.

Making repairs—Occasionally old door pockets lie hidden behind contemporary walls. Often these hidden pockets still house their rolling doors, but getting them out can be difficult. If they have been hidden through several renovations, they may have electrical cables or plumbing lines run right through them. More common problems include warped studs in the pocket, or a warped door. The door could be off its tracks, it could have been inadvertently screwed or nailed in place,

the track could have worked loose or there could be any number of other problems. A screw eye and a loop of rope attached at the top and bottom of the door will serve as a temporary handle to coax a stubborn door out of its pocket.

Once the door is out, get a couple of droplights or electric clip-on lights and shine them in the pocket (a flashlight is no substitute). By carefully examining the pocket and employing some common sense, you will probably be able to figure out and correct any problems.

Restoring the operation of a pocket door should take place after any necessary structural repair in the area has been accomplished. But it should be done before any final plastering, as you may need to make holes in the wall to make adjustments inside the pocket. If for some reason the walls can't be disturbed (if there's wallpaper or a mural, for instance, or if the wall is otherwise historically significant), you can remove material from behind the baseboard and gain access to the pocket and the track without damaging the walls above.

Sometimes the door itself needs basic structural repair. The mortises for the wheels on the lower rail of the door frequently weaken the door. A partial or complete patch, with a new and relocated mortise, will solve the problem. The tracks should be straightened and shimmed level. On older doors the wheel bearings may be worn out. The simplest way to repair this is to pad out the mortises and install replacement sheaves (available from Grant Hardware, see chart on p. 65 for address). Usually they will work on the existing track. On historic pocket doors I have had the worn hardware remachined, which worked well. While I retained the original hardware, however, I also preserved the original slightly stiff operation of the door. A compromise would be to use a better material for the bearing.

James Boorstein is a partner in Traditional Line, a restoration company in New York City.



Nine ft. tall and 3 in. thick, these converging pocket doors reside in the Dakota, one of New York City's most famous apartment buildings.

