

# Faster, Better Drilling for Finish Carpenters

Specialty drill bits and accessories speed work and improve accuracy

by Bruce Greenlaw



**It's like having two drills.** Makita's keyless chuck (left) eliminates the hassle of a chuck key. Insty-Bit's quick-change adapter (center) speeds production work.

**T**he new multipurpose, carbide-tipped twist drills appear to be ideal for finish carpenters, who drill everything from hardwoods to ceramic tile. But are these bits really "the last drill set you will ever need," as one company claims? Not unless you have lots of time on your hands. The ones I tried bored everything as advertised, but slowly. I think I'll pass.

Multipurpose bits are the latest of countless drill bits and accessories I've used to expedite finish work. Some have been a bust, but others paid for themselves quickly. In this article, I'll point out my favorite drill bits and accessories for finish work, including some I've used for years and others I tried while preparing this article—and probably would have used sooner had I known better. (For a survey of conventional builders' drill bits, see *FHB* #92, pp. 70-75.)

**First, install a high-performance chuck and toss the key**—For jobs that require continuous bit swapping, time and patience disappear as you repeatedly adjust the chuck jaws from one bit diameter to another. One solution is to use two drills. A better one is to install a high-per-

formance chuck, then chuck your chuck key. Keyless chucks (photo above) are the best thing to happen to drills since the rechargeable battery. The jaws tighten and loosen with a twist of the wrist, and the nose spins freely to adjust the jaws. The chucks come standard on many new drills, but you can buy them to fit any  $\frac{3}{8}$ -in. or  $\frac{1}{2}$ -in. model, and they're a breeze to install. Prices range from about \$18 to \$30.

Quick-change chucks hold hex-shank drill bits and screwdriver bits, which are installed or removed by pulling a spring-loaded lock collar and slipping the bit in or out. Two types of quick-change chucks are available: flattened-shank ones that fit into standard adjustable chucks (photo above), or threaded ones that replace standard adjustable chucks. Prices range from \$9 to \$22.

Insty-Bit (see sidebar p. 94 for manufacturers' addresses) makes heavy-duty quick-change chucks, plus a nice assortment of hex-shank drill bits to fit them, including standard twist drills, brad-point bits and other specialty bits. W. L. Fuller sells adapters that convert round-shank twist drills to hex-shank ones.

I think keyless chucks equipped with quick-change adapters make sense for finish carpentry. Keyless chucks alone handle a wide variety of drill bits and allow relatively speedy bit changes, but I can swap hex-shank bits in a quick-change chuck in two seconds flat.

**Countersinking drill bits accelerate screw installation**—Shipwright Warren L Fuller Sr. developed some of the first adjustable countersinking drill bits in the 1930s. Sixty years later, family-owned W. L. Fuller Inc. still makes them in Warwick, Rhode Island. These bits (top photo, facing page) speed screw installation in wood and composition materials.

I've used Fuller's bits for 15 years to bore and countersink everything from built-ins and baseboards to flooring and door jambs, and they work well. The bits are high-speed steel twist drills rigged with adjustable case-hardened steel countersinks and unhardened stop collars. The countersinks have diameters to match standard wood plugs, which hide countersunk screw heads, and plug cutters. The twist drills either taper to match the taper of wood screws, or

they're straight to match drywall-type screws. I don't like the tapered drills because their flutes clog frequently with wood fibers that can get smoking hot as the bits spin in holes. But if you use drywall-type screws, you won't need tapered twist drills anyway. Both types of drills come with round shanks or with hex shanks that fit quick-change chucks. Prices go up from \$6.50.

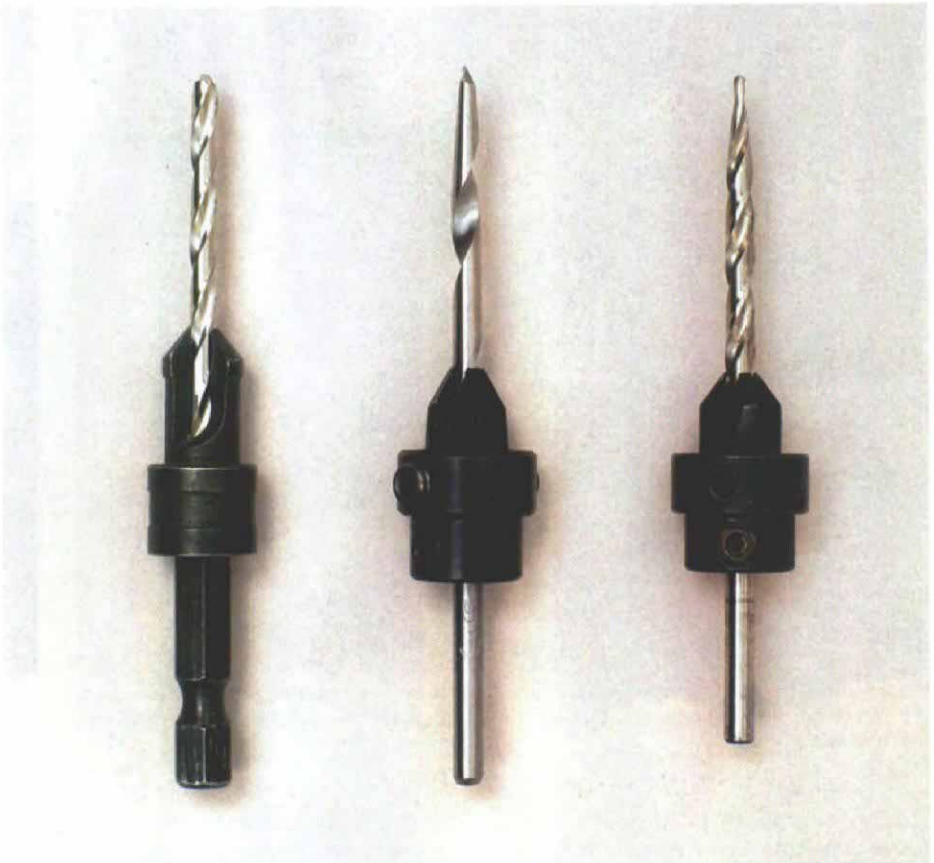
Asian-made tapered countersinking drill bits generally cost at least 25% less than Fuller's. They look almost identical, but they have single-twist (single-fluted) drills instead of double-twist ones. The bits also normally aren't high-speed steel. I tried a Star-M Japanese bit, which is sold by Woodworker's Supply and looks similar to a Fuller bit. The bit didn't clog and overheat, and it countersank amazingly fast, even in hardwoods. But the countersink's set screws etched the carbon-steel twist drill, which made adjustment or removal a headache. Fuller's high-speed steel drills don't have this problem. The countersink was also slightly oversize, but some plug cutters cut oversize plugs. If you don't want to spend top dollar, Star-M's bits are an option.

I also like Insty-Bit countersinking drill bits, which have straight high-speed steel twist drills and 1/4-in. hex shanks that fit the company's quick-change chucks. The sides of the countersinks are relieved behind the cutters to reduce friction and to minimize overheating. The bits don't have stop collars. Two models are available, one for drywall-type screws and one that accommodates the fat, unthreaded portion of conventional wood screws. The bits cost about \$6 apiece.

**Make matching or contrasting wood plugs**—Tapered plugs and buttons sold by hardware stores usually come in just one or two types of wood, such as birch and walnut. A better choice is buying plug cutters and making your own plugs. This option allows you to match plugs to a workpiece or to make contrasting plugs for decoration.

I've used two types of plug cutters. Self-ejecting plug cutters cut clear through the stock and eject plugs through an opening above the nose of the cutter (photo bottom right). Nonejecting plug cutters make chamfered plugs, which are usually pried off the plug stock with a slotted screwdriver. I prefer nonejecting cutters because they don't scatter plugs and because their chamfered edge makes installation slightly easier. You can also install chamfered plugs backward and allow them to stick out slightly to form attractive buttons. Self-ejecting plug cutters cut plugs to a uniform length, which makes plugs easier to install flush to minimize sanding. But a chisel will crop chamfered plugs flush in seconds.

Fuller makes my favorite chamfering plug cutter. It's a four-bladed, hardened-steel bit that cuts



**Adjustable countersinking drill bits make screw holes fast.** From left to right: Insty-Bit's hex-shank bit; Star-M's tapered twist drill; and W. L. Fuller's tapered bit.



**Self-centering bits speed installation.** The Vix bit (in drill) centers a twist drill to produce accurate pilot holes. Insty-Bit's Drill Guide (foreground) uses a spring-loaded bushing.



**Plug cutters make custom wood plugs.** Irwin's self-ejecting plug cutter makes unchamfered plugs of a consistent thickness, then spits out the plugs.



**Glass-and-tile bits take on bathrooms.** Black & Decker's carbide-tipped glass-and-tile bit chews holes up to 1/2-in. dia. through tiles and mirrors to make way for screws and hollow-wall anchors.



**Carbide-tipped Forstner bits bore without overheating.** Freud's carbide-tipped Forstners can bore through hard materials such as this Avonite countertop.

exceptionally smooth plugs in softwoods and hardwoods. The cutter comes in standard sizes up to 1 1/2-in. in dia. and in metric sizes up to 16mm in dia. The 3/8-in. and 1/2-in. dia. plug cutters that I use cost \$7.45 and \$9.55 respectively. Fuller also makes special plug cutters for tough woods such as teak. Although Fuller recommends using its plug cutters in drill presses, my small ones work fine in portable drills.

Fuller also sells tapered plug cutters that flare slightly from a given diameter to about 5/1000 in. oversize. I haven't tried these bits, but I have tried Veritas Snug-Plug cutters. They look similar to Fuller's, but they taper to about 1/64 in. oversize, helping to produce a tight fit in significantly oversize holes such as those produced by some imported countersinking drill bits. The cutters walk when cutting freehand, however, and the plugs can't be installed backward to expose the chamfered ends. A set of three cutters (1/4-in., 3/8-in. and 1/2-in. dia.) costs \$29.95. For an extra \$10, Veritas includes a special handsaw that cuts the plugs flush to a work surface.

I've also used Vermont American and Irwin plug-ejecting cutters. Both walk when used freehand with a portable drill, but they work fine in a drill press. There's a way to control walking when boring freehand with most other wandering plug cutters. Bore a slightly oversize hole in a 1xscrap, and hold the scrap over the plug stock to guide the cutter as you cut each plug.

**Vix bits bore dead center in hardware holes**—Years ago, I installed door hinges by poking an awl into what looked like the center of

each hinge hole, drilling pilot holes and driving home the screws. Inevitably, some screws ended up slightly off-center, pulling the hinge one way or the other. Then I discovered the Vix bit (photo bottom left, p. 91).

Developed for the furniture industry, the Vix bit is a twist drill within a metal housing that centers the drill in hardware screw holes. I've used these bits for years, mostly for boring pilot holes in door hinges and striker plates. Diameters range from 5/64 in. to 1/4 in., and prices range from \$7 to \$40, depending on the size and the source. Boring depth is adjustable. If you do adjust one of these bits, however, don't remove the lock screw completely, or the spring-loaded bit might explode in your face.

Most woodworking catalogs sell round-shank Vix bits, but Woodworker's Supply, Trendlines and Fuller also sell 9/64-in. dia. and smaller hex-shank Vix bits for production work.

Insty-Bit recently introduced a hex-shank, self-centering drill bit to fit its quick-change chucks. The Drill Guide features a twist drill nestled inside a spring capped by a tapered steel bushing that centers the bit in the hole. It works well, but I prefer the Vix bit because its twist drill doesn't rub against the tip as the Drill Guide's twist drill does. Drill Guides cost \$7.95 each.

**Install door locksets quickly and cleanly**—I've always used standard hole saws and spade bits for boring lockset holes in doors. Last time, I used a Star-M lock-installation kit. It includes a weird-looking 2 1/8-in. dia., four-tooth hole saw with a small auger bit for a pilot drill, plus a 7/8-in.

or 1-in. dia. solid-center auger bit (top photos, facing page).

Mimicking an alternate-top-bevel circular-saw blade, two of the hole saw's opposing teeth have alternate bevels that cut wood fibers. The other two teeth are flat-topped rakers that clear wood chips out of the saw kerf. The result is a fast-cutting hole saw that makes the smoothest hole-saw cuts I've seen. The one I used bored a hole in a 1 3/4-in. thick fir door five seconds faster than a Lenox bimetal hole saw. When I finished boring, the wood plug virtually fell out of the bit. The bit's hardened-steel teeth should hold an edge for a while, and they can be resharpened on site with a diamond-grit or auger file. The edge-boring auger bit also bored quickly and cleanly. The kit is available through industrial hardware suppliers. Suggested retail price is \$41.

**Nail spinners let finish nails drill their own pilot holes**—In a pinch you can chuck a finish nail in a drill and use it to bore pilot holes for other finish nails. Pilot holes may be required to prevent splitting in hardwoods or near the ends of softwood parts. Vermont American's Nail spinner (bottom photo, facing page) refines the concept. It's sort of a keyless chuck for nails composed of an industrial-duty steel cylinder with ball bearings in it that grip 4d, 6d, 8d and 10d finish nails. After chucking the nail spinner into your drill, you pop a nail into the end, spin the nail into the wood—the spinning action prevents wood from splitting—and pull the nail spinner off the nail. The bit leaves nail heads about 1 in. proud so that they can be hammered

## A better way to install a lockset



**Imported kit bores doors fast.** Star-M's Japanese Lock Installation Kit includes a four-tooth hole saw with a small auger bit patterned after a circular-saw blade (above left), plus a high-performance solid-center auger bit (above right).

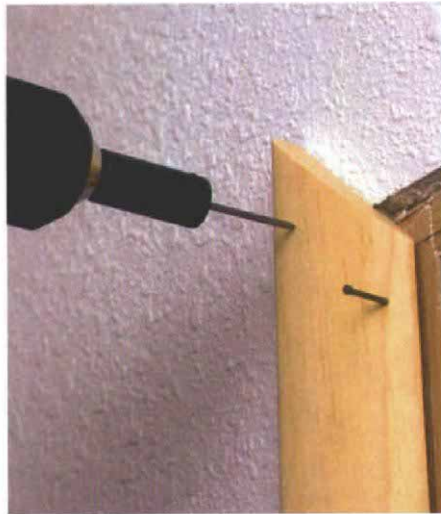
home. I recently used the spinner to drive finish nails through samples of everything from hemlock fir to rock-hard ash. It worked surprisingly well. Nail spinners cost about \$7.

### Forstner bits bore smooth, splinter-free holes in woodwork and countertops—

Forstner bits have cylindrical heads with razor-sharp rims that scribe the circumference of a hole while two interior cutters clean it out. The result is exceptionally smooth, splinter-free boring, even in end grain. Forstners can make flat-bottomed, angled and overlapping holes, and they can also enlarge existing holes. The bits can be used to bore, say, stair stringers to accept balusters and laminated countertops to accept faucets.

Some Forstner bits are made of high-carbon steel, which tends to overheat quickly, ruining the cutting edge. The better bits are high-speed steel or carbide-tipped. I like Freud's carbide-tipped Forstners. They bore hardwoods beautifully, and most sizes bore end grain faster than the high-speed steel Forstners I've tried. The bits also bore perfect holes in composition materials, thin wood laminates, plastic laminates and solid-surface countertop materials (photo right, facing page). These bits can be pushed hard without overheating, a claim that not even the best high-speed steel Forstners can make (though models with teeth on the rim, called multispur bits, help limit overheating).

When carbide-tipped Forstners dull, they can be sharpened by shops that tune carbide-tipped router bits. Woodworker's Supply sells Freud



**Nail spinners bore pilot holes to eliminate splitting.** Vermont American's Nail spinner drives finish nails most of the way into trim. The nails are then hammered home.

carbide-tipped Forstner bits with diameters ranging from  $\frac{1}{4}$  in. to  $2\frac{1}{2}$  in. and with prices ranging from \$13.40 to \$44.80.

Just remember that with all Forstner bits, the bigger the bit, the greater its tendency to bind. You'll need a steady hand or a drill press to drill big holes.

**Bore holes in glass or tile—**There's an easy way to anchor grab bars to tiled bathtub surrounds or mirrors to walls. Glass-and-tile bits drill holes up to  $\frac{1}{2}$ -in. dia. in tile and glass to make way for screws or hollow-wall anchors (photo

left, facing page). The carbide spear points on these bits bore through standard glazed wall tiles like a twist drill through pine. Harder materials such as quarry tiles take longer. Boring mirrors also takes time and produces jagged holes, but decorative washers hide the edges.

Black & Decker recommends the use of turpentine or mineral spirits during use to prolong the life of glass-and-tile bits. I pour some into a small cup, then dunk the spear point in it once every few seconds while drilling. Horizontal surfaces can be dammed with putty and filled with a coolant above the hole location, but prepare for leakage through the completed hole. Before starting a hole, it's best to grind the point into the surface by hand to create a dimple that prevents walking.

Glass-and-tile bits are sold by most hardware stores and home centers, and they cost about \$4 to \$14 apiece.

### Drilling and driving in hard-to-reach places—

I can't count how many times I've been in a cramped space while trying to bore a pilot hole or drive a screw with a standard drill. Small right-angle drills are available, including DeWalt's compact model DW160, which costs about \$150. But that's a pretty penny to pay for a tool that I would use only occasionally. Fortunately, cheaper attachments are available.

Trendlines sells a right-angle drilling attachment (photo p. 94) for \$40 that takes little space in a toolbox and can be chucked into standard  $\frac{3}{8}$ -in. or larger drills. It has a  $\frac{3}{8}$ -in. Jacobs chuck attached to a metal housing that swivels  $360^\circ$



**Accessories can reach the tight spots.** The 52-in. long flexible extension shaft (chucked in gray drill) by wolcraft snakes around obstacles to drill holes and drive screws. Trendlines' sturdy right-angle drilling attachment (chucked in blue drill) swivels 360°.

to position the chuck where you want it. I'd prefer a keyless chuck on this unit, but that's being nitpicky. A hardened helical gear and drive shaft should ensure durability. Woodworker's Supply sells a similar unit.

Another option is chucking a flexible extension shaft into your drill. General's 40-in. long model has a 1/4-in. shank and a 1/4-in. chuck, and it turns on bronze bushings. The heavier-duty 52-in. long model by wolcraft (photo left) has a 1/4-in. shank and a 5/16-in. chuck, turns on ball bearings and costs about \$35 to \$45. I've tried both brands, and I prefer wolcraft's sturdier construction and smoother operation.

**Drill guides speed joinery and hardware installation**—A number of ingenious products are available that allow drill bits to align pieces to simplify particular boring tasks. I'll mention three that I've used with good results.

Woodworker's Supply sells hardened-steel drill bushings that can be used to make simple jigs to speed repetitive jobs such as installing drawer pulls for kitchen cabinets. Bore a hole in a wood scrap, tap one of these knurled bushings into the hole with a hammer, attach a simple fence to the scrap to align it to the workpiece, and you'll get an accurate drill guide that won't become sloppy after you drill a few holes. The bushings come in seven standard sizes and in four metric sizes, and they cost from \$2.90 to \$3.50 each.

### **Manufacturers and suppliers of drill bits and accessories for finish work**

#### **American Tool Companies Inc.**

301 S. 13 St., Suite 600  
Lincoln, Neb. 68508  
(402) 435-3300

*Makes Irwin and Hanson tools, including adjustable countersinking drill bits, self-ejecting plug cutters, Forstner bits, quick-change chucks and glass-and-tile bits.*

#### **Black & Decker**

Consumer Services  
P. O. Box 160  
Hampstead, Md. 21074  
(800) 762-6672

*Makes drill bits and accessories, including glass-and-tile bits and Forstner bits.*

#### **The Dowl-it Company Inc.**

P. O. Box 310  
Hastings, Mich. 49058  
(800) 451-6872

*Makes Dowl-it and the Improved Dowl-it doweling jigs.*

#### **Freud USA Inc.**

P. O. Box 7187  
High Point, N. C. 27264  
(800) 472-7307

*Makes high-speed steel and carbide-tipped Forstner bits.*

#### **Garrett Wade Company Inc.**

161 Avenue of the Americas  
New York, N. Y. 10013  
(800) 221-2942  
*Sells countersinking drill bits, plug cutters, Vix bits, Forstner bits and Dowl-it doweling jigs.*

#### **General Tools Manufacturing Company Inc.**

80 White St.  
New York, N.Y. 10013  
(212) 431-6100  
*Sells countersinking drill bits, plug cutters, a flexible extension shaft and a right-angle drilling attachment.*

#### **Insty-Bit**

2310 Chestnut Ave. W.  
Minneapolis, Minn. 55405  
(612) 381-1060

*Makes production boring systems that include quick-change drill chucks and hex-shank twist drills, adjustable countersinking drill bits, brad-point drills and self-centering drills.*

#### **Kreg Tool Company**

P. O. Box 367  
Huxley, Iowa 50124  
(800) 447-8638

*Sells a complete system for making pocket-hole joints.*

#### **Primark Tool Group**

1350 S. 15th St.  
Louisville, Ky. 40210-1861  
(800) 242-7003

*Markets Forest City industrial-duty drill bits, including Vix bits and Forstner bits.*

The Dowl-it Company makes the Dowl-it jig, a handy device that centers 1/4-in. dia. to 1/2-in. dia. dowels in stock up to about 2 in. thick. I've used the standard model for almost 15 years. It's a hardened-steel drill guide mounted in an aluminum clamp. The Improved Dowl-it has built-in 7/16-in. and 1/2-in. dia. holes in the drill guide, plus two threaded holes spaced 3/4 in. apart that accept 1/4-in., 5/16-in. or 3/8-in. dia. drill bushings, a nice touch for doweling face frames. The standard model costs about \$40, the improved model about \$50.

I've doweled everything from custom-built skylight frames to cabinet face frames and doors. But more often I use dowels for quick alignment when gluing up door and wainscot panels or when gluing decorative nosings to stair treads. Before glue up, I simply push the adjacent wood parts together, make a few pencil marks across the edge joint and then use the Dowl-it jig to drill a dowel hole in the edge of the stock at each mark. During the glue up, the dowels draw adjacent parts into the same plane as the clamps are tightened.

I've used screws to assemble everything from drawers to stairs, yet I've always had an inexplicable aversion to pocket-hole joinery, which is an alternative to biscuit joinery and dowel joinery. Pocket-hole joinery allows you to butt and screw together two pieces of wood by using a special jig that guides a stepped drill bit to bore angled, countersunk pilot holes in one of

the two workpieces. These "pockets" receive hardened, self-tapping panhead screws that won't split wood.

The Kreg Tool Company makes a pocket-hole jig that changed my mind about pocket-hole joinery. The L-shaped jig (photo right) has an aluminum fence fitted with two hardened-steel drill bushings, plus a De-Sta-Co straight-line clamp that pins a workpiece to the fence. The jig can be screwed to a scrap of plywood, and the whole thing can be propped on sawhorses to produce a simple workstation. The company also sells the necessary drill bits and stop collars; a variety of square-drive screws for softwoods, hardwoods and composites; special wood plugs that fit into the pockets; and a clamp that keeps workpieces flush as they're screwed together. The jig plus a drill bit and stop collar cost about \$120.

Pocket-hole joinery is now commonly used for making face frames for manufactured kitchen cabinets. I recently used Kreg's jig to make some face frames. It's extremely fast and accurate. The jig can be used for assembling cabinet doors and drawers, for putting bullnoses on countertops, for attaching handrails to posts and for driving screws up through floor joists into subflooring to eliminate squeaks (by unbolting the top portion of the jig and using it in place). □

*Bruce Greenlaw is a contributing editor of Fine Homebuilding. Photos by the author.*



**Pocket-screw joinery is fast and strong.** Kreg's pocket-hole system joins two pieces of wood with countersunk, self-tapping panhead screws that can be concealed by angled wood plugs. Screw holes (pockets) are produced using a stepped drill bit and an aluminum jig.

#### **Star-M USA Inc.**

2283 Ringwood Ave., Suite E-1  
San Jose, Calif. 95131-1717  
(800) 447-7876

*Imports Japanese countersinking drill bits and a door-lock installation kit that includes a fast-cutting four-tooth hole saw and a speedy auger bit.*

#### **Trendlines Inc.**

135 American Legion Highway  
Revere, Mass. 02151  
(800) 767-9999

*Sells keyless chucks; adjustable countersinking drill bits; plug cutters; round-shank and hex-shank Vix bits; high-carbon steel and carbide-tipped Forstner bits; and a right-angle drilling attachment.*

#### **Veritas Tools Inc.**

12 E. River St.  
Ogdensburg, N. Y. 13669  
(800) 667-2986

*Sells Snug-Plug cutters that make tapered plugs and a flush-cutting plug saw.*

#### **Vermont American Tool**

P. O. Box 340  
Lincolnton, N. C. 28093  
(704) 735-7464

*Sells quick-change adapters, adjustable countersinking drill bits, plug cutters, nail spinners, Forstner bits, glass-and-tile bits and a flexible extension shaft.*

#### **W. L. Fuller Inc.**

P. O. Box 8767  
Warwick, R. I. 02888  
(401) 467-2900

*Sells adjustable countersinking drill bits, plug cutters, hex-shank and round-shank Vix bits, Forstner bits, glass-and-tile bits and hex-shank adapters for round-shank bits.*

#### **wolcraft Inc.**

1222 W. Ardmore Ave.  
P. O. Box 867  
Itasca, Ill. 60143  
(708) 773-4777

*Sells adjustable countersinking drill bits and a heavy-duty flexible extension shaft.*

#### **Woodcraft**

P. O. Box 1686  
Parkersburg, W. Va. 26102-1686  
(800) 225-1153

*Sells adjustable countersinking drill bits, plug cutters, Vix bits, keyless chucks, Forstner bits and Dowl-it doweling jigs.*

#### **The Woodworkers' Store**

4365 Willow Drive  
Medina, Minn. 55340  
(800) 2794441

*Sells cabinetmaking drill bits and accessories, including countersinking drill bits, plug cutters, Vix bits, Forstner bits and nail spinners.*

#### **Woodworker's Supply Inc.**

1108 N. Glenn Road  
Casper, Wyo. 82601  
(800) 645-9292

*Sells drill adapters; countersinking drill bits; plug cutters; round-shank and hex-shank Vix bits; keyless chucks; Forstner bits; a right-angle drilling attachment; wolcraft's flexible extension shaft; hardened-steel drill bushings; and Dowl-it doweling jigs.—B. G.*