

Portable Power Planes

How these versatile tools can true framing lumber and clean up trim

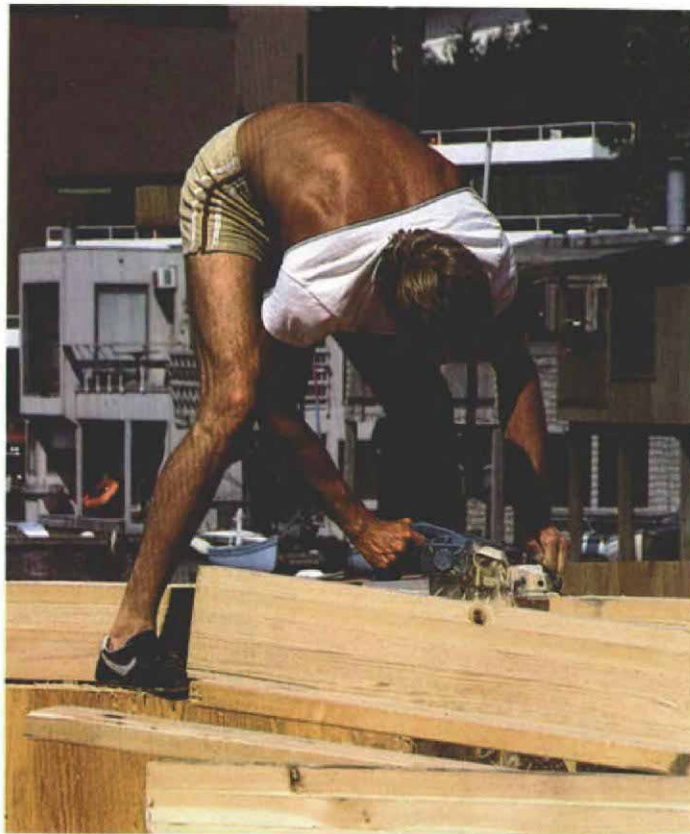
by Geoff Alexander

Portable power planes can solve many of the problems that come up on the construction site during framing and finish carpentry. By removing a thin layer from a piece of wood, power planes can improve the appearance of the surface by taking out saw marks, dings and other blemishes. And they're good for fitting and scribing trim. With repeated passes, power planes can straighten or taper studs, joists, rafters and beams, as shown in the photo at right. A lot of this work would be unnecessary if all framing lumber were dimensionally stable and free of twists and bows, if houses were built perfectly square, plumb and level, and if all carpenters, sheetrockers and other tradesmen did flawless work. But they don't. So my power planes get steady use.

In size, shape and function, power planes resemble hand planes, but they work like machine jointers, turned upside down and held by hand. On a hand plane, the sole is a single flat surface with a slot, or throat, through which the blade protrudes. You adjust the depth of cut by moving the blade up or down in relation to the sole of the plane. But the sole of a power plane, like the bed of a jointer, has two separate surfaces, one in front of the knives, one behind. The cutting edge of the knives is always aligned exactly with the plane of the rear shoe, and you change the depth of cut by raising or lowering the front shoe. When the front and rear shoes are in exactly the same plane, the knives will just skim the work surface and make no cut at all.

What's on the market—In my view, there are four types of power planes, with slight design variations among manufacturers. The planes all have the same basic working parts (drawing, facing page)—a motor, a rotary cutterhead that holds either fixed or adjustable knives, a two-piece shoe, one or two handles

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Power planes are the best tools for truing up and trimming framing members that have been nailed in place. Here a carpenter levels a crowned gluelam beam to align it with the second-story floor joists.

and a mechanism for adjusting the depth of cut and for aligning the rear shoe with the cutting arc of the knives (or knives with the shoe). Most planes have a detachable fence to help guide the tool past the work, an especially useful feature for trimming or beveling the edge of a door, window or board.

The four types differ by size and by the kind of cutterhead-drive system they have. In my business, we do everything from the rough framing of additions and new construction to finish work and architectural detailing. So I own one of each kind of power plane.

The first type is the direct-drive, or sidewinder (top photo, p. 45). The motor hangs down below the level of the surface being planed because the cutterhead is mounted directly to its rotor shaft. The direct-drive model is designed for edge planing, and its sole is only 2 in. wide. The low-slung motor helps stabilize the tool during long passes down the

edge of a door or a joist or rafter. The sidewinder I own is a Rockwell (now Porter-Cable) 126 Porta-Plane. Of all the power planes I have, this is the one that I use most.

All of the other three types of power planes have their motor mounted above the cutterhead, with a drive belt connecting the motor shaft to the cutterhead arbor. This arrangement gets the motor away from the sole, and makes the tool suitable for surface planing, even in the middle of a wide board or panel.

I group the belt-driven power planes by size because I use each type in a very different way. The smallest and lightest is the Porter-Cable 167 Power Block Plane. It's designed for one-handed use. The on/off switch is right at your fingertip, just where it ought to be. Its light weight and maneuverability let you work in situations where using a larger plane would be awkward or impossible.

The second type of belt-driven power plane is available from many manufacturers. I call it the standard size. It has a 3-in. cutting width, and a shoe length of from 11 in. to 18 in. I use the Makita 1900B, which is on the short end of this range, but others have nice features, too. Porter-Cable's 653 Versa Plane is also standard size. The great virtue of these planes is that they can perform a very wide range of tasks. They are small enough to be highly mobile, yet substantial enough to do fairly precise work; light enough to hold overhead for a short time, yet powerful enough to shave down protruding framing members. If I had to get by with only one power plane, I'd probably choose a standard size.

The fourth type of power plane simply makes possible tasks that otherwise could not be done, or that would be so prohibitively difficult or expensive to accomplish that I would not attempt them. I'm talking about the Makita 1805B. It can remove a swath of wood 6½ in. wide and ¼ in. deep in a single pass. The 1805B was the first power plane of its size to be made available in the United States. Hita-

chi's six-incher is now being sold by many tool suppliers.

The Makita 1805B and other planes like it are made for heavy-duty surfacing work on large beams and timbers. If you work often with gluelams or heavy framing, you will want one of these big planes for sure. It also makes a dandy job-site jointer for one who does a lot of finish carpentry.

Another uniquely Japanese aspect of all the Makita planes is that the knives themselves are made of laminated steel. The cutting edge is a relatively small piece of hard, brittle high-carbon steel, while the body of the knife is a softer low-carbon steel. In theory, the harder edge can take and hold a razor sharpness, but the tough body will still be able to withstand shock and abuse.

Cutterheads—There are two basic kinds of cutterheads: those with straight knives and those with spiral (helical) knives. Most power planes have straight knives, but those on Porter-Cable planes are helical. Planes having straight knives have fixed rear shoes, so the knives themselves are adjusted up and down for proper alignment of the cut. Helical knives are permanently fixed to the cutterhead, which means the rear shoe of the plane must be adjustable.

There are advantages to each type of knife. Helical knives have a lower cutting angle than straight knives, and will cut more smoothly, more quietly, with less power consumption and less wear and tear on the machine. Helical knives stay buried in the cut for a longer part of each revolution than straight knives do, and properly sharpened, will leave behind a cleaner, less scalloped surface. Helical knives have a shear-cutting action, which means less chance of tear-out and pecking in woods with irregular grain.

While either style of knives is easy to sharpen with a grinder, razor sharpness requires honing after grinding, and honing is much easier to accomplish on the removable straight knives.

Porter-Cable's 653 Versa Plane has carbide-tipped knives. You have to send the cutterhead out for sharpening.

Principles of use—Like all other cutting tools, power planes work remarkably better when they are sharp. Power planes are designed to work properly when the cutting edges align perfectly with the rear shoe. Set the cutters so that they just touch a straight-edge held against the rear shoe. You will always have to make this adjustment after you've sharpened the cutters. Locking the adjustment in place is easy on all the planes, but Makita has wisely made it more difficult to re-install the knives incorrectly than to install them the right way, though you must be sure to get the mounting screws very tight.

In most situations, you want to use a power plane to create a smooth, unbroken surface from one end of a board to the other. To do so, make each cut in one continuous pass along the full length of the board. Begin by entering the cut with firm downward pressure on the front shoe. Then as the entire sole comes to bear on the stock, shift your downward pressure to the rear shoe. Maintain the pressure on the rear shoe until the cutter has cleared the end of the work.

There is a knack to making smooth cuts, and I usually warm up on scrap stock to check the adjustments and to recapture the rhythm of a smooth stroke before starting a new job. It almost always improves the quality of the cut if you keep two hands on the plane, one in front and one in back. If you have to move your feet during the cut, make sure that your path is clear, and that the cord can't catch on anything (including your feet) during the cut. You don't want to have to stop the cut halfway through and then start up again. Many of the planers have a device for directing the cord away from the path of the cut, and these can be useful, but when I'm making a long cut, I almost always carry the cord over my right shoulder and across my back.

Tapering—In some cases you can't get the desired result by planing from one end to the other in a continuous pass.

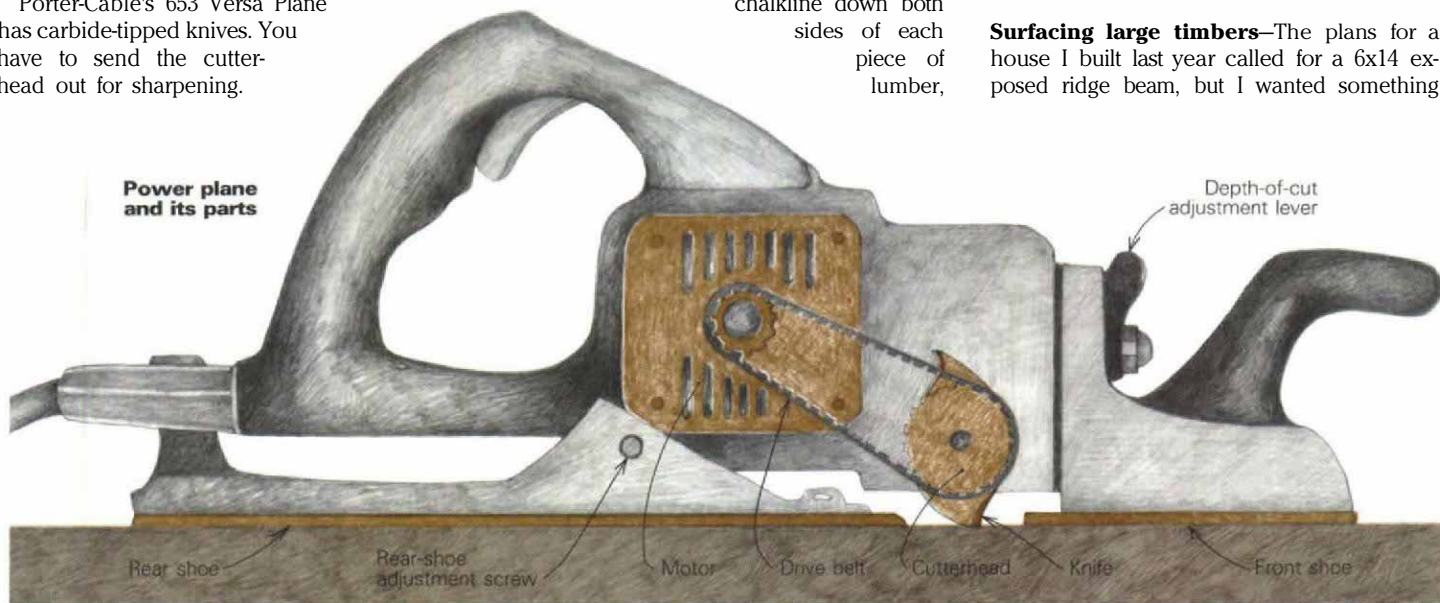
To cut a slight taper, snap a chalkline down both sides of each piece of lumber,

secure it on edge, and make the first pass 6 in. to 12 in. away from the end from which most of the stock will be removed. Back up another 12 in. or so for the second pass. Increase the length of subsequent passes until your planed surface is parallel to the line, at which point you keep removing wood until you've cut halfway through the chalkline. Snapping a line on both sides of the lumber helps guard against planing an out-of-square edge. For greater tapers, rough-cut close to the line with a circular saw and clean up with the power plane.

Truing framing members—To straighten joists, rafters or beams, it's sometimes necessary to flatten the crown of the bow, which means that the dimensions will remain true at both ends of the member. Snap a chalkline on both sides of the lumber to guide the cuts. Make the first pass about 8 in. in front of the center of the crown to produce a straight surface on the top edge parallel to the line. Increase the length of subsequent passes by 6 in. to 8 in. until you split the chalkline with an unbroken pass from one end to the other.

Concave cuts—If you are trimming to a scribed line that is straight, or nearly so, any of the planes except the big one will do a good job. For irregular or concave cuts, however, I prefer the Porta Plane. I misadjust it so that the cutters protrude slightly below the rear shoe. With this setup, you can remove a lot of wood in a hurry, so start with the depth of cut adjustment fairly shallow and experiment to find the best setting for making concave cuts. Be sure to return the rear shoe to its proper adjustment when you are through. Another method that works more slowly, but with less risk of error, is to leave the rear shoe adjusted correctly. Then, with your left hand on the depth-of-cut adjustment knob, lower the cutters as you pass over low spots in the line, and raise them to skim over the high spots. With both systems, I usually give the cut a final touch with a hand block plane held slightly askew as it runs down the wood.

Surfacing large timbers—The plans for a house I built last year called for a 6x14 exposed ridge beam, but I wanted something



much more massive, and I found it at a used building-supply yard—23-ft. redwood 10x16s whose surfaces were so battered that the dealer sold a pair of these to me for \$40. I used the Makita 1805B (photo, bottom) to take $\frac{1}{2}$ in. off the bottom edge and $\frac{1}{4}$ in. off of each side to reveal unmarred wood. The result was spectacular. The beams were almost totally clear, virgin-growth redwood, so straight that I could have milled door stock from them. This one job alone justified the substantial cost of the 6 $\frac{1}{2}$ -in. power plane. It took only eight passes to remove $\frac{1}{2}$ in. of wood 10 in. wide—about 15 minutes of work. Without the big power plane, I wouldn't have even considered the job. Not that there aren't other ways to surface a 10x16 beam. I have a friend with a huge 16-in. wide jointer who would have been happy to give it a try. But who would be crazy enough to try pushing a 600-lb. beam down a jointer?

For the rafter beams in the same house, we used 4x12s. Because the drywall was going to

come up around the rafter beams, I didn't want to use green lumber, as it would inevitably shrink away from the drywall and leave gaps. New, dry 4x12s are expensive, but used ones aren't, and the Makita 1805B made quick work of surfacing the ones I found.

When you're working with used lumber, search carefully for broken nails or other debris lurking at or beneath the surface. Pore over the wood from one end to the other. And do it again. An unseen nail or staple can nick or, in extreme cases, ruin a set of knives.

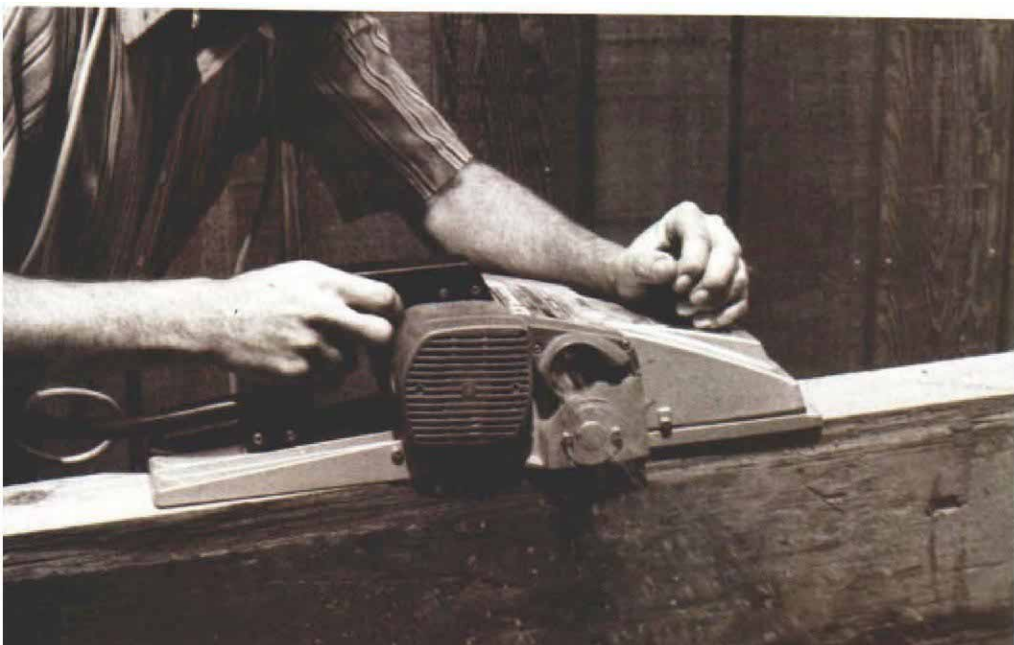
Fitting doors—Here the power plane shines. Except for prehung doors, almost every door I hang has to be trimmed to fit, beveled a few degrees on the hinge side, and beveled 4° on the latch side. For trimming and beveling the edges of a door, I like to lay it flat over two sawhorses, with its best face down, then make all the trim cuts with my Porter-Cable 126 Porta-Plane (photo facing page, top). With the door flat, I can trim all four edges without having to move anything but the tool.

The Porta-Plane adjusts for bevels quickly and accurately, and when I'm edge-planing on a horizontal surface, the weight of the Porta-Plane's direct-drive motor is almost centered over the edge of the cut. In this position, the plane handles well. I keep my left hand on the fence, at the front end of the plane. And I use both hands to ensure that the shoe and the fence make snug contact with the work.

When I'm planing the top and bottom edge of a door, the cut begins and ends on end grain. Cutting the end grain is no problem, but it can chip out at the end of the cut; so I either stop the cut shy of the end and come back from the other direction, or score the far side of the cut deeply with a utility knife, and plane right through.

Cleaning up sawn edges with Porter-Cable's Power Block Plane, left, is easy. Because it's light and compact, this plane is well suited to working overhead, and in tight spaces.

For surfacing large timbers, the Makita 1805B, shown below, can cut a path 6 $\frac{1}{2}$ in. wide in a single pass, and makes recycling used materials an attractive alternative to buying new stock.



Correcting framing errors—Let's say you are getting ready to hang drywall, and you discover that one end of a 4x8 window header stands proud of the wall by $\frac{1}{4}$ in. The window is in place and the exterior siding is on, so you can't bash the offending member into place. The sheetrocker would keep right on hanging rock, but if you're the guy who did the framing and you're also going to hang the drywall and trim out the window, it's time to reach for the power plane. The smallest standard size you've got is best here. You need some power, but you'll be working on a vertical, overhead surface, so light weight is a big plus. Be sure to set all the nails at least $\frac{3}{8}$ in. below the surface before you begin to make repeated passes on the face of the header, using a shallow ($\frac{1}{32}$ -in.) setting, and entering the header from the protruding end.

Standard-size power planes are also useful for trimming studs standing proud of a wall, for evening up stair stringers, and for correcting other framing irregularities.

Exterior siding—In sidewall shingling, if you are weaving inside or outside corners, the power block plane is a natural for trimming to fit. If you're siding with plywood or any type of rabbeted horizontal siding, you may well have to custom-rabbet some of the joints. The block plane and several of the standard-size planes can cut crude rabbets easily, if you work carefully and have a steady hand. I use a table saw or router for visible joints.

Removing saw marks—In custom finish work, stock often has to be ripped to width. If the ripped edge shows, the saw marks must be removed. With a power plane, you can clean up skillsaw rips effortlessly. All of the planes are good at this job. For freehand work the power block plane is easiest to handle (photo left), but the Porta Plane makes a smoother cut.

Fitting trim—Let's say that the sheetrockers beat you to that protruding header I mentioned earlier. If you are mitering the joint between side casings and head casing, and the shoulders of the door frame are not flat in the plane of the wall, then you may well have difficulty getting the miters to fit. Patience and a sharp power plane can solve the problem. You need to shape the back face of the stock—it's an ordinary scribing problem turned 90°, and your scribing line will be on the edge of the board. Mark the edge to fit the wall and then plane the back to your line. If you have to remove a little extra material in the center of the board, drop the cutter slightly below the rear shoe. But be careful.

It may also help to back-bevel the miter a few degrees using the Power Block Plane. Work down from the mitered corners, keeping the meeting parts the same thickness. Remember that the goal of finish carpentry is to create the illusion of perfection, not perfection itself. Therefore, if you get the miters to fit tight and flat, quit fiddling. Squirt in some glue, and start nailing. Be sure to get at least

one good nail through the miter itself. If the wood is going to be oiled or stained, sand the glued miters immediately after nailing. I use 100-grit garnet paper and sand until there is no glue residue on the surface. Sanding before the glue dries not only provides a final flattening of the joint, but also removes any excess glue and help fill any remaining gaps in the joint with a mixture of sawdust and glue.

Most of the planes have an optional adjustable fence that allows beveling and chamfering. The Makita 1900B has a groove down the center of the front shoe which makes it easy to cut a chamfer without a fence. It's fairly easy to plane skillsawn plywood edges clean enough to glue on nosing. I prefer the Porta-Plane for plywood, because it's the easiest for me to maintain a square edge, and because its high rpm and its helical knives handle the mixed grain directions with little tear-out.

Keep in mind that there's no substitute for a sharp block plane—the hand-powered type—for the final cuts on pieces of trim. You get greater control, and produce a smoother, more polished surface. Power planes are fine for most work and gross stock removal, but a hand block plane will refine your results.

A job-site jointer—Makita makes a planer-stand accessory for each of its power planes. The planer stand is designed to hold the plane securely upside-down for use as a jointer. These have some merit even for the standard-size planes, and when the big Makita is mounted on its stand, it becomes a very reasonable 6-in. jointer (photo below right) that can be carried to almost any job site comfortably by one person in one trip. This has proved so useful as an on-site jointer that I have built a support table on which the planer stand is permanently mounted, and which doubles as a carrying case for the planer stand and other accessories. To improve the plane's capability as a jointer, I have added an auxiliary wooden fence to the stock fence. The new fence contacts the shoe of the plane to prevent the cutterguard from jamming under the fence. I have also painted markings with fingernail polish on the underside of the adjustment knob to make it easier to set the depth of cut while the plane is on its stand.

Sharpening—Porter-Cable and Makita, as well as some of the other manufacturers, sell sharpening kits for their power planes. The sharpening kits that I know about use the plane motor as a power source for a small grinding wheel, and use the plane's body for mounting a jig that holds the knives. Having the sharpening kits on the job is best if you use your power plane on a regular basis.

The Porter-Cable sharpening device is

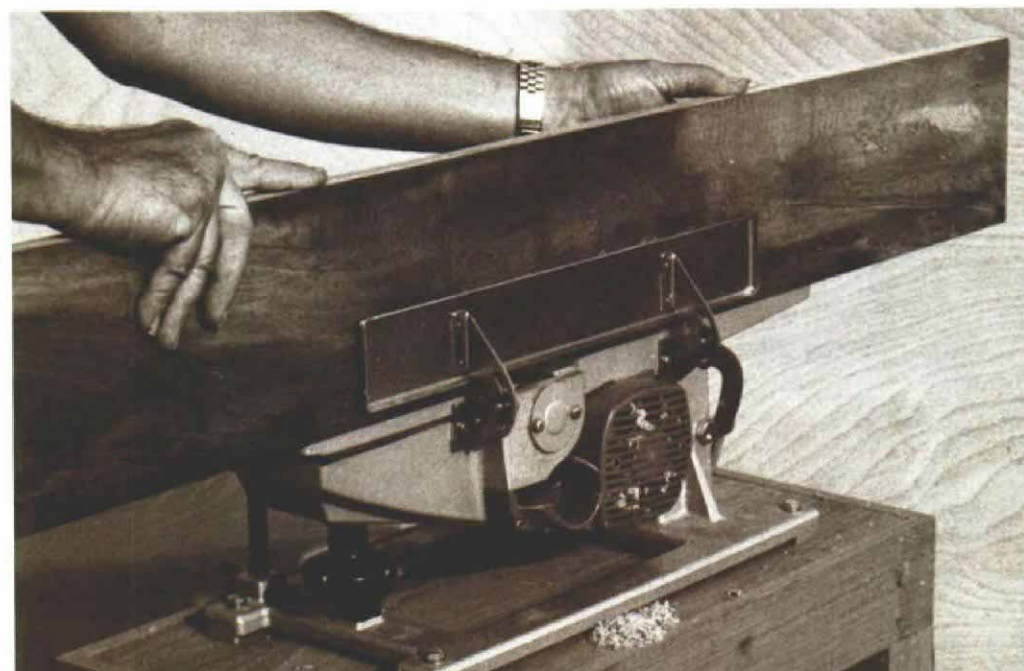
made to hold the entire cutterhead on a mandrel that is moved laterally and rotated at the same time. This compound action is necessary because the knives are helical. The Makita sharpening attachment works in a more conventional way. It's a hooded grindstone/tool-rest assembly that mounts on the rear of the plane. The knives are clamped in a bar, which slides along a track on the tool rest.

All of the sharpening systems work well, and all are fairly straightforward to set up and operate. I can disassemble, sharpen and reassemble my Power Block Plane in around 15 minutes. The big Makita takes half an hour. I try to keep two sets of cutters on hand for each power plane, and try to sharpen them both with one setup.

The Makita planes also come with a "sharpening holder"—a simple but effective jig for honing the knives on a Japanese waterstone (not included, but an inexpensive accessory). The jig, of course, would also work if you were using an oilstone, but Japanese waterstones

cut fast, stay cool, don't require oil, and are cheaper than oilstones. The jig holds the two knives in such a position that if both knives are kept in contact with the stone, they will be honed at the correct angle. If you avoid planing rough materials and lots of used lumber, and keep your knives free of nicks, you can keep them sharp by honing, something you can do several times before you have to re-grind the bevels. In most of my work, I use edges right from the grinder. But if I'm doing pretty work (as opposed to surfacing used timbers), I hone my knives on the stone after grinding all of the nicks out of them.

Safety—Jointers are notorious for eating fingers, and power planes are portable jointers that can be set down on things. A rotary cutterhead can chew away flesh quickly, even when it's coasting to a stop. So be careful. Unplug it when you're fooling with its knives or adjusting the rear shoe. Watch where you put it down, and keep it out of the dirt. □



The Porter-Cable model 126 Porta-Plane, above right, is designed for trimming the edges of doors, sash and framing lumber.

The Makita 1805B, shown at right, can be inverted and mounted on a stand to become a job-site jointer that is good for truing and fitting trim. Photo: Geoff Alexander.