

An Exemplary Folding Workbench

Ingenuity, some scrap wood and \$60 of hardware are all it took

by Jefferson Kolle



An open-and-shut case. Kazimierz Pawlik uses a sliding compound-miter saw to cut a long board on his workbench. The saw sits on two sliding tables ganged together, and the end of the board rests on one of the adjustable outfeed rollers. Folded up, the bench is less than 2 ft. by 4 ft. by 18 in.



If necessity is the mother of invention, then Kazimierz Pawlik might well be the father. He used scrap oak from a couple of his jobs and adapted common hardware available at Kmart to build a workbench as sturdy as a plow horse and as versatile as a Swiss army knife.

During the mid-80s, Pawlik left his architectural practice in Poland and came to the United States. But he wasn't licensed in this country, so he couldn't practice architecture. Pawlik got a job as

a carpenter's helper near Bethlehem, Pa. After a couple of years, he started his own company specializing in finish work.

Pawlik and his crew work at incredible speed and to a high level of quality. They typically trim out a 3,000-sq. ft. house in three days. Pawlik's ingenuity is evident in everything he does: the way he has outfitted his work van, the gauge he made to cut stair treads, the jig that enables him to install a prehung door in one minute.

But perhaps his most ingenious invention is the workbench he designed and built. He wanted a bench that was portable, sturdy and easily adaptable to diverse jobs.

The most remarkable aspect of Pawlik's bench is that its multiple tasks are accomplished without any sort of Rube Goldberg-like gyrations. Everything operates simply and smoothly. The whole bench weighs about 50 lb. Metal parts are used where needed, but where wood will suf-



Stretchers and rollers. The stretchers are lightened by cutouts in the plywood. The outfeed rollers are held by turn screws made of a carriage bolt and a wood knob.



Sliding tables. Both sliding tables ride on oak runners. Each table is equipped with three bench dogs and a vise.

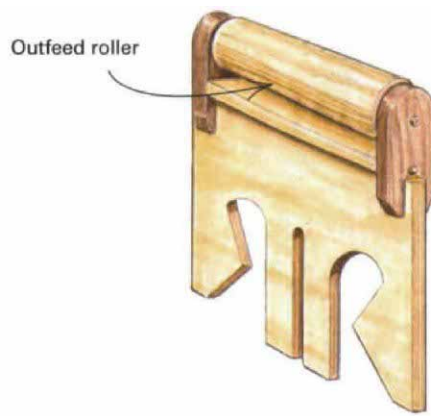


Custom clamps. Pawlik modified locking C-clamp Vise-Grip pliers by cutting off one of the swivel pads and welding two 1/4-in. rods on the jaws. The thin jaws fit into the bench-top slot and act as clamps.

fice, dovetails and butt joints account for the bench's strength.

When folded up, the bench is small—23 in. by 43½ in. by 17½ in. (inset photo, p. 63). When unfolded, the bench becomes a multipurpose work surface 32 in. high and 85½ in. long.

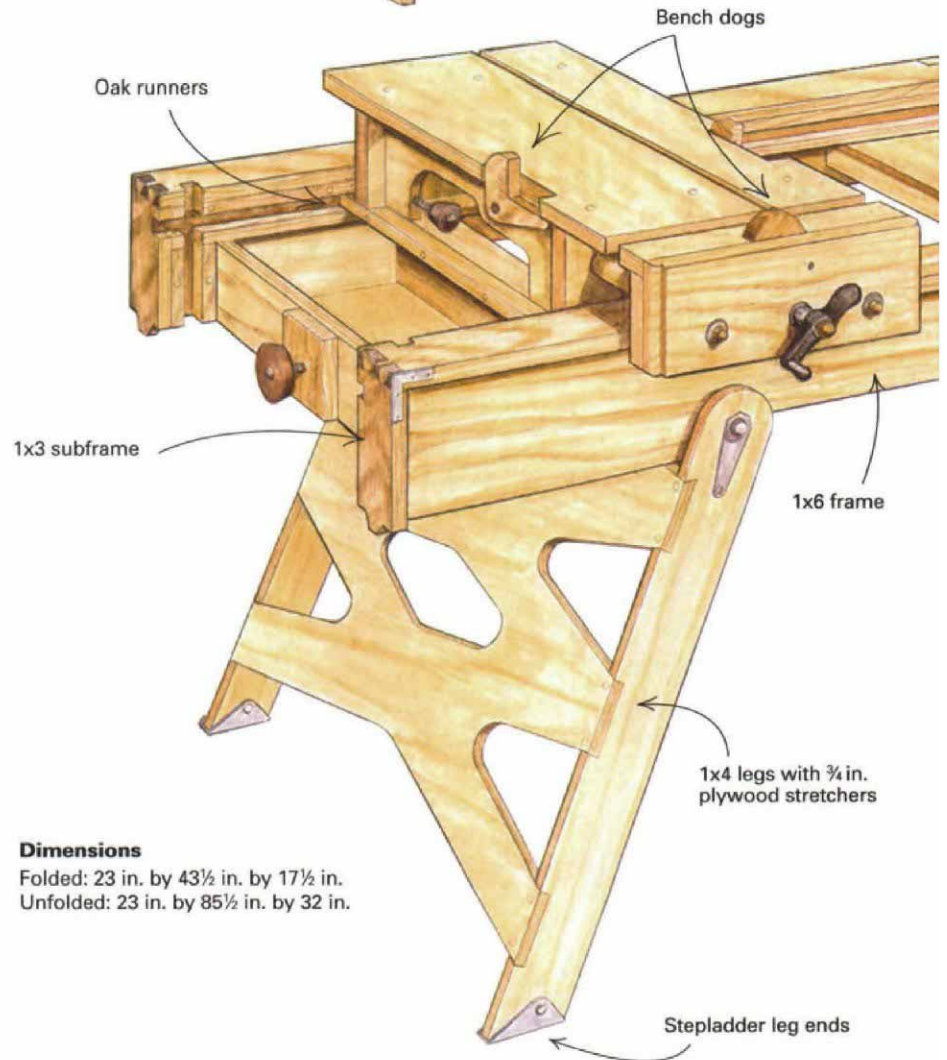
A hinged frame and folding legs—The backbone of the bench is a 1x6 frame to which most of the components are attached (drawing above). The frame folds in half on hinges made of oak knuckles and carriage-bolt pins. To keep the carriage bolts from spinning in their holes,



Outfeed roller

A Portable, Folding Workbench Simple and ingenious

To accommodate wood of different lengths, the sliding tables move on oak runners. The hardware used to build the bench was made of items commonly available at hardware stores.



Dimensions

Folded: 23 in. by 43½ in. by 17½ in.
Unfolded: 23 in. by 85½ in. by 32 in.

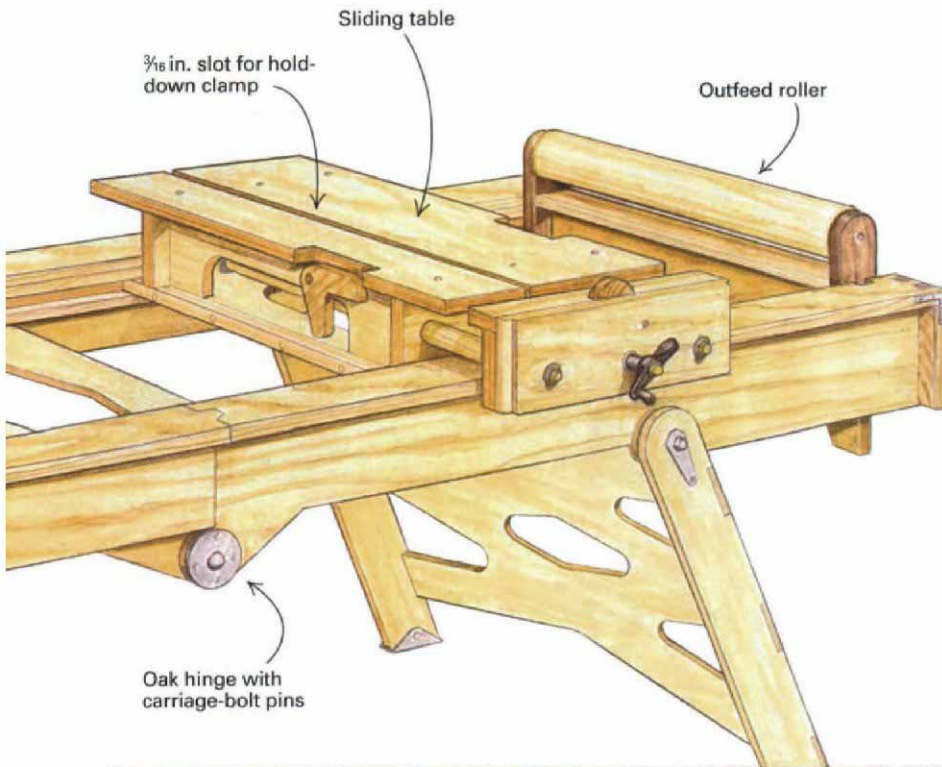
Pawlik filed square the holes in large galvanized washers, which are riveted to the oak.

To keep the bench frame rigid, 1x3s are screwed along the top edges. At the hinge, where the two halves of the frame butt, keys cut into the subframe register the two halves of the frame when it is folded open, providing further lateral rigidity (middle photo, facing page). Other keys cut into the 1x3s register the two halves of the frame when it is folded up.

The bench rests on two pairs of legs strengthened and kept from racking by plywood stretchers. Cutting out sections of the plywood reduced

the weight of the stretchers without substantially diminishing their strength (top photo, above). The top edge of the plywood stretchers acts as a stop for the canted legs when they are unfolded.

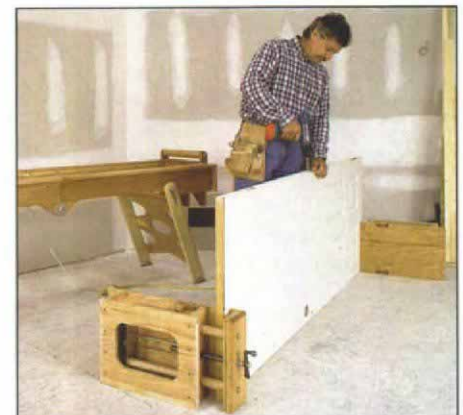
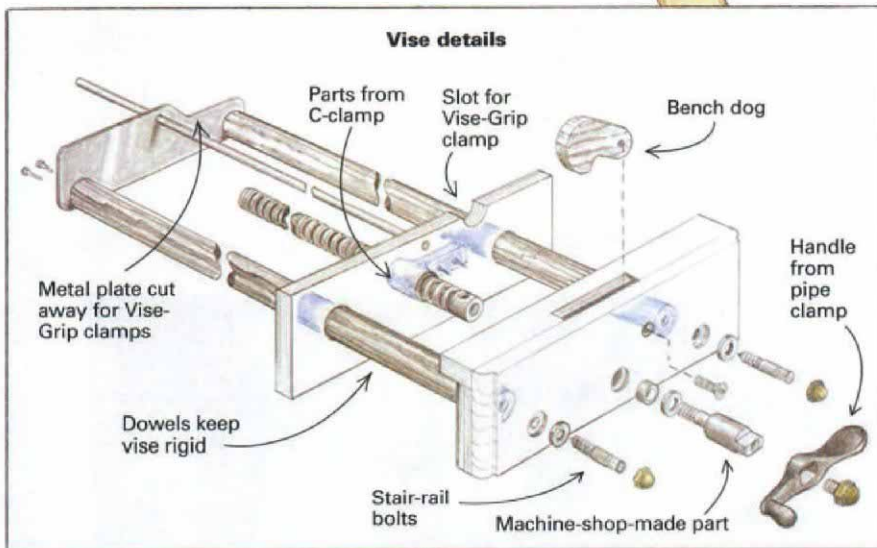
Sliding tables and outfeed rollers—If the folding 1x6 oak frame is the backbone of Pawlik's portable, folding workbench, then the bench's two sliding tables are most certainly the hands. Each table has been equipped with a multitude of hold-down devices, including a vise, three bench dogs and clamps made of modified Vise-Grip pliers.



C-clamp vise. Pawlik used the screw mechanisms from large C-clamps to make the vises for the bench's sliding tables. Hardwood dowels serve as guides for the vises' jaws.



The key to rigidity. A key cut in the 1x3 sub-frame helps register and stabilize the bench's frame when it is open.



Door vise. Pawlik uses the sliding tables as door vises by removing them from the bench and setting them on the floor.

The vises are made of parts of C-clamps and pipe clamps, cut apart and modified. A machine shop tapped the end of the vise screws and fabricated the piece that holds the vise handle (top photo, above).

The three bench dogs on each sliding table are made of oak blocks. To account for seasonal fluctuations in the oak that might cause the dogs to bind in humid weather, Pawlik drilled a 1/4-in. hole in the back of each one that he filled with grease before assembly.

The plywood top of each table is divided into two sections, separated by a 3/8-in. slot into which

slide hold-down clamps made by modifying locking C-clamp Vise-Grip pliers (bottom photo, facing page).

The tables slide along the frame on oak runners (middle photo, facing page), and they can be fixed anywhere along the bench's length by tightening hand screws made of carriage bolts and turned-oak knobs. Long boards can be held in the bench by clamping a table at each end of the frame, or the tables can be ganged in the center to hold a sliding compound-miter saw (photo p. 63) or a small table saw. Pawlik also uses the tables as door vises (bottom photo, above).

At each end of the bench is a turned-oak outfeed roller that turns on an axle made of 1/2-in. PVC pipe. The height of the rollers can be adjusted with turn screws similar to the ones that clamp the sliding tables.

To see Pawlik work at his bench—cutting, sanding, planing—is like seeing a good short-order cook at his grill. His efficiency is made possible by the intelligence and the integrity of the design and the construction of his workbench. □

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