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- Weekend project: Complete a 4x4 Jeep with a working spring suspension
- Plus: A Jewelry Box, a Scroll Saw Blade Caddy and Hand Plane tune-up basics

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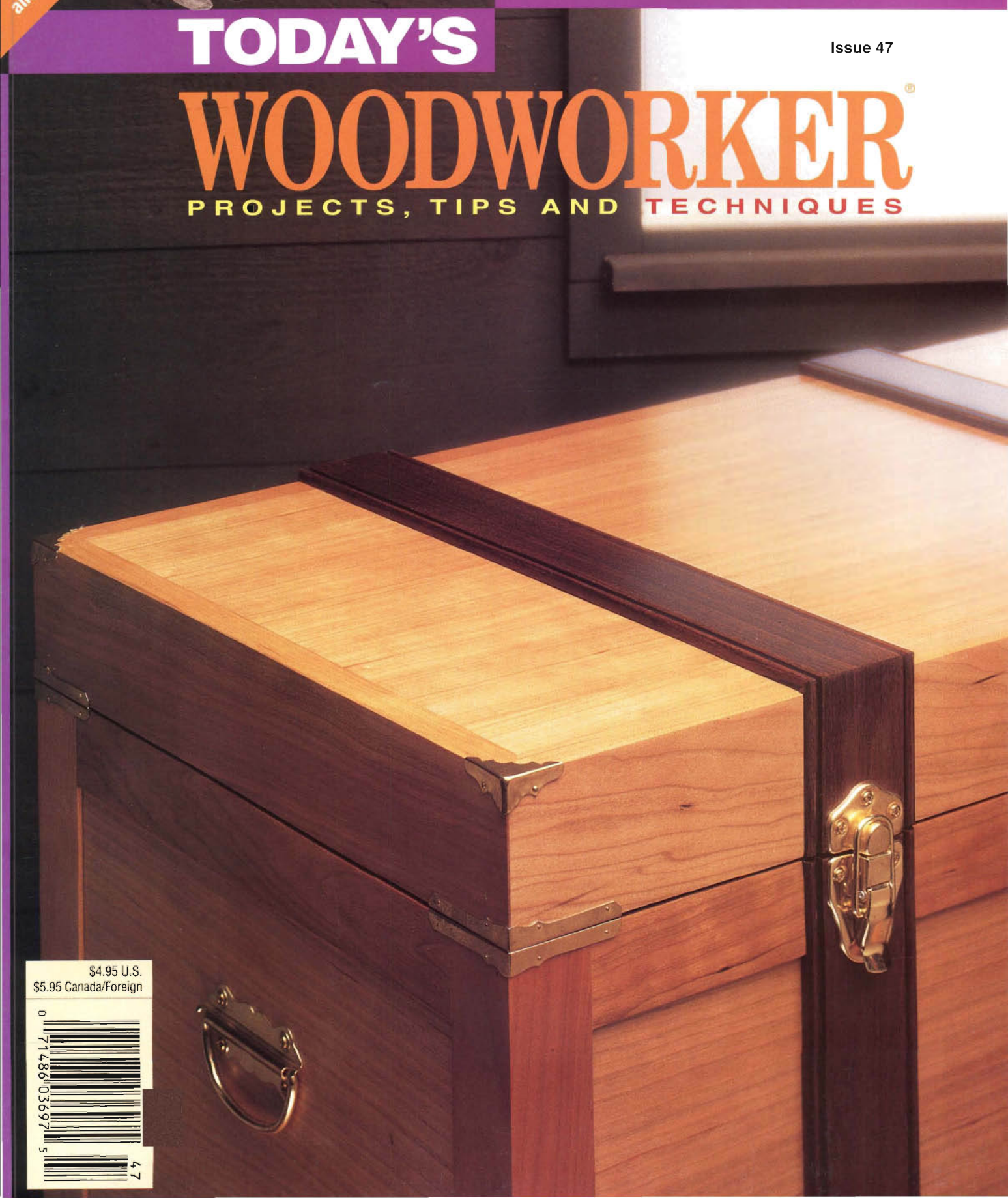
PROJECTS, TIPS AND TECHNIQUES

Issue 47



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TODAY'S
WOODWORKER®
PROJECTS, TIPS AND TECHNIQUES

Safety First
Learning how to properly operate power and hand tools is essential for developing safe woodworking practices. For purposes of clarity, necessary safety guards have been removed from the equipment shown in some of the photos and illustrations in *Today's Woodworker*. We in no way recommend using this equipment without safety guards and urge readers to strictly follow manufacturers' instructions and safety precautions.

A New Tool for Subscribers

Ah, September! Cool days and cooler evenings are with us again, and woodworkers everywhere are venturing back into their shops. Nothing makes this adventure more enjoyable than a great new tool, so this September we're sending all of our subscribers one ... free! I'm speaking of the **Sourcebook**, a copy of which has been included with this issue. (Note: If you picked up this copy of Today's Woodworker at your favorite bookstore or newsstand, call us at 800-610-0883 to request your own Sourcebook.)

Special congratulations to Bobby Taylor on his blue ribbon winning steamer trunk.

The Sourcebook is our way of saying thank you for all your support and encouragement over the past eight years. It's a 16-page, full-color publication packed with great woodworking ideas, project plans, hardware and shop products.

#

This issue of Today's Woodworker is definitely geared toward a return to the shop, with a project for every member of the family. College-bound kids will love Rick White's new and simpler version of the classic steamer trunk - a keepsake that is destined to become the focal point of many post-dorm living rooms. Smaller children (and every adult who's still a kid at heart) will be thrilled with the spring-loaded suspension system Dick Dorn developed for his rough and tumble Jeep, while Moms everywhere will melt at the sight of Sal Pontecorvo's dovetailed jewelry box. There's even something special just for your shop (if you can tear away from the Jeep): A clever blade caddy that can be set down by the scroll saw during use, and hung on the wall when it's no longer needed.

For me, returning to the shop after a long lazy summer invariably means that everything needs to be tuned up. In Today's Shop (page 28), Contributing Editor and hand tool expert Tom Caspar gets us started by tuning up the tool we'll all be reaching for soon - the hand plane.

#

I'm pleased to introduce the newest member of our staff: Advertising Director Walter Christie. Walt goes way back in the DIY field, having served tours with both Family Handyman and American How-To. He has lined up four advertising sales representatives around the country: Richard Railton, Beth Sullivan, Peter Uhry and Lisa Kollander. And that's not all the news from the advertising front: The Classified Marketplace on page 31 is making its debut in this issue, too. Check it out for some great products and services!

Finally, we would be remiss if we didn't give special recognition to Bobby Taylor, who won a blue ribbon for building the original steamer trunk from issue 29. Check out the letter from his Dad on page 30. Way to go, Bobby!

Larry N. Stoiaken

SEPTEMBER/OCTOBER 1996
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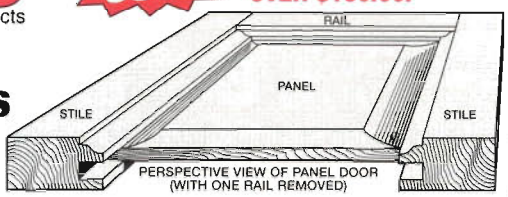

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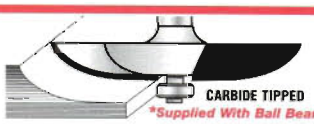

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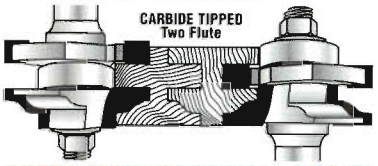

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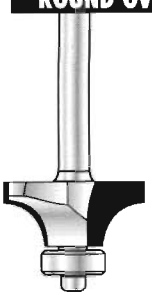

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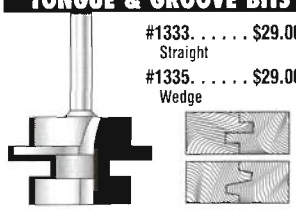

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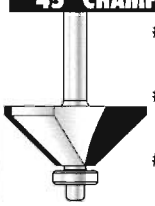

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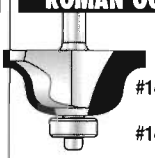

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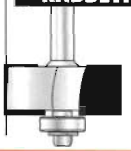

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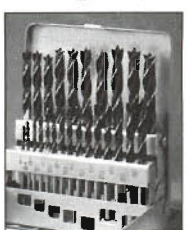

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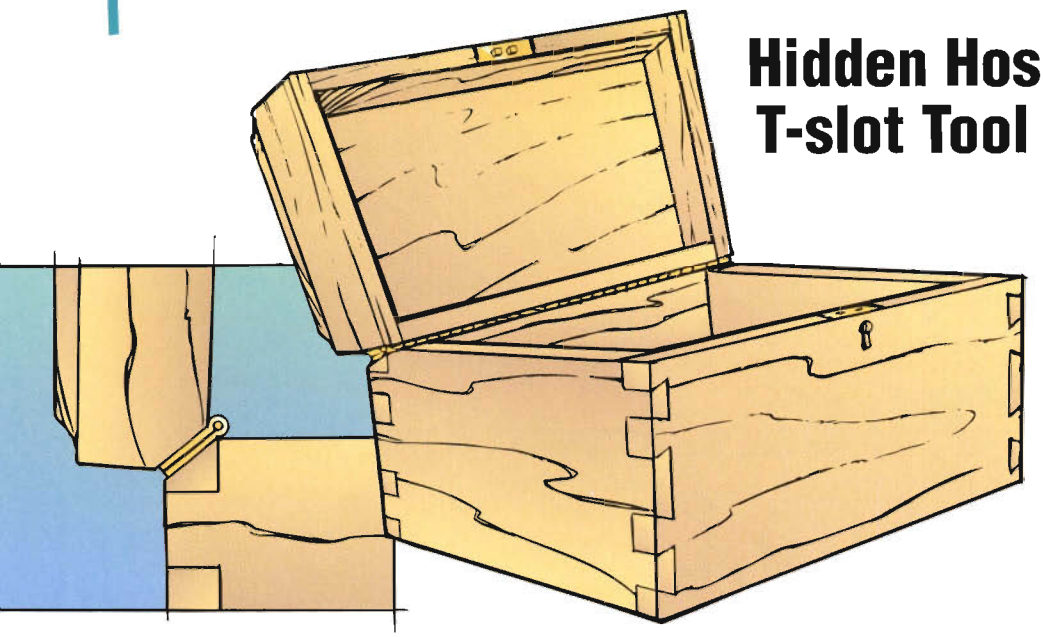


A More Efficient Lid Support

Every time I built a box, installing the lid support made me cringe. Not only did the support add cost to the box, but it usually interfered with whatever I wanted to put into the box. I have discovered an alternative to the lid support, especially on small boxes with lightweight lids. Cutting the lid and the box at an angle before setting the hinge makes for a self-supporting lid. Cutting 45° angles will keep the lid perpendicular to the box, but this is usually a little more than necessary and puts undue strain on the hinge and screws. In most cases, I find that 40° angles are sufficient to hold the lid open.

Michael Burton
Glorieta, New Mexico

Plastic Laminate Reduces Chip Out

I frequently do scroll saw work with very thin material (1/8" Baltic birch, etc.). There is always the problem of chip out from the saw blade. I have used a sandwich, but that is a waste of material. Now I purchase clear laminating plastic at an office supply store. The plastic comes 50 sheets in a box and they measure 9" x 12", so I have to cut 1/2" off the 9" side to fit them into my copier. I make a copy of the plan on this plastic, peel off the backing and stick it onto the wood that I am going to use. To prevent chip out on the bottom, I stick a piece of the clear laminate on the bottom and go to work. After I turn off the scroll saw, I just peel off the plastic and I'm done.

Jack Williams
St. Joseph, Illinois

PICK OF THE TRICKS

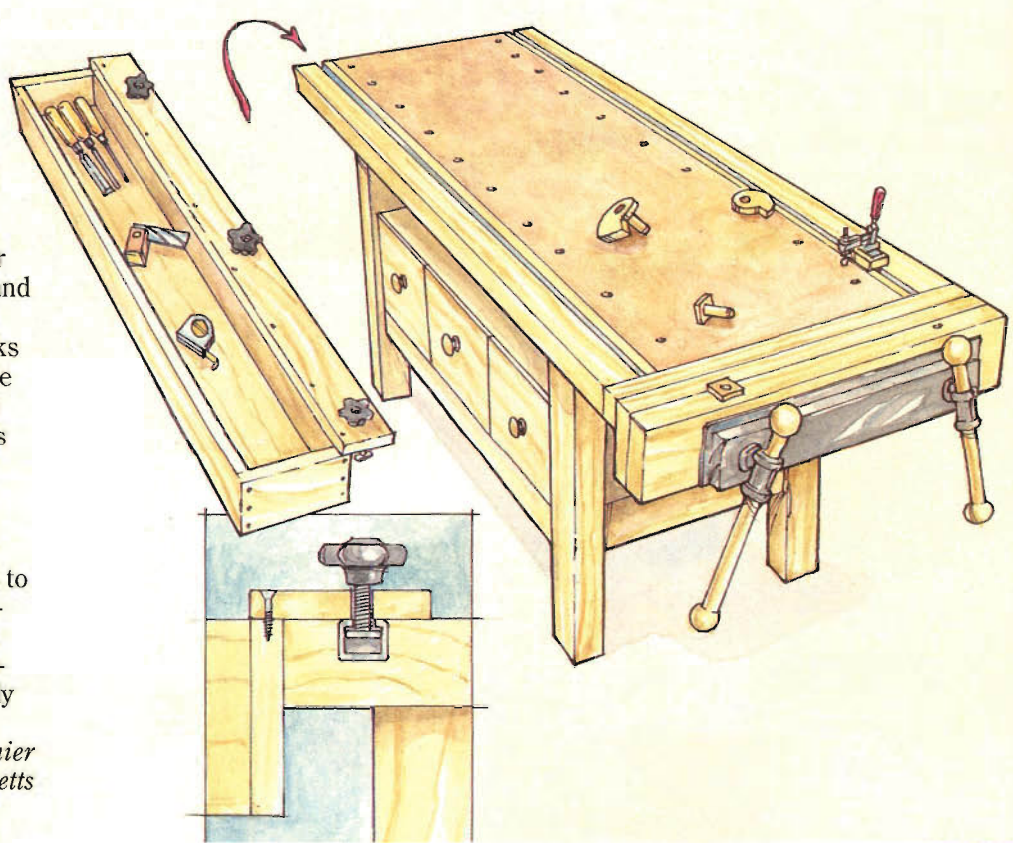
Removable Tool Tray Adds More Versatility to Budget Workbench

Last year, I built the budget workbench featured in issue 25 (January/February 1993) of Today's Woodworker. However, I opted for 4" x 4" mortise and tenon joinery and a hard maple top.

I liked the idea of the T-slot tracks which allow different type jigs to be used in this design. I'm now using your clamp support jig for glue ups and the T-square jig.

This year, I added a tool tray which makes my workbench even more versatile. A tool tray is very handy on some projects, but tends to get in the way when the entire surface of the workbench is required. My new design uses the T-slot system and as a result the tray is easily removed when it's not needed.

Joe Cormier
Peabody, Massachusetts



Winning the Air Hose Battle

For a long time, I battled my 100' air hose every time I needed just a little more than my yellow coil hose could reach. But now I simply pull as much hose as I need out of a 5-gallon pail. I drilled a 1" hole in the bottom for the male end to stick out and a 1" hole in the cover to push the hose in.

Thread the male end through the cap and then through the bottom of the pail. Put the cap on the bucket and push the rest of the hose in. Now you're all set to plug the male end of the hose into your air compressor and pull out as much hose as you need. The rest of the hose stays out of sight - and you won't have to spend a gazillion dollars on a retractable hose coil.

Jim Galewski
Winona, Minnesota

Masking Tape Eases Blade Changes

Here's a very simple suggestion for changing band saw blades, especially narrow ones: Two pieces of masking tape will prevent the blade from slipping off the top wheel while putting the blade around the bottom wheel.

Clifford Schwieger
Minneapolis, Minnesota

Today's Woodworker *pays from $40.00 (for a short tip) to $150.00 (for Pick of the Tricks) for all Tricks of the Trade published. Send yours to Today's Woodworker, Dept. T/T, P.O. Box 261, Medina, MN 55340. E-mail: editor@todayswoodworker.com.*

Quiet Oscillations

By Stan Schmidt

My first reaction to **Delta International's** benchtop oscillating spindle sander was unexpected: "Wow, is this thing quiet!" It's hardly as quiet as a mouse, but the B.O.S.S. is the quietest benchtop sander I've used. Ron Young, Delta product designer, credits the low noise level to the machine's weight (47 pounds, which helps decrease vibration) and its 1/4hp, 1725 rpm induction motor.

"We wanted more of a heavy duty machine than the rest of the competition," Young added. "In our research, we also found that most users aren't going to hog off a lot of wood, so they don't need more power. But they do need constant, efficient speed, which an induction motor does better than a universal motor."

Much of the weight comes from an 18" diameter cast iron table. There's also a dust collection fan that draws in dust through the table insert. Stroke is 7/8" with 60 strokes per minute. The sander, equipped with a 3/4" diameter sanding drum and sleeve, carries a street price of $188. An accessory kit (1", 1½", 2", 3" spindles and sleeves) retails for $65.50.

New and Improved

Manufacturers are constantly introducing new products and updating existing tools. Here are a few of the more interesting items that have crossed my desk in the last couple of months:

There are jigs galore for lining up and drilling holes for cabinet shelf pins. They all have one big problem - sooner or later, my drill bit enlarges the guide holes and I have to buy or make another jig. But **The Woodworkers' Store** catalog (1-800-279-4441) now carries 1/4" and 5mm self-centering bits that eliminate that hassle. The bits retail for $19.95 each or can be purchased with their JIG IT shelf pin drilling jig for $29.95.

I find it's nearly impossible to make perfect sliding drawers all the time. Invariably, at least one drawer sticks. **Slipit Industries,** Kingston, New York (1-800-303-0034) offers one solution: Slipit, a jelly-like, water-resistant compound that keeps wood from swelling and sticking in damp weather. Slipit works on wood drawers, rolltops, doors, even squeaky wheels. A one-pint can retails for $9.95.

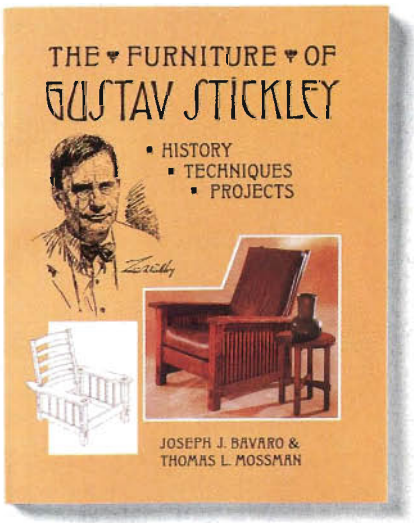
Short Takes

Milwaukee Electric Tool has introduced a 5" random orbit palm sander and a 10" Magnum slide compound miter saw with a 15-amp motor and a 12-inch crosscut capacity ... **Line Art,** Emerson, New Jersey (1-201-652-5367) has unveiled the Line Art Custom Carving System, a set of router templates that can create inlays on solid surfaces such as countertops, or carve designs on cabinets, moldings, doors, tables and furniture ... **Veritas Tools** is offering Chair Doctor Glue in a 4-ounce bottle that comes complete with a syringe and three sizes of needles ($6.95) ... **Skil Power Tools'** new plate joiner, HD1606:02, comes with a glue applicator bottle, biscuits, dust bag and vacuum adapter ... **Jet Equipment & Tools** has introduced the XACTA table saw fence system in 30" homeshop (under $300) and 50" commercial (around $329) versions ... **Bosch Power Tool's** three new dustless belt sanders - a 3x24 variable speed, a 4x24 variable speed and a 4x24 single speed - come with integral dust collection systems that can be used with bags or optional Airsweep accessories. Bosch's new variable speed reciprocating saw features the Clic wrenchless blade changing system ... **Delta International** has introduced the Precision Saw Guide table saw fence system with either 29" or 50" capacities.

Seen on the World Wide Web

http://goodwood.org/goodwood/
The Good Wood Alliance, formerly known as the Woodworkers Alliance for Rainforest Protection (WARP), has put its forest conservation message on the WWW. This site features a list of suppliers and producers of sustainably-harvested lumber, archives from Understory (the alliance's newsletter), photographs of furniture from the exhibition Conservation by Design (currently on tour around the United States), results of shop testing of lesser known tropical hardwood species and information about the Good Wood Alliance Fieldwork Fund.

http://www.stickley.com
If you're a fan of Gustav Stickley's Arts & Crafts furniture, you should read the book (page 9) by Bavaro and Mossman, but you also should check out the modern-day version of the furniture company Stickley started. L&JG Stickley has been owned by Alfred and Aminy Audi since 1974 (they're also restoring Stickley's Syracuse, New York, home). They moved the Stickley factory to Manlius, New York, in 1985. You can take a virtual tour of the factory via their WWW site, or you can browse through the Stickley construction features or their product catalog.



"The Furniture of Gustav Stickley"

This paperback reprint of the original hardcover by Joseph Bavaro and Thomas Mossman (Linden Publishing, $19.95) is a must for anyone interested in building Gustav Stickley's beautiful Craftsman furniture. The authors devote the first half of the book to the history of the Arts and Crafts movement; some background on Stickley (1857-1942), who was born in Osceola, Wisconsin; and the materials and methods he used to build his furniture.

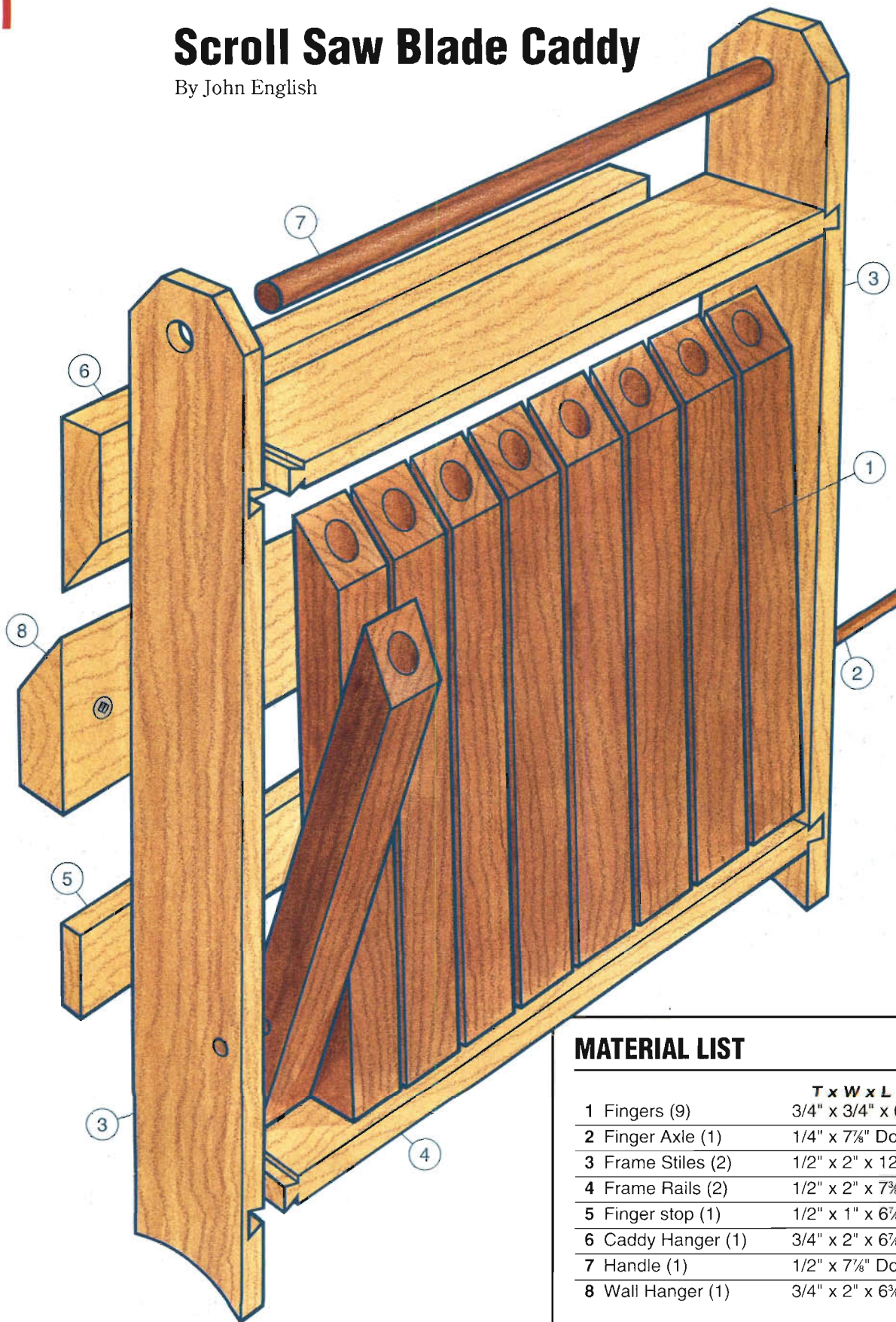
The second half focuses on Stickley projects, including working drawings and material lists: a simple mirror, a folding screen, a combination bookcase and table, a rocker, a recliner, a settle, a dining table, a bookcase and a clock case (perhaps the most difficult of the nine projects because it requires *lots of little pieces*).

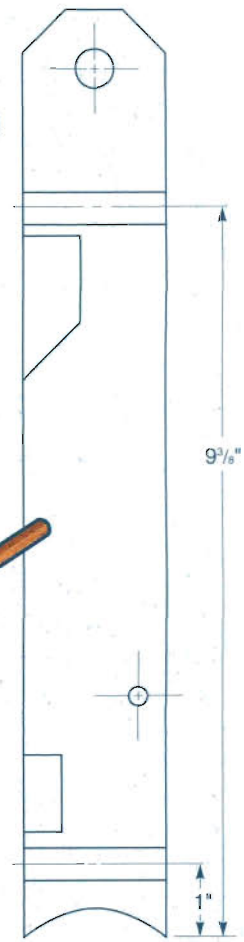
There are more than 200 good photos in this book. Unfortunately, none but those on the covers are in color.

WHAT'S IN STORE HOTLINE: If you know of new tools, hardware, books or World Wide Web sites, contact Stan Schmidt at Today's Woodworker, P.O. Box 261, Medina, MN 55340. E-mail: editor@todayswoodworker.com

Scroll Saw Blade Caddy

By John English



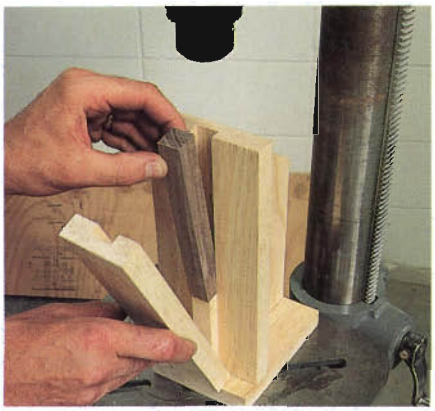


Frame Stile
Side View

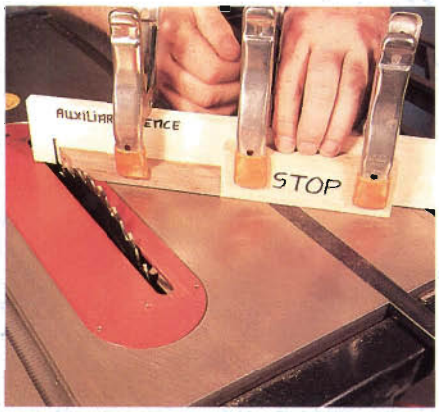
MATERIAL LIST

		T x W x L
1	Fingers (9)	3/4" x 3/4" x 6½"
2	Finger Axle (1)	1/4" x 7⅞" Dowel
3	Frame Stiles (2)	1/2" x 2" x 12"
4	Frame Rails (2)	1/2" x 2" x 7¾"
5	Finger stop (1)	1/2" x 1" x 6⅞"
6	Caddy Hanger (1)	3/4" x 2" x 6⅞"
7	Handle (1)	1/2" x 7⅞" Dowel
8	Wall Hanger (1)	3/4" x 2" x 6⅜"

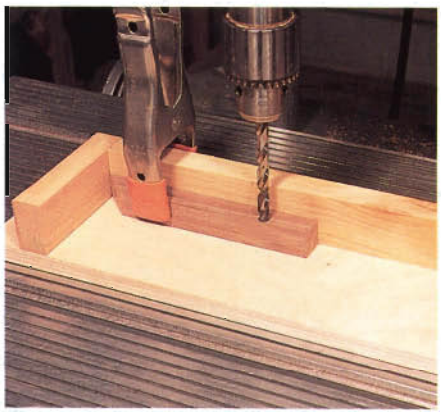
I've reached that magical point in life where my friends all seem to be raising batches of small children. So I spend a lot of my spare time on the scroll saw, releasing farm and circus animals from hardwood shop scraps. No matter how careful I am, those thin scroll saw blades seem to snap with alarming frequency on the sharp hairpin turns under my walnut antelopes' chins. So a caddy that keeps spare blades close by the saw while in use, and stores them out of the way the rest of the time, has been on my shop project list for a while. The key to this caddy is a hanging system comprised of a pair of interlocking chamfered blocks. One of these (piece 8) is attached to the wall, while the other (piece 6) is part of the caddy.



Step 1: Cut the nine 3/4" square fingers (pieces 1) to size, then use a centering jig to drill a 3/8" hole in one end of each. This jig is made from shop scraps and is nothing more than a vertical stand that locks the workpiece into a pair of matched dadoes (see Pinup Shop Drawings).

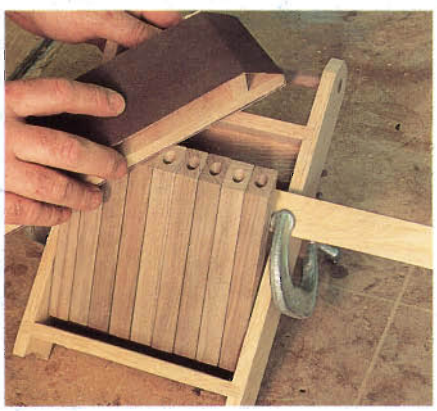


Step 2: On your table saw, miter the top of each finger at 45°. A long auxiliary fence equipped with a stop will ensure that all pieces are cut to the same length. Make sure you use clamps to keep your fingers away from the saw blade when working with such small parts.



Step 3: A simple indexing jig holds the workpiece as you drill the 5/16" holes that will house the 1/4" hardwood dowel axle (piece 2). Using this jig will ensure that all nine holes line up properly. Blow sawdust out of the jig between each drilling to avoid buildup.

Step 4: Remove most of the waste for the dovetail dadoes in the stiles (pieces 3) with a straight router bit, then finish with a 9° by 1/4" dovetail bit. To make the matching tails on the rails (pieces 4), move the fence to cover a portion of the dovetail bit (see Pinup Shop Drawings).



Step 5: Use the Pinup Shop Drawings to drill 1/2" and 1/4" dowel holes in the stiles, then glue and clamp the frame, including the finger stop (piece 5), caddy hanger (piece 6), and handle (piece 7). Now dry fit the fingers and axle and, with a brace clamped behind them, sand the tops flush.

Step 6: Finish the fingers and all of the frame except the outsides of the stiles before final assembly. After the finish is dry, permanently install the fingers and axle, then sand the axle ends flush and finish the outside faces of the caddy stiles, and the wall hanger (piece 8).

Heirloom Jewelry Box

In addition to being a great gift item, this little project will give your dovetail jig a nice workout.

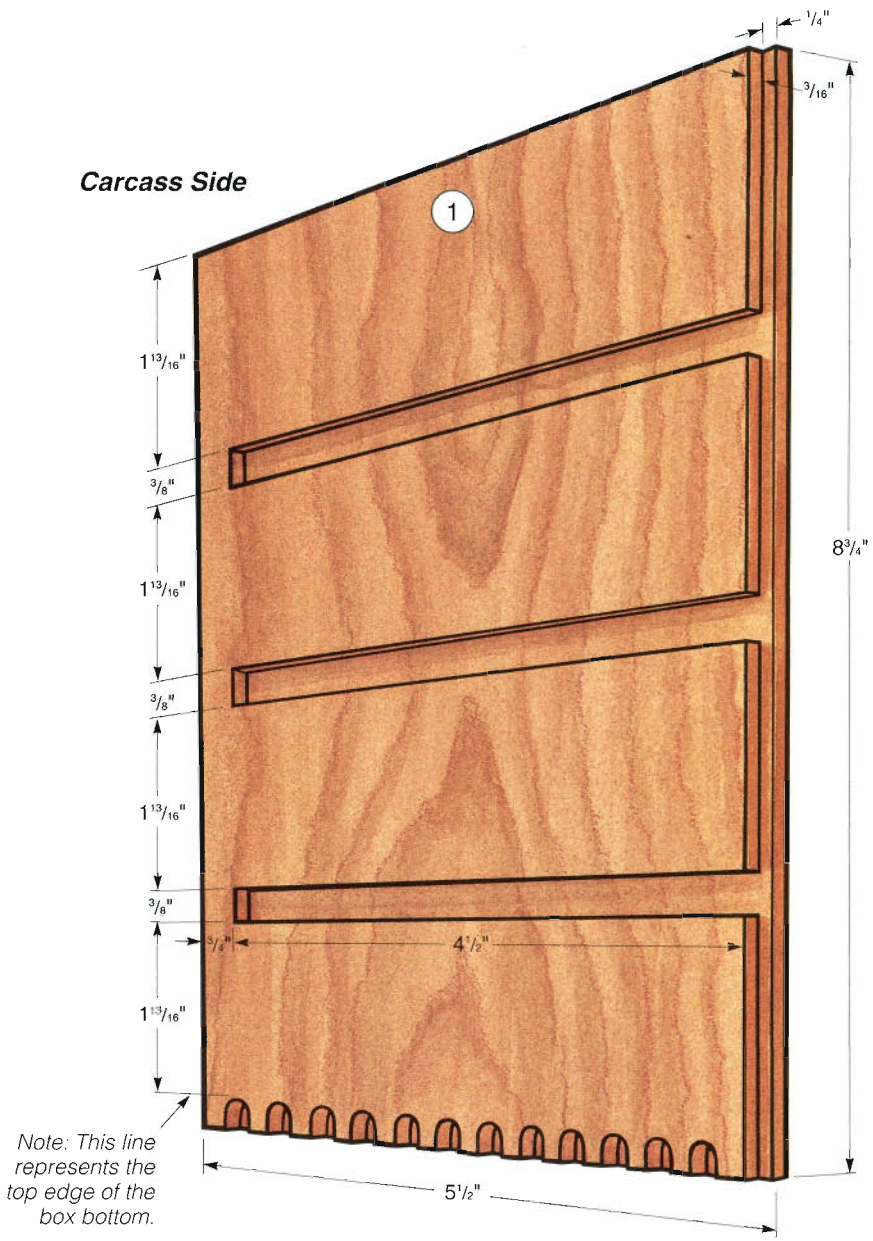
By Salvatore F. Pontecorvo

Woodworkers, it seems, are always on the lookout for great gift ideas that will stand the test of time. That's because there's no greater feeling than presenting someone with a project that you're pretty sure will become a family heirloom. This jewelry box certainly fits that bill, but it's also so straightforward in terms of construction techniques that it can easily be varied to match an individual craftsman's abilities.

The look of the finished project can also vary dramatically depending on the wood species chosen. Walnut has always been among the most popular choices for jewelry boxes: It has a rich luster and often exhibits unique character and grain patterns. However, I have a special place in my heart for cherry, a species that I like to tone with fruitwood stain before finishing. Cherry is also easy to work since it has closed grain, a fact that enhances the finish.

Milling the Carcass

With your wood selected, cut all of the pieces to size according to the dimensions given in the Carcass Material List on page 14. (Note: Don't cut the drawer parts to size until after you've assembled the carcass. This will allow you to match your parts exactly to the true dimensions of the drawer openings.) With that done, actual milling can start with the elements that comprise the carcass of the jewelry box. This



includes the two sides (pieces 1), the bottom (piece 2), and the three rails (pieces 3) that separate the drawers.

I used 1/4-inch dovetails to attach the bottom to the sides. These joints are arranged so that they're hidden when the carcass is assembled. Dovetailing may seem like overkill, but it provides strong joints and ensures that the sides are perpendicular to the bottom. To make these joints, I used a commercially available dovetailing jig and a 1/4" by 9° bit (see sidebar on page 16). Follow the manufacturer's instructions in setting up the dovetail template and adjusting router bit depth. You are looking for a snug fit to allow for proper glue bonding. Test your setup on scrap wood first: Too tight and you'll squeeze out the glue; too loose and you will weaken the joint.

With the dovetails cut, lay out the 3/16" deep stopped dadoes in the sides for the rails (see the elevation drawing at right). You'll also need to run a stopped dado in the top rail (see exploded view on page 14): This will house the divider (piece 4) that separates the two small drawers. These dadoes require care and accuracy as any misalignment of the slots will produce drawer openings that aren't square, and drawers that are not interchangeable. The stopped dadoes are cut on the router table, using alignment marks on the fence and the workpiece to mark the end of each cut (**see Figure 1**). Finish by squaring up the dadoes with a sharp chisel. When that's done, move your router table fence so that it partially covers the bit, then create a rabbet on the back edge of each side. These rabbets will house the back (piece 5).

Figure 1: End the stopped dadoes 3/4" from the front of each carcass side by lining up marks on your router table fence and workpiece.

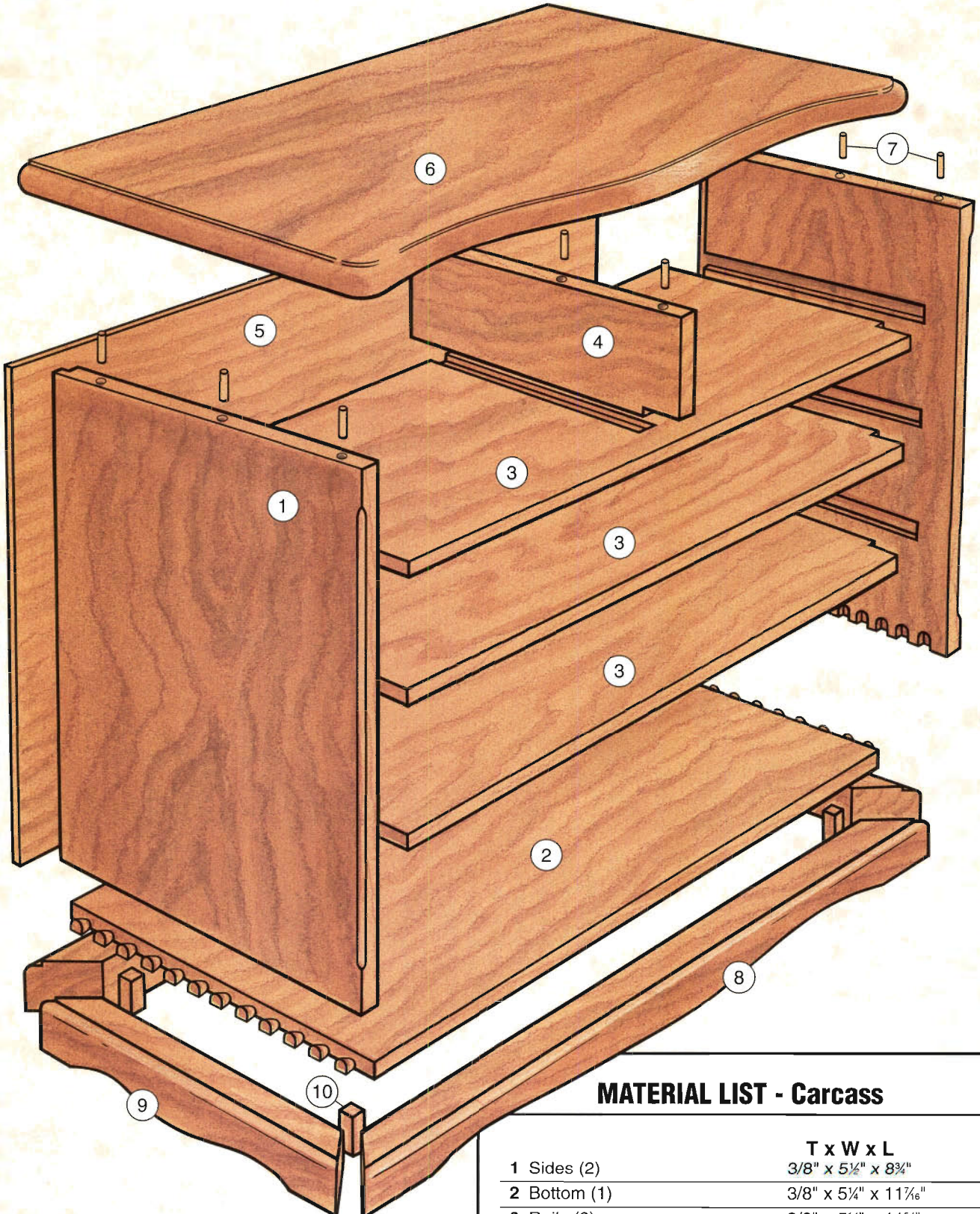
To fit into the stopped dadoes, the front edge of each of the three rails, and the lower edge of the drawer divider must all be notched so that the rails and divider fit absolutely flush with the sides. Dry fit as necessary while you cut these notches on your band saw. Then move back to the router table and switch to a 45° chamfering bit: The middle of the outside front edge of each side is lightly chamfered, as shown in the illustration on page 14.

There's only one more milling step left before you can assemble the carcass. You need to drill some holes in the tops of both sides and the small drawer divider. These holes are for dowels that will attach the carcass to the top, and their locations can be found on the **Pinup Shop Drawings** between pages 16 and 17.

Dry assemble the bottom to the sides using framing clamps, if you have them. These will ensure that the sides are perpendicular to the bottom (you can also use a square). Slide in the rails and divider and check the fit. Then unclamp everything and sand each piece through the grits down to 280. Glue and clamp the carcass and leave it to dry.

Make the Top and the Base

The top of the jewelry box (piece 6) is made from a single piece of hardwood. This is your appearance piece, so select it with care. Once it's chosen,

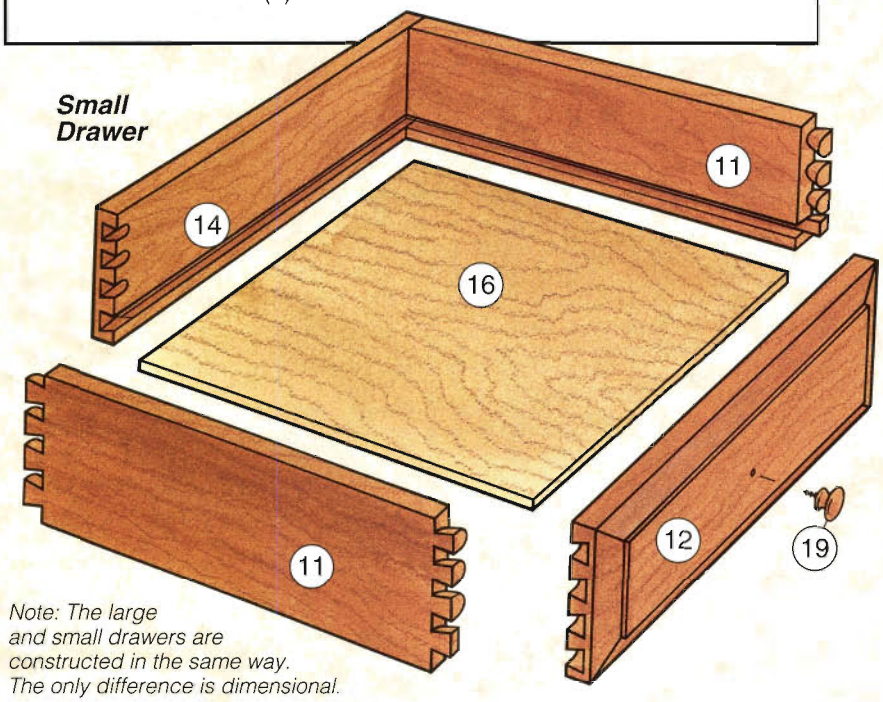


MATERIAL LIST - Carcass

		T x W x L
1	Sides (2)	3/8" x 5½" x 8¾"
2	Bottom (1)	3/8" x 5¼" x 11⁷⁄₁₆"
3	Rails (3)	3/8" x 5¼" x 11⅝"
4	Divider (1)	3/8" x 2" x 5¼"
5	Back Panel (1)	1/4" x 8¾" x 11⅝"
6	Top (1)	1/2" x 6" x 13"
7	Dowels (9)	1/4" x 1/2"
8	Base Front and Back (2)	3/4" x 3/4" x 12½"
9	Base Sides (2)	3/4" x 3/4" x 6"
10	Base Gussets (4)	1/4" x 1/4" x 3/4"

MATERIAL LIST - Drawers

		T x W x L
11	Drawer Sides (10)	3/8" x 1¾" x 5"
12	Small Drawer Fronts (2)	1/2" x 1¾" x 5⅜"
13	Large Drawer Fronts (3)	1/2" x 1¾" x 11⅜₆"
14	Small Drawer Backs (2)	3/8" x 1¾" x 5⅜"
15	Large Drawer Backs (3)	3/8" x 1¾" x 11⅜₆"
16	Small Drawer Bottom (2)	1/4" x 4⅞" x 5"
17	Large Drawer Bottom (3)	1/4" x 4⅞" x 10¾"
18	Felt	12" x 24"
19	Solid Brass Pulls (8)	3/8" Diameter



Note: The large and small drawers are constructed in the same way. The only difference is dimensional.

you can cut it to size, then shape the front edge. The pattern for this edge can be found on thse **Full-size Patterns** between pages 16 and 17. Cut the contour on your band saw, then sand the curves smooth using a drum sander in your drill press, or use an oscillating sander. Finish by routing the edge with a 1/4" roundover bit set to leave a 1/16" decorative lip.

You're now ready to install the top. To do so, drop some 1/4" dowel centers (see **Figure 2**) into the holes you drilled in the top of the carcass sides and divider, then gently lay the top on these. Position it precisely, then apply enough pressure for the dowel centers to leave their marks. Drill the holes, then sand both sides of the top. Apply glue, drop the dowels (pieces 7) in place and clamp the top in position. While the glue dries, move on to the base.

The base is constructed much like a picture frame. Cut and miter the front, back and sides (pieces 8 and 9) to size, then shape the bottom curvatures (see **Full-size Patterns**) on your band saw. Sand the curves, dry fit, then glue the base together using corner clamps. Glue a gusset (piece 10) to each inside corner for additional strength, then finish the top outside edge of the frame with a 3/16" roundover router bit. Set the bit to leave a 1/16" lip all around, then glue the base to the carcass.

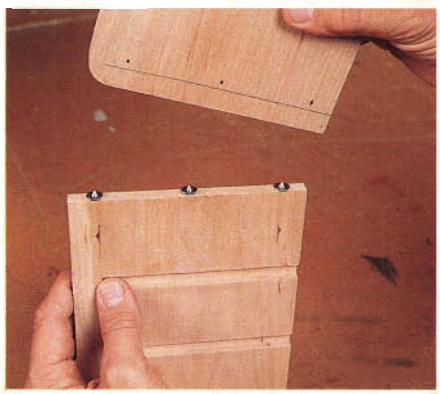


Figure 2: Use 1/4" dowel centers to mark the hole locations on the inside of the top.

Making the Drawers

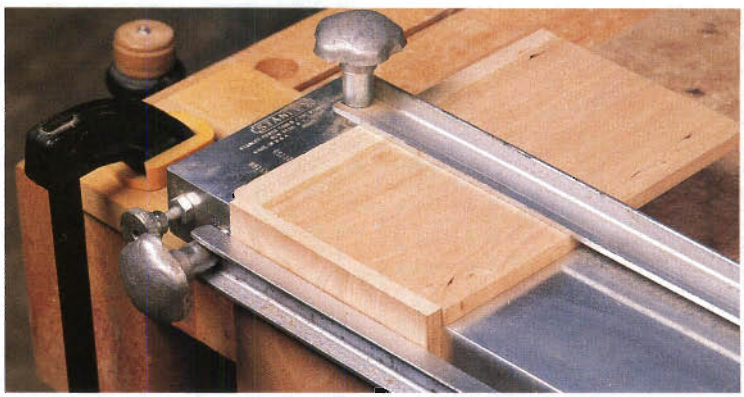
The sizes given for the components in the Drawers Material List are based on 1/16" clearances. However, before cutting your stock, it would be wise to check each drawer opening for exact size and make minor adjustments if necessary. Then cut the drawer sides (pieces 11), the fronts (pieces 12 and 13), and the backs (pieces 14 and 15) to size.

The drawer joinery again takes advantage of your commercial dovetailing fixture. Using the same 1/4" dovetail bit and template, route the drawer joints. Always test your setup on scrap wood before machining the good stock, and remember that the drawer elements are routed in an inside out position. To avoid any confusion or mistakes at this point, I first choose the side I want facing out, and then I cut the 3/16" deep groove for the drawer bottom (piece 16 or 17) in the other side. This cut can be made on your table saw. It should be centered over the bottom pin and tail to eliminate any gaps in the assembled joint (see **Pinup Shop Drawings** for location). Once the groove is cut, I keep that side facing out with the groove next to the template guide pins.

If you don't feel comfortable making these dovetails (and I urge you to try - it's a great learning experience), lap joints can be used. Whatever you choose, the length of the drawer sides should be such that it leaves the drawer fronts proud of the carcass by about 1/16". This (together with the bevels on the drawer front edges), is responsible for the raised panel appearance. The bevels are created on the table saw, cutting the short sides first across the grain to avoid tearout, then finishing up with the grain (see **Pinup Shop Drawings** for details).

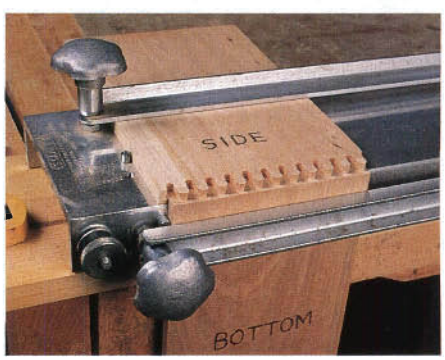
Routing Dovetails

The easiest way to route uniform dovetails is with a commercially available jig and a router equipped with a guide bushing. This jig is essentially just a clamp that holds the boards in position, and a template for the router to follow. In a project as small as our cherry jewelry box, you can use a 1/4" finger template rather than the standard 1/2". To begin the process, clamp the jig to a stable base such as a workbench, then secure the two workpieces as shown at right. Make sure that they line up properly, and that the offset pins are in the correct holes for a 1/4" template (check your jig's instruction manual).



The 5/16" guide bushing is secured to the router base with a locking nut. The bushing must be installed at the same time that the 1/4" by 9° dovetail bit is chucked into the router, as one won't slide over the other.

Having used scrap wood to set the depth of cut and the position of the template, route from left to right. Remember that you can't lift the router until you're clear of the jig, or you'll destroy the template.



Note how the cuts on the bottom go right through the piece, while those on the side are stopped, or blind. One other important thing to remember with these jigs is that the workpieces are flipped inside out during routing.

I used 1/4" lauan plywood for the drawer bottoms. This plywood is readily available at lumberyards and is often used for subflooring in home construction. One side is sanded smooth and has no voids. Install the drawer bottoms with the best side facing down since the other side will later be covered with felt. Dry assemble each drawer, checking for squareness by measuring diagonally.

welry Box Hardware

You can order the 3/8" solid brass pulls, the self-adhesive green felt and the 1/4" diameter, 9° dovetail router bit (1/4" shank) for the jewelry box from Today's Woodworker. Call toll-free 1-800-610-0883.

68593** (brass pulls) ..... **$2.45 ea.
22814** (12" x 24" felt) **$3.95
43661** (dovetail bit) **$9.95

Before completing the glue up, check the fit of each drawer within the carcass. Don't glue the bottoms in though: They need to be able to float to allow for wood movement.

Finishing the Box

For cherry, I prefer a penetrating fruitwood stain followed by several coats of tung oil. If you use walnut, it probably requires no stain due to its natural rich color. Depending on the porosity of the wood, four to five coats of tung oil with light sanding (400 grit sandpaper) between coats will provide a good finish. Tung oil is available in low or high gloss, but the high gloss will accent any finish shortcomings. Low gloss, on the other hand, is more forgiving. Regardless of the choice of finish, the final appearance will only be as good as the final sanding.

The insides of the drawers are lined with self-adhesive sheets of felt (pieces 18). You can cut this product roughly to size with a scissors, then do your final trimming with a sharp knife. Where two felt edges meet, trim both with a straightedge before installing them. Apply felt to the drawer bottom first, and then follow up with the side, front and back. Finally, pre-drill pilot holes for the drawer pulls (pieces 19) in each of the drawer fronts (see **Pinup Shop Drawings** for locations), and install the brass pulls.

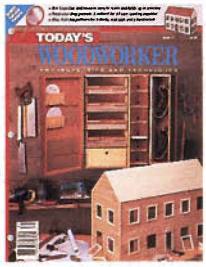
This completes the project. Now all that remains is the joy and satisfaction of presenting your heirloom jewelry box to a loved one.

Salvatore F. Pontecorvo, a woodworker from Fort Wayne, Indiana, built this jewelry box for his granddaughter.

Back Issues

All of our back issues are still available. A brief description of the contents can be found below each cover. Volumes 6 through 8 are shown here and the rest are on the order form or in the Sourcebook. Remember, we'll send you a free Today's Woodworker binder if you order six or more back issues.

31



The sanding supply cabinet, a self-storing dollhouse, a hand mirror and a coat rack.
Item 97247.....$4.95

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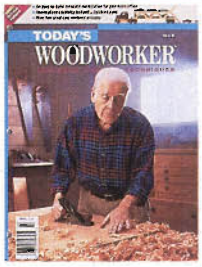

A modular computer desk, the 18 wheeler for kids, a cherry end table and CD holder.
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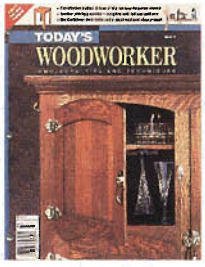

A classic oak icebox, deck table, adjustable band saw fence and a woodworker's whirligig.
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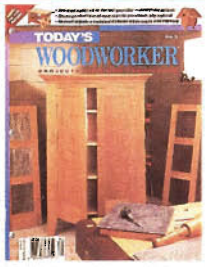

A kid's workbench, a bookcase, an authentic jelly cupboard and a Victorian birdhouse.
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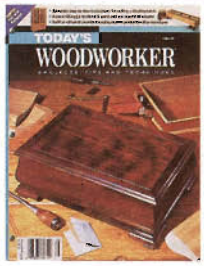

A Stickley hutch, a toy tanker truck, heirloom jewelry box, and a tilt table for the drill press.
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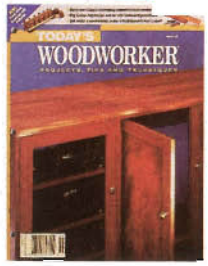

An entertainment center, a pencil box, log hauling semi truck, and a baker's shelf.
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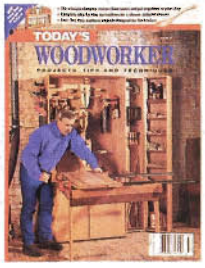

A clamping station, an early American dresser, a wedged tenon spice rack and a soup spoon.
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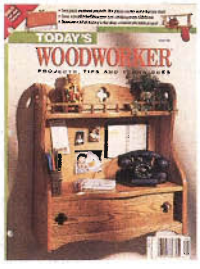

A biplane coat rack, the Scandinavian sideboard, a cherry tea table and a home phone center.
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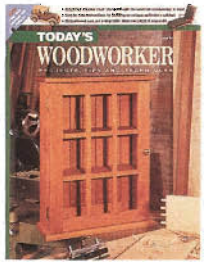

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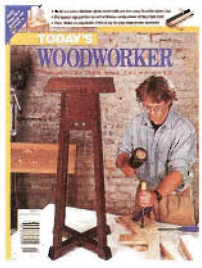

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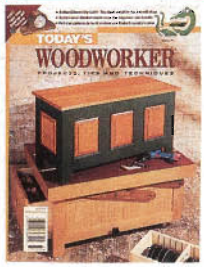

The heirloom blanket chest, a mantel clock, Corky crocodile's desk, outfeed/assembly table.
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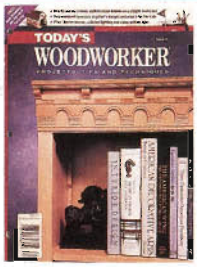

The Itasca bookcase, a toy barn, the golfer's whirligig, a Greene & Greene hall mirror.
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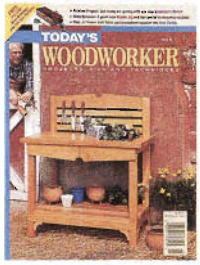

The gardener's bench, a dart caddy, Shaker hall table and a router surfacing jig.
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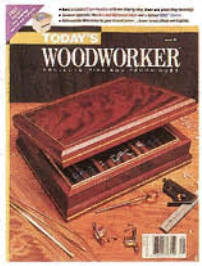

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The Sedan

This kit includes five wheel assemblies, four people and a radiator cap.
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Shift into Gear for the Holidays

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Try this kit. It includes 8 Rubbarider wheels, screw hole buttons, a driver, carburetors and enough walnut dowel to make the mirrors.
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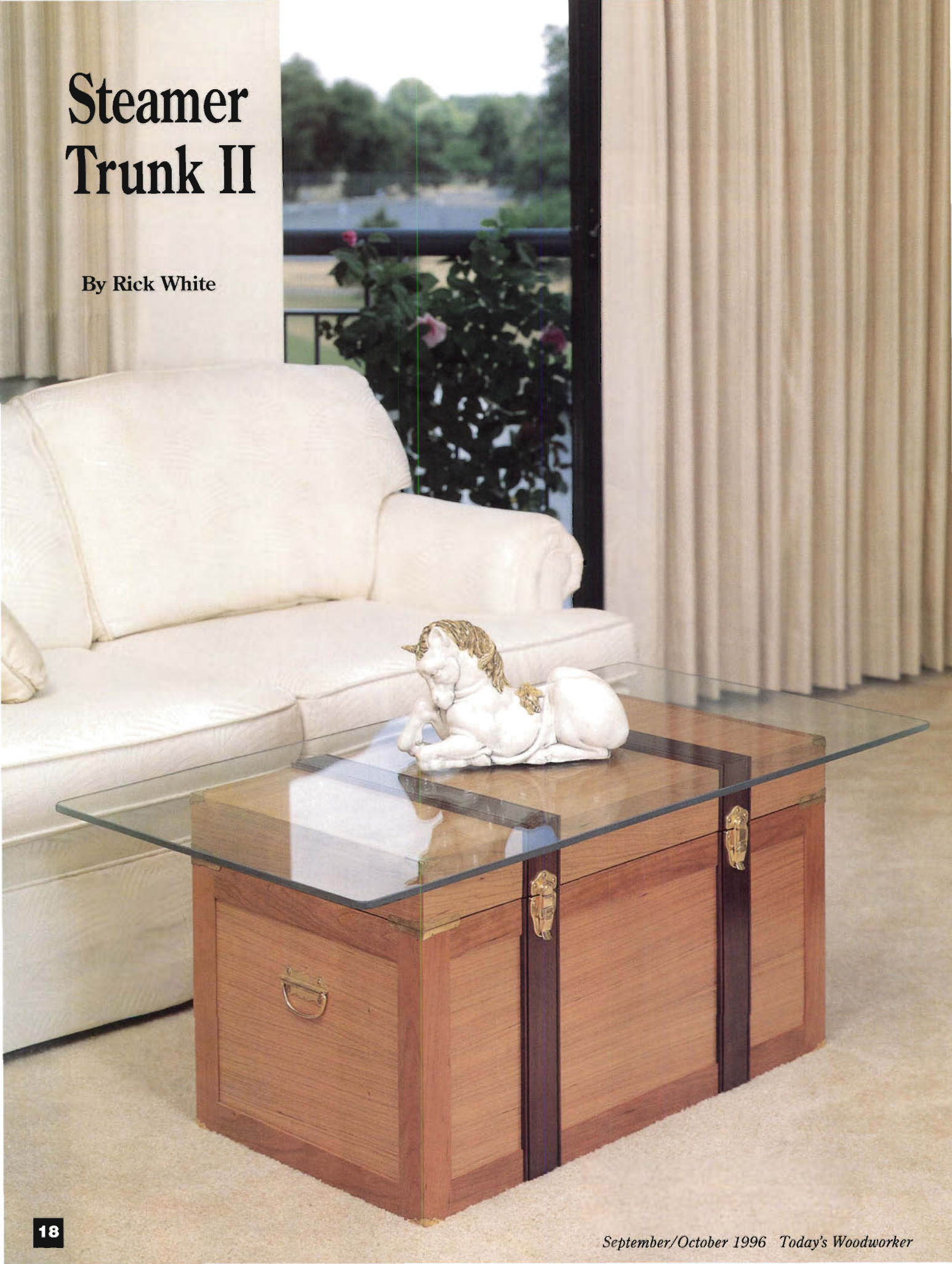
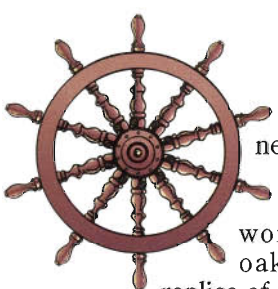
Steamer Trunk II

By Rick White



Steamer trunks have been around as long as steam powered locomotives and ships. But they really came into their own in the 1890s, when they began to mirror popular fashion.

For instance, their domed tops were very pronounced and ornate, much like women's dresses of that era. Steamer trunks enjoyed a brief revival between the wars when Sears & Roebuck offered a complete line. Interestingly enough, those factory built trunks were regarded as being superior in quality to handmade versions.



One of my favorite projects for Today's Woodworker was the oak and walnut replica of a classic steamer trunk that I built for Issue 29 (September/October 1993). That trunk has since become one of our most popular projects, generating lots of reader letters, comments, hints and advice. One idea that emerged from all that correspondence was the notion of a smaller version of the trunk that would be easier to build. So, with the help of the magazine's design team, we eliminated the curves on the original trunk, simplified the joinery and added a whole new option: Place glass with polished edges on top, and you'll have a coffee table that will quickly become a conversation piece.

I chose solid cherry for the framework on this chest, and 1/2" cherry plywood for all the panels. And to simulate those classic leather straps, I stained some walnut after shaping it on my router table. But before you get to that stage, cut all the parts to size (see the Material List on page 22 for dimensions). Then you'll be ready to start work on the trunk's case.

Perfect Corners

One of the key requirements of this project was simplified construction, and with that in mind I decided to forego mitered corners on the main body of the trunk. Instead, I made all four case stiles (pieces 1) out of a simple one-piece corner molding cut from 8/4 cherry stock (see **Figure 1,** below). This operation is completed on the table saw (dimensions are shown on the **Pinup Shop Drawings** between pages 16 and 17), then the kerf marks are removed with a hand sanding block.

Milling the Case

The case bottom (piece 6) rests in a dado, and cutting this in the stiles is next. Lay out the cut following the dimensions in the **Pinup Shop Drawings**, then use a sharp utility knife to score along your layout lines. Begin removing the waste on the drill press using a 1/2" Forstner bit, then finish up with a sharp chisel (see **Figure 2**, at right).

The case rails (pieces 2 and 4) and the panels (pieces 3 and 5) are all housed in stopped grooves that run down the edges of the stiles (see **Corner Detail** on page 20). Make these 1/2" by 1/2" grooves on your router table, stopping each cut 1/2" from the top of the stile. The lower end of each groove is cut through.

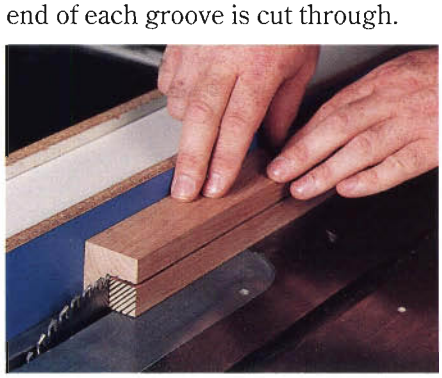


Figure 1: Cut the L-shaped stiles on your table saw. Make sure the waste side is away from the fence, and use a push stick near the blade.

The eight rails (front, back and sides) are milled next. Both ends of each rail are tenoned (see **Pinup Shop Drawings** for dimensions) to fit in the stopped grooves you have just cut in the stiles. The easiest way to create these tenons is on your table saw, using the miter gauge and a dado head. Note that the resulting tongues on each of the four top rails are notched to fit over the end of the stopped groove. Cut these notches by raising the blade in your saw to 1/2", then use a file to round over the edges for a perfect fit.

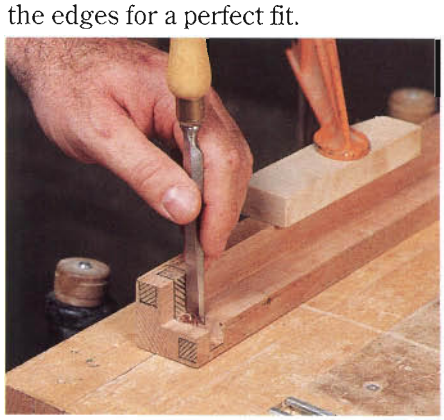


Figure 2: After removing most of the dado for the bottom panel on the drill press, clean out the remaining waste with a sharp chisel.

Finish up these pieces by making grooves for the bottom in the lower rails, and grooves for the side, front and back panels in all eight rails. These can be cut on the router table.

Assembling the Case

Steamer trunks were aptly named: They spent much of their lives in the humid holds of rolling ships - not the most stable environment for wood. Consequently, their makers became very familiar with the way lumber behaves. I've incorporated some of their rules in my design: All the panels are down-sized so they don't bind on expanding, and they're also free-floating (not glued in) to allow for movement in the frame elements.

Planning Ahead: Steamer Trunk II

To complete this project you'll need access to a table saw, a router table and a portable router. If you decide to top it off with glass, allow the supplier at least a week to cut the glass, radius the corners and polish the edges.

- *1½ BF 1¼" cherry*
- *5 BF 3/4" cherry*
- *1¼ BF 1/2" cherry*
- *3/4 BF black walnut*
- *1/2 sheet of 1/2" cherry plywood*
- *Hardware Kit on page 23*

Corner Detail

As you glue and clamp the case together, remember that you need to get good glue coverage wherever hardwood meets hardwood, but no glue should hit the plywood panels, which must float in the frames.

It's essential that you keep the top, bottom and sides square while clamping. Do this by measuring diagonally in both directions, then compare the two measurements.

A Finger-Jointed Tray

The problem with trunks and chests is that they open from the top. That makes it difficult to compartmentalize them: If you need something, you pretty much have to rummage through everything to find it. Old steamer trunk builders used to tackle this problem by building several small baskets or boxes that stacked neatly inside the main trunk. However, to keep our project simple, we borrowed an idea more commonly found in cedar chests - a sliding tray. While a sliding tray may not have been too stable on a stormy sea, it works wonderfully in the average living room. This tray rests on two cleats (pieces 7). These are cut to size, notched on the table saw to fit around the stiles, then glued and clamped in place (see **Pinup Shop Drawings** for locations).

The tray front and back (pieces 8) are attached to the sides (pieces 9)

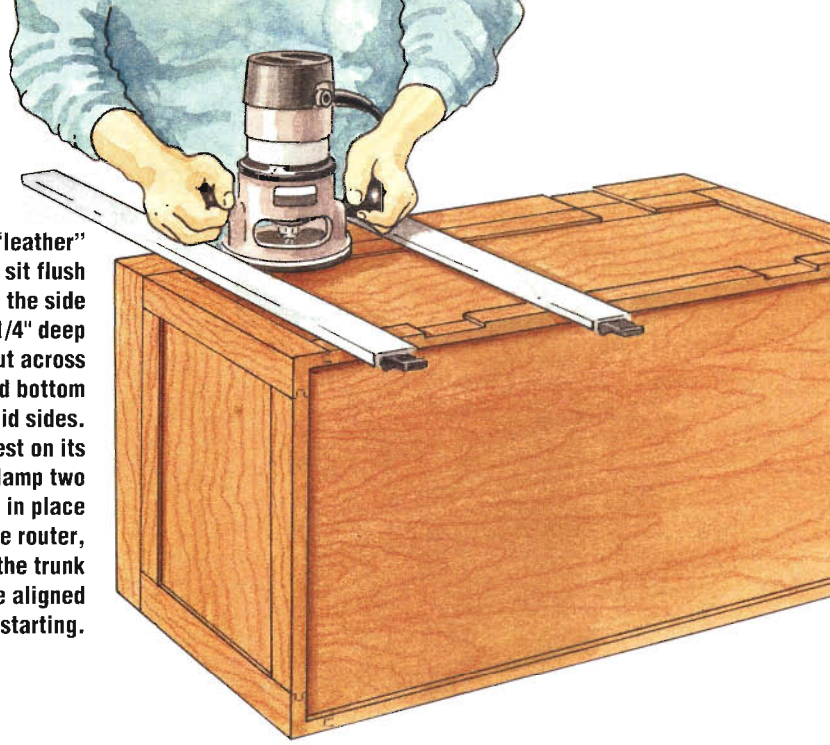
Figure 3: To ensure a square cut, attach a long auxiliary fence to your miter gauge when cutting long parts such as the lid front and back.

with finger joints which are cut on the table saw. The method described in the sidebar below makes use of a key to index each cut as you create the fingers on the ends of the tray elements (see the **Pinup Shop Drawings** for a complete layout). It's a good idea to run the first set on scrap, just to check the fit.

Finger Joints, Step-By-Step

Finger joinery has been a staple of good woodworking since ancient times, and now modern table saws have made its milling operations very simple. The keys to success are to have your miter gauge set at precisely 90° to the blade, and also to make sure that your dado set - including the chippers - is resin-free and nicely sharpened.

Step 1: Install a 1/2" dado blade in your table saw and screw a tall fence to your miter gauge. Make sure the gauge is square to the blade and, with the blade raised 1/2", make one pass.



To allow the "leather" straps to sit flush against the side panels, 1/4" deep dadoes are cut across the top and bottom rails and the lid sides. Set the chest on its side and clamp two straightedges in place to guide the router, making sure the trunk and lid are aligned before starting.

When all of the fingers are cut, create the grooves for the tray bottom (piece 10) on the front, back and sides. The grooves in the sides are stopped 1/4" from each end of the workpiece, while those on the front and back are cut through. Make all four grooves on your router table, using masking tape on the fence to mark the stops. You can use the same router bit to create the rabbet on all four edges of the bottom (see **Pinup Shop Drawings**) by adjusting the height and the fence.

Refer to the **Full-size Pattern** for the shape and position of both the tray handles and the arcs on the top of the tray sides. Use your drill press and a saber saw to cut out the handles, and a 1/4" roundover router bit to finish their edges after sanding them smooth. The arcs on the tray sides can be formed on the band saw, but don't sand them yet.

Assemble the tray with glue and clamps, checking for squareness as you go. Be sure to allow the bottom to float freely in its grooves. Then, after the glue is dry, sand the arcs smooth with a hand block. Break all the edges with 280 grit paper and move on to the trunk's lid.

Move on to the Lid

Unlike the case, the ends of the lid front, back and sides (pieces 11 and 12) are mitered on the table saw. With long pieces like the front and back, I use an extra long auxiliary fence on my miter gauge to provide plenty of support (see **Figure 3**).

The lid top (piece 13) is rabbeted along all four edges. This can be done on a router table, or on the table saw using the dado head. Refer to the **Pinup Shop Drawings** for the exact dimensions. Once they're cut, you can move on to the dadoes that house them in the lid front, back and sides. These are through dadoes because the lid's corners are mitered, so just set the dado head and run the pieces across it.

Dry fit the top to ensure that the miters aren't being forced apart. If they are, trim the rabbets until you get a nice tight fit. Then assemble the top with glue and clamps, checking diagonals for squareness as you go. Even though this is a fairly small frame and panel and you won't experience much movement, try to keep the glue out of the grooves so the top floats freely.

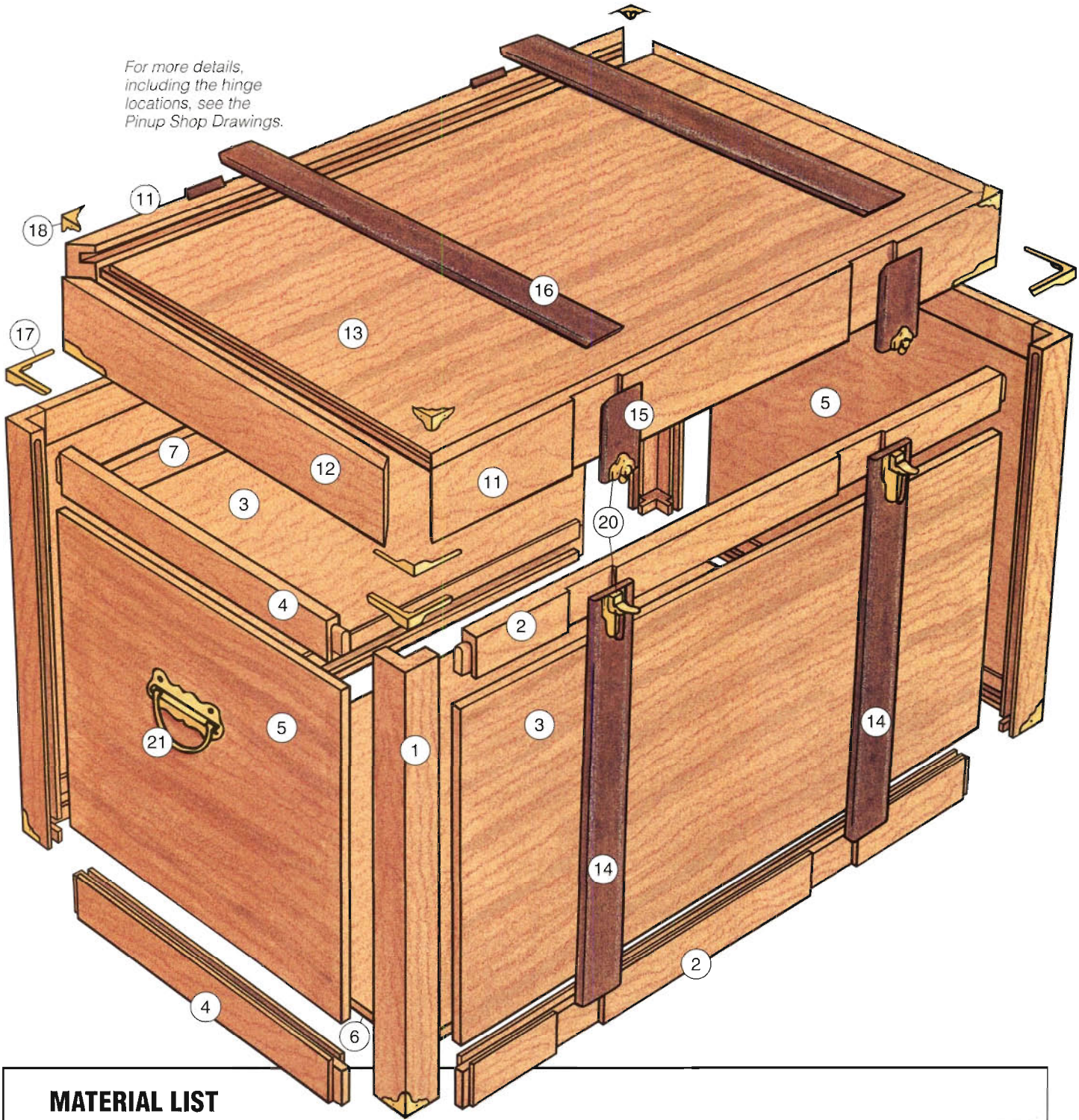
The Look of Leather

Steamship baggage handlers were probably just as careful with steamer trunks as airport baggage handlers are reputed to be with modern suitcases. So, while you had passage to Jakarta, your trunks were probably being bounced along a Hong Kong

Step 2: Glue a 1/2" x 1/2" x 2" piece of scrap in the dado (the "key") and reposition the fence 1" further to the right on the miter gauge. Make another pass, leaving a 1/2" gap between cuts.

Step 3: Position your tray front against the fence, butted up to the key, and take your first pass. Now simply slip the newly created dado onto the key and take your second pass.

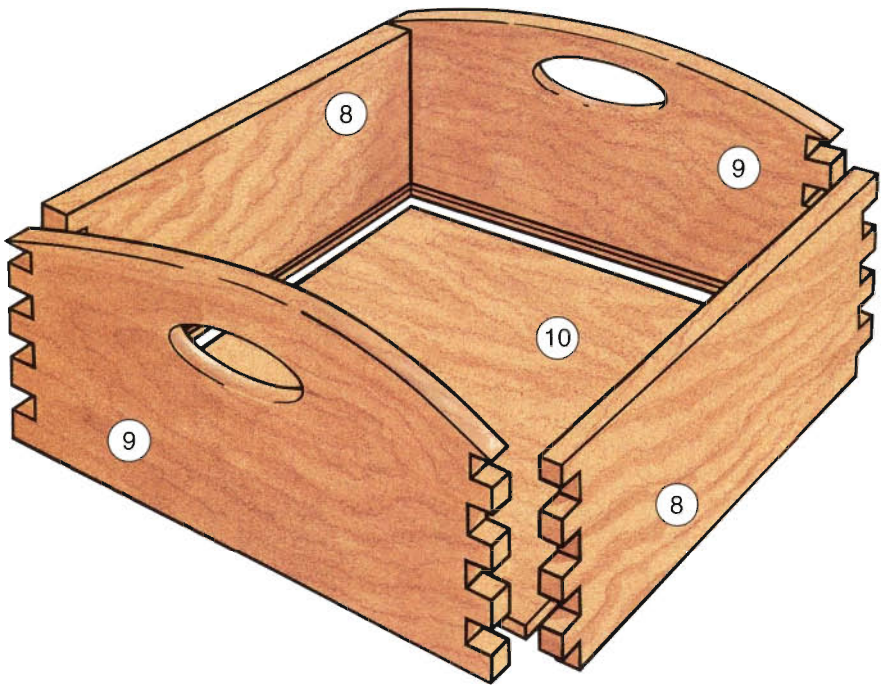
Step 4: After the last cut is made in the tray front, set the mating side tightly against it and start cutting its fingers. Follow this sequence as you work your way around each tray piece.



MATERIAL LIST

		T x W x L
1	Case Stiles (4)	1¾" x 1¾" x 14"
2	Case Front and Back Rails (4)	3/4" x 1¾" x 27½"
3	Case Front and Back Panels (2)	1/2" x 11⁷⁄₁₆" x 27⁷⁄₁₆"
4	Case Side Rails (4)	3/4" x 1¾" x 14½"
5	Case Side Panels (2)	1/2" x 11⁷⁄₁₆" x 14⁷⁄₁₆"
6	Case Bottom (1)	1/2" x 16³⁄₁₆" x 29³⁄₁₆"
7	Tray Cleats (2)	3/4" x 1¾" x 28½"
8	Tray Front and Back (2)	1/2" x 4" x 14¼"
9	Tray Sides (2)	1/2" x 5¼" x 15¼"
10	Tray Bottom (1)	1/2" x 13¾" x 14¾"
11	Lid Front and Back (2)	3/4" x 2⅞" x 30"

		T x W x L
12	Lid Sides (2)	3/4" x 2⅞" x 17"
13	Lid Top (1)	1/2" x 16³⁄₁₆" x 29³⁄₁₆"
14	Walnut Straps, Case (4)	1/4" x 2½" x 14"
15	Walnut Straps, Lid Sides (4)	1/4" x 2½" x 3⅛"
16	Walnut Straps, Lid Top (2)	1/4" x 2½" x 17¼"
17	Small Corners (8)	7/16" x 2½" x 2½" brass
18	Large Corners (8)	1/2" x 1¼" x 1¼" brass
19	Trunk Strap Hinges (2)	1¼" x 5⅝" brass
20	Oblong catches (2)	1½" x 2¾" brass
21	Handles (2)	brass



Steamer Trunk II Hardware Kit

The hardware kit for Steamer Trunk II includes two oblong catches, two trunk strap hinges, two chest handles, eight small corners and eight larger corners. All the hardware is brass plated and is available from Today's Woodworker by calling 1-800-610-0883.

23672 (use order form) $17.95

Steamer Trunk I Plans & Kit

Plans for our original steamer trunk appeared in issue 29.

A complete hardware kit for that project is still available.

89004 (Issue 29) $4.95

94441 (Hardware kit) $39.95

pier. Leather straps were a necessity back then, and in keeping with that look we designed walnut straps (pieces 14, 15 and 16) for this trunk. The edges of these black walnut straps are run across a router table equipped with a beading bit (see **Figure 4**), then they're coated with a dark walnut stain.

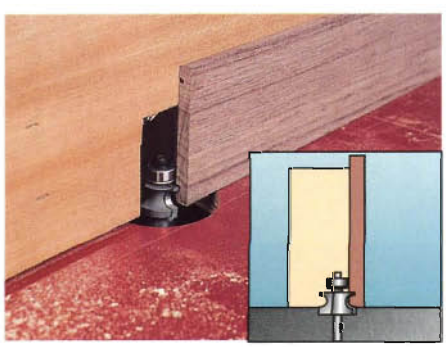


Figure 4: Make the leather-like straps by shaping the edges of some black walnut strips. This is done on a router table with a beading bit.

Attaching these straps to the outside of the trunk requires a little milling. The straps must sit flush with the panels, so you need to cut dadoes across the case rails and also across the front and back of the lid. Wait until after the trunk is assembled to do this, or the dadoes may not line up. Use the **Pinup Shop Drawings** to locate your cuts, and clamp two parallel straightedges in the correct spot (see **illustration** on page 21). Score along the lines with a sharp blade to avoid blowout, then equip your router with a straight bit. Set the depth to 1/8" and clean out the areas where the straps will lie. Remove the straightedges and sand the entire trunk, getting it ready to finish. After mitering the joints where the lid sides meet the top, glue and clamp the straps in place. If possible, move the floating panels so that there is an equal amount of play in either direction, and glue the straps to them.

Finishing Up

The brass hardware is installed after the trunk has been finished. I applied a coat of sanding sealer followed by three coats of polyurethane, sanding between each with 400 grit paper.

When the finish is dry, begin installing the hardware with the corners that protect the top of the case and the bottom of the lid (pieces 17). The larger brass corners (pieces 18) that fit on the outside of the trunk are next. Then gently clamp the lid to the case, making sure that all the leather straps line up properly. Mark the locations for the hinges (pieces 19), and install them. With the clamps still in place, screw the oblong catches (pieces 20) to the front of the trunk, then remove the clamps. Finish up with the handles (pieces 21): See the **Pinup Shop Drawings** for their locations.

If you decide to transform your trunk into a coffee table, you'll need to have some glass made with finished edges. My local glazier recommended 3/8" glass with a polished edge and 1" radiused corners, so I ordered a piece that was 23" x 42".

Every time you want access to this trunk, you'll have to remove the glass top. So this is a good time to think about what you wish to store in it. Seasonal items are an obvious choice, such as winter throws and blankets. But my wife may have discovered the best of all possible uses for this trunk: Because of the heavy glass, it's an absolutely ideal place to hide children's birthday presents!

Off the Beaten Path

The author's latest toy car features a unique spring suspension system that works like a charm!

By Dick Dorn

If you've ever built toys for children, you know how delighted they are with unusual design twists. Toys, according to kids, should be able to "do stuff". That's what makes them come alive. As a response to that need, I decided to add something special to the wooden cars I build ... a spring suspension system that really works. Deciding on a vehicle that *would test my* system was easy enough: It had to be something off-road, 4x4, rough and ready - what else but a Jeep!

The suspension system is based on four light duty compression springs and a pair of floating axles. Though it sounds complex, in truth it's really very simple. The springs try to push the axles away from the Jeep body, and a pin through the center of each axle prevents that from happening. And though the axle can't escape, it is able to see-saw as the vehicle runs over rough terrain.

Start with the Jeep Body

I chose maple for the Jeep chassis, hood and trunk (pieces 1, 2 and 3), because I wanted a fairly neutral grain and color to accentuate the walnut trim I would add later. You can start by cutting these and all the other parts to size, then turn your attention to milling.

Figure 1: You don't have to use a dado blade to cut the two axle dadoes in the chassis. Simply make 3 or 4 passes with your regular saw blade.

The chassis receives two dadoes for the axles, and these are your first cuts. Mark them on the workpiece (see the **Full-size Patterns** between pages 16 and 17 for both locations and dimensions), and use your table saw and miter gauge to nibble the waste away (see **Figure 1**). With that done, drill the two 5/16" diameter holes for the axle retainer pins (see **Figure 2** and the **Full-size Pattern**). With this machining completed, you now can glue and clamp the hood and trunk in place.

The dashboard and seat back (pieces 4) are made of walnut, and their edges are broken with sandpaper before they are epoxied in place. With that done, you can switch back to maple for the fenders. Each fender is made up of five elements (one each of pieces 5, 6 and 7, and two of piece 8), and all five can be cut to width and thickness from the same stock: The only dimension that changes is length. Where the individual elements meet, they are joined at a 22½° angle (see the **Full-size Pattern**). Epoxy the fenders to the Jeep body, then you're ready to work on the suspension.

Building the Suspension

The core of this spring suspension system (see **Figure 3** below) is a pair of maple axles (pieces 9) that ride in the dadoes you made earlier in the underside of the chassis. These axles are cut to shape on the band saw (see **Full-size Pattern**), then sanded smooth. Next, create an elongated hole down the center of each: Drill a series of round holes and finish up with a file (see **Figure 4** on page 27). After that, a 1/8" diameter hole is drilled in each end.

To complement the walnut used in the dashboard and seat back, I used the same species to make the front and rear bumpers (pieces 10). These are simply cut to shape on the band saw (or you could use a disk sander if you have one), then a 1/4" diameter by 1/4" deep hole is drilled in the center (see **Full-size Pattern**). A short piece of birch dowel, the axle retainer pin (piece 11), is epoxied into this hole.

The final element of the suspension system is the set of four shock absorbers (pieces 12). These are

Figure 2: Hold the chassis against a tall fence and a stop in order to mill the 5/16" diameter holes that will hold the axle retainer pins.

really just small compression springs that are readily available at your local hardware store. The ones I used were #C-582, manufactured by Century Spring Corp. in Los Angeles, but springs from any manufacturer should work just as well. Make sure that the springs, when compressed, will move freely in the holes you drill for them.

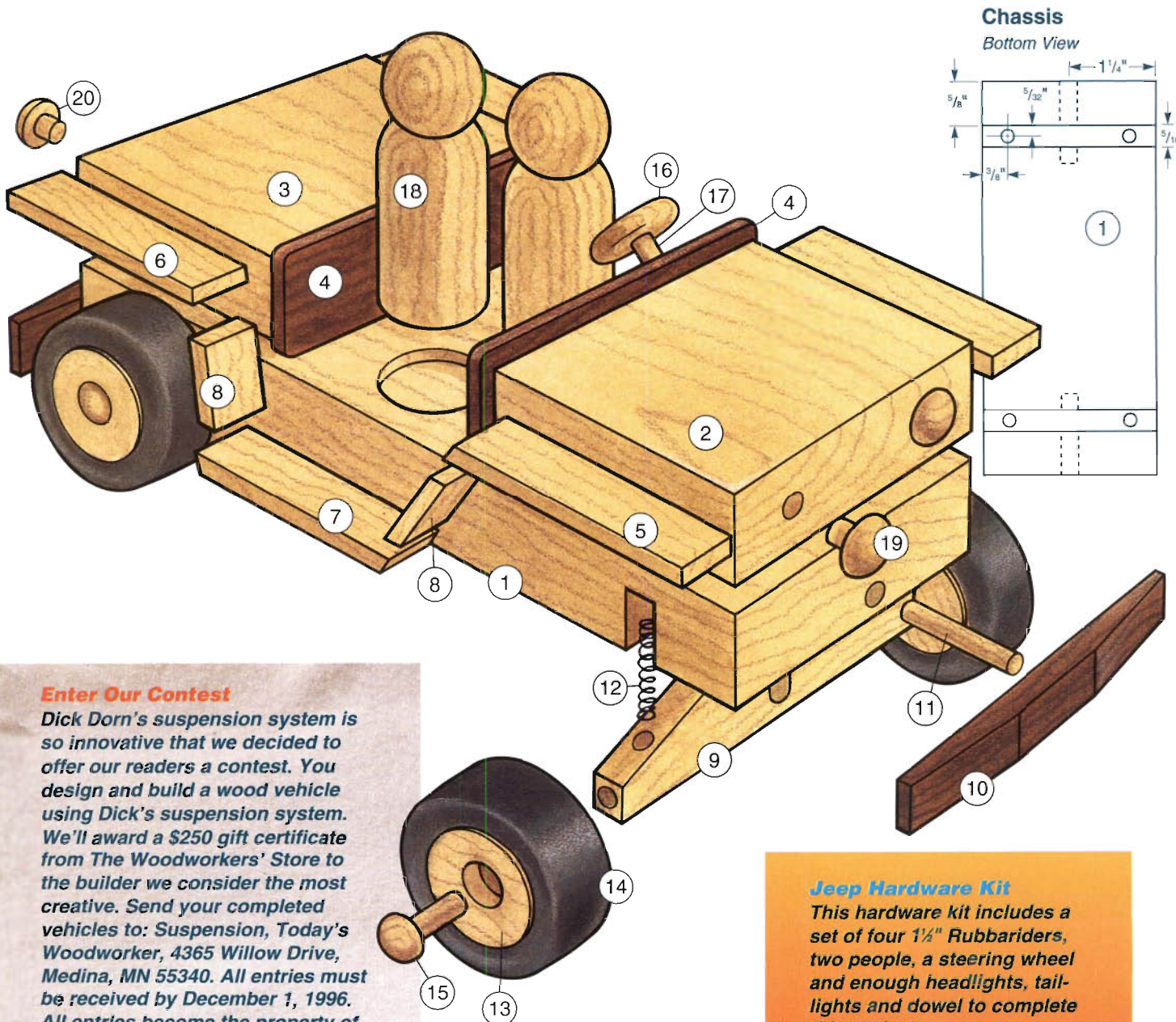
Making those holes is next. Two of them are drilled into the top side of each axle to a depth of 1/4" (you can find their locations on the **Full-size**

Figure 3: This Jeep didn't break up while doing somersaults. We just turned it upside down to clearly show the working parts of Dick Dorn's spring suspension system.

MATERIAL LIST

		T x W x L
1	Chassis (1)	3/4" x 2½" x 55⅝"
2	Hood (1)	3/4" x 2½" x 2"
3	Trunk (1)	3/4" x 2½" x1 13/16"
4	Dashboard/Seat Back (2)	3/16" x 1" x 2¾"
5	Upper Fenders, Front (2)	5/16" x 11/16" x 2⅛"
6	Upper Fenders, Rear (2)	5/16" x 11/16" x 1⅞"
7	Lower Fenders (2)	5/16" x 11/16" x 2⅝"
8	Fender Uprights (4)	5/16" x 11/16" x 7/8"
9	Axles (2)	5/16" x 3/4" x 2¾"
10	Bumpers (2)	3/8" x 5/8" x 3¾"

		T x W x L
11	Axle Retainer Pins (2)	1/4" x 1½" Dowel
12	Shock Absorbers (4)	3/16" x 1⅜" Compression Springs
13	Hubs (4)	1½" Original Style Rubbariders™
14	Tires (4)	1½" Original Style Rubbariders
15	Axle Pins (4)	1½" Original Style Rubbariders
16	Steering Wheel (1)	1" Diameter Maple Wheel
17	Steering Column (1)	1/4" x 1" Dowel
18	People (2)	2⅜" x 7/8"
19	Headlights (2)	1/2" Birch Screw Hole Buttons
20	Taillights (2)	1/2" Walnut Screw Hole Buttons



Chassis

Bottom View

Enter Our Contest

Dick Dorn's suspension system is so innovative that we decided to offer our readers a contest. You design and build a wood vehicle using Dick's suspension system. We'll award a $250 gift certificate from The Woodworkers' Store to the builder we consider the most creative. Send your completed vehicles to: Suspension, Today's Woodworker, 4365 Willow Drive, Medina, MN 55340. All entries must be received by December 1, 1996. All entries become the property of Today's Woodworker and will be donated to the Toys for Tots program. We'll feature our favorite selections in a future issue.

Jeep Hardware Kit

This hardware kit includes a set of four 1½" Rubbariders, two people, a steering wheel and enough headlights, taillights and dowel to complete this project.

Item #24092 .....$4.95

Figure 4: After you've drilled holes in the axles, use a file to elongate them to allow for the free movement of the axle retainer pins.

Pattern). A matching pair are then drilled into the bottom of each axle dado on the chassis, and their depth will depend on the length of spring you use. The 1¾" long springs I used required 3/4" deep holes.

Final Assembly

Before installing wheels on your Jeep, you need to drill two 7/8" diameter by 1/4" deep holes in the topside floor of the chassis. These holes will act as seats later on, and they need to be drilled now before access to them is blocked by other parts. Their locations can be found on the **Full-size Pattern**.

Now you're ready to attach wheels to the ends of the Jeep's axles. The Rubbarider wheels come as a kit that includes four hubs (pieces 13), four tires (pieces 14), and four axle pins (pieces 15). The easiest way to mount the tires on the hubs is to take advantage of the lever action of your drill press to exert enough downward pressure on the tires (see **Figure 5**). Place a piece of scrap wood between the tire and the drill chuck, then press the tire home. Install each wheel by mounting a tire and hub on an axle pin, then epoxy the pin into the end of the Jeep axle. A note of caution: Make sure that the wheels spin freely before allowing the epoxy to cure completely.

The steering wheel and column (pieces 16 and 17) are next. Drill a 1/4" hole for the column in the dash (see **Full-size Pattern** for location and dimensions), and epoxy both parts in place. With that done, epoxy the driver and passenger (pieces 18) into their seats, then turn your attention to the Jeep's lights (pieces 19 and 20). These are simply 1/2" hardwood buttons - birch headlights and walnut taillights - that are epoxied into 1/2" diameter by 1/4" deep holes in the chassis. Check the **Full-size Pattern** for their locations.

Now you're all set to finish your Jeep. I strongly suggest using Toy Maker's Finish, a clear, non-toxic toy finish. Apply the manufacturer's recommended number of coats to all

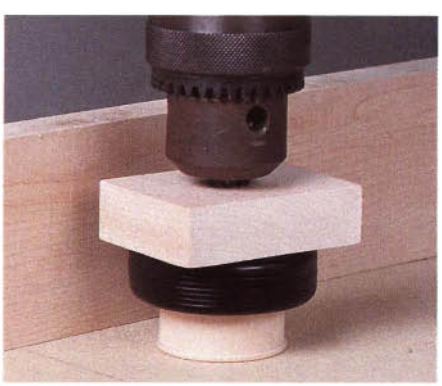


Figure 5: If you have trouble pressing the tires onto the hubs, use the drill press for additional leverage. A piece of scrap will protect the tires.

parts (except the tires and springs) and when the final coat has dried, epoxy the front and rear bumpers to the chassis (wait until now to do this so that you have access to all the suspension parts during finishing).Then find some nice muddy hills, press the pedal to the metal, and create enough air flow to dry the epoxy!

Dick Dorn teaches woodworking in the Oelwein, Iowa, school system.

Dune Buggy Prototype

This Jeep project really began late one evening in front of my TV, when a vague notion of the mechanics for the suspension system came to mind. Knowing from experience that good ideas only come around once (and that I tend to forget them by morning), I immediately went out to the shop and started whipping together a prototype. Starting with some chunks of maple from the scrap bin, the concept went through several generations before the dune buggy pictured above was born.

From a structural point of view, the biggest difference between this dune buggy and the Jeep is the fact that the buggy doesn't have bumpers. That means that you can't take advantage of the removable retainer pin trick that I used to hold the Jeep's suspension together. Also, the buggy's fenders and body shape are more free-flowing, and their contoured shapes will take a little longer to cut and sand. Each fender is cut from a single piece of maple, while the Jeep's fenders are built with several elements for the standard square Jeep look.

One other noticeable difference between the two models is that the buggy sports a high, clear plastic windshield, rather than the walnut one on the Jeep. This is because your little buggy drivers will need some protection from flying sand as they plow through the dunes ...

How to Tune Up Your Hand Planes

By Tom Caspar

Every woodworker should get the chance to use a sharp, tuned-up hand plane. It achieves a beautiful surface unlike one made any other way. But before a plane will work for you, you have to work on it. No plane is ready to use when you buy it new, or even used.

Flatten the Sole

The equipment you'll need for a tune-up is readily available. First is a lapping plate - a totally flat surface - and 1/4" glass works well. Aside from the plate, a machinist's square or straightedge is helpful, as are files: A mill bastard is best for the preliminary coarse work, and you can finish metal with a mill smooth file.

Figure 1: To discover how flat the plane's sole is, the author sets the tool on a piece of 1/4" glass, then he inserts automotive feeler gauges between the sole and the glass.

Set the sole of your plane on the lapping plate to see how flat the sole is: Use automotive feeler gauges to discover if it's dished around the mouth, or lifts up at the ends like the camber in a canoe (see **Figure 1**, above). The sole should allow you to cut a shaving of consistent thickness from one end of a board to the other. It also holds down the wood immediately in front of the cutting iron: This prevents the shaving from splitting and tearing. So pay special attention to the portion of the sole in front of the plane's mouth.

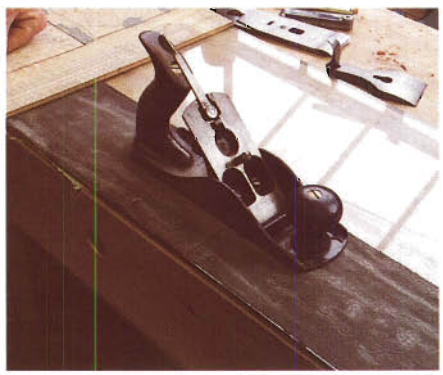


Figure 2: The sole is ground on an absolutely flat abrasive surface. To make a flat lapping plate, glue emery cloth or silicon carbide sandpaper to a sheet of 1/4" glass.

Your lapping plate should be two or three times the length of the plane (**Figure 2**). Use spray adhesive to glue emery cloth or silicon carbide sandpaper to one of its surfaces (seams in the paper are okay). If you have a lot of metal to remove, start with coarse emery cloth or 60 grit paper and change it regularly. Corrugated soles go faster than flat ones. Check your progress carefully with a straightedge, and don't worry about the front and back half inch: It's better to leave a bit of camber in the sole than for it to remain hollow around the mouth.

Sharpen the Cutting Iron

The two-part iron is the heart of any plane. The cutting iron must have a flat back and a bevel sharpened at about 30° right to its tip. Begin flattening the back on your lapping plate (**Figure 3**), then move on to fine honing stones. Make a comfortable wooden block to fit around the iron and protect your hands (**Figure 4**), then concentrate on the first half inch or so of the iron: Eventually this should become highly polished.

Figure 3: Begin tuning up the leading edge of the cutting iron by flattening its back on your glass lapping plate (above). Complete the process using fine honing stones.

To create the bevel, use a honing guide (**Figure 5, at right**). It's quick and easy, and it won't round over the bevel. I prefer a guide that rides on the stone, and I also prefer waterstones: They cut fast, with a positive feel. Start with a coarse (800) stone and work until you raise a burr. Then remove the burr by honing the back side of the iron on a polishing stone. Next, raise another burr on a medium (1200) waterstone, then hone both sides on the polishing stone. A highly polished edge will stay sharp longer. After a few honings I regrind the bevel to a 27° - 28° angle at a bench grinder (**Figure 5, inset**). This secondary bevel means less honing. For this I use a white aluminum oxide wheel and maintain it with a diamond point wheel dresser.

Figure 4: Grind the back of the cutting iron flat on the lapping plate, using a comfortable wooden block both to hold the iron down evenly and to protect your fingers.

Fit the Cap Iron

Your plane will jam up if shavings get caught between the cutting and cap irons. The cap iron creates the curl in a shaving by levering it up right at the cutting edge, in effect constantly breaking it. This levering prevents the shaving from splitting out ahead of the iron, minimizing tearout.

The front edge of the cap iron

Figure 5: The primary 30° bevel on the cutting iron is created with a honing guide (above). A secondary bevel of 27°-28° is formed using an aluminum oxide wheel on the bench grinder (right).

should be lapped to form a straight, sharp edge. Pinch the two irons together and sight towards a bright light to achieve a tight fit. Form and smooth the rounded top of the cap iron next, as shavings must glide up here. This won't happen if the curve is too perpendicular to the cutter, so file a smooth curve on the top that leans into the cutter. Finish up with very fine sandpaper.

Your plane's cutting iron has a shape that corresponds to the type of job it is designed to do. A plane for coarse work has an iron with a noticeable curve, while one for shooting fitted edges, like a jointer, will have an iron that's straight across. On a smoothing plane, or one used to level a surface, the iron is a bit of a hybrid. Its corners are slightly rounded so they don't dig in. Between them, the majority of the iron is straight, but it should trail off to a very slight rounding at each side. This planes very shallow scallops with ridges that are easily sanded off. You can create this profile when honing by twisting the honing jig every other pass or so.

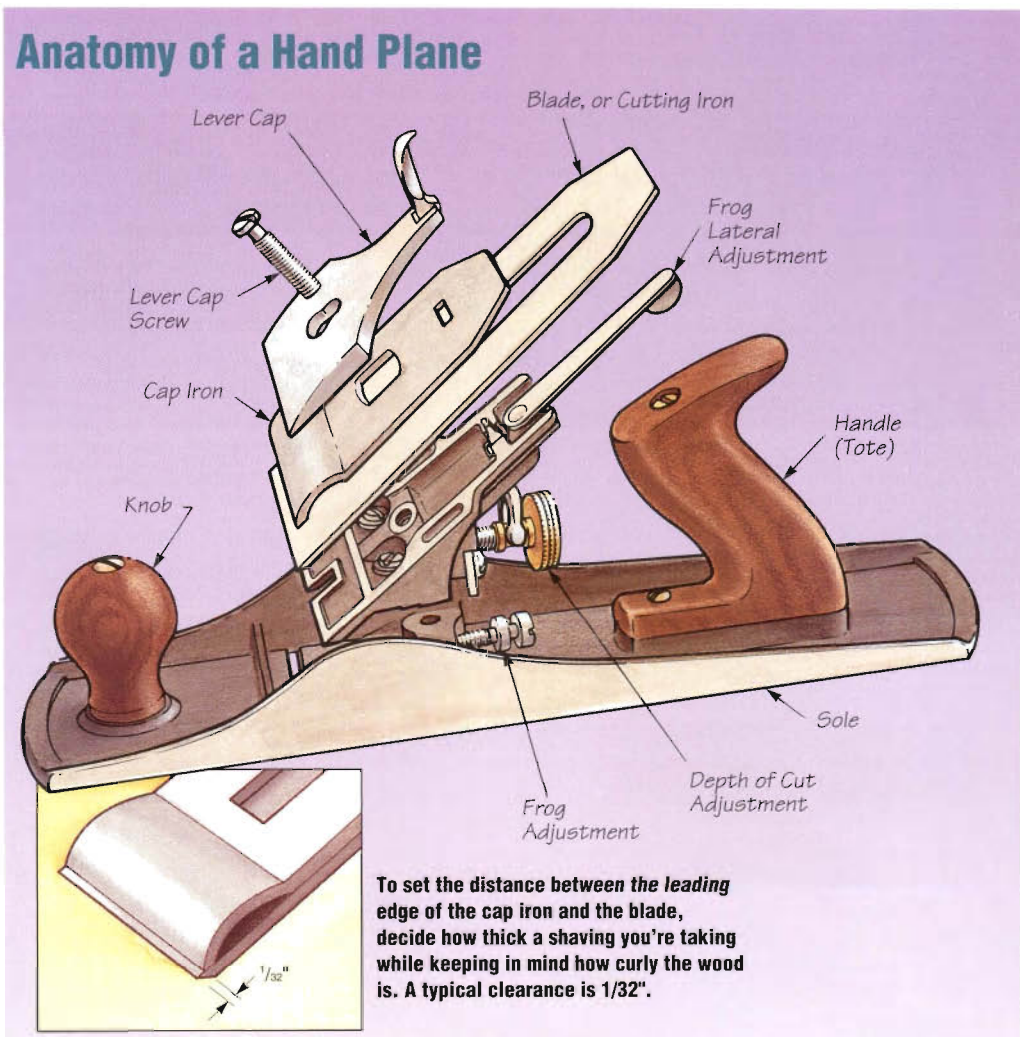
Setting the Iron

The plane's mouth must be open enough to admit a plane shaving, but the smaller the opening, the less tearout there will be. So a plane set for curly woods should have a very small mouth opening with the cap iron barely set back from the cutting edge. Widen both for normal wood.

When setting the iron, you've probably noticed that it takes a few turns of the adjusting nut before the iron moves. This play allows the iron to creep back up the frog if you set it by backing it out. To minimize this play, advance, rather than retard, the iron until you get the right shaving.

I've saved one of the best tune up tips for last. Lubricate the sole often during use with a few light strokes of paraffin wax (**Figure 6**). This is sold as canning wax in grocery stores, but it's not really a wax at all. It's a petroleum derivative related to mineral spirits, so it won't contaminate the wood or prevent a finish from adhering to newly planed wood.

Figure 6: Lubricate your plane's sole often with paraffin wax. It won't contaminate the wood or interfere with the finish.



To set the distance between the leading edge of the cap iron and the blade, decide how thick a shaving you're taking while keeping in mind how curly the wood is. A typical clearance is 1/32".

Blue Ribbons and Cigar Smoke

Bobby Taylor poses proudly alongside his blue ribbon winning steamer trunk.

Like Father, Like Son

I started woodworking with my Dad when I was very young. He was the carpenter type, building houses and some furniture and cabinets. I took somewhat of a different direction, building furniture and gifts for family and friends. This has been a hobby of mine for 20 years and I really enjoy it.

Here's a picture of my son, Bobby, and the steamer trunk featured in issue 29 (September/October 1993) of Today's Woodworker. He won a blue ribbon and a trophy for competing at the Oklahoma Industrial Arts Show. He won first place in the cedar chest division. This was Bobby's second year in the competition at the high school level, and I think he did a great job on the trunk (and so did the judges).

Bobby and I have built several other plans from other issues, but I think this one was special because of the competition and how the project turned out. These types of quality plans that you continue to publish make it one of our family's favorite magazines.

Chuck Taylor
Yukon, Oklahoma

TWW responds: We certainly agree with the judges. Great job, Bobby! We don't award blue ribbons, but keep an eye on the mail for a package from your favorite magazine.

Entertainment Center Enhancements

I completed this entertainment center from issue 24 (November/December 1992) and made some changes I would like to share. I designed and made leaded glass windows with bevels and put them in the sliding doors. I moved my VCR up with my stereo, so young children could not get at it. I made a drawer for the space where the VCR was. I made the shelves on the sides half the depth as your plan, then behind them I added storage space with a door on each end. I enjoy your projects, big or small.

Pat Timmerman
Minster, Ohio

TWW responds: Terrific enhancements, Pat. Thanks for sharing them.

Smoking is Optional

I found the inclusion of a humidor in issue 46 (July/August 1996) interesting for a number of reasons. I grew up as a son of a very good dentist whose one single fear was telling a patient they might have oral cancer. I didn't smoke, for obvious reasons. That said, I do wish to compliment you on Today's Woodworker. No cute stuff. No ticky tacky pine, either. I appreciate your serious dedication to useful projects and information.

I suspect that you smoke cigars and were probably excited by the idea of JFK's humidor selling for over $500,000 - but I don't have much use for or interest in a humidor. I'd like to suggest that you could increase the utility of the humidor by providing alternative plans for those of us who don't smoke (an ever increasing number).

You probably expected some controversy involving the humidor project, and might even in the future have another controversial project. Good, because playing it safe isn't what I am looking for in my woodworking, it only leads to mediocrity.

Martin Miller
mmillr@aol.com

TWW responds: Thanks for the suggestion, Martin, and thanks to all of you who wrote about the humidor. There's more than one ex-smoker on staff here, so we struggled with the inclusion of this project. Frankly, we proceeded because while we were struggling we kept getting requests for plans, Spanish cedar, humidity regulators and hygrometers. As the other two projects featured on this page make clear, we encourage readers to alter our plans for personal preference and taste.

Please send your letters and photos to: End Grain, Today's Woodworker, P.O. Box 261, Medina, MN 55340. You can also reach us by E-mail at: editor@todayswoodworker.com

Classified Marketplace

Classified Rate: $40 minimum for 25 words; $1.50 for each additional word. Payment must accompany order. Send copy and check/money order to: Classified Marketplace, Today's Woodworker, Box 261, Medina, MN 55340. Or Fax copy to 612-478-8396 and use credit card. Display classified rates start at $75.00 per inch; call Jill Arens, 612-478-8305 for more details. ***Deadline for the Nov/Dec issue is Oct. 1, 1996.***

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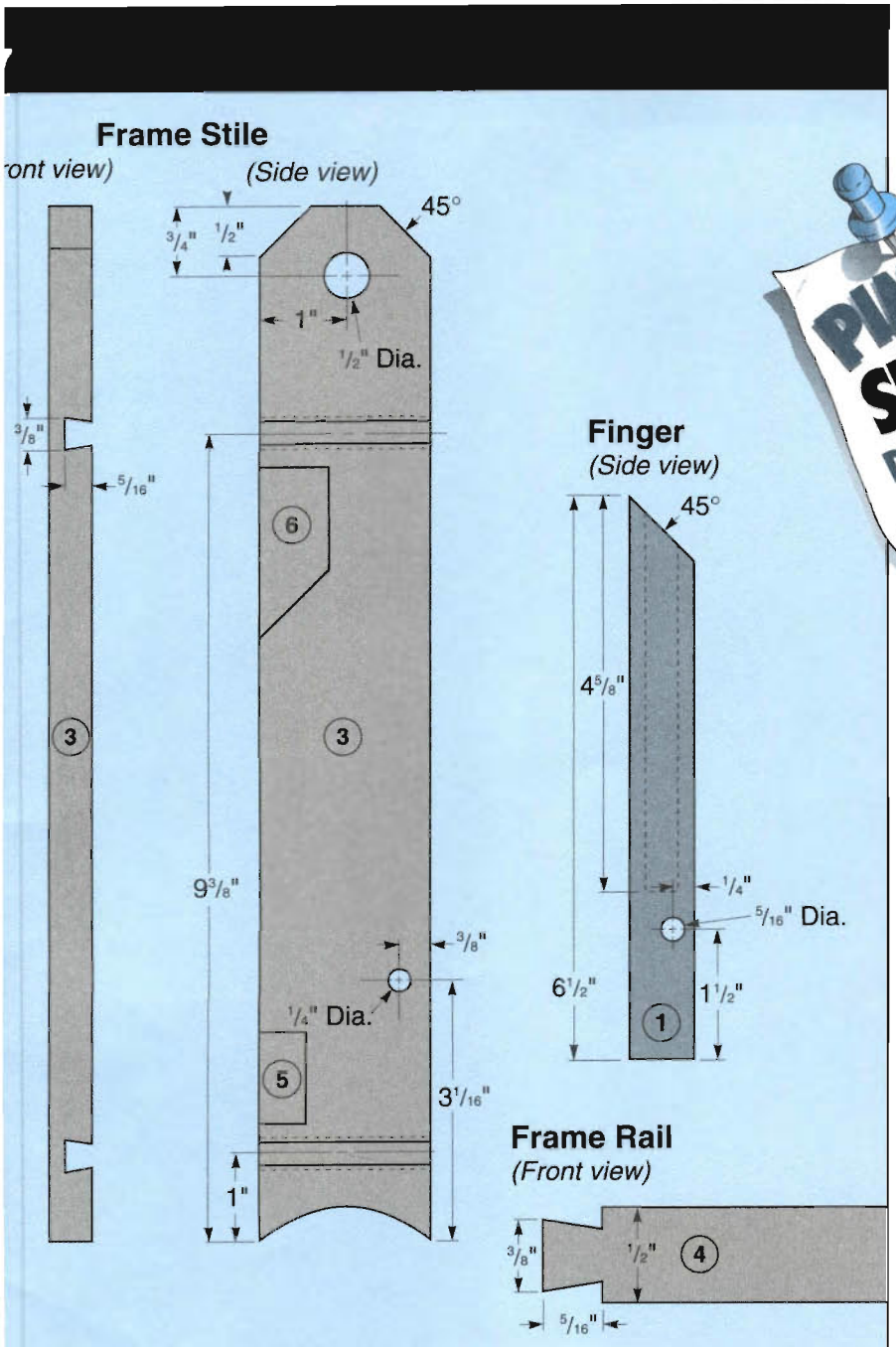

MATERIAL LIST		T x W x L
1	Fingers (9)	3/4" x 3/4" x 6½"
2	Finger Axle (1)	1/4" x 7⅞" Dowel
3	Frame Stiles (2)	1/2" x 2" x 12"
4	Frame Rails (2)	1/2" x 2" x 7⅞"
5	Finger stop (1)	1/2" x 1" x 6⅞"
6	Caddy Hanger (1)	3/4" x 2" x 6⅞"
7	Handle (1)	1/2" x 7⅞" Dowel
8	Wall Hanger (1)	3/4" x 2" x 6⅜"

Shape top and bottom before assembly.

Full-Size Patterns

PINUP SHOP DRAWINGS

- Open staples carefully, remove pattern and fold staples back in place.
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- Cut out the elevation drawings and pin them to your shop wall.

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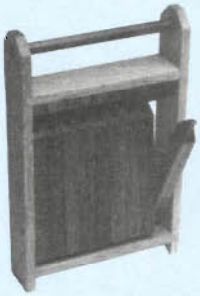
Our Pinup Shop Drawings provide you with all the detailed elevations. You also get full-size patterns for the edges of the top and base, plus a complete material list.



Scroll Saw Blade Caddy

Includes the hole locations on the stiles, dimensions for the vertical drill press jig and the material list, along with a full size pattern for the stiles.

4x4 Jeep

Includes full-size patterns for all the shaped jeep parts.

Steamer Trunk II

Includes the stile dimensions, locations of the dadoes,cleats, hinges and handles, plus a complete material list.

TODAY'S WOODWORKER®

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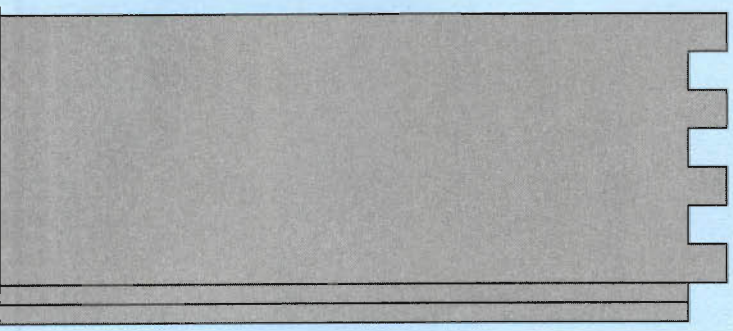
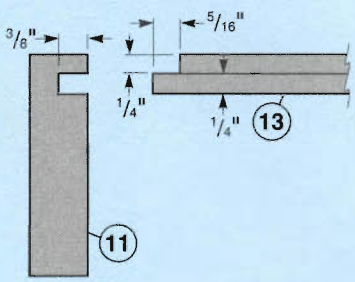
MATERIAL LIST

	T x W x L
1 Case Stiles (4)	1¾" x 1¾" x 14"
2 Case Front and Back Rails (4)	3/4" x 1¾" x 27½"
3 Case Front and Back Panels (2)	1/2" x 11⁷⁄₁₆" x 27⁷⁄₁₆"
4 Case Side Rails (4)	3/4" x 1¾" x 14½"
5 Case Side Panels (2)	1/2" x 11⁷⁄₁₆" x 14⁷⁄₁₆"
6 Case Bottom (1)	1/2" x 16⁹⁄₁₆" x 29⁹⁄₁₆"
7 Tray Cleats (2)	3/4" x 1¾" x 28½"
8 Tray Front and Back (2)	1/2" x 4" x 14¼"
9 Tray Sides (2)	1/2" x 5¼" x 15¼"
10 Tray Bottom (1)	1/2" x 13¾" x 14¾"
11 Lid Front and Back (2)	3/4" x 2⅞" x 30"

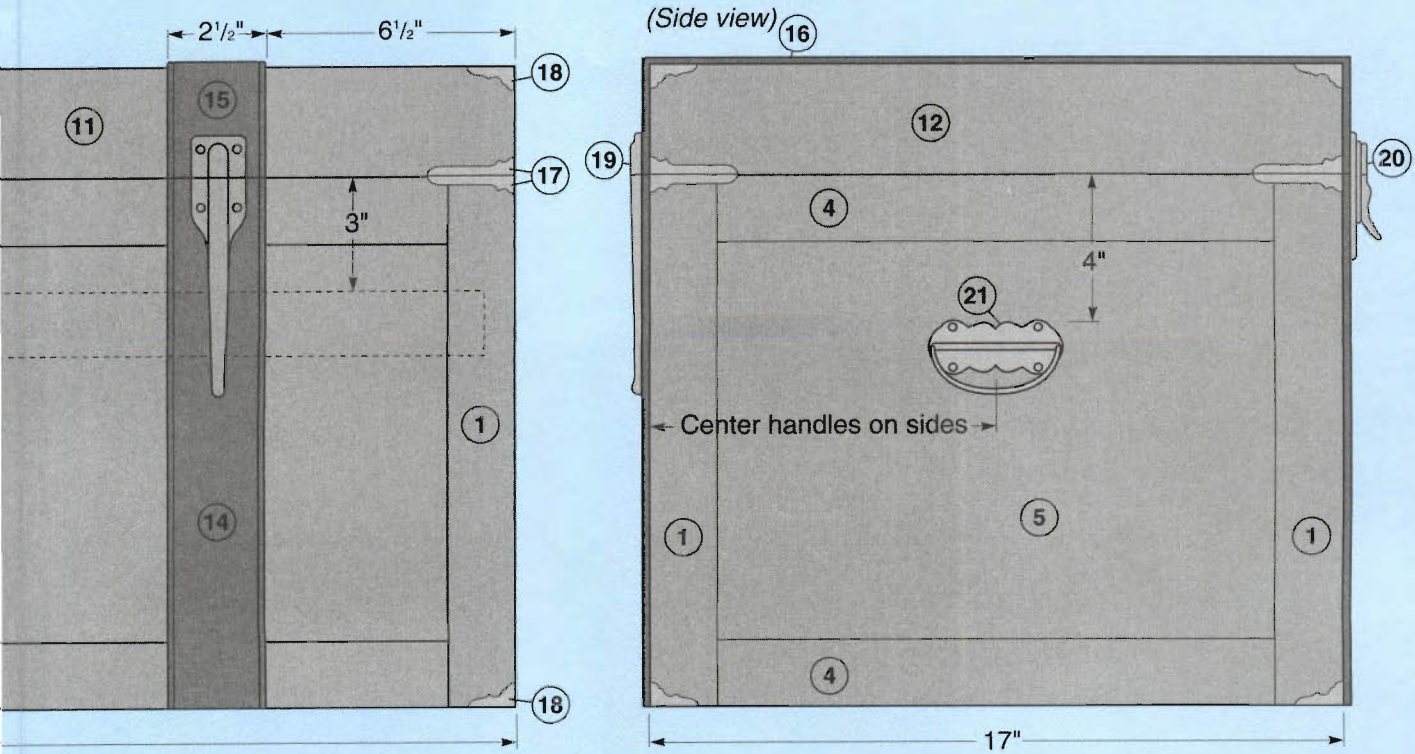
	T x W x L
12 Lid Sides (2)	3/4" x 2⅞" x 17"
13 Lid Top (1)	1/2" x 16⁹⁄₁₆" x 29⁹⁄₁₆"
14 Walnut Straps, Case (4)	1/4" x 2½" x 14"
15 Walnut Straps, Lid Sides (4)	1/4" x 2½" x 3⅛"
16 Walnut Straps, Lid Top (2)	1/4" x 2½" x 17¼"
17 Small Corners (8)	7/16" x 2½" x 2½" brass
18 Large Corners (8)	1/2" x 1¼" x 1¼" brass
19 Trunk Strap Hinges (2)	1¼" x 5⅝" brass
20 Oblong catches (2)	1½" x 2¾" brass
21 Handles (2)	Brass



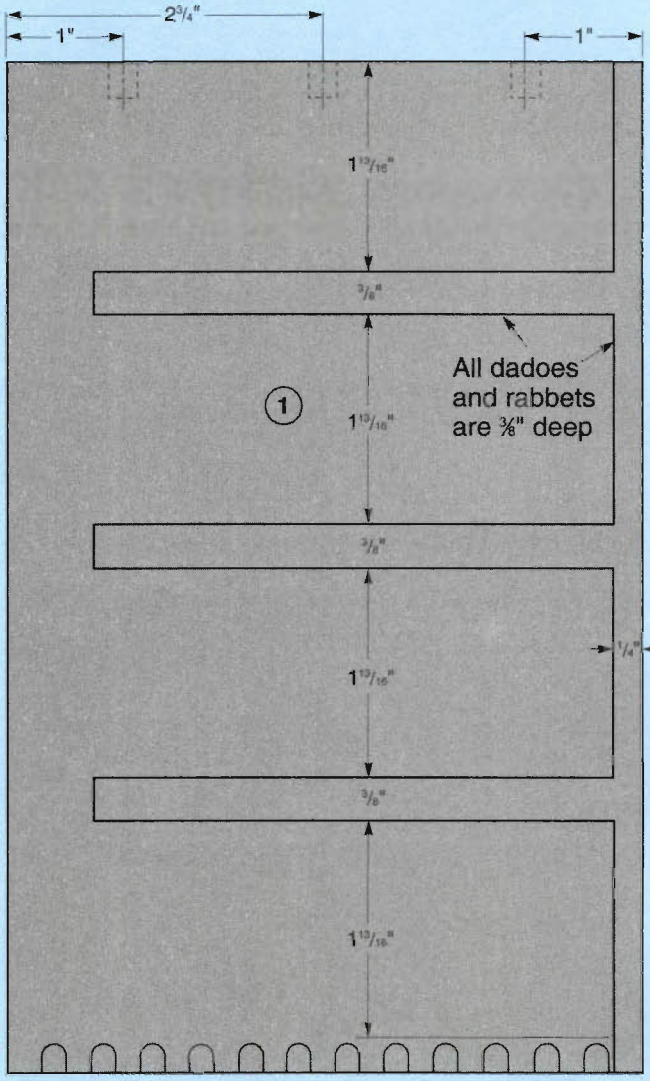
Lid Top Detail
(Side view)



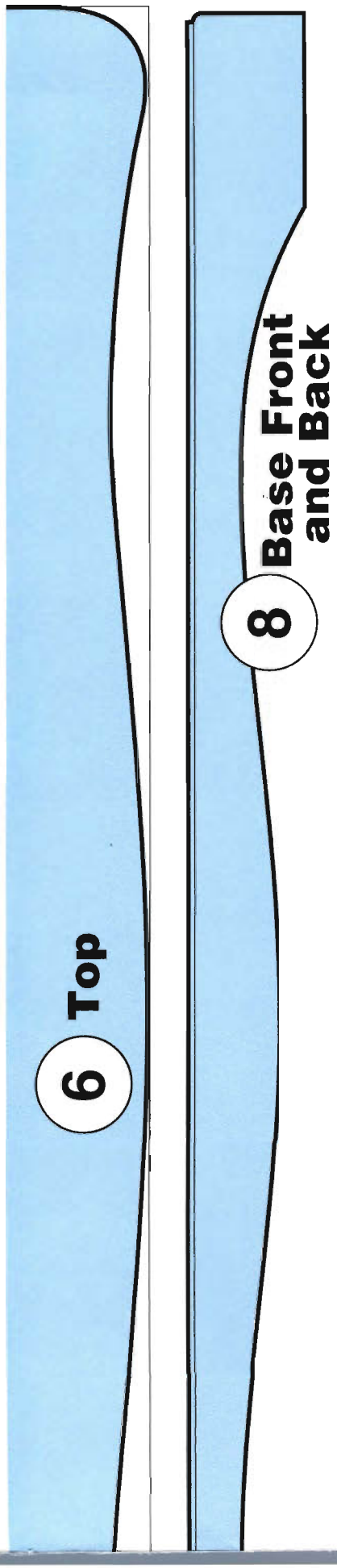
Steamer Trunk
(Side view)



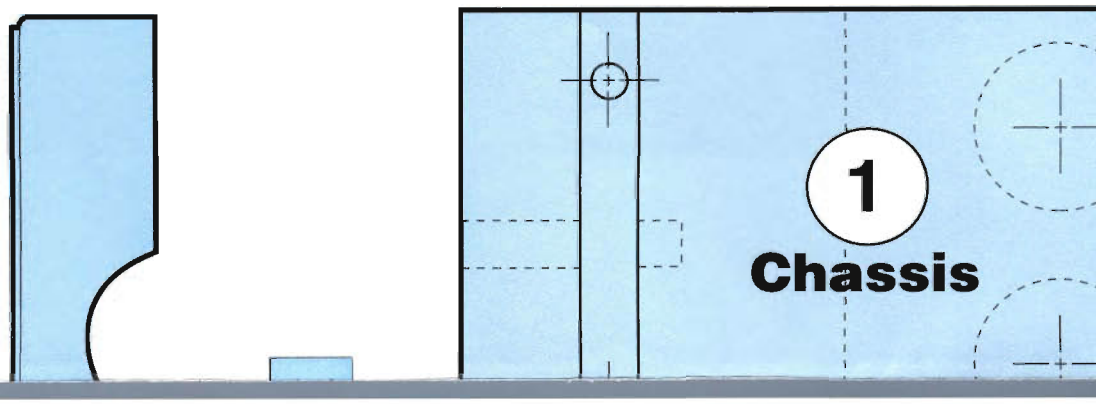
Side Panel
(Front view)

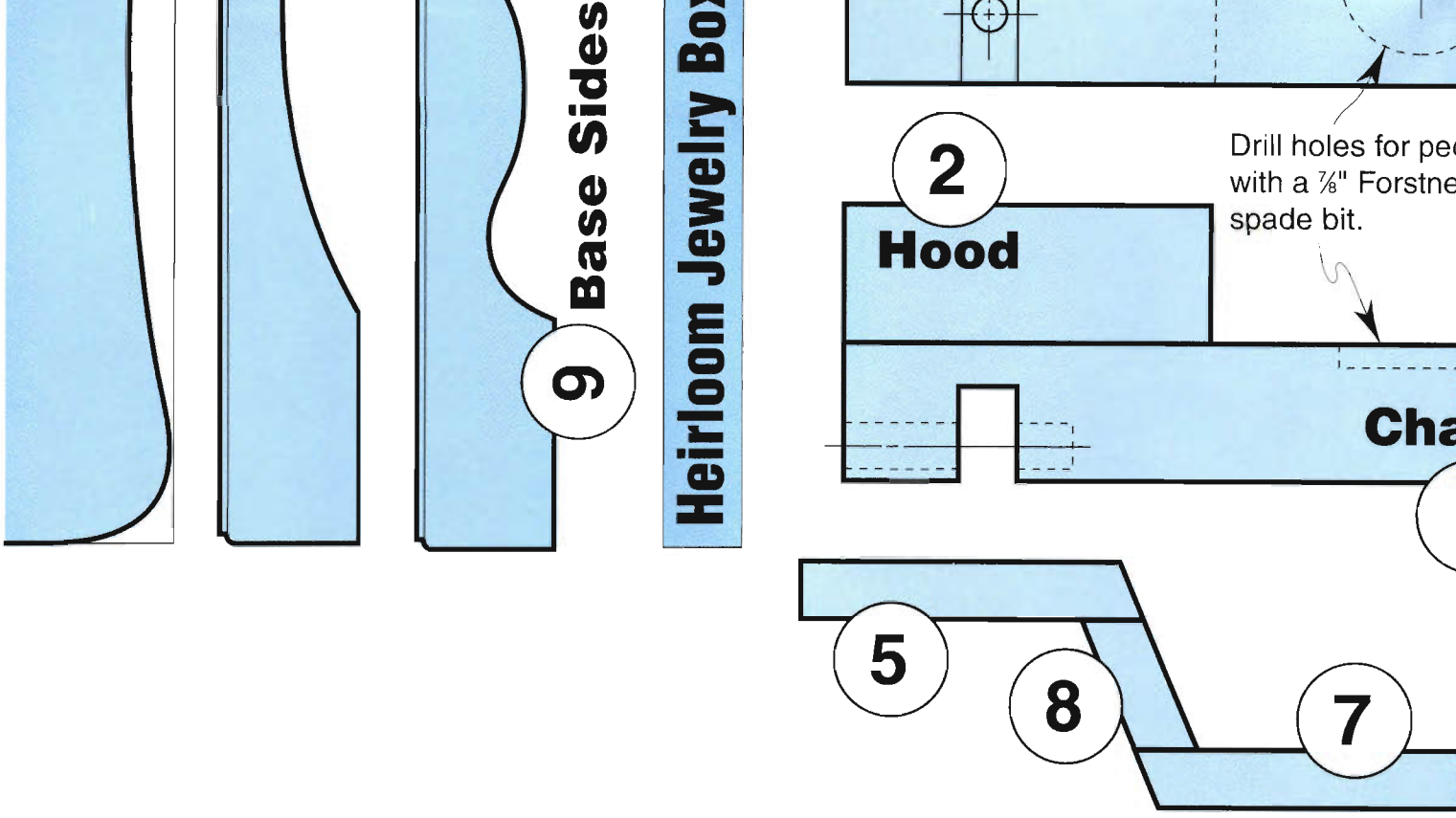


Note: The center 3/16" deep dado in piece 3 (which houses piece 4) can be cut at the same time as those shown above.

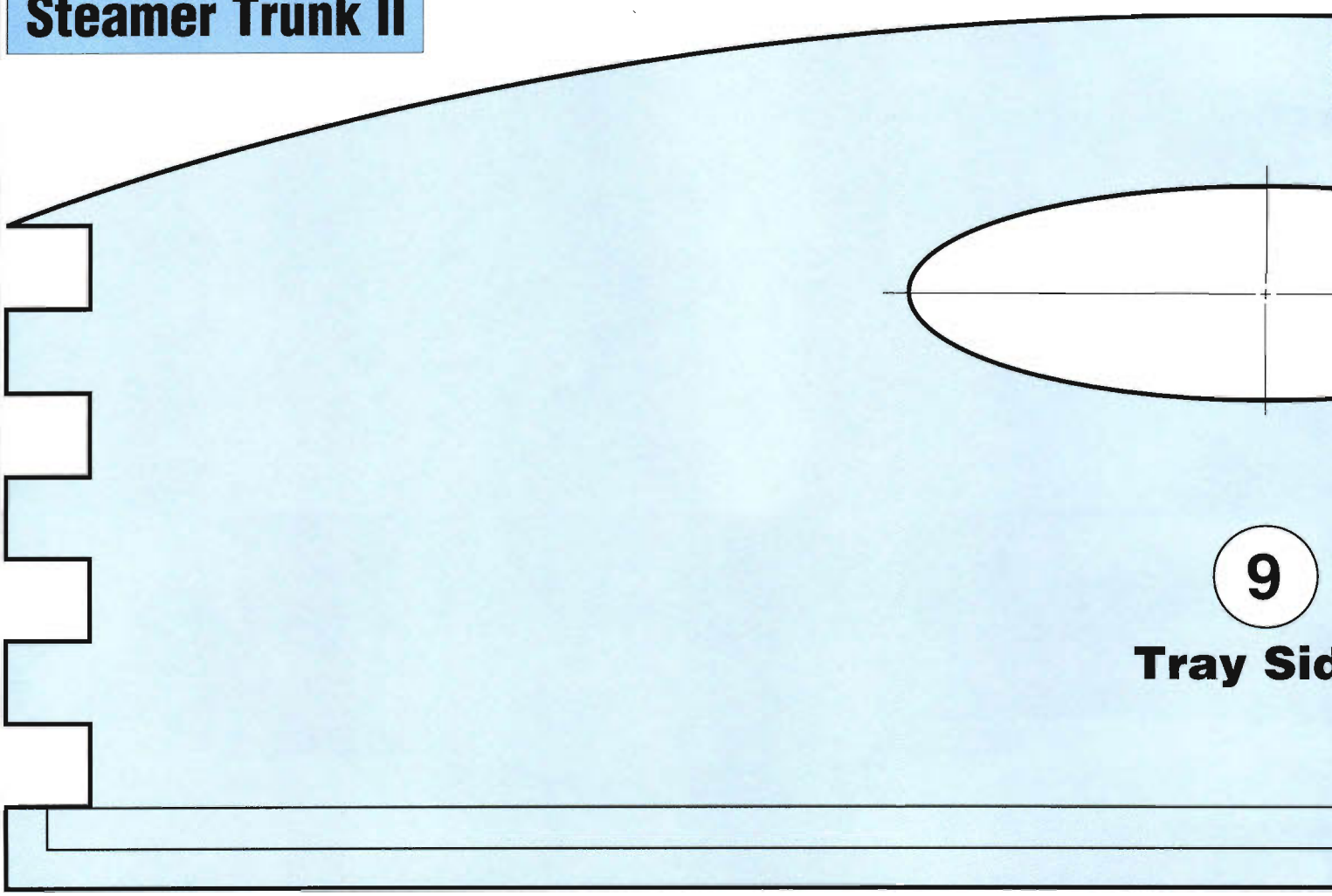


4 x 4 Jeep

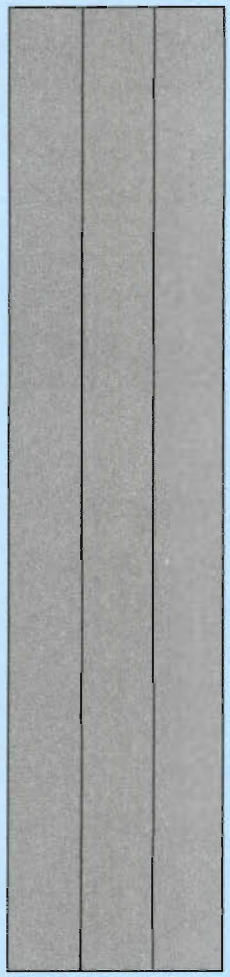




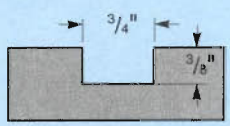
Steamer Trunk II



Centering Jig Plate
(Front view)

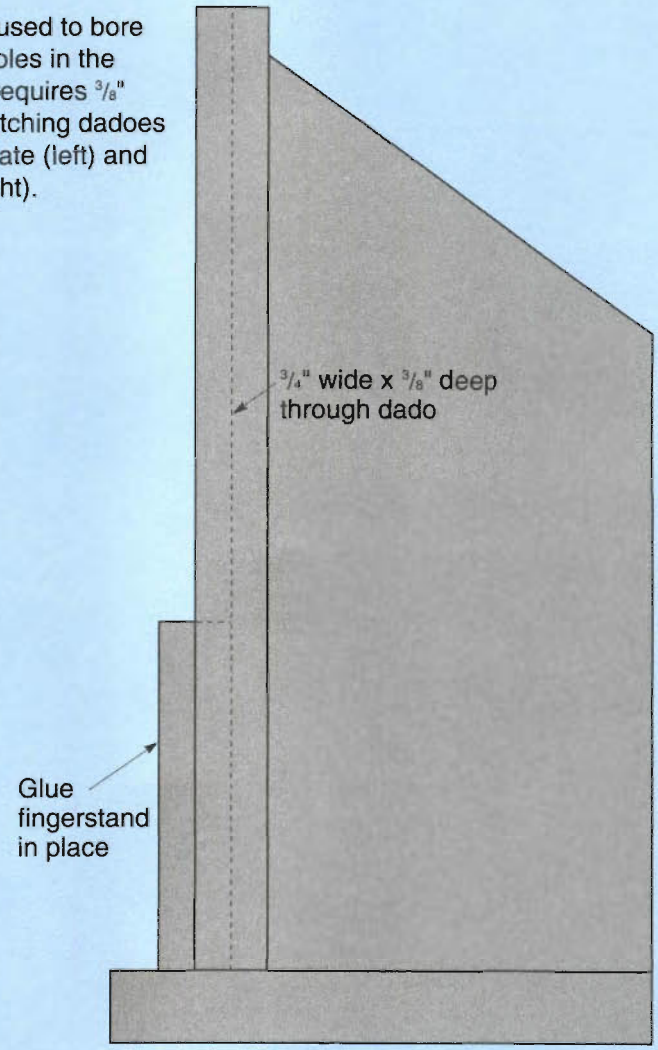


This jig, used to bore the 3/8" holes in the fingers, requires 3/8" deep matching dadoes on the plate (left) and base (right).

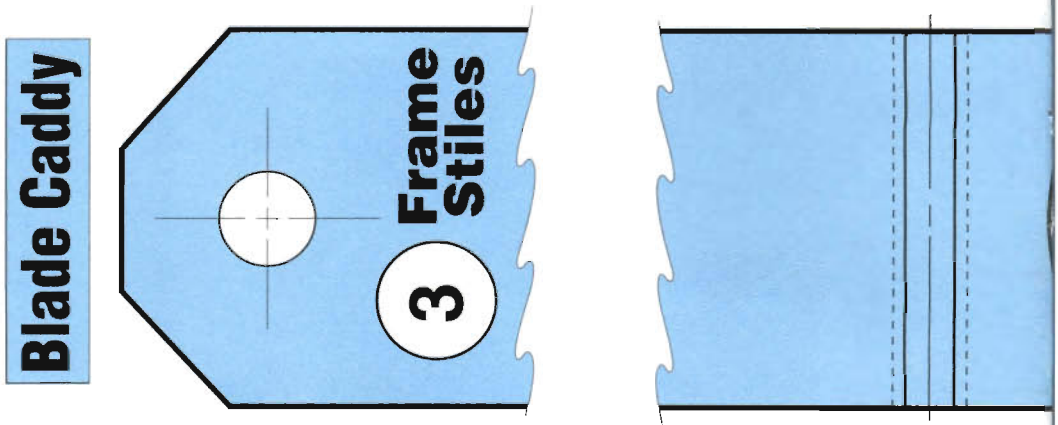


(End view)

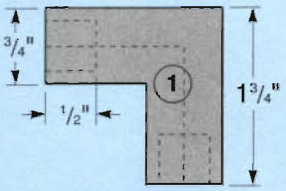
Centering Jig Base
(Side view)



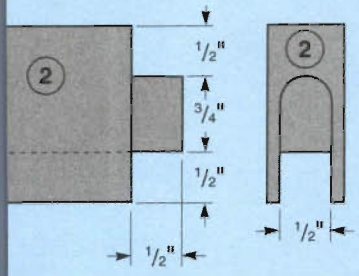
Note: Use 3/4" x 3/4" scrap to get the bit centered on the workpiece. Then clamp the base in place to bore the blade holes in the fingers.



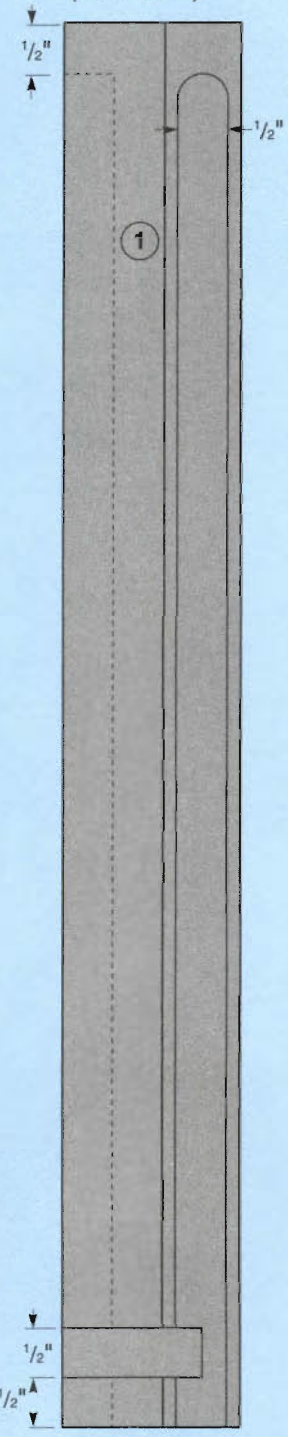
Case Stile
(Top view)



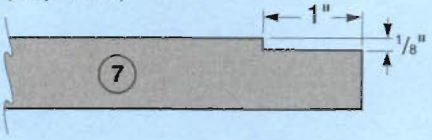
Case Top Rail
(Side view) *(End view)*



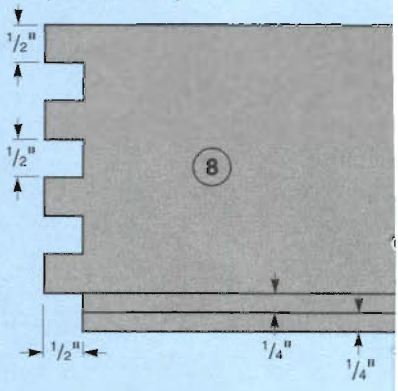
Case Stile
(Side view)



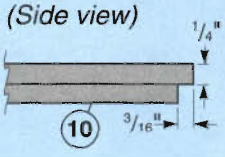
Tray Cleat Detail
(Top view)



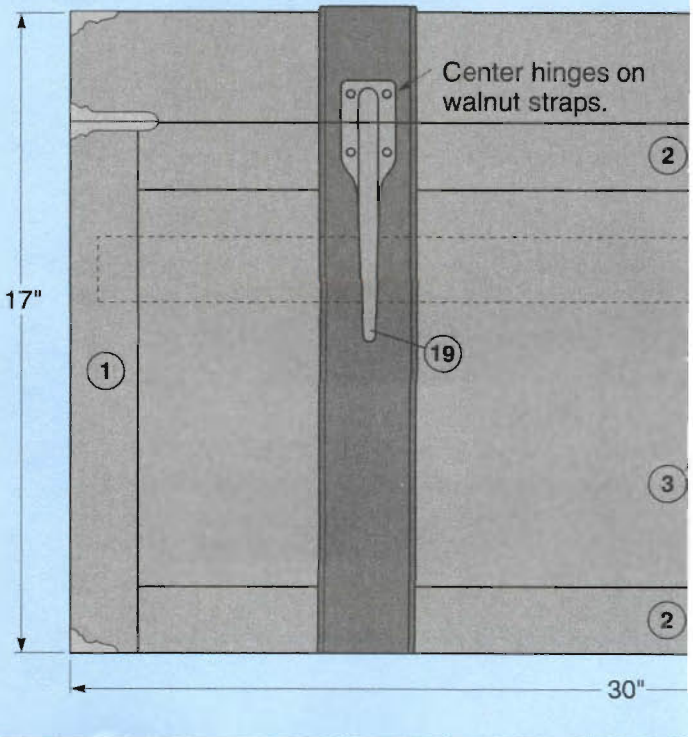
Tray Front and Back
(Front view)



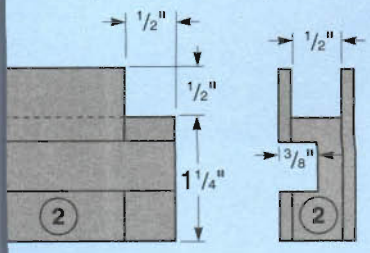
Tray Bottom
(Side view)



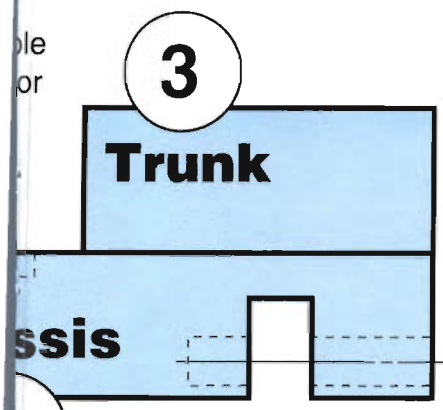
Steamer Trunk
(Back view)

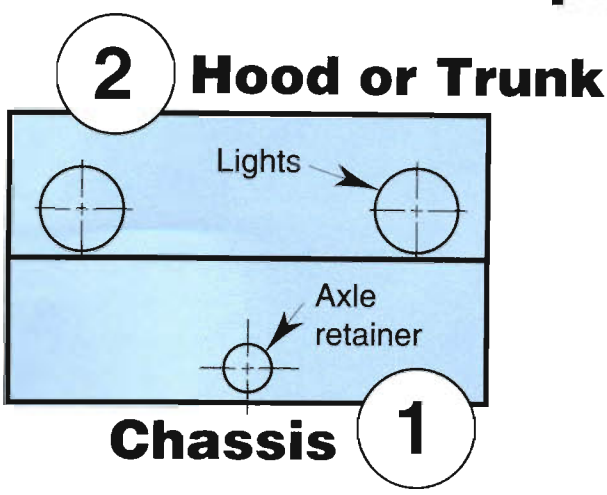


Case Bottom Rail
(Side view) *(End view)*

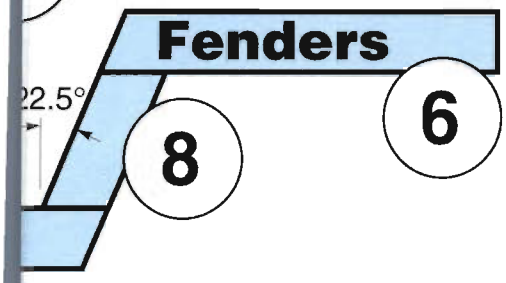


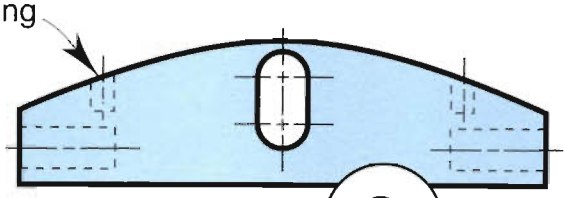
Bumpers



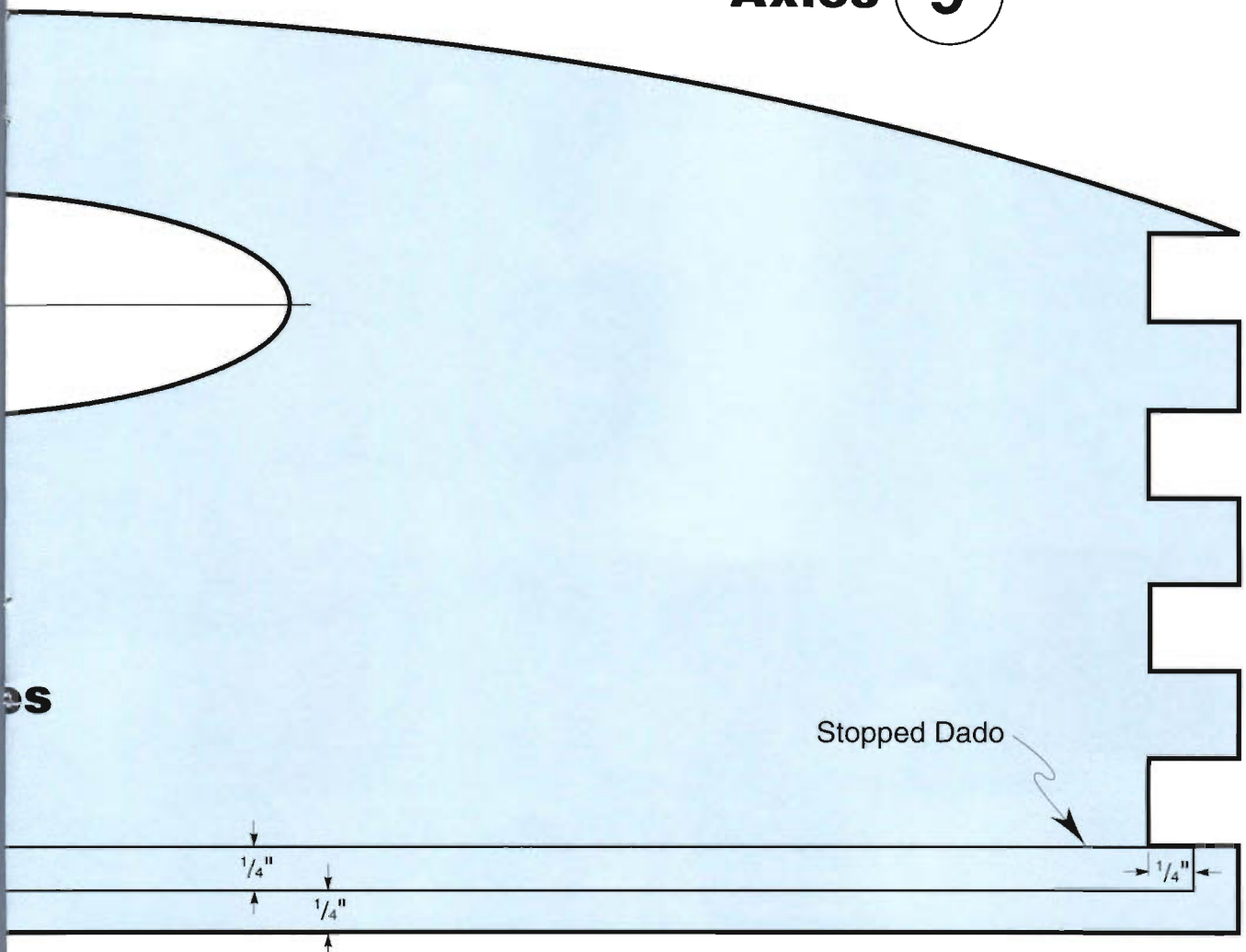


Chassis 1





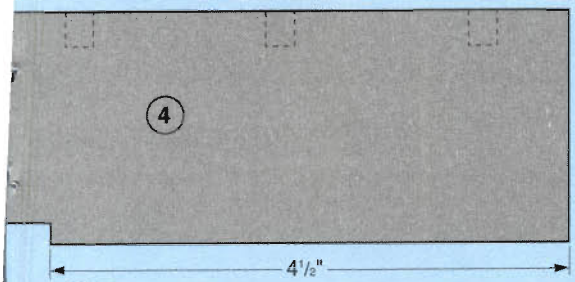
Axles 9



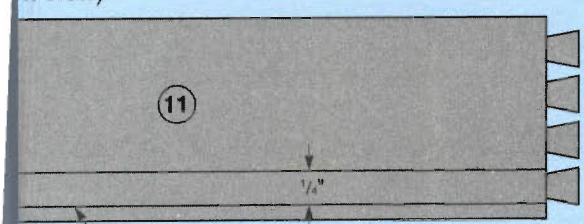
MATERIAL LIST

		T x W x L
1	Sides (2)	3/8" x 5½" x 8¾"
2	Bottom (1)	3/8" x 5¼" x 11⅞"
3	Rails (3)	3/8" x 5¼" x 11⅝"
4	Divider (1)	3/8" x 2" x 5¼"
5	Back Panel (1)	1/4" x 8¾" x 11⅝"
6	Top (1)	1/2" x 6" x 13"
7	Dowels (9)	1/4" x 1/2"
8	Base Front and Back (2)	3/4" x 3/4" x 12½"
9	Base Sides (2)	3/4" x 3/4" x 6"
10	Base Gussets (4)	1/4" x 1/4" x 3/4"
11	Drawer Sides (10)	3/8" x 1¾" x 5"
12	Small Drawer Fronts (2)	1/2" x 1¾" x 5⅜"
13	Large Drawer Fronts (3)	1/2" x 1¾" x 11⅞"
14	Small Drawer Backs (2)	3/8" x 1¾" x 5⅜"
15	Large Drawer Backs (3)	3/8" x 1¾" x 11⅞"
16	Small Drawer Bottom (2)	1/4" x 4⅞" x 5"
17	Large Drawer Bottom (3)	1/4" x 4⅞" x 10¾"
18	Felt	12" x 24"
19	Solid Brass Pulls (8)	3/8" Diameter

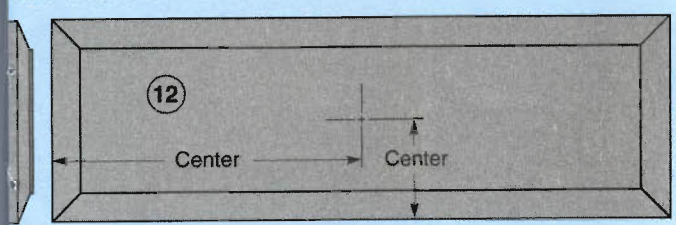
ider
nt view)



wer Side
nt view)

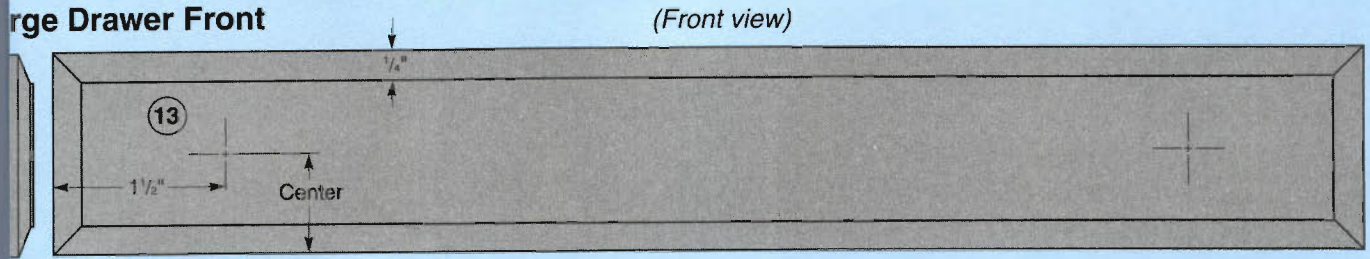


nall Drawer Front *(Front view)*

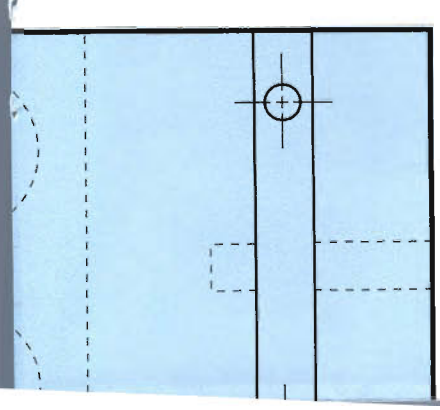


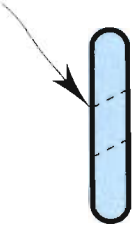
Note: Use ½" scrap to establish your setup for the drawer front bevel. Set your blade at 10° and move the fence ⅜" from the inside of the blade. Now slowly raise the blade until the waste is separated, creating the reveal.

rge Drawer Front *(Front view)*

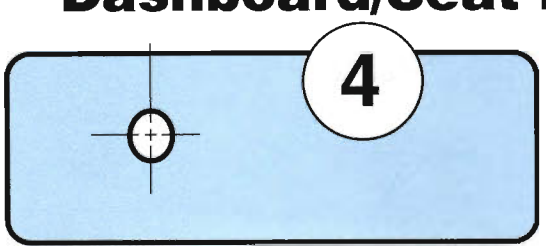


Drill hole for steering column at an angle.





Dashboard/Seat back



Axle retainer pin locatio