



The author grips the muslin with the palm of his hand, instead of his fingers, to stretch it smoothly and evenly over the seat. Then, he rolls the horse hair under at the edges, so that no hair hangs over the edge roll, and tacks the muslin in place.

Upholstering a Slip Seat

A traditional approach with horse-hair padding

by Don Taylor

Most experienced woodworkers consistently produce refined furniture that draws praise from friends and family. But give those same craftsmen a piece of material and they turn to all thumbs. With a little knowledge and practice, however, most woodworkers can produce a slip seat that will do justice to the finest furniture. In this article, I will describe the traditional technique of upholstering a slip seat for a chair, such as the Chipendale described by Eugene Landon in *FWW* #73, pp. 84-87.

Recessing the slip-seat frame into the chair rails minimizes the upholstered appearance, while horse-hair padding, suspended by webbing and burlap over an open wooden frame and covered with upholstery material, provides comfortable cushioning. Horse hair was traditionally the preferred padding because it retained its

loft and stayed in place better than Spanish moss, grass or other alternatives. Although horse hair is used for restoration work, it is expensive and often difficult to work; therefore, I'll also discuss the more common method of gluing high-density foam, which is easier to work, very durable and more comfortable, to a plywood platform in the sidebar on p. 80.

The first step in upholstering any chair is to build the wooden frame to fit the chair and serve as the foundation for the seat. Interwoven jute webbing, stretched across and tacked to the top of the frame, provides the seat's main support and is the base for the padding and covering materials. Tacking burlap over the webbing prevents the horse-hair padding, which is laid on top of the burlap, from filtering through and being damaged by the webbing.

Cotton muslin, stretched and smoothed over the horse hair, is wrapped over the edge of the frame and tacked to the bottom. This is perhaps the most critical step of the operation because it determines the seat's final shape and form. Finally, cotton batting is loosely laid over the muslin to add extra softness and prevent the horse hair from uncomfortably poking through the upholstery material, which is stretched over the cotton batting, wrapped over the edge of the frame and tacked to the bottom of the seat frame.

Tools and materials—Only a few specialized tools, which are shown in the top photo at right, are needed for upholstering. A basic tool kit includes a tack hammer, upholstery shears, a webbing stretcher and a tack lifter, all of which are available from Constantine (2050 Eastchester Rd., Bronx, N.Y. 10461; 212-792-1600) for under \$50. You'll also need a utility knife, a tape measure and a straightedge, such as a 54-in. upholsterer's metal straightedge, carpenter's square or T-square. A sewing machine is helpful, but not absolutely necessary.

For a traditional seat, you'll also need about 8 ft. of 3½-in.-wide red-stripe jute webbing, several pounds of curled horse hair, about 6 ft. of ¾-in. welt cord, about 4 sq. ft. each of 10-oz. burlap, cotton muslin, cotton or polyester batting, and a piece of upholstery fabric, some white chalk and some no. 2, no. 3 and no. 8 upholstery tacks or webbing nails.

Constructing the seat frame—The open seat frame is constructed from a medium-density hardwood such as soft maple or white elm. Cut the 7/8-in.-thick by 2¼-in.-wide strips to fit your chair. Mortise-and-tenon joints were traditionally used, but I believe that dowel or biscuit joints work just as well. Whatever joint you use, allow a full ¼-in. clearance on all sides between the seat frame and the chair rails for the upholstery fabric. Because some fabrics are thicker than others, I recommend buying the fabric before constructing the seat frame so you can make sure you leave enough space.

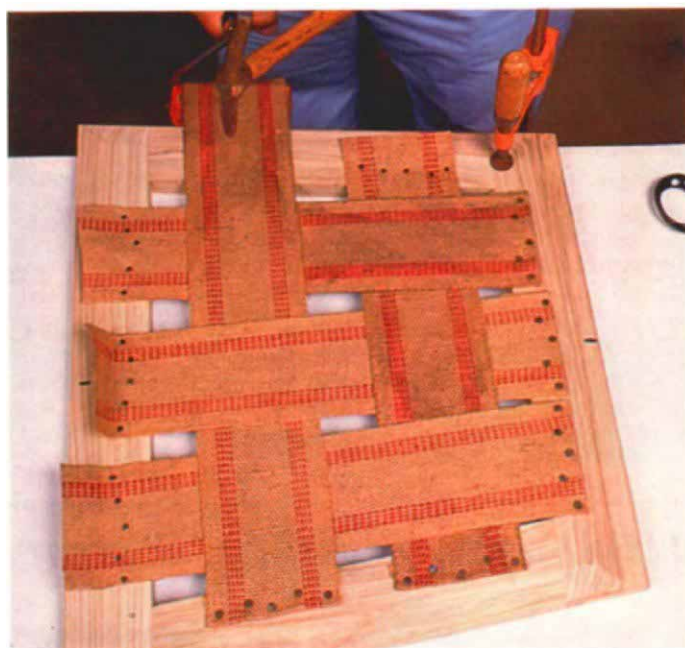
I make full-size poster board or cardboard templates for laying out the stock and determining the angles of the frame pieces. If you use mortises and tenons, allow extra length on the side rails for the tenons. For dowel or biscuit joints, cut the stock for a butt fit. Next, the frame is glued and clamped together. When the glue has dried, handplane or belt-sand the joints flush before you rip an 8° bevel around the top outside edge. The bevel starts on the side of the seat frame at a point even with the top of the chair rail when the frame is placed in the chair. This bevel softens the transition from upholstered seat to chair frame, and it also reduces wear on the upholstery. Sand or plane away all sharp edges and corners so they won't cut through the fabric, and then test-fit the seat frame to ensure there is enough clearance for the fabric. If the seat is tight, plane it to fit; if it's loose, tack cardboard along the edge of the seat frame to fill the gaps.

Installing webbing and padding—With either the front or back rail facing you, clamp the seat frame to your workbench. Do not cut the webbing to length until after it has been stretched and tacked in place. Center the first strip of webbing about 1 in. onto the rail that is facing away from you. Then, fold 1 in. of webbing either under or over itself to provide a strong double thickness for nailing. Next, I drive webbing nails or no. 8 upholstery tacks into the center and each outside corner of the webbing, and then drive two tacks in between, for a total of five tacks. The last two tacks are spaced farther away from the edge than the first three and are staggered to prevent splitting.

After the first end is secured, the webbing is stretched taut with the webbing stretcher, as shown in the bottom photo at right. The webbing stretcher is a block of wood with a row of protruding

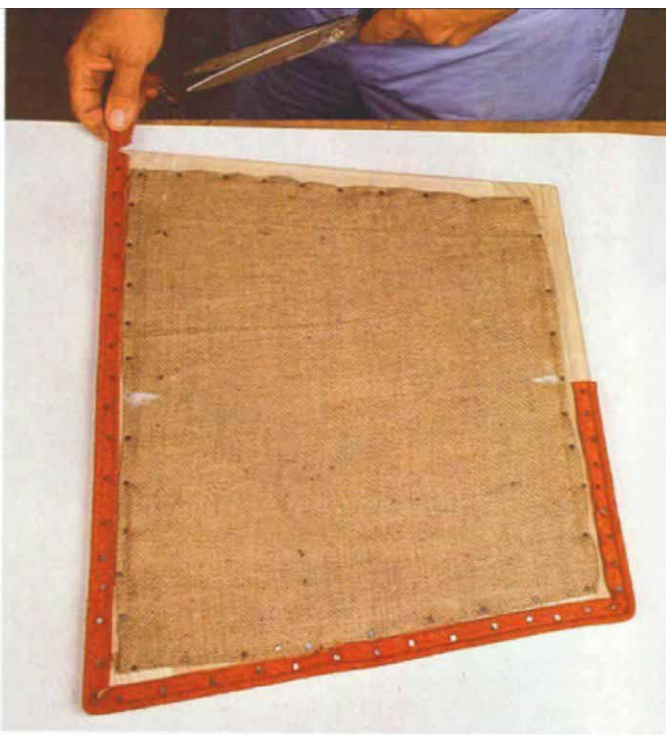


Basic upholstery tools for making a slip seat include from left to right: a tack lifter, shears, tack hammer and a webbing stretcher. You will also need webbing nails, no. 8, no. 3 and no. 2 upholstery tacks, chalk, a dark marker and a measuring tape.



Stretch the webbing taut by levering the webbing stretcher against the wooden frame. Note the position of the webbing on the frame, the nailing pattern and the weave pattern of the webbing. The loose ends of webbing will be folded over and nailed with webbing nails in the same pattern as the other end.

nails that grip the webbing and a handle that levers the block against the seat frame, thereby stretching the webbing. The webbing should not be stretched so tight that it distorts the frame; it should yield just slightly under pressure. Try to stretch each band to the same tension. Drive in five equally spaced no. 3 upholstery tacks about ¾ in. from the inside edge of the seat frame to temporarily hold the strip. Cut webbing about 1 in. beyond the row of upholstery tacks so you have enough material to fold the webbing over, and then retack it through a double thickness with five webbing nails as before. This process should be repeated when a strip of webbing is added to each side of the first band. Next, weave two bands of webbing at a right angle to the three bands of webbing



After the burlap is tacked in place, install the edge roll and notch the corners to avoid build up of material. Allow the edge roll to overhang the seat frame about $\frac{1}{16}$ in.

running front to back, alternating over, under and over, as shown in the bottom photo on the previous page.

The next step is to cut a burlap barrier 2 in. wider and deeper than the installed webbing. Whenever installing material in upholstery, you should always work from the center, to ensure adequate material on each side for pulling and stretching and to keep the material square to the frame. After centering the burlap on the seat frame, temporarily tack the middle on all four sides; it is much easier to remove these tacks with the tack lifter if they are not driven completely home. Now, remove the tack on the front rail and turn the burlap over or under so it extends about $\frac{1}{4}$ in. beyond the edge of the webbing. Drive a tack in the center of the

rail, close to the edge of the burlap, and pull the burlap toward the front corners until it is taut. Then, tack about $1\frac{1}{2}$ in. from each corner of the front rail, and complete the front of the frame by spacing tacks 1 in. apart between the tacks previously installed. When the front rail is finished, do the same to the back rail. Be sure to pull the burlap taut, but don't stretch it excessively. The burlap is tacked to the side rails in the same manner as the front and back rails.

Making the edge roll—An edge roll tacked around the top outside edge of the seat frame keeps the padding in place and softens the frame edges, increasing comfort and reducing wear on the fabric. I make the edge roll by wrapping $\frac{5}{32}$ -in. welt cord with cotton muslin, burlap or even upholstery material, leaving a $\frac{1}{2}$ -in. flap of doubled material to one side of the roll, and machine-sewing as close as possible to the welt cord. A zipper-foot or welting-foot attachment on a sewing machine allows sewing close to the welt cord. You could also hand-sew the edge roll, or you could even apply the edge roll without sewing by driving no. 3 tacks through the flap as close to the cord as possible. Starting in the center of any side, allow the edge roll to overhang the seat frame by $\frac{1}{16}$ in., and tack through the flap of material along the outside perimeter of the seat frame. After the first tack, pull the edge roll tight and tack about 1 in. from the corner. Fill in the space with no. 3 tacks about 1 in. apart. Cut a V-notch at the corner, bend the edge roll around it and tack close to the corner, as shown in the photo at left. Then, stretch the edge roll tight and tack about 1 in. from the next corner. Fill in the space with no. 3 tacks and repeat this procedure until you are back where you started.

The next task is to lay in the horse-hair padding. Curled hair is available in three different grades that are based on the amount of horse mane included in the mix. The cheapest is a mix of 15% horse mane and 85% hog hair, followed by a mix of 50% horse mane and 50% horse tail, while the top of the line is 100% horse mane. Retail prices range from \$8 to \$12 per lb., usually with a 50-lb. minimum. New England Upholstery Supply Co., 23 Sanrico Dr., Manchester, Conn. 06040; (203) 643-6773, sells horse hair at a 50-lb. minimum, as well as a full line of upholstery supplies. Your best solution might be to salvage horse hair from older furniture.

High-density foam: a convenient alternative

Upholstering with high-density polyurethane foam offers some real advantages over traditional horse hair. Foam is readily available at fabric or upholstery supply stores, reasonably priced and easier to use. In addition, cushions with foam maintain their loft and don't "sing" as horse-hair seats do when people sit on them.

Foam can be used with the open seat frame and jute webbing as before or with a solid seat platform, as shown in the photo at right. The open seat frame makes a slightly more comfortable seat, but a $\frac{1}{2}$ -in. or $\frac{3}{8}$ -in. plywood platform is much easier and quicker to make. In addition to the foam and platform, you will need cotton muslin, upholstery fabric, tacks and spray adhesive suitable for foam. Although cotton or polyester batting is optional with this



The extra cushioning provided by foam makes it practical and comfortable to build a slip-seat base by simply gluing high-density foam to a piece of $\frac{1}{2}$ -in. plywood, which is then upholstered the same way as the traditional horse-hair slip seat.

procedure, either could be used to further shape the seat.

Upholstering with foam: I cut the foam to the full size of the seat and then bandsaw a 45° bevel around the top edge. The foam can also be cut with a utility knife and metal straightedge or an electric carving knife. Cement the foam to the seat platform by spraying a 3-in. band of adhesive around the perimeter of the foam and seat platform. I find it easier to place the plywood on the foam, as shown in the photo at left. Cover the foam, which has been glued in place, with polyester batting, layering it until you reach the desired fullness. Using the techniques described in the main article, finish up the seat by installing the muslin cover and upholstery fabric. — D. T.

Also, you can check with your local upholstery shops because many times some hair will be left from a piece that's been reupholstered. The quantity of hair needed depends on the size of the seat, but an average 14-in. by 16-in. seat takes 1 lb. to 2 lbs. of hair. If you use reclaimed curled hair, pull it apart to fluff it up and restore its loft. Before putting on any horse hair, mark the centers on the bottom of the front and back seat rails to establish reference points for later installing the cotton muslin. Now, lay the horse hair evenly on top of the burlap, building up about a 3-in. layer that's somewhat thicker in the middle to give the seat a crown. Pat the hair into position with your hands, feeling for voids and low spots as you go.

Installing the cotton muslin—Once the muslin is on, it is very difficult to correct mistakes, so I take extra time here to smooth the fabric and add hair to fill voids and to shape the cushion. Cut the cotton muslin, allowing at least 2 in. extra on all sides, and mark the center on the front and back edges with a pencil. Align the center marks on the muslin with the center marks previously made on the bottom of the frame. Using no. 2 upholstery tacks, temporarily tack the muslin at the center point of the front rail of the seat frame, pull the muslin tight and tack the center of the back rail. Repeating this procedure, temporarily tack the center of the sides. I then remove the tack on the front rail, smooth the muslin from the center of the seat to the front edge to remove any slack, and retack. I find it easiest to work with the seat on edge, smoothing with one hand, holding the material in place and then retacking with the other hand, as shown in the photo on p. 78. As you pull the muslin, curl the hair under on the edges to eliminate voids and give the seat a firm edge. Pull the muslin with the palm of your hand, not just your thumb, to get smoother results, and work the fabric back and forth so no hair hangs over the edge roll. Then, pull the muslin tight to one corner of the front rail and tack it. Repeat the process on the other corner of the front rail. Following this sequence, I tack the back rail and then the side rails in position. I don't fully set any of these tacks until I have worked my way around the seat frame and have completely smoothed the muslin.

Once the muslin fits tight, with no wrinkles or voids, I drive the tack in the center of the front rail home, and tack the material every $\frac{3}{4}$ in., working from the center to the corners and pulling and smoothing material as I go. The process is repeated first for the back rail and then the side rails. Finish installing the muslin by pulling the corners at a 45° angle to the frame and holding it with a no. 2 tack, as shown in the top photo at right. Cut the excess muslin along each side of the tack to the point of the corner, fold over the material on the sides and tack before cutting away the excess material, as shown in the center photo at right. I check the seat carefully for voids or low spots in the padding and redistribute the horse hair with a sharp ice pick. Poke the ice pick carefully through the muslin, and then use the point to move the horse hair from surrounding areas into the low spots.

To improve comfort and appearance, I put a layer of cotton or polyester batting, the material used for lining quilts, over the muslin cover. Cotton batting, the traditionally used material, should be separated so only half the thickness is used. Tear cotton batting with your fingers to fit the muslin cover; however, use the seat frame as a pattern and cut polyester batting to fit. I cut the upholstery fabric with 2 in. of extra material on each side and apply it the same way as the cotton muslin, but with no. 3 upholstery tacks. Again, work from the centers to the corners, pulling and smoothing as you go. The material should be stretched tight to eliminate wrinkles, but it doesn't need to be as tight as the muslin. Less pulling will be required because the shape of the seat



To finish the corners of the seat, pull the material toward the diagonally opposite corner and tack it in place as shown above. Cut toward the corner on either side of the just-installed tack to remove any excess material.



After cutting the excess material, the remaining material is pulled over the tack installed at the side of the frame toward the opposite side so that it is parallel to the front edge of the frame. Then, tack it with a no. 2 upholstery tack, as shown in the photo above.



Pull the material on the front of the frame parallel to the side of the frame and tack it. The corners of the upholstery are folded first at the sides and then at the front so the seams are visible only from the sides. A cambric cover on the bottom of the seat finishes the chair.

has already been formed, but be sure to pull the fabric evenly so that patterns or lines will be square to the seat frame. When turning the corners, I fold the sides in first and then the front, as shown in the bottom photo above, so the fold is not seen from the front of the seat.

To finish the slip seat, I apply a thin, usually black, cambric cover to the bottom of the seat frame to protect the webbing and padding from dust and dirt. The material is attached with no. 3 tacks by following the same procedure used for the burlap. □

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