

Weave a Seat with Danish Cord

Smart technique
uses no nails and makes
for a tight, durable seat

BY DAVID JOHNSON



As someone who specializes in the restoration of chairs with woven seats, I get to experience a wide variety of weaving designs. While I replicate the original seats exactly when doing restoration work, for my own work I cull and combine the best techniques from these chairs.

Most chairs with a Danish cord seat use L-shaped nails to fasten the warp (the front-to-back cords) to the rails. The nails enable the cord to reverse direction easily to return across the seat. This works well, but when you start on the weft, or weavers (the side-to-side cords), the warp can lift, creating gaps. If the rail is concave along the top, the warp will lift even more, creating larger gaps. On a few vintage chairs I discovered a method that eschews the nails and uses a cow-hitch knot to fasten and return the warp. This locks down the warp to the rail and eliminates the lifting and gaps, creating very tidy front and back rails. This method also better captures the weavers and keeps them from sliding sideways, since they butt up against the cow hitches. And because you can pack in more rows of weavers, the seat is more dense and durable.

Lay out the pattern

When laying out the weaving pattern for your seat, mark the front and back rails with centerlines for each pair of warp cords. You want an odd number of warp centerlines; this ensures that when the weavers are threaded across the warp, they have the same pattern on both side rails.

Start by marking the center. Then, at the ends of the front and back rails, mark $\frac{1}{4}$ in. from each leg for the first and last warp pairs. Have them as close to the ends as possible so the cords are held in by the side rails. The $\frac{1}{4}$ -in. space will leave room for

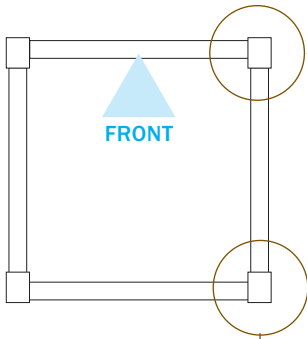
NO NAILS NEEDED

Double rails enable the cord to reverse direction at the sides and go back across the seat, eliminating the need for nails. Another method is to use nails on the inside of a single rail, like on Mark Edmundson's bench from *FWW* #194 (top).

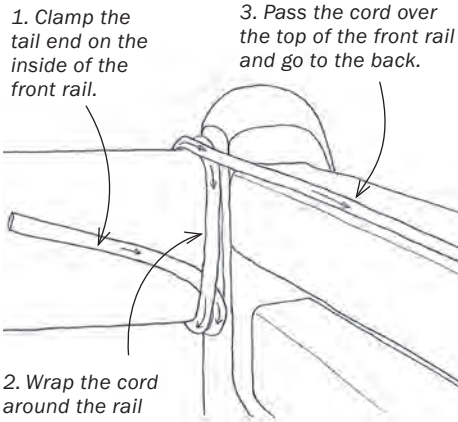


Begin with the warp

The warp runs front to back. In most traditional chairs, the warp is secured with nails. Johnson replaced the nails with cow hitches and tension.



Start on the front rail



1. Bring the cord up between the side rail and the cord spanning the seat and go over it to form the loop.

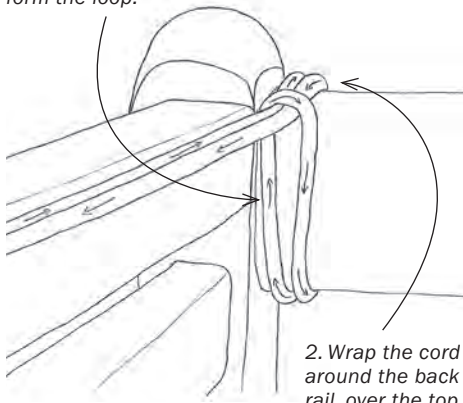
2. Wrap the cord around the rail once to capture the tail end.

3. Pass the cord over the top of the front rail and go to the back.



Capture the tail. After marking the layout lines on the front rail, loosely run the cord down, then up and around the rail, crossing over itself. To tighten it, hold the tail where the working end crosses it and pull the working end.

Wrap the cord over the back rail on the left side of the pencil mark



2. Wrap the cord around the back rail, over the top, through the loop, and back to the front rail.



Front to back. Bring the cord across to the back rail, wrap around it, and come up between the first warp and the side rail. Make the cow hitch by loosely wrapping over the first warp, under the back rail, and up the outside. Thread the cord through the hitch and come back to the front.

one wrap of the rail and the first cow hitch. In between these end marks, fill in with marks $\frac{7}{8}$ in. to 1 in. apart. If you are using $\frac{1}{8}$ -in. cord, you need 1 in. of space for five wraps and $\frac{7}{8}$ in. for four wraps. Experiment until you have spacing that works and don't worry if it isn't exact. Unlike the stool shown here, most dining chairs have shorter rear rails, so the spacing at the back will be narrower than at the front. When doing a set of chairs, I make a template of the centerline layout marks.

Danish cord is made from three paper plies that are twisted separately, then together to form the cord. In the laced type of cord, which I prefer, each individual ply is tightly twisted, making the cord look more like a piece of rope. With unlaced cord, the individual ply is more loosely twisted, giving the finished cord a smoother appearance. It's said that laced cord makes a tighter seat. I haven't noticed that; I just like the way it looks. The cord comes in either 10-lb. or 2-lb. rolls. I get mine from

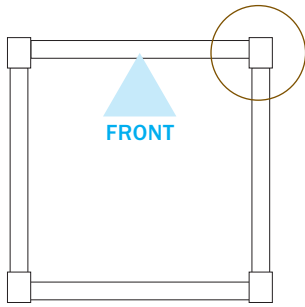
caneandbasket.com. A dining chair seat uses about 2 lb., this stool a little less.

Create the warp

Begin by roughing up the rails with a rasp to give the cord something to grab. The front of the chair should face you. The warp is the foundation of the seat, so make sure everything is neat, with even tension and tightly wrapped rails. The basic idea is to work from front to back to front again, and so on. Start the warp by capturing the tail of the cord under one wrap and clamping the end of the tail to the front rail. Stretch the cord to the back rail and tie a cow hitch, and pull the cord back to the front. Create another cow hitch and wrap it to conceal the rail until you're near the next centerline. You'll repeat this process all the way across. When you have the first pair of warp cords in place, go back and pull them tight across the seat, just tight enough to stay in place.

Create the front-to-back pattern

Cord seats on dining chairs work best with four or five wraps between warp pairs. Larger chairs or benches can have more.

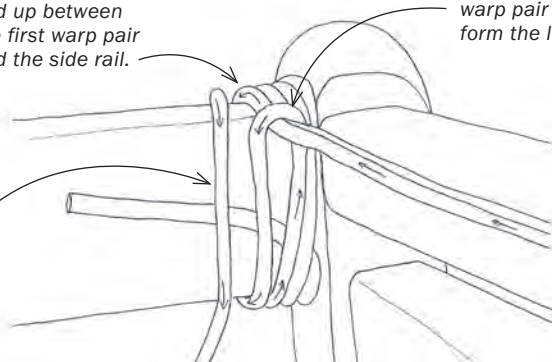


Form the cow hitch

1. Wrap the cord over the front rail and up between the first warp pair and the side rail.

2. Go over the warp pair to form the loop.

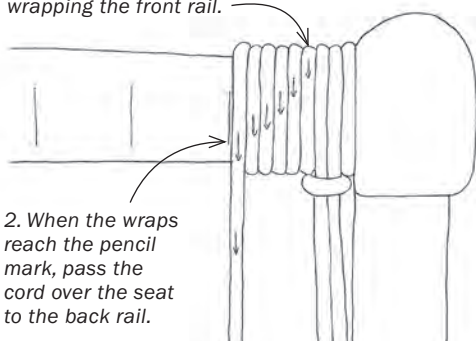
3. Wrap around the rail.



Wraps establish warp spacing

1. Continue tightly wrapping the front rail.

2. When the wraps reach the pencil mark, pass the cord over the seat to the back rail.

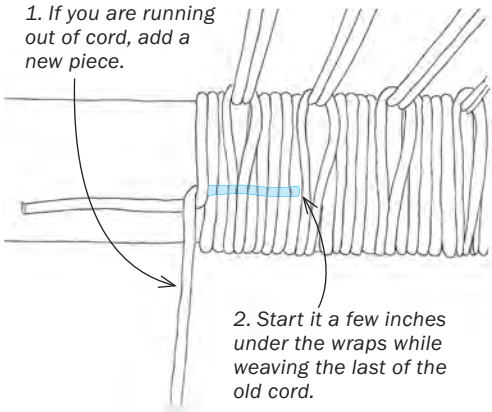


The end of the line

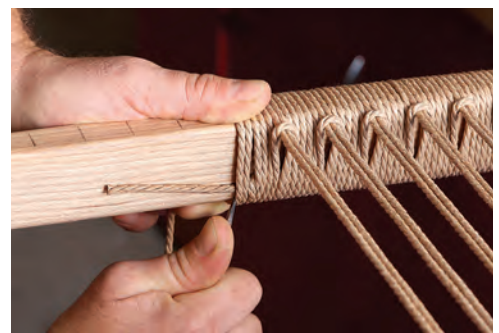
Working with too much cord at one time is frustrating and time consuming. Shoot for working with about half a chair's warp length and front rail wrap—about 50 ft., to start. When you run out, splice in a new piece.

1. If you are running out of cord, add a new piece.

2. Start it a few inches under the wraps while weaving the last of the old cord.

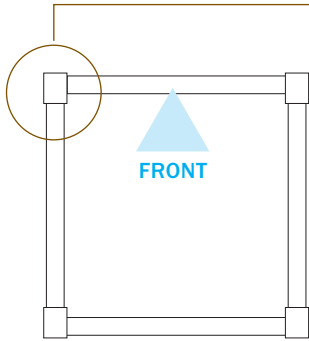


Swapping places. Once you've used all of the first cord, twist it around the new piece that has been secured under the wrappings. This will make them trade places. Leave the tail end of the first cord to be secured under the wraps of the new cord.

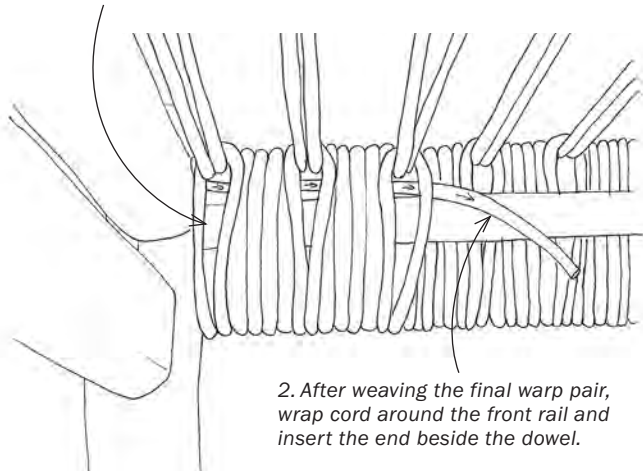


Finish the warp

Inserting a dowel under the final wraps creates a space to insert the end of the cord and finish the front-to-back weave.



1. Once you've reached about 2 in. from the right side, put a dowel along the inside of the front rail and continue weaving your pattern.



2. After weaving the final warp pair, wrap cord around the front rail and insert the end beside the dowel.

Hitches that are too tight can pull the warps down, giving the seat a hump in the middle.

Splice in another cord

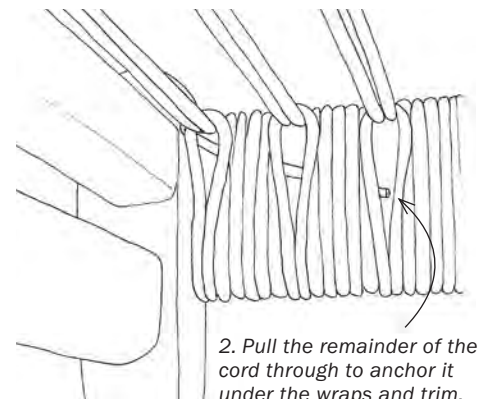
A few inches before reaching the middle of the rail, add a new piece of cord. While wrapping the front rail, capture the new piece against the rail's inside face. Continue wrapping until the old cord is near to running out while wrapping the front rail but there is still some cord to work with. To switch to the new cord, wrap the rail twice and where the old goes over the new, twist them together so they switch positions.

Once the fourth-to-last warp pair is in place, use a dowel as a temporary spacer so the tail end of the cord can be fed back through. When the final warp pairs are done, the dowel will be removed and the cord tightened. Continue wrapping. Nothing needs to be tight around the rails yet, but the cord must be packed snugly against itself along the length of the rail.

Remove the dowel



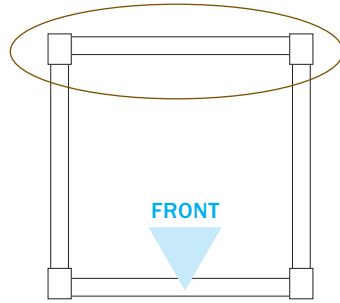
1. Pull the dowel out and tighten the loose cord. Go back to where you were when you put in the dowel and make everything tight and neat.



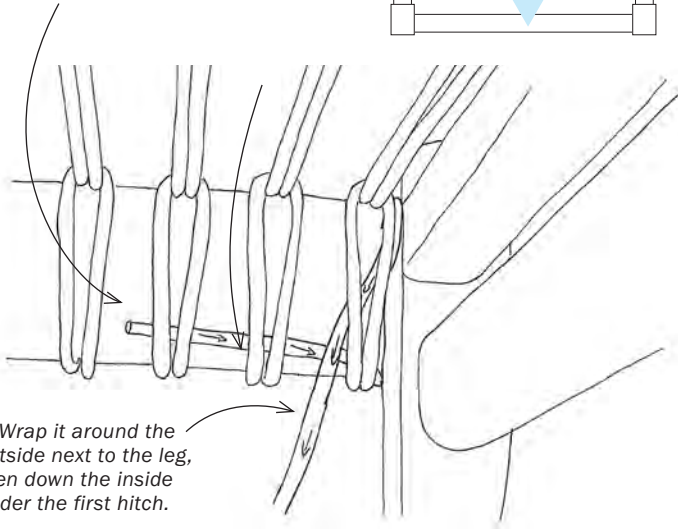
2. Pull the remainder of the cord through to anchor it under the wraps and trim.

Fill out the back rail

At this point the front rail is fully wrapped. You have to fill out the back rail with wraps between the warp pairs.



1. To secure the tail end of the new cord, tuck it under the cow hitches inside the back rail for 4 in.



2. Wrap it around the outside next to the leg, then down the inside under the first hitch.

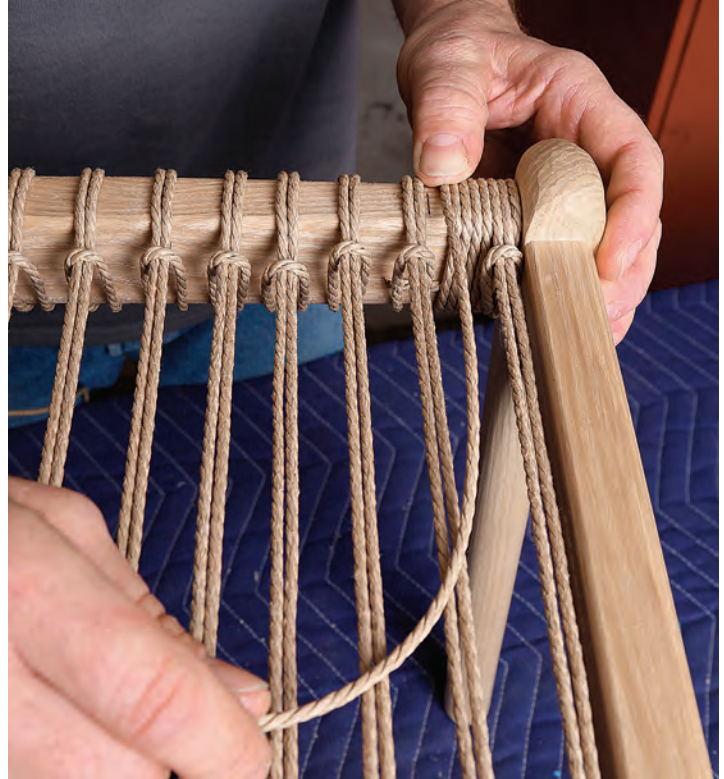
Wrap the back rail

Wrapping the back rail is similar to the front. Turn the piece around so the back rail is facing you. Slide 4 in. of cord under the hitch loops on the back rail, keeping it near the bottom of the inside face of the rail, and secure the end with a clamp. Loosely make the first wrap between the leg and the first warp pair, wrapping the rail from the bottom, around the outside, over the top, and down the inside. When going down the inside pass the cord under the first hitch loop and wrap the section between the first and second warp pairs. Tighten the cord and continue wrapping, keeping the wraps as tight as possible and the warp pairs centered on their marks.

Weavers wind through the warp

Once you've wrapped the back rail, the warp is done and you're ready for the weft, or weavers. Turn the stool so the front faces you again. From the spool, pull off twice as much cord as needed to weave half of the seat. Find the center of that length of cord and form a loop. Holding it below the warp, push the loop out through the gap between the double rails so the loop is on the outside of the stool and the working ends are inside. Wrap the working ends around the bottom rail, up through the loop, and pull it tight and neat. Next pass the weavers over the outside and top of the upper side rail. Then loosely weave them through the seat, going over the first warp pairs, under the second, and so forth until the weavers pass over the final warp pair. Now go in the other direction and keep repeating until you work all the way across.

The tension on the weavers is crucial to a clean seat. They should be fairly tight as they go through and around the split rail



3. Continue wrapping the area between the first and second warp pairs.



4. When the area is filled, move to the area between the second and third warp pair by passing the cord under the loop of the second warp pair.

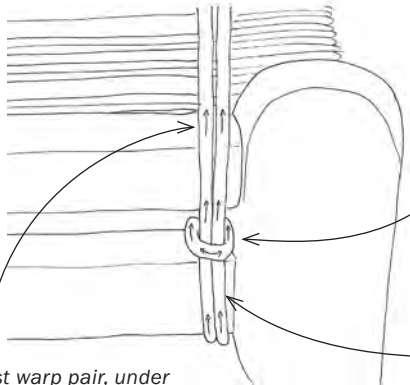
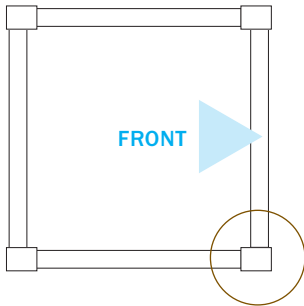


5. Continue in this manner until about 2 in. from the end of the back rail. Finish with the dowel technique.

Weave between the warps

The weft, or weavers, run side to side. The weaving is done after the front and back rails are strung and wrapped. The weavers are woven as a pair and begin with another cow hitch to attach them to the lower side rail. While working with the weavers, treat them as a unit.

Start at the front left corner



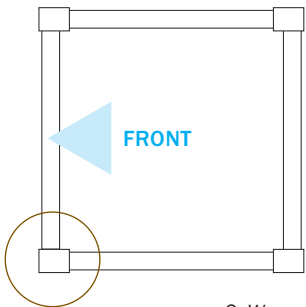
1. In the center of a long piece of cord make a loop and pass it through the gap between the rails from inside.

2. Bring the working ends of the cord through the loop and over the top side rail.

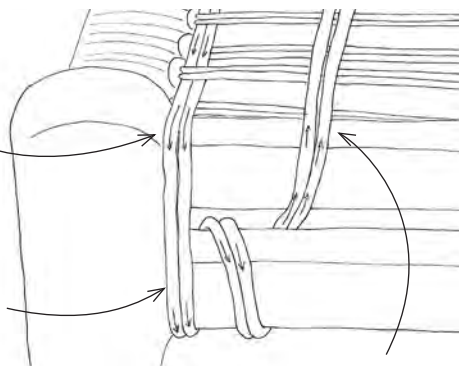
3. Go over the first warp pair, under the second, over the third, and so on.



Wrap the right side rail and weave again



1. After going over the last warp pair on the right side, go over both side rails.

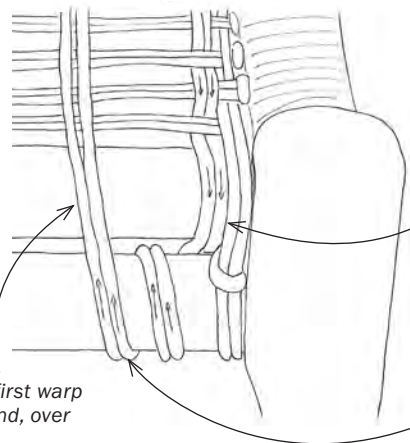
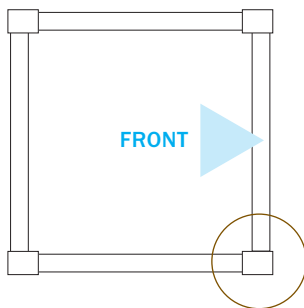


2. Wrap around the bottom side rail, through the gap, around the rail again, and back up through the gap.

3. Then weave again, under the first warp pair, over the second, and so on.



Wrap the left side rail and weave back to the right



1. On the left side, after going under the last warp pair, go over the top side rail and through the gap.

2. Wrap completely around the bottom side rail once and go up over the outside of both rails.

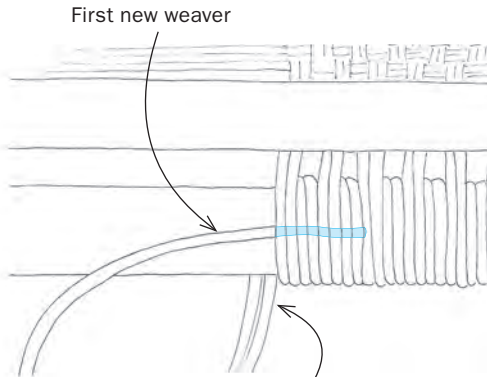
3. Then go over the first warp pair, under the second, over the third, and so on.



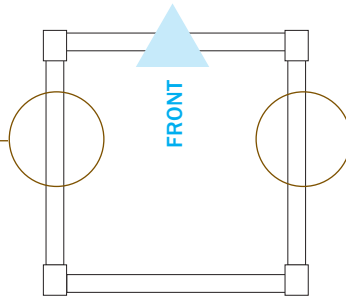
A double splice for the weavers

When it's time to splice in new cord for the weavers, instead of swapping both cords in at the same time it's easier to add new weavers one at a time to opposite sides. As the weavers get short, place a new one on each side on the inside face of the bottom rails. Do this early enough so a few inches at the tail of the cord are held by the wrapping of the bottom rail. The procedure is very similar to splicing in a single strand.

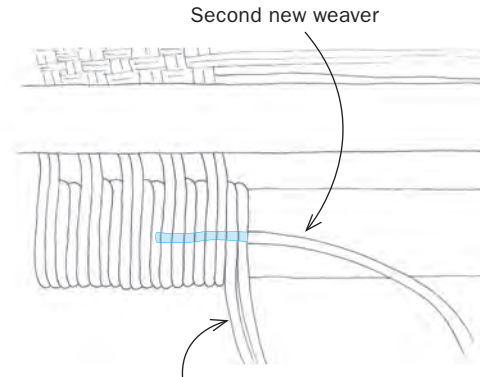
Add the first new weaver...



On one side the wrap will go up the inside face of the rail ...



and then the second



and on the opposite it will go down.



With one new cord and one old one, weave your way to the other side of the stool to switch out the second old weaver with the second new one.



but only tight enough to stay in place across the seat. Too tight and the weavers won't nest next to each other and stress will be added to the stool. Too loose and the seat will be loose.

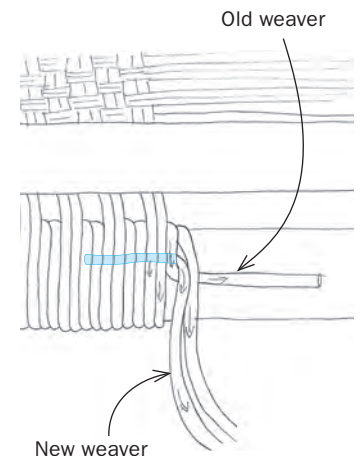
When you get to the end of a row, there's an easy way to remember whether the weavers should go over both rails or in the gap. If the weavers pass over the last warp pair, then they pass over the two side rails; if the weavers pass under the last warp pair, then they pass through the gap. The cords that wrap over the outsides of both rails should be perfectly straight up and down, or perpendicular to the floor or rails. It keeps the spacing even and looks cleaner.

A double splice for the weavers

A third of the way across, splice in a new set of weavers. Add a piece of cord long enough to complete the seat onto each side rail. Hold the new piece on the inside of the bottom side rail. As the bottom rail is wrapped, the new cord will be held in place.

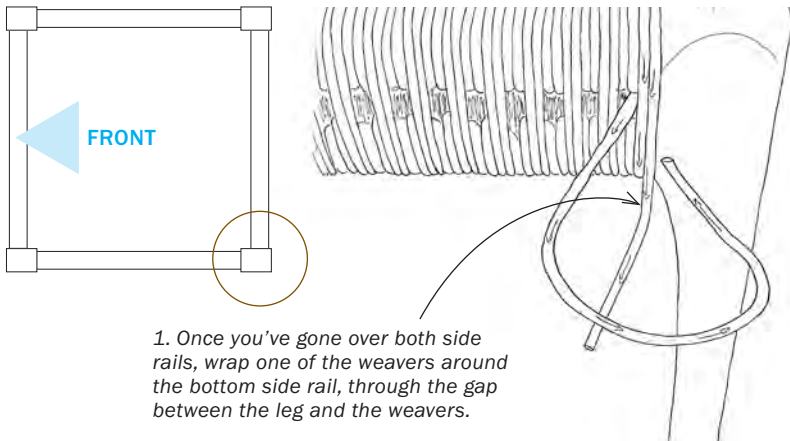
Twist the old weavers with the new

The tails of the old weavers will be held by the wrapping of the rails.



Finishing moves

End the seat at the back right corner



Continue weaving until there is only enough of the old weavers to easily go across the seat twice. As the weavers wrap around the bottom side rail, twist one of the old weavers around the new one just as you add a new piece on the front rail. This will leave a very long weaver and a very short one. Weave these two across the seat and replace the old weaver with the new on the other side. The tail ends of the old weavers will be held in place by wrapping over them as the seat is woven.

As the weaving nears the end, the pace will get slower with less room to work. The seat ends as it began, with the last weavers passing over the first and last warp pairs and going over both side rails on each side of the chair. If you're lucky, the last row will be in perfect placement. Usually this isn't the case, so decide

whether more rows can be added by tightening everything or whether everything can be adjusted and no new rows are needed. Make adjustments and do one final check to be sure the weavers and warps are straight.

To finish, pass the weavers around the outside of both side rails. Then mimic the cow hitch at the start by feeding one of the weavers through the gap next to the leg. Wrap it around and back, creating a loop around the last weavers. Tie the two ends together with a square knot and trim the ends. □

David Johnson specializes in the conservation of Danish Modern chairs with woven seats from his home shop in Los Angeles.