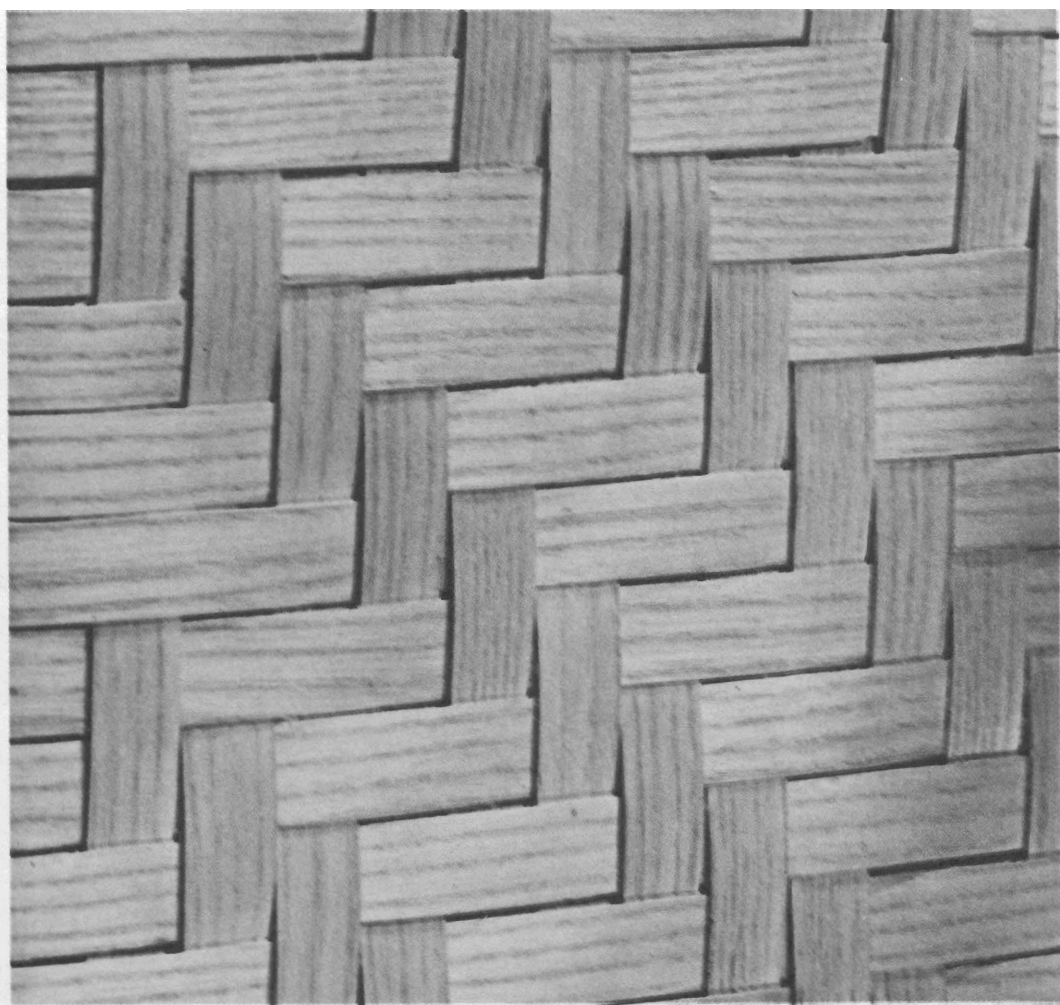


SPLINT

SEATS FOR CHAIRS



Ruth B. Comstock

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An Extension publication of the Department of Design and Environmental Analysis, New York State College of Human Ecology, a statutory college of the State University, at Cornell University, Ithaca, New York.

Original text by Ruth B. Comstock, Professor Emerita, Department of Design and Environmental Analysis.

SPLINT SEATS for chairs

Select the Chair

Splint chair seats are made of wood that has been cut in long thin strips and interwoven in various patterns. The chair on which splint can be used must have seat rails so that you can wind the splint around them. Such chairs also may have seats of splint-type materials (reed or wide binding cane) or of rush; the original seat, if you have it, usually indicates which to use.

Splint is suitable for chairs simple in design, with few turnings, such as the Early American ladder-back chairs. Often it is used when side rails are higher than front and back rails. If side rails slant so the front of the seat is more than 3 inches wider than the back, choose rush or a material no wider than 3/8 inch so the strands will stay in place without slipping on the side rails.

Splint and flat reed are used for indoor furniture, while flat oval reed and wide binding cane are used for outdoor furniture.

Select the Splint

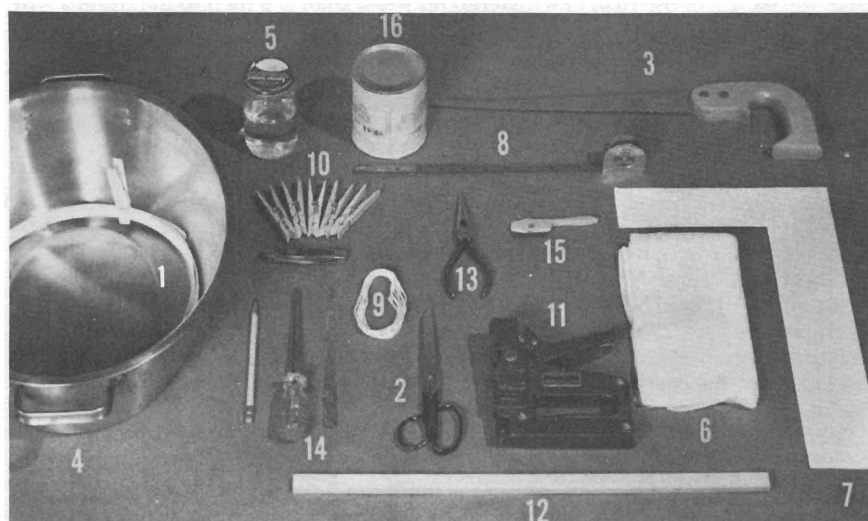
Splint is obtained from native ash and from the tropical rattan palm. Native splint should be cut from select straight grain second-growth timber and machine cut to a uniform width.

The tropical palm from which materials like splint are made grows in the Indian Archipelago, China, India, Ceylon, and the Malay Peninsula. Without its leaves it is known commercially as *rattan*. The outer bark, stripped in different widths, is sold as cane; the core, split into round and flat strips of different thicknesses and widths, is called *reed*.

These materials are available from dealers of seat weaving supplies, mail order houses, and local stores. They are all sold either in bunches containing enough for one chair or in quantity lots. Costs per seat are about the same. Real splint makes a better looking seat than does flat reed, but reed may be easier for beginners to weave.

Equipment You Need

1. Splint of the desired type and width
2. Shears
3. Keyhole saw
4. Pan, oval, about 14 by 18 inches for splint and reed
Bowl about 11 inches in diameter for flat oval reed
Bowl about 6 inches in diameter for wide binding cane
5. Glycerine U.S.P. Standard
For splint, reed — 1 cup glycerine to 10 cups water
For flat oval reed — 1/2 cup glycerine to 5 cups water
For wide binding cane — 1/3 cup glycerine to 4 cups water
or
Urea crystals, 4 tablespoons to 1 quart of water
6. Sponge, cloths, or towel
7. Cardboard from which to cut the shape of a carpenter's square, the long arm about 18 inches, the short end about 6 inches (see page 5)
8. Steel measure and sharp pencil
9. String to fasten the end of the strand
10. Clamp clothespins, 6
11. Staple gun/gun tacker and staples — 1/4-inch size
12. Stick of soft wood — 1-inch lumber, 1/4 inch thick and about 18 inches long
13. Pliers, long nose
14. Screw driver with blunt end or a similar tool to force the splint in place
15. Razor blade
16. Blending seat stain, if desired, and cloth to apply



Widths of splint vary:

Splint	1/2 inch, 5/8 inch, and 3/4 inch Buy 1 pound of 5/8-inch width for seat of average size (16 inches across front)
Flat reed	1/4 inch, 3/8 inch, and 1/2 inch Buy 1 pound of 3/8-inch width for 16-inch seat
Flat oval reed	3/16 inch and 3/8 inch Buy 1 pound for 16-inch seat; 1-1/2 pound for 18-inch or larger seat
Wide binding cane	About 3/16 inch Buy 1 bunch of 500 feet for 18-inch seat

The width you need depends on the style and size of chair and on the place the chair is to be used. Narrower widths take longer to weave than wider ones, but wider ones may look heavy or bulky.

Fiber (paper) splint is not shown in this bulletin; it is less durable than other kinds of splint.

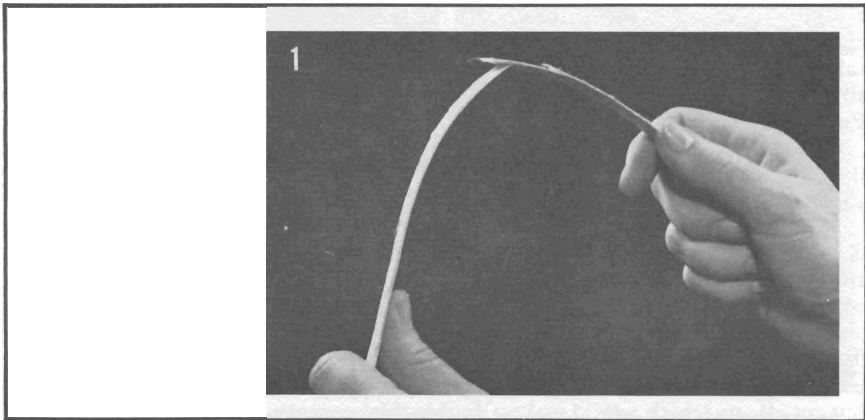
Prepare to Weave

The seat

If old seating remains, cut it away, but save it as a guide. You may find padding between the layers, but shaped seats without stuffing usually are more comfortable to sit on. Pull out all nails and tacks and clean any dust from the seat rails. If you need to paint or refinish the wood, be sure it is done before you begin weaving.

The splint

Pull one of the pieces of splint from the looped end of the hank, near where it is tied. As you pull, shake the hank so the splint will not tangle or roughen. Bend the piece between your fingers. The right side is smooth; the wrong side splinters as in figure 1. With the smooth or beveled side out, roll it to fit the pan or bowl in which it is to



soak. Fasten the ends with a clamp clothespin. Prepare 3 or 4 pieces in the same way. Ash splint, 5/8 inch wide, is used for the chair illustrated.

Soak the splint in a solution of glycerine, or of urea crystals. Either helps to shape the splint. The crystals increase its strength; but glycerine is preferred because it helps to retain moisture and keep the splint from drying out and cracking. To hasten the soaking process, use warm water in the solution. Lay the roll in the appropriate container and let it soak until it is soft and pliable — about 1/2 hour for splint and about 20 minutes for flat reed, flat oval reed, and binding cane. Each time you remove a roll from the pan, put another one in to soak while you work.

How to Weave

Weaving is done in two directions: the first called *warping*, is the wrapping of the splint around the seat rails. Usually this is done from the back to the front of the chair, or the long way of the opening, so that the second step, called *weaving*, can be done across the open rails, from side to side or the short way of the opening. Both sides of the seat are woven so that they look alike when finished.

All splints woven one way on the top of the seat are at right angles to those woven the other way. If the front of the seat is wider than the back, weave the center first and fill in the corners later with short lengths.

Warping

Mark a center rectangle or square: using a carpenter's square, cut a cardboard pattern of a size that will fit within the chair rails. Fit this close against one back post, parallel with the back rail (figure 2).

Mark the front corner of the square on the front rail (figure 3). Repeat on the other side of the seat. Check to see that you have enough space for the width of splint. If the two sides vary, adjust by marking a slightly greater allowance on the shorter side and less on the long side (figure 4).

Mark on the front rail the center between these two marks (figure 5).

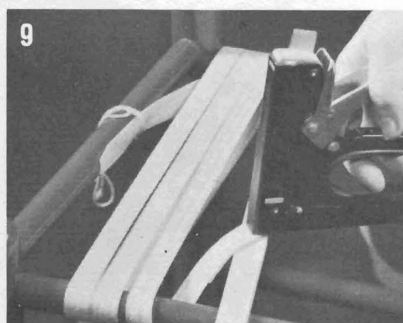
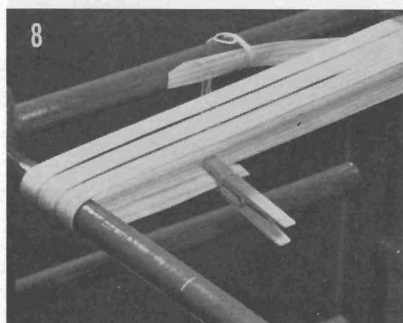
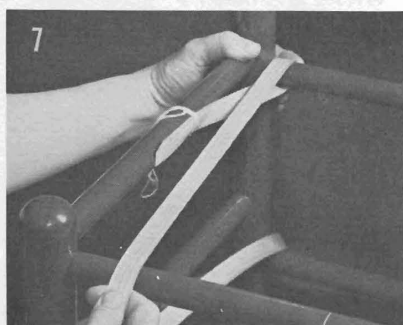
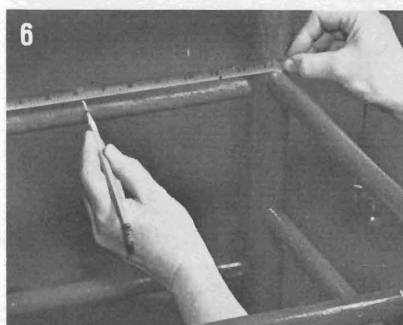
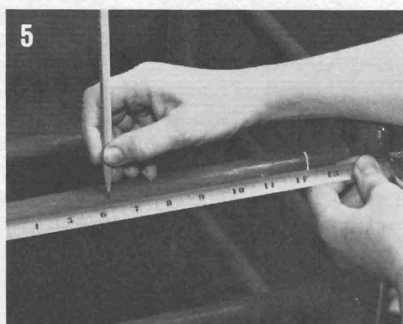
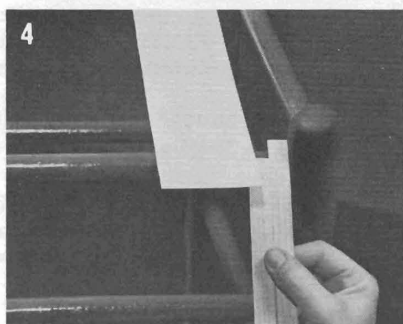
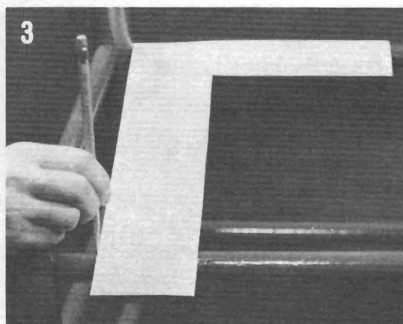
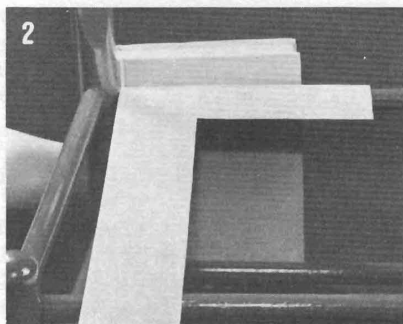
Mark the center on the back rail (figure 6).

Take the roll of splint from the bowl in which it is soaking and remove the excess water with your fingers or a sponge or cloth. Put another piece in to soak while you work.

Work with the full length of the piece. Tie one end to the left side rail with string, with the right side of the splint next to the wood, so that you work with the grain and the smooth side is outside. Pull the strand under, and then up and over the back rail, close to the post, in the exact position and shape you want it to dry. Pull the strand to the front rail, with the outside edge exactly at the pencil mark (figure 7). Pull the strand over and under the rail and then return it to the back rail.

Continue until you have used all the piece. Force the wet strands close together so they will not slip on the rail; splint shrinks more in width than in length. Keep strands equally taut. Secure the end temporarily with a clamp clothespin (figure 8).

Join pieces on the underside: place a new piece under the old, with the right side down. Lay a stick of soft wood across the rails, under the strands, and staple the strands together in three places, 1 to 2 inches apart, so that at least one of them can be covered when you weave the other way (figure 9). Pull the strand away from the stick and with pliers flatten the ends of the staples (figure 17). When legs of staples are down, they show less, but could scratch as you work. Staples which show can usually be removed or covered. Leave enough of the old strand to support the new, but cut off any which would make a double thickness around the rail. Pull the new



strand under and around the rail (figure 10).

Continue wrapping strands. When you reach the center mark, count the warp strands to make sure you will have the same number on each half of the seat. When you reach the pencil mark on the right side of the chair, use a clamp clothespin to hold the warp. If work is interrupted, sprinkle the seat and dampen the end to keep the splint pliable.

You may want to use the old seat as a guide in deciding the pattern of the weave. Or, you can use scraps and ends of splints to try out different designs. Or, work out designs on squared paper as illustrated in figure 34.

Count the number of warp strands on the back rail. This number may be evenly divisible by the number in the design you want to use: for example, 20 strands and a pattern of 2 over and 2 under, or 21 strands with a pattern of 3 over and 3 under. If the number is not evenly divisible, you may use the same pattern if you:

1. Plan from near the center of the opening and begin weaving accordingly. For example: if there are 23 strands and a pattern of 3 over 3 under, weave over 1 to start the row, continue across until you have used 21 strands, and then weave the single strand as on the first side.
2. Plan to use a diagonal design. Emphasis then will be away from the side rails where the design may or may not be completed. A diagonal design also is desirable if side rails are uneven.

The second row determines how you use the design. You can move one or more strands to the left for a diagonal design from the right back to the left front of the seat, or you may reverse the direction. For a geometric design, weave alternate rows alike.

Weaving, which makes the design, frequently is:

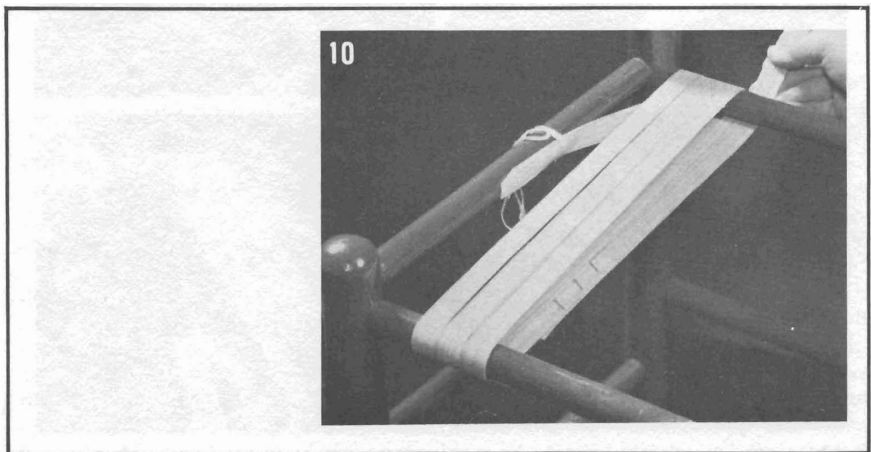
Over 2 and under 2

A close weave is difficult to achieve with patterns less than over 2 and under 2.

Other designs are:

Over 2 and under 3

Over 3 and under 3



Large seats or narrow strands, $\frac{3}{8}$ inch or less, may be woven:

Over 4 and under 4

Over 4 and under 2

Over 5 and under 3

The above combinations may be reversed, as over 2 and under 4. Coarser mesh may be used occasionally if long strands will stay in place and wear satisfactorily. See page 11 for other weaving designs and the method of planning elaborate designs on squared paper.

The design you choose depends on:

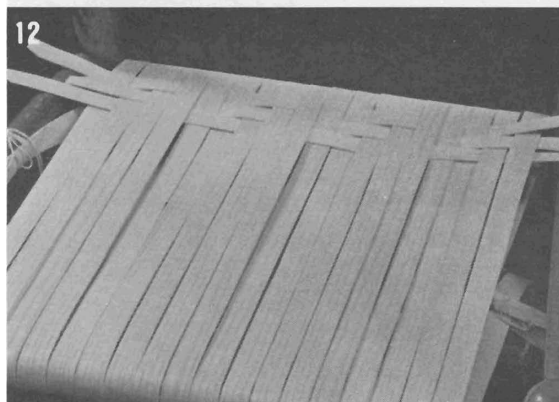
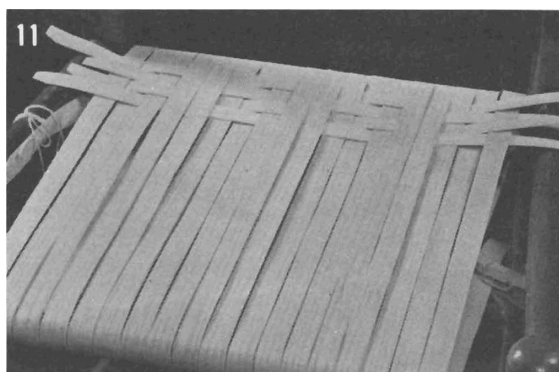
☐ The size and shape of seat opening

☐ The width of splint you are using

☐ The number of warp strands and whether the number is even or uneven

Figure 11 shows weaving over 2 and under 3. Every other row is the same.

In figure 12, weaving is also over 2 and under 3, but one warp strand to the left is used for each new row, creating a diagonal design. This design is used for the chair illustrated.



Weaving

Be sure the strand of splint is long enough to weave across the top of the seat and to join on the underside.

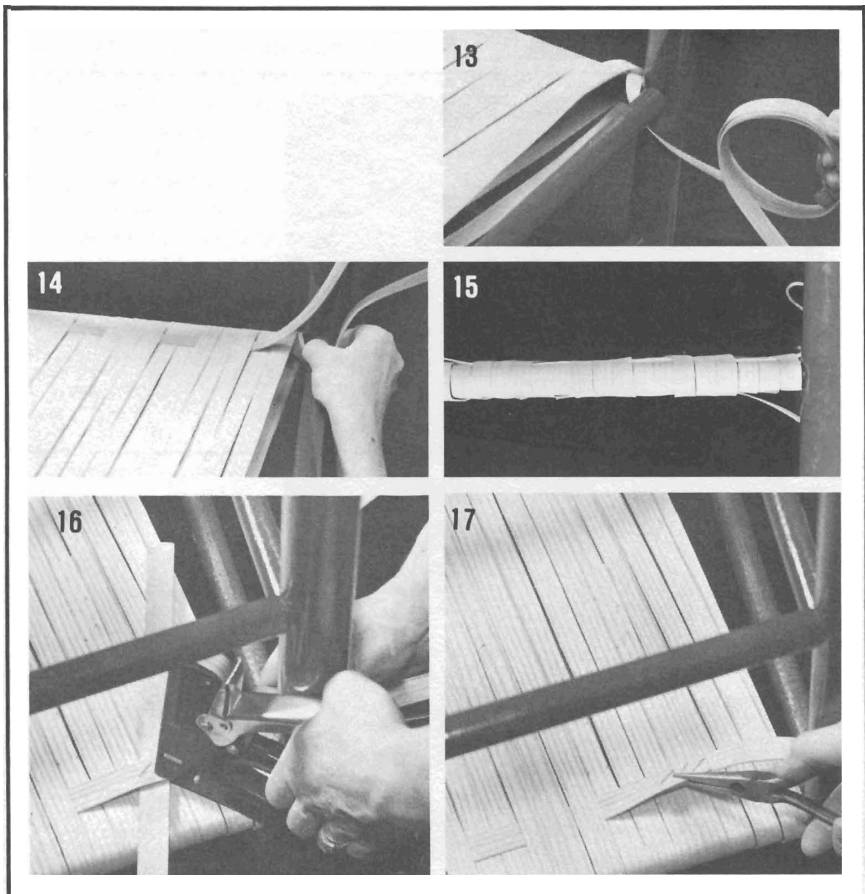
Loosen the last warp strand over the back rail, remove the clothespin, and bring the strand from the front under and over the back rail and under the preceding strand. Then bring the strand diagonally in front of the back post, under the side rail and turned so the right side is down (figure 13).

Pull all strands tight and then weave across, right to left (figure 14).

Pull the weaver over the side rail and weave the underside like the top, going over and under the same warp strands (figure 15).

When you join pieces, staple from either side, if you know the staples will be hidden under warp strands (figure 16). Or you can cover staples with short lengths of splint tucked under nearby strands.

Flatten the sharp ends of staples with pliers, as before (figure 17). Continue weaving, cutting the old strand inside the rail, even if you waste some of it, and



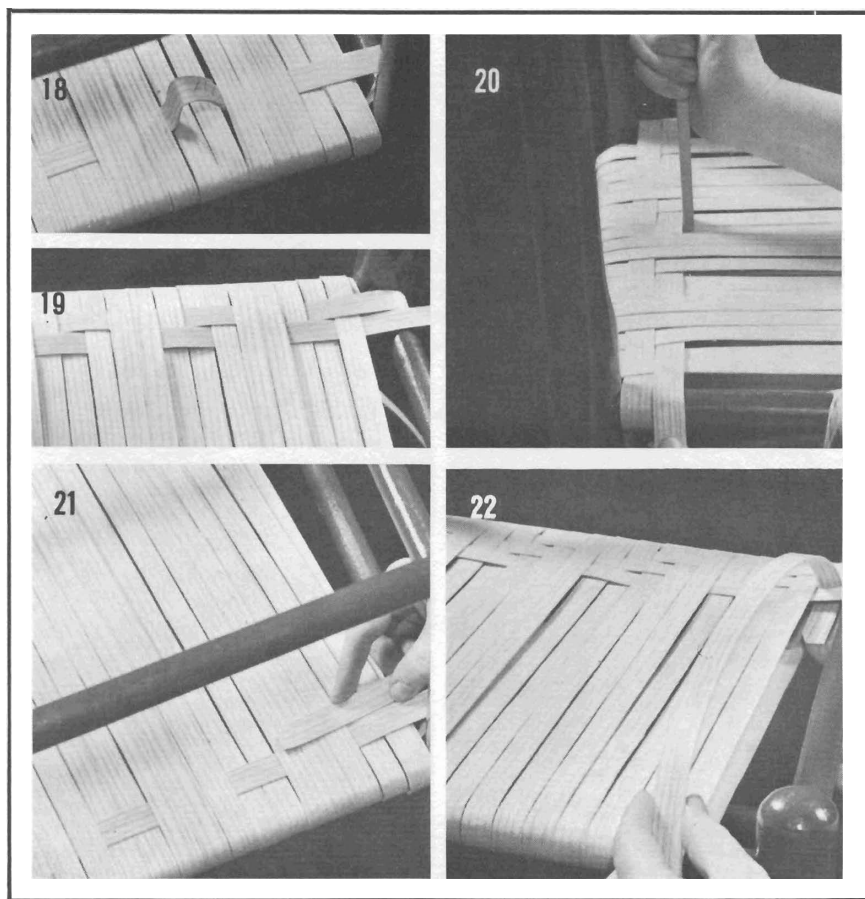
forcing the joining in position. You cannot use the wrapper strand you tucked under until you get nearer the front (figure 18).

The second row is over 2 and under 3 but one warp strand to the left of the first row (figure 19). Or, weave to the right if you want the diagonal in the same direction as on the top of the seat.

Use a stick or a screw driver to force the strands together. At the same time pull the strand across the rails so the seat will be firm (figure 20).

On the underside, plan from near the center of the opening, where the pattern is established, how to begin the row and so continue the design used on the top (figure 21). In this way you will weave over and under the same strands as you did on top.

When you have woven far enough to see the design, and have space, cut off a length of splint for a warp in the corner of the seat. Hook about 3 inches over the weaver strand which will continue the design, near the back of the seat (figure 22). Or just push the strand in rather than hook it over a weaver, if it fits snugly.



Bring this warp strand to the underside of the seat and fasten there also (figure 23). Strands may be joined on top of the seat under the warp to save splint (figure 24). If the joining is secure, cut off the old strand so two thicknesses do not show. Also cut the string holding the first strand. Weaving holds this end in place (figure 25).

Add other short lengths in the corners of the seat, as you have room for them (figure 26).

Warp strands also are cut so ends are concealed. One or two staples and the weaving will hold the joining (figure 27).

Use a screw driver or similar blunt tool to help with weaving, as you get near the front of the seat (figure 28).

Continue weaving to the front rail (figure 29). Finish the underside by weaving as far across as you can and tuck the end under a warp strand (figure 30).

If the back of the chair is to be woven, wrap strands the long way (up and down). Weave across from the bottom up so that you can push strands in place easily.

Other methods of joining splint

Figure 31 shows a more time-consuming method of joining splint. Notches are cut out and strands held together in the notch.

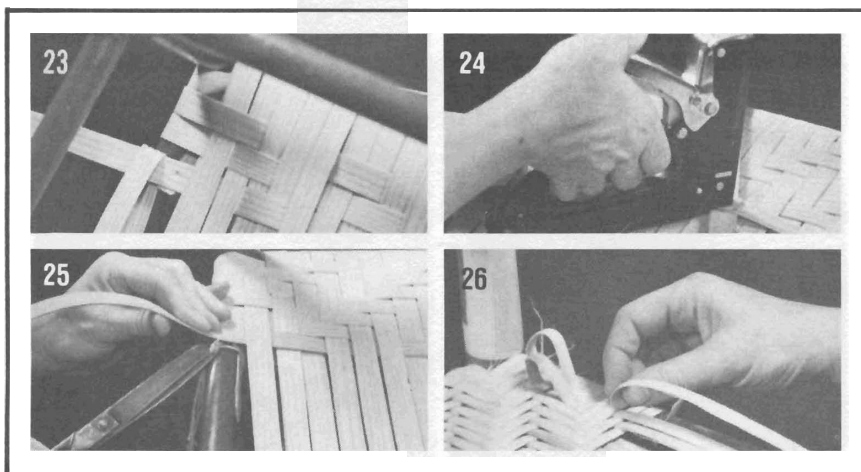
Splint joinings found on an old chair are shown in figure 32. The arrow fits in the slotted end, holding the two securely.

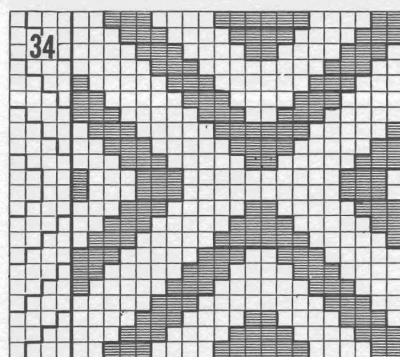
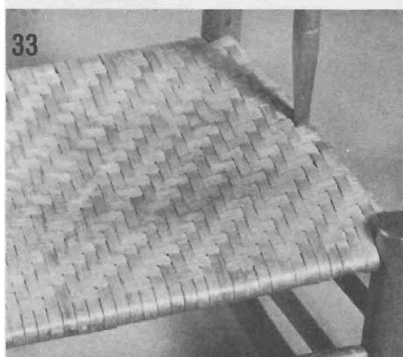
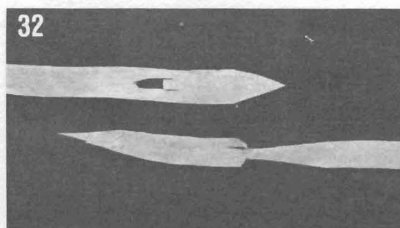
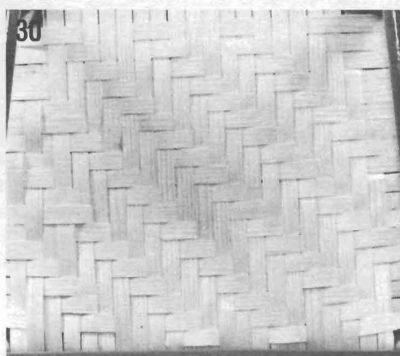
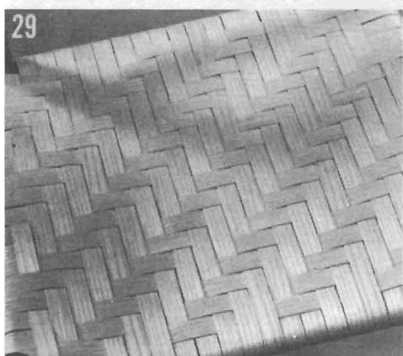
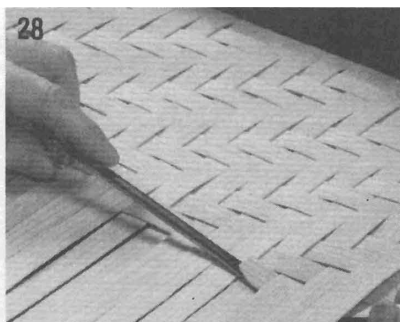
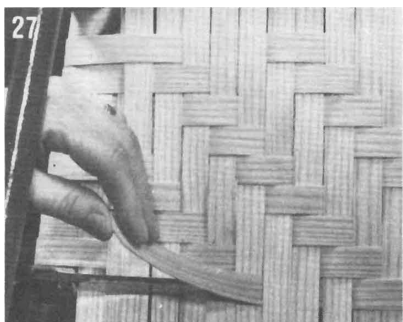
Other weaving designs

The old rocker in figure 33 has a pattern woven over 2 and under 2, creating a repeat pattern by using one strand to the left in each new row.

Elaborate designs are planned first on squared paper. Count the number of warp strands over the back rail. Estimate the number of rows from front to back by measuring with a piece of splint on one of the side rails. Allow one square on the paper for each strand across the back, and for each strand from back to front.

For a geometric design, choose as square an opening as possible or a design which can be adapted to a wider front rail. Begin in the center and work toward the sides and ends. The side sections indicate that the design can be continued if there is space for added rows (figure 34).





Weaving with Other Materials

Flat reed

Flat reed is thinner and more pliable than splint and consequently is easier for beginners to use. It is not as smooth, as sturdy, or as fine a quality as splint. The right side of reed is smoother than the wrong side. Follow the directions for weaving splint seats.

The seat in figure 35 is woven with 3/8-inch flat reed, stained to blend with the paint on the chair frame. The design was first drawn on squared paper. The uneven number of strands across the back (29) and the simple lines of the chair permit a geometric design planned from the center to the sides. The width of strand must also be checked on the side rail to be sure there is space to complete the design; there are 30 strands over these rails.

Flat oval reed

Flat oval reed is used mostly for porch furniture. The right side is beveled and the other is flat. Strands can be rolled smaller than splint, to fit in a bowl about 11 inches in diameter for soaking.

The seat in figure 36 is made of wide (3/8-inch) flat oval reed, woven over 4 and under 4 in a diagonal design. With 34 warp strands over the back rail, the first strand was woven under 3 on each side, to start the design. A smaller pattern is not desirable because this reed is thick and would be hard to force in place. Weaving is easier if warp strands are a little slack. Corner strands, 3 on each side, were filled in as there was space and the pattern became established, counting four each way each row. The design is woven on the underside also (figure 37).

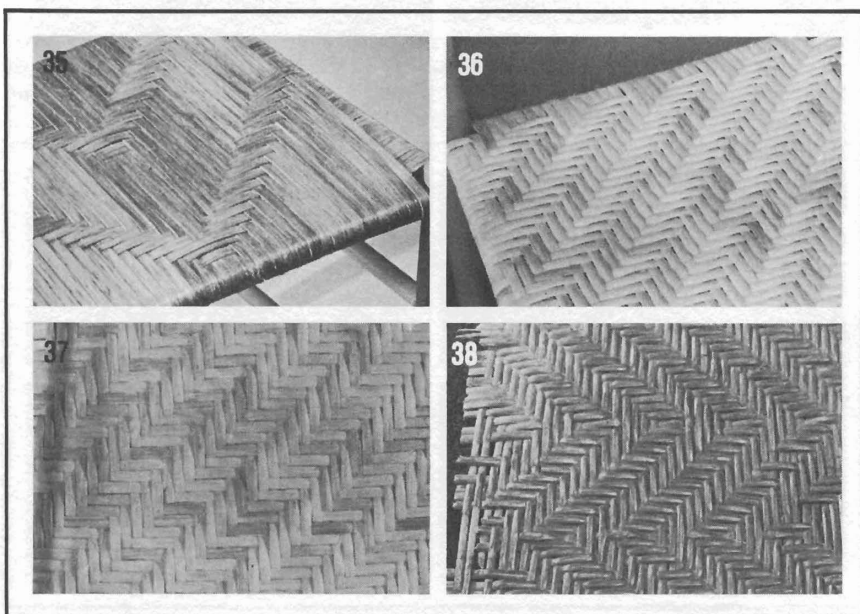


Figure 38 shows a section of an old seat woven with 3/16-inch flat oval reed. The design on the top is over 4 and under 4, in a zigzag pattern. With room on the side rails for about 54 weaver strands, the design was planned for 4 repeats of 12 each, with 3 additional rows for the points, and weavers added to fill the space at the front and back.

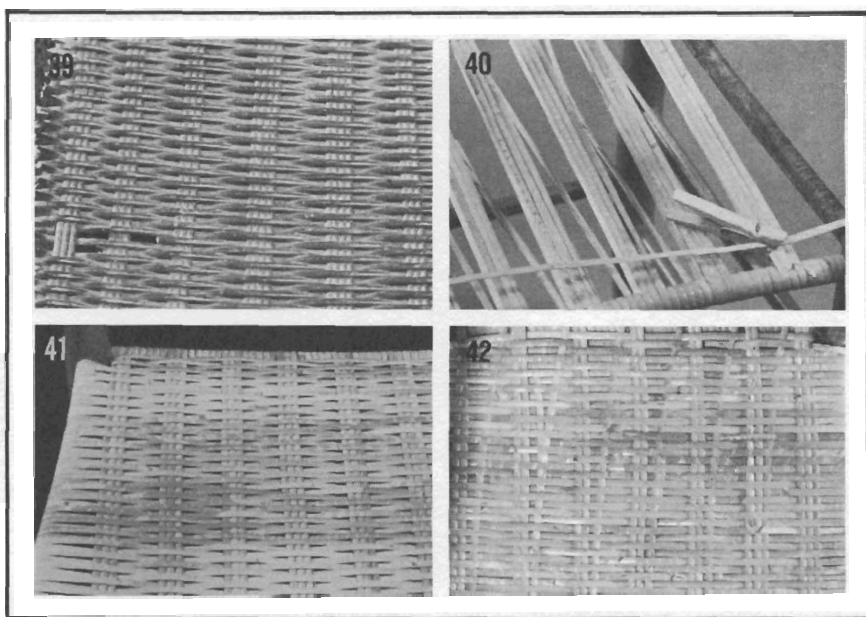
Three or four strands may be used together for warping as in the section of old seat shown in figure 39. Weaving is over and under warp strands, alternating each row.

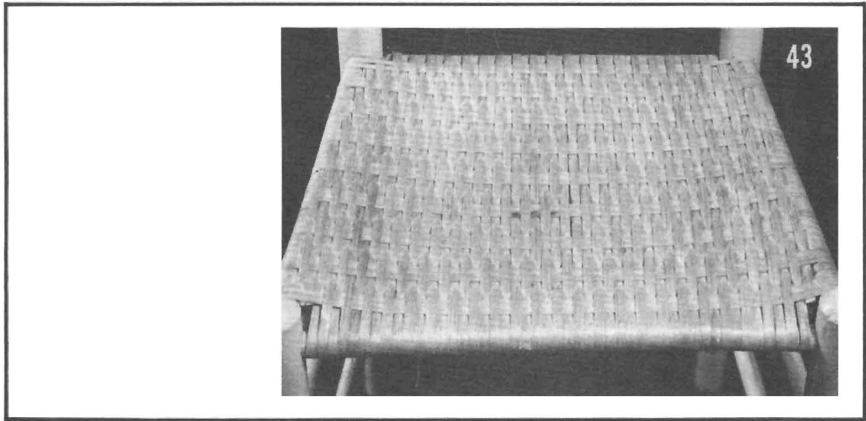
Wide binding cane

Wide binding cane is also used for outdoor furniture. Strands are about 3/16 inch wide; the right side is glossy and smooth but with frequent "eyes" or joints. Be careful to weave with these joints rather than roughen or break them; discard poor strands. Strands can be rolled to fit in a bowl 6 inches in diameter.

The chair in figure 40 shows warping back to front and will be woven side to side.

Staple the first strand to the left side rail. Pull the strand to the front rail and wind around (over and under) this rail 5 times. Continue the strand to the back rail and wrap around it and the front rail 3 times. Wrap around the front rail 5 times and pull the strand to the back rail, close to the previous strand. Wrap around the back rail 5 times, and continue the design until you fill the back rail. Finish by wrapping around the front rail 5 times and continue this strand to start weaving. The top of the finished seat (figure 41) shows the design woven over and under the groups of warp strands, alternating each row. Warp strands are straight from front to back on top of the seat, but on the bottom, one of the grouping of 3 has to be diagonal near the back rail (figure 42).





Note that weaving from side to side leaves spaces at the front of the seat.

The seat shown in figure 43 avoids spaces at the front by warping side to side, and weaving back to front. Note that the corners on the top are filled with short strands; ends might be bent, tucked in, and stapled to a strand on the underside of the seat.

How to Finish the Seat

Trim off hairs or rough places with a razor blade or knife. Splint that has a hard glossy surface needs no finish. However if you want the seat to blend with the color of the chair, apply one or more coats of a blending seat stain, available from dealers of seating supplies. Varnish finishes generally dry materials and cause them to split and crack. Penetrating oil stains that color and seal or polyurethane finishes are preferable. Let the seat dry thoroughly and then apply 2 or 3 thin coats to both sides of the seat. Dry thoroughly between coats.

Reed has little natural finish; a polyurethane finish or an oil stain and sealer may be used.

This bulletin is one of a series of how-to publications on replacing chair seating materials.

E-681 Cane Seats for Chairs

E-683 Rush Seats for Chairs

E-964 Hong Kong Grass Rope, and Twine Seats for Chairs

Cooperative Extension, the New York State College of Agriculture and Life Sciences, the New York State College of Human Ecology, and the New York State College of Veterinary Medicine, at Cornell University, and the U.S. Department of Agriculture cooperating. In furtherance of acts of Congress May 8 and June 30, 1914, and providing equal opportunities in employment and programs. Lucinda A. Noble, Director.

40/125 Reprinted 1/88 15M CP 871771