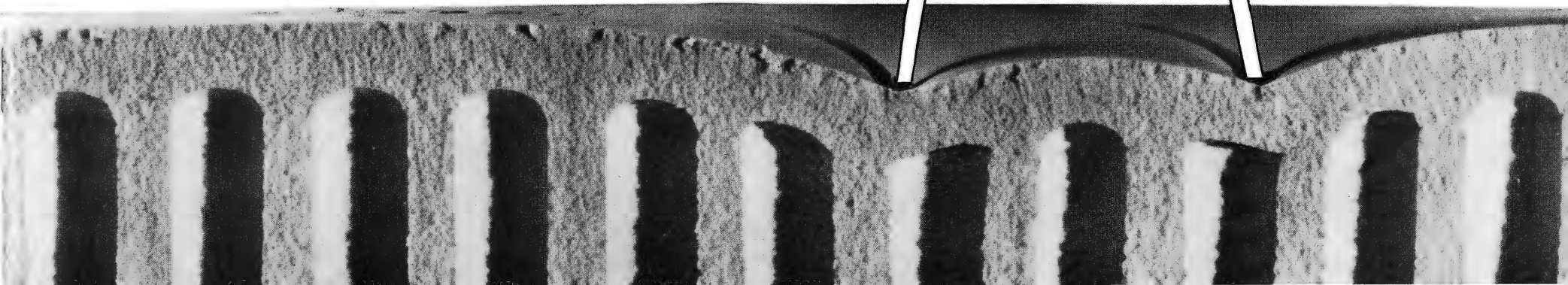


REUPHOLSTERING

CHAIRS

with

Foam Rubber



PREFACE

The purpose of this bulletin is to present information and methods for beginners to use in reupholstering chairs with foam rubber.

Foam rubber is being used more and more in reupholstery because it is easy to work with, and requires less experience. Numerous requests have been received for information and assistance in developing some skill in reupholstering chairs at home.

Methods are illustrated step by step through pictures and line drawings with written instructions — chairs with six different types of bases for foam rubber are shown in detail. Reversible cushions are discussed and illustrated with line drawings.

Information is included concerning types, sizes, and suggested uses of the kinds of foam rubber available; what you will need to know when buying it; how to estimate the amount needed; and where to buy it.

The bulletin shows how to cover foam rubber with fabric, but no attempt has been made to give details for making fabric coverings.

ACKNOWLEDGMENT

This bulletin was reprinted, by permission, for use in Washington from Cornell Miscellaneous Bulletin 20 by Gena Thames. It was originally published by the New York State College of Home Economics at Cornell University, Ithaca, New York.

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REUPHOLSTERING CHAIRS with

Foam Rubber

Gena Thames

New York State College of Home Economics at Cornell University

ADVANTAGES OF FOAM RUBBER

Foam rubber has many advantages as a cushioning material in upholstering and is being used increasingly for this purpose. Cushioning made with foam rubber is:

- Durable. It withstands hard usage over a long period of years
- Comfortable. It is soft and resilient, springs back and retains its original shape, and will not mat down or lump
- Attractive. Its appearance is neat, trim, graceful and uniform in shape and thickness of padding
- Lightweight
- Resistant to mildew, moths, and vermin
- Allergy-free
- Easy to work with. You can cut and shape it with ordinary shears to fit any type of chair seat or back. It takes less time, effort, and skill to use foam rubber because you can eliminate some of the steps used in conventional methods of reupholstery. A beginner can do a more professional-looking job in reupholstery with foam rubber

Foam rubber is still comparatively expensive. However, the initial cost is counterbalanced by its excellent wearing qualities and its ability to combine well with other materials.

Another important consideration is that the reupholstering will not have to be done so often. The cost can be reduced, if necessary, by using thinner slabs of foam rubber over springs and burlap, with a one-inch layer of cotton felt or hair or moss.

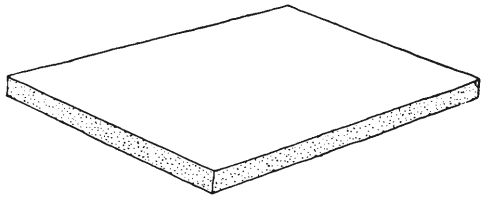
This requires more time and skill, however, and the finished chair is not as comfortable as when all foam rubber is used as cushioning. "Seconds" can be found at reduced prices and are often quite satisfactory. You can also cut costs by making reversible cushions from layers of cored foam rubber instead of buying ready-molded cushions.

A word of caution: Foam rubber should always be covered with fabric because it deteriorates if it is exposed to direct sunlight or extreme heat. It will discolor, harden, and crumble.

TYPES AND USES OF FOAM RUBBER

The types of foam rubber available are:

- Solid slab uncored stock
- Cored utility stock (with cores molded in)
- Ready-molded or full-molded reversible cushions or molded pieces



Solid Slab Uncored Stock Foam Rubber

This type of foam rubber is made in solid slabs or sheets without cored depressions. It is used *where a relatively thin padding is required*. You can buy solid slab uncored stock in sheets or rolls in the following thicknesses or “gauges”: 1/4, 1/2, 3/4, 1, 1 1/4, 1 1/2, and 2 inches.

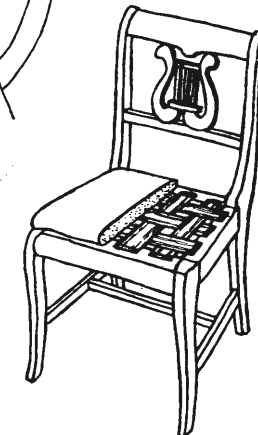
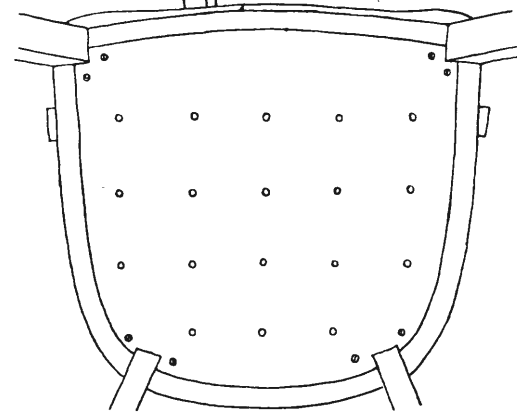
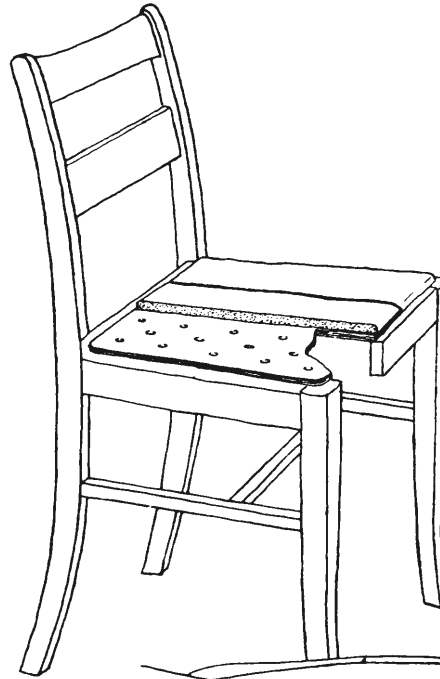
Solid slab uncored stock is available in varying degrees of softness or “compressions” (called “density,” too), ranging from soft to extra-firm. When you buy, remember that the thinner the slab is, the firmer the compression should be.

- | | Compression | Gauge (thickness) |
|---|----------------|-------------------------|
| • Arms and backs | Soft or medium | 3/4 inch – 1 1/2 inches |
| • Seats (dining room and small side chairs) | | |
| Webbing base | Medium | 3/4 inch – 2 inches |
| Plywood base | Firm | 1 1/2 inch – 2 inches |
| • Heavy-duty automotive use | Extra firm | |

You can use 3/4-, 1-, 1 1/4-, 1 1/2-, or 2-inch gauge of medium or firm compression in solid slab uncored stock on dining room or small side chairs with

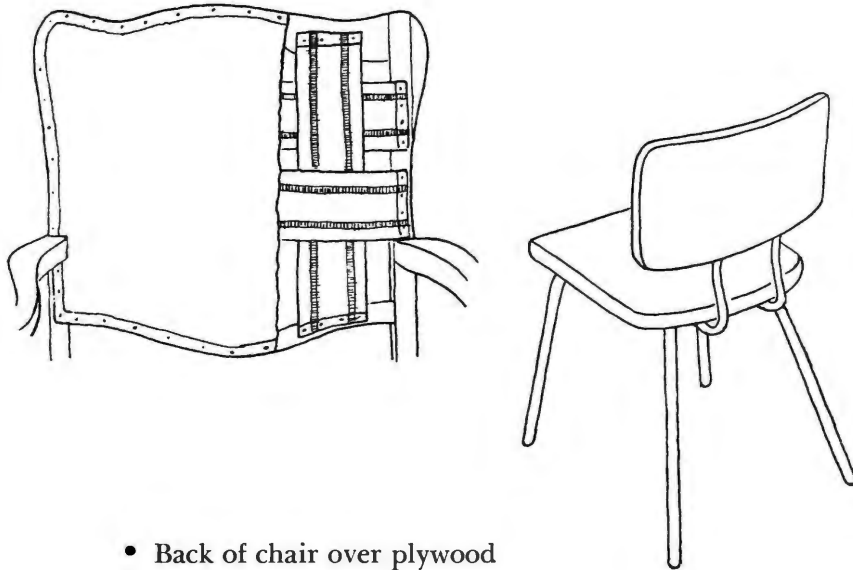
- Webbing base fastened to top of chair seat frame
- Slip seat of perforated plywood

Caution: the thinner the slab is, the firmer the compression should be.



Solid slab uncored stock may be used on arms and tight or fixed backs of chairs (cushions that are not separate from the chair). You can use 3/4- to 1 1/2-inch gauge solid slab in soft compression on

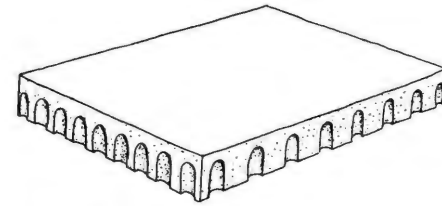
- Back of chair over burlap and webbing



- Back of chair over plywood

Cored Utility Stock Foam Rubber

Cored utility stock foam rubber is made with open cores molded in. (See illustration.) These cores add to its resiliency. Cored utility stock is used *where a deep cushioned effect is desired*. It is available in the following *compressions* or *densities* (degrees of softness) (the thinner the slab is, the firmer the compression should be):



Cored utility stock may be used on:

Tight or fixed:	Compression	Gauge (thickness)
<i>Arms and backs</i>	No. 2	1 1/2 - 2 inches
<i>Seats</i>		
• Springs		
No sag	No. 2 1/2 - 3	1 1/2 - 3 inches
Coil	No. 2 1/2 - 3	2 1/2 - 3 inches
• Webbing	No. 2 1/2 - 3	1 - 3 inches
• Plywood	No. 2 1/2 - 3	1 - 3 inches

Note: If you plan to use *leather* as the outer fabric, buy cored stock for the cushion one compression firmer than that recommended for the type of base on your chair.

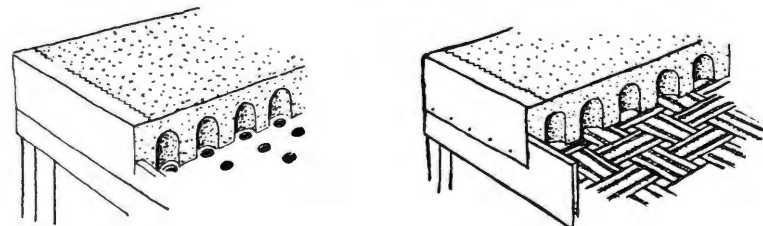
There are other compressions available in cored stock for special jobs, such as mattress stock and bus and truck seats. These are: 3 1/2, 4, 4 1/2, 5, 6, 7, and 8.

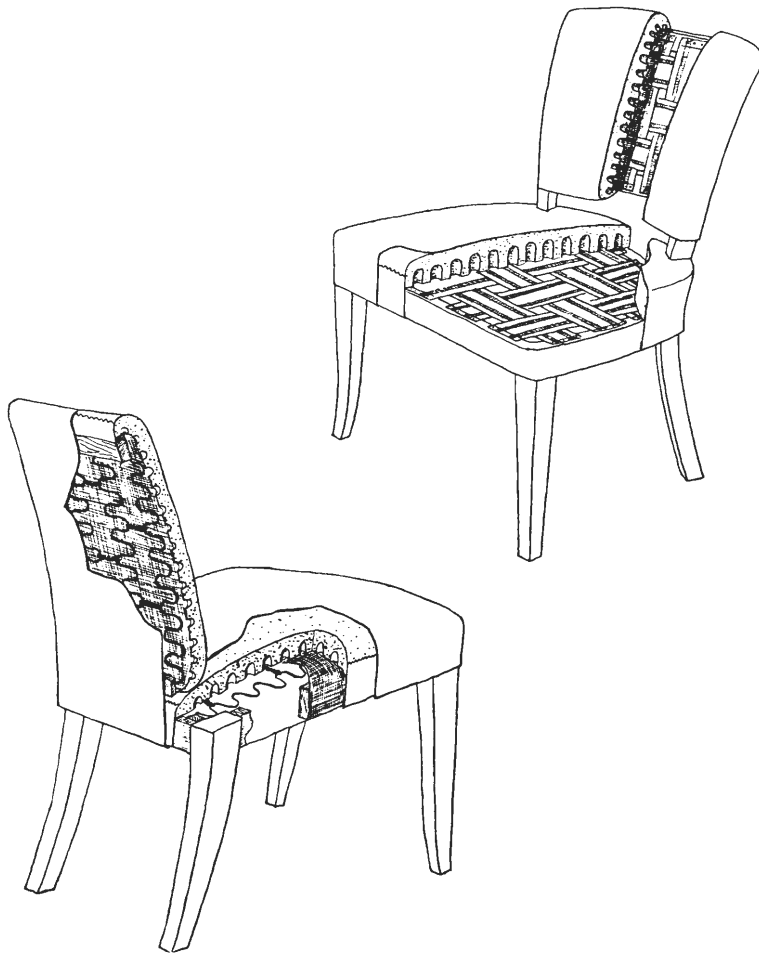
The various compressions are usually available in these dimensions:

1" x 40" x 44"	2" x 40" x 44"
1" x 24" x 80"	2 1/2" x 40" x 44"
1 1/2" x 40" x 44"	3" x 40" x 44"
1 1/2" x 24" x 80"	4 1/2" x 40" x 44"

Cored utility stock may be used on dining room or small side chairs with

A. Base of webbing or plywood attached to *top* or *bottom* of chair seat frame. Use 1- to 1 1/2-inch gauge (thick) cored stock of No. 3 compression, or 2-inch gauge of No. 2 1/2.



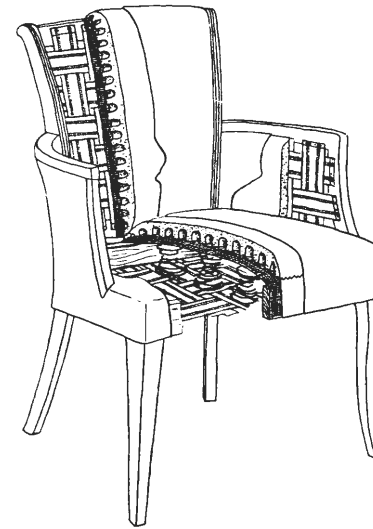
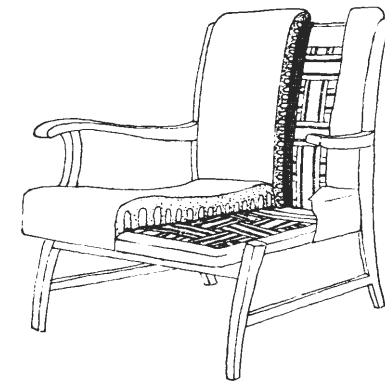


B. Base of no-sag springs attached to *top of chair seat frame and back*. Use 1½-inch gauge cored utility stock of No. 3 compression, or 2 inches of No. 2½, or 1 inch of cotton felt, hair, or moss (could be rubberized), and 1- or 1½-inch gauge cored stock of No. 2½ or No. 3.

Cored utility stock may be used on lounge chairs with tight or fixed backs and seats with

A. Base of webbing and burlap on chair back. Use 1½- or 2-inch gauge cored stock of No. 2 compression over single layer of burlap.

B. Base of webbing attached to *top* of chair seat frame. Use 2 to 2½-inch gauge cored stock of No. 3 compression, or 3-inch gauge of No. 2½ compression.



C. Base of webbing and springs attached to *bottom of chair seat frame*. Use 2½-inch gauge cored stock of No. 3 compression, or 3-inch gauge of No. 2½ or 1 inch of cotton felt, hair, or moss (could be rubberized), and 2- to 2½-inch gauge cored stock of No. 2 or No. 2½.

Some types of bases over which foam rubber may be used:

Jute or steel webbing and coil springs covered with burlap
Strips of jute webbing spaced one inch apart and tacked to top of chair seat frame

Plywood – 3/8, 5/8, or 3/4 inch thick with holes drilled in

No-sag springs covered with burlap

WHAT YOU SHOULD KNOW BEFORE BUYING FOAM RUBBER

1. The type of base (seat) and back on your chair. Is the seat constructed with jute webbing and springs, or jute webbing only, or with no-sag springs, or with plywood? Is the back of jute webbing? Would you like another type of base?

2. The compression (degree of softness) that you would like, that is suitable to the type of chair seat and back you are reupholstering. (See pages 5, 6.)

3. The thickness (gauge) of the foam rubber to use for the chair. (See pages 5, 6.)

4. How to measure the chair and what allowances to add, in order to estimate the amount of foam rubber you will need.

HOW TO ESTIMATE AMOUNT

For Chairs with Tight or Fixed Seats and Backs:

Measure

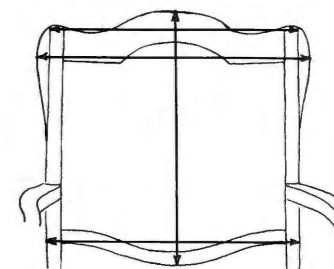
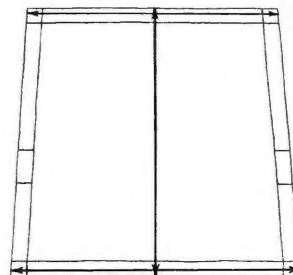
1. Chair seat frame

Length of seat, center back to front

Width of back of seat, including back posts

Width of front of seat

Any widest part



2. Back of chair, if it is to be padded

Length of back, center top to bottom

Width of back, at top

Width of back, at bottom, including back posts

Any widest part

For Tight or Fixed Cushions on Seats and Backs:

Add these allowances to chair measurements

Up to 12 inches ADD 1/4 inch to measurement

13 to 24 inches ADD 3/8 inch to measurement

25 to 36 inches ADD 1/2 inch to measurement

37 to 48 inches ADD 5/8 inch to measurement

49 to 60 inches ADD 3/4 inch to measurement

61 to 72 inches ADD 7/8 inch to measurement

Over 72 inches ADD 1 inch to measurement

Example: If the seat is 50 inches by 20 inches, make pattern for cushion 50 3/4 inches by 20 3/8 inches.

For Reversible Cushions, See Page 45.

WHERE TO BUY FOAM RUBBER

Foam rubber may be purchased from:

- Department stores
- Mail order houses
- Distributors and jobbers of foam rubber
- Some upholstery supply houses

If you have a classified section in your telephone directory, it may be of help to you.

HOW TO REUPHOLSTER DIFFERENT TYPES OF CHAIRS

First, turn the chair upside down and remove the old cambric from the bottom of the chair seat. This will enable you to see what kind of base you have to work with – webbing, or plywood, or webbing and springs, or no-sag springs.

Second, turn the chair upright and remove the outside fabric and padding. You may wish to save the outside fabric to use as a pattern *if* the new seat is to be similar to the old.

Third, find the chair with a base similar to yours from illustrations or photographs in this bulletin.

If your chair has a tight or fixed back and seat (without separate cushions), you may apply foam rubber directly over a base of webbing or plywood attached to the top or bottom of the chair seat frame. Or you can put it over an insulator cover of burlap sewed to tied springs or no-sag springs.

When a thinner gauge of foam rubber is used, a one-inch layer of cotton felt can be placed over the burlap, or a one-inch layer of hair or moss can be sewed to the burlap.

Loose, reversible cushions made of foam rubber can be used over bases of webbing; webbing, springs, and burlap; or webbing, springs, burlap, and a one-inch layer of cotton felt, hair, or moss, or rubberized moss.

It is important that the base of the chair frame be properly constructed. Foam rubber cannot be expected to cover up defects of a base.

Order of Steps in Reupholstering

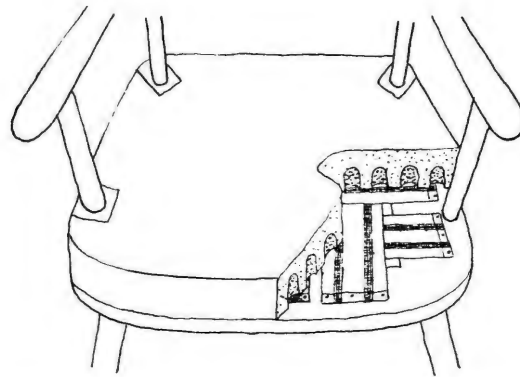
1. Cover coil springs or no-sag springs with burlap to prevent their rubbing the foam rubber. Tack burlap in two places on each coil spring and about every four to six inches on no-sag springs.

2. Measure chair seat and back:
Length, Width, Any widest part
3. Add allowances to chair measurements. (Allowance is to prevent wrinkling of fabric and to secure a crowned effect.)
4. Make paper pattern.
5. Fasten pattern to foam rubber with tape.
6. Mark around pattern with ball point pen or indelible pencil moistened in water, or a soft-lead pencil.
7. Cut out cushion with ordinary scissors dipped in water.
8. Reinforce cutouts for arm posts and back posts with one-inch-wide adhesive tape.
9. Mount cushion on seat and then on back.
10. Cement muslin strip to edge of cushion.
11. Tack or staple muslin strip to chair frame.
12. Cover with muslin if these upholstery fabrics are used:
 - Loosely woven materials
 - Unsupported plastics
 - Leathers
 - Cut velvets
13. Provide for ventilation with:
 - Muslin strip 6 inches long in rear boxing
 - Grommets
 - Muslin inset on underside of cushion
 - Holes in plywood

Chair with Jute Webbing (Tight or Fixed Cushion)

Superior quality jute webbing, $3\frac{1}{2}$ to 4 inches wide, interwoven on top of chair seat frame, is an excellent semiflexible base for





foam rubber. Spaces formed by interweaving the webbing provide ventilation for the foam rubber to breathe. Use 2-2½-inch cored stock of No. 3 compression or 3 inches of No. 2½ compression, and cement it directly to the edges of the seat frame. No. 2 compression, 1½ to 2 inches thick, is used on back.

Materials and equipment you will need

To put jute webbing on seat

Jute webbing, superior quality, 3½ to 4 inches wide
(If strips are spaced more than an inch apart, or a good quality jute webbing is *not* used, a single layer of burlap should be placed over the webbing and tacked to the top of the seat frame. See pages 11-13 for directions)

Webbing stretcher

Upholsterer's tacks, No. 8

Tack hammer

Scissors

Pencil

Mattress needle, 4-inch (if webbing has to be lengthened in stretching)

Yardstick or 15-inch ruler



To measure chair and make paper pattern

Yardstick

Carpenter's square or T-square, if possible

Wrapping paper

Pencil

Scissors

Tape (masking or adhesive)

To make and put foam rubber cushion on seat

Paper pattern cut to chair measurements with allowances added

Cored utility stock foam rubber 2½ inches of No. 3 compression or 3 inches of 2½ compression for seat;

1½ to 2-inches of No. 2 compression for back

Adhesive tape, 1-3 inches wide

Ballpoint pen, indelible pencil, or soft-lead pencil

Scissors with sharp blades at least 6 inches long

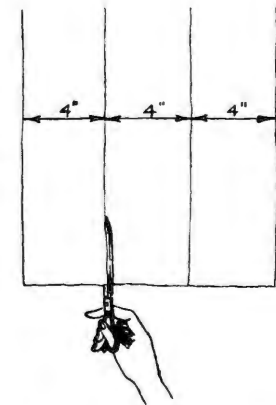
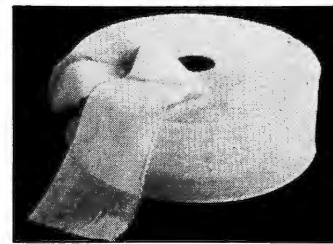
Container of water to moisten indelible pencil and scissors

Muslin — mediumweight piece to be cut in strips 3 or 4 inches wide, or roll of muslin tape, 3 to 4 inches wide

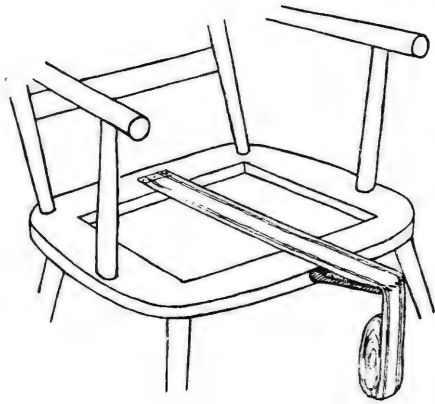
Rubber cement (a paint brush may be used to apply this)

Upholsterer's tacks, No. 3 or No. 4

Tack hammer

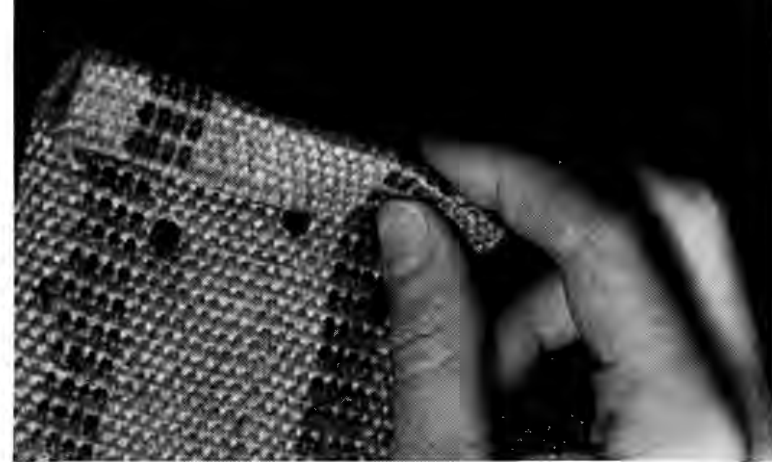


Put Webbing on Top of Chair Seat Frame



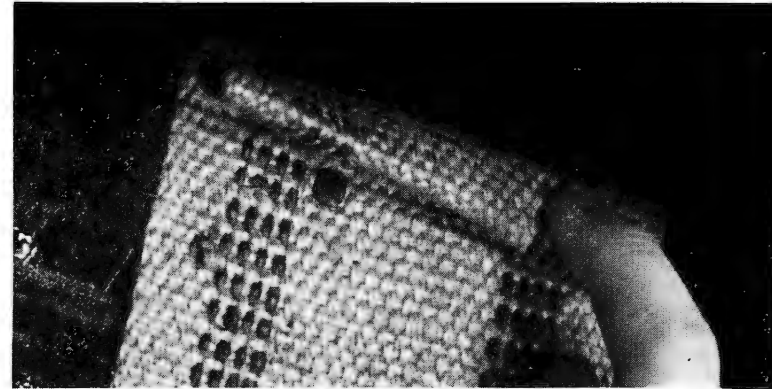
Step 1

Start at the *back* of the chair seat frame, and *without* cutting strip from roll, place end of webbing strip in the center, one inch from the outer back edge of the seat. Stagger four No. 8 tacks $1\frac{1}{2}$ inches from cut edge of webbing (to leave room for folding webbing in steps 2 and 3). Tacks are staggered to prevent splitting of seat frame. Hammer tacks firmly.



Step 2

Fold over cut end of webbing $\frac{3}{4}$ inch.

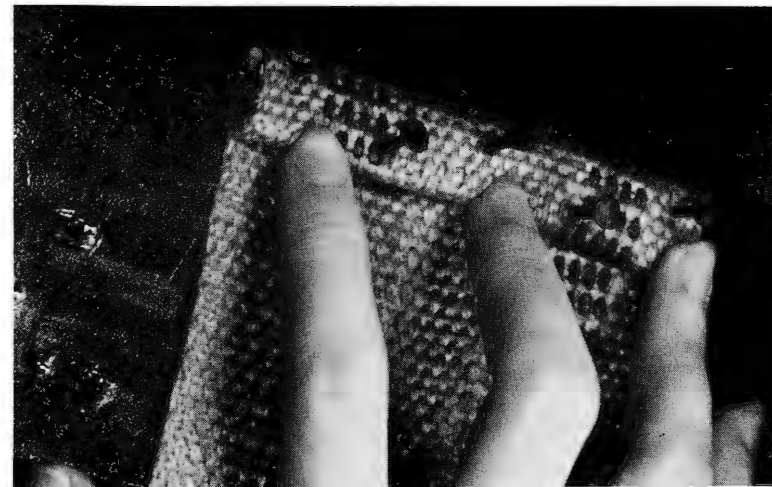


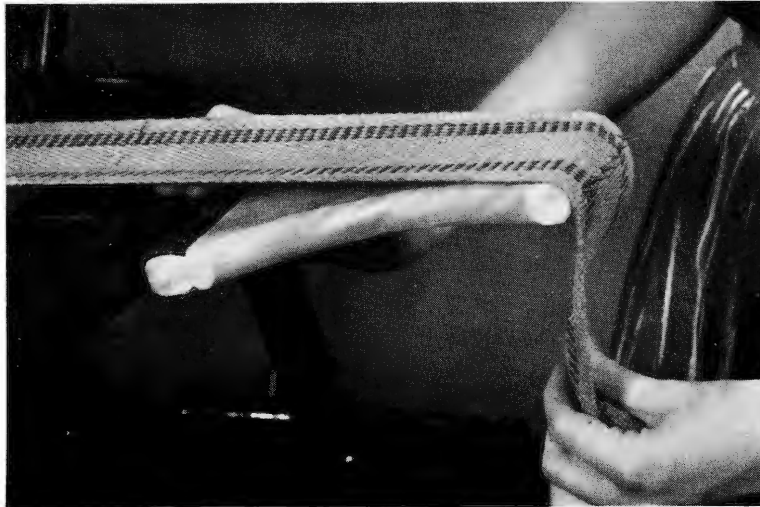
Step 3

Make a second fold, again doubling over webbing $\frac{3}{4}$ inch.

Step 4

Place five tacks in staggered position, and fasten.



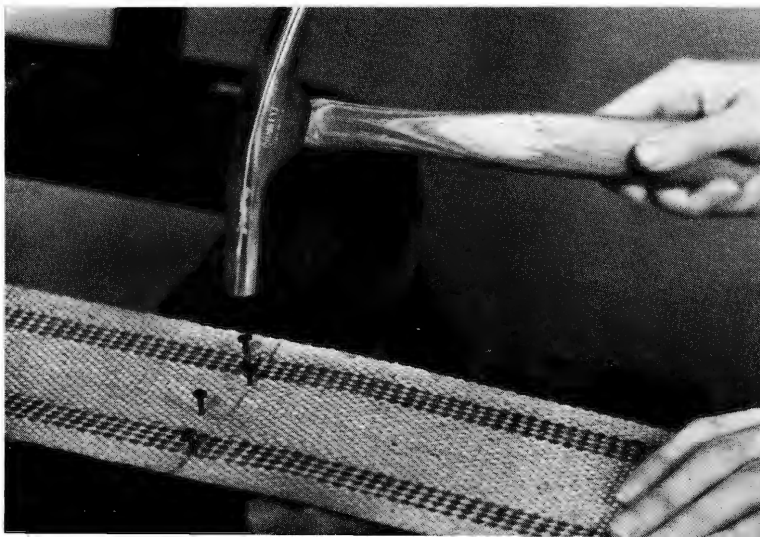


Step 5

Stretch webbing with a webbing stretcher toward the front of chair, making it as taut as possible.

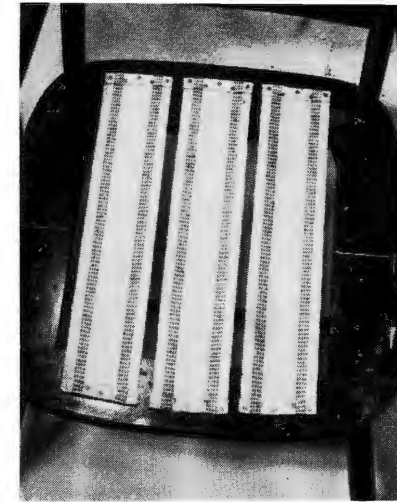
Step 6

Holding webbing with stretcher, stagger four tacks on webbing one inch from outer edge of *front* of seat frame. Fasten tacks. Cut webbing $1\frac{1}{2}$ inches from tacks. Fold over and fasten as you did in Steps 1, 2, 3, and 4.



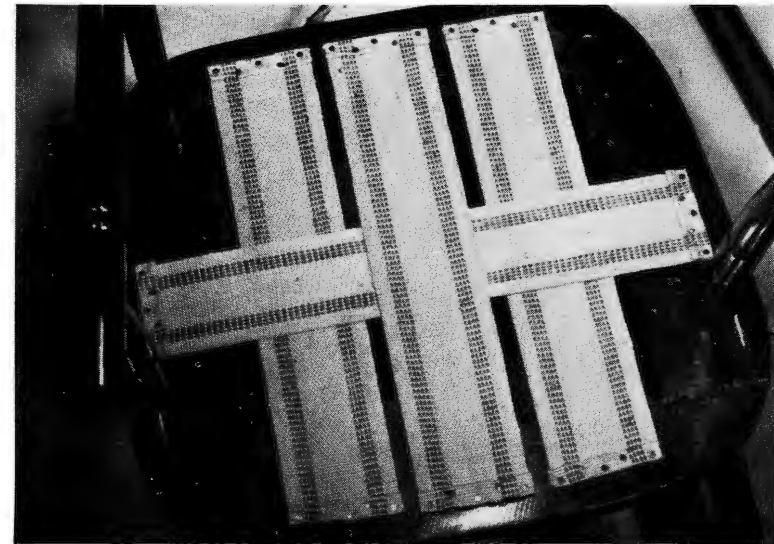
Step 7

Place and fasten a strip of webbing on each side of center strip, from back to front of chair, following the method used in Steps 1–6. (Space between strips should be no wider than one inch.)



Step 8

Place and fasten a strip of webbing in center of chair seat frame, *from side to side*. Weave it over and under the three strips running from back to front of chair. Stretch and fasten with tacks.



Step 9

Weave in two more strips of webbing, *from side to side*, one on each side of center strip, and fasten in place.

To lengthen short pieces of webbing to give you enough room for stretching, pin on an extra piece of webbing with a mattress needle as illustrated.

Completed webbing base. If webbing is to be placed on the back of the chair you are reupholstering, see pages 22 and 31.

Measure Chair and Make Paper Pattern

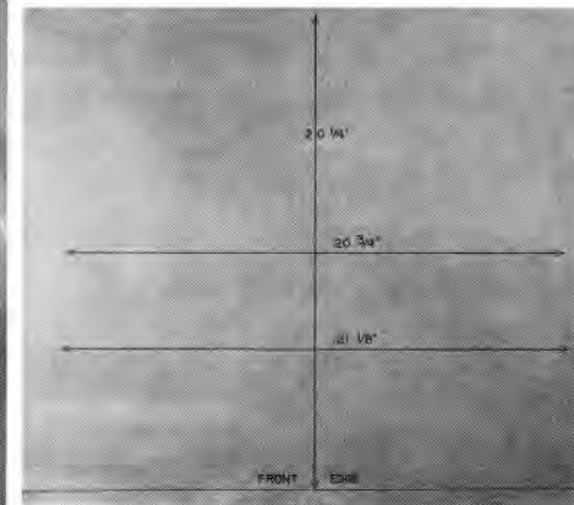
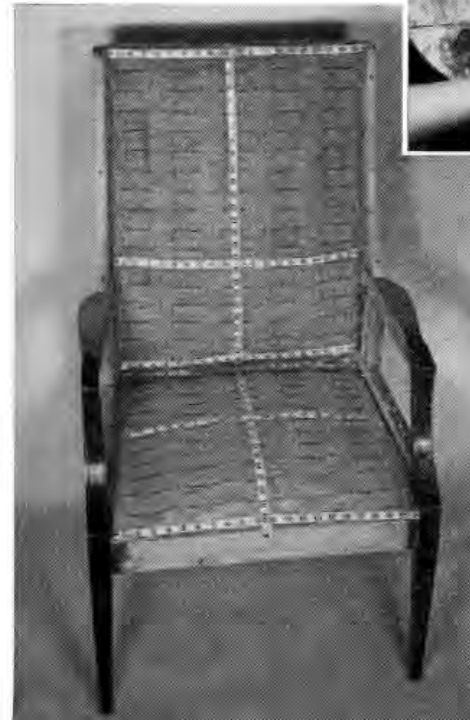
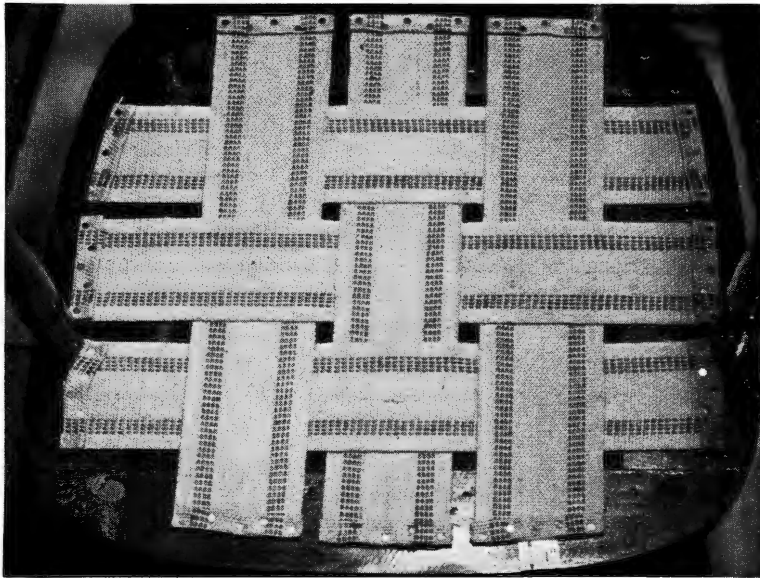
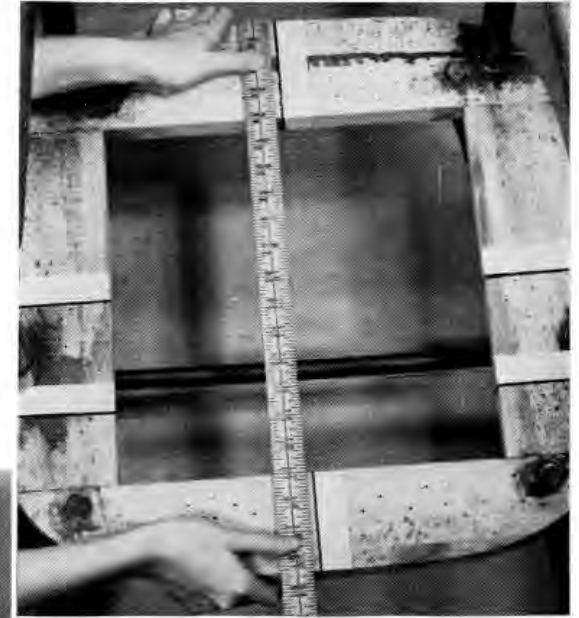
Step 1

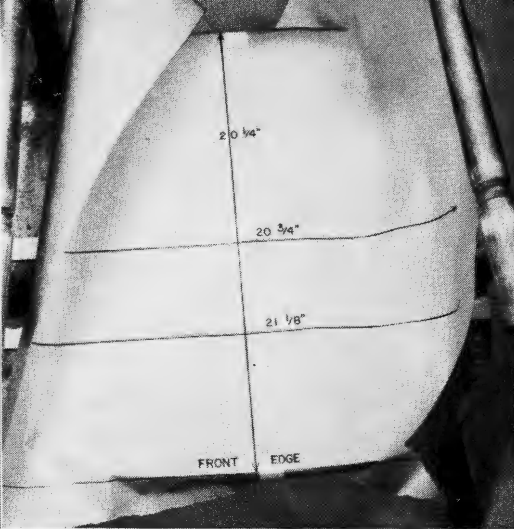
Measure and mark chair seat frame with crayon or pencil:

- Center back to front
- Center side to side
- Wider part of chair frame (may be across the front)
- Across front

Step 2

Make a pattern on heavy wrapping paper, using measurements. (See below, right.)





In order to make a pattern easily of this rounded chair seat, it was decided in this case to get outside shape first, then add allowance all around.

On a rectangular chair this would not be necessary. Simply add allowance to each measurement.

Fold pattern in half.

Cut out.

Step 3

To get the shape of the seat, place pattern over seat frame and fasten it with masking or adhesive tape at center front and back marks on chair seat frame.

Step 4

Smooth out one-half of pattern toward one side and edges of chair seat frame. Using this half of the pattern, split it at the arm and back posts. Cut out pattern around posts.



Step 5

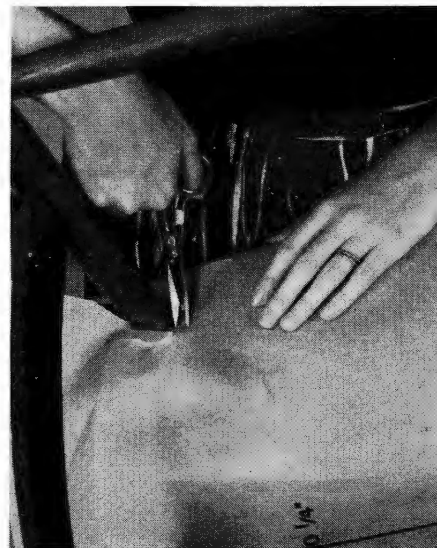
Press paper around edges of chair frame on this same half of the pattern to obtain outer shape of seat.

Step 6

Remove pattern from chair and fold down center line, back to front. Add these allowances to chair measurements to prevent wrinkling of fabric and to obtain a crowned effect:

For Tight or Fixed Cushions

- 0 to 12 inches ADD $\frac{1}{4}$ inch to measurement
- 13 to 24 inches ADD $\frac{3}{8}$ inch to measurement
- 25 to 36 inches ADD $\frac{1}{2}$ inch to measurement
- 37 to 48 inches ADD $\frac{5}{8}$ inch to measurement
- 49 to 60 inches ADD $\frac{3}{4}$ inch to measurement
- 61 to 72 inches ADD $\frac{7}{8}$ inch to measurement
- Over 72 inches ADD 1 inch to measurement





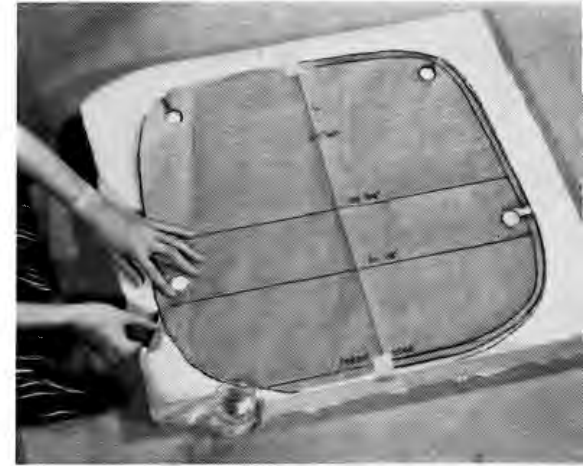
Place Pattern on Foam Rubber and Cut Out

Step 1

Place paper pattern on smooth side of foam rubber. Using masking or adhesive tape, fasten center front and back of pattern to foam rubber, to prevent slipping.

Step 2

With ballpoint pen, indelible pencil, or soft-lead pencil moistened in water, mark foam rubber around edges of pattern and arm and back posts. Remove paper pattern.

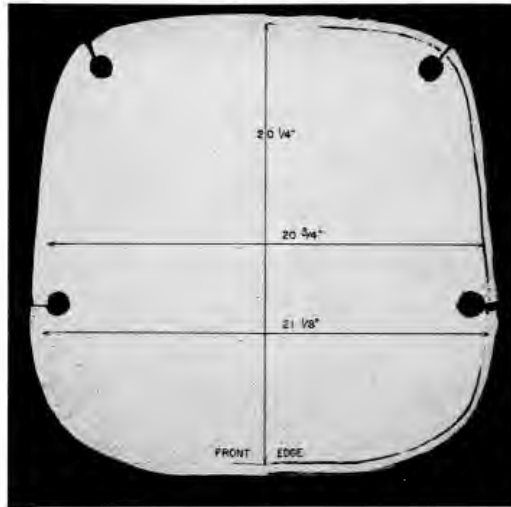


Step 3

Dip scissors in water to lubricate them. This is not absolutely necessary, but is helpful. Do not use too much water.

Step 4

Cut foam rubber on pencil marks along top, cutting just deep enough to separate the top of each core, and cutting only a few inches at a time.



Pattern cut out.





Step 5

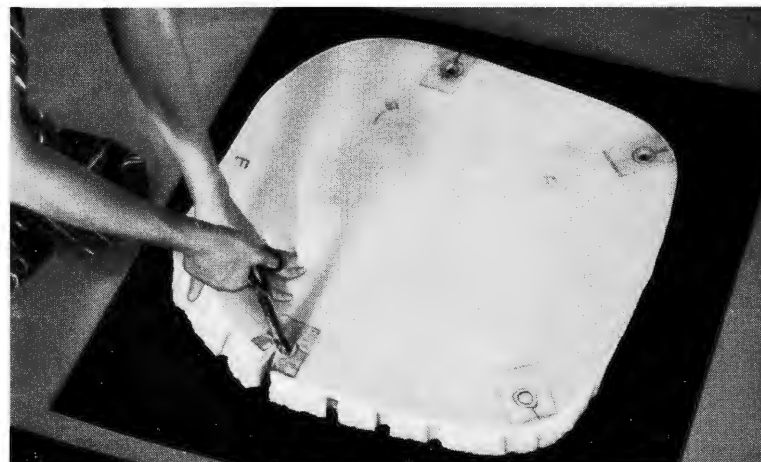
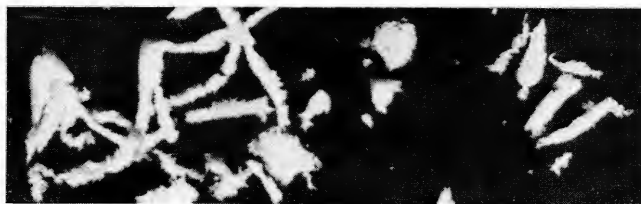
Cut down vertically through cored walls. (Foam rubber less than 2 inches thick may be cut clear through.)

Foam rubber can be cut with a 14-inch electric saw using a 1/4-inch wood blade (11 or 12 tooth size).



Step 6

Trim off ragged edges with scissors to get smooth contour. Slip your fingers into the cores, to get a firm grip for trimming.



Step 7

Place a piece of adhesive tape 3 inches wide and about 4 inches long on top of cushion at each marked post location. Return pattern to cushion; mark post locations on tape. (To insure a snug fit of arm and back posts, measure and mark area 1/4 inch smaller than actual size of arm or back posts.)

Step 8

Remove pattern. Cut out places for arm and back posts on taped area.

Put Foam Rubber Cushion on Top of Webbing on Chair Seat Frame

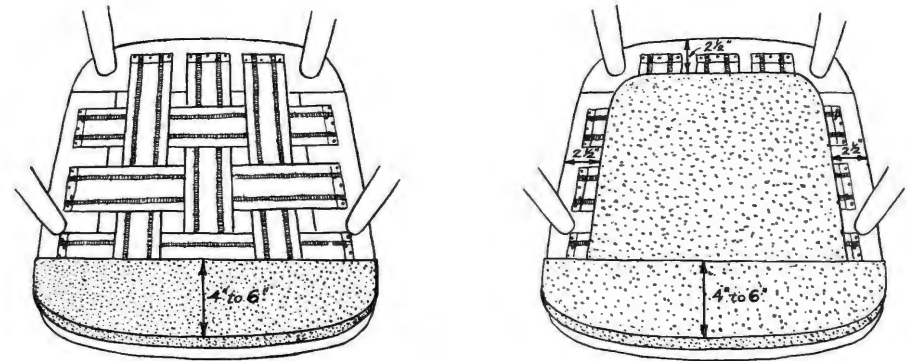
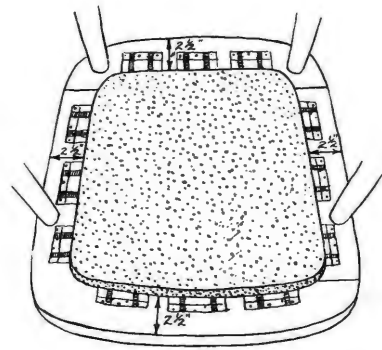
Step 1

Before applying cement, *try out cushion*. Place it over the seat frame, sit on it; get up and then look at it. If it feels and appears too flat, you may want to make a "crowned" (curved) cushion. Here is how to do it.



Cut a piece of 1 inch thick solid slab, $2\frac{1}{2}$ inches smaller all the way around from the outer edge of chair frame. The thickness of this piece should not be more than one-fourth that of the cushion.

Place it in center of seat and cement it in the form of an X and at front edge.



OR

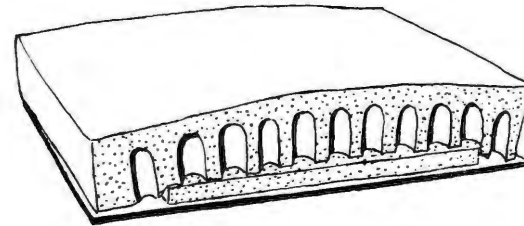
You can use a 1 inch layer of cotton felt the same size.

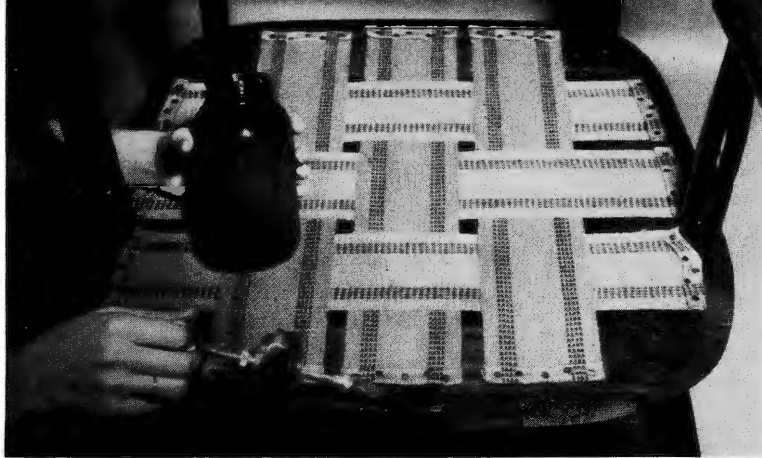
OR

If you want to raise the cushion *at the front of the seat* for a crowned effect, place a narrow strip (4 to 6 inches wide of 1 or $1\frac{1}{2}$ inch gauge solid slab or cored stock) across front. (See pages 33 and 39.) Cement to front of seat frame only.

OR

If you want a crowned effect *both at front of seat and in center of seat*, pieces may be cut as above and both applied as directed; or the foam rubber may be cut in one piece.





Step 2

Apply rubber cement around edges on top of chair seat frame and along edge of underside of cushion in a strip about one inch wide. Let it dry just enough to get tacky or adhesive.

Step 3

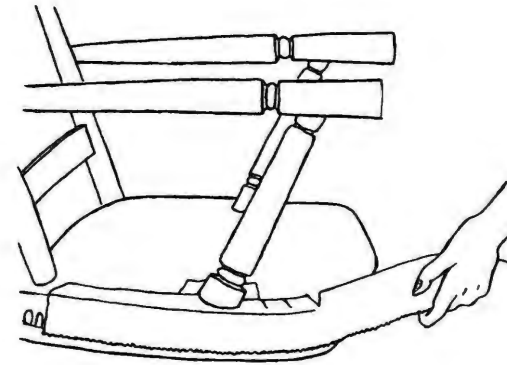
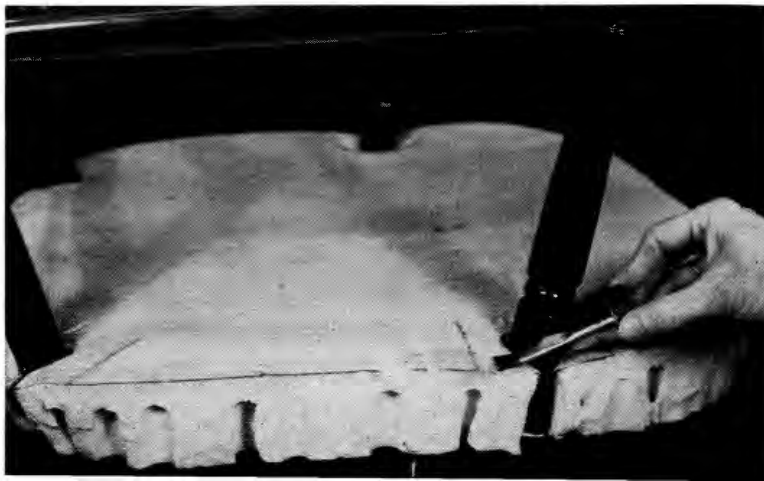
Place foam rubber cushion on top of seat frame that you previously covered with webbing.

Note how close strips of a good quality jute webbing have been put together on this chair.

Caution: If strips are spaced more than an inch apart or a good quality jute webbing is *not* used, a single layer of burlap should be placed over the webbing and tacked to the top of the seat frame.

Step 4

Apply rubber cement along edge of top of cushion in a band about one inch wide. Apply an inch-wide band of cement along edge of 3- or 4-inch-wide muslin strip.



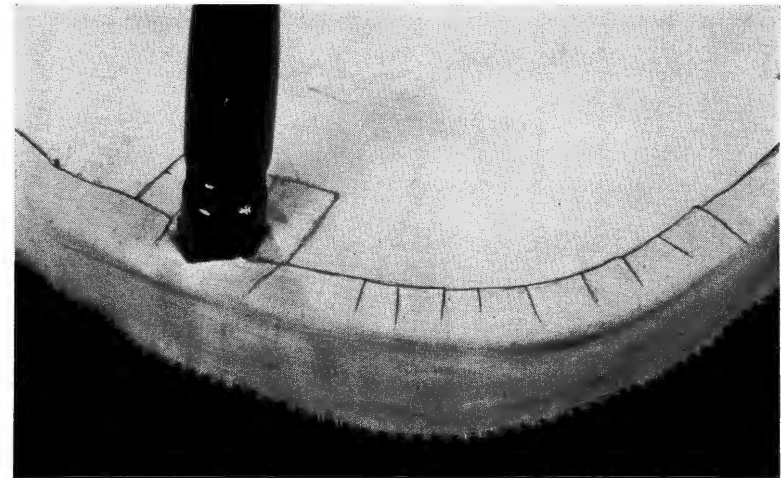
Step 5

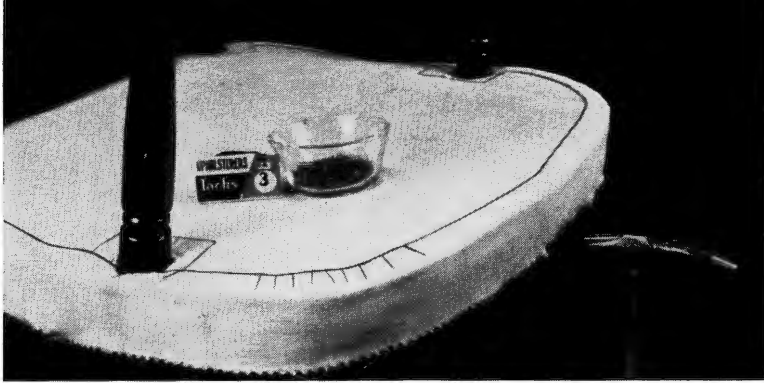
When the cement on foam rubber reaches the tacky stage, apply the muslin strip to top edge of cushion. Place strip on top along the edge of cushion you cemented.

Caution: Pull strip gently as you apply it, to keep it from wrinkling.

Step 6

Snip edges of muslin strip vertically around curves to flatten it.





Step 7

When cement is dry, fasten muslin strip to sides of chair seat frame with No. 3 or 4 upholstery tacks. Drive the tacks in only far enough to catch firmly, as you may need to relocate them.

Tack at center front, back, and sides.

Tack at four corners.

Gently press foam rubber down with your hand so that muslin can be tacked evenly at center points between tacks, first on one side of the chair and then on the other, on front and on back. Again, tack between tacks until tacks are spaced about $1\frac{1}{2}$ to 2 inches apart on all sides of the chair, or close

enough so that the cushion is straight on top. Check to make sure muslin is firmly tacked. Fasten tacks in place.

The foam rubber cushion is fastened to the chair seat frame ready for outside fabric covering.



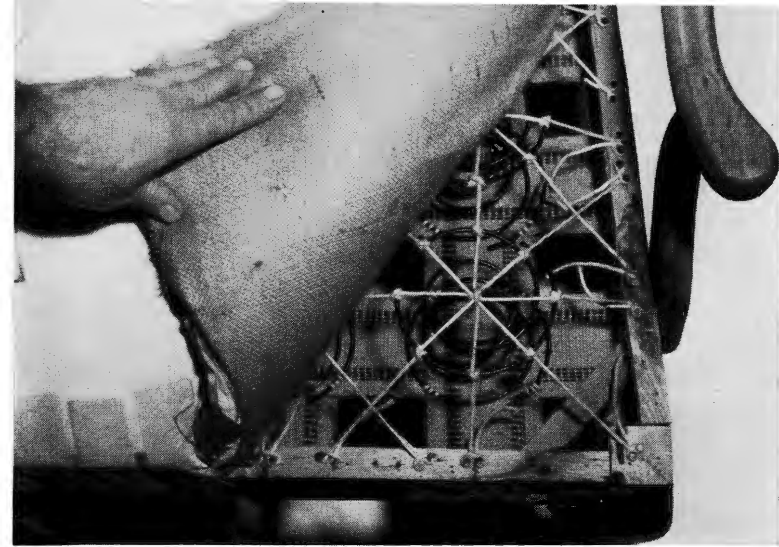
Chair with Jute Webbing and Conventional Springs

(Tight or fixed cushion in seat and on back)

Note: If seat frame is less than 21½ inches deep, do not use coil springs. See chair with webbing base, pages 10 through 13.

Superior quality jute webbing, 3½ or 4 inches wide, is interwoven on the *bottom of the chair seat frame*. Springs are sewed to jute webbing and tied. Burlap or canvas is then sewed to the springs to protect the foam rubber from abrasion and cutting. Two and one-half inches of No. 3 compression or three-inch cored stock of No. 2½ compression, cut to the desired shape, is placed over the burlap and taped in place with a three or four-inch strip of muslin.

When you use foam rubber on jute webbing for the *back* of a chair, you can apply 1- to 1½-inch slab utility stock of soft compression to burlap *tacked over the webbing*. For deeper cushioning on the back, 1½- or 2-inch cored stock of No. 2 compression is more desirable.



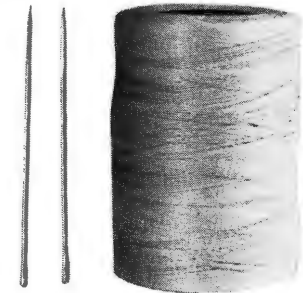
Materials and Equipment You Will Need

To put webbing on seat and back

- Jute webbing, superior quality, 3½ to 4 inches wide
- Webbing stretcher
- Upholsterer's tacks, No. 8
- Thumbtacks
- Tack hammer; a tack puller
- Scissors
- Pencil
- Yardstick

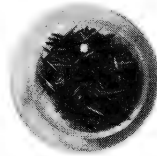
To sew springs to webbing

- Coil springs — springs should be twice the height of seat frame; use 5-inch springs on a seat frame 21½ inches deep. Five to 9 springs are used, depending on the size of your chair.
- Mattress needle, 6-inch
- Flax mattress twine
- Scissors



To tie springs

- Yardstick
- Black crayon
- Upholsterer's tacks, size 12
- Hammer
- Tack puller
- Manila or hemp spring-tying twine
- Scissors



To insulate with cover of burlap

- Burlap (10–12 oz. weight) — jute or hemp fabric 40 inches wide — a piece large enough to cover area of chair seat with an allowance of 2 inches on all sides
- Curved 4-inch needle
- Flax mattress twine
- Mattress needle
- Upholsterer's tacks, size 4
- Hammer

To measure chair and make paper pattern

See page 10 for equipment

To make and put foam rubber cushion on seat

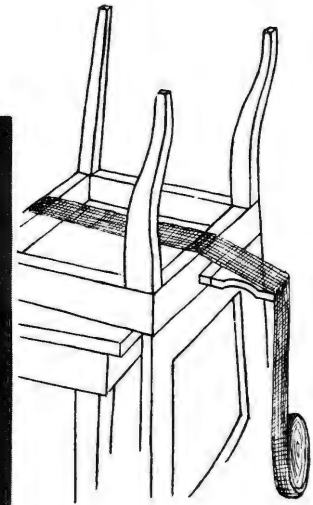
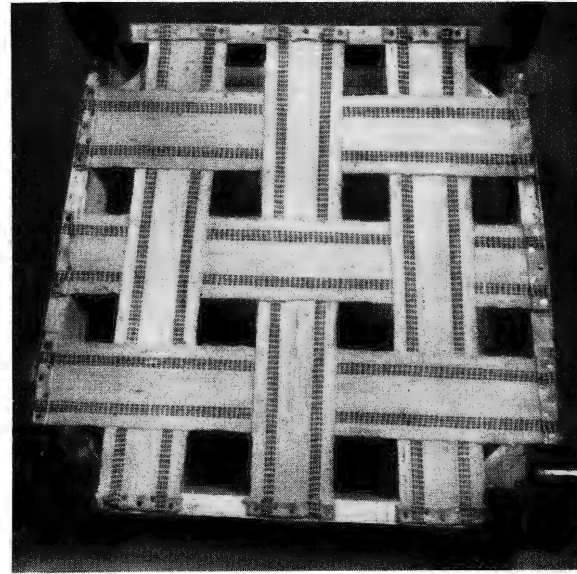
See page 10 for equipment

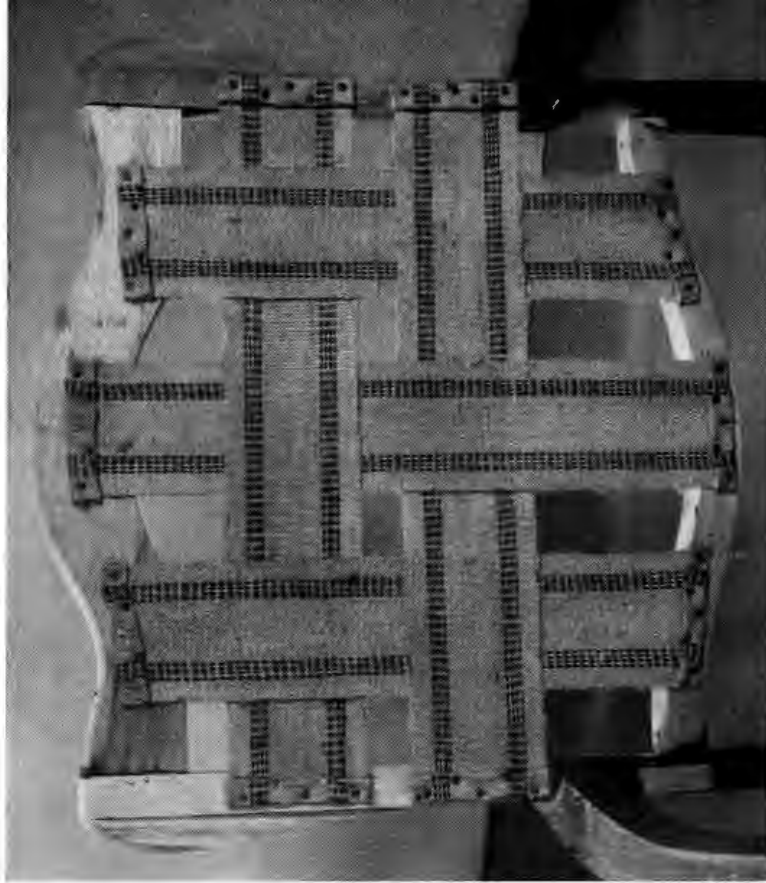
Foam rubber — 2½ inches of No. 3 compression or 3 inches of No. 2½ compression

Put Webbing on Bottom of Chair Seat Frame and Front of Chair Back

Step 1

Turn chair upside down. Put webbing on bottom of chair seat frame (for directions, see pages 11–13). Strips should be not more than 2 or 2½ inches apart, preferably 2 inches.





Step 2

Turn the chair so the back is horizontal. Put webbing on front side of chair back (for directions, see pages 11–13, 31). If back of chair is larger than that illustrated, place more strips lengthwise and crosswise.

Place Springs at Webbing Crossings and Sew

New springs can be used, or old springs *in good condition* can be straightened and used. If the springs are rusty, clean them with steel wool, dust them, and apply paint or a rust-resistant penetrating wood sealer.

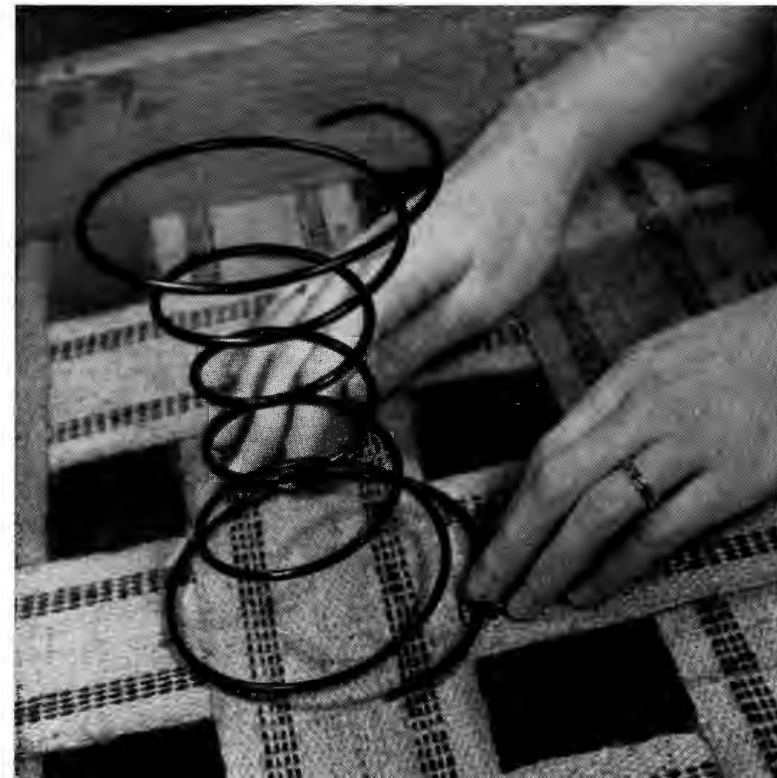
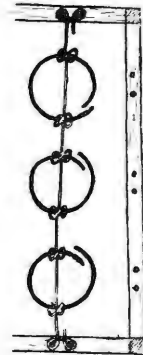
To straighten new or old springs:

1. Pull coils sidwise, one coil toward you, the next from you
2. Twist coils and bend them, if necessary
3. Pull wires longer between top and bottom, if spring is too short

Step 1

Place chair in upright position. Starting at any corner, place a spring in the center of the area where the webbing strips cross. (Usually five springs are used on a small chair and nine on one of average size.)

Caution: The loose end of each spring *that bends downward* slightly should be at the top and turned to one side as illustrated.

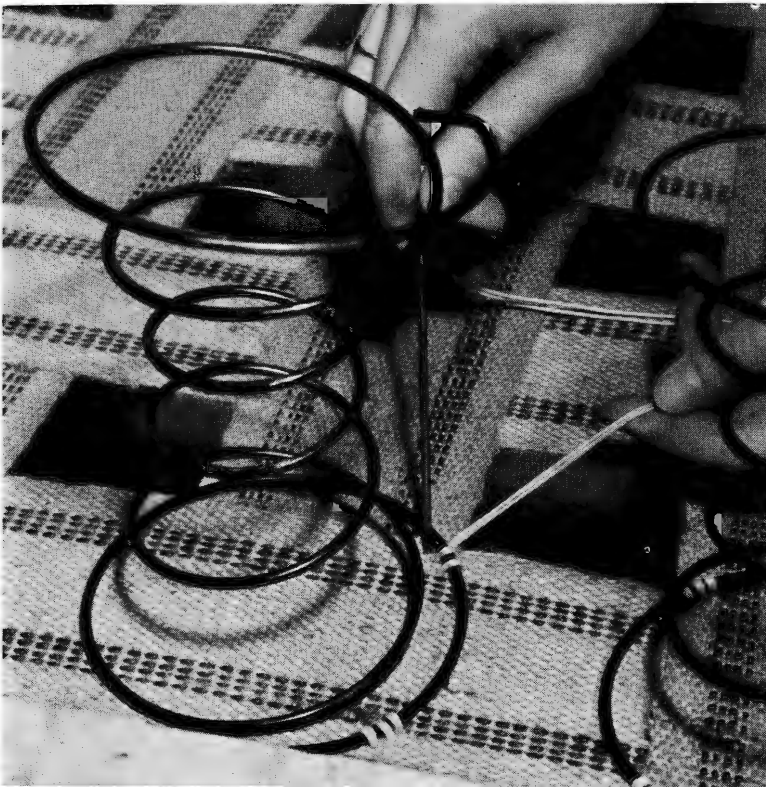


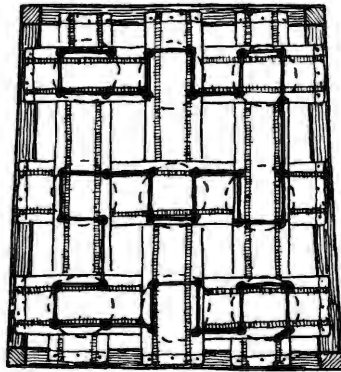


Step 2

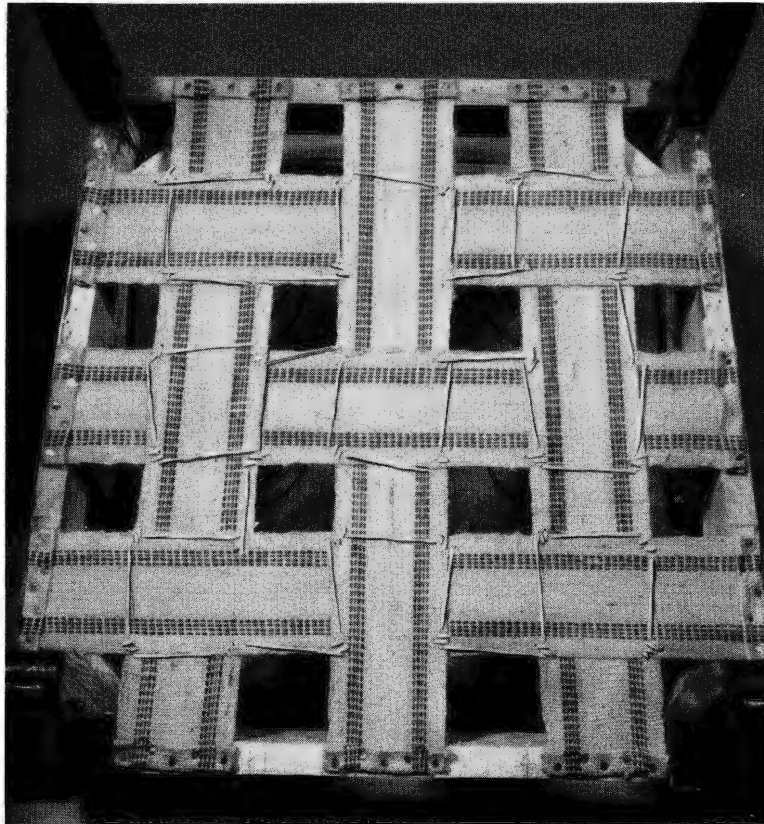
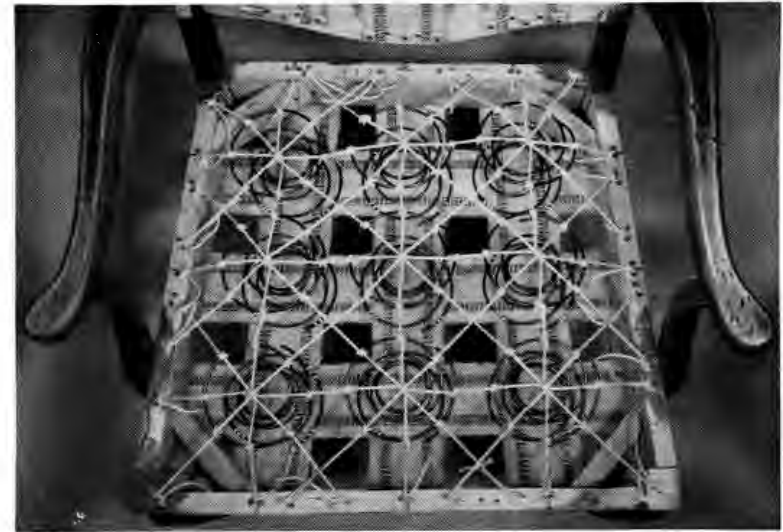
Thread an upholsterer's or mattress needle with a *long* double strand of flax mattress twine. Start sewing a corner spring to the webbing. Make three stitches close to the wire at four equally spaced points. Stitch continuously from spring to spring to avoid cutting twine.

Springs sewed in.



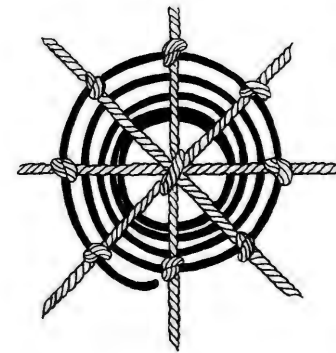


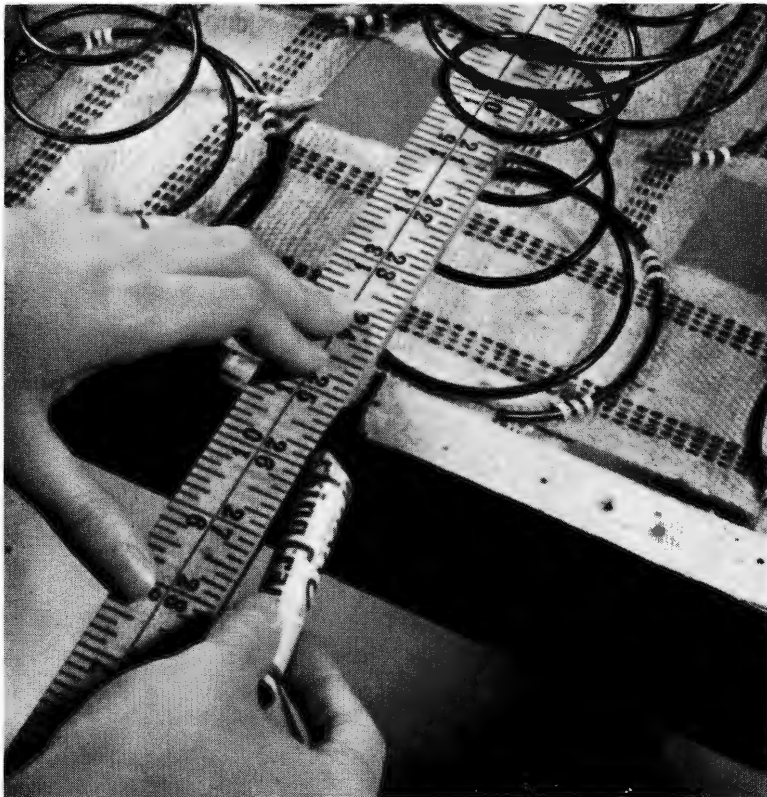
Underside of chair showing direction in which springs are sewed.



Tie Springs

Springs are tied in this order: first from back to front, second, from side to side, and third, diagonally each way. Each spring is tied eight times with spring-tying twine. Here is how it is done:





Step 1

Using a yardstick and a black crayon, mark places for tacks on seat frame opposite center of each outside spring.

Step 2

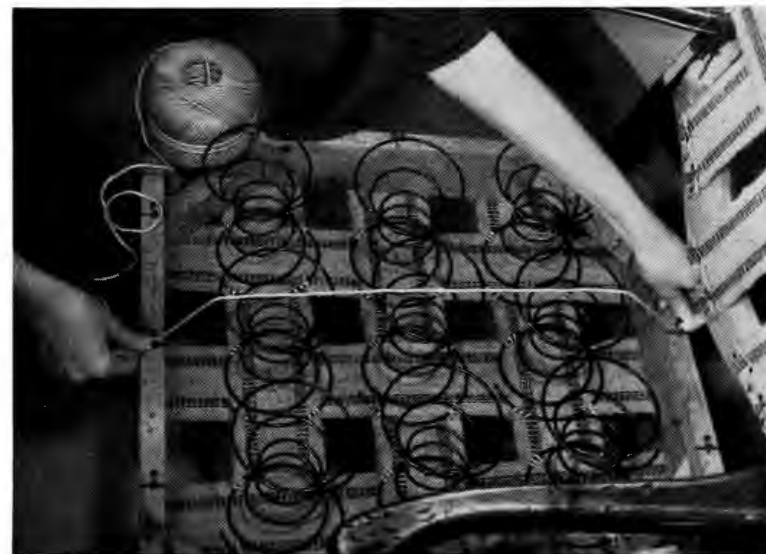
Drive two No. 12 upholsterer's tacks side by side into seat frame opposite each outside spring at crayon mark. (Drive only far enough in to hold firmly.) Leave enough space (about $\frac{3}{8}$ inch) between the two tacks for spring-tying cord.



Step 3

Measure the amount of spring-tying cord you will need to tie the three rows of springs from back to front as follows:

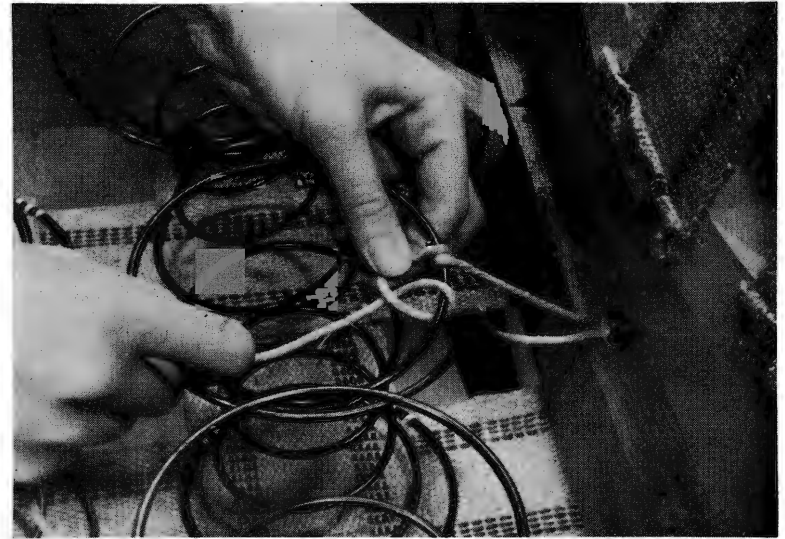
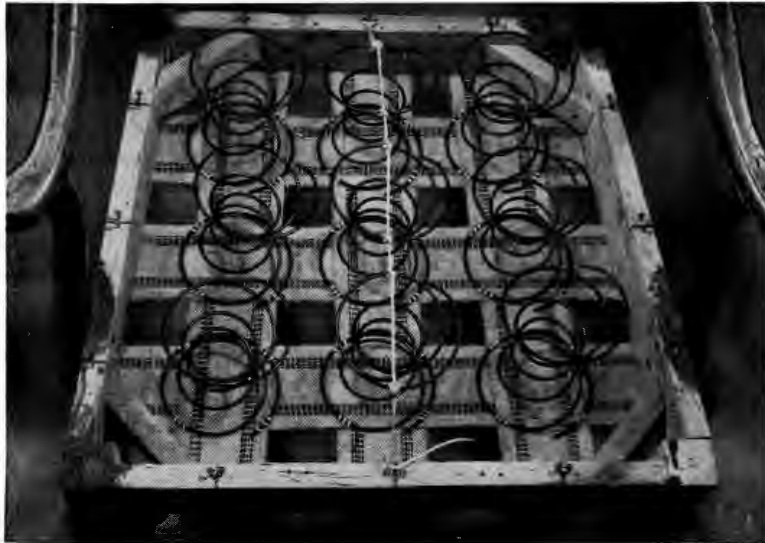
Place the cord across the top of one row of springs, from the two tacks in back to the two in front. Multiply this measurement by three, and add one-half of the total (for knots.)



Step 4

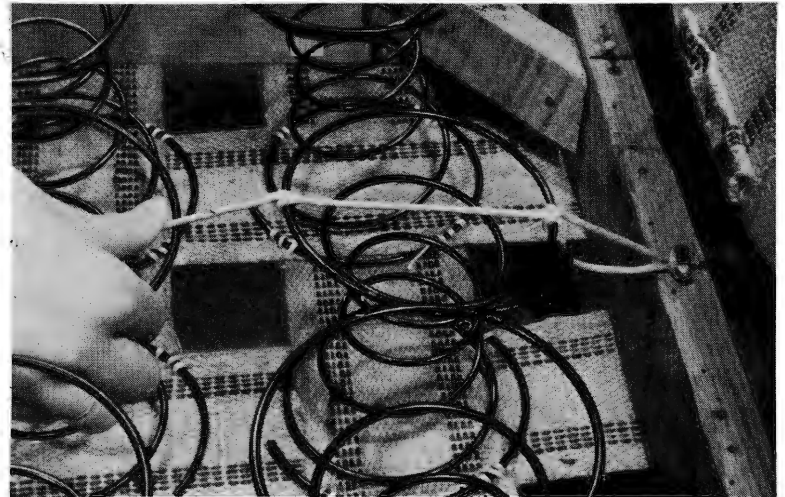
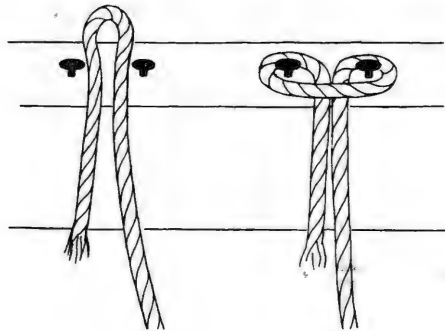
First, tie the center row of springs *from back to front*.

Leaving an end about 4 inches long, loop cord between tacks opposite center spring at back of chair. Loop cord over tacks and pull firmly. Fasten tacks in place.

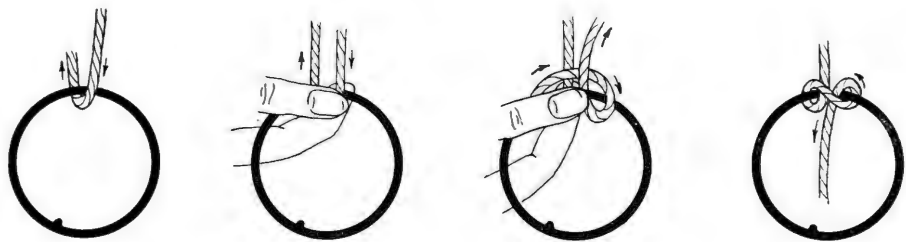


Step 5

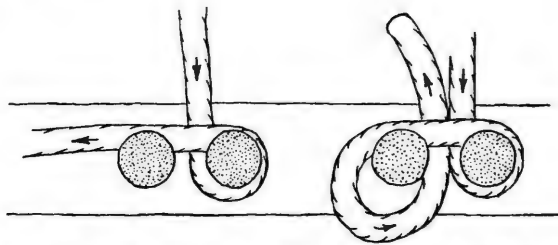
Tie springs, using a figure eight knot, as illustrated.



Tying a figure eight knot.

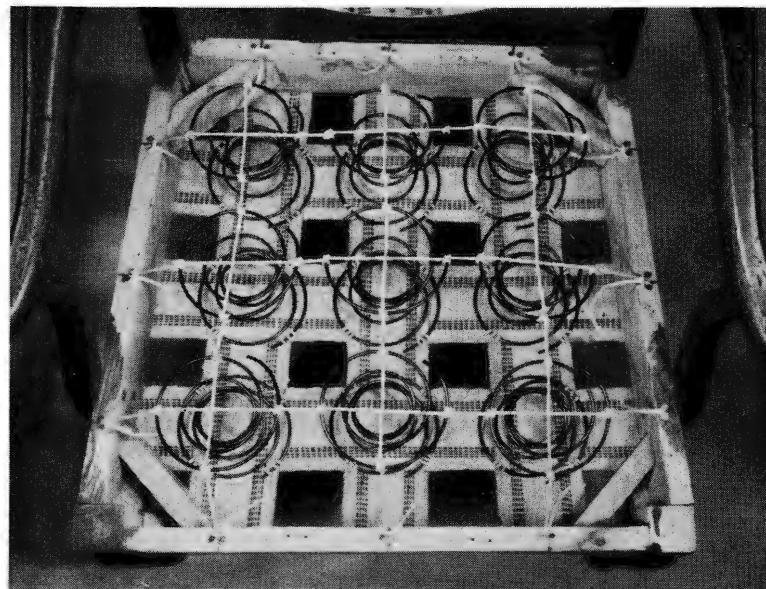
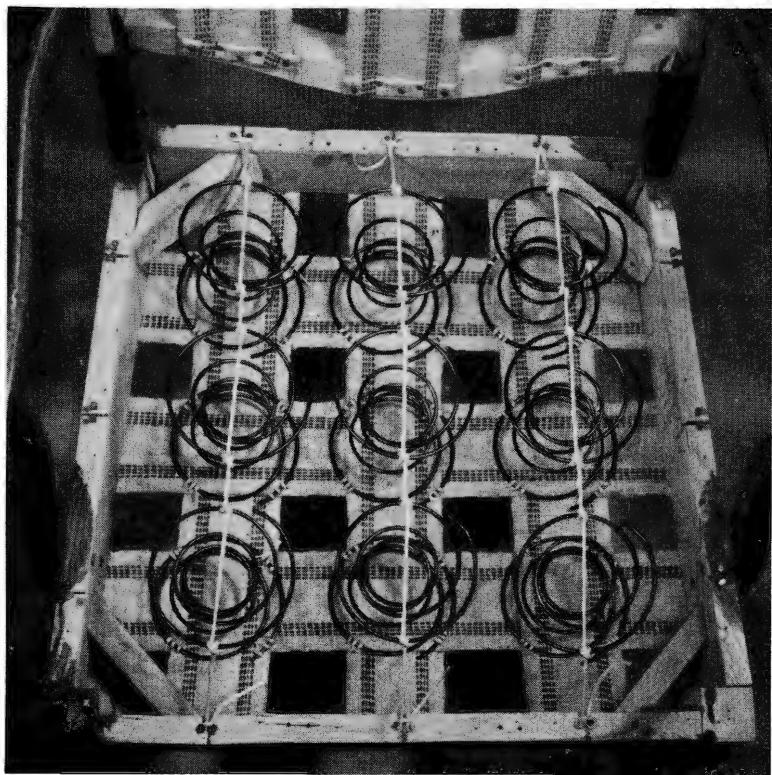


Fasten the cord at the end.



Step 6

Beginning in center row, tie springs *from side to side*, the same way as in Step 5.

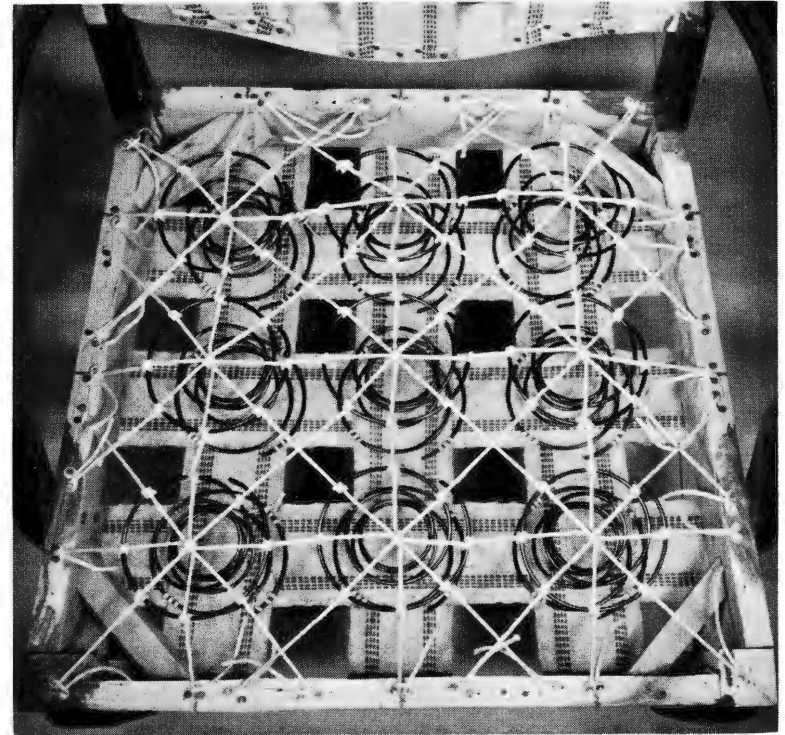
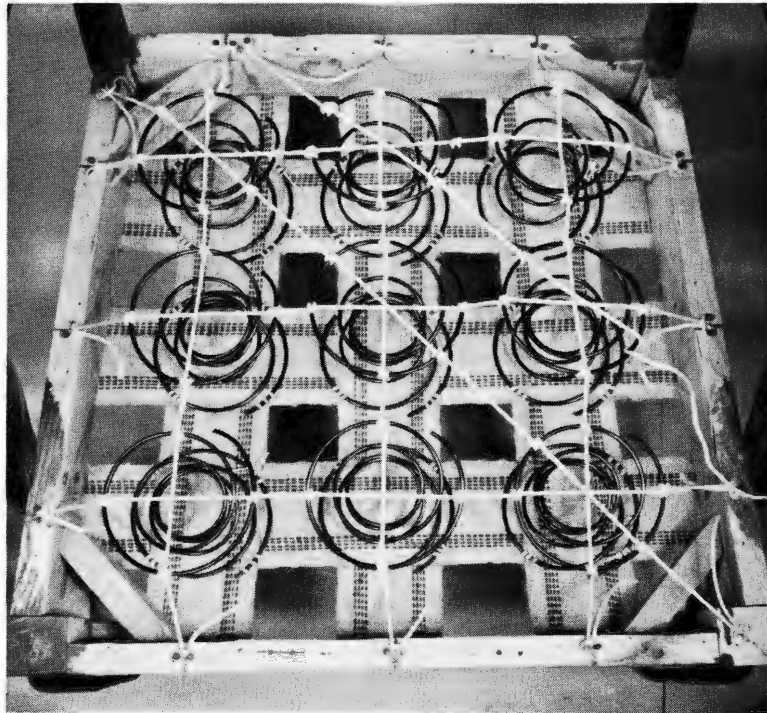


Step 7

Measure amount of cord needed for tying a row diagonally and add $\frac{2}{3}$ of the total.

Step 8

Start at *left-hand back corner* of frame and tie a row of springs diagonally to opposite corner. Continue tying remaining rows diagonally in this direction.



Step 9

Start at *right-hand back corner* of frame and tie row of springs diagonally to opposite corner. Continue tying remaining rows diagonally in this direction.

Cover Springs with Burlap

Step 1

Measure chair seat over tied springs:

- Center back to front
- Across back, including posts
- Across front

Add 2 inches on all sides.

Step 2

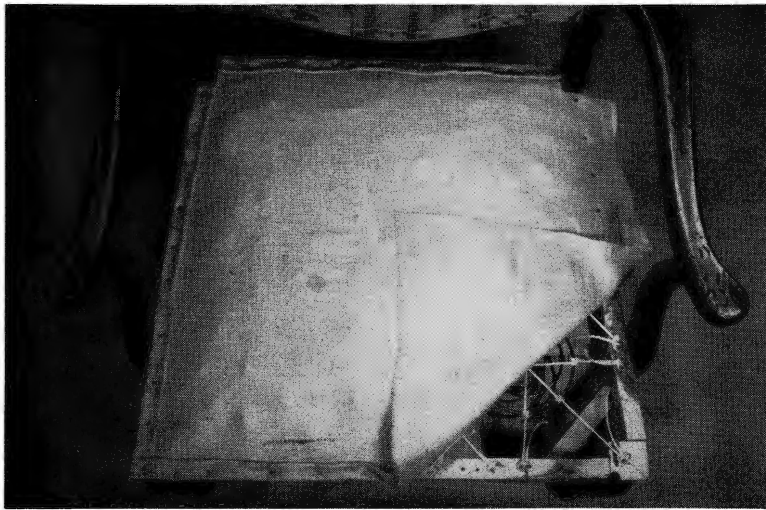
Cut a piece of burlap on the straight of the material to the above measurements.

Step 3

Place burlap over tied springs, and smooth it out. Fasten a temporary tack at center back, center front, and each side, making certain that the grain of the material is straight.

Step 4

Tack burlap evenly all the way around the top of the chair seat frame.

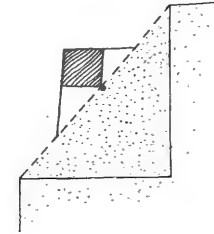


Step 5

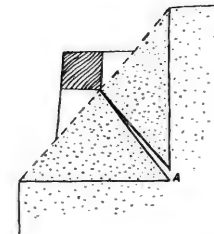
Fit and miter burlap at corners of back posts, as directed below.

Fitting material around back posts.

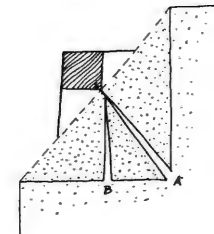
First, pull material firmly over seat. Fold back as shown. Mark point where fold touches corner of post.



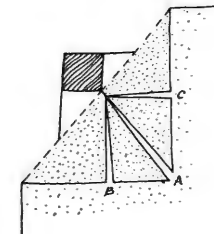
Second, cut from corner of material to point marked on material.



Third, follow grain of material and cut from B to *WITHIN ONE INCH* of end of first cut.

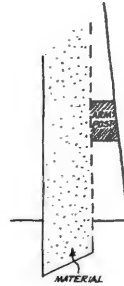


Fourth, follow grain of material and cut from C to *WITHIN ONE INCH* of end of first cut.

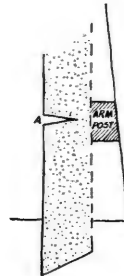


Fitting material around an arm post.

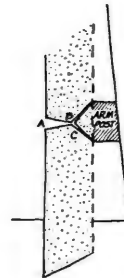
First, pull material firmly over seat, and fold material back at arm post.



Second, cut material *WITHIN* 1½ INCHES of arm post at center of arm post as in A.

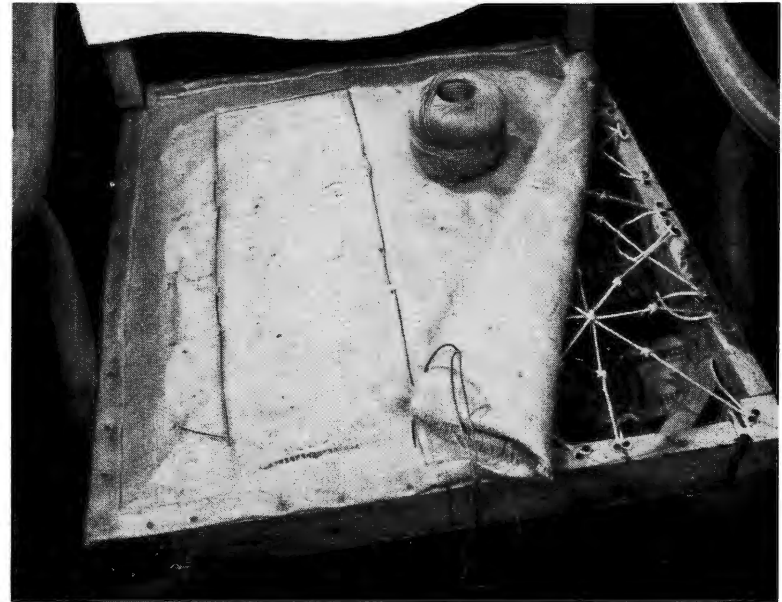


Third, cut diagonally as in B and C, turn under triangle, and cut at arm posts.



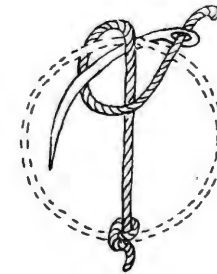
Step 6

Start at center on all sides and turn in edges of burlap, making a double fold. Fasten with No. 4 tacks as on page 29.



Step 7

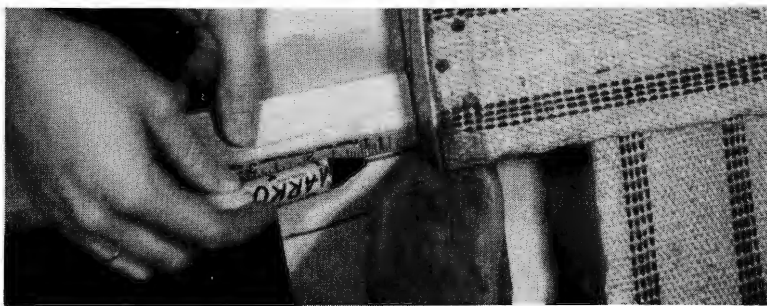
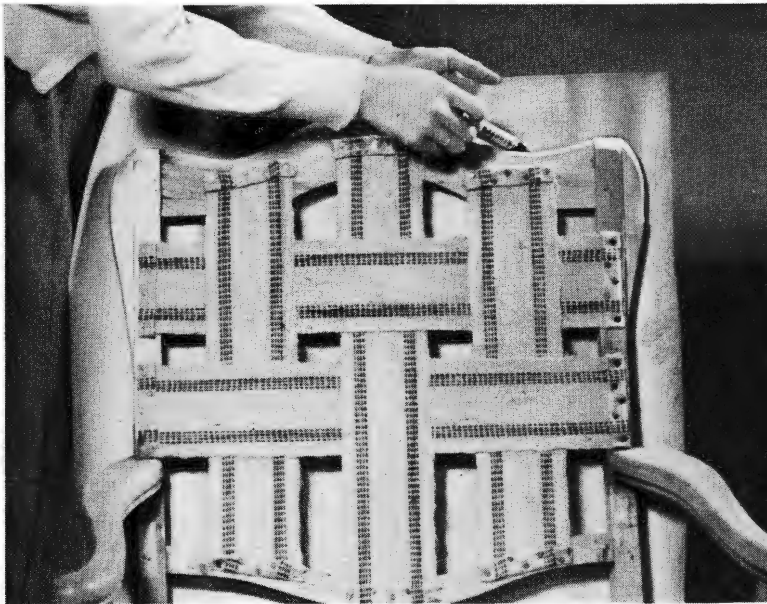
Thread a No. 4 curved needle with a single long thread of mattress twine. Sew each spring to burlap in two places.



Cover Webbing on Chair Back with Burlap

Step 1

Thumbtack a piece of wrapping paper to the back frame. With pencil or black crayon, trace around edges of chair frame. Mark for arms.



Step 2

Remove paper from chair and add 2-inch allowance on each of the four sides.

Step 3

Cut out pattern.

Step 4

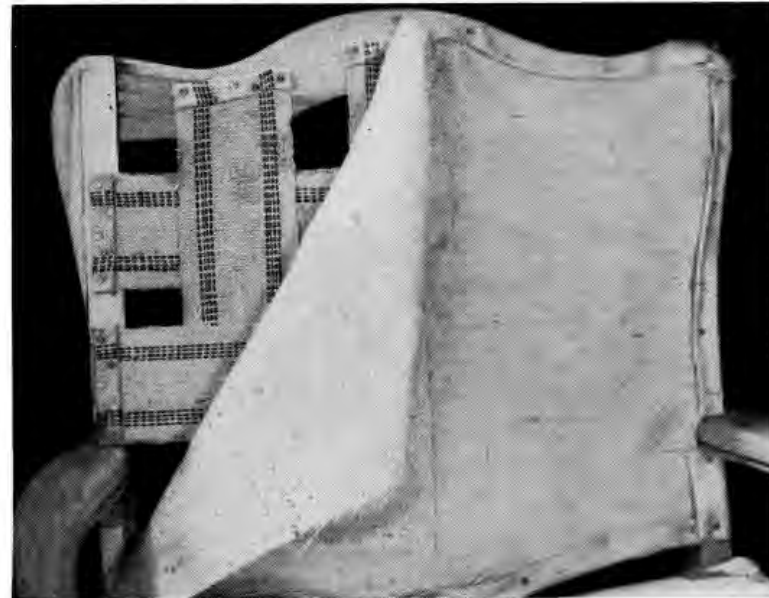
Place pattern lengthwise on burlap. Cut out.

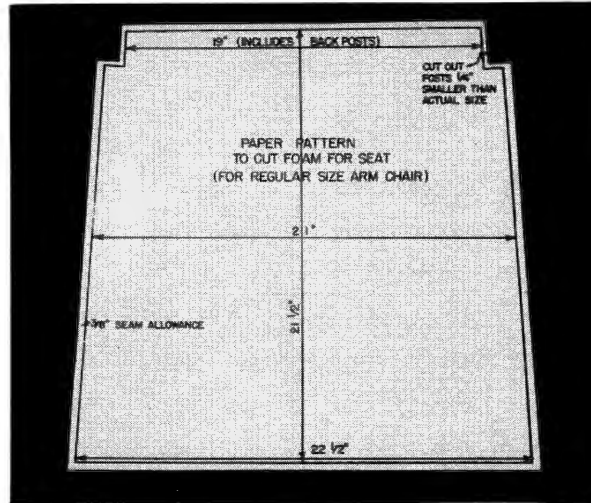
Step 5

Turn chair so back is in horizontal position. Fasten a single layer of burlap to the front of the chair back, fit and trim corners. Tack:

Center top and bottom and each side

Continue tacking in between tacks





Measure Chair and Make Paper Pattern for Cushion

For chair seat, follow directions given on pages 13 to 15.

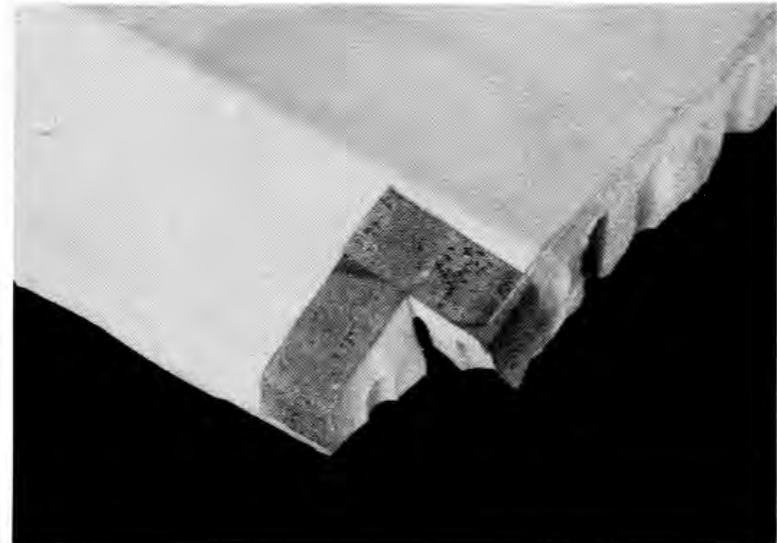
For chair back, thumbtack a piece of wrapping paper to the back frame. Trace around edges of chair frame back, using black crayon. Mark arm locations. Remove paper from chair. Add allowance on each of the four sides. Cut out pattern.



Place Paper Patterns for Seat and Back on Foam Rubber

Place the paper patterns for seat and back on the smooth side of the foam rubber. Mark around pattern with crayon or indelible pencil. Cut out cushions. (See pages 15 and 16.)

Reinforce back and arm post cutouts with 1- or 2-inch-wide adhesive tape.

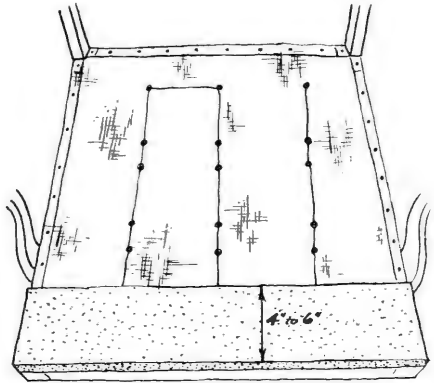


Put Foam Rubber Cushion on Springs Covered with Burlap

Step 1

Place rubber cement on the burlap where it is tacked and on the edge of underside of cushion in a band about one inch wide. (This is to hold the cushion in position while applying the strip of muslin.)

Let rubber cement dry until it becomes tacky. Place the cushion on top of the burlap-covered springs.



Put Foam Rubber on Chair Back Covered with Burlap

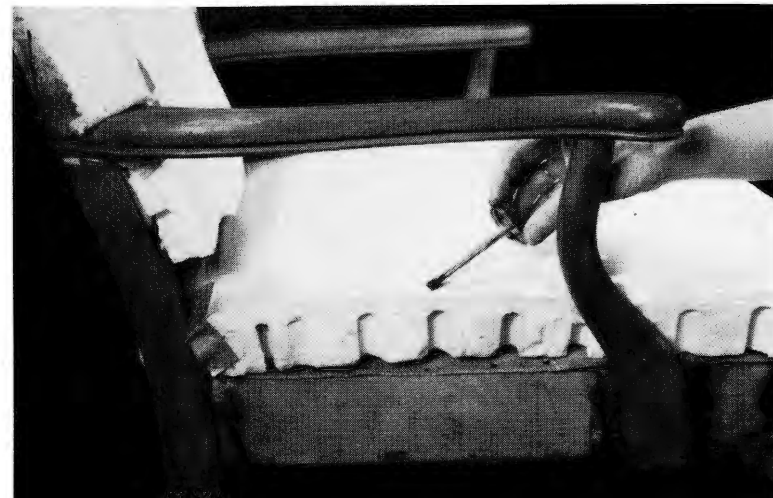
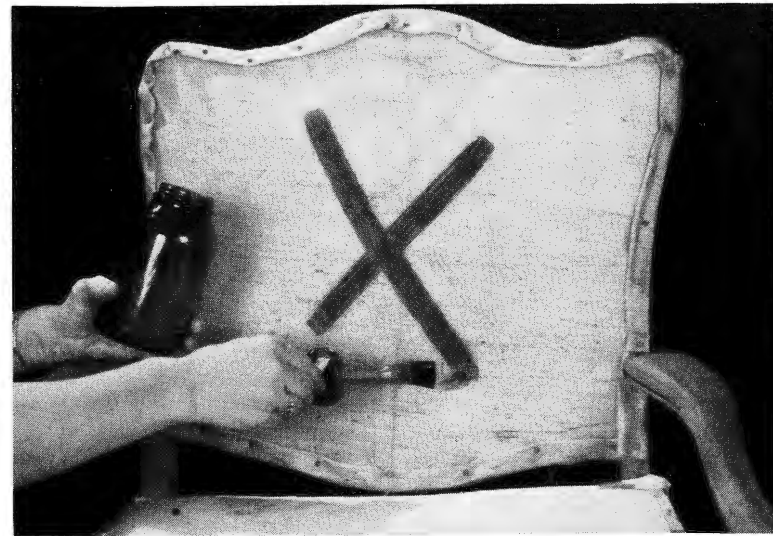
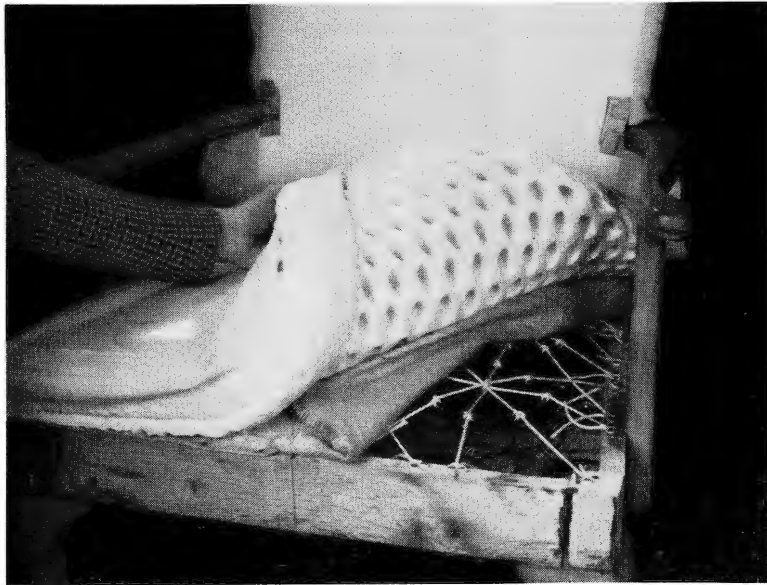
Step 1

Apply rubber cement to:

- Edge of back of frame on tacked burlap, and in an X
- Edge of underside of back cushion in an X one inch wide. Let the cement dry to tacky stage
- Top edges of back and seat cushions in a band one inch wide

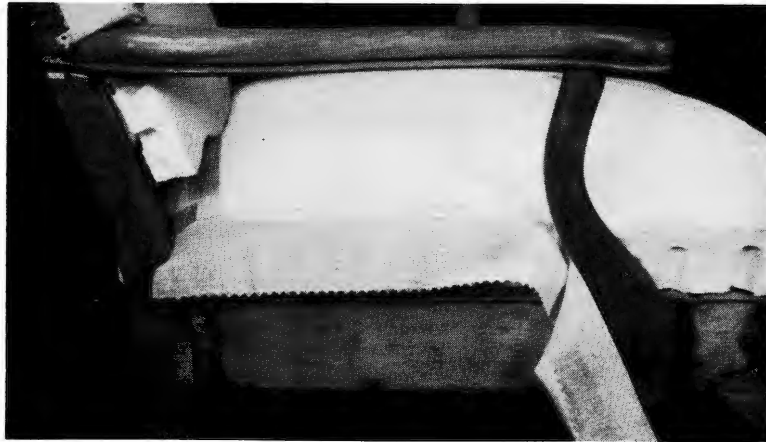
Step 2

If you want to raise the cushion for a crowned effect at the front of the seat, place a narrow strip, 4 to 6 inches wide, of 1- or 1½-inch gauge solid slab or cored stock across front. (See page 39.) Cement to edge of front of seat frame.



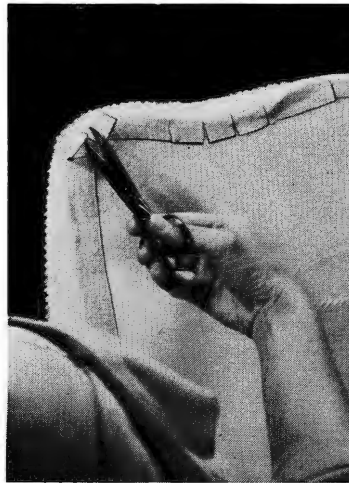
Step 2

Apply a 3- or 4-inch strip of muslin to edges of seat and back cushion (see page 18.) Apply cement along one side of 3- or 4-inch-wide muslin strip in a band one inch wide.



Step 3

Snip muslin strip vertically at curves to flatten.



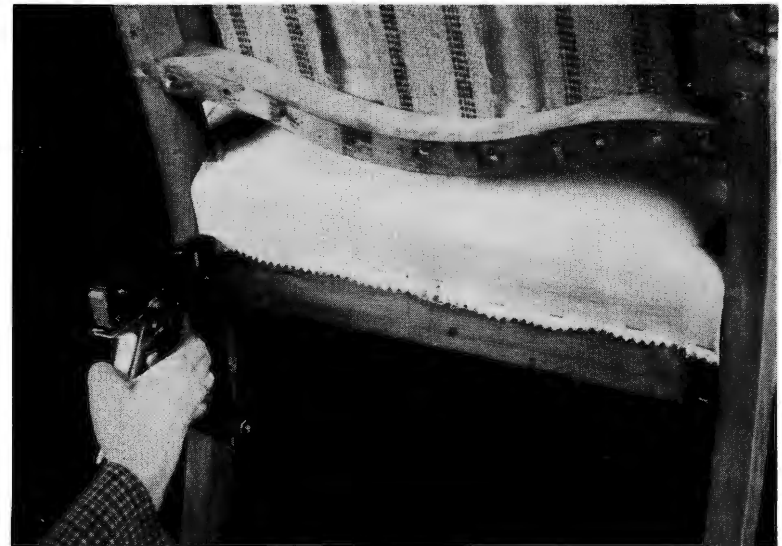
Step 4

Fasten the muslin strip to sides of chair seat frame and back frame with size No. 3 or No. 4 tacks.

Drive tacks in only far enough to hold, as they may need to be relocated.



Tack, as given in directions on page 19. Or, if you wish, you may use a stapler gun, beginning stapling in the centers and continuing around. Staples $\frac{3}{16}$ or $\frac{1}{4}$ inch are recommended for both soft and hard woods.



Foam rubber applied to seat and back — chair is now ready for covering.



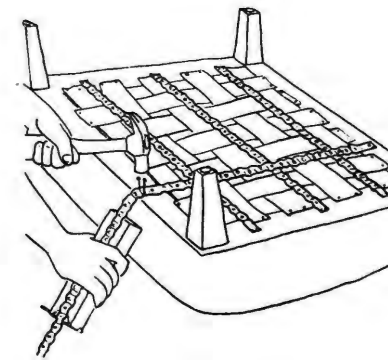
Chair with Steel Webbing and Conventional Springs

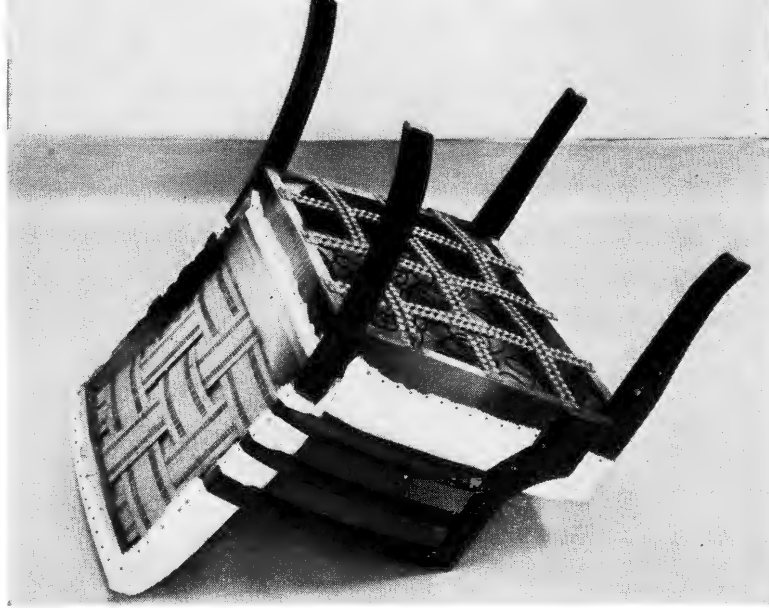
Another base for reupholstering a chair seat is steel webbing and conventional springs. (This base eliminates sewing the springs to the webbing and keeps the webbing from sagging.)

This type of webbing can also be used as a support for sagging springs when complete retying of springs is not necessary.

Materials and Equipment You Will Need

- Steel webbing
- Yardstick
- Pencil
- “Strong hold” (one-way) nails or size 4 rosin-coated nails
- Hammer
- Webbing stretcher for use on steel webbing only
- Coil springs (twice the height of seat frame)
- Spring-tying twine
- Upholsterer’s tacks, No. 4 and No. 12
- Burlap
- Mattress twine
- Curved 4-inch needle
- Foam rubber — 2½ inches of No. 3 compression or 3-inch-thick cored stock of No. 2½ compression
- Rubber cement
- Strips of muslin 3 to 4 inches wide
- Adhesive tape





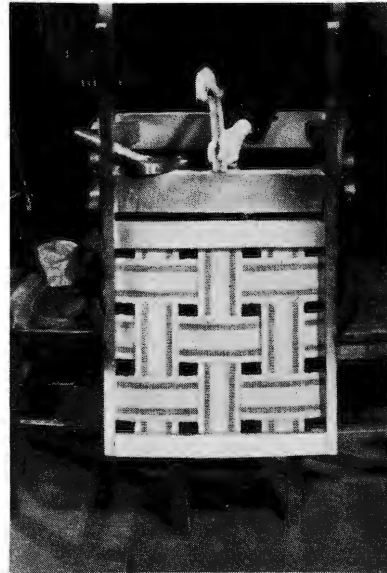
Put Webbing on Underside of Chair Seat Frame

Step 1

Turn chair upside down. With crayon or pencil, mark the center point of back, front, and sides of seat frame.

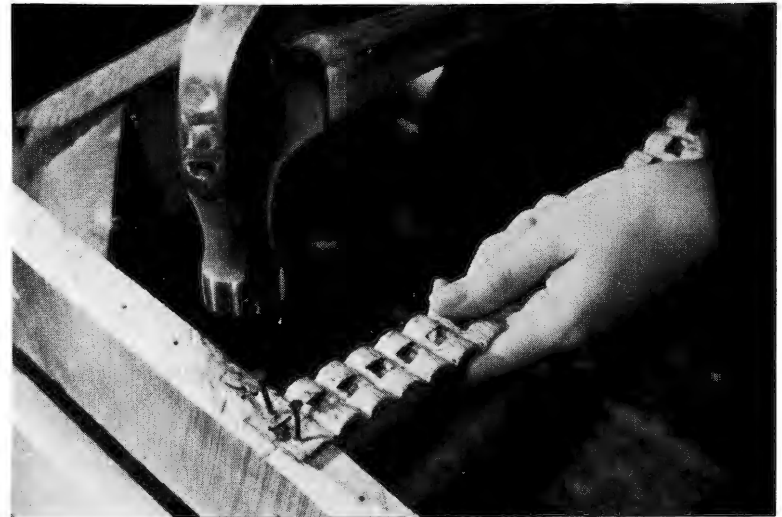
Step 2

Place center strip of steel webbing, looped side down, from *back to front on underside* of chair seat frame.



Step 3

Flatten first link of webbing at back with hammer, to make a flat surface for nailing. Fasten with two "strong hold" nails or size 4 rosin-coated nails.



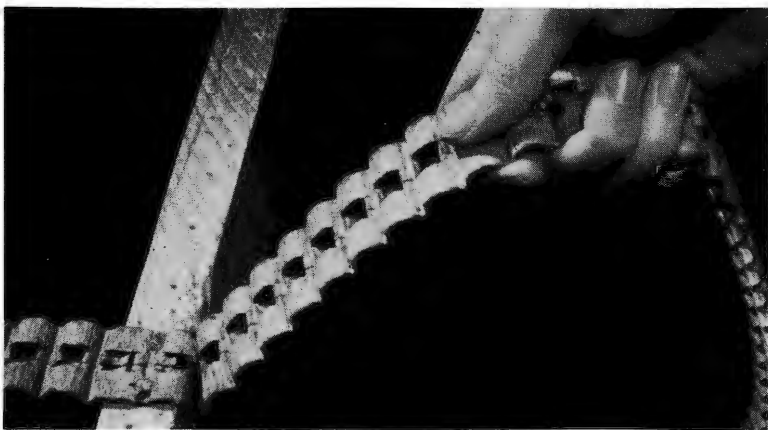


Step 4

Stretch webbing taut with webbing stretcher and flatten last link of webbing at front with hammer. Fasten to front of chair seat frame with nails.

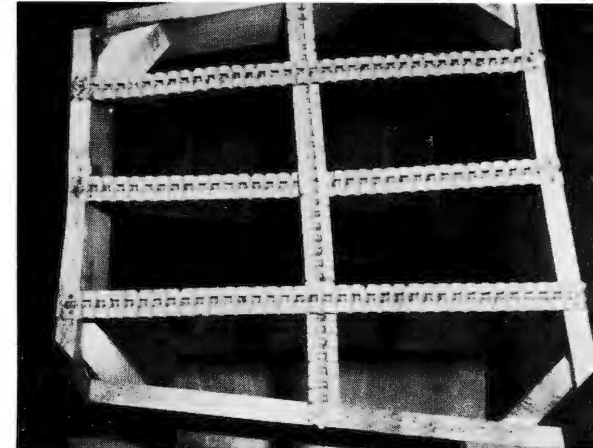
Step 5

Bend steel webbing until it breaks in two at this point, and hammer flat.



Step 6

Place center strip of steel webbing, looped side down, *FROM SIDE TO SIDE* on underside of chair seat frame.

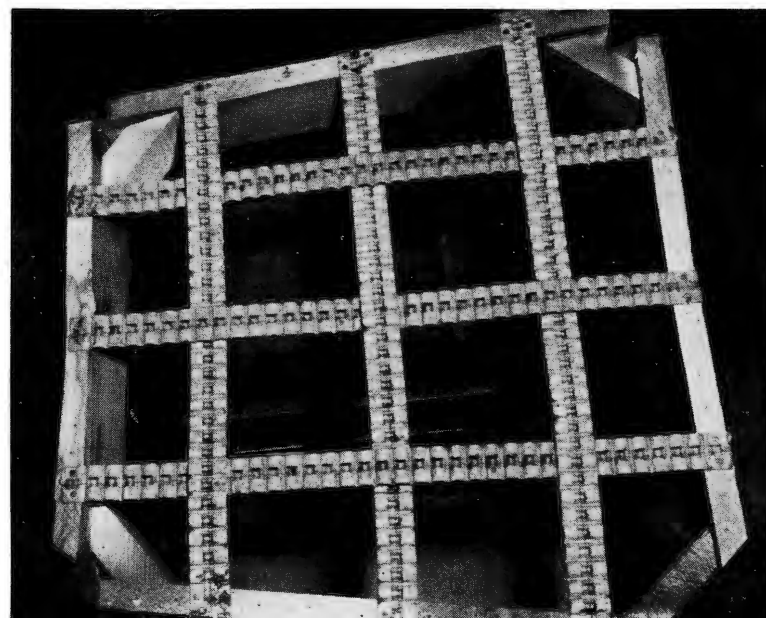
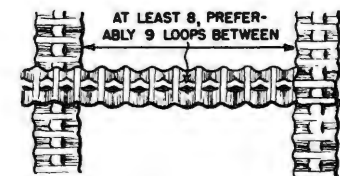


Step 7

Place a strip of webbing on either side of center strip, from *BACK TO FRONT*, following above directions. *Caution:* In using 5-inch and 6-inch springs, there should be at least 8 loops of steel webbing and preferably 9 between crossovers of *outer edge* of strips of steel webbing. Number of loops will vary around edges of frame.

Step 8

Weave a strip of webbing on either side of center strip from *SIDE TO SIDE*, following above directions.



Fasten Springs to Webbing

Step 1

Place chair in upright position.

Step 2

Bend lower cut end of each spring in and down with pliers or vise to facilitate pushing spring through loops of steel webbing. Some springs are made with lower cut end straight and bending is not necessary.

Step 3

Center a spring on each crossing of steel webbing, making certain that the bottom of the spring covers the same number of loops in each direction. (A 6-inch spring usually covers 3 or 4 loops in each direction.)

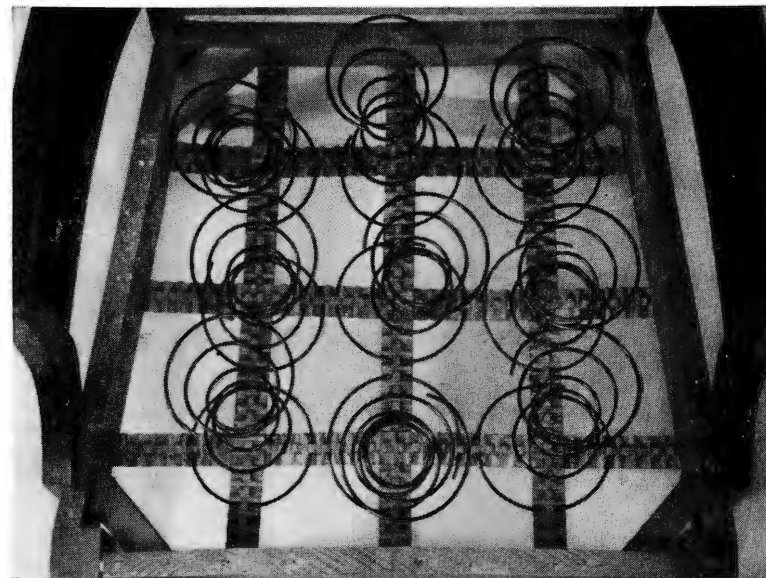
Step 4

To fasten spring to webbing, turn the lower cut end of spring through a loop on either the upper or lower strip of webbing. Continue to turn the spring through loops, on the remaining 3 strips, centering spring over crossing.



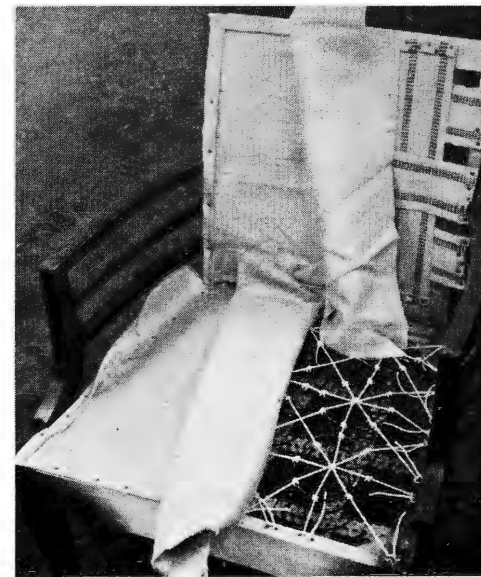
Step 5

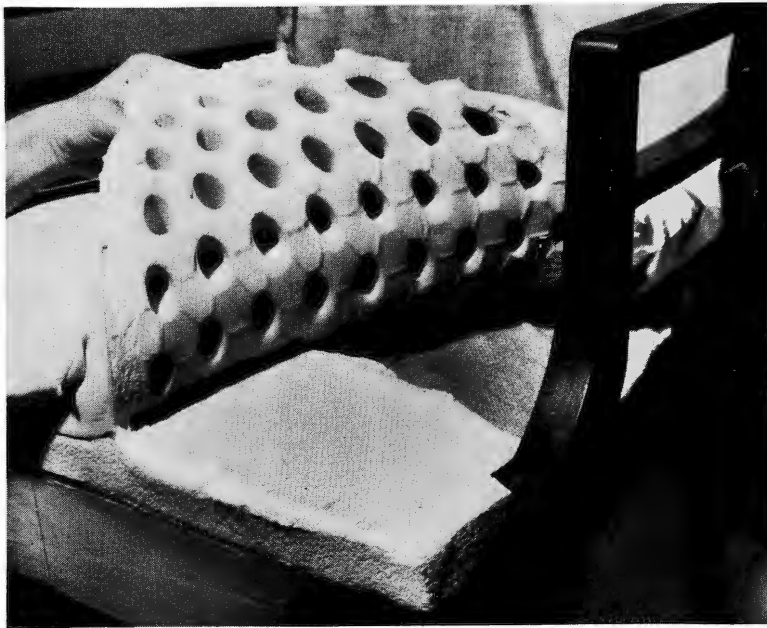
Following the above directions, fasten remaining springs to steel webbing.



Step 6

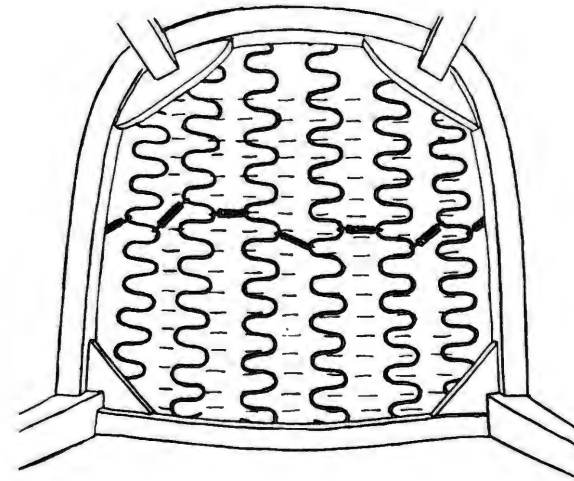
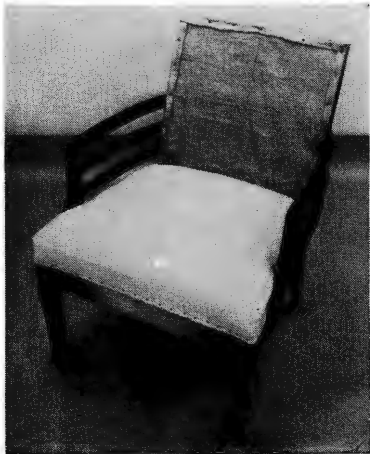
For directions on tying springs, covering springs with burlap, and making cushion of foam rubber, see pages 24 to 35.





Chair with No-Sag Springs

No-sag springs are self-supporting and eliminate much bulk and weight. They do not have to be tied. Wire-woven burlap (made with ribs of wire) or burlap is attached to the springs, and the foam rubber cushion is placed on this base.



For chair seat, use:

2½-inch cored foam rubber of No. 3 compression or 3 inches of No. 2½ compression;

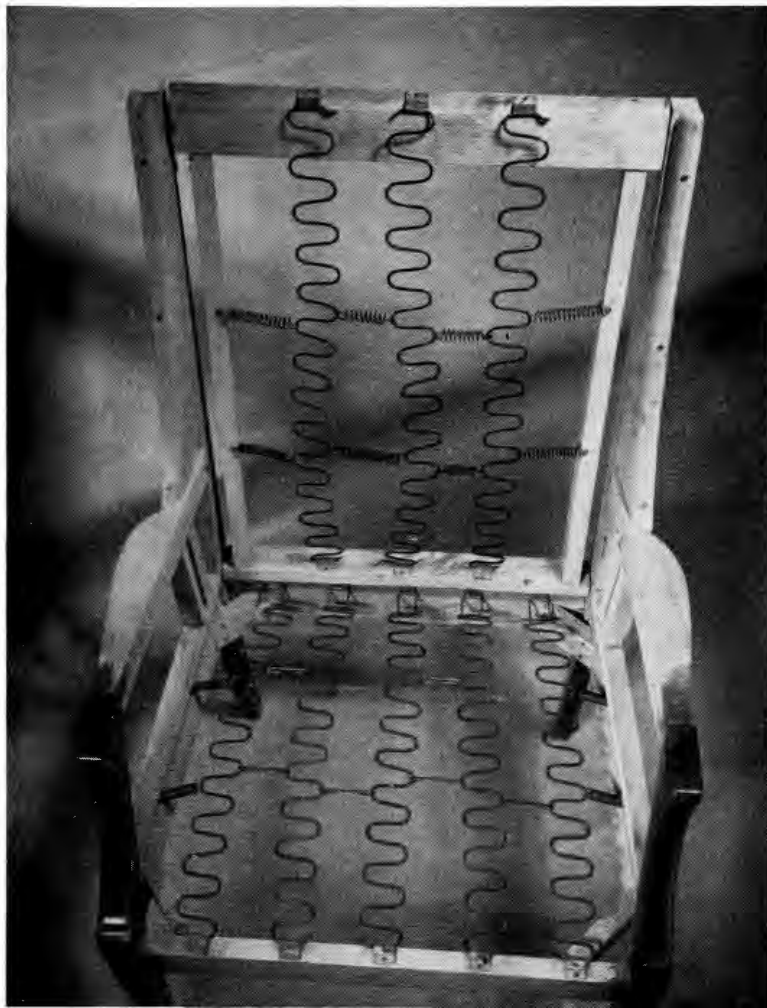
OR

1-inch layer of cotton felt, or hair, or moss sewed to burlap, and 2- to 2½-inch cored foam rubber of No. 3 or No. 2½ compression.

For chair back, use:

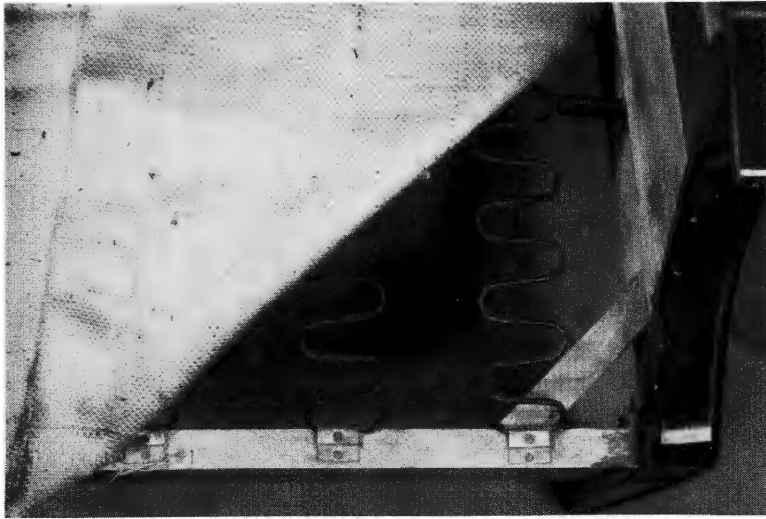
1½-2-inch cored stock of No. 2 compression

For steps in covering no-sag springs with burlap, measuring chair, making paper pattern and foam rubber cushion, see directions on pages 29 to 35.



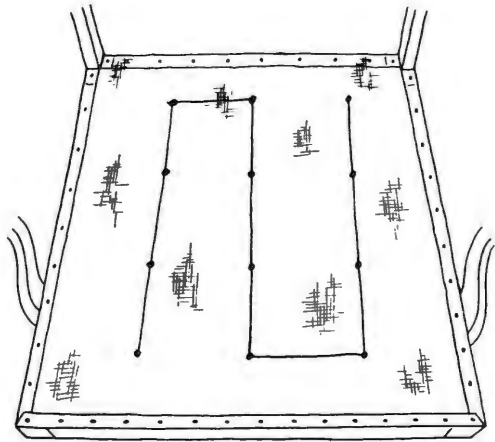
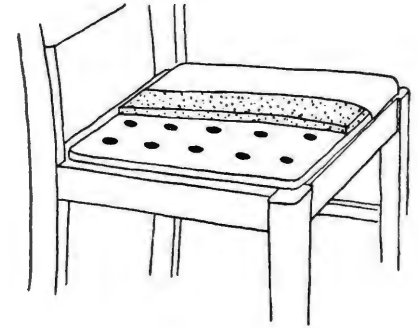
Insulator cover of wire-woven burlap. It must be tacked around the seat frame but does not need to be sewed to the springs.

Burlap cover cut to size and sewed to springs as on pages 29 and 30.



Chair with Plywood Seat (Slip Seat)

Plywood, with $\frac{1}{4}$ - to $\frac{3}{8}$ -inch holes drilled three inches apart, can be used as a base for foam rubber in dining-room chairs or small side chairs, as well as some lounge chairs. Holes are drilled to allow passage of air to and from foam rubber. The plywood base is usually anchored to the chair frame with one or two screws at each corner. With this type of base, use $1\frac{1}{2}$ - to 2-inch slab foam rubber of firm compression or $1\frac{1}{2}$ -inch gauge of No. 3 compression of cored stock. For deeper cushioning, 2-inch cored stock of No. 3 compression or 3 inches of No. 2 $\frac{1}{2}$ can be used.



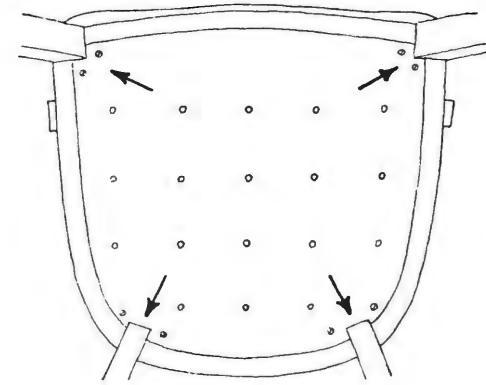


Materials and Equipment You Will Need:

- Plywood, $\frac{3}{8}$ -inch to $\frac{3}{4}$ -inch thick, cut to fit seat frame
- Auger bits, $\frac{1}{4}$ inch or $\frac{3}{8}$ inch to drill holes, and brace
- Screw driver
- Tack puller; tack hammer
- Foam rubber — 2-inch-thick cored stock of No. 3 compression or 3-inch-thick No. 2 $\frac{1}{2}$; or 1 $\frac{1}{2}$ - to 2-inch slab of firm compression
- Ballpoint pen, indelible pencil, or soft-lead pencil
- Container of water to moisten pencil and scissors
- Ruler
- Scissors
- Rubber cement
- Upholsterer's tacks, No. 4

Step 1

To remove slip seat from chair, turn chair upside down. At each corner, remove screws (at arrows) that anchor plywood to chair seat frame. Remove the old padding and cover from the plywood base.



Step 2

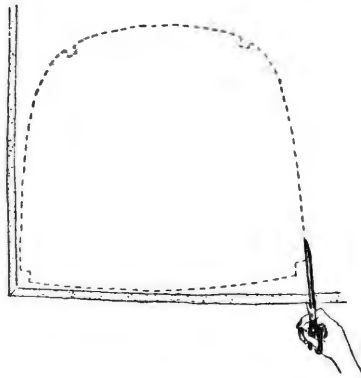
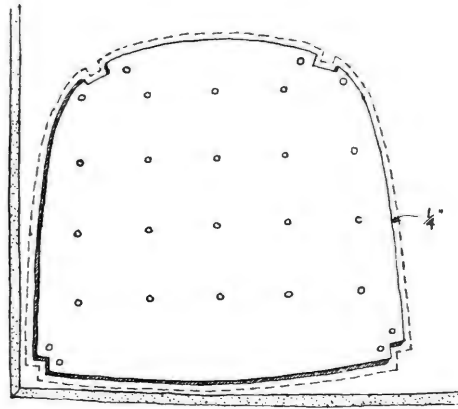
With auger bit and brace, drill holes in the plywood $\frac{1}{4}$ to $\frac{3}{8}$ inch in diameter, and spaced 3 inches apart. The holes are necessary to provide ventilation for the foam rubber.



Step 3

Using the plywood base as a pattern, place it on foam rubber and mark around it with ballpoint pen or indelible pencil moistened in water.

Remove base. Mark $\frac{1}{4}$ inch allowance on all sides of cushion.

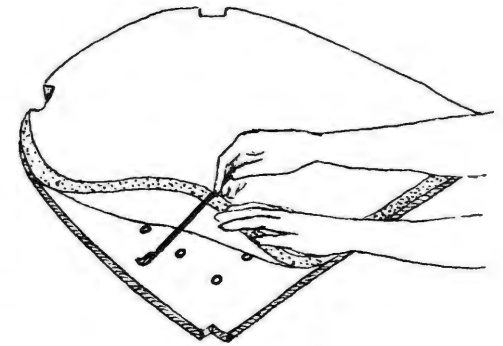


Step 4

Cut out foam rubber along marked allowance.

Step 5

Apply rubber cement around edges of plywood base and in the center in the form of an X. Let it dry to the tacky stage. Apply rubber cement around the edges of cushion and in the center in the form of an X. Let this dry to the tacky stage.



Step 6

Place cushion on plywood base.

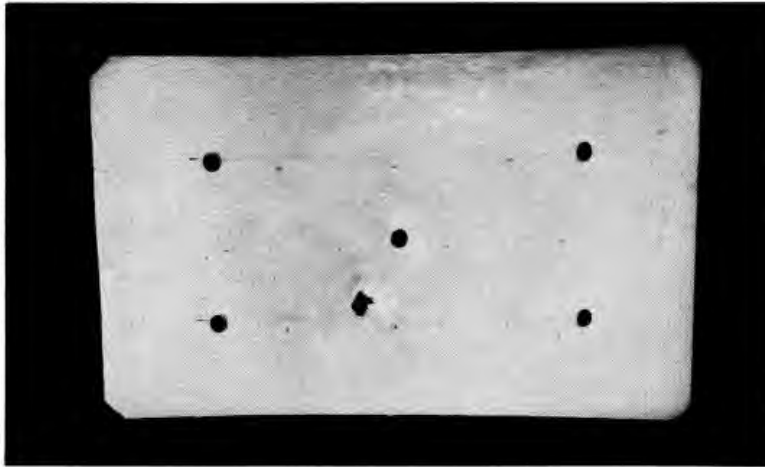
Step 7

Cover with fabric and place on chair frame.

Step 8

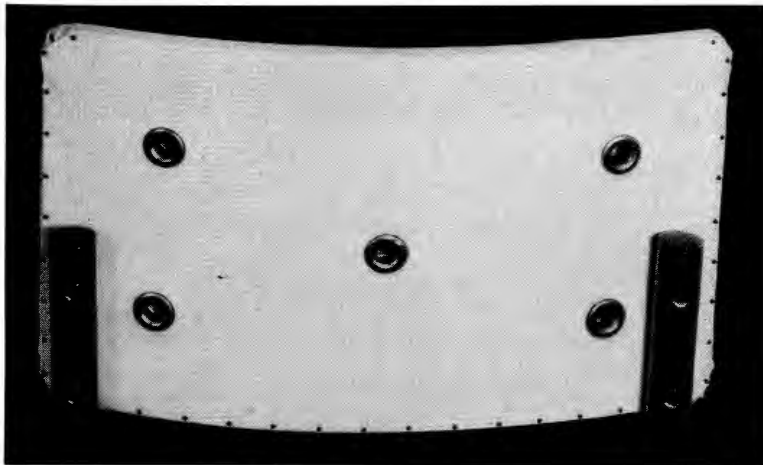
Turn chair upside down, put screws in place, and tighten.





Holes drilled in plywood chair back for grommets. Metal grommets are used to permit circulation of air.

Grommets may be purchased from upholstery supply houses.

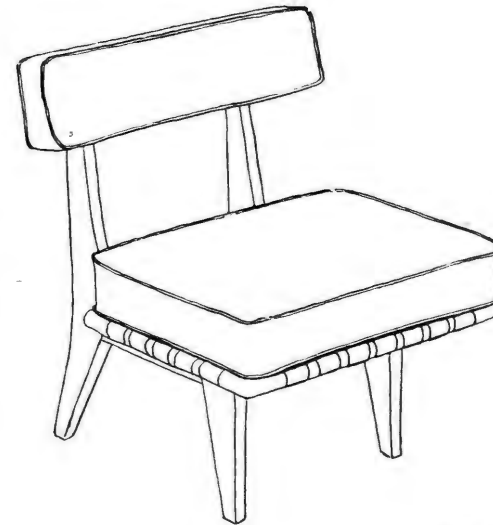


Chair with Cotton Webbing Base and Separate Reversible Cushions

Cotton webbing can be interwoven on top of chair seat frame, and wrapped around seat frame for a decorative effect. The webbing is tacked on the inside of the frame, underneath. Note that strips of webbing are placed about one inch apart.

See page 45 for directions for making reversible cushions from layers of foam.

If you want to buy full-molded reversible cushions ready to cover with fabric, see pages 46, 47 for directions for measuring chair.

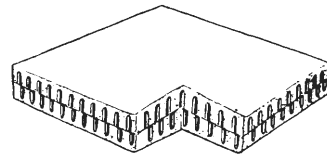


REVERSIBLE CUSHIONS

Reversible Cushions Made from Cored Stock Foam Rubber

You can make reversible cushions from layers of cored stock cemented together, or you can buy full-molded cushions ready-made, instead of the conventional innerspring-type cushions. Cushions made from layers of foam cemented together are as comfortable as full-molded cushions and cost less.

You can buy pieces of cored stock and cement the layers together at home. It is necessary to box in the exposed cores with slab stock on all four sides of the cushion. This strengthens the cored stock on the sides and makes the edges uniform.



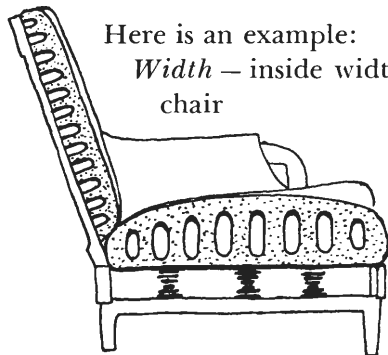
To make your own cushion: Measure chair, add necessary allowances, subtract thickness of slab stock used for boxing, make paper pattern, cut out foam rubber, and cement layers in place.

For a 4-inch thick reversible cushion, cement together two layers of 2-inch cored stock of No. 2 compression.

Take Measurements on Top of Seat Frame

Here is an example:

Width – inside width across back of chair



Add

19 $\frac{1}{4}$ inches
 $\frac{3}{4}$ inch

Subtract

20 inches
 2 inches for
 boxing added
 to each side

Cut foam rubber across *back* of cushion 18 inches wide

Length – center back (inside) to center front *outside* 20 $\frac{1}{4}$ inches
 Add $\frac{3}{4}$ inch

Subtract

21 inches
 2 inches

Cut foam rubber cushion 19 inches long
Width – across front of chair 21 $\frac{1}{8}$ inches
 Add $\frac{3}{4}$ inch

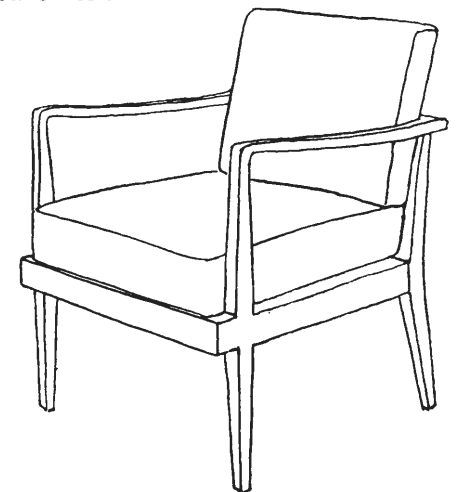
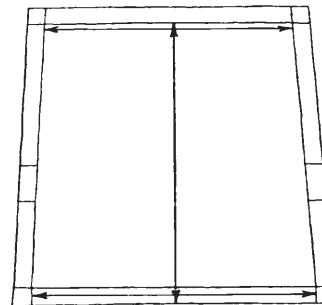
Subtract

21 $\frac{7}{8}$ inches
 2 inches

Cut foam rubber across *front* 19 $\frac{7}{8}$ inches

Add Allowance for Reversible Cushions

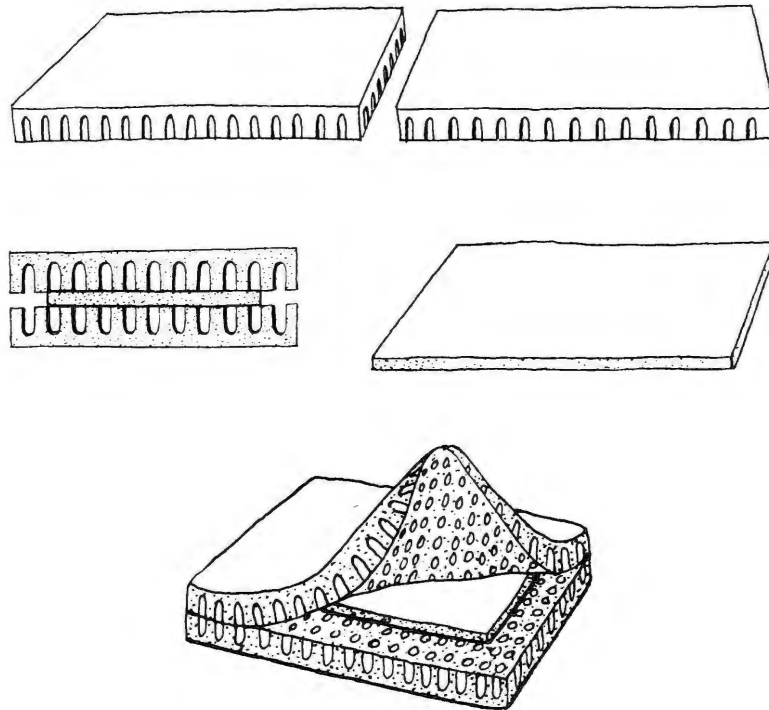
Up to 24 inches, ADD $\frac{3}{4}$ inch to measurement
 25 to 36 inches, ADD 1 $\frac{1}{4}$ inches to measurement
 37 to 54 inches, ADD 1 $\frac{3}{4}$ inches to measurement
 55 to 72 inches, ADD 2 $\frac{1}{4}$ inches to measurement
 Over 72 inches, ADD 2 $\frac{3}{4}$ inches to measurement



Following your measurements:

Cut two pieces of 2-inch-thick cored foam rubber of No. 2 compression.

If you want a crowned, curved effect, cut a 1-inch piece of solid slab $2\frac{1}{2}$ inches smaller all the way around and place it between the layers of cored stock.



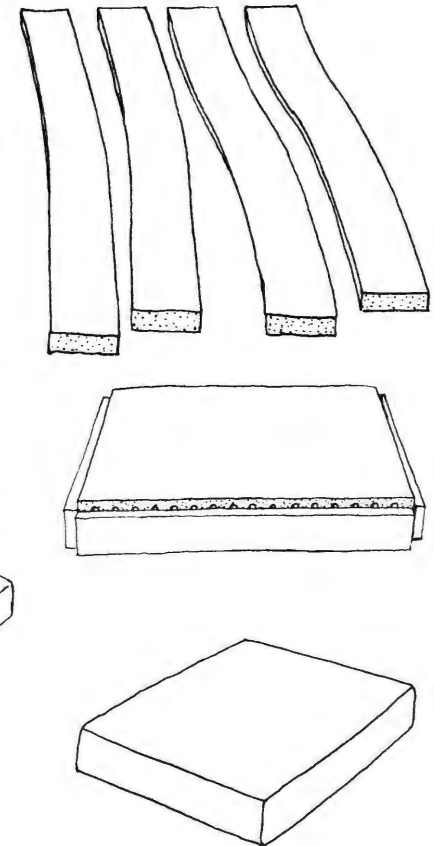
To box cushion following sample measurements on p. 45:

For back — cut 1 piece of 1-inch soft slab stock $3\frac{1}{2}$ " x 18"

For front—cut 1 piece of 1-inch soft slab stock $3\frac{1}{2}$ " x $19\frac{7}{8}$ "

For sides — cut 2 pieces of 1-inch soft slab stock $2\frac{1}{2}$ " x 21"

Place rubber cement on edges of cored side of each layer of foam rubber and in the form of an x. Let it dry until it reaches the tacky stage. Place layers together. Cement $3\frac{1}{2}$ -inch-wide boxing strips and place on sides.



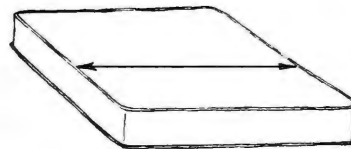
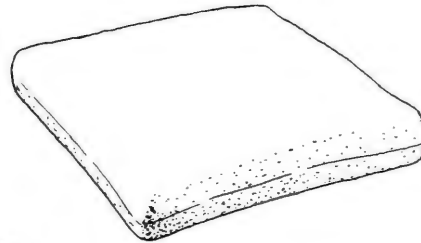
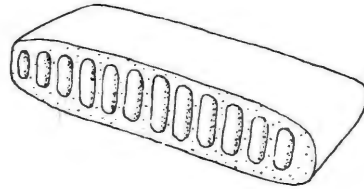
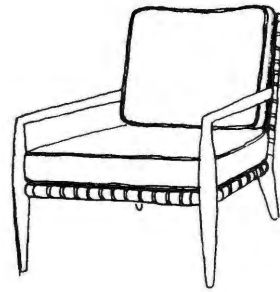
Full-molded Cored Reversible Cushions

If you buy regular molded reversible cushions, order by the actual measurements of the inside of the chair frame, or measure cushion (length and width) inside cord or welt of outside fabric.

To avoid confusion, specify whether the measurements were taken from the chair frame or from the inside cord or welt of fabric.

This type of cushion is made in the following compressions (densities):

- No. 1 — for back of chairs
- No. 1½ — for seats over flexible springs (page 45)
- No. 3 — for rigid or solid bases (page 44)



Cover Foam Rubber with Fabric

It has been found advisable to cover foam rubber with muslin before covering it with fabric *when these materials are used*:

Unsupported plastic sheeting (without a fabric back): Unsupported plastics may become stiff and brittle if they are placed directly over the foam rubber. Some discoloration may occur due to chemical action of some plastics in direct contact with the foam rubber.

Leather: The muslin helps to prevent abrasion and rubbing of leather on foam rubber.

Loosely woven, stretchy materials: The muslin helps to reduce friction and minimizes stretching. Firmly and closely woven fabrics with minimum stretch are more serviceable, give longer wear, and keep sunlight out.

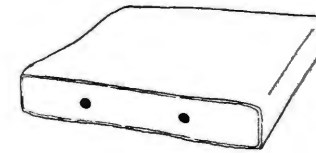
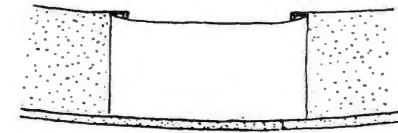
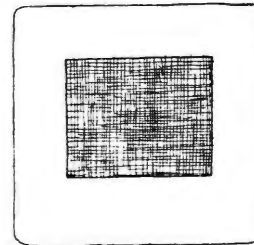
High pile fabrics (such as cut velvets): Pile (individual threads woven into the back of the fabric) may loosen and pull out from their base due to rubbing back and forth in direct contact with foam rubber.

Provide for ventilation

When plastics, leathers, and closely woven materials are used on reversible foam rubber cushions, provisions must be made for air circulation. A muslin-like inset about six inches long in the rear boxing will afford adequate ventilation.

If cushion is not reversible, cambric, muslin, or loosely woven fabric may be set in on underside of cushion.

Grommets may be used in plastic or leather boxing.



Fabric covering for cushion

Make the top and bottom of the fabric cover smaller on all sides than the foam rubber cushion to allow for stretch in the fabric. Materials should be drawn to compress foam rubber slightly. If the cover is too loose, it will wrinkle. If it is too tight, it will reduce the springiness of the foam rubber.

For reversible cushions Cut either length or width of fabric, or both for a square cushion (add 1/2 inch seam allowance on two sides)

up to 24 inches	3/4 inch shorter than cushion plus seam allowance
25 to 36 inches	1 1/4 inches shorter than cushion plus seam allowance
37 to 54 inches	1 3/4 inches shorter than cushion plus seam allowance
55 to 72 inches	2 1/4 inches shorter than cushion plus seam allowance
over 72 inches	2 3/4 inches shorter than cushion plus seam allowance

For example, if the cushion measures:

	33 inches in width
Subtract	1 1/4 inches
	<hr/>
	31 3/4 inches
Add	1 inch seam allowance (1/2 inch each side)
	<hr/>
Cut fabric	32 3/4 inches wide

If cushion measures:

	21 inches in length
Subtract	3/4 inch
	<hr/>
	20 1/4 inches
Add	1 inch seam allowance (1/2 inch each side)
	<hr/>
Cut fabric	21 1/4 inches long

If cushion measures:

	24 inches by 24 inches (square cushion)
	24 inches
Subtract	3/4 inch
	<hr/>
	23 1/4 inches
Add	1 inch for seam allowance
	<hr/>
Cut fabric	24 1/4 inches — wide and long

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Published and distributed in furtherance of the Acts of May 8 and June 30, 1914, by the Washington State University Extension Service, C. A. Svinth, Director, and the U. S. Department of Agriculture, cooperating. 5M-762