SHOE FABRICATION TECHNIQUES

CHAPTER 2

ALTERNATIVE LIGHT WEIGHT

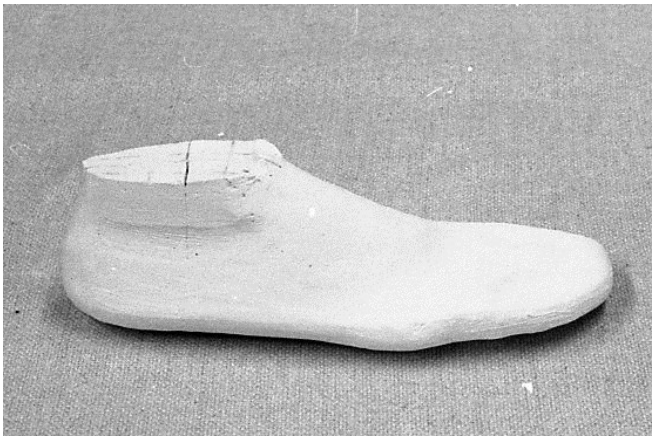
The traditional regular weight shoe was the principle product with which the Murrays established and maintained their moulded shoe making business from the 1940's thru the 1970's. (An interesting historical book is Mr. Murray's "Shoes and Feet to Boot". It is out of print. Used copies can sometimes be found.)

The traditional regular weight shoe became the recognized standard of what a moulded shoe should be. The traditional regular weight shoe had a tremendous following because a lot of people had a hard time finding good footwear with a comfortable fit. The Murrays' moulded shoe quickly became the shoe for working people because they felt better wearing this shoe than anything else they could find. It made walking and standing much easier and more comfortable for many people.

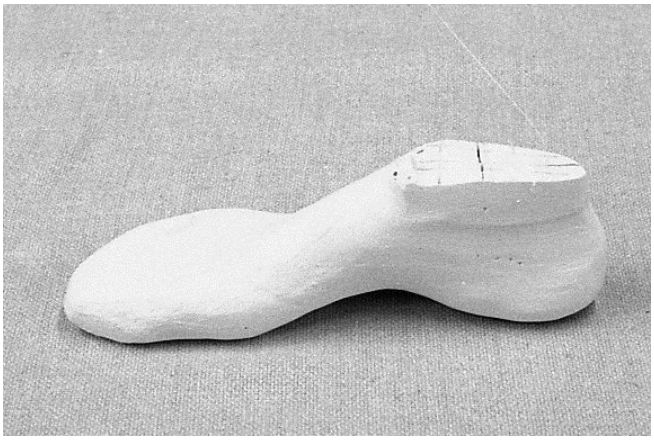
However, the traditional regular weight shoe was not the shoe for everyone. It was heavy, somewhat riged and did not have enough cushion for those experiencing physical degeneration of the feet (health problems). Therefore, based upon customer demand, in the 1980's, we started looking at newer materials and ways to allow the shoes to accommodate the diverse needs of more of our customers. Our main consideration was not to deviate from the philosophy and attributes of the traditional regular weight MURRAY SPACE SHOE®.

Changes do necessitate compromises, therefore, we will always make the traditional regular weight shoe for those who want it. Today most of our customers prefer the alternative which provides a little lighter weight, more flexibility and is more cushioned underneath the bottom of the feet.

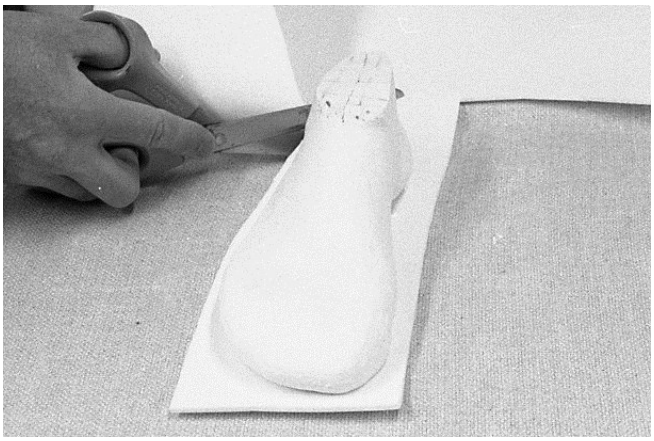
There is no one absolute alternative method or technique that will ever truly replace the traditional regular weight shoe or satisfy every customer need. Most importantly the MURRAY SPACE SHOE© will remain a custom made and hand crafted product, unique for every individual wearer or customer.



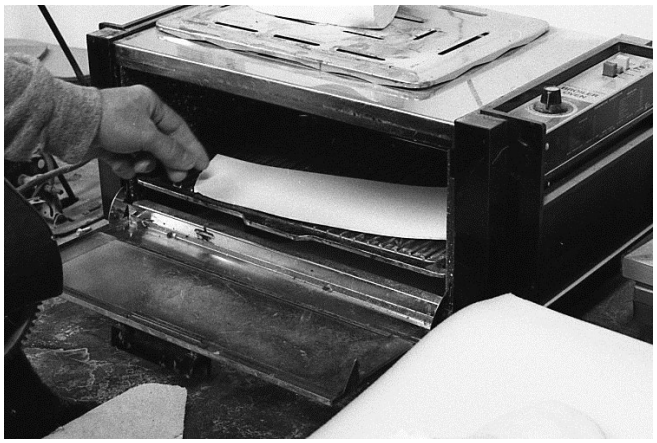
1 Lateral view of foot last ready for shoe construction. The inside form of the finished shoe. The inside SPACE for the foot when the shoe is completed.



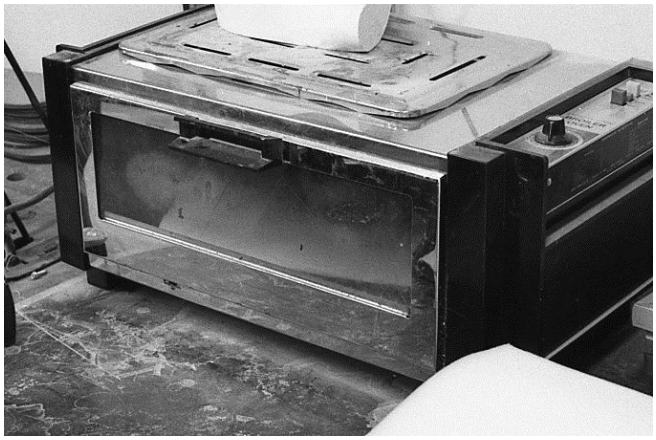
2 Medial view of foot last ready for shoe construction. The inside form of the finished shoe. The inside SPACE for the foot when the shoe is completed.



3 Cutting a piece of 3mm Pe-Lite® (white, non perforated) from a sheet. The Pe-Lite® layer will usually become the upper layer of cushion for the bottom of the foot. (Available from Fillauer, LLC Chattanooga, TN 37406 tel 1-800-251-6398).



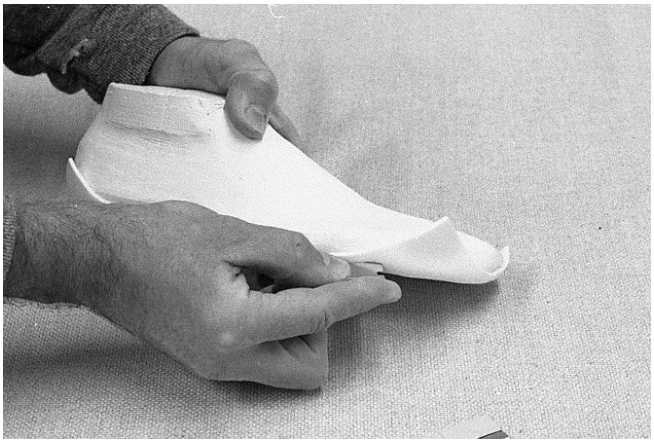
4 The Pe-Lite® is heated for about 30-45 seconds at approximately 250-275F.



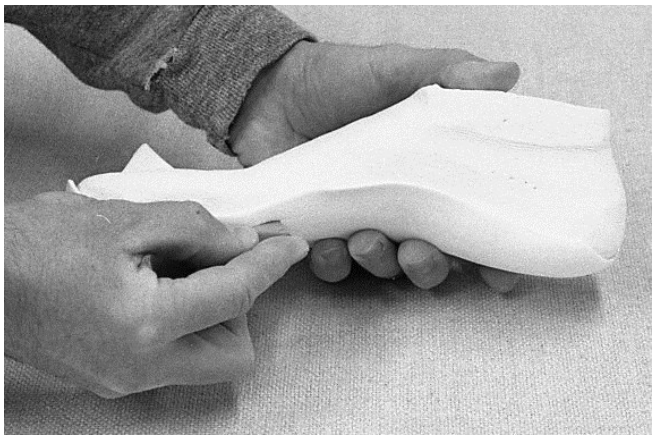
5 When the Pe-Lite® begins to curl, it will be ready to remove from the oven. .

6 The Pe-Lite® is placed on foam. The last is placed on top of the Pe-Lite®. Hand pressure is used to force last into foam.

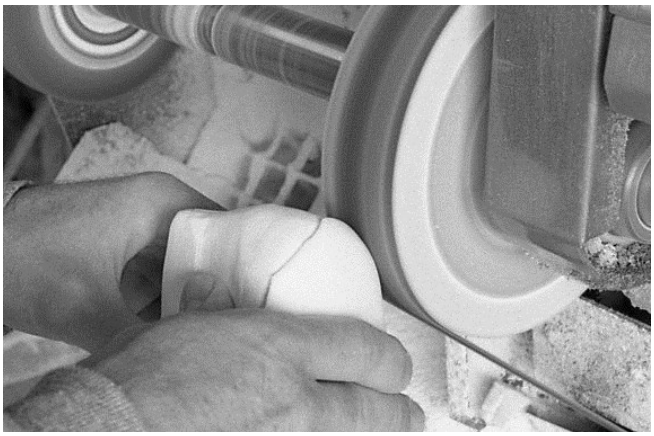
7 As Pe-Lite® cools, it takes the form of the last in about 30 to 45 seconds.



8 The Pe-Lite® is trimmed to last with a single edge razor blade.

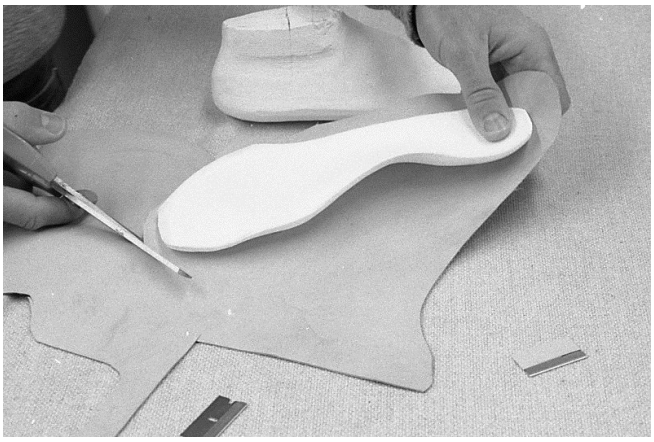


9 Ditto.

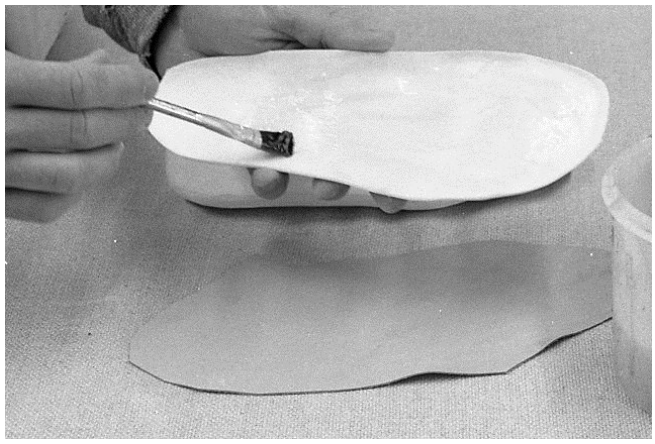


10 The edge of Pe-Lite® is sanded with 80 or 100 grit belt on wheel.

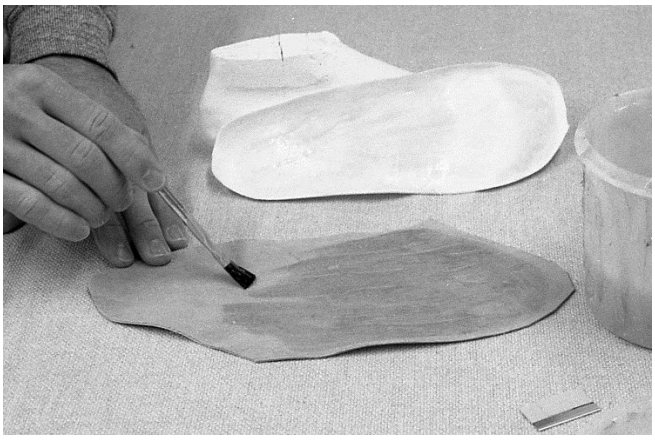
11 Ditto. In these pictures the Pe-Lite® is held in position by hand. The use of hand tacks would be of assistance.



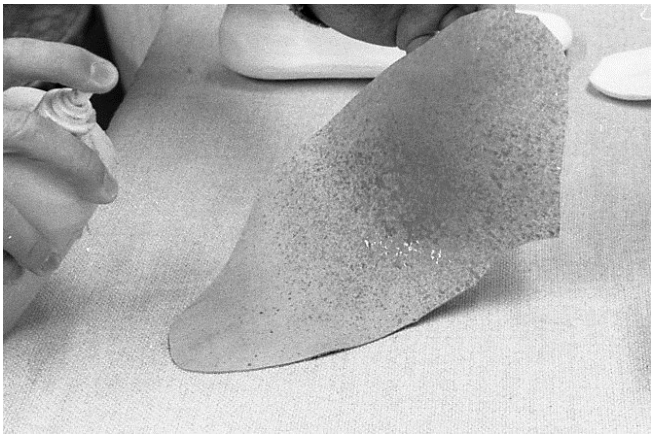
12 Leather covering for Pe-Lite® is cut to size.



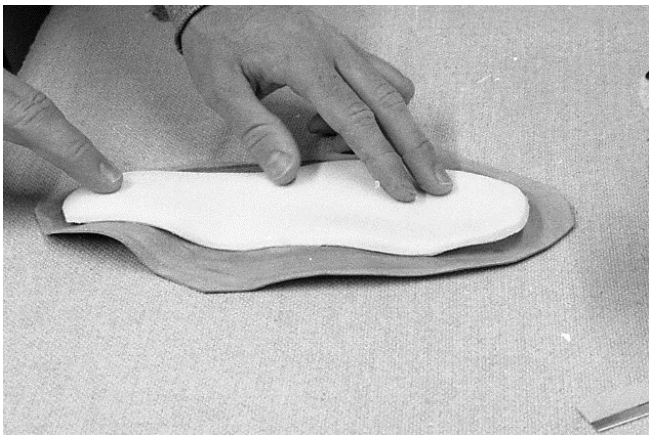
13 Contact cement is applied to Pe-Lite® and leather (ORTEC®, BARGE®, etc.).



14 Ditto.

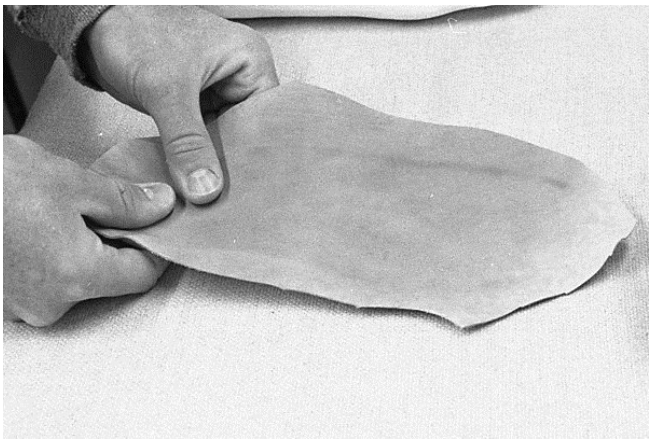


15 MAGIC® spray (alcohol and distilled water) will allow leather to relax and stretch.

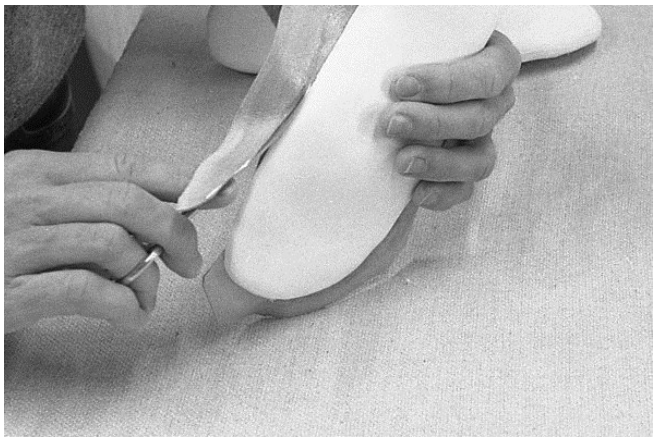


16 Pe-Lite® is placed upside down onto bottom side of leather.

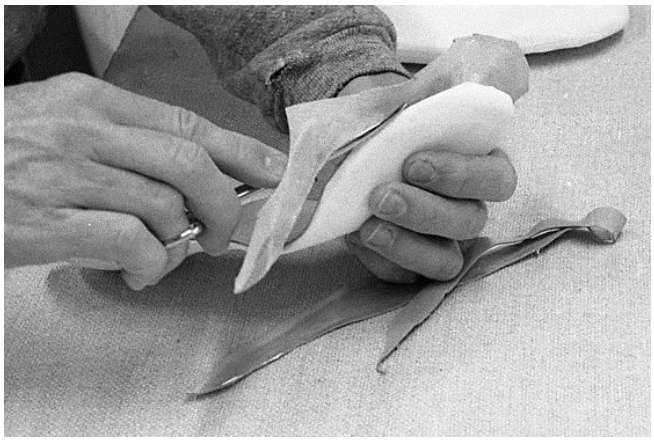
17 The leather is pressed into Pe-Lite® and any wrinkles in leather or bubbles are smoothed and pressed out.



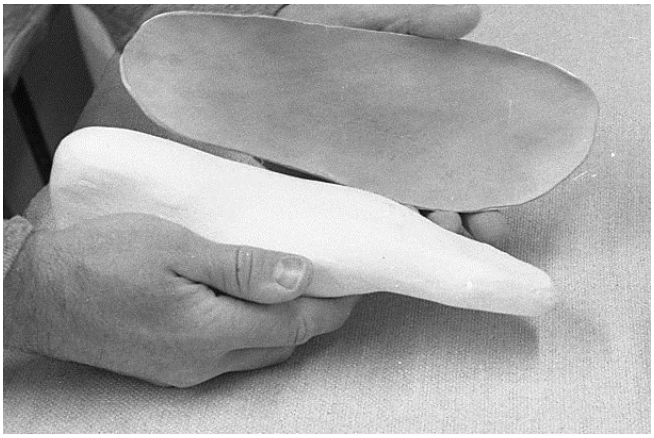
18 Ditto.



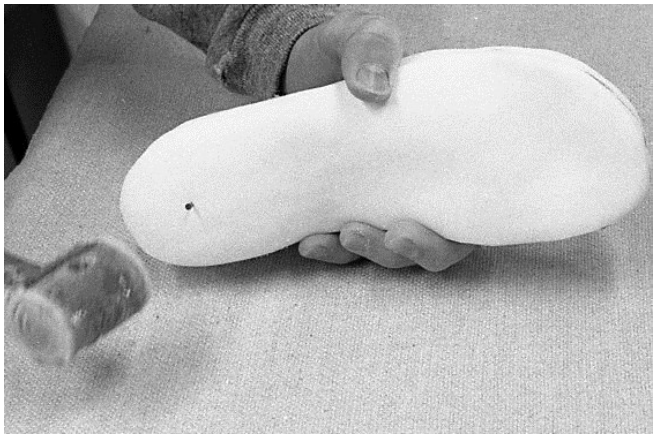
19 The leather is trimmed along the edge of Pe-Lite®.



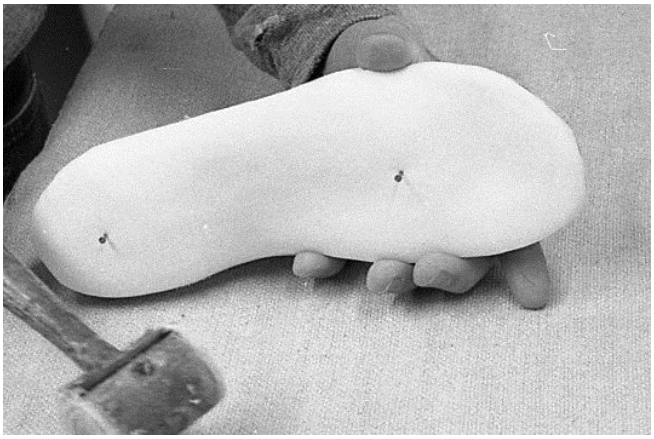
20 Ditto.



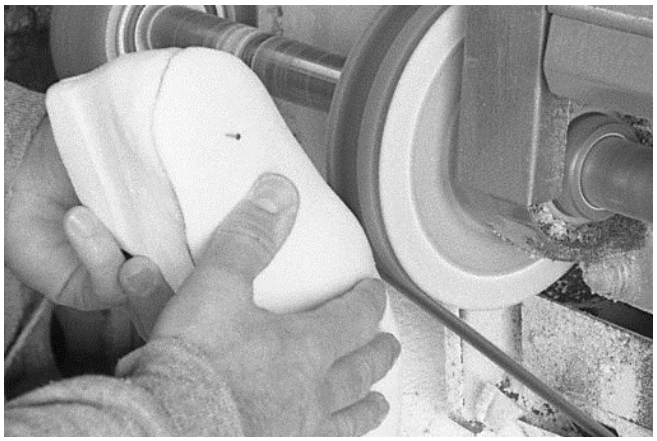
21 Smooth side of leather will fit to last.



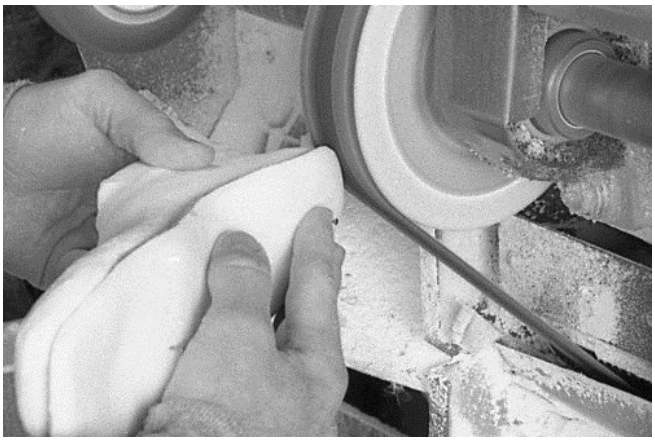
22 Hand tacks are used to hold leather covered Pe-Lite® insert in place.



23 Ditto.

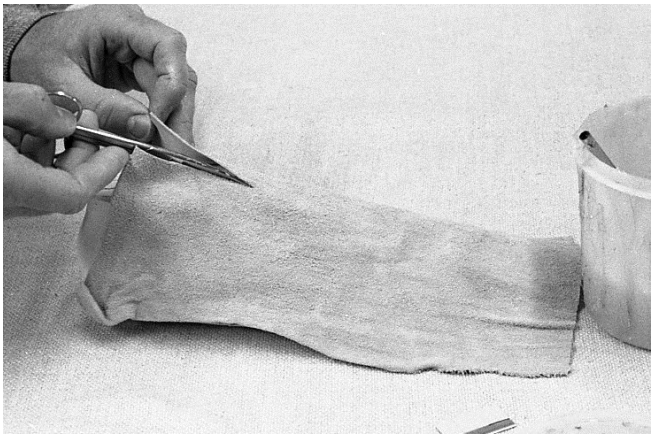


24 Edge of insert is sanded smooth right up to the last for a really nice and close fit.

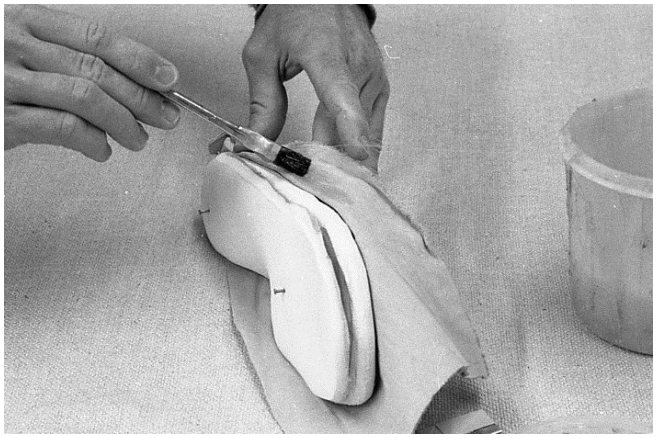


25 Ditto.

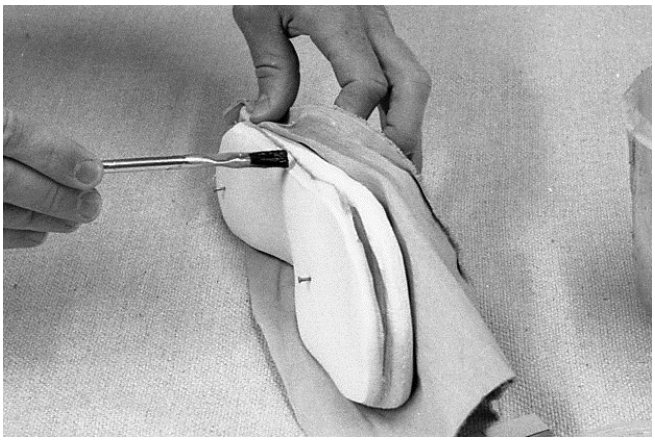
26 Ditto.



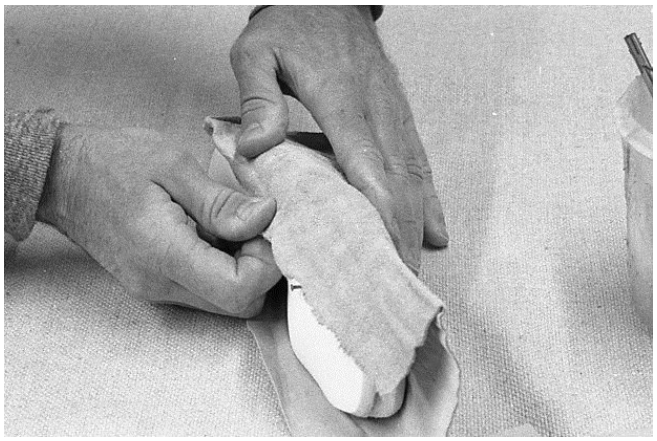
27 Soft and supple upper lining leather (orthopedic type) is placed over last (smooth side to last). Leather is center cut to just above top of shoe.



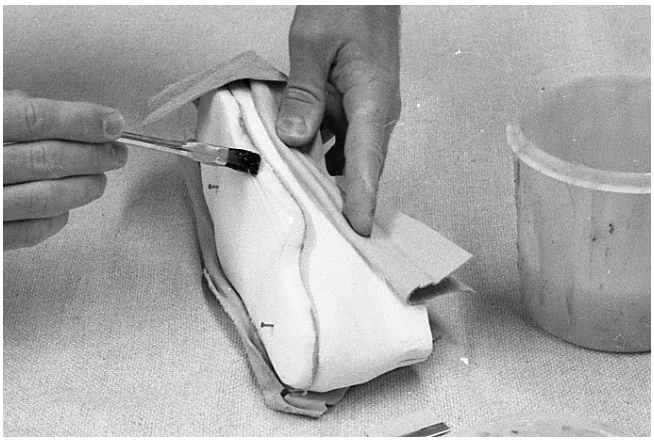
28 Contact cement is brushed onto leather.



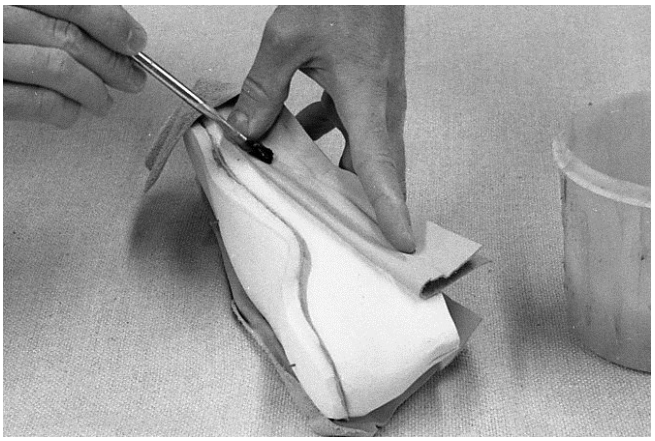
29 Contact cement is brushed onto insert.



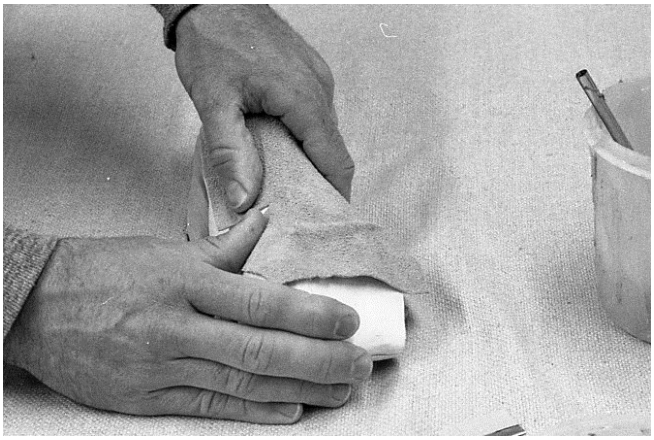
30 Lining leather is pulled and pressed into place to bond to insert.



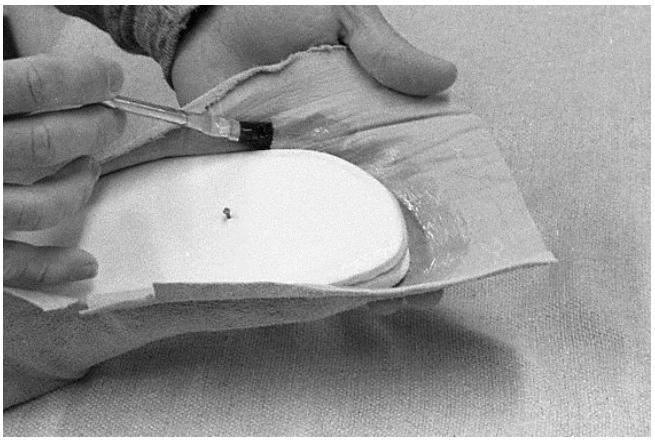
31 The leather to insert bonding process is continued.



32 Ditto.

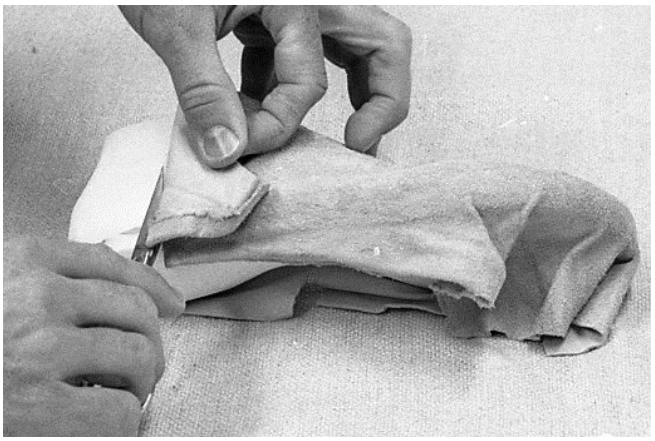


33 Ditto.

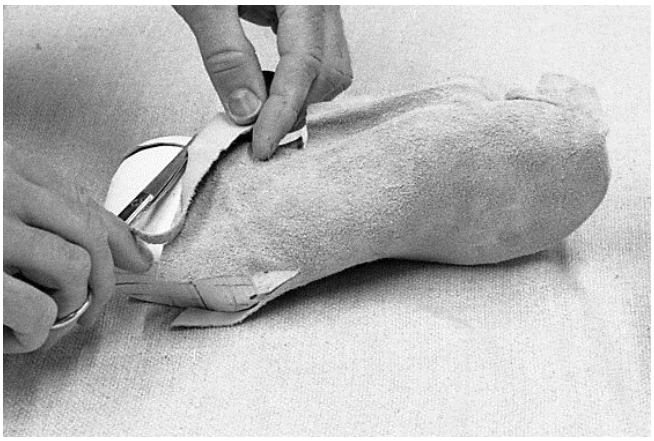


34 More contact cement is applied.

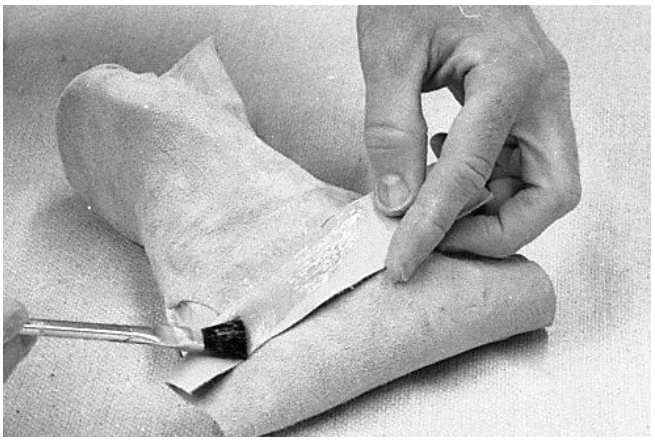
35 Leather is folded nicely around toe box area.



36 Leather is cut at side seam.

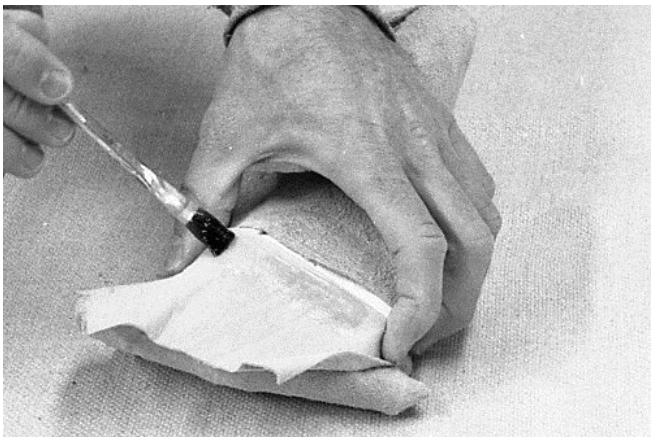


37 Ditto.



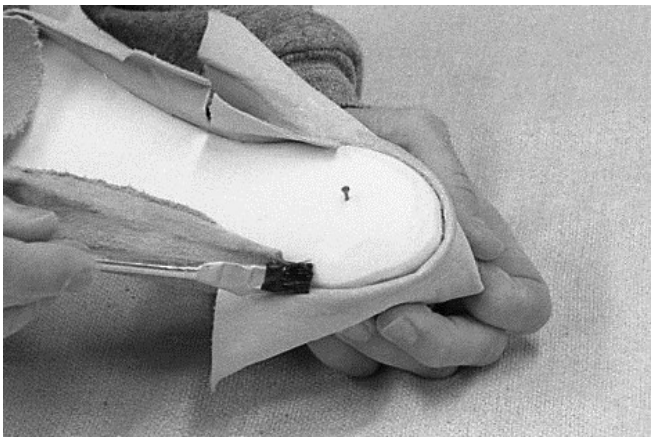
38 Contact cement is applied to heel lining leather and front top leather.

39 Heel lining leather is folded over front leather and is pressed to bond.



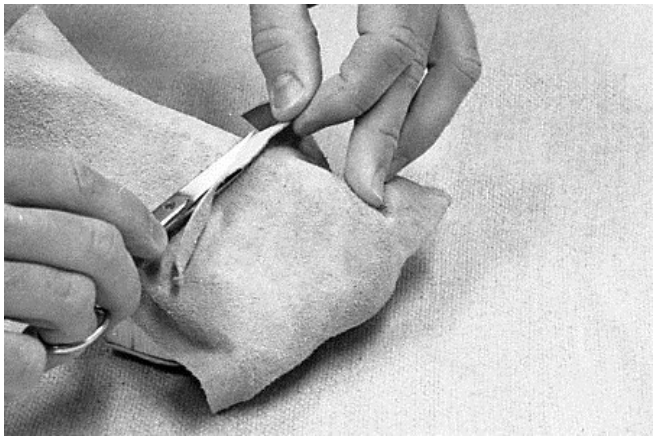
40 The process is continued on the other side.

41 Ditto.

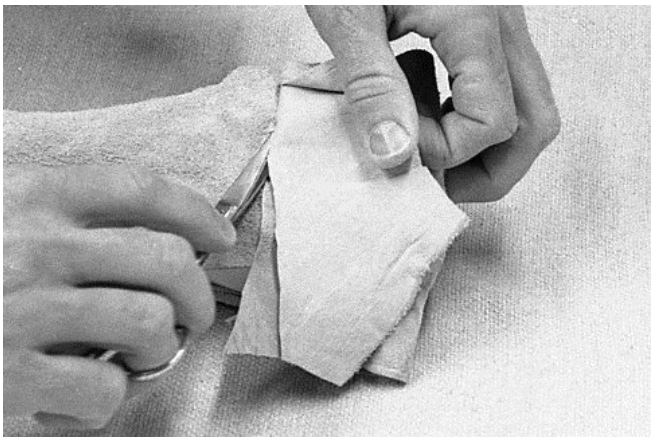


42 Contact cement is applied to insert and heel lining leather.

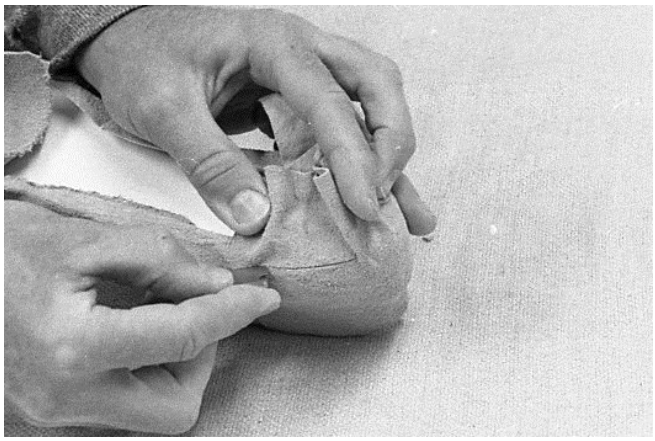
43 Heel lining leather is pressed to insert.



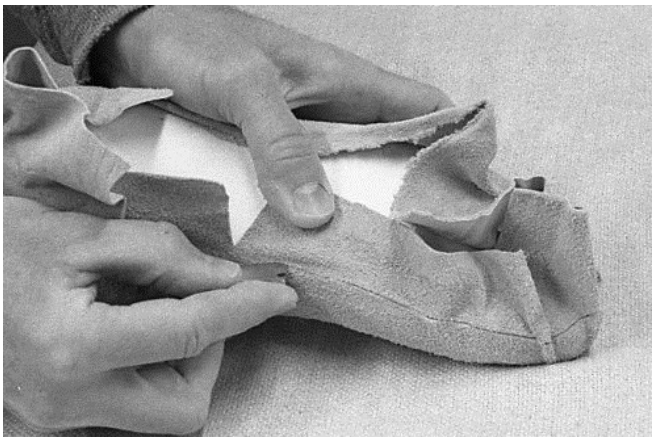
44 Side seam with overlap is cut.



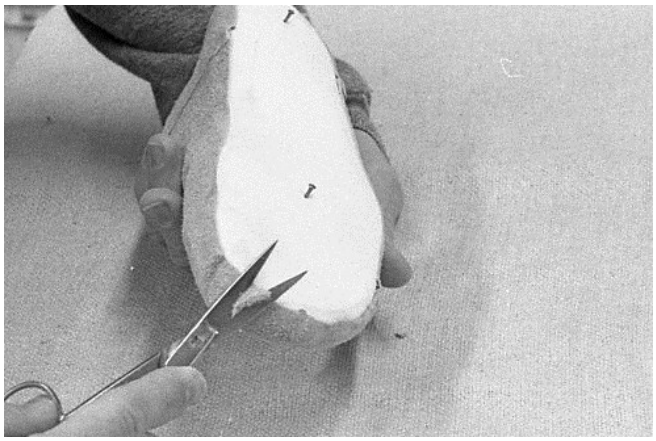
45 Ditto.



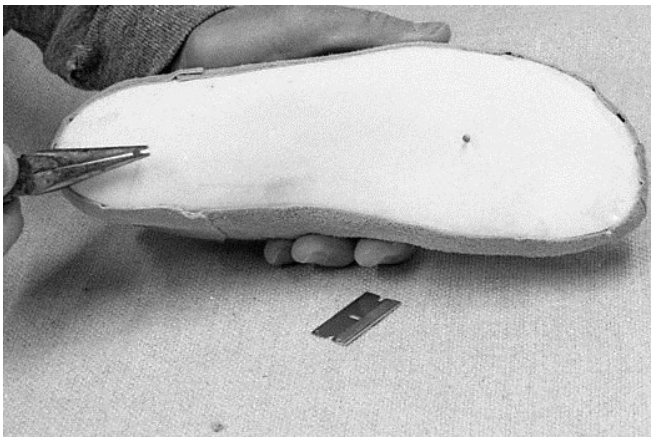
46 Lining leather is cut using a single edge razor blade or scissor.



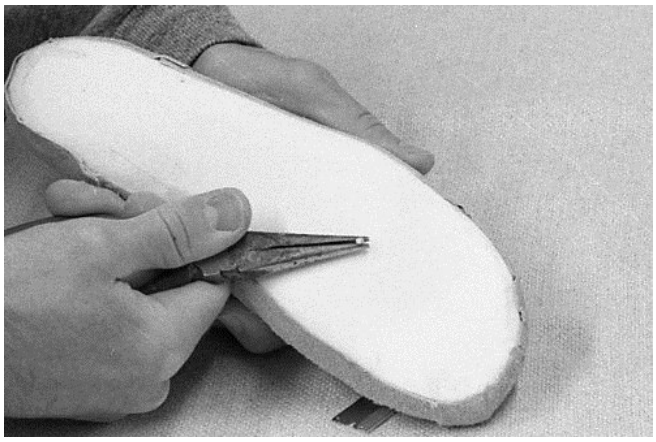
47 Ditto.



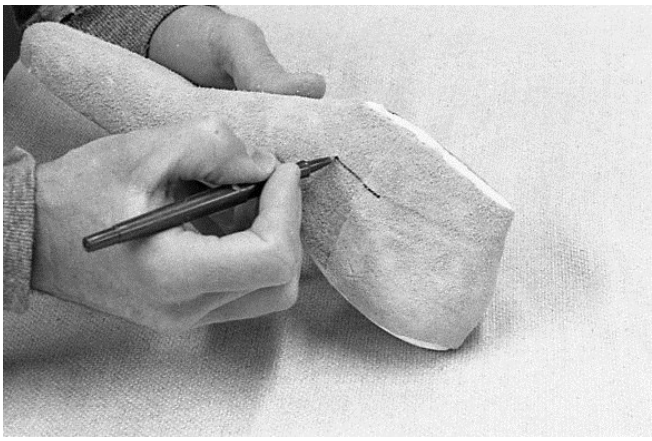
48 Darts are cut off with scissor.



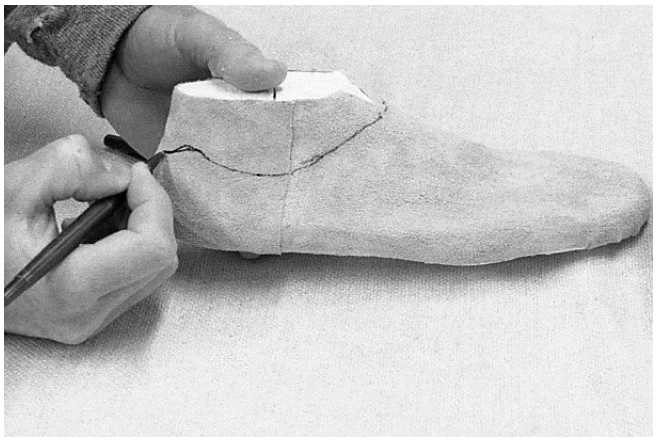
49 Hand tacks are removed.



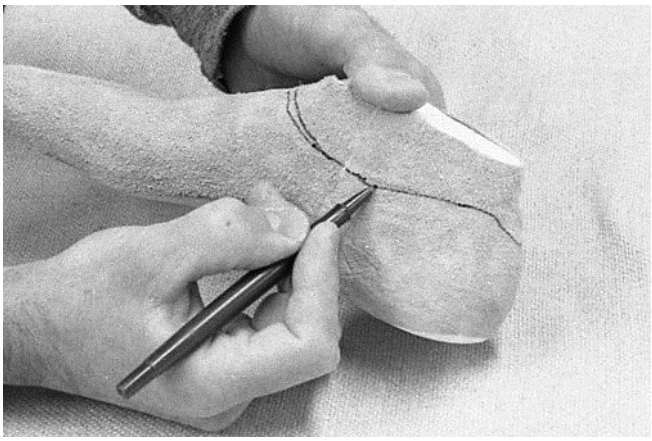
50 Ditto.



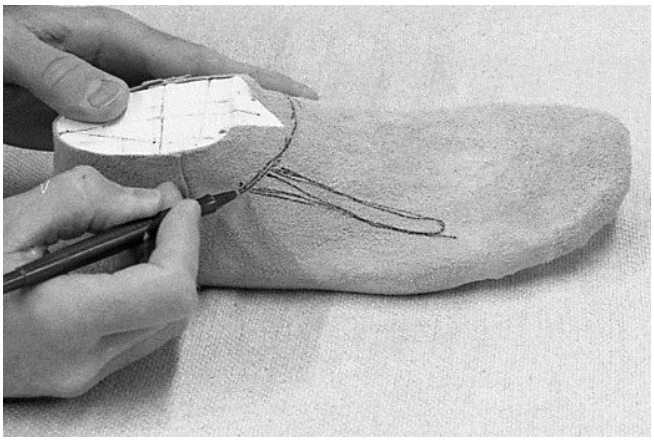
51 Outline of upper edge of shoe is drawn on leather.



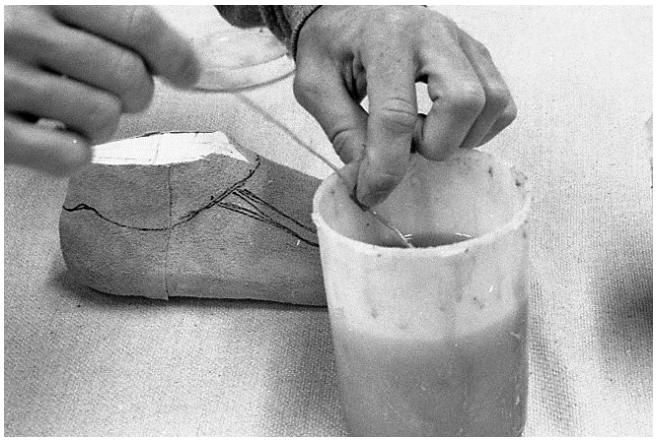
52 Ditto.



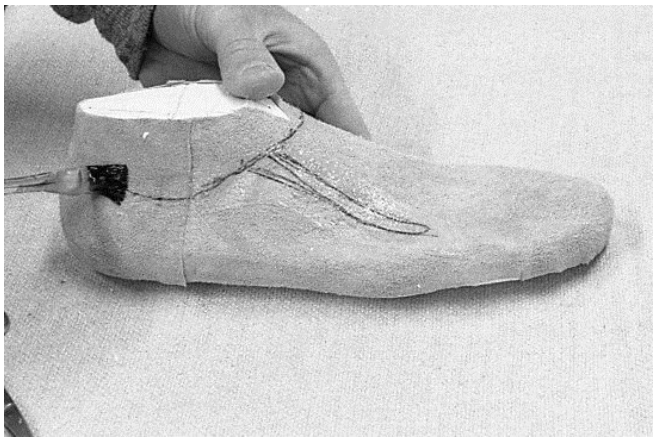
53 Ditto.



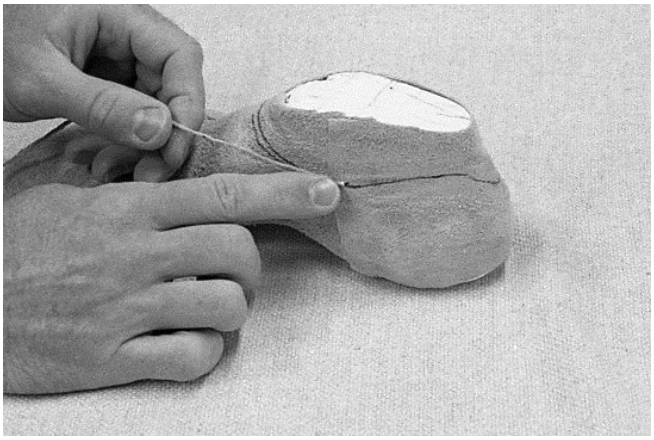
54 Ditto.



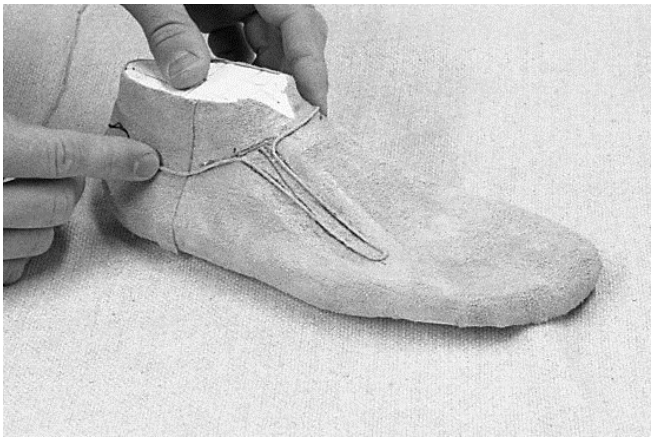
55 Glue is applied to design string.



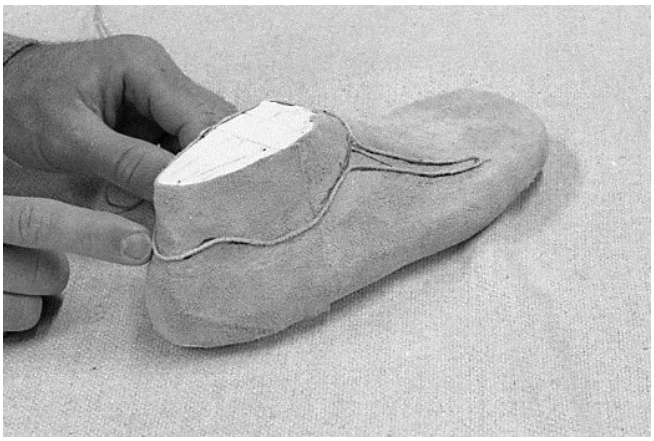
56 Glue is applied to leather.



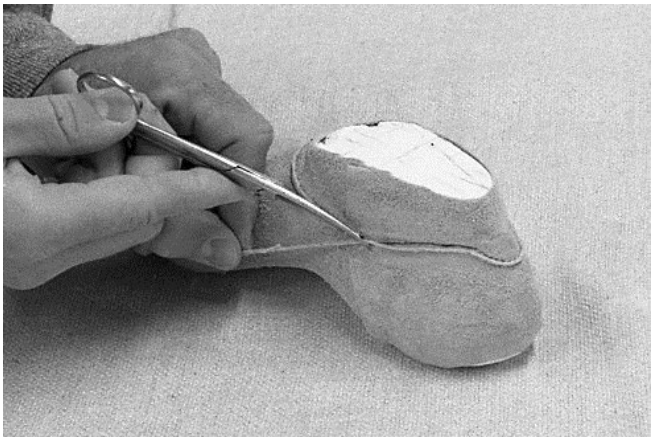
57 Design string is applied to leather.



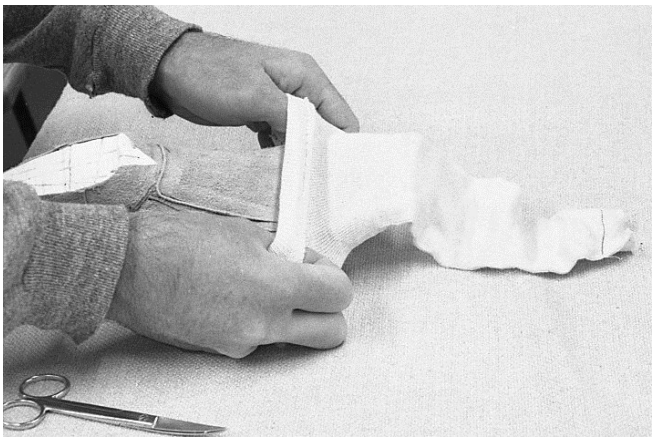
58 Ditto.



59 Ditto.

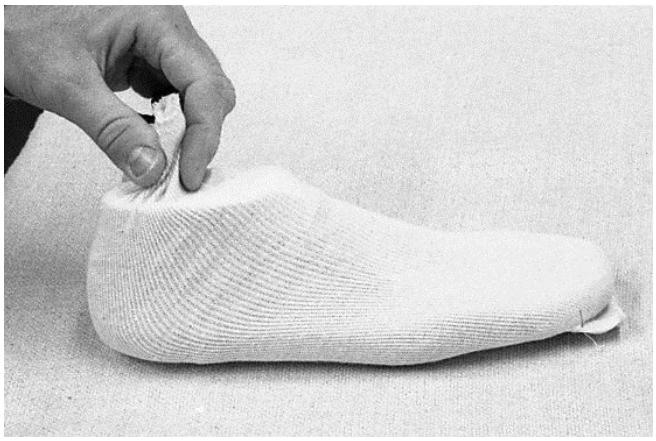


60 Ditto.

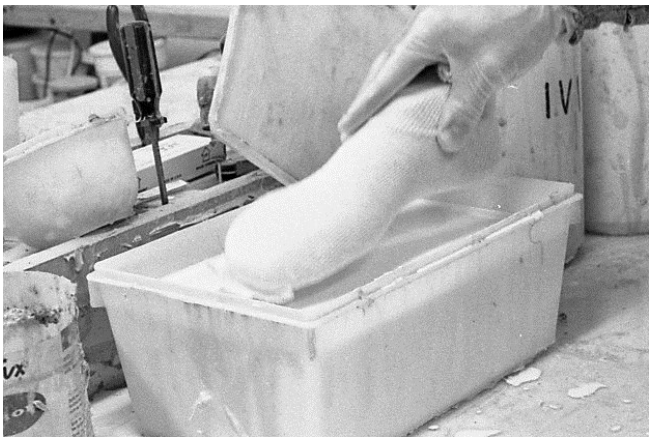


61 Sock is pulled over last.

62 Ditto.

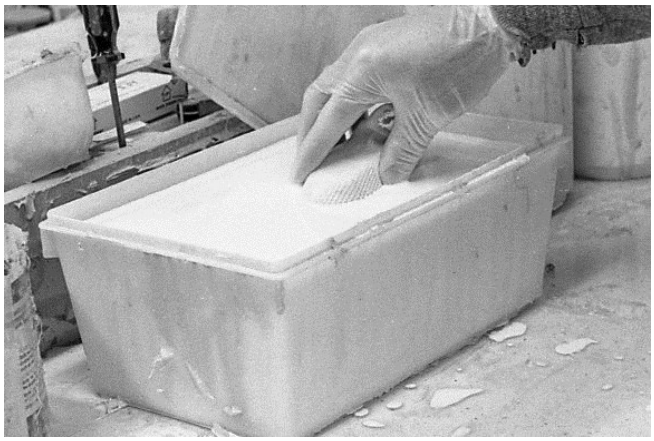


63 Sock is pulled up so as to be wrinkle free.

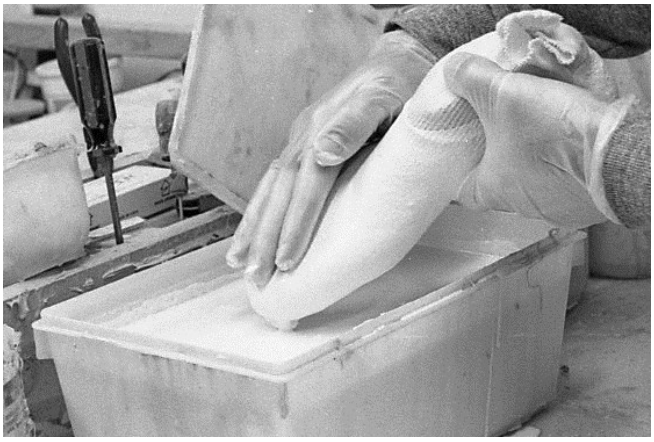


64 Socked last is dipped in latex.

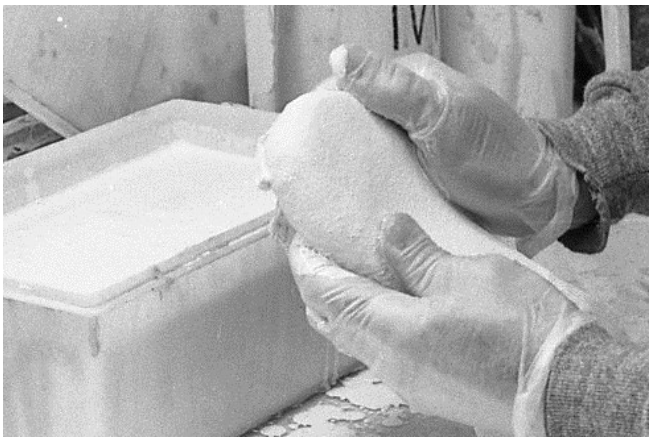
65 Ditto.



66 Ditto.



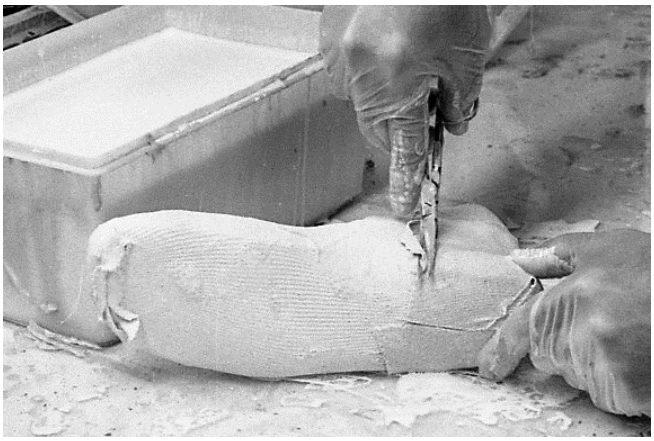
67 Excess latex is squeezed from sock.



68 Ditto.

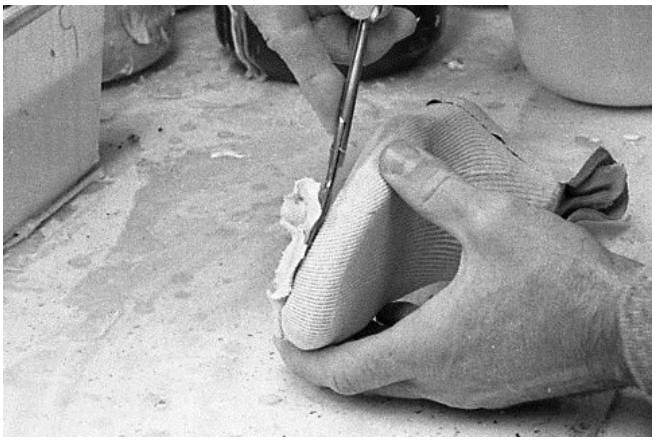
69 Heel Monks Cloth is dipped in latex.

70 Heel Monks Cloth is applied to socked last.



71 Heel Monks Cloth is trimmed.

72 Sometimes a rubber band can be used to force latexed sock to hold to last temporarily while latex sets or firms.



73 Any excess of sock at toe can be trimmed with a scissor or razor blade after sock has dried (a straight sewing machine stitch was used to close sock end).

74 The position of design string is observed and cutting begins along upper edge of string.

75 Ditto.

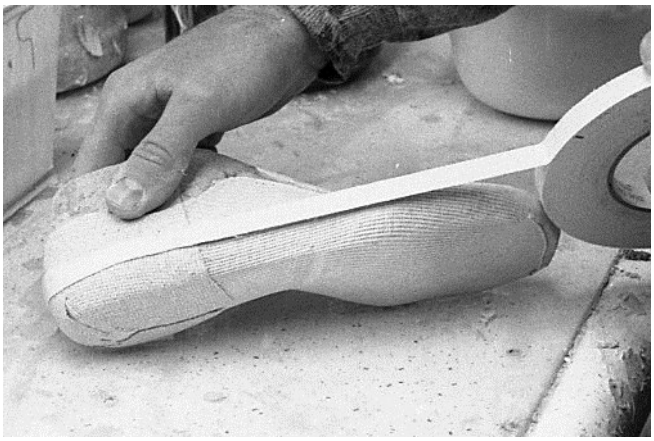
76 Ditto.

77 Ditto.

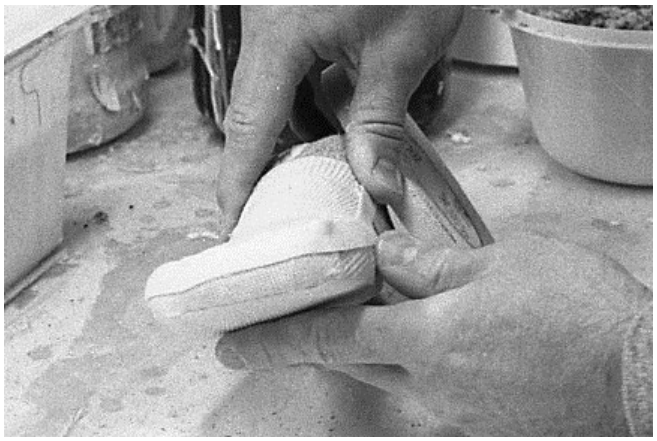
78 Upper waste of sock and Monks Cloth has been removed.

79 Ditto. Sock is now left to dry. The drying takes about a day. It can be speeded up with a fan or heat.

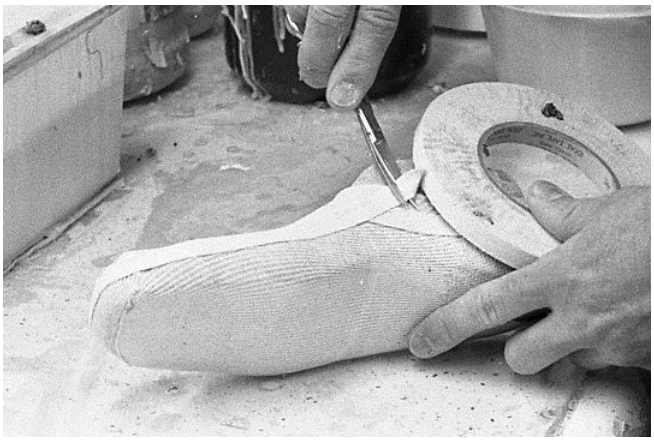
80 Masking tape is applied to dried sock and heel Monks Cloth. The back heel Monks Cloth is used for stiffening. It is referred to as the counter or heel counter in general shoe making.



81 Ditto.



82 Ditto.



83 Ditto.

84 Latex is brushed onto bottom of socked last.

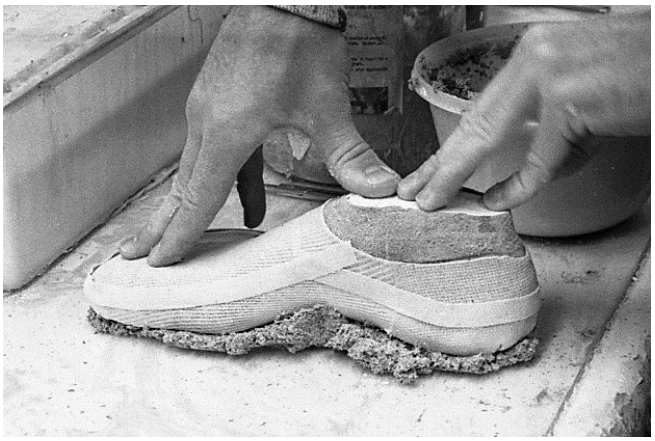
85 Ditto.

86 "Mud" the mix of latex, wood flour and cork, is applied to bottom of socked last.

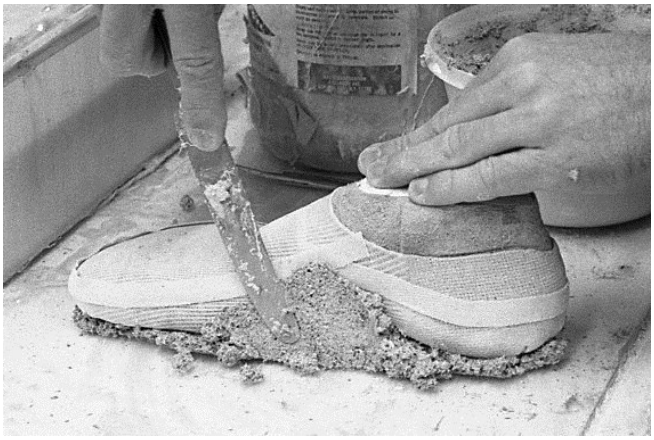
87 Ditto.

88 Ditto.

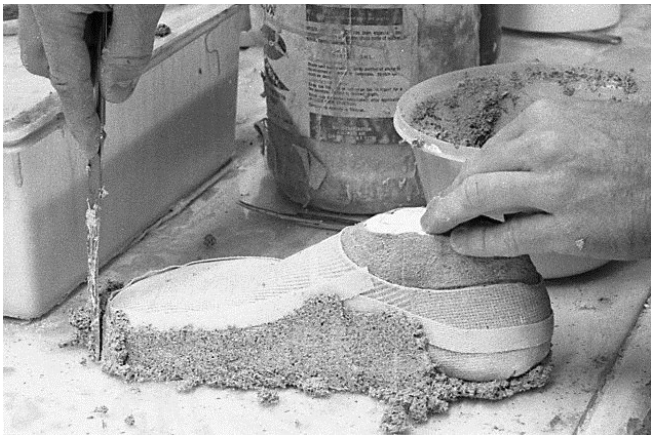
89 Mud is smoothed as appropriate.



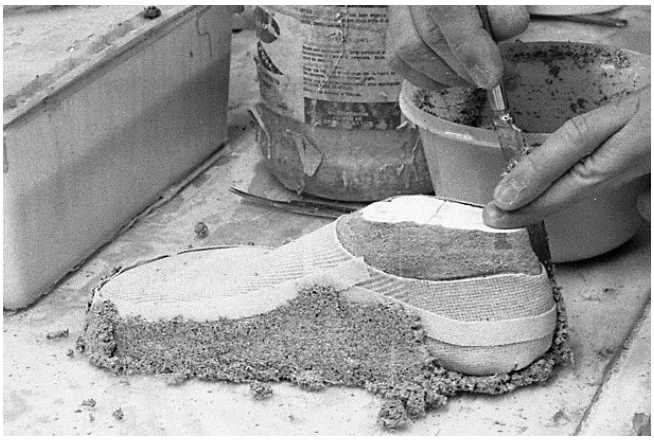
90 Last is flipped and pressed onto glass surface.



91 Mud is filled and patted to last so there are no voids.



92 Ditto.



93 Ditto.

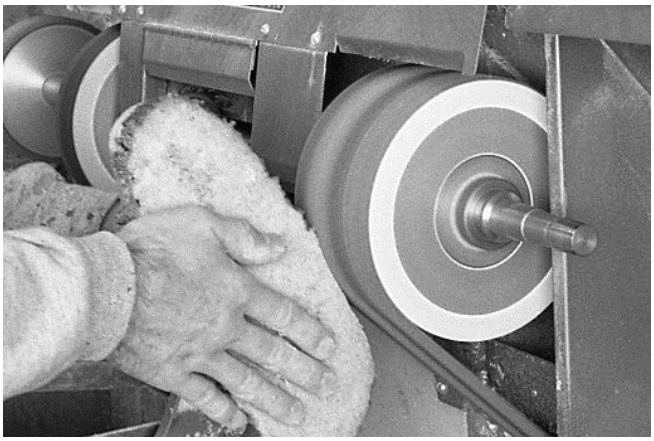
94 Masking tape is removed.

95 Mudded last is allowed to dry one or two days.

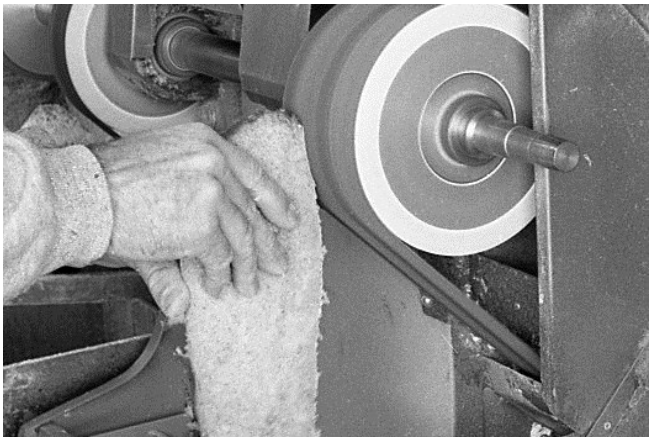
96 Dry mudded last is lifted from glass surface.

97 Dry mud has filled the "space" between the last and the flat walking surface, giving a supporting structure to the contours of the last. This base is the important structure of molded footwear.

98 Dry mud is rough sanded on a 24 or 36 grit sanding belt.



99 The technique is to grind off excess dry mud in stages. This mud is not completely dry for several days. The artisan will, therefore, grind only as needed for several days.

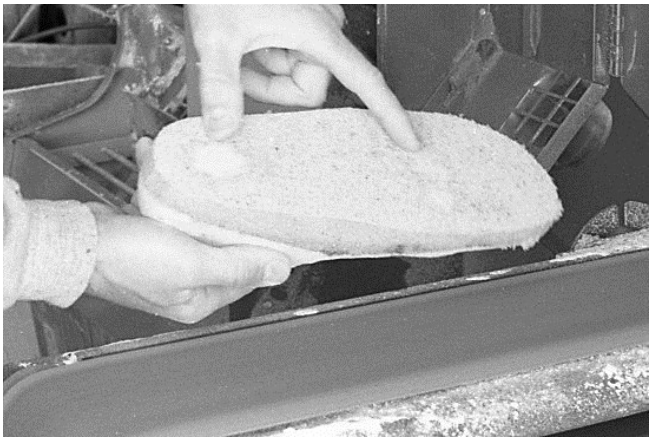


100 Ditto.

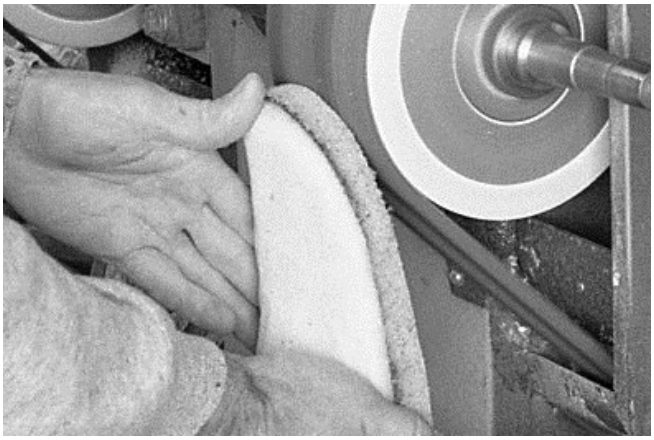
101 A flat bed belt sander, running away from the artisan, is used to grind the flat bottom surface.

102 Ditto.

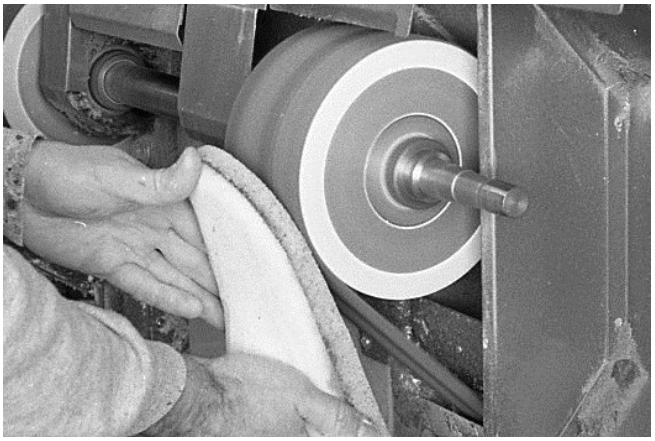
103 Maintaining the proper left to right (medial to lateral) balance is very important.



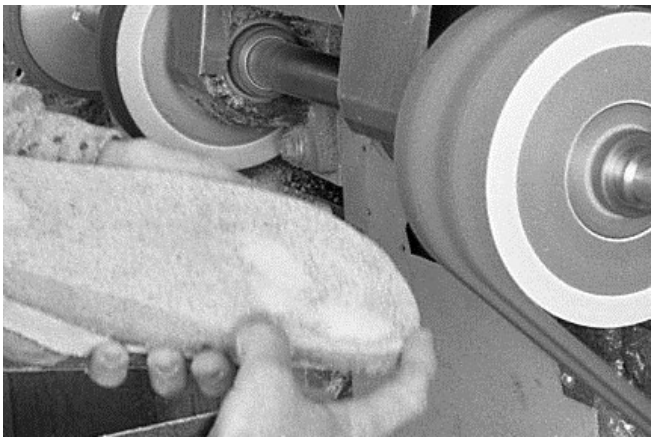
104 The grinding is finished when it touches the heel Monks Cloth or sock.



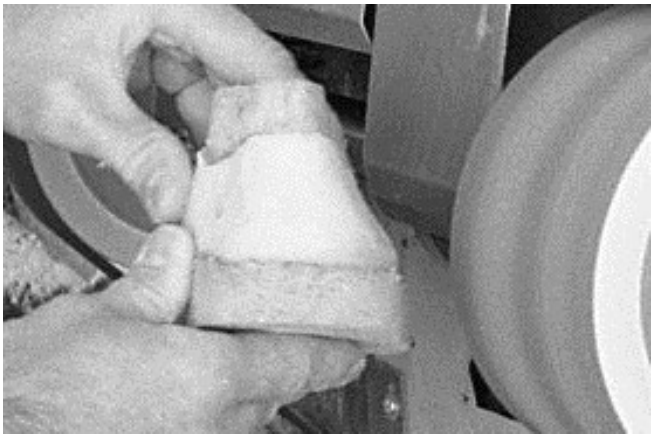
105 The toe to ball angle is ground using either type of sanding machine.



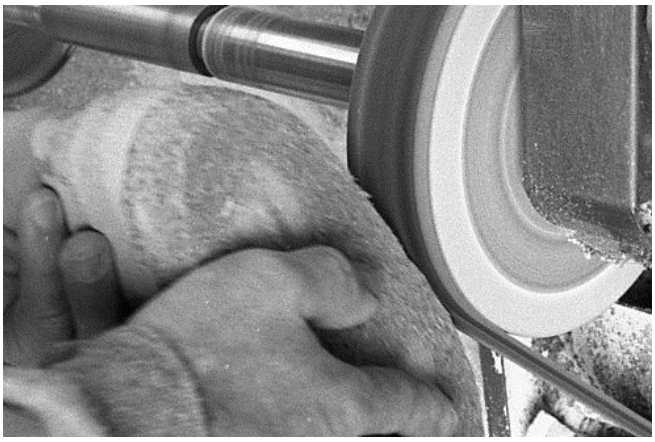
106 Ditto.



107 Inspection of mud angle of bottom from ball to toe tip.



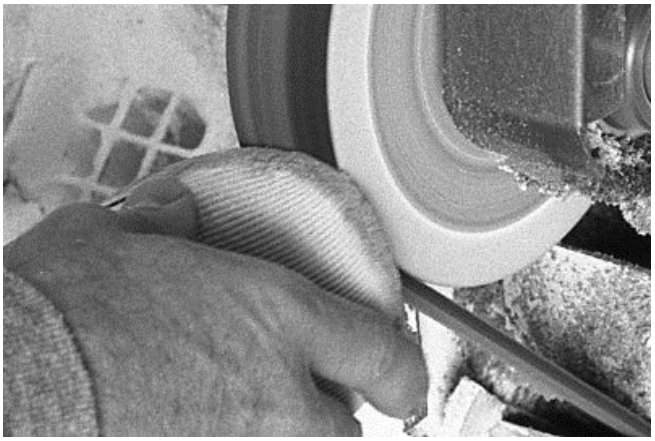
108 Inspection of perpendicular angle from bottom of mud.



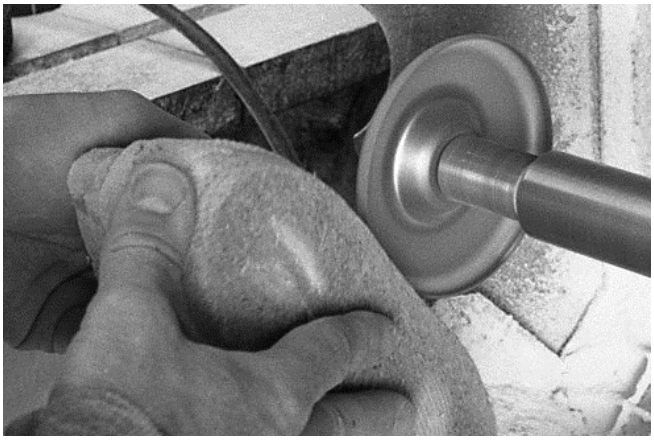
109 Grinding the sides of mud on an 80 to 100 grit sanding belt.

110 Ditto.

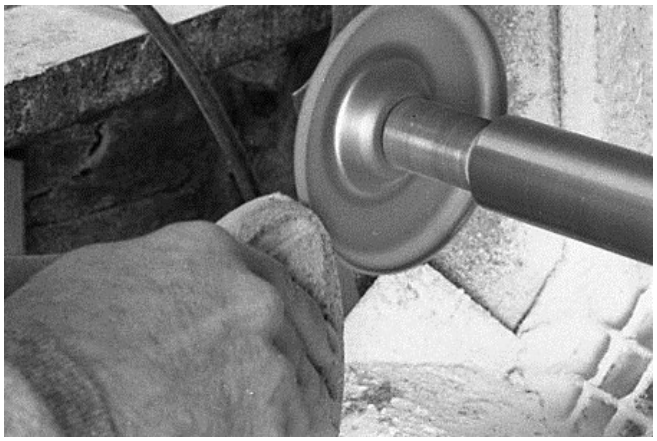
111 The edge of mud is carefully smoothed.



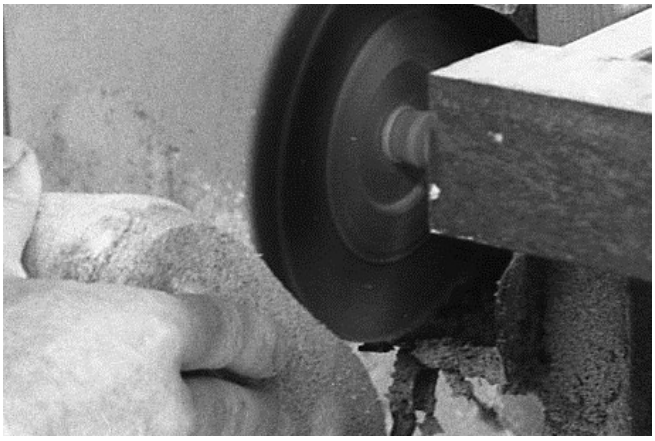
112 Ditto.



113 Making an appearance of separate base from top.

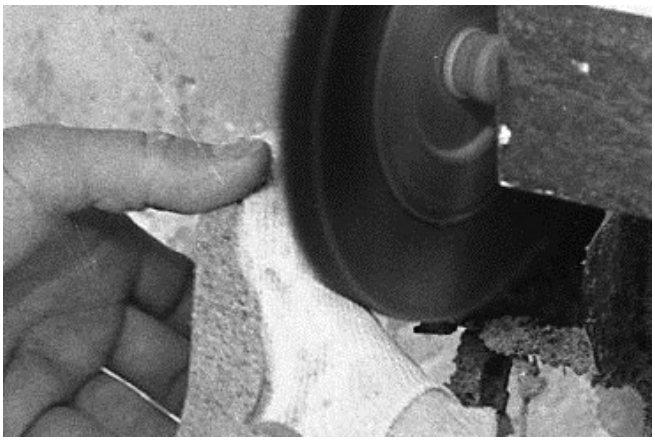


114 Ditto. This step will be deleted in subsequent techniques. It is artistic, but contributes to long term structural weakness.

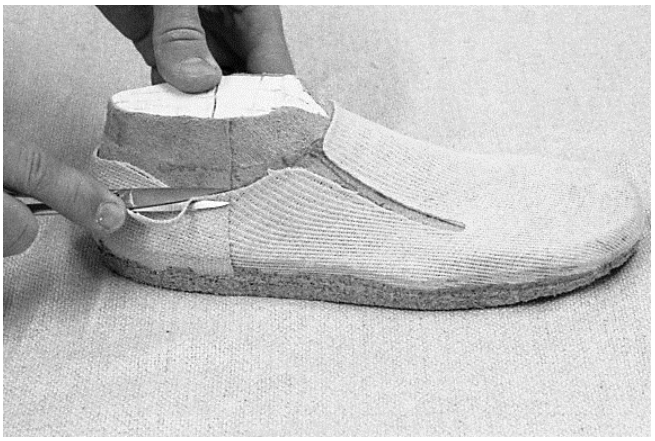


115 Wire brushing the Monks Cloth and sock to clean.

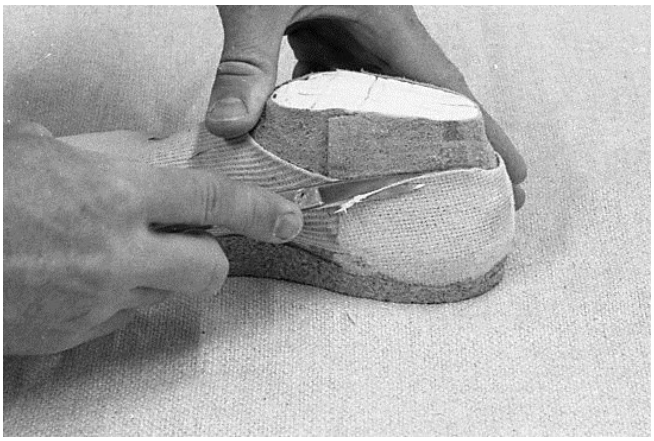
116 Ditto.



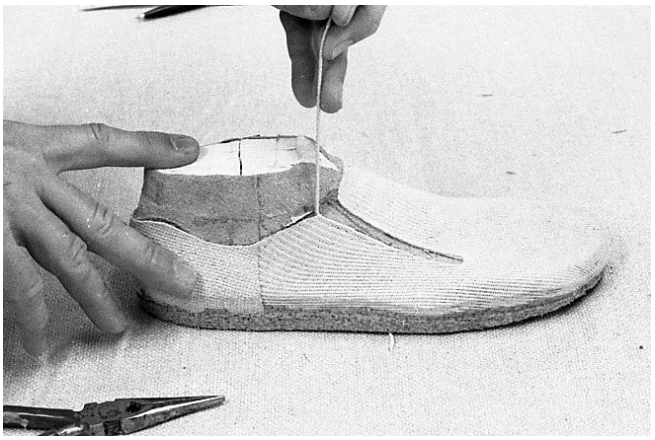
117 Ditto.



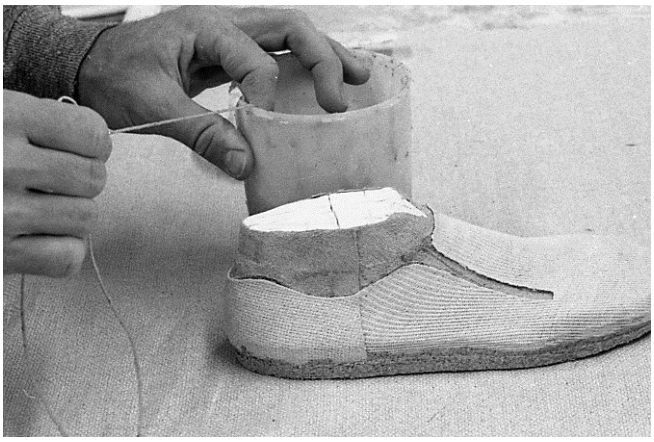
118 Trimming waste to the top of design cord.



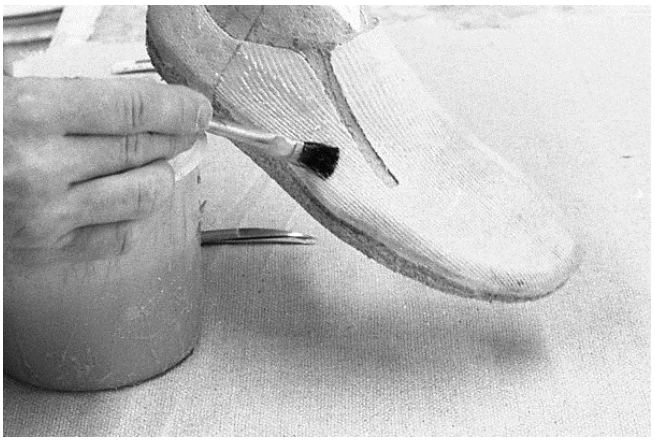
119 Ditto.



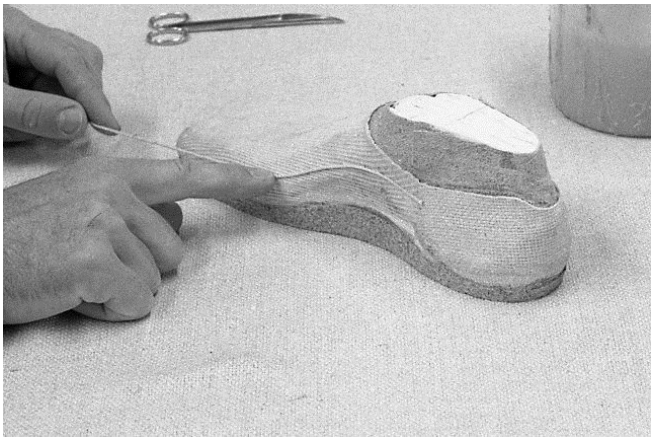
120 Pulling out the top of shoe design cord.



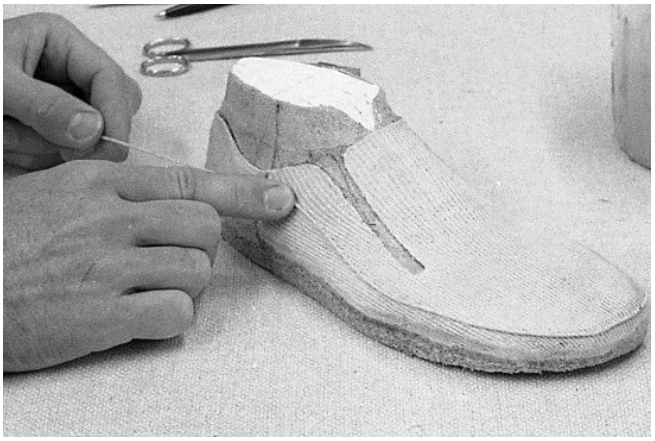
121 Coating string with glue.



122 Coating shoe with glue.

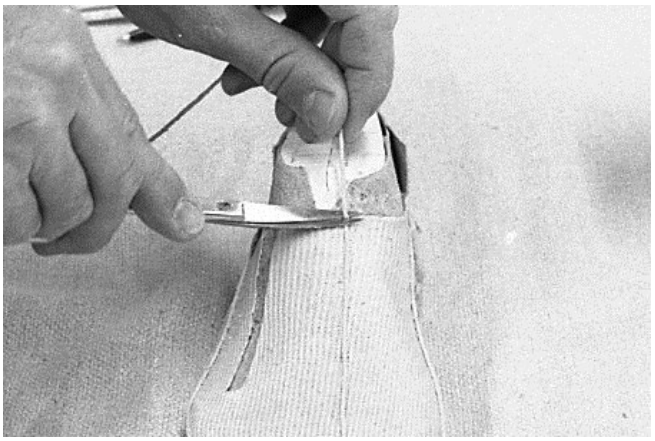


123 Appling an "artistic" design cord. This cord has no other purpose.

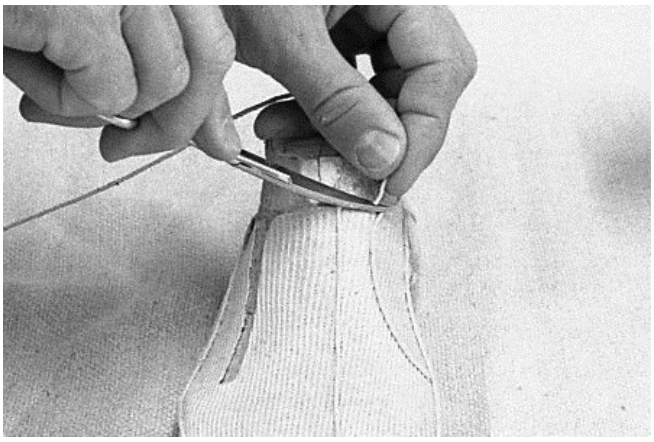


124 Ditto.

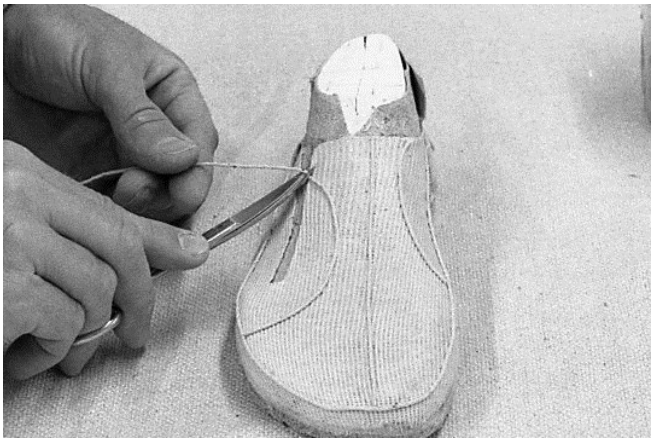
125 Ditto.



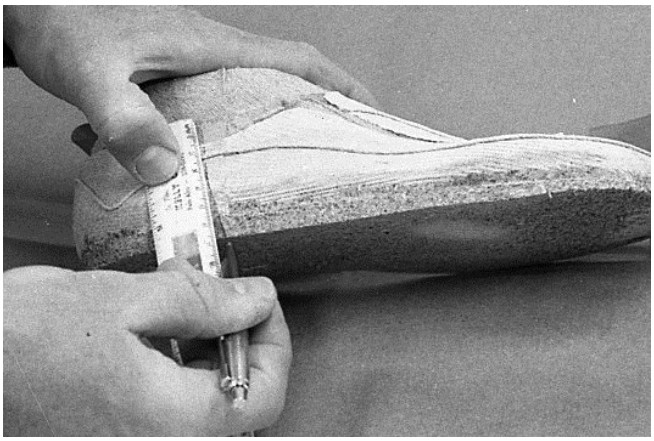
126 Ditto.



127 Ditto.

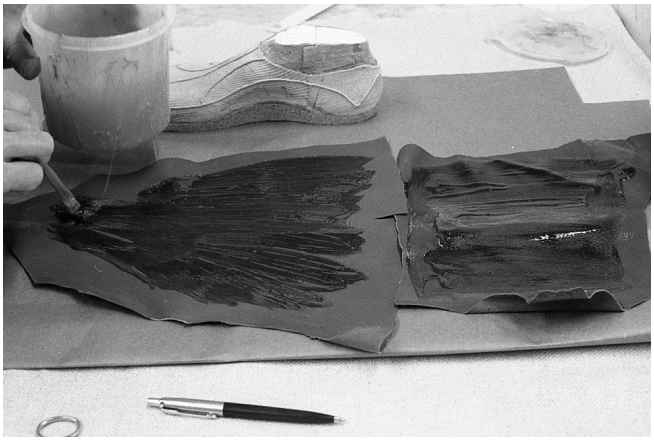


128 Ditto.

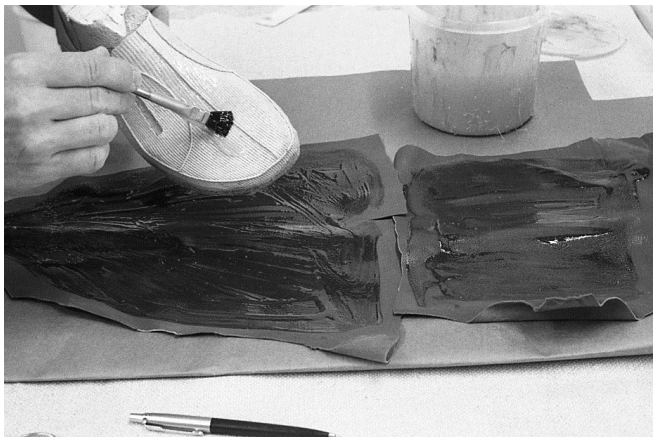


129 Marking lateral front edge of heel seam.

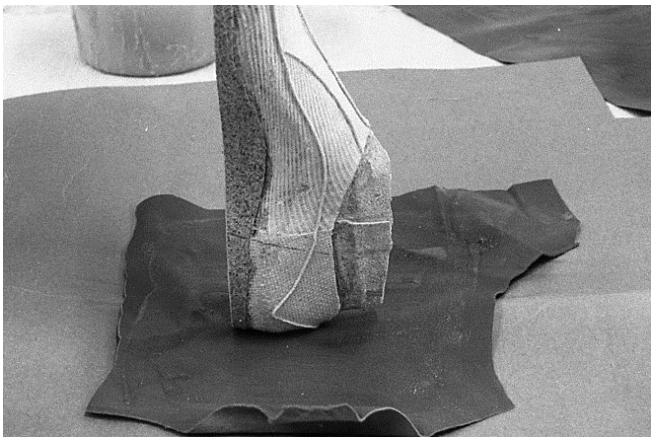
130 Marking medial front edge of heel seam.



131 Applying contact adhesive (glue) to inside of leather.

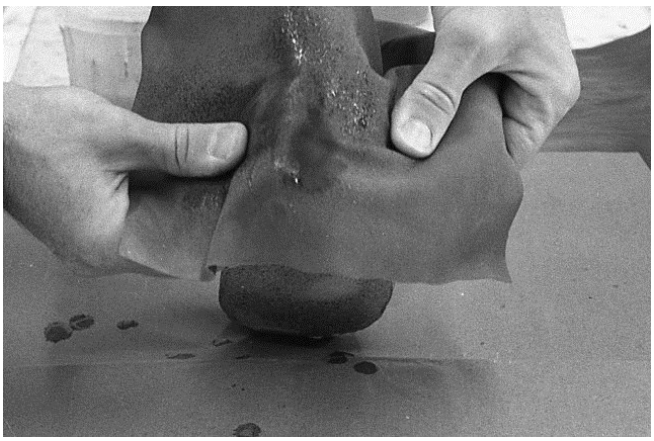


132 Applying contact adhesive (glue) to shoe.

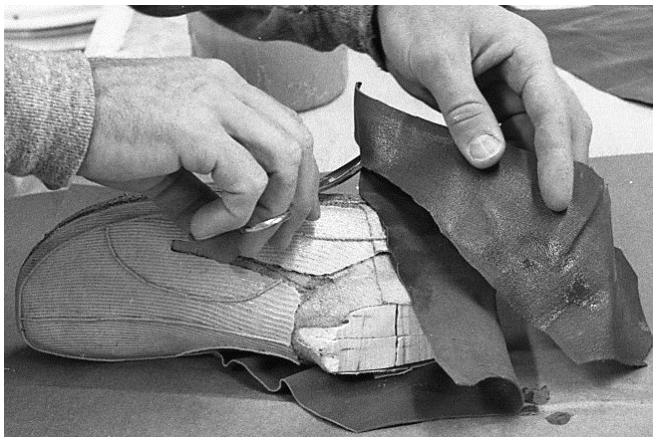


133 When glue is tack free, back of shoe is placed onto inside of heel leather. The process is done on clean paper, not a dirty table top. This is a suede or rough out leather. It needs to stay clean and free of excess glue.

134 Leather stretch is sprayed onto outside of leather to make it relax.

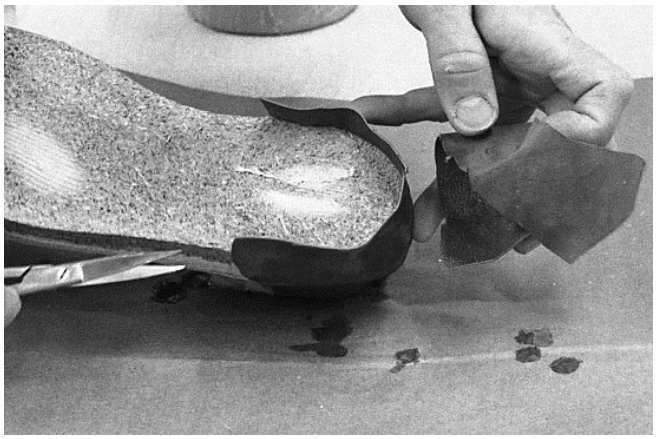


135 Leather is pulled, stretched and pressed over naked shoe.

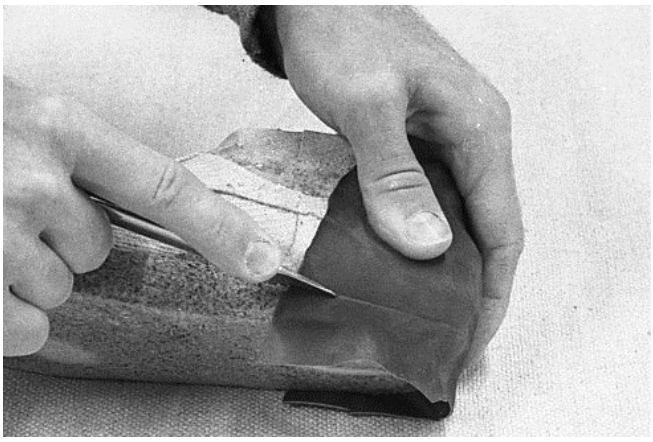


136 Lateral front edge of heel seam is cut.

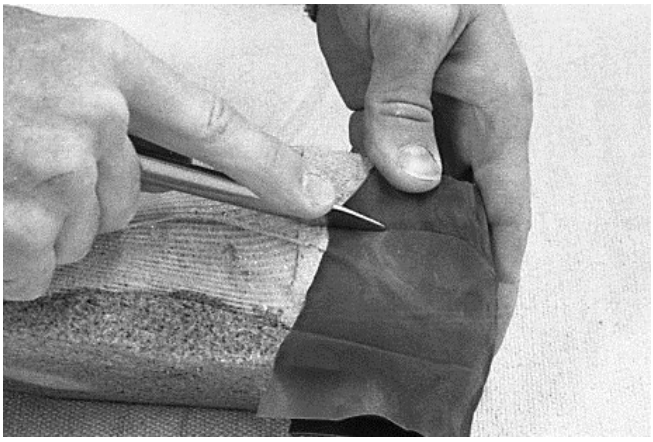
137 Medial front edge of seam is cut.



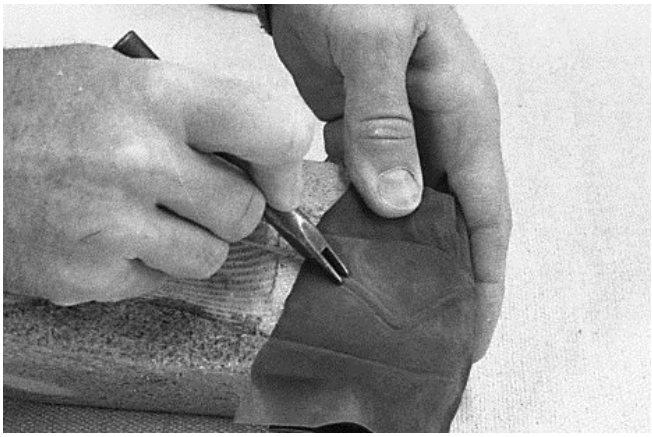
138 Excess bottom leather is cut off.



139 The base to upper indentation is pressed tight.

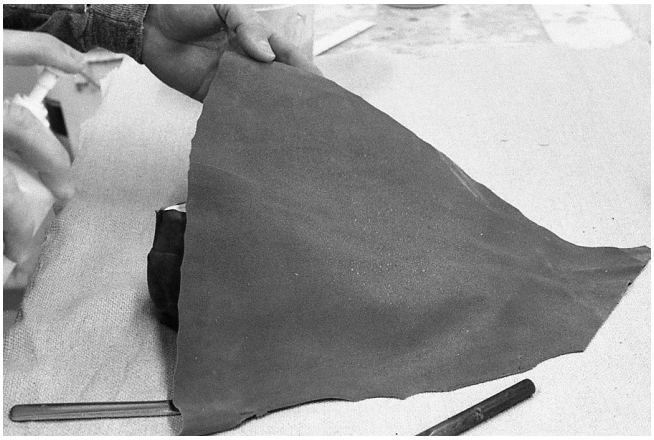


140 The top of shoe leather is pressed tight.

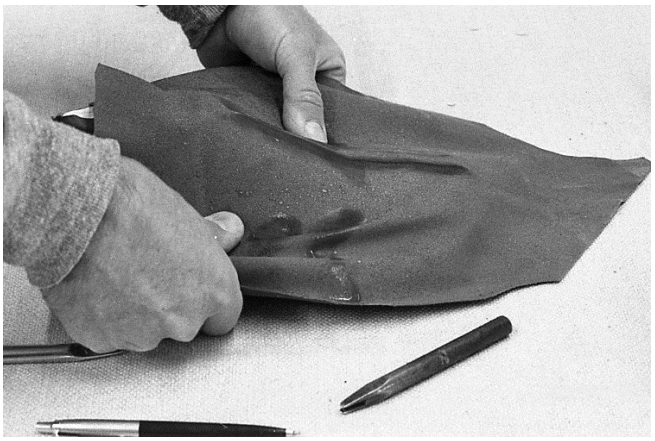


141 The "artistic" design cord is pressed tight on both sides.

142 Glue is applied to bottom of base inside leather. Then leather is folded to bottom (not shown).

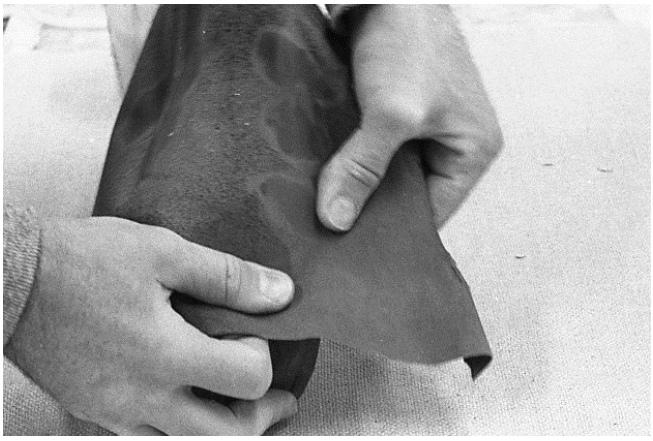


143 Front leather is placed over shoe and sprayed.



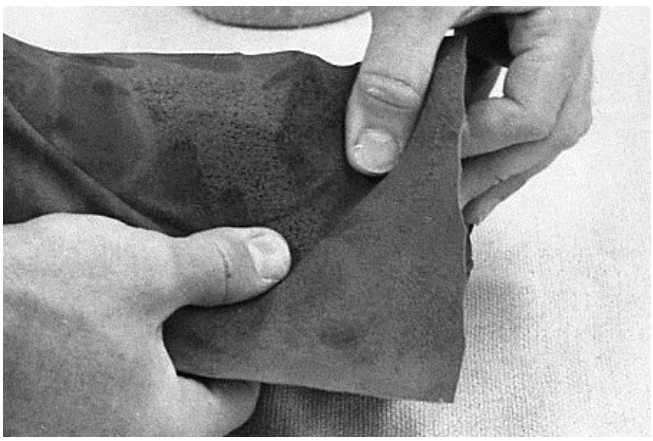
144 Front leather is pulled and pushed into place.

145 Front leather is pulled over toes.

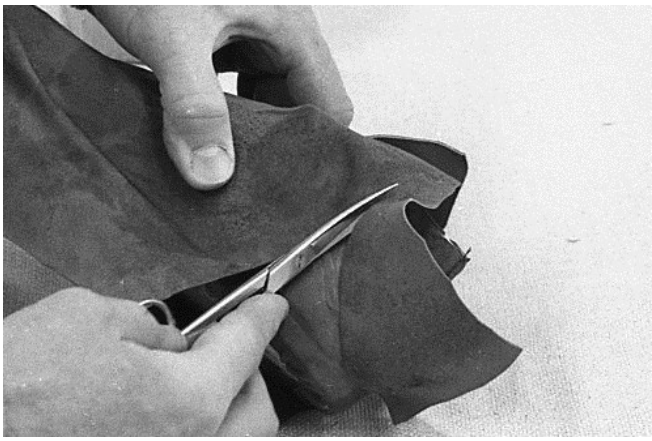


146 Front leather is pulled down and backward along sides to take out creases.

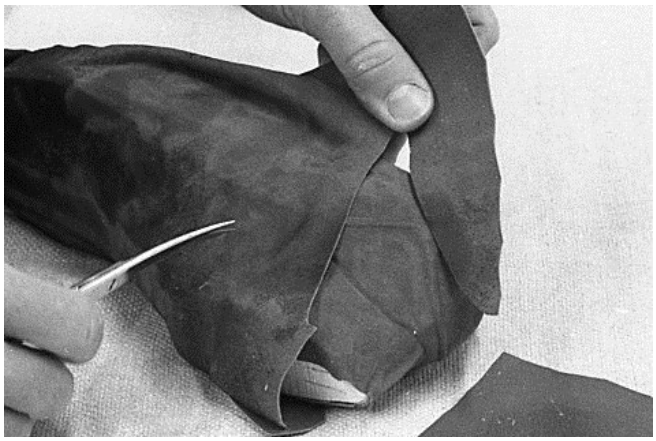
147 Ditto.



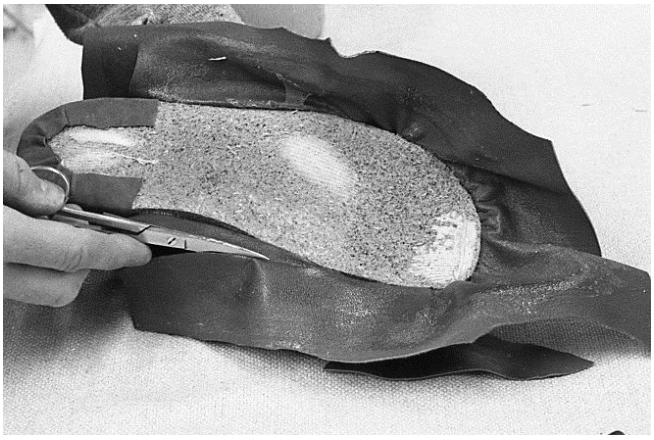
148 Ditto.



149 Front leather is cut at lateral side seam.

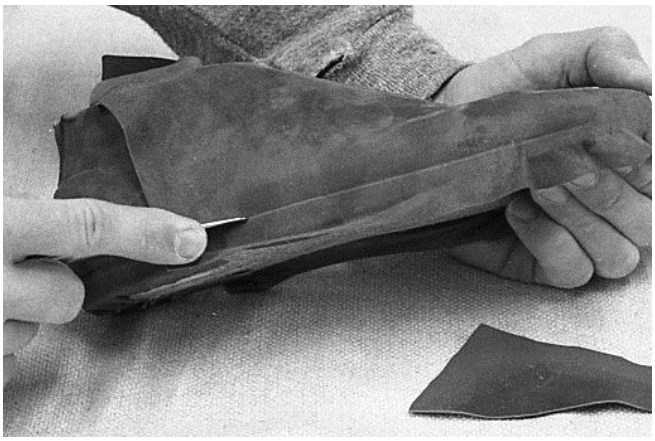


150 Front leather is cut at medial side seam.

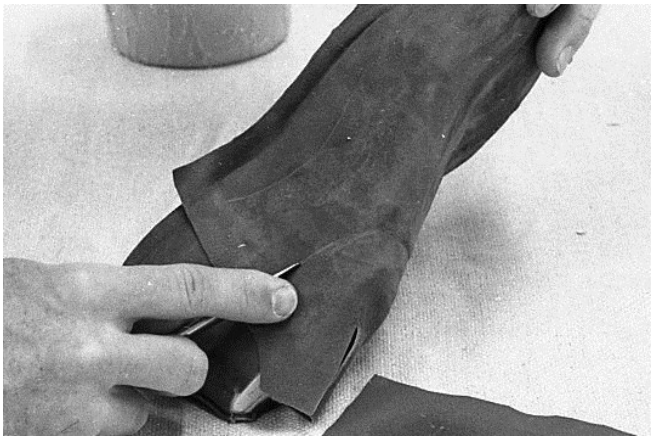


151 Front leather is trimmed along base.

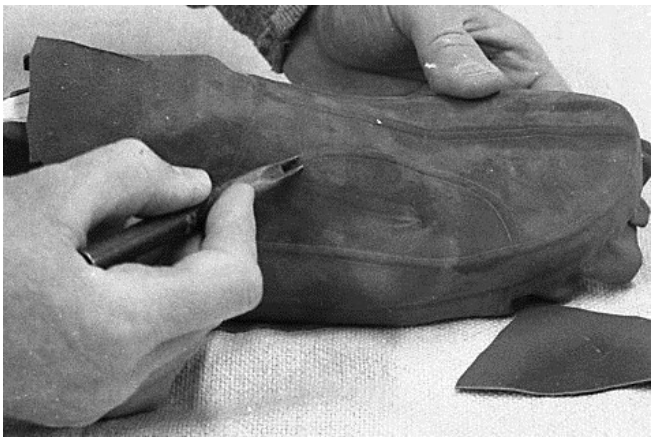
152 Front leather is pressed with blunt (not sharp) tool just in front of overlap. The overlap is 1/4″ to 3/8″.



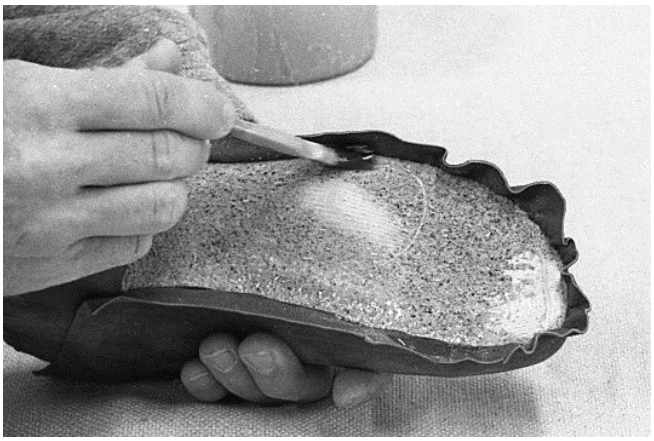
153 Front leather is pressed in at "artistic" groove between upper and base.



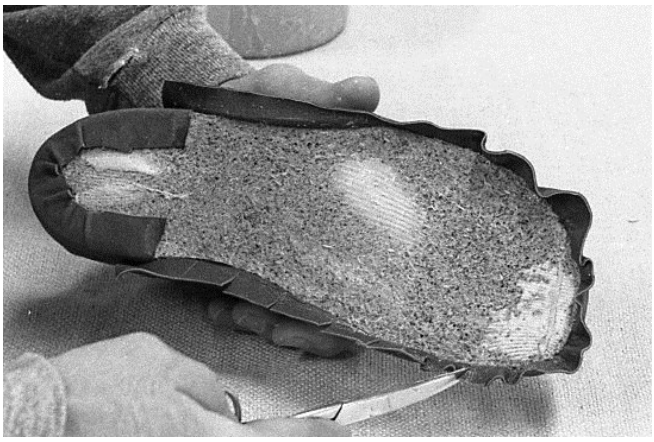
154 Leather is pressed in around top edge of shoe.



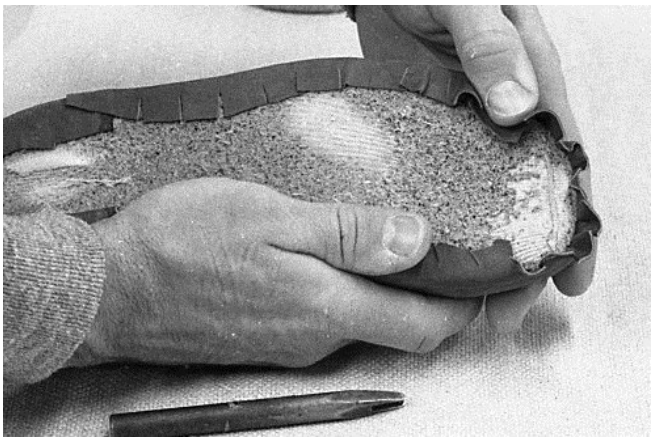
155 Design cords are pressed with forked tool.



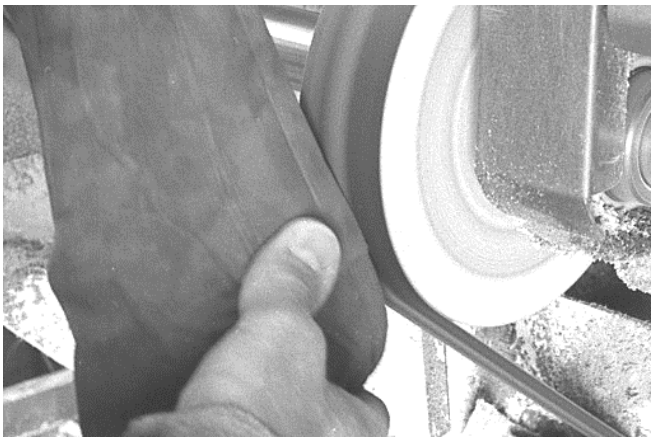
156 Glue is painted on bottom of "mud" base.



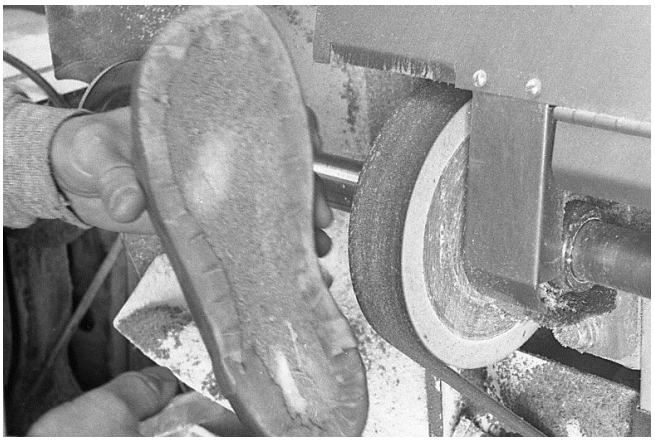
157 Scissor cuts are made on bottom leather which will fold over.



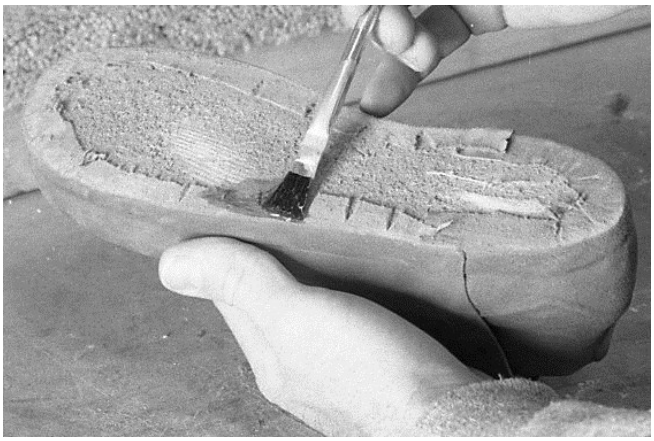
158 Bottom leather is folded over (nice and smooth).



159 Bottom leather is sanded with 80 grit belt.



160 Observe the finished sanding is flat, nice and smooth, and perpendicular to outer edge.



161 Glue is applied to leather and "mud" of shoe bottom. This is suede leather and the artisan must be extra clean and neat as any glue on outer suede leather will not be easily removed!

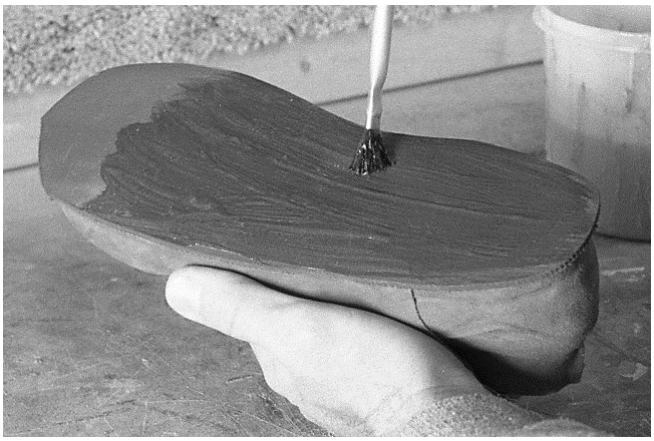
162 Glue is applied to mid soling.

163 Glue is applied very carefully (second coat) right to the very edge.

164 After adhesive dries tack free, the shoe is pressed into mid soling and hand firmed so there are no voids in the bond, especially at edges.

165 Mid soling is trimmed.

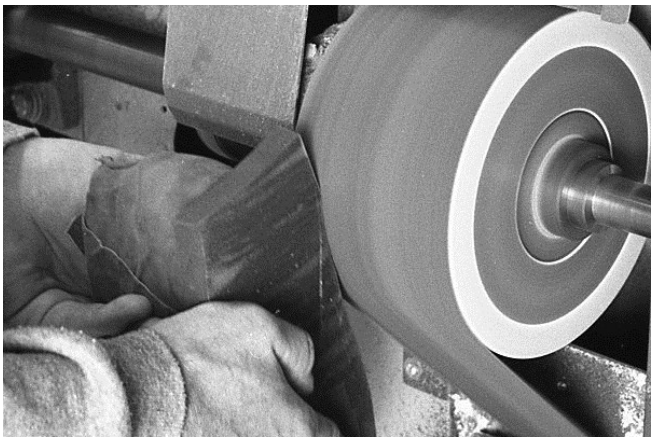
166 Again, all edges are hand pressed.



167 Adhesive is applied to bottom of mid soling, from ball to heel.

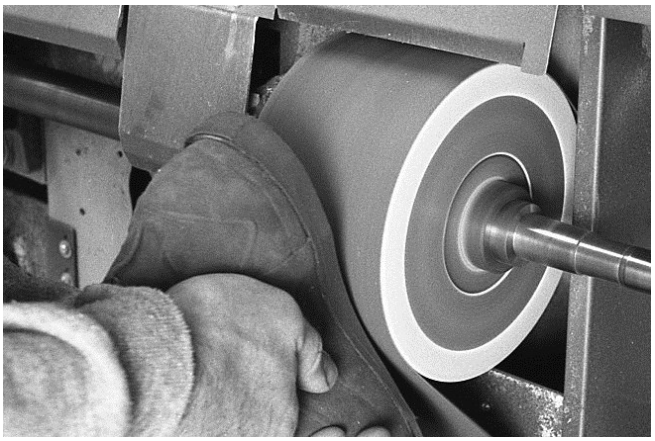
168 Adhesive is applied to a block of 24 iron or 36 iron cushion crepe (Vulite® or Cloud® are good).

169 After adhesive dries tack free, the shoe is placed on cushion block, from ball to heel.

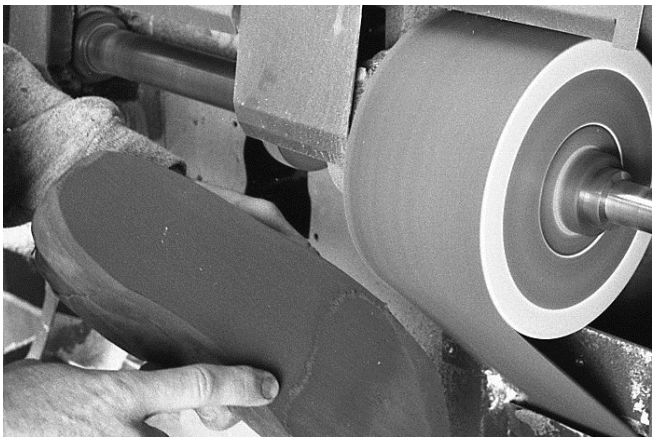


170 The block is cut with a hand knife and then the sides are sanded with coarse grit belt on grinder.

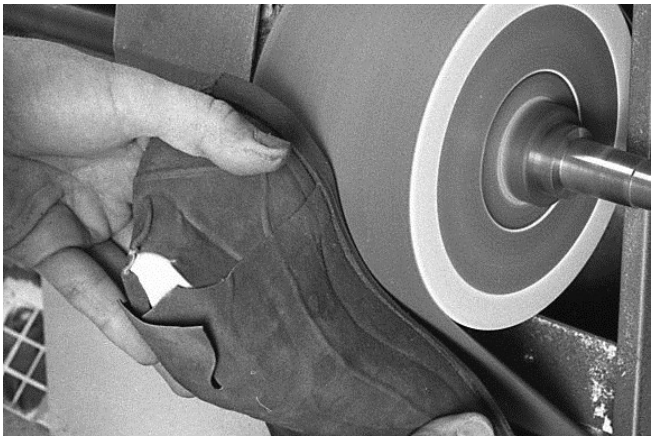
171 The bottom of block is ground to create a tapered wedge from ball to heel. This wedge becomes the heel lift.



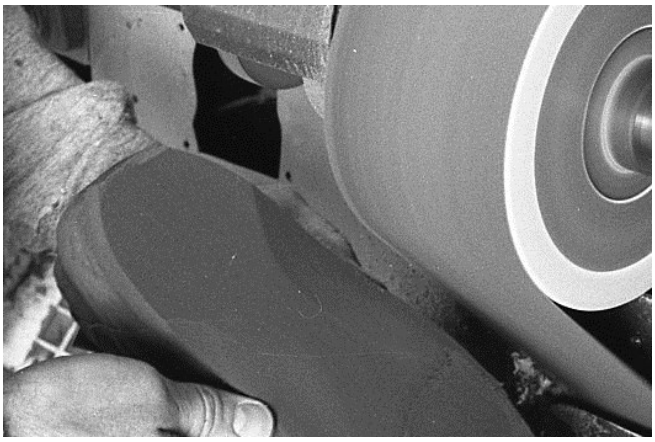
172 Ditto.



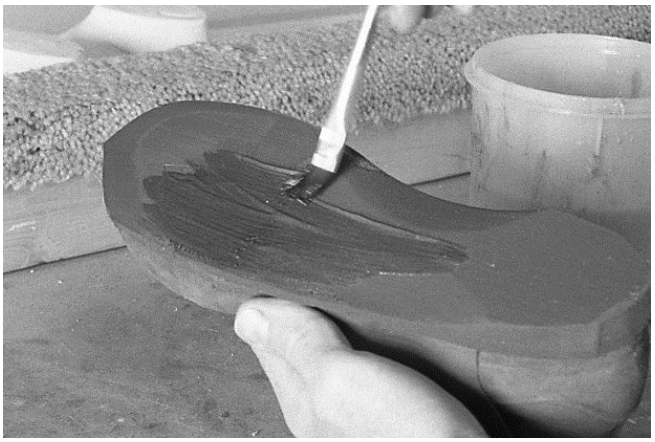
173 Observe results of flat taper which has been final finished on flat belt sander.



174 An inner "artistic" scallop may be ground medial and lateral. No scallop is provided when maximum bilateral support is required.



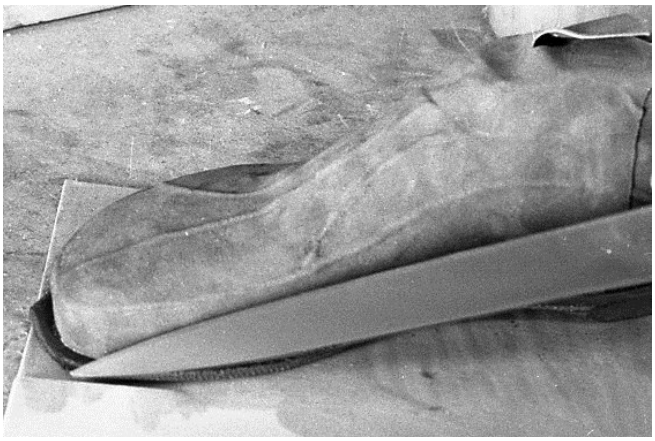
175 Ditto.



176 Adhesive is applied to bottom of mid soling and wedge.

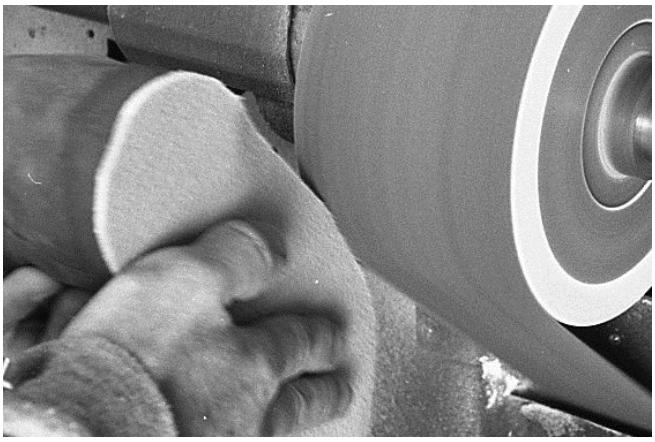
177 Adhesive is applied to outer sole.

178 After being allowed to dry tack free, the shoe and outer sole are pressed together.

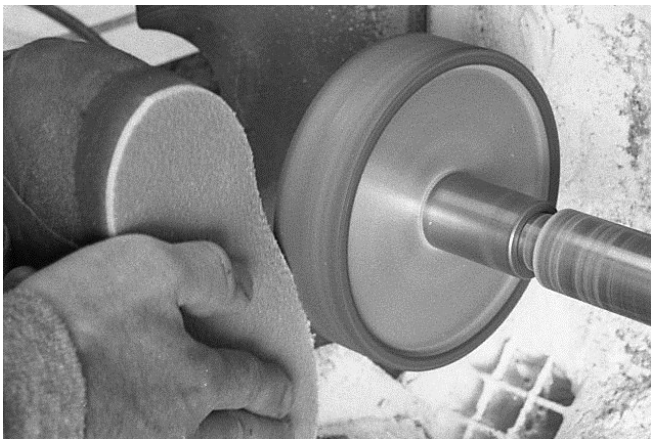


179 The soling sheet is cut.

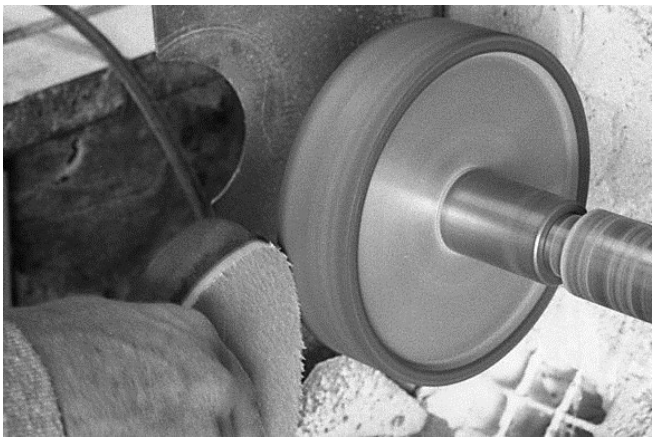
180 The sole is trimmed.



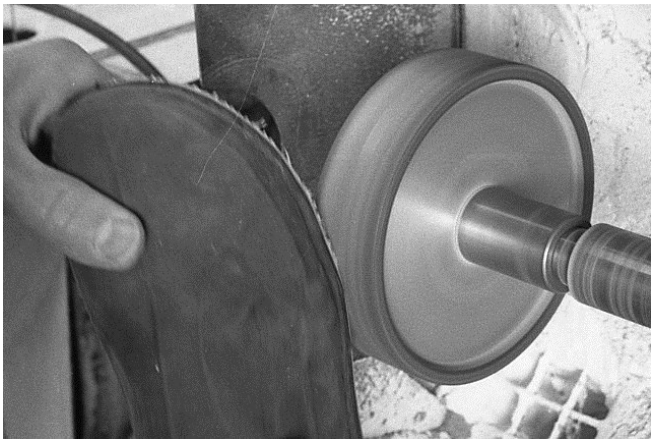
181 The sole is rough ground on 24 grit belt.



182 The sole is finely ground on 80 or 100 grit belt, or as in this example, a tungsten carbide wheel.



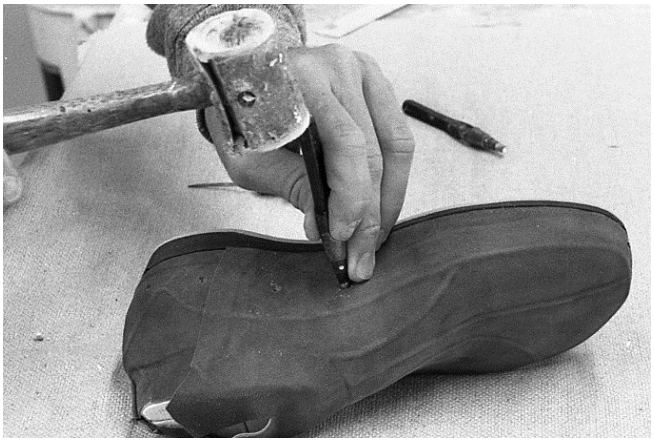
183 Ditto.



184 Ditto. Feather edge is being ground in reverse direction to take off little feathers at edge.

185 Dental lab brush is used to clean leather to sole area and remove burrs and dirt.

186 Base perforations are punched with a #3 punch.



187 Ditto.

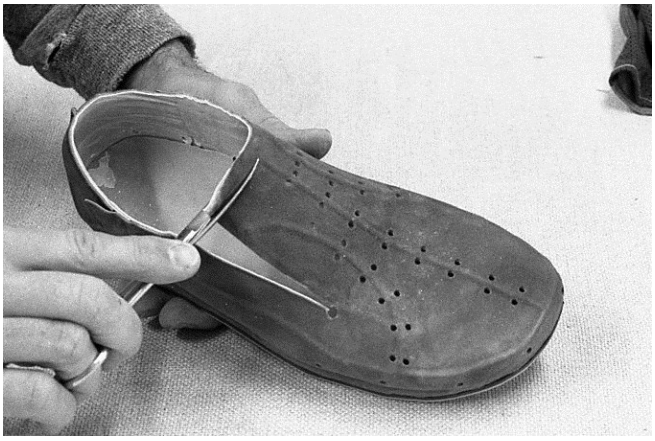
188 Top perforations are punched.

189 Bottom of lace opening is punched.

190 Single edge razor blade is used to cut lace opening from bottom hole upwards.

191 Last is removed from shoe with care to do as little damage to last as possible, so it can be reused again.

192 Ditto.



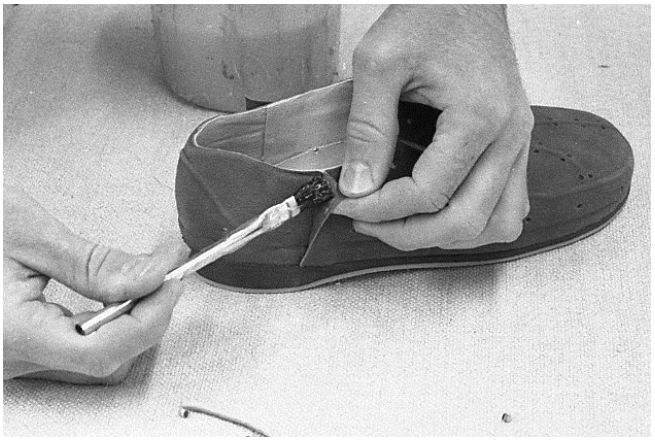
193 Top edge of leather is trimmed.

194 Lace opening is trimmed.

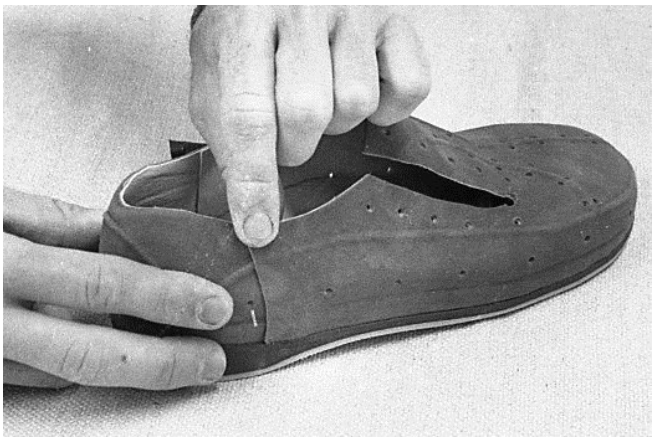
195 Lace holes are punched.

196 Inside of shoe is cleaned with a toe brush.

197 Inside of shoe is cleaned again with a hand brush or possibly compressed air.



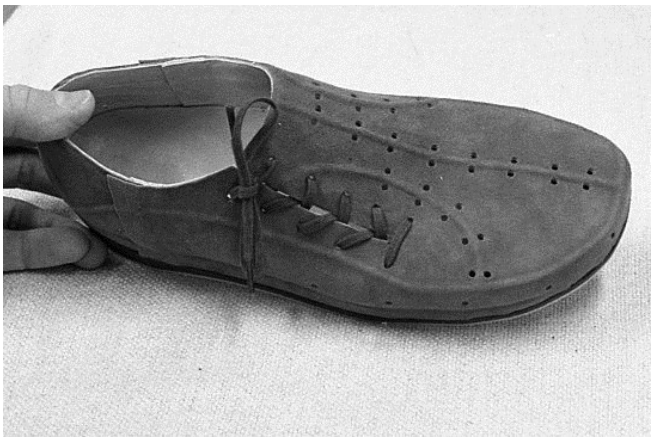
198 Side seams are glued carefully.



199 Side seams are pressed together.

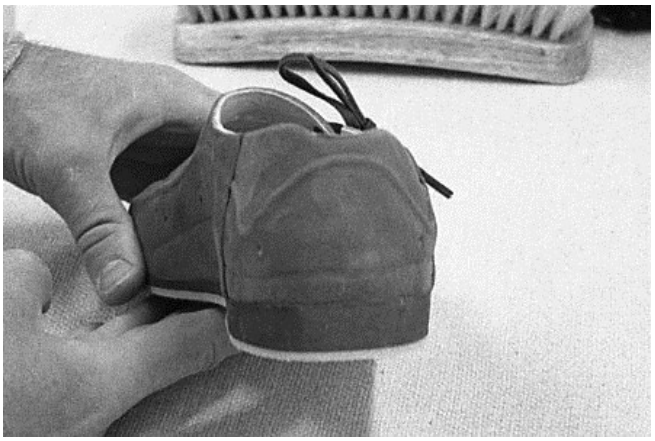
200 Laces are inserted.

201 The finished shoe can be admired as a beautiful piece of "art". Be proud of what you made! Not everyone can do it, and certainly not everyone can do it expertly!

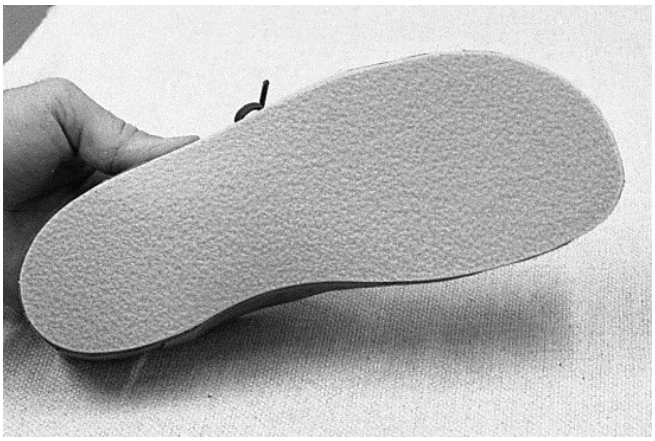


202 Ditto.

203 Ditto.

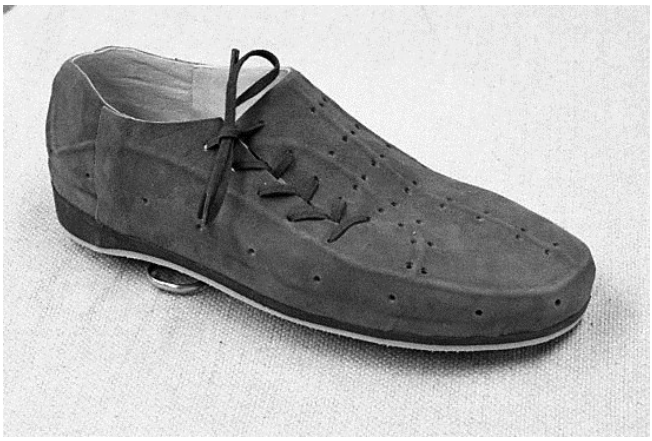


204 Ditto.

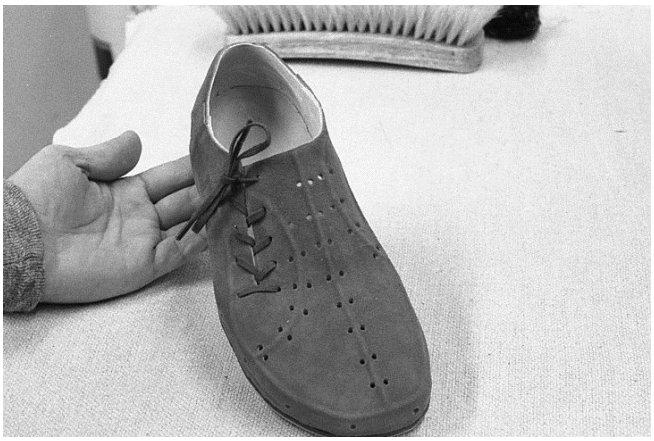


205 Ditto.

206 Ditto.

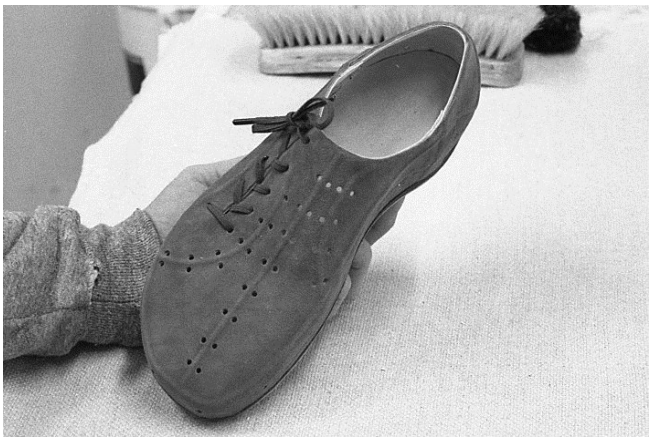


207 Ditto.



208 Ditto.

209 Ditto.



210 And, Ditto!

Now you can begin to see that molded shoe making has lots of possibilities for artistic expression.

And, variations of procedures, techniques and materials, allow for a wide diversity of individual products to suit the needs of many people.

The principal of making footwear to fit each individual foot can be achieved with a high level of integrity, because the creativity of the artisan is what really produces the products.

By studying the different alternative methods presented in these books, you can learn to make your own molded shoes, boots and sandals.

The procedures are relatively simple, the tools needed are few, and most materials or substitutes are easily obtained.