rotates. No heat or water is used. Most finishes—such as lacquer, shellac, and varnish—are "washed off" by the force of the sprays. Painted and enamel finishes are loosened. The pieces are removed from the enclosure and placed in a flow tank where the remaining finish or paint is brushed off. This is the safest and best method for fine furniture, including pieces with veneer, laminate, and inlays. There is no damage to glue joints and no raising of the grain. However, it is quite an expensive process.

Furniture Repairs*

Most repairs just involve using glue, since furniture generally comes apart at the joints. Of course, glue can also be employed to mend splits, repair veneer, patch surfaces, and strengthen legs and drawers, among other repairs. Most of the repairs can best be done by employing a ready-to-use adhesive such as liquid hide glue.

Gluing Techniques

For best results with any furniture regluing job, keep the following basic tips in mind:

- It is difficult if not impossible to reglue dirty joints or those filled with old glue. Therefore dismantle the piece and clean it. Carefully try to pull apart the loose joints by hand. On tighter joints, use a hammer or mallet, employing a wooden block or thick, folded newspaper to protect the furniture. Joints in very good condition should not be touched.
- All old paint, wax, dust, oil, grease, glue, etc., must be scraped away or otherwise removed from all surfaces to be glued. Warm vinegar will generally soften most stubborn glue (Fig. 64-5), but it is important to allow the wood to dry before continuing. Be careful not to remove any wood from the joints.
- The end grain of the joint is one spot where all the glue need not be removed, since most joints are commonly built with clearance between the end of the dowel, or round, and the bottom of the hole. This insures a tight fit at the shoulder. Simply remove the thickest lumps of glue from the end grain with a knife or other sharp tool.
- Roughen or slash the surfaces to be glued to form a "tooth" for more holding power. Plane, sand, or scrape uneven surfaces to form perfect, well-fitting contact surfaces.
- Since it is essential to return worn parts to their original places, dismantle, clean, and replace one piece at a time. If you have to dismantle the entire piece, mark

64-5. Use cotton swabs to apply the warm vinegar to joints.

*(This section adapted courtesy of Dr. Robert S. Miller and Franklin Chemical Industries)

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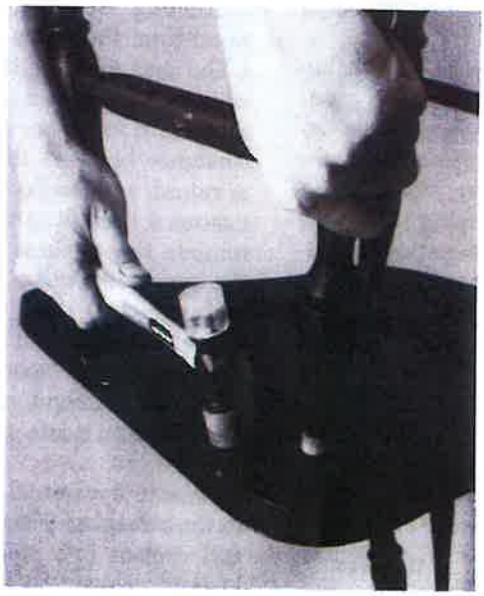
the ends of each part and the holes from which they were removed to insure accurate reassembly. Fig. 64-6.

• Dipping the parts to be glued in warm water and letting them dry completely will open the wood pores and allow the glue to enter more freely. Warming the parts on top of a radiator or in the sunshine are other ways to open wood pores.

• After the parts are clean and dry, test fit them together before gluing. With a tight fit, you are ready to glue. If the joints are a little loose, follow one of the joint tightening methods outlined later in this unit.

• After checking to be sure you are getting the proper parts in the right places, apply glue to both joint surfaces and assemble. Apply pressure with clamps, protecting the finish from scratches. (See Unit 40.) Waxed paper under the wood pieces or pads will catch any glue forced out by the pressure. Since glue will not stick to waxed paper, cleanup is easy.

64-6. Use a mallet to dismantle furniture pieces without damage.



• After gluing and clamping, wipe up the glue which is still soft. Use a smooth chisel-edged stick to clean around the joints and tight places, and rub the rest of the piece down with a clean, damp cloth. If the piece must be moved to another position before the glue has set, wind a piece of string around the joint several times and knot it to prevent the new glue from running out of the joint. Remove the string before the glue hardens completely. Later, any hardened excess glue can be carefully removed with a knife without damage to the surface.

• Pieces with many glued joints should be placed on a flat surface and tested for alignment before the glue completely hardens because this is the only time adjustments can be made.

• Allow plenty of time for the glue to dry, being sure to take into account any cavities in the joint which may have made it necessary to apply a thicker coat of glue than normal. The glue must be completely dry before the clamps are removed. Any glue remaining on the surface will produce spots beneath a clear finish, so now is the time to check for and remove it.

While it is a good idea to dismantle a furniture piece before regluing, some antiques, especially some rung-type chairs and furniture held together by wooden pins or wedges, should never be completely taken apart. There is a good reason for this. Before glue was commonly used in furniture construction, chair rungs were made out of dry wood with a bulb on each end. These were tightly fitted into the holes of green (unseasoned) legs. As the green legs seasoned and shrank, they formed a tight joint with the rungs. With age and wear these joints can become loose, but they cannot be dismantled without damage.

Loose joints of this type can be reglued in several ways without dismantling them. One good method is to work the glue well

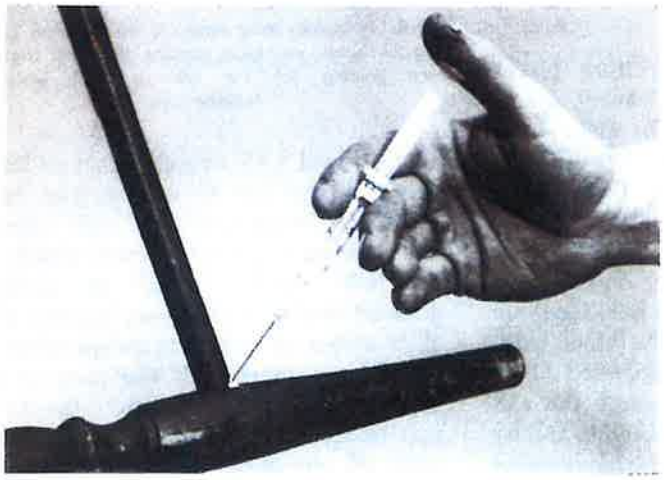
64-7(a). A small oil can filled with glue can be used to pump glue into joints.

into the loose joint using a toothpick. Try to position the piece so that the glue can flow freely down into the joint.

By drilling a 1/16″ hole at an angle to or alongside loose joints, glue can be forced into them with a small oil can, plastic squeeze bottle, or a glue injector. Fig. 64-7. Inject glue into the joint until a squeeze-out appears. Then clamp it fast, wipe clean, and let dry.

Mending Split or Broken Parts

Parts which are split or cracked, but not broken into individual pieces, should be repaired without being separated if at all possible. Most cracks in wood furniture may be glued and clamped, the result being a permanent repair. First, any dirt, old glue, and paint must be removed from the crack with a narrow-bladed knife, pin, or thin tool. Dragging an old hacksaw blade through a straight crack is a very good way to clean it. Turn the saw teeth down and pointing toward yourself. Blow out the loose material.



64-7(b). A glue injector is a syringe designed for applying glue to small spaces.

Cracks near an edge should be widened by gently driving in several soft wood wedges, one at a time. When the crack is wide enough, insert the glue, remove the wedges, and clamp tightly. Cover the area with waxed paper and place flat sticks under the clamp jaws to protect the wood surface. Fill the hole with stick shellac, wood putty, or dough the same color as the wood finish. Then smooth off the rough spots with a knife or fine abrasive paper.

Cracks farther away from an edge should be thoroughly cleaned and then tested to see if they can be brought together. Use a strong bar clamp with blocks of wood beneath the jaws for surface protection to see if this can be done. If the crack can be drawn together, apply glue and then clamp.

Most repairs of broken furniture can be separated into two general categories: supported and unsupported. Broken parts in unsupported repair are simply glued together, and you must rely on the

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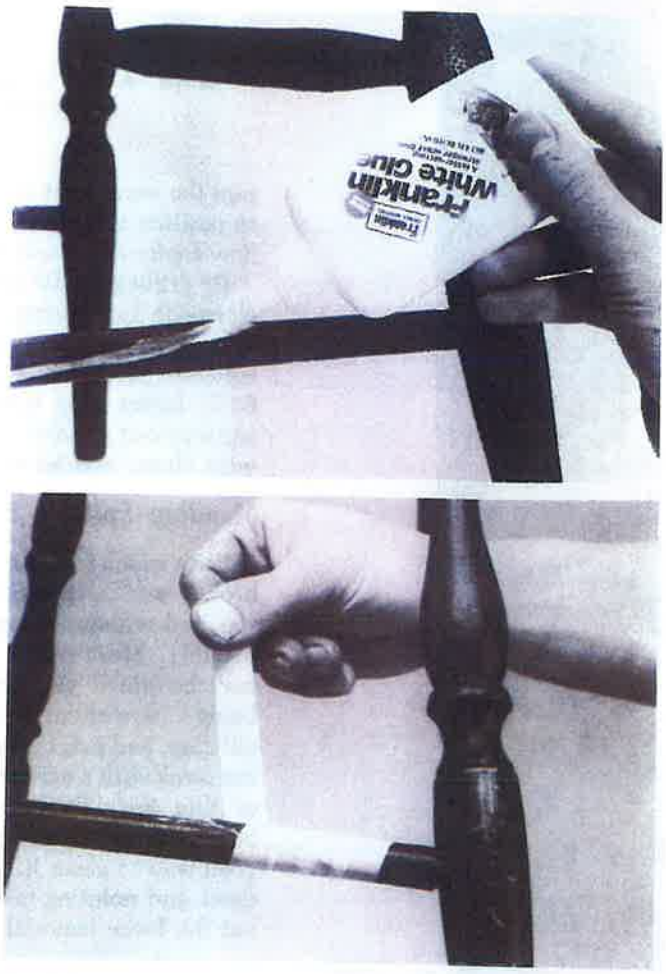
strength of the glue and wood to make a satisfactory mend. For supported repairs, dowels or other types of supporting devices are used to strengthen the repaired parts. Use common sense when deciding whether to glue or use a dowel in the repair. Remember that the more gluing surface there is between the two parts, the stronger the glue joint will be. Small, flat surfaces fastened together by glue make the weakest joints and need structural support. On the other hand, if the crack in a split chair rung runs nearly the entire length of the part, a very large surface for gluing exists and an unsupported repair will usually be successful.

Consider the amount of stress the part will undergo during normal use before deciding on the type of repair. For example, the arms of a dining room chair take plenty of stress, and dowelling is a good idea whenever possible. But, where stress is less, a simple gluing may be appropriate. Broken rungs frequently can be repaired just by filling the break with glue, pressing the parts together, and clamping. Fig. 64-8.

Save all the pieces of a broken part because you will need them when you glue the part back together. If some of the pieces are missing, fill the void with glue or insert bits of wood or wood putty.

Dowel Pin Repairs

Dowel pins holding furniture pieces together sometimes snap, leaving one or both ends in the holes. To make most dowel pin repairs, you must first bore the dowel out of the hole. Fig. 64-9. Use a drill with straight-shank bits slightly smaller than the diameter of the dowel. Drill only to the depth of the dowel, since it is quite possible to bore a hole too deep or even drill through to the other side. Since boring through the hardwood dowel is tougher than boring through the soft wood of furniture, it is possible to tell by feel when to stop. Force out what remains



64-8. A broken chair rung can be repaired by filling the break with glue, pressing the parts together, and binding the run with a tight wrap of masking tape.

of the dowel with a small chisel or knife, being careful not to enlarge the hole. Flush the remaining glue with vinegar before selecting a new dowel which fits the hole snugly. Spiral- or straight-grooved dowels are the best because they allow excess air or glue to escape after the dowels are inserted. If the parts of the joint fail to come close together, the dowel may be too long. If this is the case, cut a piece off one end, round the cut with a

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Tightening Loose Furniture Joints

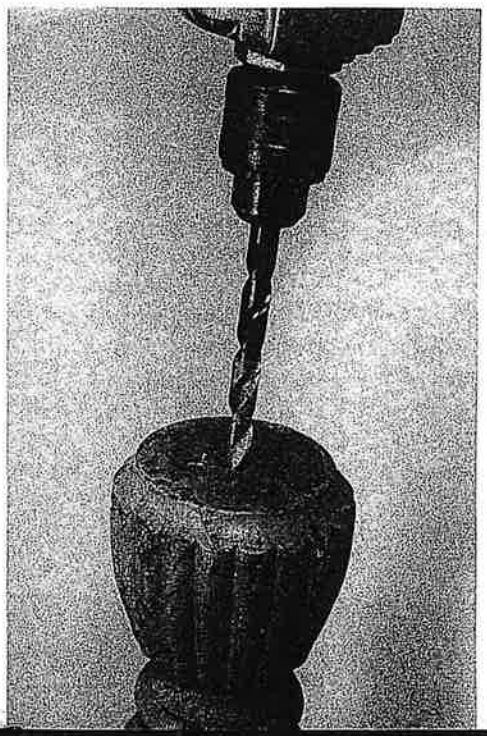
Loose joints are most commonly found in chairs, sofas, and tables. This condition generally results from heavy use and movement. In addition to rough usage, joints may also become loose from shrinkage of the wood. To make a permanent repair, the joint must be tightened properly. It may be advisable to reinforce a joint with added mechanical devices such as those described in the following paragraphs.

Tightening a Joint with Thread or Cloth

If the piece is not too loose in its socket, it can often be tightened by wrapping thread around the loose part. To repair a loose rung, for instance, wrap the ends with a single layer of thread. Fig. 64-13. Coat the thread with adhesive so that it will hold onto the wood. The thread gives the ends of the rungs just enough added thickness to make the joint between the rung and the socket tight. When the adhesive on the thread dries, coat the socket holes with glue and insert the rung. Clamp until the glue dries.

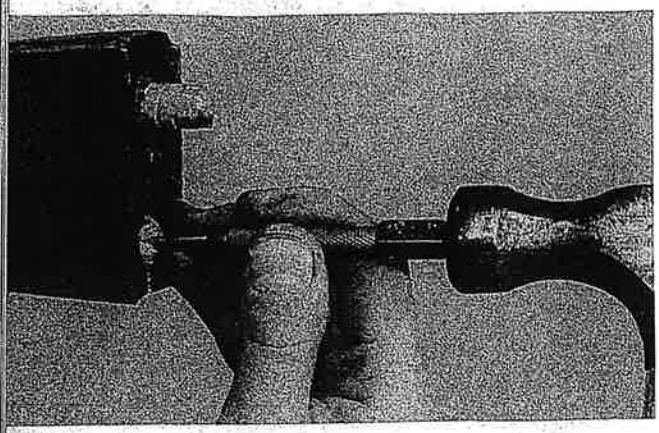
Another method for a round or square joint is to cut some cloth strips narrower than the end of the part to be inserted into the hole. Place these cloth strips, in the form of a cross, over the end of the piece. Fig. 64-14. Since the cloth will stretch when being inserted into the hole, trim the material on the sides from one-half to

64-11. Reboring the caster hole.



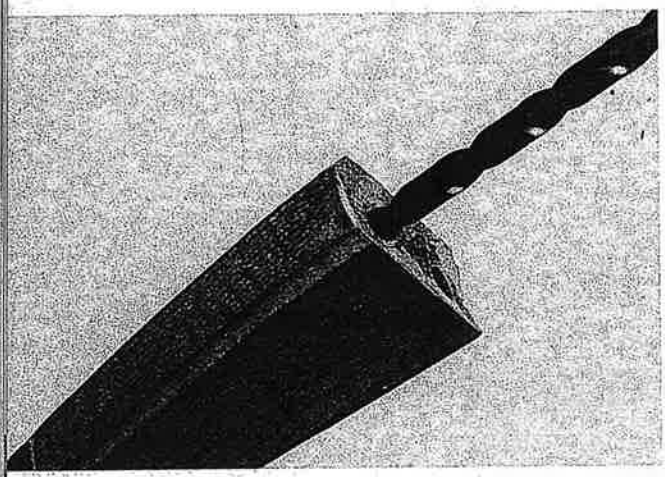
64-12. Inserting the new dowel.

64-13. Wrapping the end with thread increases the diameter of the rung.

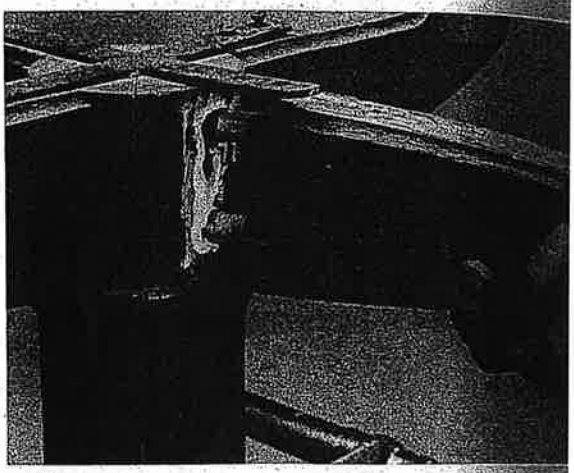


64-9(a). Mark the exact center of the old dowel with a sharp punch.

64-10(a). Squeeze some glue into the dowel hole and insert the new dowel.



64-9(b). Drill out the old dowel, in both pieces if necessary.



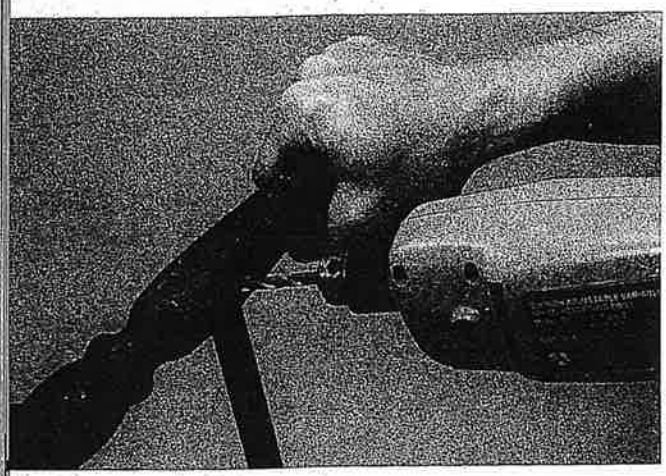
64-10(b). Apply a thin coat of adhesive around the dowel and fit the pieces together.

knife or abrasive paper, and then follow the directions for gluing. Fig. 64-10.

• *Mending Split Legs with Caster Inserts*

Loose casters can cause furniture legs to split. You can avoid trouble by tightening the casters with new plastic inserts and new caster assemblies. Rebore the hole into which the caster is inserted with a drill the same size as the hole, to make it clean and smooth. Fig. 64-11. Select a dowel the same size as the hole you have just drilled, coat it with adhesive, and slip it into place. Fig. 64-12. Cut off the dowel flush with the surface after the glue has dried and redrill the caster insert hole, making sure it is the same diameter as the shaft of the caster. A wobbly leg can cause the caster to split it when weight is applied. As an added precaution, be sure all legs are firmly secured to the piece of furniture.

64-14. Applying cloth strips to the end of the rung.



64-15. Drilling a dowel hole through a chair leg and rung.

three-quarters the depth of the joint. Apply glue and assemble the joint. If the cloth protrudes out of the joint, closely trim it with a razor blade and wipe off any excess glue with a damp cloth.

• *Plugging a Round Hole with a Dowel*

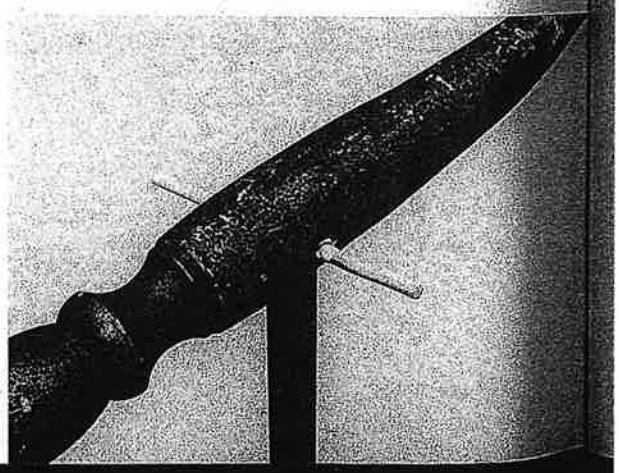
Receiving holes often enlarge and must be tightened. One way to do this is to remove the loose piece and glue a piece of hardwood dowel (of the same diameter as the hole) into the receiving hole. When the inserted section is dry, cut the dowel off flush with the surface and drill a new hole for the part to be inserted.

Cross-doweling can also be done to tighten a loose rung. Remove the rung from the chair; clean the socket hole and the turned end of the rung. Apply adhesive to both the rung end and socket hole. Insert the rung and clamp. Then drill a 1/8″ hole through the leg and the turned end of the rung. Fig. 64-15. Insert a small dowel, well glued, into the drilled hole. Fig. 64-16. When the glue has dried, cut the dowel flush with the surface and sand smooth. Nails have also been used the same way, with ends filed flush.

• *Tightening a Joint with a Screw*

If the joint is one where the hole does not go all the way through the receiving member, as is the case with stretchers and some mortise-and-tenon joints, it may be tightened and strengthened by inserting a screw through the base of the hole and into the second part. By countersinking the receiving hole from the outside, the screw head will be beneath the surface when driven into the part to be tightened. The countersink can be plugged later with a small piece of dowel glued in place, smoothed, and finished.

64-16. The dowel is inserted through the hole. After the glue dries, the ends will be cut off flush with the leg.



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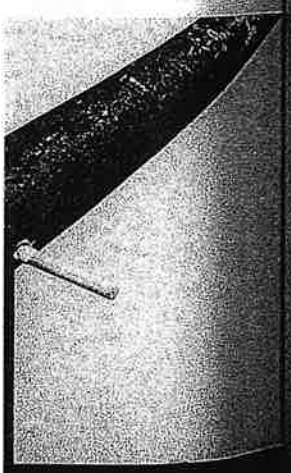


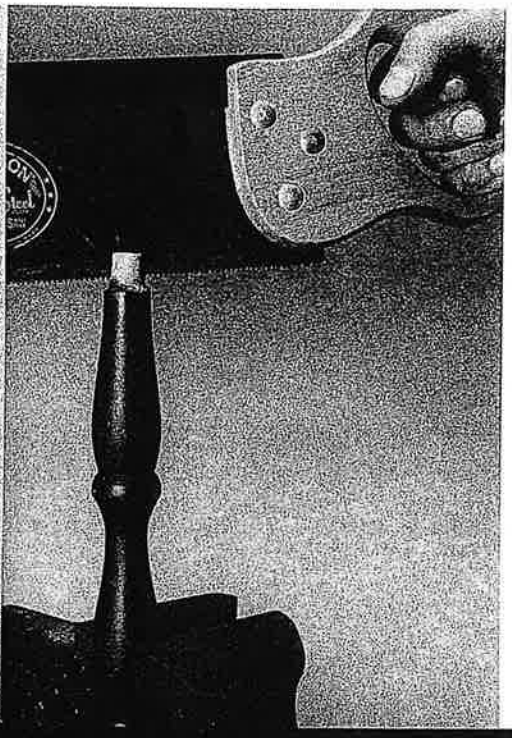
• *Tightening a Joint with a Wedge*

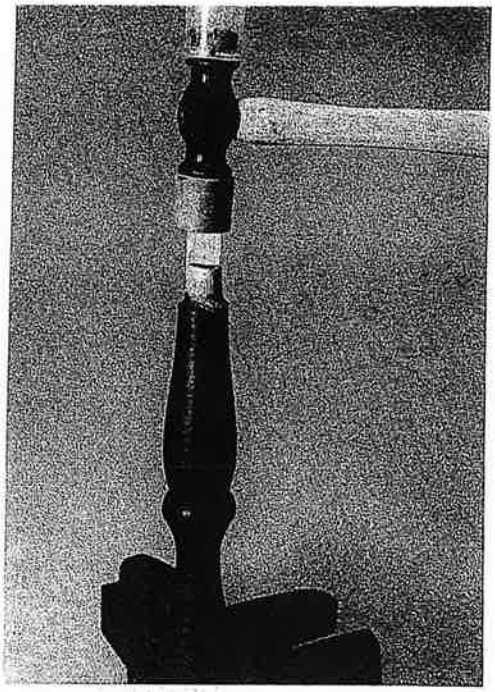
Thin wood wedges (hardwood is best) may be used to widen a round or square piece so that it will fit snugly against the sides of the hole into which it goes. To accomplish this, cut a saw kerf (slot) into the end of the piece with a backsaw or dovetail saw. Fig. 64-17. Be careful to cut straight and not split the wood. The saw kerf should be fairly deep, but should not cut into the exposed portion of the piece.

With a sharp knife, cut a thin wedge as wide as the receiving hole. Apply glue to both the kerf and the receiving hole. Start the wedge into the kerf. Fig. 64-18. Set the piece into the receiving hole and drive it into place with a soft-faced mallet. If the thickness and length of the wedge are correct, it will hit at the base of the holding hole, widen the cut slot, and thus hold the piece tightly in place. The piece must be clamped together until the glue dries. Fig. 64-19.

When the piece to be widened (chair leg, rung, tenon, etc.) is to fit into a hole that goes all the way through the holding piece, cut a slot, apply glue, and assemble the pieces. Then drive in the wedge, allow the glue to cure, trim off the excess material, and sand the surface to a smooth finish.

64-17. Cutting a kerf into the end of a chair rung.





64-18. Using a mallet to drive the wedge partway into the kerf.

• *Tightening a Square Joint with a Shim*

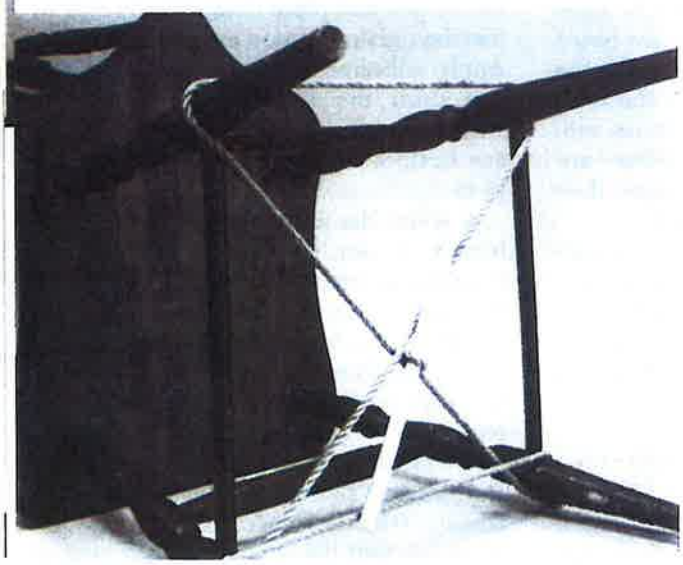
Shims are excellent for tightening mortise-and-tenon and similar square-sided joints. Shims of hardwood are best. These shims may be of even thickness or slightly tapered, but they should be as wide as the receiving hole. Apply the glue to the hole and carefully drive the shim into place.

• *Adding Corner Blocks*

Chairs which have cloth-covered, padded seats must depend almost entirely upon the strength of the joints in the seat frame to hold them together. When such chairs are subjected to heavy strain, there is a greater chance of joints coming apart than is the case with chairs that are constructed with solid seats. The padded-seat

64-19(a). One way to clamp a chair rung is to use a strap clamp.

64-19(b). The chair rung can also be held in place with a tourniquet.



chair and similar styles of furniture, such as overstuffed chairs and sofas, should have additional support in the form of screws inserted into the frame.

The best method of repairing and strengthening loose joints in such furniture is by means of hardwood corner blocks. First remove the padded seat by taking out the screws on the underside. Then cut triangular blocks to fit into the four inside corners of the seat frame. They must fit evenly into the corner, with all edges flush against the frame. When possible, the triangular blocks should be at least 1½" thick and the side edges over 3" long. To prevent splitting, drill clearance holes at an angle through the longest side of the triangular block for the screws that are to go into the seat frame. Countersink for the screw heads. Apply glue and screw the blocks into place. Once the glue has dried, fasten the padded seat with screws.

If a corner block is missing, remove one of the remaining blocks and copy it. Then re-install both. If a metal brace is missing, it can be replaced with a metal brace of the same design or with a wooden block.

Working with overstuffed furniture is more difficult since the padding, and sometimes the springs, must be removed. If you are not qualified for this work, it is best left to a professional.

Repairing Furniture Tops

Furniture tops usually have to be removed to be repaired. Turning the object over will most likely show you how it is fastened. The usual systems employ wooden fasteners with screws, recessed screws in aprons, glue blocks, and corner brackets with wing nuts. Except for the latter, simply turn out all the screws and the top will usually come free. In the case of the corner brackets, there is a hanger bolt at a 45-degree angle in the leg. This bolt slips through the center hole in the corner bracket, where it is tightened with

a wing nut. If the leg is loose, it can be tightened by giving the wing nut a turn or two. To take off the legs, remove the wing nuts. The apron frequently found fastened to furniture tops can usually be taken off by removing the screws holding it in place.

Warped tops can be repaired by a heat and water treatment. That is, dry out the convex (curved out) side of the board and/or dampen the concave (curved in) side. A heat lamp makes a good source of heat, while moisture can be applied with a wet sponge or towel. Fig. 64-20. Once the board is no longer warped, seal the surfaces.

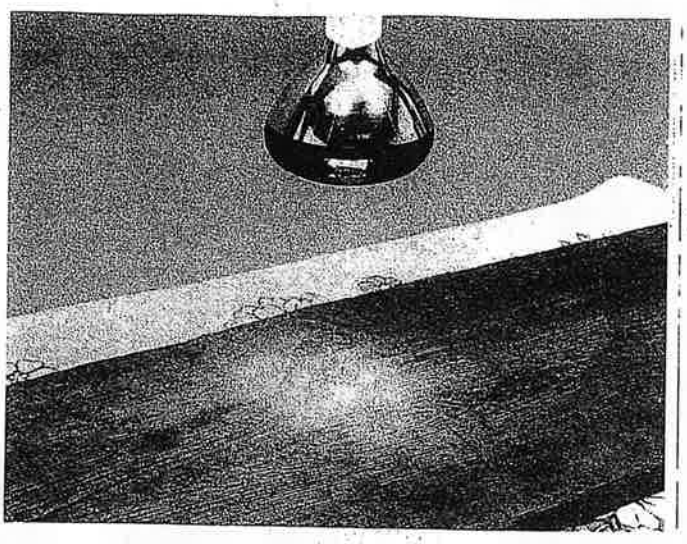
If this method does not solve the warpage problem, make a series of parallel cuts with a power saw, each about one-half the thickness of the top. These saw kerfs should run with the grain, but should not go to the edges where they would show. Keep the kerfs 3″ to 4″ apart, and do not make cuts in areas where fasteners are located.

After the cuts are made, clamp the top flat, keeping the clamping devices away from the saw cuts. Then cut wood splines to fill the kerfs. If the top surface is concave, cut the splines to fit snugly since they must act as a filler to keep the board flat. If the top surface is convex, make the wood splines a little wider than the kerfs and plane to a slightly wedged cross section. Thus, when the wedge splines are tapped into the kerfs, the pressure they tend to exert will flatten the top.

With either a concave or convex surface, insert the splines with adhesive, wipe the surface clean, and allow the glue to cure completely before removing the clamps. Sand the splines flush and apply a sealer to keep the moisture content fairly constant.

For securing the repaired boards to the top frames, proceed as follows:

1. If a top consists of two or more boards, scrape any old glue from the edges and roughen them slightly, so that the new glue will have a "tooth" to hold onto.



64-20. The heat and water treatment for removing warp. Place a wet towel beneath the concave side of the board and a heat lamp above the convex side.

2. Fill any screw holes with wood putty. Be sure to pack it well into the hole and then allow it to dry completely.

3. Turn the boards upside down on a flat surface and place them side-by-side in matched grain position over waxed paper. Apply adhesive to the contacting edges and draw the boards together with a wedge clamp. On small tops, bar clamps are best, with wood blocks under their jaws.

4. Place the frame upside down on the boards. Locate its exact former position from marks left at the edge of the frame. Reinsert all screws that previously held the top to the frame and tighten them securely. In addition, install glue blocks at the joints between the top and frame, at each end of the frame, and along the frame sides. Besides being glued in place, the blocks should also be held with screws. Drill clearance holes through the blocks so that the screws will not bind in

them, and then countersink the holes. Use flathead screws to take full advantage of the pull against the head when the screw is tightened.

Repairing Drawers

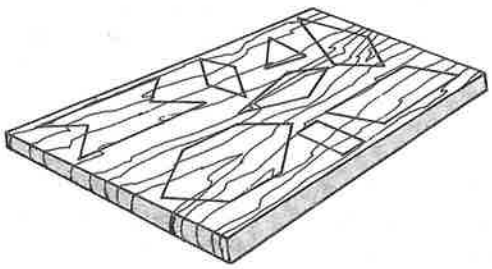
Since furniture drawers are subject to extra hard usage, their joints frequently become loosened. Should this occur, the drawer should be taken apart and reglued.

Turn the drawer upside down to remove the bottom. If the drawer back sits over the bottom, remove the brads or staples that hold the bottom to the back. Slide out the bottom. Then remove the sides from the front and back. If the bottom fits into a groove in the back, tap open the sides near the back and then remove the back. Slide out the bottom. Care must be taken in removing the sides from the front if they have been connected to each other with dovetail joints. To release the strain, tap on a small, flat board held against the drawer sides and next to the joint.

After thoroughly cleaning away the old glue from the joints, apply adhesive to all the joints and reassemble the drawer. Do not apply glue to the edge of the bottom because the solid parts of the drawer will expand and contract, while the bottom (of hardboard or plywood) will not. Insert brads or staples if the back sits over the bottom. Check to see if the drawer fits properly and slides in and out smoothly. Weak drawer corners can be strengthened with corner blocks. Sometimes glue blocks are added to the underside of the drawer between the sides and bottom.

If the drawer drags or sticks along its sides or its slide, it may have to be sanded or planed. A slight drag may be relieved by rubbing paraffin or furniture wax on the sides or slides. If the drawer is too loose vertically, build up the slide by gluing thin strips of wood to it.

64-21. These patch shapes will accomplish most surface patching jobs.



Patch Repairing

Mild scratches which are confined to the finish and do not extend into the wood can be easily repaired. For example, a minor abrasion on a shellac surface can usually be removed by brushing alcohol on the damaged area. The alcohol liquefies the shellac, which then flows into the scratch and rehardens in a short time. The same technique can be employed for lacquered surfaces, except that lacquer thinner is used in place of the alcohol.

Deeper scratches can, as a rule, be repaired with shellac sticks, applying as directed by the manufacturer. See Unit 56. However, when the damaged area extends deeply into the wood, the blemish should be cut out and replaced with a patch of veneer or solid wood whose grain and coloring closely match the original wood.

The shape of the patch is important. To achieve a good grain match, for instance, the lengthwise ends of the patch should be cut at a 45-degree angle to the grain. If an end is cut at right angles, there will be noticeable evidence of the repair. Figure 64-21 illustrates several shapes that will be adequate for most patching jobs. Note that where the end edges of the patch cross the grain, they do so at an angle of 45 degrees, and the side edges run with the grain in long patches.

Make a cardboard template of the patch shape and scratch its outline on the sur-

face to be repaired. To dip out the "grave" for the patch, cut down along the scratch marks with a sharp chisel. Then, with a mallet, hit the chisel lightly into the surface along the same lines. Hold the chisel with the beveled edge toward the patch and perpendicular to the surface. Cut square corners. It is important to cut down to the correct depth. When a shallow patch is to be glued in place, its upper surface should be slightly higher than that of the surrounding area. This raised surface can later be sanded level with the surrounding area. Disregard the chisel marks on the bottom of the grave. They actually increase the holding power of the adhesive.

To glue the patch, apply adhesive to the edges of the patch and the sides of the hole. Press the patch into place, leaving its surface a bit above the surrounding wood. If the grave has been cut too deeply, insert a small brad or pin in the cracks on opposite sides so that the patch will not settle too far into the hole. Before the glue has had a chance to dry, scrape out some of the glue with a pin so that the level of the glue is just below the surface. Remove any pins and brads used to raise the patch before the glue has hardened.

Let the patch set for at least 24 hours in order to make certain that the glue is hard. When you are sure that the glue has set and can take some work, sand the raised patch down to the level of the surrounding wood. Do not press down too hard on the patch as you may damage it. Sand with the grain, using extra fine abrasive paper. Be very careful and deliberate during this phase of the operation. Hasty and careless work here may result in an unsightly repair. The last steps are to fill in the patch outline with a wood filler which can take a stain or with a shellac stick of the proper color.

When patching furniture surfaces, your intent is usually to refinish the entire piece. In such cases, you can use different materials for the new finish, especially when you plan to stain the entire surface. But when the patch alone is to be given a finish, it is best to use the same materials that were used for the original finish of the piece.

Repairing Veneer Surfaces

The veneer on older pieces of furniture often comes loose and peels away from the solid core. These curled, wrinkled, and/or blistered segments of veneer are unsightly. Furthermore, if left untreated, they will break off.

To reattach loose veneer, scrape the old glue from the base wood with a small, sharp knife or razor blade. Work the cutting tool in under the veneer as far as possible, being careful not to break the surface. If all the glue does not come out, apply a solution of vinegar and hot water under the loose veneer. The solution will eventually melt the glue, which then can be scraped away. Wait until the area has dried completely, then reattach the veneer to the base wood with polyvinyl acetate glue. Wipe off as much excess glue as possible. Lay plastic sheeting or waxed paper over the repaired area to prevent excess glue from sticking to whatever clamping device you use. After the adhesive sets, carefully wipe away any excess adhesive with a damp cloth. If it is not possible to use clamps to secure the veneer, masking tape can be placed over the repaired area. If neither clamps nor masking tape can be employed, the patch can be secured by using a weight, such as a sandbag. Allow the adhesive to set for at least 12 hours before removing the weight from the repaired area.

Even with the most careful clamping techniques, you may end up with a bubble or two in the veneer. If you have a glue injector, flattening these bubbles will be a simple job. Polyvinyl acetate adhesives are usually too thick to use full

strength in glue injectors, so mix the glue with an equal amount of warm water or solvent before placing it in the injector. Afterwards, clean the adhesive out of the injector with vinegar and warm water so that you may use the injector again.

Plastic Laminate Repair

Rust rings, minor scorches, or black marks from cooking utensils left on plastic laminates can frequently be removed with scouring powder. But for more serious damage to the surface, patching of some type is generally necessary. If the laminate is a standard color or pattern, a match should be no problem. An edge-to-edge patch is simple to make and is seldom noticeable.

To patch and/or re-cement a plastic laminate, first dissolve the old adhesive (using a lacquer thinner or other appropriate solvent) so that it can be scraped up. Pry up the laminate with a small, sharp knife so you can get the solvent underneath. The patch is made by scoring an outline of the damaged area onto the new laminate and then cutting it out with a fine-toothed hacksaw blade. Cut carefully beyond the scored mark, and then file down to size. Next draw an outline of the patch pattern onto the surface being repaired and, using a sharp knife, cut a hole for the patch. Apply adhesive to both surfaces and press the patch into place. Wipe away any excess glue and then clamp, placing waxed paper between the clamp and the patch so that excess glue will not stick to the clamp. If a contact adhesive is used as described in Unit 43, no clamping is necessary.

SECTION V

Questions and Discussion Topics

Unit 56

1. Why is it important to remove excess glue before finishing wood? How should the glue be removed?
2. Describe three ways of repairing a dent or crack in wood.
3. What is the purpose of bleaching wood?
4. Preliminary fitting of hardware is usually done before a product is given a finish. Why do you think this is so?
5. What is a tack rag? For what is it used?

Unit 57

1. What does an air compressor do? What is the significance of an air compressor's cfm rating?
2. What is the purpose of an air transformer?
3. Spray guns can differ in construction and operation in three ways. Explain these.
4. Describe two kinds of spray booths.
5. Describe four spraying problems and tell how to avoid them.

Unit 58

1. What factors must be considered when choosing a finishing process?
2. List the steps in applying a standard finish.
3. What is wash coating? Why is it done?
4. What is the difference between a penetrating finish and a surface finish? Name three kinds of penetrating finishes.
5. Describe two simple shop finishes.

Unit 59

1. What is the purpose of staining?
2. Why is sap staining sometimes necessary?
3. Describe the materials that go into stain.
4. Discuss the advantages and disadvantages of water stains.
5. Describe the two types of oil stains.

Unit 60

1. What are the two reasons for applying wood filler?