

Repairing Finishes: Two Ways

1. Burn-in resins hide deep scratches

by Rick Bütz

It's frustrating to discover a deep scratch in a nicely finished piece of furniture. A scratch rarely goes unnoticed and it may be unfairly interpreted as a glaring defect in the furniture itself. With any luck—and light damage—a surface scratch may be easily rubbed out with steel wool, but usually not.

Over the years, furniture makers have developed lots of tricks for touching up damaged finishes. A favorite method for repairing deep scratches is called "burning-in." The repairer fills the scratch with melted shellac resin, matches the color and grain of the surrounding wood with stains and a small brush and, finally, touches-in the appropriate finish. Damage to oil, varnish, shellac and lacquer finishes can be burned-in; polyurethane and other plastic finishes sometimes blister.

For burn-in work, you'll need shellac sticks of various colors, a special knife, a heat source, padding lacquer and powdered blending stains. Burn-in sticks are sold in hundreds of colors, but I keep only a dozen on hand in the colors of woods I usually repair. Clear or translucent sticks are available and they can be color-matched using the blending stains. Burn-in or shellac sticks are made of various pigments and resins and have a consistency similar to the wax used for sealing letters. My burn-in knife is like a palette knife with a curved, flexible blade. A small alcohol lamp is a good heat source. Use the lamp carefully; never leave it burning unattended. Although electrically-heated knives can be used, I prefer the alcohol lamp for its more delicate heat control.

To repair a scratch heat the knife tip with the concave side toward the flame. This keeps any soot that forms from contaminating the resin. Judging the proper temperature takes practice. If the resin bubbles and smokes when it touches the knife, it's too hot. If it forms drops that quickly resolidify, it's too cool. When it's right, it's almost watery. Once you've found the correct

temperature, hold the knife like a pencil and carefully flow the hot resin into the scratch. The knife can touch the wood surface, but you must keep it moving to get an even flow. Fill the scratch, clean the knife by heating it and wiping it with a rag, then level the resin by heating the knife once more and moving the convex face quickly over the surface. Keep the knife moving whenever it's hot enough to soften the resin, or you will damage the surrounding finish. Aged shellac and varnishes can be particularly sensitive to heat. If the resin from the burn-in stick bubbles up and sticks like chewing gum instead of flowing smoothly when heated, the stick is probably stale and should be replaced. The sticks have a shelf-life of six months to two years and if cracked and checked are probably stale.

When the scratch is completely filled and the surface is smooth, the final leveling is done with a piece of 600-grit wet/dry sandpaper wrapped around a small felt block. With water as a lubricant, gently remove any excess resin. Be careful not to sand through the finish surrounding your repair.

There's another method using a different burn-in stick—called a Nolift-stick—which was developed several years ago by Mohawk and Behlen. It uses a resin stick that dissolves in a solvent that won't affect the surrounding finish. During sanding the solvent is used as a lubricant and can be applied directly with a felt block. The solvent is called Brasive by Mohawk; Behlen sells it as Abrosol.

Regardless of which stick is used, once the surface of the repair is level with the finish around it, color and grain differences can be matched. The traditional method of applying color over a small area is to use a French polishing technique with padding lacquer and finely powdered blending stains. These dry stains come in many different shades and can be mixed to create an infinite range of colors. You can match the most delicate shades with surprising control. Padding lacquer is compatible with many finishes, but you should experiment with it before trying to repair a valuable piece. If the lacquer's gloss is higher than the surrounding finish, you can rub it out with fine steel wool. An

alternative to commercially made padding lacquer is a traditional French polish solution of equal parts of boiled linseed oil, 5-lb. cut shellac and alcohol. Experiment with the proportions to get a quick-drying mixture.

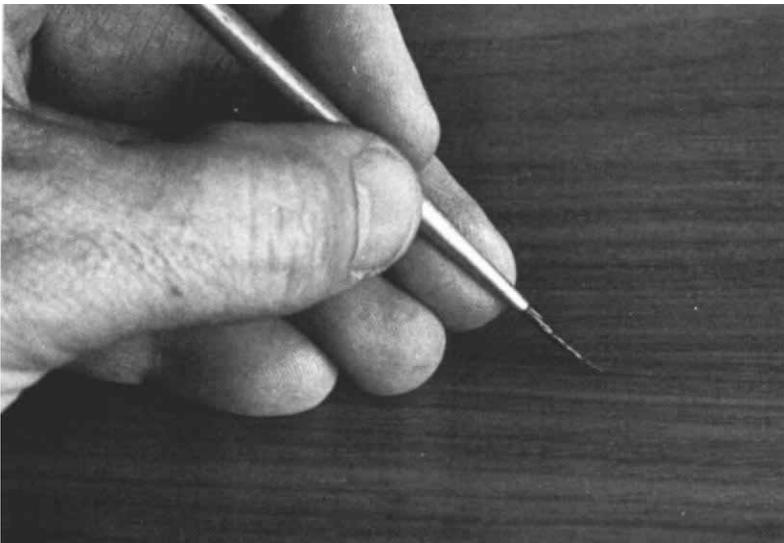
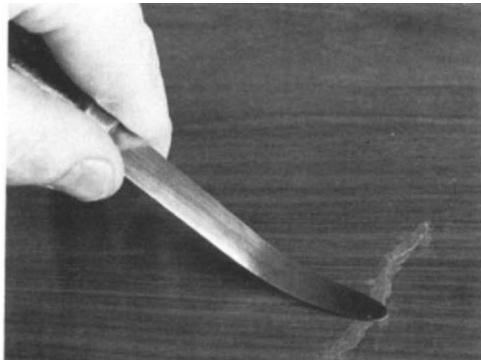
To use the padding lacquer or French polish, make a cloth rubbing pad out of lint-free, absorbent cloth. Fold the cloth upon itself to make a ball about the size of an egg. Apply a small amount of padding lacquer to the cloth and tap the palm of your hand against it to evenly disperse the liquid. Don't saturate the cloth. Then apply the lacquer over the scratch by stroking lightly in the direction of the grain, with the pad barely touching the wood. You want to build up a thin layer of lacquer, to which the stain will adhere.

Next, select the desired color of blending stain and apply a thin layer with your index finger. Again, pad lacquer several times over the filled area and wipe a thin layer of the stain from your fingertip onto the surface. Once the stain has been applied, lightly pad lacquer over it. The powder will dissolve when it comes in contact with the liquid, and create a stained finish. Repeat this process until the desired shade has been gradually built up over the burned-in area. If the color should go too dark or doesn't match, clean away the stain with alcohol or padding lacquer solvent. Let the finish dry for a few minutes before starting over. Padding technique requires a little practice, but in time, you will be able to match the most subtle color variations. The real secret is to apply the padding lacquer with as light a padding stroke as possible. This will prevent the stain from "shifting" or washing away. It's better to apply too little stain than too much, as it is easy to darken an area but impossible to lighten it without starting over. Experimenting on scrap pieces will give you a taste of controlling color. Use as little stain as possible to achieve the desired effect.

With the wood color matched, the grain lines can be touched in. If the original wood finish shows porous grain texture, as in oiled walnut, teak or oak, it's a good idea to duplicate this texture in the repair. Use a needle or razor blade to carefully scratch the grain texture



For repairing finishes you'll need (from left to right) an alcohol lamp, resin sticks, a burn-in knife, and a felt sanding block. To match colors, blending stain, French polish or padding lacquer, a cloth pad and a fine brush are used.



With the heated burn-in knife, concave side down, fill in the scratch by flowing hot resin into it (above, left). Be careful not to get the knife too hot. When the scratch is filled, reheat the knife and wipe it clean with a rag before leveling the built up resin (above, center). Keep the knife just hot enough to make the resin flow as you work it. After the repair has been leveled and sanded with 600-grit wet/dry sandpaper, apply padding lacquer or French polish to act as a base for the powdered blending stain (above, right). The stain evens out color differences. Use a fine sable brush to touch-in grain detail over the repair (left). Then pad over a couple of coats of padding lacquer and when that has dried overnight, gently rub out the repair with steel wool and blend it into the surrounding finish.

into the resin. Then mix a few drops of padding lacquer and dark powder stain on a small piece of glass. Carefully paint in the grain lines over the repair, using a fine sable brush. Blend these lines and carry them into the natural grain on either side of the repair. After letting the repair dry for 30 minutes, lightly pad several layers of padding lacquer over the patch to seal and protect it.

You can let the padding lacquer serve as a final finish but it's better to apply a coat of the finish used on the rest of the piece. Once dry, the entire repair can be rubbed with steel wool or pumice to match the gloss. The result will be an invisible repair permanently bonded to the wood and undetectable under the closest scrutiny. □

Rick Bütz is a professional woodcarver and he repairs furniture in Blue Mountain Lake, N.Y. Photos by Ellen Bütz. Materials for burning-in can be purchased in professional quantities from H. Behlen and Bros. Inc., or from Mohawk Finishing Products, both at Route 30N, Amsterdam, N.Y. 12010, and by mail order from Constantine's, 2050 Eastchester Rd., Bronx, N.Y. 10461, or Garrett Wade Co., 161 Avenue of the Americas, New York, N.Y. 10013.

2. Knife technique makes the difference

by John Revelle

You can fill scratches by burning-in on new furniture and in refinishing, repair or restoration work. In the first two, knife technique isn't important since the repair will be finished over. In repair and restoration work, however, a hot knife in a clumsy hand can damage as much as it can fix.

When burning-in already finished work, I like to run the resin into the scratch and smooth it completely with my knife, skipping padding lacquer and stains and all but a cursory sanding. I prefer the Nu-Glo sticks made by the Star Chemical Co. Inc. These sticks were developed for marble repair and have an indefinite shelflife. They don't crack and go stale as do other types. Mohawk sells an equivalent product called MF or marble-fill stick. There's an assortment

of colors so it's not hard to match whatever wood you happen to be working on. Since I don't use stains, I pick a stick that exactly matches the background color of the wood I'm repairing.

I've found that Star's Opal #750 knife works best for me. The tool has a $\frac{3}{4}$ -in. wide flexible steel blade with a shallow bevel ground on one side of its skewed working end. It's sometimes sold as a cement finisher's knife. I use the electric knife-oven sold for the Opal knife. If you use two knives, one can be heating while you work with the other. It takes about a minute to bring a knife to the right temperature. To make a repair I heat the blade and touch the bevel side of the knife's heel (its obtuse point) to a resin stick so it melts just a small bead. I quickly push the resin-coated heel into the scratch at a point farthest away from me. Rocking the knife gently back and forth flows the resin evenly into the scratch. I repeat the process until there is just enough to fill the scratch level with the surrounding surface. Then I wipe the hot knife clean with a rag or a paper towel and reheat it. To level the patch, I drag the heated knife along the scratch, bevel-side down, in light rapid strokes, lifting the knife off the surface between strokes. Moving the knife continuously is critical. You can light a cigarette with a hot knife, so stopping it even for an instant will char the finish around the repair.

Small repairs can be done with just a bead or two of resin, larger ones take more. Take care not to mound the resin above the level of the surface around it, or the repair will be conspicuous. If you do get too much resin in the repair, hold the knife firmly, bevel down, and with short, chevron-shaped strokes work the excess resin back and down into the scratch. If air bubbles turn up, pierce them with the heel of a hot knife and rework the resin. The temperature of the knife can be varied to help control resin flow. As the knife gets cooler, the material gets harder to spread. With practice, you should be able to smooth the resin without sanding. But if you can't get a perfect surface with the knife alone, complete the smoothing with 400-grit or 600-grit wet/dry paper.

With the scratch filled and leveled, you can grain the wood with a hot knife and a resin stick that matches the color of the grain lines in the wood. Draw a hot knife's sharp edge through the darker stick to coat it from heel to toe,



To fill a scratch, apply a bead of resin to the heel of the hot knife. Then push the resin-coated heel into the scratch and rock it gently to distribute the resin.



Clean and reheat the knife and drag it bevel-side down to smooth the resin to the surrounding surface.

then press the sharp edge straight into the repair in the same direction as the grain you are simulating. Some of the darker color will transfer to the patch. Continue the process until the grain lines match the surrounding wood. You can smooth the patch by dragging it with a hot knife as before. If you're repairing an open-grained wood, skip the smoothing step and sand with 400-grit wet/dry paper using mineral spirits or sanding oil as a lubricant.

Finally, I match the repair to the sheen of the existing finish by rubbing with fine steel wool or a soft cloth and rottenstone. I usually don't put any finish over the repair since I'm never sure what the original is. Overlaying with the wrong finish will often cause more problems than it will cure. □

John Revelle is a professional furniture restorer in Rohmert Park, Calif. Photos by the author. The materials he describes can be purchased from Star Chemical Co., Inc., 360 Shore Drive, Hinsdale, Ill. 60521.