

EXTENSION BULLETIN 295

# Refinishing Furniture



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**NATURAL FINISHES**

**MICHIGAN STATE COLLEGE  
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EAST LANSING**

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# Refinishing Furniture: Natural Finishes

By RUTH J. PECK and JESSIE E. MARION

*Extension Specialists in Home Furnishings*

The use of "Something Old and Something New" may be the means of making your home more beautiful and more livable. "Something old" may be a piece of furniture that's been in the family many years, it may be a purchase at an auction sale or an antique shop or it may be something you had thought about discarding. If it provides needed storage space or can fill a useful place in your home, consider what a refinishing job would do for it.

Refinishing methods and materials have been developed that make it possible, even for the amateur, to refinish furniture satisfactorily at home. A good refinishing job requires patience, time and much labor. Furniture should be worth the effort and expense of refinishing. Before refinishing a piece of furniture, study it from the viewpoint of design and utility. Does it need remodeling to improve the design or make it more useful? If it is not sturdy, can it be repaired and made structurally sound?

Woods such as walnut, mahogany, cherry, maple and oak have a natural beauty in their color and grain. The finish used on these woods should bring out this beauty. Furniture made of woods that do not have any particular color or grain can have a finish such as paint or enamel that covers the wood.

The steps in refinishing furniture are:

1. The removal of the old finish.
2. The preparation for the new finish.
3. The application of the new finish.

## REMOVAL OF OLD FINISH

Choose a method for removing the old finish which will not injure the wood and which is best suited for the type of finish to be removed. The removal of the old finish is simplified if the handles, knobs, and hinges can be removed from the furniture.

The materials and equipment needed for removing the old finish are:



Paint and varnish remover  
Denatured alcohol  
Steel wool—medium  
Sandpaper No. 3, 2, or 1  
Brush  
Putty knife  
Scraper

Small container for remover  
Soft lintless cloth  
Burlap or coarse cloth  
Smock  
Rubber gloves  
Newspapers

Two methods may be used for removing the old finish:

1. Soften the old finish by dissolving it with a liquid or powder remover.

2. Remove the old finish by friction, such as scraping or sanding.

A combination of these methods is frequently used in order to completely remove the old finish.



Fig. 1. Remove the old finish, which has been softened by a liquid remover, with a putty knife held firmly against the wood. Take care not to scratch the wood. The old finish can be wiped onto a newspaper which can then be burned immediately.

**LIQUID REMOVERS**

Liquid removers are effective, fast working and do not injure the wood (Fig. 1).

**Commercial Liquid Removers**—A good grade of paint and varnish remover will remove heavy coats of varnish, paint and enamel quickly and without injury to the wood. If lacquer is to be removed, select a remover that states it will remove lacquer.

Read and follow the directions on the container which will be similar to the following:

1. Shake the container thoroughly.
2. Pour a little into a small can. Keep the original container tightly capped.
3. Apply remover to a small area with a full brush, stroking in one direction only. Do not restroke after the surface is completely covered. Blisters or frostiness will soon begin to appear.
4. Let stand undisturbed for 3 to 5 minutes or for the time specified in the directions.
5. Remove the softened substance with a putty knife. An old toothbrush, an orange stick or a meat skewer is useful in cleaning carvings. A piece of burlap can be used on turnings to remove the first layer and steel wool to remove the last traces of the old finish.
6. Repeat applications of the remover until all traces of the old finish are gone.
7. Rinse as directed on the container or wash with alcohol and steel wool to remove any wax left from the remover.

**CAUTION: LIQUID PAINT AND VARNISH REMOVERS ARE INFLAMMABLE. DO NOT USE NEAR FLAME. BURN IMMEDIATELY ALL CLOTHS, PAPERS AND STEEL WOOL USED WITH THE REMOVER.**

**Denatured Alcohol**—This can be used with steel wool to remove thin coats of shellac and varnish (Fig. 2).

1. Pour a small amount of alcohol into a container.
2. Dip No. 0 steel wool into the alcohol.
3. Apply to a small area rubbing with the grain of the wood.
4. Wipe the softened finish off with a cloth or piece of burlap.
5. Repeat applications of alcohol until all of the old finish is removed.



Fig. 2. Use steel wool and alcohol to remove the finish from turnings.

#### POWDER REMOVERS

Powder removers are slow acting and the solution raises the grain of the wood. They may be added to a cooked laundry starch paste to keep the surface moist for a longer time.

**Lye**—is injurious to the wood and is not recommended.

**Tri-sodium Phosphate**—1 pound to 1 gallon of warm water or starch paste. Apply with a brush. Repeat applications, keeping surface moist until finish softens which may take up to 30 minutes. Rinse thoroughly with water.

**Commercial Powder Removers**—Apply and rinse as directed on the package.

#### SANDING AND SCRAPING

Sanding and scraping are slow methods but are satisfactory for removing layers of paint and enamel until the wood becomes exposed.



**Sanding**— Use coarse sandpaper No. 3, 2, or 1, depending upon the roughness of the surface.

— Place  $\frac{1}{4}$  sheet of sandpaper over a padded block of wood or felt blackboard eraser.

— Sand with the grain of the wood.

**Scraping**— Use a sharp-edged steel scraper or an old knife, taking care not to cut the wood (Fig. 3).

## PREPARATION OF THE NEW FINISH

### REPAIRS

Minor repairs may be made at home. Major repairs that include replacing broken parts or regluing the entire piece of furniture should be done by a cabinetmaker.

**Gluing**— Examine the surfaces to be glued. Scrape off all the old



Fig. 3. A scraper is used to remove the old finish from flat surfaces.

glue. If the surfaces are smooth, roughen them slightly with coarse sandpaper or by slashing the surface lightly with a knife.

Test the parts to see that they fit tightly. If they do not, plastic wood or wood putty may be used to fill the extra space. One or two strips of cloth may be placed over a dowel to make it fit snugly if plastic wood or wood putty cannot be used.

Casein glue and plastic resin glue come in powder form and are the most satisfactory for the amateur to use. Prepare according to the directions on the container.

1. Apply the glue to both surfaces and place them together. Immediately wipe away all the excess glue.

2. Allow the piece to dry under pressure for 24 hours. Pressure may be obtained by clamps or by using a rope and a stick to make a tourniquet. Protect the surface of the wood from damage by using pieces of soft wood or thick pads of paper placed between the clamps or the rope and the furniture.

#### SURFACE DEFECTS

**Removing Dark Spots**—Stains and darkened spots cannot always be entirely removed but they can be diminished by bleaching.

Make a solution of oxalic acid using 1 ounce (2 tablespoons) powdered or 2 ounces crystal oxalic acid to 1 pint (2 cups) hot water.

1. Apply with a dish mop or cloth. As the spot dries remoisten with the solution until the discoloration is removed. To prevent rings or light spots it is advisable to give the entire surface one wash with the solution.

2. Rinse well with a solution made of 1 tablespoon ammonia and 1 quart water. Follow with clear water.

**CAUTION: OXALIC ACID SOLUTION IS A POISON AND SHOULD BE SO LABELED.**

**Bleaching**—The blonde finish on furniture is brought about through bleaching. It is important that the bleach does not touch the hands, clothes or furnishings. One of the following materials may be used to bleach wood.

1. *Household bleach*—Follow directions on container for bleaching wood.



2. *Concentrated solution of oxalic acid* — Stir 6 heaping teaspoons of oxalic acid crystals into 1 cup of warm water. Some of the crystals will not dissolve. Apply and rinse as directed under "Removing Dark Spots."

3. *Commercial wood bleach* — Follow directions on container.

**Treating Red or Black Stain in Wood** — Some old pieces of furniture have a red or black stain that has penetrated deeply into the wood. Varnish remover will not remove the stain; in fact, its use may drive the stain further into the wood. A bleach or the use of No. 0 steel wool dipped in denatured alcohol may lighten the color. It is not objectionable if a small amount of the stain remains in the wood.

**Filling Small Holes** — A shellac stick is best for filling small holes, cracks and deep scars. These sticks are obtainable in a variety of colors and may be purchased at a paint supply store.

The following equipment should be near the hole that is to be filled: A flame (canned heat, alcohol lamp, gas jet) or an electric sol-



Fig. 4. Holes and large cracks are filled with stick shellac of matching color.



Fig. 5. Remove dents with a damp woolen cloth and a warm iron.

dering iron; a putty knife, an old steel knife or screw driver; shellac stick that will match the wood after the finish is applied (Fig. 4).

1. Heat the end of the shellac stick until it is ready to drip. Heat the blade of the knife at the same time.
2. Let the stick shellac drip into the hole to be filled.
3. Press the shellac into the hole and level it off with the heated knife. Reheat and clean the knife. Remove excess shellac with heated knife.
4. When the shellac has hardened, smooth it down with No. 0 or 3/0 sandpaper.

If the shellac stick is not available, mix fine sawdust with ordinary glue or household cement and fill the crack. Sawdust obtained from wood like that in the furniture will blend in color. Wood putty can also be used to fill cracks and small holes. Mix powdered stain, the color of the wood, with the dry putty before adding water. Round up the filling above the surface to allow for shrinkage as it dries.

### Removing Dents and Bruises (Fig. 5).

1. Place a damp cloth (1 thickness of woolen or several thicknesses of cotton cloth) over the dent or bruise.
2. Hold a warm iron lightly over the damp cloth. The steam will swell the fibers of the wood.
3. Repeat the process if necessary.
4. Allow the wood to dry thoroughly.
5. Sand with No. 1 or 1/2 sandpaper. Sand with the grain.

### SANDING

The success of a beautiful finish depends upon the completeness of the sanding which is done before the new finish is applied. Wrap  $\frac{1}{4}$  sheet of sandpaper around a blackboard eraser or a padded block of wood. Sand straight with the grain of the wood. Sand the wood well with each grade of sandpaper. After the final sanding the wood should be as smooth as glass (Fig. 6).



Fig. 6. A sanding block, for sanding large surfaces, can be made by wrapping the sandpaper around an eraser.



1. Start sanding with No. 1/0 or 2/0 sandpaper.
2. Finish the sanding with the very fine sandpaper, such as No. 5/0 or 7/0 sandpaper or garnet paper, or No. 320 to 400 waterproof carborundum paper.
3. Remove all traces of sand dust with a cloth moistened in turpentine or alcohol.

#### SPECIAL PROBLEMS

**When to Use Oil Stain**—Stain is very seldom needed. Occasionally, certain parts of a piece of furniture are made of a different wood. The side and back rungs of a walnut chair may be of birch or oak. Walnut oil stain may be used to blend these light woods with the walnut wood.

Occasionally, a wide board in a table or desk top may have a light streak in it. This is not a defect. It is sapwood which is the wood toward the outside of the tree and is lighter in color. The inner part of the tree is called heartwood and is darker in color. If desired, the sapwood may be given a coat of oil stain to make it tone in with the rest of the wood; however, the little variation in color is not objectionable.

Oil stain is the only stain recommended for use by amateurs. Varnish stains are never satisfactory and are not recommended.

Soft woods such as pine absorb oil stain very quickly and sometimes unevenly. The color may become too dark or spotty unless the wood is given a preliminary coat of a mixture of  $\frac{1}{2}$  linseed oil and  $\frac{2}{3}$  turpentine. If the preliminary coat is omitted the stain should be diluted with a mixture of  $\frac{2}{3}$  linseed oil and  $\frac{1}{3}$  turpentine. Test the stain on an inconspicuous part of the furniture.

Wipe the stain off immediately after applying it. If the color is not as dark as desired apply the stain again and leave for one minute or until the desired color is obtained.

Hard woods, as birch, oak and maple do not take the stain very readily. Let the stain stand on such woods for several minutes or until it becomes tacky before wiping it off.

Read the directions on the container which will be similar to the following:

1. Apply the stain with a brush to a small area at a time.
2. After a specified time, wipe off all excess stain. The longer the stain is left undisturbed the darker the color becomes.

3. Allow 24 hours for the stain to dry.
4. Seal the stained surfaces with thinned shellac (1 part shellac to 1 part alcohol).

**CAUTION: OIL CLOTHS ARE INFLAMMABLE. BURN THEM IMMEDIATELY OR PUT THEM IN WATER.**

**When to Use Paste Wood Filler**—Paste wood filler may be used on open-grained woods as walnut and oak if the pores are unusually large. This condition may be due to neglect and abuse of the wood. The paste fills the pores and gives the wood a smoother surface for the final finish.

Paste wood filler can be transparent, natural or dark in color. The natural color is used for light and golden oak; the dark, for dark oak, walnut and mahogany. Follow the directions on the can. Fillers are usually applied in the following manner:

1. Place a small amount of filler in a container and thin with turpentine to a brushing consistency.
2. Apply to a small area, brushing in a circular motion and across the grain of the wood.
3. Allow the filler to stand until the surface looks dull instead of shiny.
4. Remove all surplus filler by rubbing **across** the grain with a coarse cloth or burlap. Clean crevices or carvings by using a cloth over a wooden skewer or stick before the filler hardens.
5. Let dry 24 hours.

When penetrating wood seal is used as the finish, the paste wood filler, if it is applied, must be used **between** the first and second coat of seal. When varnish and shellac or other surface type finishes are used, the filler is applied before the first coat of finish.

### TYPES OF FINISHES FOR FURNITURE

The finish used on a piece of furniture will depend upon the color and grain of the wood, the use given the piece of furniture and the preference of the person who is doing the work. A soft, satin sheen is the most desirable for furniture wood. This effect is produced by using a penetrating finish or by rubbing down a glossy surface finish.

### PENETRATING FINISHES

Finishes of this type must be applied directly to the bare wood. They build up a seal from the inside out, which preserves and protects the wood. The penetrating finish selected for furniture may be the oil finish or the penetrating wood seal.

Oil finish darkens the wood and is best for use on dark woods as mahogany, cherry and walnut. The oil finish builds up slowly. It requires the application of many coats, with each coat rubbed in thoroughly.

Penetrating wood seal is a most satisfactory finish for the amateur to use. It makes an excellent finish for furniture, floors, and woodwork. It is easily applied, easily maintained, and it is easy to repair worn places.

Seals on the market vary greatly in composition, penetrating characteristics and durability. One group has the characteristics of an oil finish, a second group penetrates into the pores of the wood and hardens, level with the surface, and the third group forms a surface coating. The seals of the second group are the most practical to use. The finishes that form a surface coating may be thinned with equal parts of turpentine to obtain better penetration.

### SURFACE FINISHES

Finishes such as varnish, shellac and lacquer are surface finishes and produce a hard, glassy finish unless they are hand rubbed with pumice stone and oil. These finishes show scratches and worn places cannot be patched satisfactorily.

### APPLICATION OF THE NEW FINISH

The finish should be applied in a dust free room. Plan the order of work on the piece of furniture so that when the job of applying the finish is completed the article can remain undisturbed until dry. When applying the finish to chairs, small tables, etc., start by placing them upside down on clean papers on a table (Fig. 7). When all of the under parts are finished, turn the article right side up, in which position it can be completed and left undisturbed until dry.





Fig. 7. Turn the piece of furniture upside down and apply the finish to the underneath parts first.

#### PENETRATING SEALS

**Oil Finish**—Prepare a mixture of  $\frac{2}{3}$  boiled linseed oil and  $\frac{1}{3}$  turpentine.

1. Warm the mixture by placing the container in a pan of hot water.

**CAUTION: DO NOT HEAT OVER A DIRECT FLAME.**

2. Apply generously with a folded, lintless cloth, rubbing into the wood all the oil it will absorb. Apply oil and rub until the surface stays moist for several minutes after the rubbing is stopped.

3. Let stand 30 minutes.

4. Wipe off all excess oil. Care must be taken to get all traces of oil out of carvings and crevices before it hardens.

5. Rub well with a woolen polishing cloth for 10 to 20 minutes to bring out the luster.

6. Dry at least 24 hours before applying another coat.



Fig. 8. Apply the penetrating seal liberally at first with a folded cloth. Rub the seal into the wood, going across the grain and finishing with the grain.

Four to twelve coats of the oil mixture are needed to build up a satin finish. The piece of furniture may be used during the finishing process as these additional coats may be spaced a week or more apart.

If the oil mixture is applied once or twice a year thereafter, it will keep the furniture in good condition.

**Penetrating Wood Seal**—Read the directions on the container. Penetrating seals are usually applied in the following manner:

1. Apply seal liberally with folded cloth until the wood remains moist for a few minutes. Rub first in a circular motion, then finish by stroking with the grain (Fig. 8).

2. Allow to stand 15 to 20 minutes. Do not let the seal become tacky.

3. Wipe off all excess finish from the surface.

4. Dry 12 hours.

5. Rub lightly with No. 0 or fine steel wool.
6. Apply second coat of seal.
7. Let stand 10 minutes.
8. Wipe off excess seal.
9. Dry 12 hours.
10. Buff lightly with steel wool.

**CAUTION: OILED CLOTHS ARE INFLAMMABLE. BURN THEM IMMEDIATELY OR PUT IN WATER.**

#### SURFACE FINISHES

A waterproof varnish or a special waterproof shellac may be used on a table top or surface that is likely to get spotted with water and other liquids.

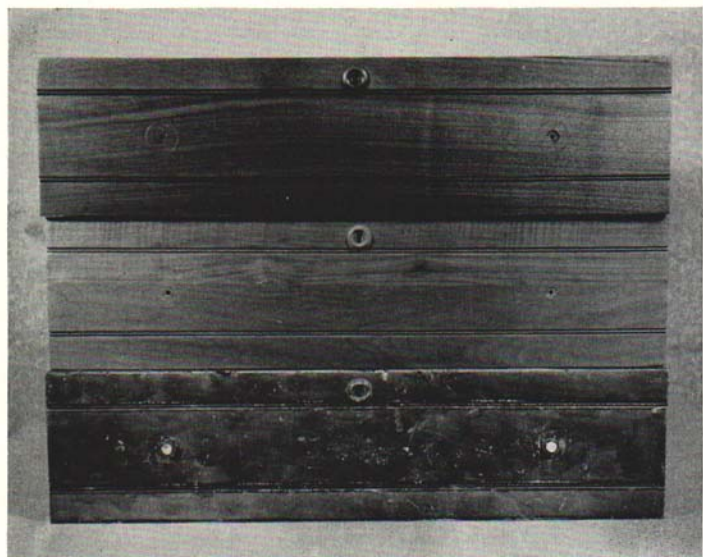


Fig. 9. (Top) Two coats of penetrating seal brought out the rich beauty of the walnut wood. (Center) The old finish was removed with liquid remover and the wood was sanded to satin smoothness. (Bottom) The drawer from a dresser before it went to refinishing school.



**Waterproof Varnish**—The first coat may be diluted up to  $\frac{1}{4}$  with turpentine.

1. Apply with a full brush, stroking back and forth with the grain, then across the grain. Finish by stroking in one direction only, with the grain (Fig. 7).

2. Dry 48 hours.

3. Rub lightly with fine sandpaper, No. 2/0 or 3/0.

4. Apply second and third coats in same manner as first.

5. Dry a week or more after last coat.

6. Rub to a satin finish. Dip cloth pad into rubbing oil (boiled linseed oil or paraffin oil) and then into FFF pumice stone. Rub lightly with long, even strokes over entire surface. Wipe with clean cloth.

**Shellac**—Dilute  $\frac{1}{2}$  with denatured alcohol.

1. Apply with a full brush, stroking in one direction only, with the grain. Restroke, if necessary, but not more than once or twice, as shellac sets quickly.

2. Dry 24 hours.

3. Buff with fine steel wool.

4. Apply second and third coats in same manner as first.

5. Dry 24 hours between coats.

6. Rub last coat to a satin finish with pumice stone and oil.

**Lacquer**—This is difficult for the amateur to use, as it sets so quickly. Clear brushing lacquer is applied in the same manner as is shellac. Lacquer must be thinned with a lacquer thinner. Alcohol, turpentine, and linseed oil cannot be used with lacquer.

### PROTECT THE FINISH

**Paste Wax** may be (1) used over any of the above-mentioned final finishes as added protection, or (2) applied to the bare wood as a final finish.

1. Place a small amount of paste wax on several layers of cheesecloth. Gather the corners of the cloth together so the wax is enclosed.

2. Apply a thin, even film of wax to the furniture, using first a circular motion then following the grain. (The friction causes the wax to melt and come through the cloth.)

3. Allow to stand 30 minutes.
4. Polish with a woolen cloth until all of the paste wax has been rubbed in and a hard film formed.

### CARE OF BRUSHES

**Cleaning**—Good work cannot be done with a brush which is not perfectly clean. The best practice is to clean a brush immediately after using it. The solvent needed for cleaning the brush depends upon the finishing material in which the brush was used. For a brush that has been used in:

- Varnish, paint, or enamel—clean with turpentine.
- Shellac—clean with denatured alcohol or shellac solvent.
- Lacquer—clean with lacquer thinner.
- Penetrating seal—clean with alcohol or turpentine.

A brush may be injured and is very difficult to clean if any finishing material has been allowed to dry in it. The brush may sometimes be made usable again by cleaning with one of the following solutions:

Soak the brush for 12 to 24 hours, or until the bristles soften and the paint is loosened, in one of the following:

1. Commercial paint brush cleaner.
2. Tri-sodium phosphate—1 teaspoon in 1 pint of warm water. Work the brush gently, pressing the bristles from side to side. When the paint is thoroughly loosened stroke the brush back and forth on an unfinished board. Wash in soap and water. In order to dry the brush without harming the bristles it may be suspended by a wire put through a hole bored in the handle or it may be placed in a jar or can with the bristles pointing up, where the air can get to them.

After the brush is dry, dip it in turpentine to restore the oil and fill the pores of the bristles. Wipe with a cloth and allow the brush to dry thoroughly.

**Storing**—If the brush is to be used again soon it may be left suspended in a jar or placed in a container with the bristles pointing up.

If the brush is not to be used for some time, wrap it in waxed paper and hang it up or lay it on a flat surface.

## CARE OF FURNITURE

Furniture is never "finished" as far as care is concerned. Wood needs to be cleaned, and oiled or waxed occasionally.

**General Cleaning**—Wash with one of the following:

1. Solution of linseed oil soap and water.
2. Solution of lemon oil and water.
3. A mixture of 1 quart of hot water, 3 tablespoons of boiled linseed oil, and 1 tablespoon of turpentine.

—Wipe the furniture with a soft cloth wrung out of the solution.

—Polish with a dry cloth.

After a thorough cleaning the furniture may be given a coat of wax, if desired.

**Removing White Spots**—White spots caused by water or heat on a finished surface can be removed if the spot has not penetrated the finish too deeply. The remedy will depend on the finish on the furniture.

Dampen a cloth with one of the following: oil of camphor, oil of peppermint, a few drops of ammonia, or a paste made of boiled linseed oil and rottenstone or pumice stone. Rub carefully with the grain. If the spot still persists, use fine steel wool moistened with one of the oils. It will be necessary to remove the finish if the spot still shows.

White spots on a lacquer finish are difficult to remove. A cloth slightly dampened with nail polish remover or lacquer thinner and stroked quickly and lightly over the spot will sometimes diminish or remove the spot if it is not too deep. Allow the lacquer to remain undisturbed until it hardens.

**Treating Scratches**—Scratches on dark woods may be colored by rubbing them with one of the following: Commercial scratch remover, oil stain, or rottenstone and linseed oil.

**Cleaning Wicker Furniture**—Wicker furniture can be cleaned with a scrub brush and a solution of 2 teaspoons tri-sodium phosphate to 1 gallon water. Use a stronger solution if the old finish is to be removed. Rinse with clear water. The new finish may be paint or a penetrating seal.

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