



French polishing, the venerable technique for applying a shellac finish, produces a high-gloss sheen as yet unmatched by any modern finishing technique. Here, George Frank checks for flaws in the finished surface.

French Polishing

Applying the ultimate finish

by George Frank

It was 1922, over 60 years ago, when I was first introduced to French polishing. My teacher couldn't hear or speak, but she was expert in the arts of French polishing and communicating through sign language. When she twirled both ends of her imaginary moustache she was talking about the boss, twirling just one end meant the foreman. She had unprintable words to chastize me for my errors; hugs and kisses were my reward when I was doing well. Two months later, French polishing had no secrets for me. If I could join the areas I've French polished since, I could easily cover three football fields.

In the olden days, before modern lacquers and varnishes, French polishing was the ultimate finish, reserved for fine luxury furniture. Even today, the beauty of this glossy shellac finish is unparalleled, but the skill is not an easy one to acquire. Here, I will convey to you the true French way of French polishing.

Materials—Shellac is the main ingredient in French polishing. Shellac's solvent is denatured alcohol. A French-polished finish is extremely durable, but because alcohol is the solvent, a spilled drink can damage it.

Hardware stores sell pre-mixed shellac in cans, but I mix my own so I have complete control over the quality of the ingredients. Dry shellac comes in many grades. I use a grade called superfine orange flakes. These flakes have an unlimited shelf life while dry, and almost as long a shelf life when they are dissolved in alcohol (don't store it in metal containers). On light colored woods, where I want a water-clear finish, I use bleached, or white shellac instead. Dry bleached shellac must be kept very cold and even so, it won't keep long. For this reason, I buy white shellac already mixed, and not more than I can promptly use up. Super blonde flakes, which have an unlimited

shelf life, can be substituted for the perishable white shellac,

Shellac's "cut" refers to the ratio of shellac to alcohol. Three pounds of shellac flakes dissolved in a gallon of alcohol is called 3-lb.-cut, 5 lb. in a gallon is 5-lb.-cut, etc. For French polishing, I make 2½-lb.-cut shellac. For moldings, carvings and turnings I make a heavier, 3½-lb.-cut solution. After mixing, I filter the 3½-lb.-cut solution through a clean cloth.

Mineral oil, a petroleum by-product, is used in French polishing as a lubricant. Light-density oil is the best for French polishing—baby oil and lemon oil are also acceptable.

Pumice stone is pulverized volcanic stone used as an abrasive in French polishing. I buy the finest, the FFFF grade.

The French name of French polishing is *vernissage au tampon* (varnishing with a tampon). The tampon, in English, is called a pad, rubber or fad, but none of these are used exactly the same way a tampon is, so allow me to use the French word. The tampon is the French polisher's main tool. It holds the liquid shellac and alcohol and releases them as you squeeze it, or press it against the object to be polished. The inside of the tampon is wool, preferably some old, often-washed knit wool, such as part of a sweater or some white woolen socks. (According to my old notes the best tampons are made of virgin lamb's wool). Before making a new tampon, the wool has to be soaked with the 2½-lb.-cut shellac and hung up for about two hours. Before it dries completely, it must be stored in a tampon can (a tin can with a tightly fitting lid) or in a screw-top jar. A tampon must never dry out completely or it will be ruined.

The tampon is not complete without its outer wrap, which I will call by its old name "linen." Nowadays, our linen is mostly cotton and/or some untraceable man-made cloth. The linen, as we will soon see, plays a crucial part in French polishing.

An array of small secondary items makes the polisher's task easier. On my workbench, I have within easy reach two bottles (about a pint) and a third smaller one. All three have cork stoppers with a thin V-cut in the cork to slowly dispense the contents. I fill one pint bottle with denatured alcohol, and the other with the 2½-lb.-cut shellac. The smaller bottle contains the filtered 3½-lb.-cut shellac. On the workbench are two small tins, one containing 4F pumice stone, the second mineral oil. For dark or red woods (like mahogany) I fill a third tin with mineral oil tinted red or reddish brown with an oil soluble aniline dye (in the old days, we colored the oil red with alkanet root). First, I dissolve the dye in a small amount of lacquer thinner, then filter out the sediment before adding the dye to the oil.

Under the bench I keep a toolbox containing three or four natural-bristle shellac brushes, a duster-brush, sandpaper (220 grit through 600 grit) and some cheesecloth.

The most important step in mastering the art of French polishing is to understand the theory. A single flake of shellac, when dissolved in alcohol, can be spread over an unbelievably large area. When the alcohol evaporates, the film of shellac remaining on the surface is incredibly thin, dry within seconds, and you can spread a second layer on top of it, a third, fourth or hundredth, and all these layers will melt into one almost immeasurably thin layer. In French polishing, the tampon holds and dispenses the dissolved shellac as it rubs over and over the surface. Meanwhile, the linen retains a bit of pumice and transforms itself into a fine sanding cloth, smoothing the surface simultaneously as it lays down countless layers of shellac.

French polishing a flat surface—French polishing could be compared to playing a musical instrument, and no music teacher

would start a beginner with an elaborate tune. Likewise, I strongly suggest that you practice on large, flat boards before you attempt to finish a piece of furniture. The technique is the same for a practice board or the little tabletop in the photos. The legs of the table require a different technique, as I'll explain later.

After sanding thoroughly with 120-grit paper, I sponge the surface sparingly with water to raise the grain. When it's dry, with one-quarter sheet of fresh 150-grit aluminum oxide sandpaper wrapped around my hard rubber sanding block (carpet layers use such rubber blocks to kneel on), I sand at a slight angle to the grain, so as not to push the raised grain back down, but rather to shave off the whiskers. I sandpaper the edges carefully, and break all the sharp corners. Then I sweep away the dust with my dust brush, and check my sanding. Not with my finger tips, but by laying my open palm on the board and moving it around. This way I can detect imperfections not otherwise perceptible.

At this stage, the wood may be dyed, and that's what I did to my little mahogany table. I mixed a water-soluble red/brown aniline dye in water and applied it generously with a piece of soft rubber sponge.

When dry, I sand again with 220- or 280-grit paper. I dust it off once more (not too carefully, since dust does not interfere with French polishing, especially not at the beginning) and I am ready to apply mineral oil.

At this point, I would like to explain that there is a marked difference between the Italian, English and American schools of French polishing and the true French way. These methods coat the raw wood with a heavy layer of shellac and don't use oil at the beginning. The French way always starts by oiling the surface. Using some cheesecloth, I spread on a coat of mineral oil and immediately wipe off the excess.

A finisher always expends his best effort on the surface that will show. Since no one will closely examine the underside of a tabletop, I don't lavish the same attention there as I do on the top. After oiling, I brush the underside with the filtered 3½-lb.-cut shellac. When dry, I build up a film of 2½-lb.-cut shellac with a piece of cheesecloth. It takes about five minutes to build a nice film on the underside. I'm ready to start polishing the top.

French polishing is usually done in three phases. The first phase is the filling of the pores. From my shellac-soaked wool I cut off enough to make a tampon about the size of an egg (larger for a big surface). Then, digging in my box of rags I pull out a piece of linen the size of a small handkerchief. I shape the wool to fit my hand, cover it with the linen and twist the linen tightly around it. From the alcohol bottle, I dribble alcohol onto the bottom of the tampon, and squeeze it into the tampon. The rule of thumb for applying alcohol—the tampon should be moist, but you should not be able to squeeze drops out of it. The downward pressure applied to the tampon shall always be the opposite of the tampon's load. A just fed tampon—very light pressure, a nearly dry tampon. . . let me quote Olga, my teacher: "When your workbench sinks a half inch into the floor, the pressure is almost enough." I hold the tampon firmly so the thumb, index and middle finger can squeeze it to force out the moisture.

To begin, I fasten the board securely to the workbench, raised





After dusting a pinch of pumice stone across the surface, the tampon is wet with alcohol and rubbed over and over the surface, filling the pores with pumice and wood dust. When the pores are filled, shellac is introduced to the inside of the tampon, and the rubbing continues, eventually building up a film of shellac.

on cleats so I can have easy access to the edges. Now, before my tampon contacts the wood, I pick up a pinch of pumice and sprinkle it across the surface. I glide the tampon onto the wood, like a plane coming in for a landing, and keep it moving once it has hit the surface. When I want to stop, I glide the tampon off the surface like a plane taking off. Just putting down and picking up the tampon will leave a mark. Gliding the tampon on, I start pressing the pumice into the pores of the wood, moving the tampon around the board in swirls, endlessly writing WOW, WOW, across the surface, with a few figure 8s thrown in. The tampon must never stop on the surface. This writing isn't limited to the board, in fact, half of the tampon is almost always off the edge of the board. Olga taught me, "Don't worry about the center of the board, it will be done by itself, worry about the edges and the corners."

As I rub, some of the pumice powder enters the microscopic pores of the very smooth wood, but a fair amount sticks to the bottom of the tampon and goes into the openings of the linen. This abrasive linen cuts off the protruding microscopic fibers of the wood, and mixes them into a paste, combining shellac (from the pre-soaked wool inside the tampon), pumice and wood-dust. This compound fills the pores of the wood, blending into it, matching its color and texture to perfection.

After 10 to 15 minutes of rubbing, filling and refilling my tampon with alcohol alone (no shellac) and sparingly salting the board with pumice (very little amounts, but frequently), the surface begins to change. It becomes like frosted glass, smooth and dull. At this point, I have to explain about the light. Imagine the surface as a mirror. I place it so as to see in it some source of light that will allow me to see all details of my progress. Are all the

pores properly filled? Am I leaving heaps of pumice? Did I wash off one coat with the next one? Without proper light, successful French polishing is impossible.

What happens if you put pebbles into a glass of water? Simple, the more pebbles you put in, the more water you force out. At the beginning, the pores of the wood were filled with oil, and now I am refilling them with pumice, shellac and wood dust. The oil spills out and reappears now on the surface, causing it to look like frosted glass, and helping my tampon to glide easier.

When the pores are filled, I begin adding shellac to the wool inside the tampon. I peel off the linen, feed the alcohol first, shellac next (always more alcohol than shellac), then re-cover my tampon, giving the linen a tight twist. I tap the tampon against the back of my hand a few times to even out the moisture. Now I work the shellac and alcohol into the wood. (I never apply shellac to the outside of the tampon, although I will sometimes add alcohol to the outside.)

Whenever the tampon is very dry, I feed it with alcohol and a few drops of shellac and dust a trace of pumice across the board's surface. I am achieving a beautifully smooth surface on which I can easily trace every move of my tampon, since its moves are as readable as the moves of your pen on paper. The oil being forced out of the pores forms faint clouds on the surface that tell me "everything is going well." The finish should always feel dry to the touch.

After I've refilled my tampon three or four times, the shellac buildup is already perceptible and quite shiny. When it is, I touch a drop of oil on the outside of the tampon and continue rubbing. Things begin to happen. Until now, faint clouds marked the passage of my tampon. The droplet of oil that I put on the bottom of my tampon transforms these clouds into easily visible ones. By now the first phase, the filling of the pores, is almost finished, and I've already started the second phase, the bodying. (I timed myself on the tabletop, The filling stage took me approximately 25 minutes, the bodying stage about 15 more.) Now I begin to increase the amount of shellac I add to the inside of my tampon, but never more shellac than alcohol. I also reduce the amount of pumice and, every so often, touch a single drop of oil to the bottom of my tampon. I concentrate on the clouds, which *must* be present on the surface at all times. French polishing has a wonderful rule: Whatever goes wrong, the remedy is alcohol. Remember this well, and practice it. I hardly put any pressure on my freshly filled tampon, but I increase the pressure as the tampon dries. Underneath the clouds, the wood becomes alive and beautiful, it pays me back every bit of effort I put in so far, and with interest.

The edges get a different treatment. In my tampon can, I keep a piece of cheesecloth about 1 ft. square. I wet this generously with 3½-lb.-cut filtered shellac and wipe it over the edges. Repeating this about every five minutes builds up a fair coating on the edges. With my tampon, I skim over the edges time and again. I don't use pumice on the edges, and a bit more oil than on the flat surface. By the time the surface is well bodied up, the edges are in good shape also.

I end up my bodying by filling my tampon once more with alcohol alone and rub until it is quite dry. The alcohol improves the shine and thins the clouds. Incidentally, by this time, the bottom of my tampon is always clean. (If not, the remedy is alcohol). The board is now ready for an overnight rest, and the tampon goes in the tampon can.

The next day I scrutinize my work for poorly filled areas. Beginners frequently have pumice heaps within the finish. These must be sanded off lightly with 600-grit wet or dry paper wet

sparingly with soapy water then dried off well. It is a good idea to go over any and all problem areas with this sandpaper.

The second day operation takes about 20 minutes. The purpose is to correct the shortcomings of the first application and then complete the bodying by adding shellac. I start by feeding the tampon with alcohol only and dusting the board with pumice. The only difference is the quantity. Both alcohol and pumice have to be used much more sparingly than at the beginning. On the other hand, even more care is needed than the first day because the film of finish can be easily ruined. I apply hard pressure and space the "O"s and "W"s so that no spot will be hit again before it has time to dry.

Alcohol, little pumice, great care and the problem areas are fading away. The clouds are appearing again, meaning that once more I am on the right road and that I can resume the bodying. I slowly increase the shellac content of my tampon and add a dab of oil to its bottom.

After about 15 minutes, I replace my linen with a clean, softer "linen" (soft cotton). I stop using oil. This forces me to use extreme care as I land my tampon on the board. I use as little pressure on the tampon as possible. Now, as my tampon dries out, the clouds are thin and they become iridescent. The last two feedings of my tampon are with alcohol alone. I use up every drop of it and the surface smiles at me.

At the start of the third day, the beautiful gloss is somewhat veiled by the clouds of oil. If I am satisfied with the body of my polish, I can proceed with the final clearing. If I feel that additional bodying up would improve the job, I wet my tampon with shellac and alcohol (and maybe a tiny drop of oil, too) and keep up the bodying. When I'm satisfied, I will ease up the shellac feeding and once more, using alcohol alone, I thin-up the clouds to bring up the shine.

My goal now is to eliminate all traces of these clouds and to clear the glossy surface perfectly. For the final clearing, I park my tampon in the tampon can and reach for my special finishing tampon, which I keep in a special tampon can. This special tampon looks just like my regular tampon, except that it is new, and contains no shellac and no oil. The heart of this tampon could be made of a clean, white cotton undershirt or a piece of cheesecloth instead of wool.

First, I sprinkle a light pinch of tripoli earth (a very fine abrasive) on the surface. Wetting the tampon with alcohol, I land it on the board so gently that the board doesn't notice what I did, and wipe off, with imperceptibly increasing pressure, all remainders of the clouds. The job is finished.

French polishing the pedestal—Moldings and carved surfaces get a different finish, one more like the English style of French polishing, and I used this technique on the legs and column of my little mahogany table. Had I turned the table column myself, I would have sanded and finished it on the lathe.

After dyeing the pedestal, I sand with 220-grit paper. After applying mineral oil, I brush on a coat of the filtered 3½lb.-cut shellac. When that is dry I wipe on 2½lb.-cut shellac with a piece of cheesecloth. Here, I'm trying to fill the pores of the wood with shellac instead of pumice and wood dust. Where I applied only drops to the tampon when I polished the top, here I am liberal with the shellac. After a few minutes, I add mineral oil to the cheesecloth—much more than I used on the top, and a drop of alcohol. The shellac builds quickly and I have a nice shine in a few minutes.

On the second day, I sand the legs and column with 400-grit



A thicker coat of shellac is built up on the table legs and column using a piece of cheesecloth as an applicator. Then, after sanding with 600-grit paper, a final coat of shellac is applied with a piece of soft foam rubber.

paper. After brushing off the dust, I rub the legs with cheesecloth using more shellac and more oil. On the third day, I gently sand over the rough spots with 600-grit paper. Using the tampon this time, instead of the cheesecloth, I wet the inside liberally with shellac, apply some alcohol to the outside of the linen and smooth up the legs and column. When that coat is dry, I'm ready for the last step. I add the final gloss by dipping a piece of soft foam-rubber sponge in the filtered 3½lb.-cut shellac and gently stroking on one smooth, heavy coat of shellac.

For the first 50 years, dusting is the only care that a French polished surface requires. After that, an occasional light wipe with lemon oil or lemon oil cut with turpentine will do fine. □

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Sources of supply

French-polishing materials are available by mail from Lee Valley Tools, Garrett Wade, Constantines, Highland Hardware, The Woodworkers' Store and the following companies:

Wood Finishing Supply Co., 1267 Mary Drive, Macedon, N.Y. 14502

Olde Mill Cabinet Shoppe, RD 3, Box 547A, York, Pa. 17402
Mohawk Finishing Products, Inc., Route 30 North, Amsterdam, N.Y. 12010