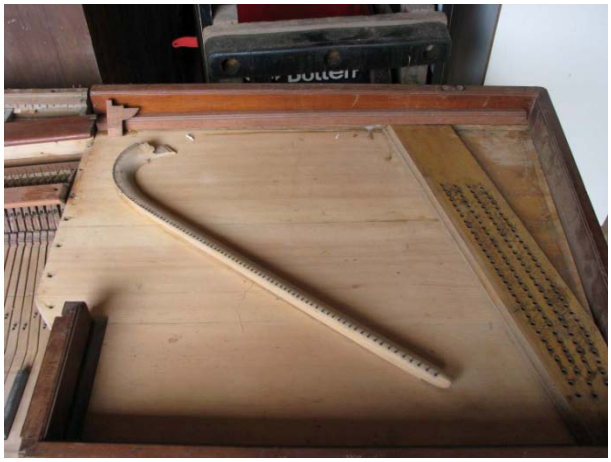
Removing and Reinstalling a Soundboard from an Early Square Piano

This section is for those restorers who have determined that for one reason or the other, the soundboard must come out. Some noted restorers remove them as a matter of course, stating that things always need attending to underneath. Others are of the mind that once the toolbox comes out, some history is going to be erased, so they are good for removing soundboards only when the job requires it. An incompletely done restoration job that leaves the piano limping was a lot of work for nothing though, so when we must go in, it is best to do it the right way.

Broad generalizations are fraught with exceptions, but generally speaking the attachment of the soundboard follows three schools:

1) Type 1 - The soundboard fully covers the wrestplank level with the surface (from 1766 to about 1790 or so).

2) Type 2 - As above, but with a separate piece over the tuning pin area that also acts to hold the pins (~1790 to about 1795 or so), much favored by Longman and Broderip of this period.



3) Type 3 - The soundboard laps a rebate in the edge of the wrestplank but does not cover it, with a separate triangle in the right rear corner that may allow sound to radiate (late 18th and early to mid 19th C squares.

The second type offers the greatest challenge for removal because there is a major glue joint between the wrest plank and soundboard, and between the soundboard and the crown plank, as well as around the perimeter, but we will approach all the designs with a similar protocol.

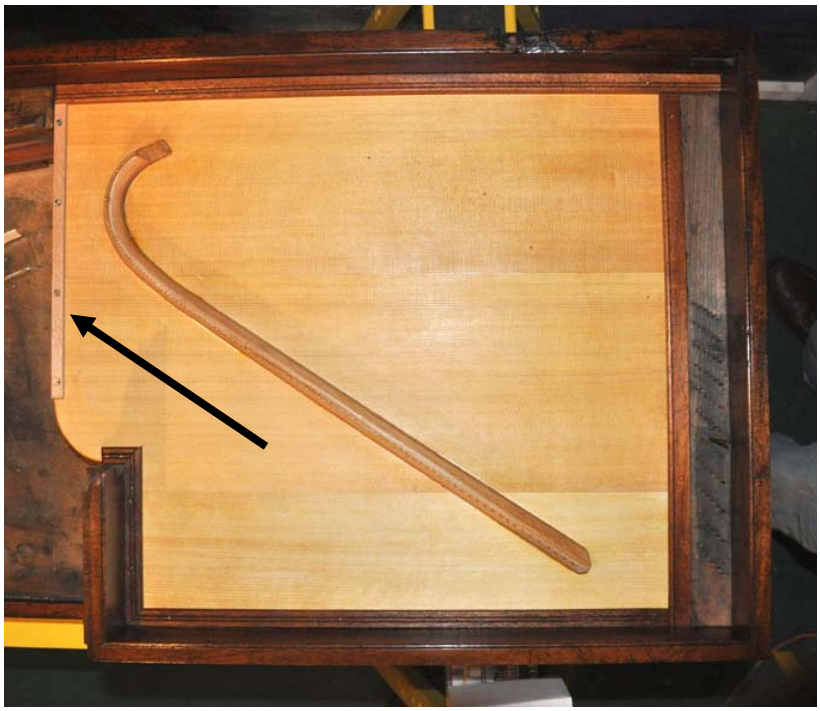
Unless these have been fiddled with by a modern restorer and different glues added these are all glued down with hide glue, which will remain our superior choice for this work. See the articles on hide glue for more information, but no one who styles themselves a restorer will even consider anything but hide, fish, or similar glues for the various jobs we encounter. For us, fish glue has limited uses so let's focus on hide glue for now.

Hide glue that is 200 years old is in a somewhat different state than recently applied glue. With glue from even 10 or 20 years in place, sometimes an aggressive warming to about 100 C will loosen the joint for repair, but not so the very old glues. We must rehydrate them, meaning getting them wetted, and also warm them, to effectively loosen the joint. We will read that methyl alcohol spirits should be used. For the UK reader, methylated spirits (meths) is ~95% ethyl alcohol, 5% methanol, what we in the US call reagent alcohol, which here may also include isopropyl alcohol. Industrial methylated spirits in the UK has distasteful flavorings and purple dye also added. In the US, methanol is readily obtainable and the grain alcohol

‘**Everclear**’ is 95% ethyl alcohol. In my experience, old glue dissolves no faster in methanol or ethanol than it does in water. Alcohol DOES lower the viscosity and surface tension, so a little in the water (~20%~40%) can accelerate access into narrow crevices. Cheap vodka, perhaps?!?

The thing here is to get the water to the glue first, and that is not easy in Type 1 and 2 designs where we must loosen the joint to the wrestplank. Additionally, there is a molding rail around the perimeter, and a hardwood strip screwed on the top left side where the soundboard terminates at the action that we must also remove. So, we remove the strings of course, and if you suspect they are early (original!?) measure them for diameter to two decimal places (0.44 mm for example) as they come off one at a time and record your values. If the design is type one or two, remove the tuning pins. If this is a Broadwood (pins at the spine) and the hitch pins are marching off into the soundboard, remove these as well. Then, the general approach is:

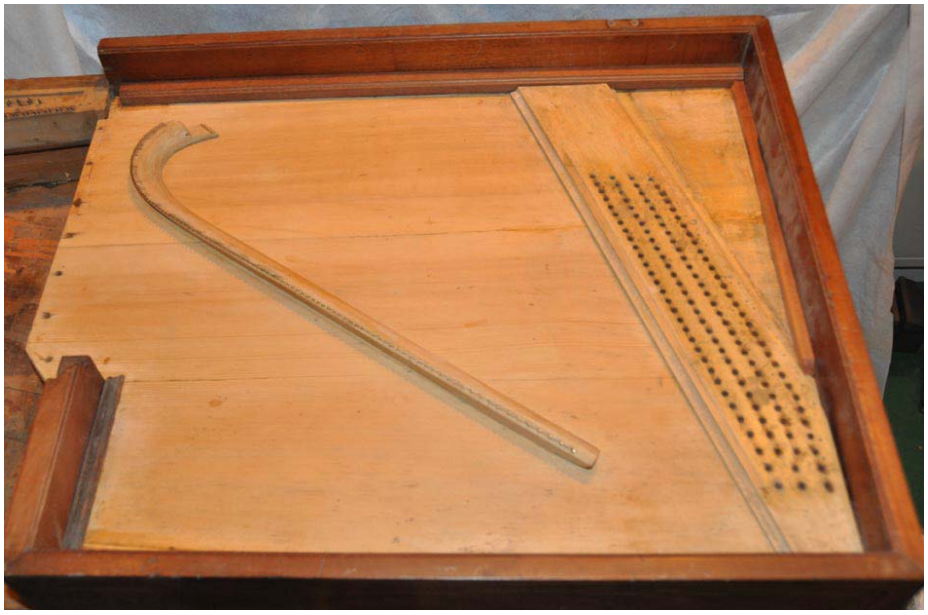
Remove the front hardwood strip which is usually only screwed in with no glue (but check before prying!)



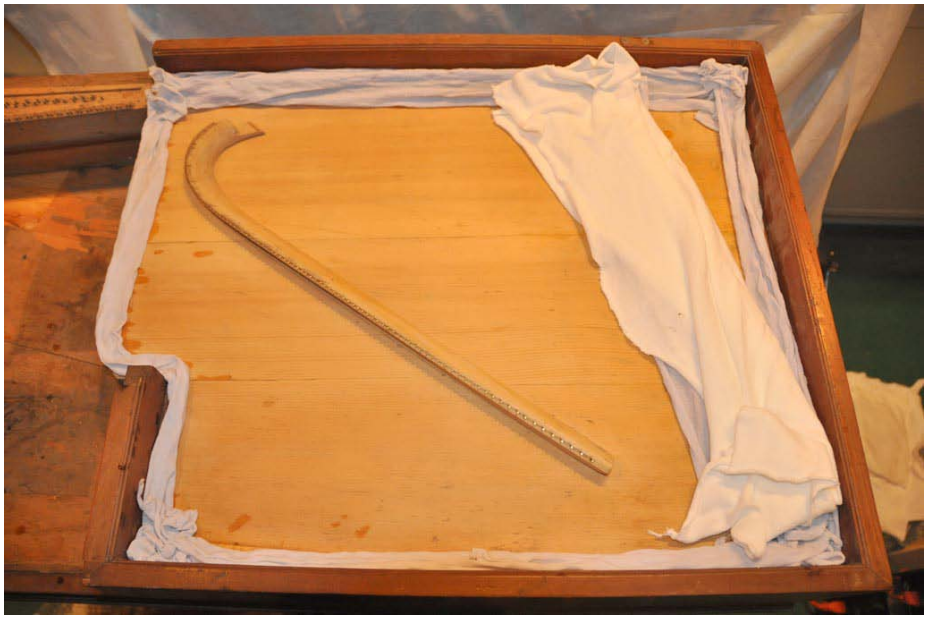
Usually the molding is glued and nailed in, making it a little bit of a challenge to remove. Check closely to see if it is actually glued before soaking, but in general, soak paper or cloth towels in the water or water/methanol mix and apply these to the edge molding, being a bit liberal with the water. We don’t need water running all over the instrument or soundboard, but lightly damp will not work nearly as quickly, or possibly at all. If you are concerned about veneer buckling, painters tape (available as a blue or green tape in the States), applied to side surfaces,

can limit the exposure to water for areas you want to protect. Masking tape leaves a residue behind so avoid that like the plague.

The towels go all around the perimeter, including where we took up the hardwood strip. If the soundboard is shellacked, removing that with straight methyl alcohol will help facilitate uptake of water. If you have a soundboard from Type 1 or 2 squares, we will need to loosen the glue between the soundboard to the wrest plank, so wet towels are placed over that area as well. Then cover all the exposed wet towels with plastic wrap.



Soundboard to be removed

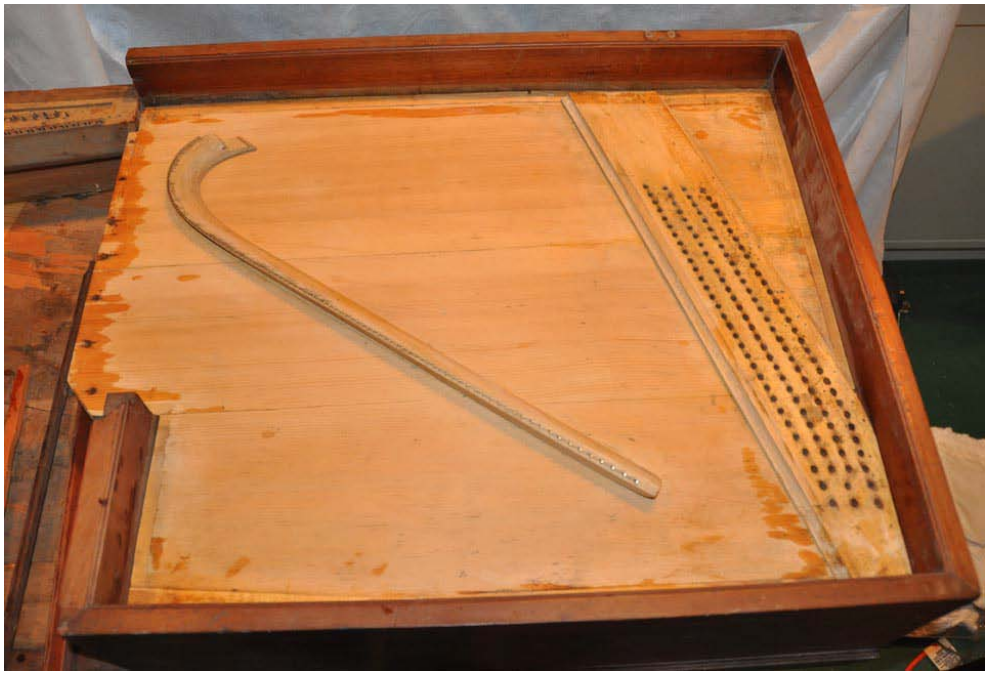


Wet towels added all around

Plastic being added to prevent rapid drying

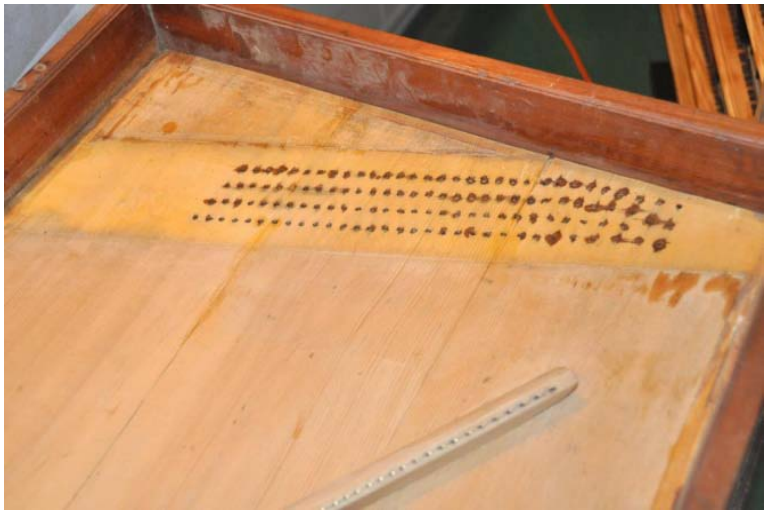
We now have a wait period ahead of us. Use the time to start gathering or making the tools we will need to finish. A thin pallet knife 2 to 3 inches long, perhaps a broader painters spatula (2-3 inch wide and 4 inches or more long), a wood stake, oak is very good, about ¾ inch square on the sides, about 2 feet long with a shallow taper on one end to a flat edge, and a source of heating the joint will be very useful. Heat can be applied with a heat gun or even a hair dryer, a heat lamp, a veneer iron, or the flexible silicone heating tape sold by Watlow or Briskheat.

We are just going to have to wait now on the water to reach all the glued areas, but usually the moldings come loose fairly quickly, in two or three days generally. Work the pallet knife or similar very thin and stiff/flexible blade between the molding and soundboard or case wall. When it easily slips in all along the length you are ready to lift out. Apply heat from your source of choice until the joint becomes quite warm, but not scorched. Over 140 F is all we need, so, well below boiling. You may need to pry up the rear molding which is usually the heavier one, so a small pry bar is useful. Always support the pry bar with the joint knife or a wood bit to prevent denting the soundboard.



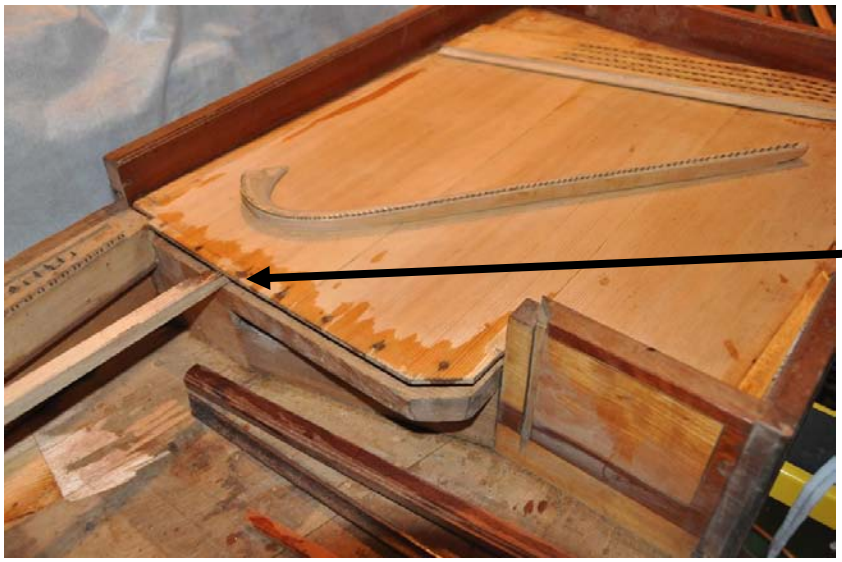
Molding up, ready to re-apply towels directly to soundboard joints

Your moldings are out, now apply the wet towels again to the exposed wood. If you have Type 2, check on the looseness of the wrestplank crown piece, as we will remove that next if we have one. Warm it and reach under with the pallet knife or joint knife all around. It will pop up once free, but this can take a long time to free up, so apply water and wait if it is holding firm yet.



Wrestplank crown piece off, ready to re-apply towels to soundboard on top of wrestplank

We will wait several more days at this point and see what is coming loose. After a week or two soaking, most of the joints should be fairly free, but we will need some heat to get things moving. Start with the edge where we first removed the hardwood strip and see if your pallet knife will slip under all around. If so, warm it all up and GENTLY begin to lift this edge. All must travel together, and any real tension will split the sound board, so easy does it all the time. It is better to re-wet and wait than force things now.



Tapered stick used to lift soundboard at edge once the putty knife has freed up the joint all around

If it is coming up easily, get the left side lifted first, then with your taper stick, start to loosen the front and rear sides, keeping the advancing joints nice and hot. Watch that you don't damage the ribs with overly aggressive prying. If you hit a snag and it won't LIFT out easily on being fully warmed, wet things again and wait, leaving the free end up in the air. If you have Type 1 or 2, when we get to the wrestplank we may need to wait a bit longer still, but work the joint with your stick and see where you are. Once that is up, the right side generally lifts free at once unless you starved it for water. It can take as much as six weeks to fully hydrate and loosen a sound board, or as little as a few days at most. All depends on the many factors that went into the initial construction.

You now have your soundboard free and ready to repair. See the section on repair of soundboards for some tips to help with this step.

Clean up all the case edges where the old glue was for reinstallation. If you accidentally lost a bit of soundboard due to aggressive prying, you can quickly soak that out and reattach it to the old board. We will need a flat, neat base to re-glue our soundboard into.

If the old molding nails are in good condition we can reuse them but usually that is not the case. Solid brads with heads removed will service as good replacements for nails you cannot reuse. If the old nails are loose, push them out with pliers. If not (usually the case) heat the exposed end so that it becomes cherry red (careful not to singe the molding) then push back out. If it broke off flush, drill for another close to the old point.

Reinstallation

You have been working and have all the cracks repaired and taped, all ribs secure, and the bridge tight to the old soundboard, or replacement SB, if the old one was deemed a loss. The soundboard has had a couple of weeks to dry and relax after all this work. You have not attempted to restore any finish yet; we need raw wood to glue to or things will come loose very quickly. Weather-wise, it is a fine dry day, your glue pot is full of fresh glue, and an assistant may be at hand to help.

This is not a hard job, but we must work quickly and deliberately. We can clamp the edges down in one of several ways, by reinstalling the moldings strips, by clamping the edges with hardwood strips and clamps first, then putting in the moldings as a second step, or using padded nails first, which are withdrawn and then the moldings installed. I have successfully used option one, a friend uses padded nails to keep from rushing the molding installation, and some like to clamp first. As a note, padded nails are nails driven just into a dense cardboard or fiberboard perhaps ¾ X ¾ inch, so that as the nail goes into the wood it pushes the pad down like a clamp, effectively clamping the soundboard in. This is a traditional method for installing soundboards.

So, with our nails back into the molding strips, with the points just proud of the bottoms, clamps, or a supply of padded nails on hand, we bring the glue up to temp. We can warm the pieces to be glued by heating as before, or have the piano in a hot box prior to gluing. A box made up of thin plywood that the whole piano can fit into, and then the space warmed with the heat gun, a bulb, or similar until the instrument is about 100 F, will keep the glue liquid until all can be assembled. If you can manage it, an hour or so on a hot day out in the sun first can service well also.

We can also extend the working time of the glue by adding 1 part urea crystals to 5 parts glue (while still a powder) before you make it up with water. A product from Titebond called liquid hide glue is available and is reversible, but is not strong glue at all. This author advises against using this except for small, non stress related jobs. Fresh glue on first heating has the longest work time as well, so we will use new glue for this job.

Insert the soundboard as a dry run first, making sure everything will fit without forcing or trimming after we are glued up. If you have Type 1 or 2, have some thinner pins to locate the soundboard correctly over the holes in the wrestplank at the bass and treble, so there is good alignment and no need to redrill into the sound board. In all types, the screw holes on the left edge should line back up. We may need to be able to clamp the soundboard at the front lip of this edge if the strip does not cover it here, so a small clamp or two (with a padded foot to prevent damage to the soundboard) should be on hand also.

With Type 1 or 2, we will need to clamp the soundboard to the wrest plank. You can do this with Type 2 designs by setting the old crown piece in place and adding blocks so you can clamp with bar clamps as shown below, or, with the old crown piece in place, insert a few padded nails into pin holes and nail in just enough to catch things firmly. For Type 1, make a piece to closely cover the area (use the top of the wrestplank profile to make the pattern) and then clamp.

Put down a fairly heavy bead of glue on all edges and on the wrestplank top (Type 1, 2), and a thinner coat on the soundboard surface where it will contact is helpful as well. Work quickly here, we have about 10 minutes to get things into place unless using urea glue. The glue-runs you will always find inside speak to how this was done 200 years ago; without fussing over neatness. This is no time to 'spare the glue' but certainly great gobs will not help anything either, so a good neat heavy bead please. If the molding is to be glued and nailed, having your assistant begin this with a neat thin film on both molding and case surfaces is helpful. If you are doing it alone, do the moldings first and set aside in a warm spot covered with a damp but not wet towel until you are ready.

Place the sound board into position, establish alignment, and begin to install the molding. The hardwood strip on the left edge is not a bad place to begin. Then working quickly, add the moldings around the rim. Wipe everything clean with a damp towel, and if you have Type 1 or 2, clamp the wrestplank as described. Look at that left edge and see if is down like you wanted. If not, add the clamps to get it tight. A good installation is practically air tight all around the perimeter, and certainly firmly held at all points.

And you have completed the job! All work to complete the finish on the sound board can begin now.