

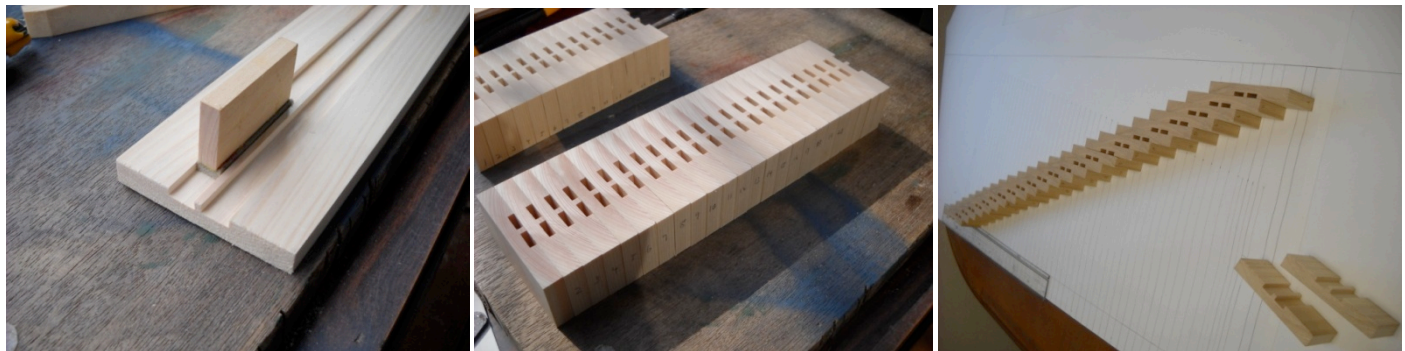
Virginal non mesuré ver.1

23 4 2012

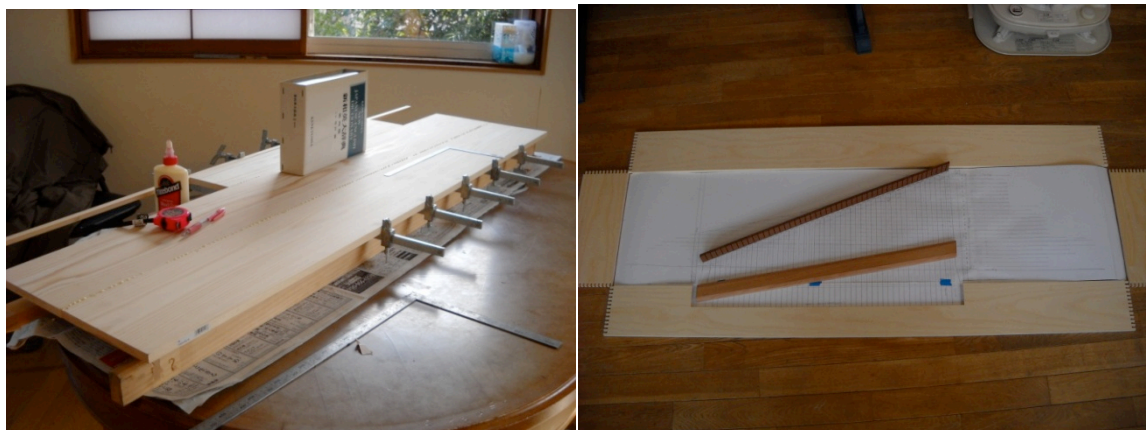
Simple report on making a portable virginal.



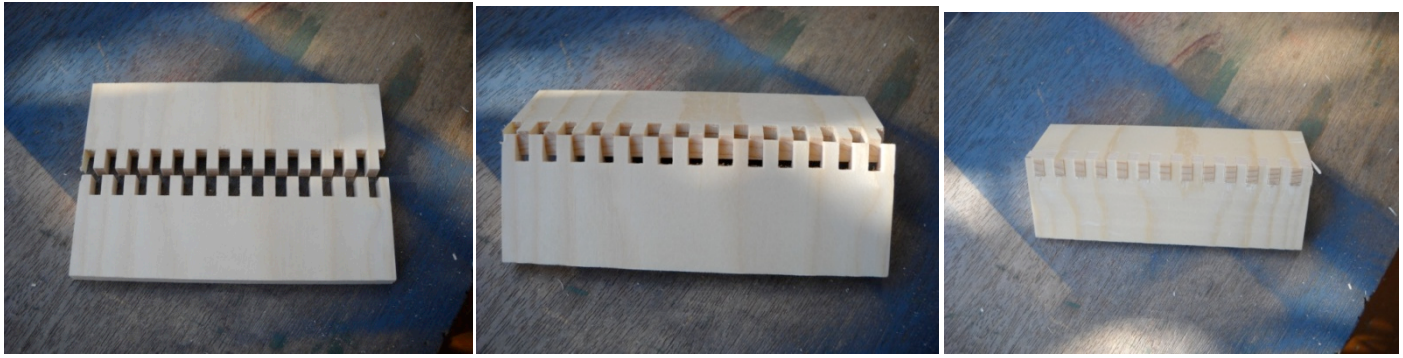
Making a jack guide



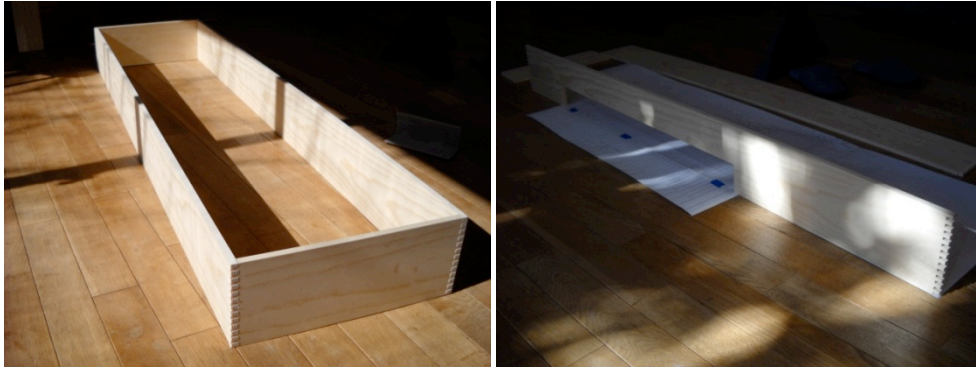
Making the bottom



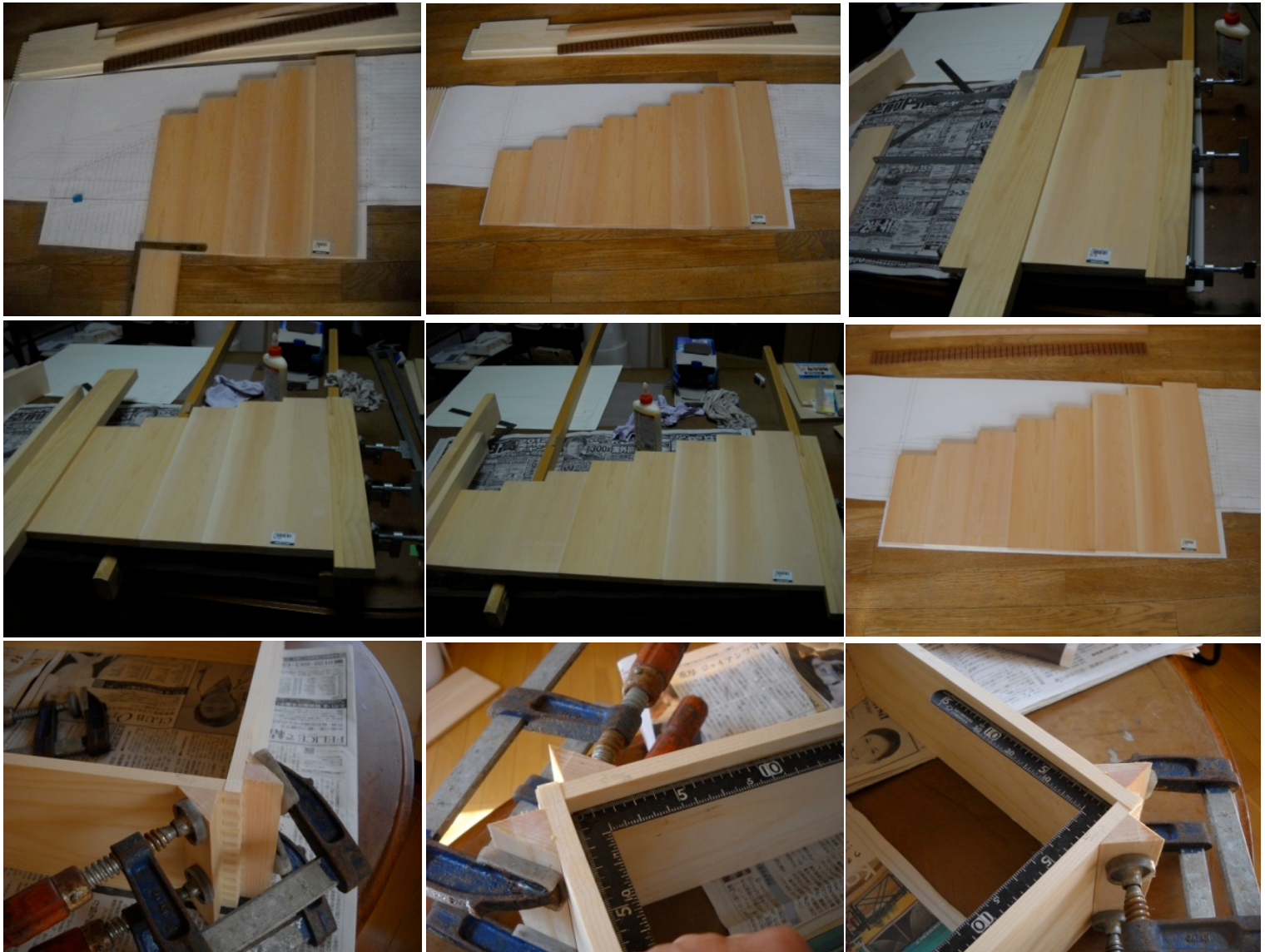
Case



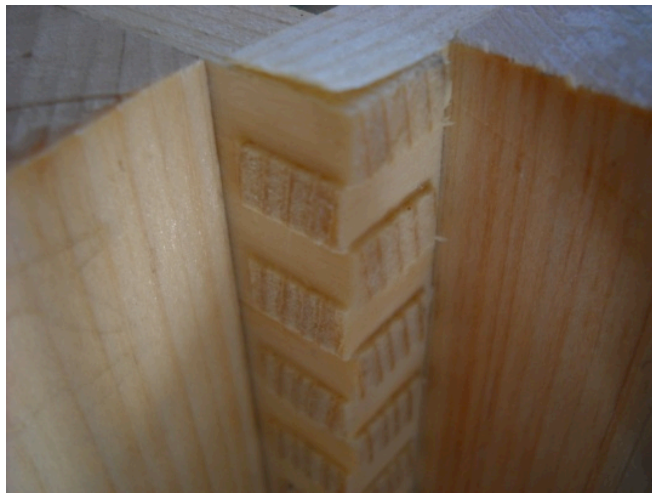
Corner joint should be tested as above.



Making a keyboard blank



Corner joint may be done as above. The Triangular pieces of wood is temporary glued to the panels.



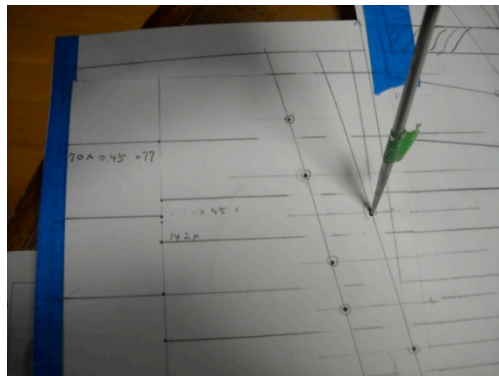
Finishing the keyboard blank



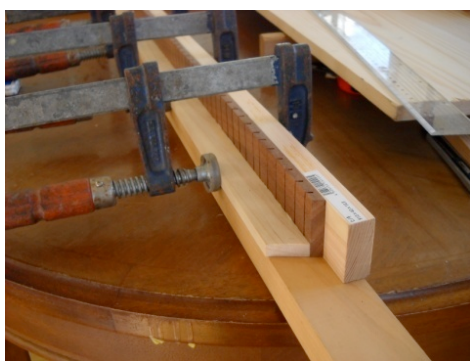
You should enough be careful that there is a enough space ,say 2mm, between the keyboard blank the rack



The keyboard blank is carved as above.

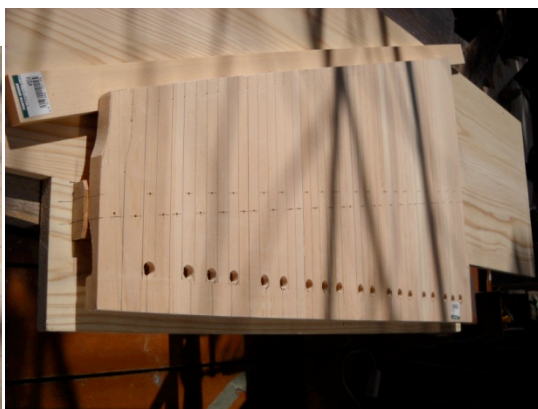


The balance rail is glued to the bottom. You have to pay enough attention to the position of the balance rail



The rack is glued to the rack base.

The keyboard blank is temporary glued to the balance rail. The holes for balance pins are now drilled through the keyboard blank.

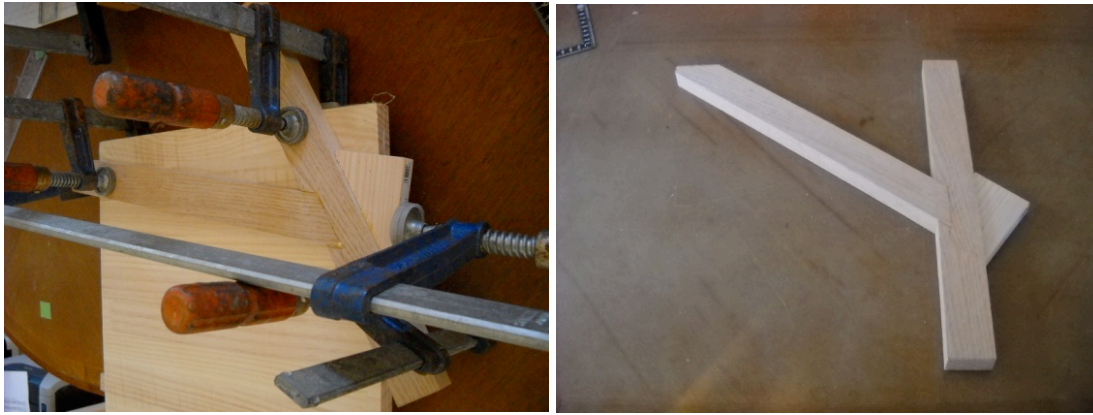


The gap between the rack and the keyboard blank needs 2mm at the bass, 2.5mm at the treble.

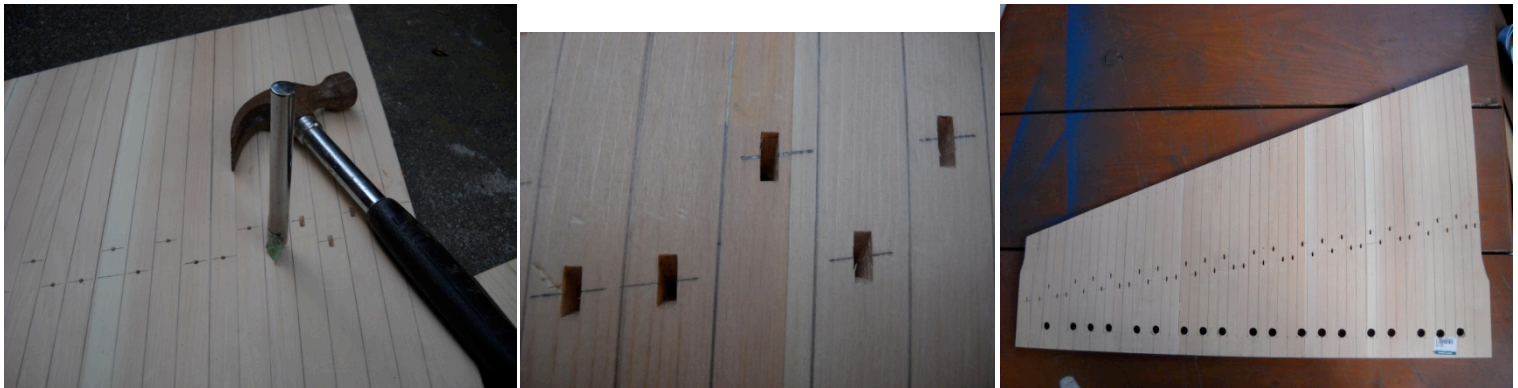


Now the rack is glued to the base board carefully.

You can see the triangle piece of wood for glueing tightly the two pieces of the wrest plank on the picture below..

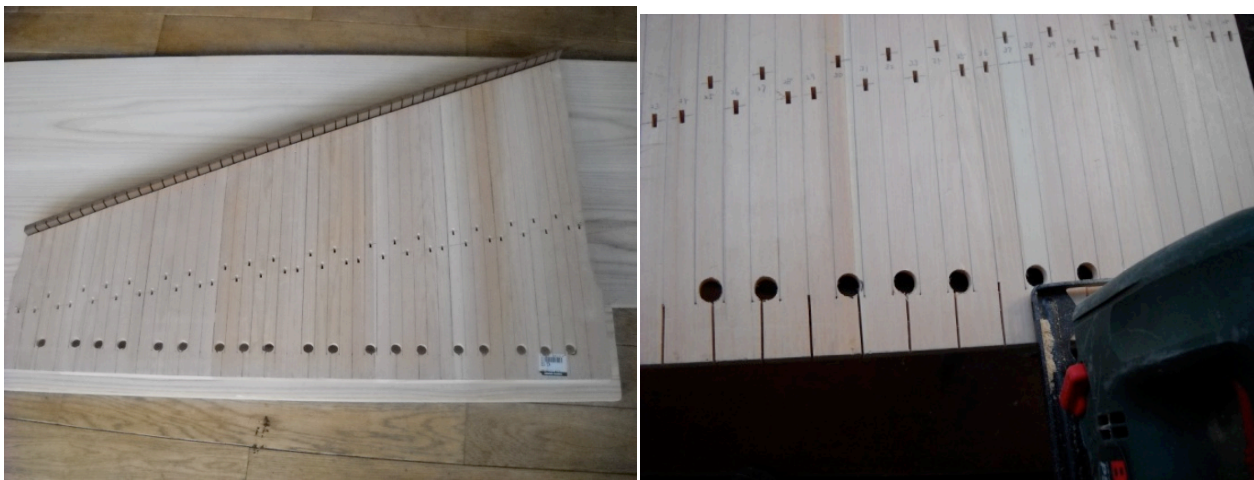


You can see how the balance pin mortises are made below.



Now it is ready to cut the keyboard blank into keys.

You can drill holes at front end of the sharp keys. You can start cutting from these holes



It is a good idea to cut the key front first.



The balance rail is now treated by an agate pen. The both ends are more important. So you can carefully treat them.



You will see the balance pin depth guage to keep the height of balance pins. But you need to tap the pins too hard.



Now you can arrange the keys in the instrument.



Then you push in the keyend pins.



The case frame is temporarily set on the bottom.

A dowel is glued in as the picture above to get a very firm contact between the two part of wrest plank. You can cut off the excess of the dowel.



Now the case frame is glued to the base board. You will need many clamps in this work. You can start making the inner parts of the case.



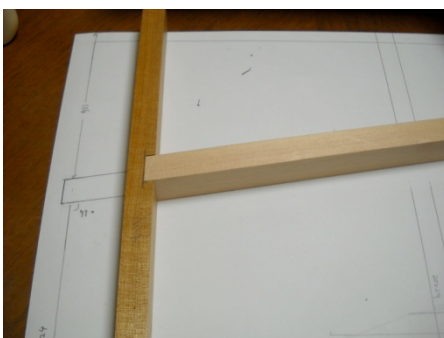
The wrest plank supports are glued to the case.



The braces and the wrest plank are glued in.

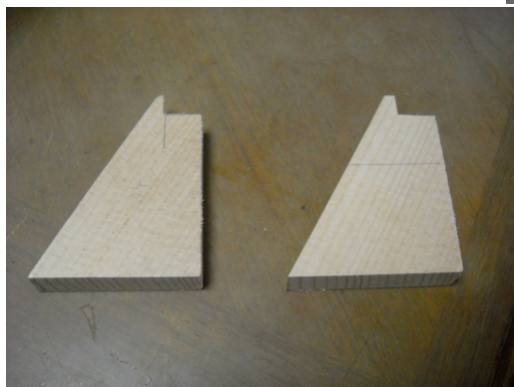
Treble hitch pin rail is just like a 4' hitch pin rail of a harpsichord on this virginal.

The pictures below show how a treble hitch pin rail is jointed with bass hitch pin rail.



IMPORTANT; It is not shown on the picture that a dowel should be glued in from the left on the middle picture. Then the bass hitch and the treble hitch pin rail will be firmly joined. This is the same method as you have seen in the wrest plank making.

Liner liner-support hitchpin rail wrestplank

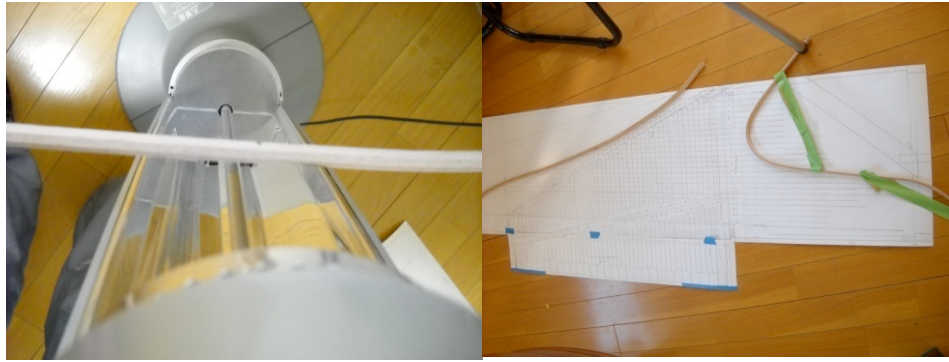


The knee are only for the treble hitch pin rail. Please note the direction of the grain.



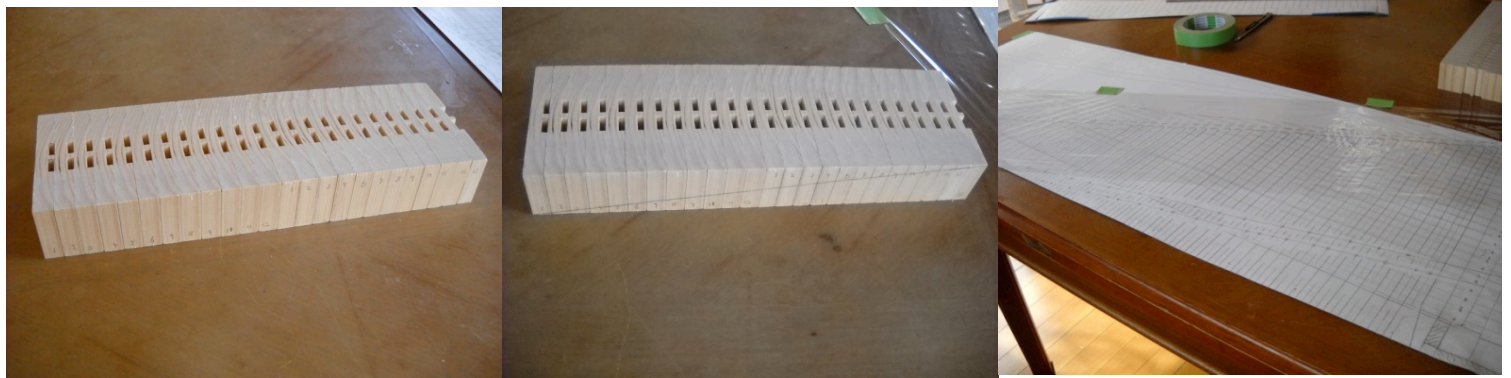
The interior of the instrument is now almost made.

Bridge making

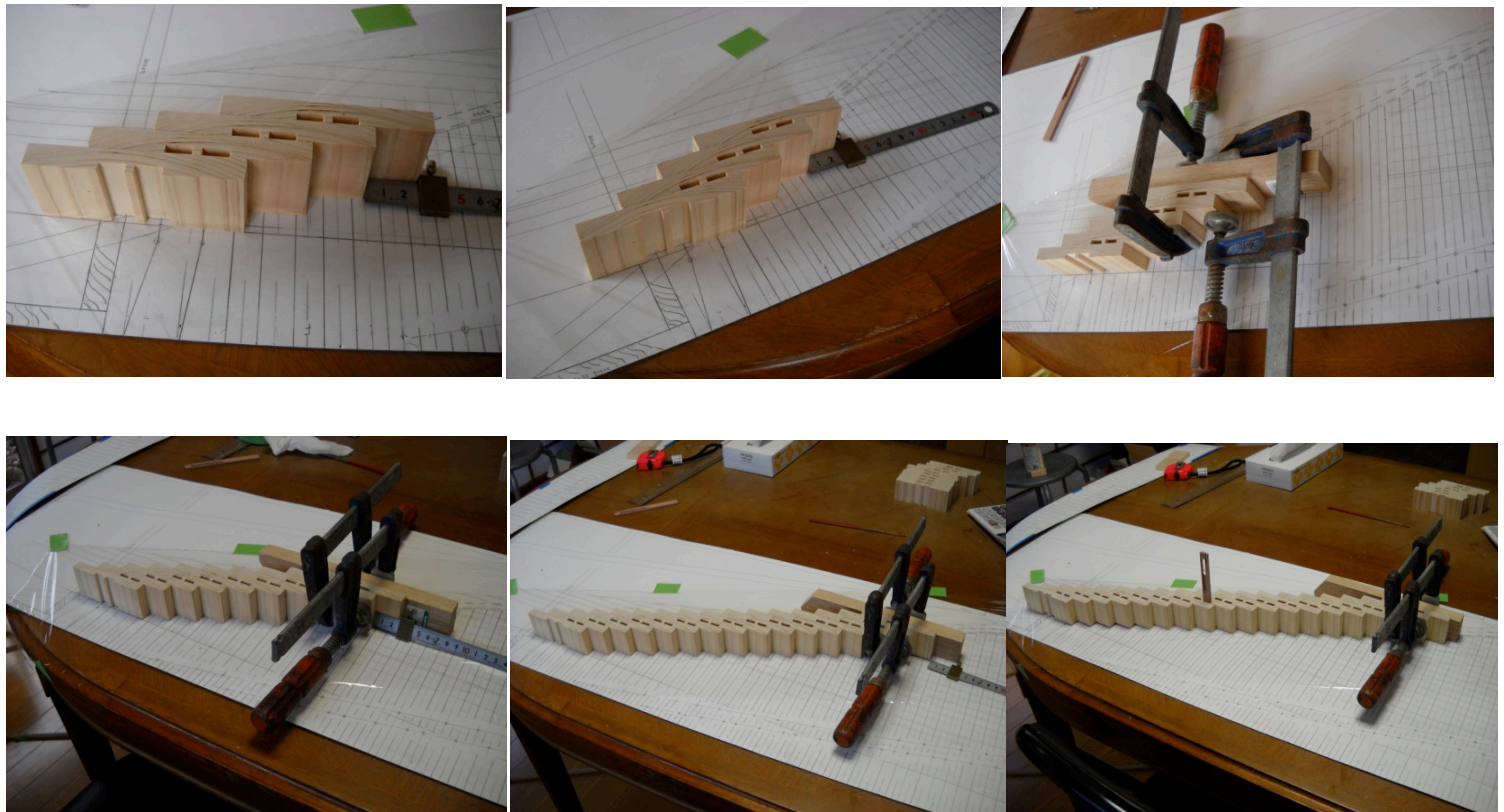


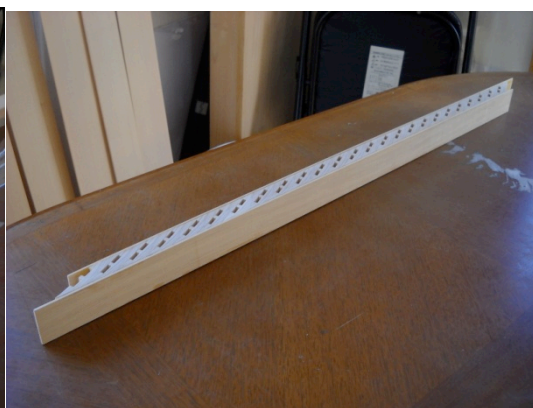
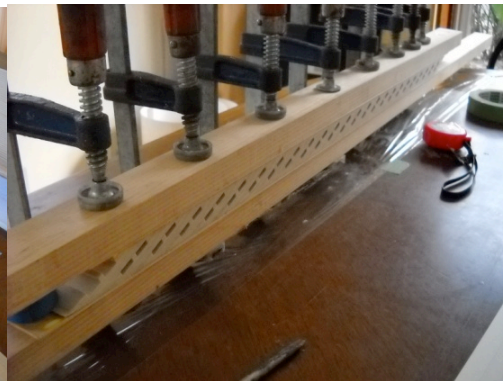
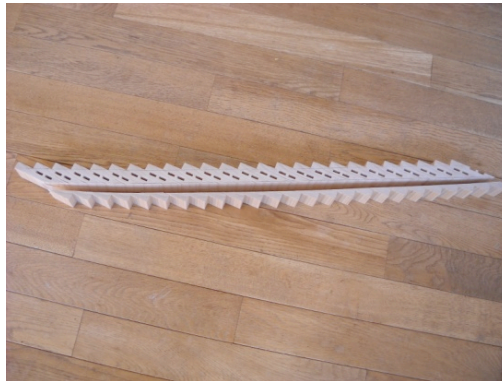
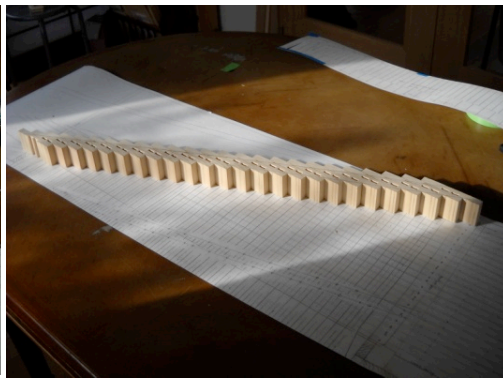
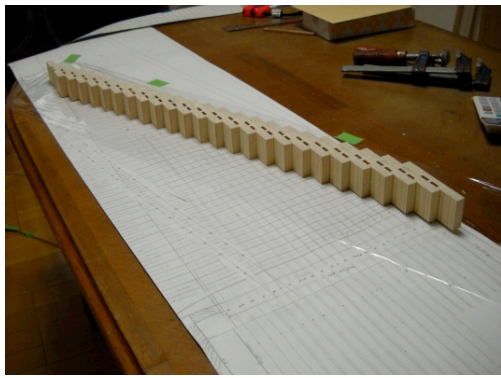
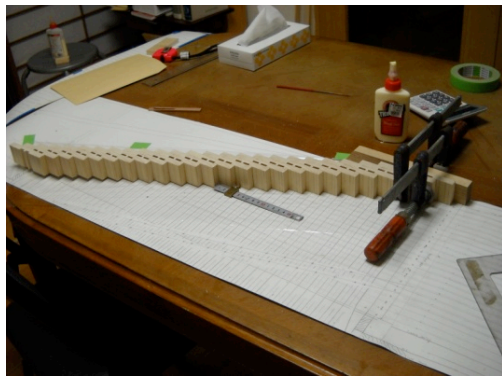
The left bridge can easily be bent by heating. On the other hand the right bridge must be bent steeply. So I tried once this bending method, but I did not use it. Later I cut out one from a board of hard wood.

The jack guide glueing up



On the right picture you will see very thin cooking polyethylene film covering the drawing. On this you can glue up each piece of the jack guide together.

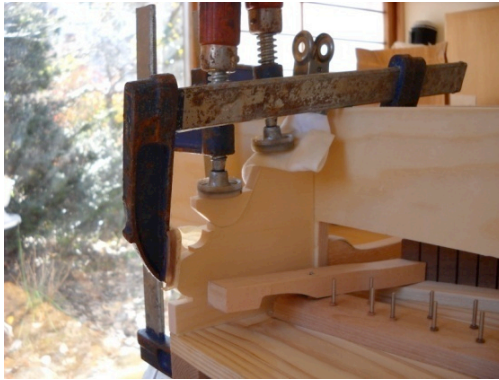
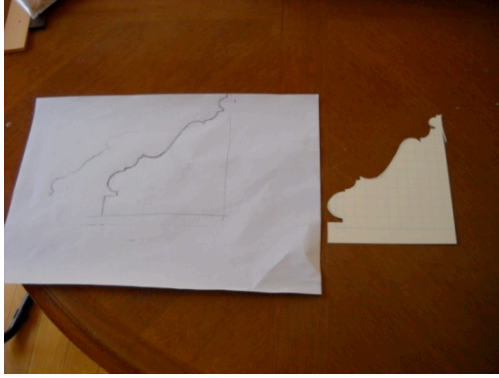




Two sheets of paper are now cut to the instrument, so that you will know where the hitch pin rail and the wrest plank are.



Two cheeks are now designed and cut out.



Soundboard making

First you have to decide which board come to where.



This method of glueing up for soundboard is very simple.

Cut out to the instrument.



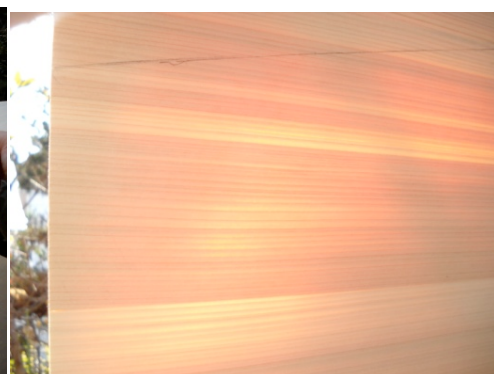
The two sheets of paper will help you to mark where the hitch pin rail and wrest plank will be. the two pieces of paper show where come the hitch pin rail and wrestplank.



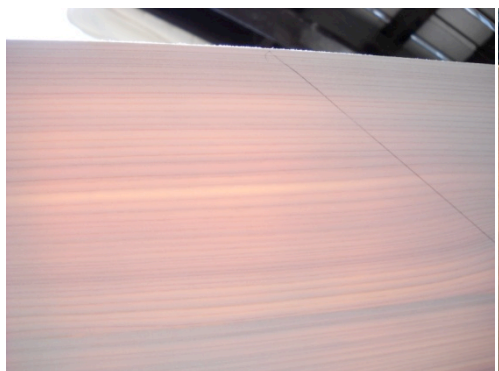
Right bridge making

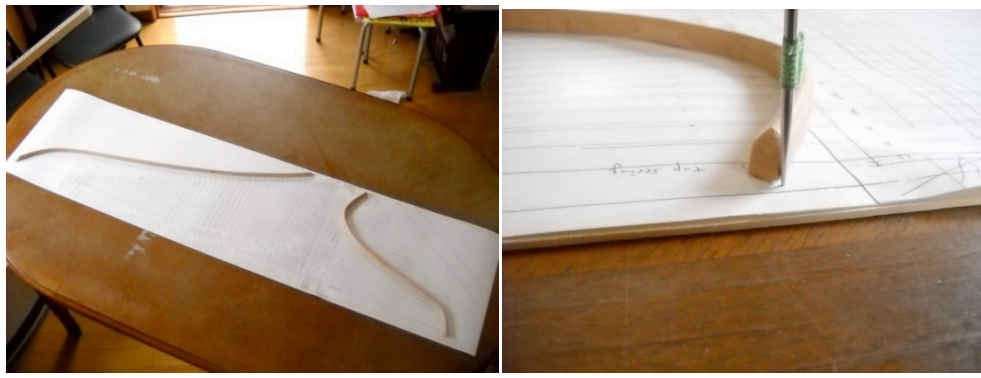


Cuttin out the bridge is a little bit labourious job but not difficult.

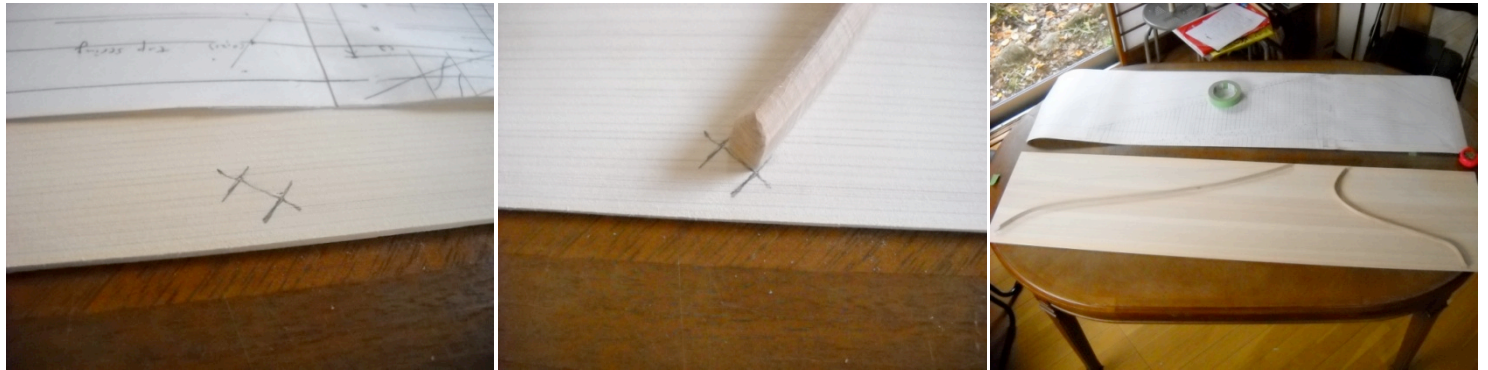


The middle photo above shows that the sound board may be too stiff. You may know where it will be too stiff under the sun. I use very good Japanese cypress for the soundboard. I make it 1.8mm thick at the treble around 2.2 the thickest.





The positions of the bridges are are marked carefully.



Glueing the bridge to the soundboard.

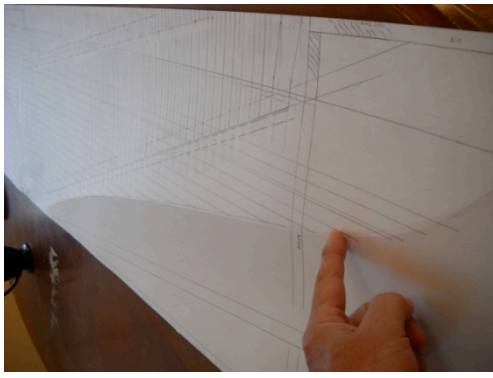
This is the most important job to do in virginal making. There should be no gap between the bridge and the soundboard. If you use natural glue you can use hair drier to heat and melt the glue.



I do not know how many clamps should be used, but I always use the clamps as many as I can use.



Moving off excese glue is a labourious job



It may work if you mark the drawing with your finger.



It may be a good idea to locate the jack guide at correct position (at the end of key levers). Then a white cardboard is cut to guide where the jack guide should come.



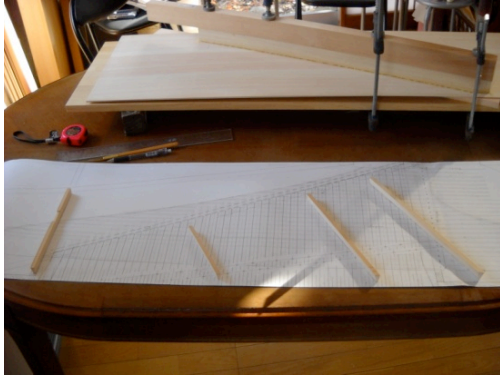
You can check if the jack are resting on the correct keys. Then mark the position of the jack guide on the soundboard. Then temporary place the jack guide on the board by tape.



Set the soundboard and check the jack guide is in position. Check the jacks are coming on the right keys. Before gluing the jack guide, you can cut out a sound hole.

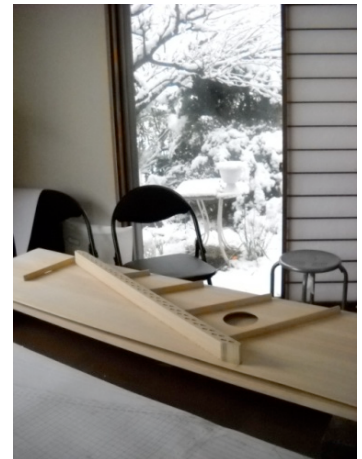
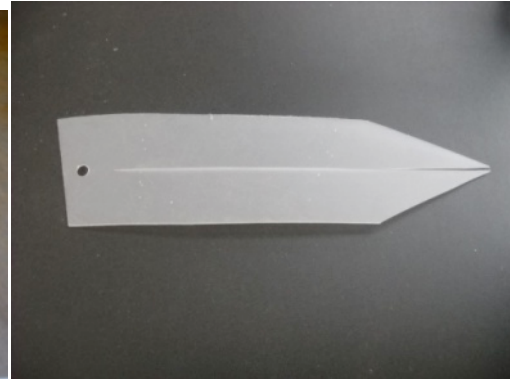
You need to glue the jack guide carefully at a correct position and perfectly.

Making libs and glueing them to the soundboard.



Cut out libs according to your plan. Glue them one by one. Please find a 3φround strip wood on the lib. This is a very good method of gluing libs on sound board. The strip will roll a little bit and this will help a good contact between the lib and the soundboard.

On lib at the left bass area has a cut off at the bridge so that the bridge and bar do not connected at one point. The bridge will come over the cut-off area.



You can make a simple tool shown above. This will help you to find where the bridge comes under the sound board.

The bridge should come just in the middle of the cut-off area.

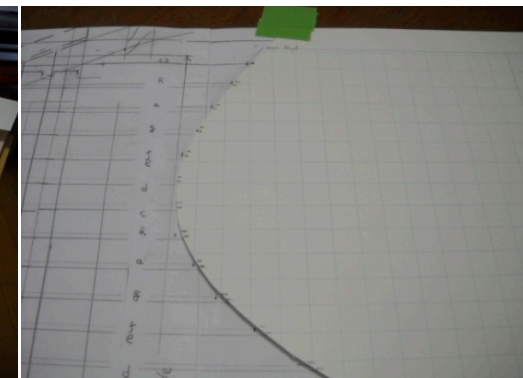
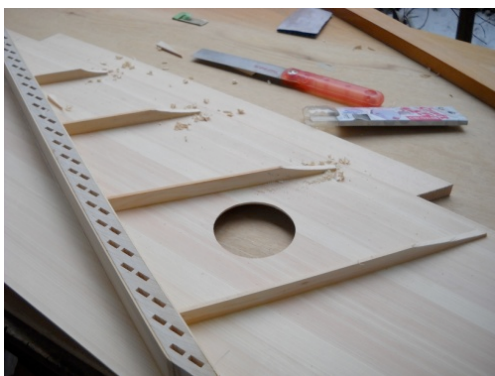
Cutting a square holes on the sound board.



The jack holes on the sound board are cut out with drilling at both ends and cutting with a cutter.



Libs are not cut into shape. This bendy saw on the picture is useful.

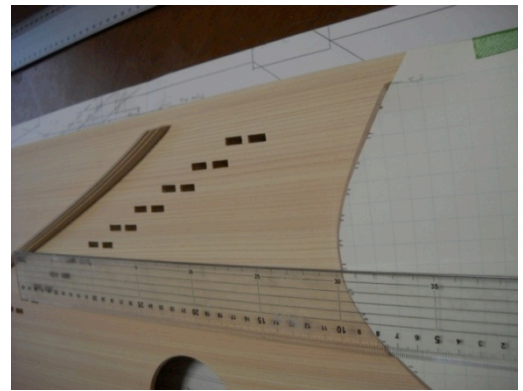
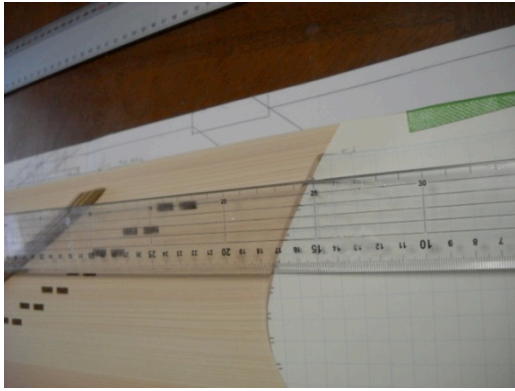


The balance rail and the rack is glued to the bototm, so you have to check many times that the jack will rest on the keys correctly.

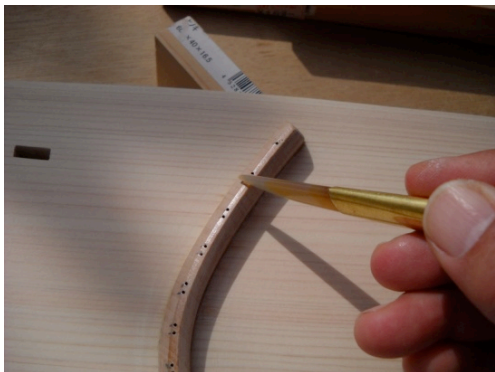
The positions of bridge pins are marked now using a card board cut out along the bridge and each positions

of bridge pins are marked on the cardboard.

If you use very thin wires, you need more angled side bearing de eliminate jumping of the strings.



The bridge now should be treated with agate pen.



Drill 1.0mm hole for 1.2mm jack pins.

The front and the back of the soundboard is shown bellow.





You will need to make two presuring brocks, one on the wrest plank, one on the hitch pin rail. You can test that they stay on the correct positions.



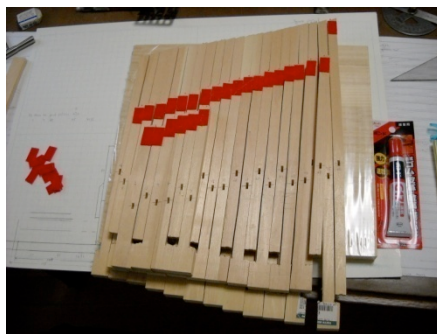
The left and middle picture show a wood screw through soundboard to the bridge.

Installing a soundboard

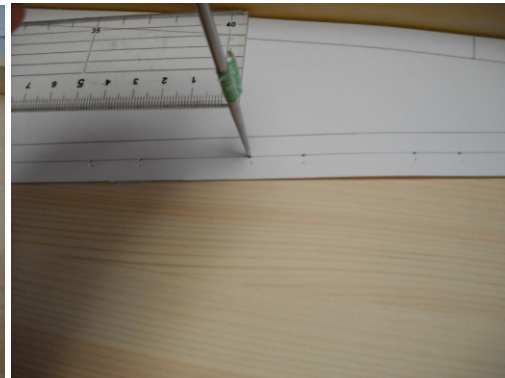
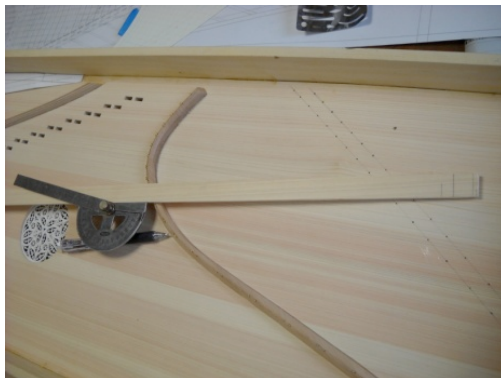
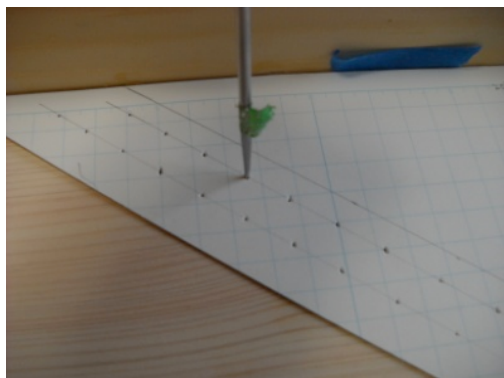
The second important job is to glue the soundboard to the case. I recommend you to make a final check if the jacks are resting on the correct keys.



Please prepare all you need for this job. You have no time to leave to get something. You have to do clamping continuously.



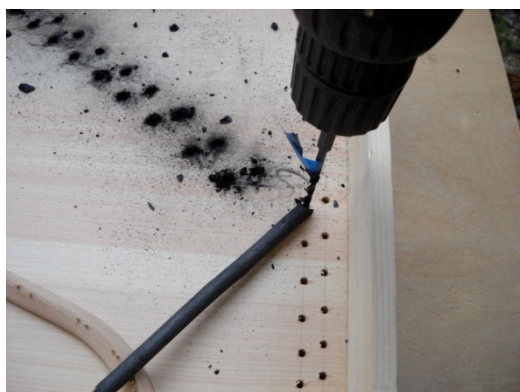
You can check again if the keys are resting on the correct keys.



These pictures show how you mark for the holes of wrest pins and hitch pins. The middle picture shows how to check the side bearing for each strings.



The left picture shows the drilling angled 2~3degrees. The right picture shows a hand drill on which two levels are glued on to it to achieve a angled drilling.

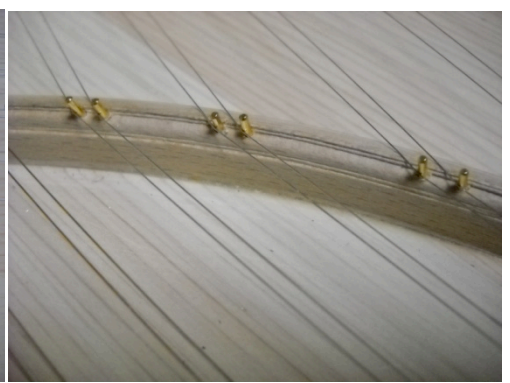
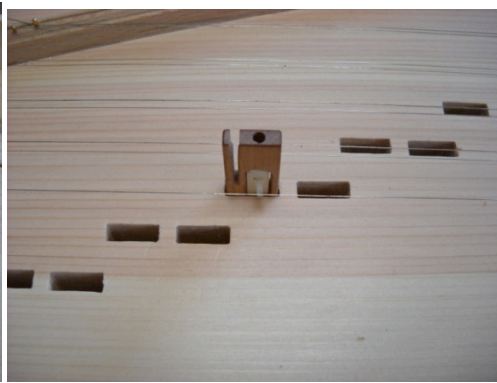


The left picture shows the charcoal is pushed into the surfaces of holes using drill turning counter-wise. The middle picture shows a hitchpin punch made in brass.

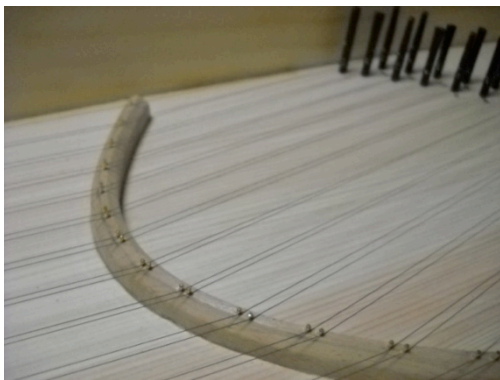
IMPORTANT: I recommend another method of burning. For example, make holes 3.6 diameter, then burn the surface of the hole using a drill turning counter-wise with the drill bit of 3.8 diameter. In this method you can try on a scrap wood of the same kind to see it works or not.

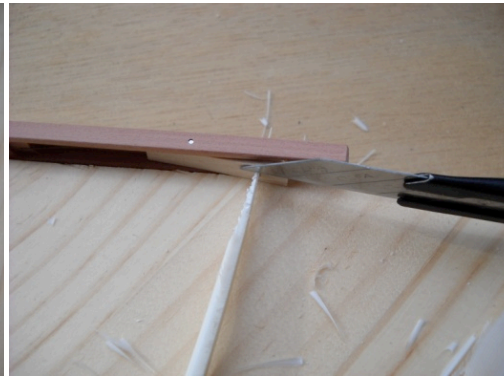


Drill holes for bridge pins carefully. You can not tap in the bridge pins with a hammer. So we have an idea of using hand drill. The left picture shows the drilling. The middle picture shows a hand drill with a bridge pin checked to it. You can push in the bridge pins turning it and pushing down.

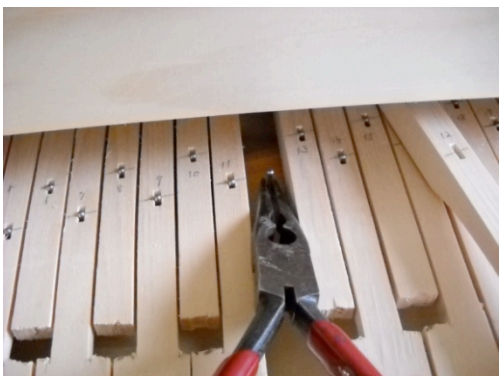


To keep the same distance between the jack and the strings, you can make a standard jack with nicely made plectrum.

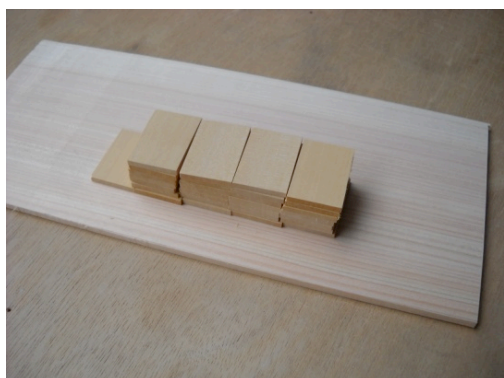




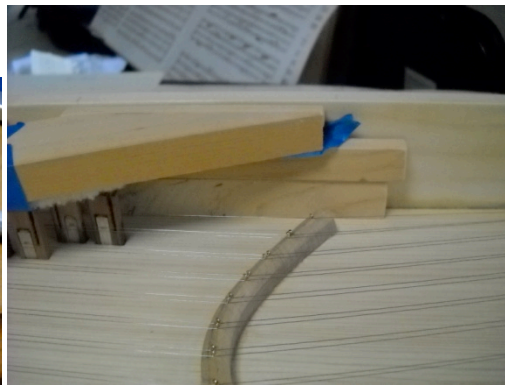
The width and the thickness of a quill should be very minutely tapered so that the quill should be snugly pushed into the tongue. If it is not, the quill will be slipped off from the jack. If you make the taper well, you can push a little more to get a better touch with the strings which may often occur in a mean time.



You can bend the balance pins to achieve level of the tops of the keys

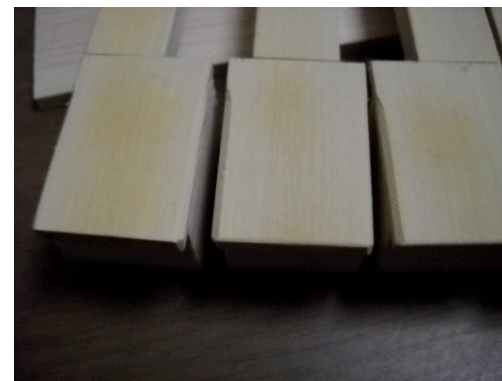
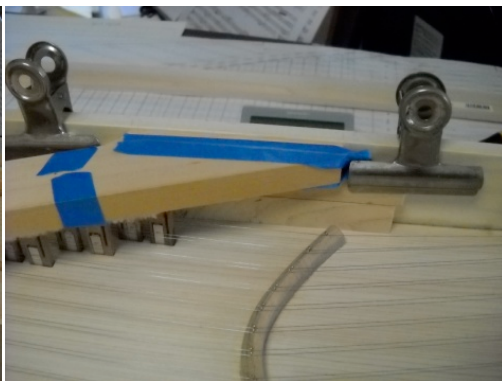


You will need to determine the thickness of the nameboard before cutting out the sharp key tops. One idea is to leave enough space between the nameboard and the ends of sharp key tops. Sharp key tops are now trimmed.



Determine the position of the jack guide carefully.

You will find a piece of brock under the jack guide support. This brock will help you to glue the jack guide support to a correct position of the case. The position especially how high it should be glued is very important because the jack guide defines the key depth in this system. You can define the position and glue while the jack guide is supported by the two jack guide supports. In this method it may be easier to locate the jack guide in a good position.



Each natural key heads are now trimmed which is shown on the right photo.



Name board and jack rail are finished. You will find that the jack rail is not parallel to the row of the jacks but

angled.

The name board is screwed to the front panel.



music desk



Voicing

voicing of keys It is done like a clavichord.

