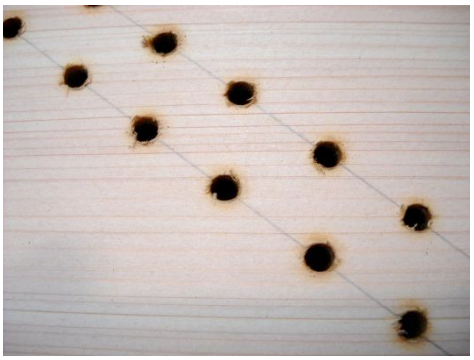
Addition1　for virginal non mesuré n.2　Burning Method on virginal making

2012 10 12

I tried burning to all the holes of virginal to eliminate friction noise between pins and wood or jacks and jack guide. I used several methods of burning.
Following methods are applied to the virginal non mesuré n.2.

1 wrest pin hole burning.

You need to make drill bit for the use of this burning method. I used 4.0mm dia. wrest pin, so I have made a burning drill bit from 3.9 dia. drill bit. I made the bit thinner turning the bit with high speed between two concrete blocks pressing the bit strongly. Finally at the top the diameter became 3.7mm, and 3.8mm at the other end. Then the bit is unsharpened using a very fine file so that it will not cut the wood clearly but burn the wood. Note that the side blade of the drill bit should not cut at all. This part acts only burning. You will have to check the holes are shining black. And you need to clean up the holes with air or tapping the instrument.



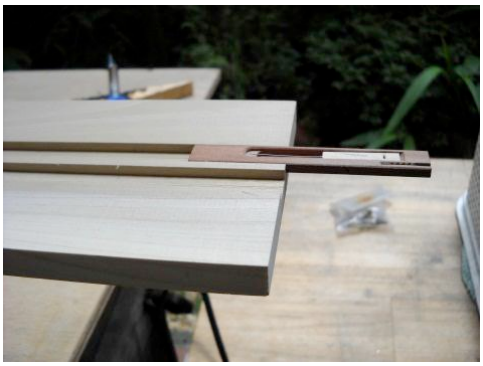
The metal file shown above is 800degree. If you file the bit with a file grade 300 or lower the bit will have rough surface and it will cut the wood.

You will see the burning mark around the holes. Please test enough times so that you can burn the hole well and the wrest pin should have a very nice smooth fit to the holes. Note that you can burn a scrap hard wood, push in the wrest pin and check if it turns smoothly. You will need to try this for many times. You may notice that making the blade dull is not so easy.

2

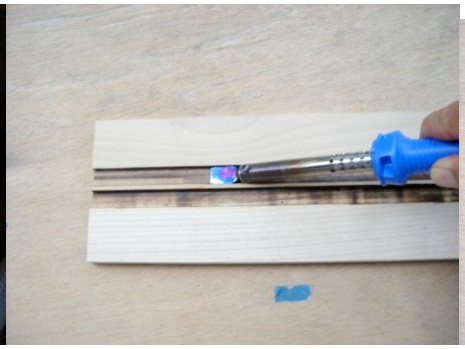
2 Jack guide burning

You can burn neatly using a solder iron. It is shown on the pictures.



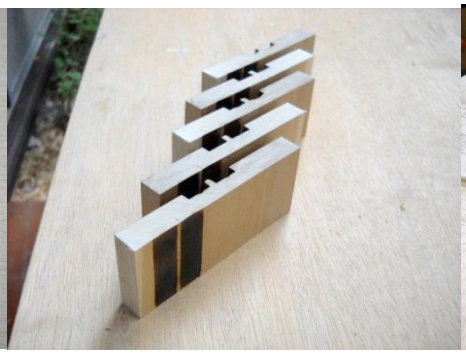
It is important that the width of the jack holes need enough larger than the jacks after burning.

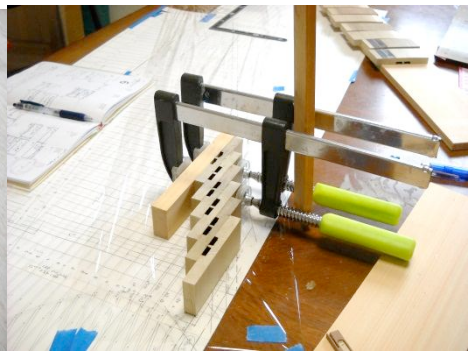
First make the jack guide with mortise near the size of the jacks. I use a jack of 12mm wide and 4.0mm thick. The width of the mortise should be a little more than 12mm before burning, so that the holes should have enough width after burning. The jack is straight grained, so in a wet weather the width of jacks will come larger and it causes sticking problem often. On the other hand the thickness of the jack, 4mm in my case, will not change. So the depth of the mortise should not come too large. If it is too large, the voicing of the instrument is difficutl.



Burn the mortise using a solder iron with a tip for this use. You can easily make this tip by your self.

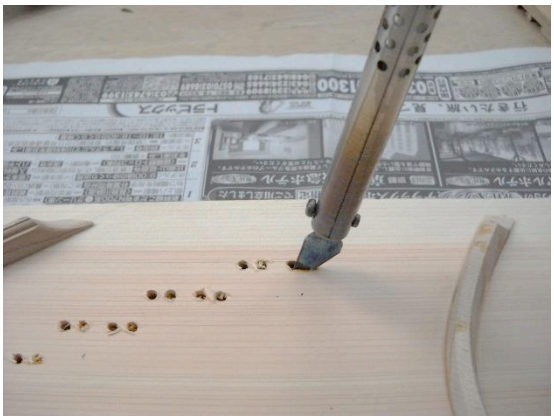
After this piece of wood is cut to segments, you can burn the middle area more so that you will get a more than enough space for a jack in the middle area of the hole. The gap between the jack and the jack hole on soundboard is shown on the next page by drawing.



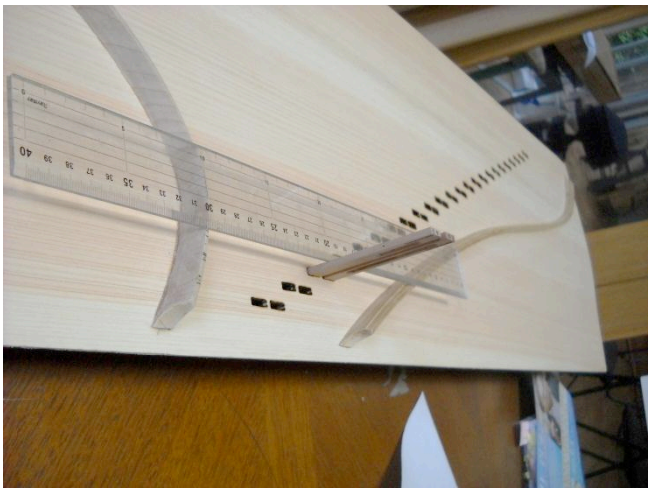


You can burn the back. You will know where to burn when you glue each

segments.

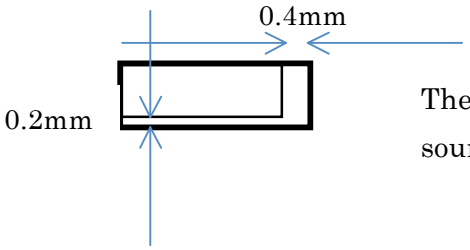


After the jack guide is glued beneath the sound board, you can drill two holes for each jack hole from under side. Then you can burn using the solder iron shaped above. The tip of this solder iron is designed for making balance pin mortises in burning method which will be shown bellow.



You can find where shall come the string to the right bridge. Especially you cannot get the positions of bridge pins from the drawing at the treble area where the jacks are closer to the right bridge. On the other hand on the left bridge the holes are drilled and burnt when you will string the instrument.

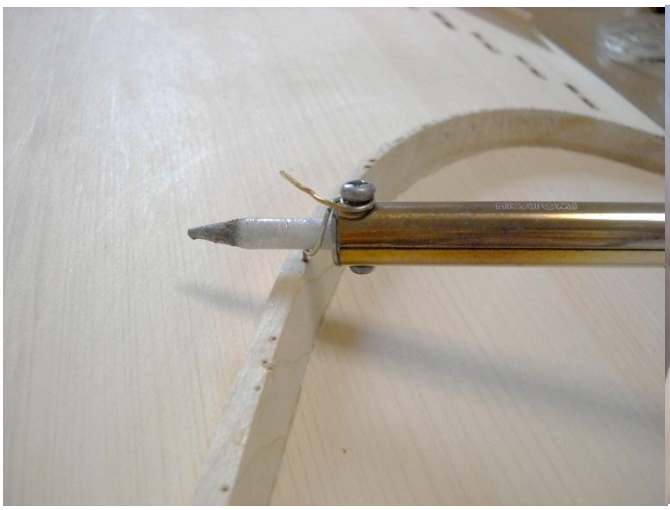
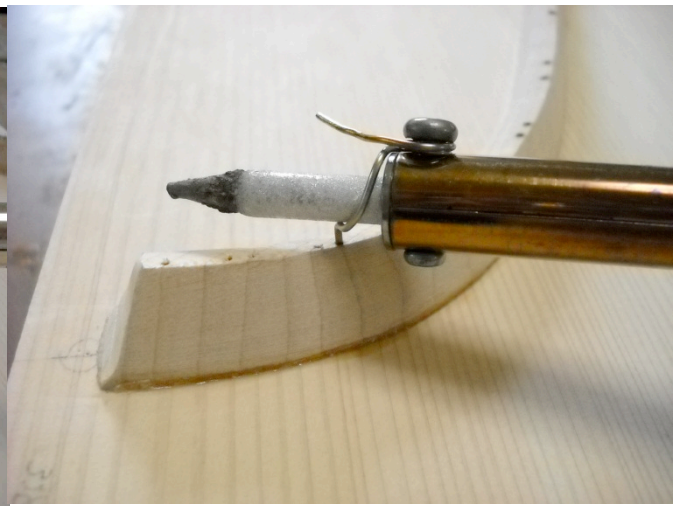
Note: You will need to burn the sound board carefully after you have made square holes on the sound board. IMPORTANT; You cannot make the hole too large for the jacks. The allowance is so small. The gap should be 0.2mm and 0.4mm which is shown on the figure below.



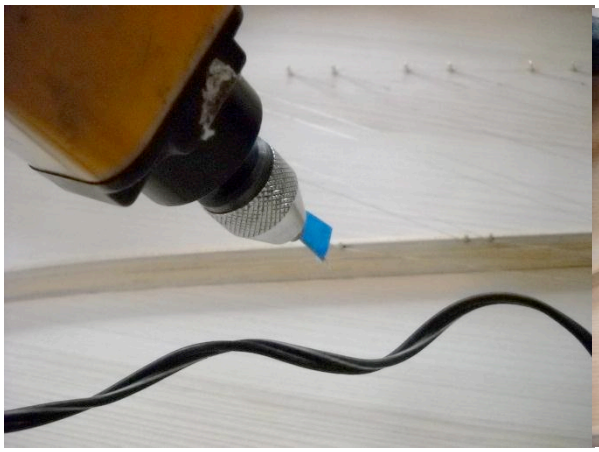
The smaller square shows a jack. The larger, a hole on a soundboard.

3 Bridge pin hole burning

It may not be possible to burn by drilling with a dull bit because the hole is so thin that the friction will not enough strong. I burnt after drilling by a heated brass rod. I use 1.2mm bridge pins, so I use 1.0mm drilling bit (normal bit). I put a 1.0mm brass rod on a solder iron and burn the holes pushing the rod in the hole.

On the left bridge, the bridge pin holes are drilled when stringing. So, on this work you will need a drill for drilling a bridge pin hole, vacuum cleaner for cleaning the hole and burning iron for burning the inside of the holes and a drill to let the bridge pin go in while turning.

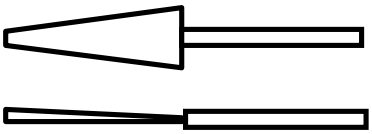



A bridge is chucked to the drill and it can be pushed in while turning.

4 Balance pin mortise burning

You can drill the keyboard blank and balance rail together if the keyboard blank is glued temporally to the balance rail. You can use a burning method to burn the holes of balance rail. After the keyboard blank and balance rail are take apart then you can reform the holes on the keyboard blank to mortises using the solder iron with tip on the picture below

. This picture shows that the key is cut apart but you can burn the hole before the keys are cut apart. It is also important to burn the underside of the keys where the balance washers will touch the keys. I use cow skin for balance washers. Take care you will not burn too much you need to check often with your balance pin. Especially the top of the mortise is close to the solder iron, so the temperature will go up higher. It may be a good idea to make the tip of the solder iron enough thick at the top but thinner at the other end. I try to draw the design of the tip.



5 Hitch pin hole burning

You can drill the hitch pin hole then burn it. I use 1.5mm diameter hitch pins so I use the 1.3 drill bit and burn after drilling, using a heated rod of 1.2mm attached to a solder iron.

6 The rack burning

You can file the tip of a solder iron as follows. It should slide the slit of the rack.