

# MAKER'S BENCH

## What to Do When the Bridge is Down.

by John Waddle

I believe that part of learning to play violin, viola or cello is also learning at least the basics of the parts of the instrument and how they work, just like in learning how to make instruments, I also learned the basics of how to play them.

Learning how to change a string, how to tune, using not just the fine tuners, but also the pegs, how to keep an instrument clean, and how to keep the bridge straight, are good basic things to know to keep the instrument working well, sounding good and looking beautiful.

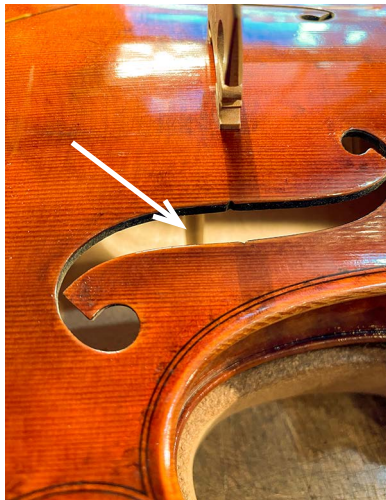
There are many reasons why a bridge may not be attached. One might assume that the bridge would be glued on to the top, but it is only held in place by the pressure of the strings pushing down on it. When all of the string tension is taken off, there will be no pressure down on the bridge. Sometimes when this happens the sound post inside the instrument may fall over. In my experience, a sound post that is fitted optimally will not fall over if the bridge falls. If the post is down, a luthier will need to check it to see if it can be set back up, or if the instrument needs a better fitting post.

A well-cut bridge is a marvel of design, engineering, art and craftsmanship. Some bridges are heavy looking, thick, and clumsy. Some are light, efficient, and graceful. The process of fitting a bridge to an instrument takes time and care.



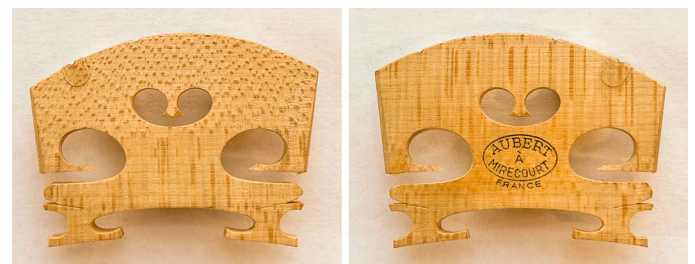
This cello bridge was hastily made. It is heavy and clunky.

This cello bridge was made with thought and care. Made by Luca Primon, of Milan, Italy.



Before setting the bridge back up, check to see if the sound post is still standing in its place inside. If not, it's time to get a trusted luthier to set it up.

Most luthiers start with a bridge blank, but I've made some from raw wood. When I am choosing which blank to use for an instrument, I consider the weight of the blank, the grain structure of the wood in the blank, how the blank is cut, and the beauty of the wood. I take into account what the characteristics of the instrument are, what I know about the person who will be playing the instrument, and if it had a bridge on it before, what I know about that bridge and what improvements I can make with the new one.



The bridge has a front side, which faces the fingerboard, and a back side, which faces the tailpiece.

The back side may have a stamp in the wood with the mark of the bridge blank maker. In this case, it is Aubert. The Aubert bridge shop in Mirecourt, France, has been making bridges for more than 100 years. Each bridge blank is fitted by the luthier to the individual instrument, which takes training and skill.

The front side curves down more on the side with the small parchment glued on the top of the bridge under the top string, which is the thinnest string.

The most common cause of bridges falling off instruments is dry air. When winter comes and the heat comes on, the humidity goes down. The wood in the pegs shrinks and the pegs let go, causing the strings to go slack, and the bridge falls. This can be prevented by keeping the instrument in a stable environment.

If the bridge is down, it's a good opportunity to take a good look at it.

Check it to see if it has any cracks, or if it is warped. If there are cracks, the bridge needs to be replaced. If it warps, it might be possible for the luthier to straighten it, and it may last a while longer. I've seen bridges that have been maintained and lasted decades with no problems.

The exact placement of the bridge on the top of the instrument will have an effect on the tone, and ease of playing. Because the feet of the bridge are fitted to the individual instrument in a specific location, putting the bridge on in that position is important. Learning where the bridge goes is part of getting to know the instrument.

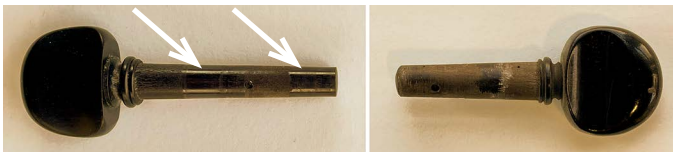


Most instruments, even new ones, will have marks on the top where the bridge has been.

When stringing an instrument after the bridge has been off, it's good to do the work on a stable surface with good lighting, like a table with a window or a good lamp. It's good to protect the instrument by placing something under the instrument, like a blanket or a towel, and it's good to protect the top of the instrument by putting something under the tail piece, like a piece of cloth, or stiff card stock.

Understanding how the pegs work will help in knowing how to use them. A well fitted and lubricated peg turns smoothly and with ease.

Without lubrication, the pegs would not turn at all. Before winding the strings up on the pegs, pull out a peg and look at it. Take a minute and with a clean dry soft cloth or piece of paper towel, wrap the cloth or paper towel around the peg and give it a few turns and then put it back in the peg box and give it a few turns. Take it out again and look at it. If it fits properly, you will see that the peg is shiny all the way around the peg where it rubs in the peg box, and evenly on both surfaces of the peg where it rubs.



This cello peg is shaped properly and makes good even contact in both sides of the pegbox.

This cello peg shows lack of contact on the sides of the pegbox. We can see that the owner put chalk on it in the hopes of getting it to stick, or not slip.

If the peg is not making good contact in the peg box, it may need to be replaced, as it may slip when you are trying to tune.

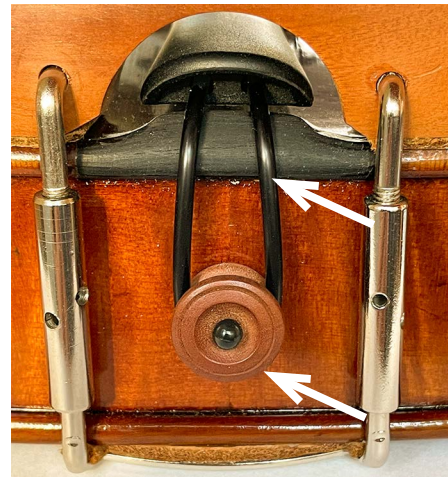
If the peg slips, pushing it in to the peg box will make it tighter, but if the peg doesn't fit well and the only way to get it to hold is to use excessive force, it's pretty easy to crack the peg box, which is unfortunately all too common.

The best lubricant if the well-fitted peg sticks is Hill Peg Compound. I recommend buying one and using any time your pegs are sticking, or every time you change strings. Do one peg at a time

because the pegs are fitted specifically for each peg hole. The peg that fits in the peg box holes for the low string will not work in the holes for the peg for the high string.

It's good to lubricate the grooves in the nut and the bridge with a little graphite from a pencil. Just rub the sharp pencil into the grooves enough to coat the surface. That will help the strings to slide over those spots and not get stuck.

Check that the end pin is securely in place, and that the tail gut is secure around the end pin and centered on the saddle.



The tailgut is centered on the saddle, and the end pin is secured into the lower block inside the instrument.

If the end pin is fitted optimally, it will be snug, and will not move when there is no tension on it. This is important because if it is not snug, it may tend to keep sticking out as you try to tune the instrument up. If that's the case with your instrument, you may need a new end pin. This is a job for the luthier. End pins are not interchangeable.



The strings are wound on the pegs as shown. When tightening the strings, go slowly. Too much tension and the string will break.

My approach is usually to put the low string and the high string in their proper pegs first, make sure that the string is in the groove of the nut, put the ball end of the string in the tailpiece, or the fine tuner in the tail piece, set the bridge up under those two strings, make sure the feet are in position, and then gradually bring the

tension up on those two strings just until they are holding the bridge in place.



Make sure that the strings are securely anchored in the fine tuners in the tailpiece, or if there are no fine tuners, in the holes in the tailpiece.

Check that the top of the bridge is straight, then put the two inner strings in place.



When tuning up the strings, make sure that the bridge stays upright in its vertical position.

It's usually easy to tell which string is the bottom string because it will be the thickest, and the top string is the thinnest one. The two middle strings can be more difficult to discern. If you put the two middle strings on and give them a little tension and pluck them, if they have about the same tension, one will have a higher pitch than the other. That will tell you which string they are.

As you tune up the strings, keep plucking the strings so you can hear the pitches. Even if you have perfect pitch, most musicians I know now have a tuning app on their phone. These work very well, but still require some practice to use.

I usually tune the top string first. Check that the bridge is still straight. Tune the string next to the top string. Check the bridge. Do this until you have tuned all four strings and then check the bridge again as it will be off.

The reason you need to keep checking the bridge is that it will

keep being pulled by the strings as you tune them and will need to be pulled back. Since the pressure exerted on the bridge by the strings is on the top of the bridge, it is the top of the bridge that you need to exert pressure on to straighten it. If you try to push the bridge in the middle, it is very easy to break the bridge. Watch the feet to make sure that they are still in place on the top. Check the end pin again.



The bridge is centered between the notch in the f-holes, lines up with the fingerboard, and is standing up straight. Each string is in the groove made for it by the luthier.

Cello bridges need to be fitted in such a way that when the tension is brought up, the feet will not splay out due to the curvature of the top. This is done by spreading the bridge feet out during the fitting process. This means that when putting a cello bridge up, the feet may need to settle into place. This is normal.

Many professional musicians know all of these things and are comfortable doing them on their own instruments, but students don't know them until somebody teaches them. Knowing the basics of maintaining an instrument will help the musician feel confident and comfortable as they go through their musical life, as well as saving them a lot of money in repairs!

*John R. Waddle is a violin maker, dealer, and restorer whose shop is in St. Paul, Minnesota. He is a 1981 graduate of The Violin Making School of America in Salt Lake City, Utah, and has had his own shop in St. Paul since 1986. John is a member of both The American Federation of Violin and Bow Makers, and the Violin Society of America. †*