



At this point, you have a stave braced at close to normal height. If you’ve been paying attention, you’ve corrected any major problems. Both limbs should be bending approximately the same, with the “tiller” or measurement between the string and the limbs some distance from the center approximately the same - let’s say within 1/2 - 3/4”.

The next steps are much the same as we’ve done before, with gradual increases in bending while watching carefully for any stiff sections or weak hinges. Also, if you’re aiming for a given draw weight, you’ll need a scale to tell how hard the bow is to pull. A small travel scale such as that shown here is under \$20, and very useful. This one has a pointer which shows the maximum pull applied. Try to keep this at, or less than, your desired final draw weight.



For the coming work, it’s helpful to have a tillering stick or tillering tree set up, where you can draw the bow a specific distance and tie the drawing line, or hook the string into a slot or over a pin* This is so you can use a simple tool (called a “tillering gizmo”) to help you identify exactly where the bow is bending, and where the limbs are too stiff. When you first start out, (as shown below) every part of the bow is probably too stiff. On this walnut bow we needed to work the whole left limb and the outer 2/3 of the right before pulling any more. Remember that patience is the key. Keep checking your “tiller” measurement between string and limbs, keeping it even.



**Note: Some bowyers including Stim Wilcox (“The Art of Making a Selfbow”) advise against ever leaving the bow “at draw” like this, but I find it helps new bowyers locate spots needing work more precisely - to me that help justifies any added stress caused by holding at draw.*



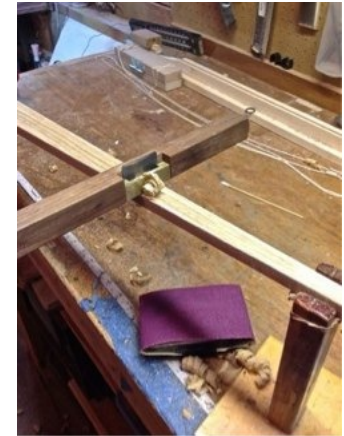


Here’s the “tillering gizmo” held up against the belly of our oak pyramid example bow. The pencil is screwed into a nut in the gizmo, and extends just slightly from its base.

Adjust the pencil so it won’t hit the belly where the bow is bending well, then run the gizmo up and down the limb a couple of times. You should see pencil lines wherever the limb is a little flat, and no lines where it is bending enough for the pencil to miss.

For the pyramid bows you’re making now, this will give about all the information you need. Simply scrape or sand away the lines (removing a slight amount of wood from where the limb wasn’t bending as much), exercise the limb 20 times or so, and repeat. Remember if you don’t work the wood after each removal, the limb may not show the effect until later. What you’re after is an even curve that the gizmo will trace from (near) the fade to (near) the limb tip, without breaks that would show excessive bending.

You can make your own gizmo from a chunk of wood; Dave Martin’s model shown here is reversible so you can use the long side on slightly-drawn, near flat limbs, then the short side as the curves become tighter.



It is important not to become fixated on one limb - remember that each change you make in any one place will show up as a different bend everywhere along the bow. Here’s one limb (at right) that was worked on a bit too much, before I noticed how much the bend on the left was reduced. I had to reduce the left limb to match, resulting in a pretty but underweight bow.

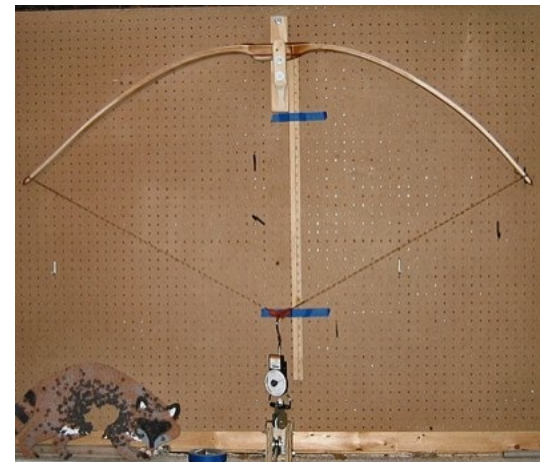
The only way to prevent such problems is to take your time - and to walk away from the work whenever you become impatient, or tempted to rush anything. Very few bow projects are damaged when left alone - just remember to unstring them!



OK, let's say you've got both limbs bending smoothly and evenly, hopefully with less bend at the fades than the example shown at right. Now you've pulled the bow near to your final draw weight (let's say 40# for this example, using our pyramid bow design). If you've been doing this right, you can pull that weight without damaging the bow - but you're probably not yet at your draw length.

The lower blue mark here shows a draw length of 28". Just so you know, this is measured from the "back" or target-side of the bow, or more technically 1.75" ahead of where the web of your thumb and forefinger contact the handle. You'll be pretty close if you measure down 26 1/4" from there. You don't have to pull the bow 28", just to the draw length that fits your needs - when you sign the bow you will mark down the length it is designed for.

Now let's assume that your bow draws 40# when drawn to 26". Don't pull further - not even a half inch. Get out your sandpaper and do 20-30 strokes down each limb, exercise the bow, and test again. Repeat, including the exercise and test after each 30 strokes on each limb. Many, many bows are lost at this stage, when their makers are anxious to be done and resort to a power sander or scraper. At this point, a few thousandths of an inch make a difference. Keep at it, and you'll reach your draw length at your weight.



Some bowyers recommend now pulling the bow another inch, to assure themselves that the bow is not right at the point of exploding. It's not a bad idea, since doing this with a pulley is safer than in your hands outside - I've broken bows both ways and inside is less stressful.

The final stage in tillering is "shooting in"...putting a bunch of arrows through the bow to let the wood work itself into final shape. Start with partial draws, and gradually work back to your full draw length. Using a heavier arrow for this is easier on the bow; as is using B50 dacron string, which is stretchier and more resilient than more modern low-stretch fibers. Start off easy, 10-20 shots, and over time work up to 50. Don't be fussy about accuracy for now, you're just getting your bow into shooting condition. We will consider arrow rests and other enhancements later on.

In between each shooting session, remember to check your tiller measurement and watch for signs of hinges or stiff sections - there's no law against putting the bow up for a bit more fine tuning as it works in.