

# BEGINNING HAMMER DULCIMER

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## TUNING HAMMERS

When we buy a dulcimer, most often the builder or the store throws in a pair of hammers with the bargain. Those hammers become our hammers by default not by design. Bad idea. You should not think about hammers as a one-size-fits-all, *spandex* proposition. Guitar players fuss over the material and thickness of picks. Fiddle players think a lot about the nature of the bow and how much rosin to use. Yet, hammer dulcimer players just pick up a set of hammers and start banging away. Do yourself and your listeners a favor – shop around for hammers and try the style of hammers that works for you and your instrument. AND tune your hammers. That means making conscious decisions about the style of shaft, the length of shaft, the length of the head, the width of the head, the material of the head, the weight of the hammer, and the balance of the hammer.

There is good economic news about becoming hammer smart. Ask yourself this question: Do I really want to spend \$40 on a pair of hammers? What happens when you sit on those \$40 hammers? Or lose them? Or your dog chews on them? Maybe you don't need all that lovely and expensive cabinetwork, carving and glossy finish on your hammers. There are lower cost alternatives. You should know about them and make an informed decision on how much to spend on hammers.

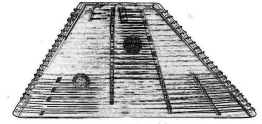
### Hammer Characteristics

**Two Basic Styles of Hammers.** Dulcimer hammers come in flexible or inflexible shafts. There are great players using both styles. Try both styles yourself to see what works best for you. Flexible shaft hammers are often lighter and can give an interesting snap to a playing style. Inflexible shaft hammers are almost always prettier and more expensive.

**Length of the Hammerhead.** You must consider how long the hammerhead is in relation to the distance between courses of strings on your dulcimer. If the hammerhead fits easily into this gap, it can get wedged between string courses and utterly destroy your playing. Get a hammer that will not fit into the gap between courses. On the other side of this caution, don't buy a hammer that will easily span the gap. You will find yourself hitting two courses of strings simultaneously - equally disastrous for playing.

Hammerheads are rarely flat. All of them curve upward. So there is a "strike zone" to the head that is usually smaller than the overall length of the head. That strike zone must more than cover the width of your string-courses. The hammer must reliably hit all strings in the courses. The broader the strike zone on the hammerhead, the more accurate your playing. Hammerheads that are sharply curved have a small strike zone.

**Weight of the Hammerhead.** If the hammer is perfectly balanced in your hand, it is probably a difficult hammer to use. The head should have a little heft to it. You want the



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head to help you play. That means, the balance of the hammer has to be somewhat toward the head. If it is perfectly balanced or just too light, you will have to put more physical effort into your playing. That can result in a heavy, cumbersome playing style. Don't overdue it. An extremely heavy hammerhead is ponderous and will limit your speed and grace. Heavy hammerheads also tend to fly sideways at high speed and reduce accuracy in playing. Choose carefully and remember you will likely make some mistakes. I have a bucket full of hammer experiments at home. Some of them are better wall hangings than musical tools.

**Width of the Hammer Head.** You must compromise on the thickness of a hammerhead. The tradeoff goes like this. A wide or thick head gives the greatest volume but produces a percussive sound – a THUNK – with each hammer strike. A thin hammerhead will produce very little unwanted percussive sound, but the volume of sound will be low. So, builders try their best to make hammers that produce the maximum volume with the lowest percussive sound. When you buy a pair of hammers note the thickness of the strike zone on the head. Is it excessive? Is it very thin? If covered with soft leather, a thick strike zone hammer will exhibit a lot of damping of the sound.

Shape is also important. Some builders make hammers with strike zones that have a v-shape to the striking edge. These can be deceptive because the thickness you see from above or beside is different from what may be a very skinny strike zone at the apex of the V taper.

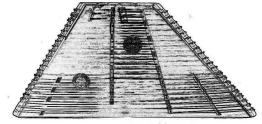
**Length of the Shaft of the Hammer.** The hammer should not require an excessive stretch to reach the high-pitched tones on your instrument. Stretching will reduce both speed and accuracy. On the other hand, an excessively long hammer shaft will also give accuracy problems for low-pitched tones. The angle at which you play your instrument and the length of your forearm govern this decision. Some players position their instruments dead flat. Others play the instrument in almost a vertical position. The decision is a trial and error matter. Above all, be comfortable. If the hammer feels bad, it *is* bad for you.

**Surface material of the head.** The type of material on the striking surface makes all the difference in sound and playing style. A bare wood surface gives a bright tone well suited to fiddle tunes but is probably a bad choice for hymns. Sometimes, bare wood and a thin hammerhead do not produce the full volume of the instrument. A soft leather covering on the hammerhead will be great for a ballad but might not be heard in a jam session. All leathers do not produce the same sound. Different builders use different materials that produce different sounds.

## **Tuning Hammers – The Striking Surface**

It is not hard to get the best possible sound out of a pair of hammers. A few common or easily obtained supplies and a little time will produce custom hammers with great sound and playability.

### **Materials and Tools Needed to Alter the Striking Surface of Hammers**



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Here is a selection of tools that will help you alter the surface of your hammers.

**Tools:**

Razor blade or Xacto knife (very sharp)	Sandpaper 220 grit
Straight edge to guide the cut	Cutting board
Tooth picks used to apply the adhesive	Ruler
Rubber bands may be needed to hold things in place	

**Adhesives:** *You don't need all of these. One or two will do the job*

Shoe Goo™ (or similar running shoe repair material)  
White Glue (like Elmer's Glue™)  
Fabric glue (Fabric Tack)  
Contact cement (*my personal favorite*)  
Leather Weld

**Covering materials**

**Leather bootlaces** are usually about the right width and they have varying thickness along their length. Typically, one side is polished and the other is rough. Leather bootlaces are available in most shoe stores. Suede laces are a favorite of many builders. Generally leather laces come in 48-inch lengths. That will cover a lot of hammers!!

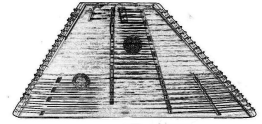
**Old leather shoes, belts or straps** - cut up the family discards and use these as a source of coverings. Fabric stores often carry leather, too. Remember that the thicker the leather, the quieter the sound. It makes a difference in the final sound if you use the rough side or the polished side. The rough side makes a quieter sound. If you put the polished side on the face of the hammer, be sure to scuff it a bit so that the adhesive will hold.

**Dr. Shol's Moleskin™** – many players report good results with this commercial product. It comes in two thicknesses. Experiment to find what works best on your instrument. One nice thing about this product is that it has an adhesive backing.

**Piano felt** - get this from a piano tuner or autoharp repairperson. Felt will not last nearly as long as leather. But it makes a wonderful sound. You can't find this at the fabric store. Piano felt is much denser and more durable than what is sold in a fabric store. Use the THIN piano felt. Autoharp pads work too, but must be cut down to produce the right thickness. That's a tedious process.

**How to put the material on the hammer**

1. Measure and cut the material you want to affix to the hammerhead. I usually trace the hammerhead directly on the material and cut from that pattern.
2. Lightly sand the surface of the hammer to remove the finish. You just need to lift off the shine. Rub away the dust from the sanding.



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3. Put a small puddle of adhesive on a scrap of paper. Use a toothpick to apply a light layer of adhesive to the hammer and the covering material you are going to use. Not much adhesive is required. The toothpicks make it easy to control the amount and placing of the glue.
  4. The adhesive manufacturer may recommend a short drying period before putting the two items together. Follow those instructions. When ready, stick the two together. Position the leather on the head and let it dry. If I'm using Elmer's glue, I usually lightly clamp the combination overnight with rubber bands. With contact cement, clamping is not necessary. Whatever adhesive you use, let it cure overnight. The hammers are ready for playing the next day.

### **Comments on Adhesives**

The type of adhesive used will make a *huge* difference in the quality of the sound produced by the hammer.

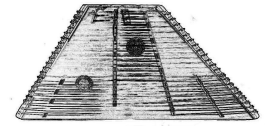
**White glue** (like Elmer's™) will dry rock hard and make a very bright sound. Don't use this type of glue on a surface that will be asked to produce a soft and mellow sound. It will defeat the purpose of that soft felt because, as the glue hardens, it will soak into the porous felt. When the glue dries, the felt will be just as hard as the glue. Elmer's™ is a great choice for hammers that will be used to play in a jam, in a band, or wherever volume and clear articulation are at a premium.

**Contact cement** is very thin and unobtrusive. However, as the name implies, if you follow the manufactures directions exactly, you get one shot at putting the material on straight. It is hard to make adjustments after the two materials come together. I always shorten the drying time on this adhesive and put the leathers on sooner rather than later. This is my adhesive of choice. It holds up well over time and is easy to use.

**Fabric cement** sold in bridal shops or fabric stores and a material that runners use to repair their worn down heels with the trade name Shoe Goo™, are excellent adhesives. Both fabric cement and Shoe Goo remain flexible after they dry. They will not alter the felt or leather surface of the hammer. That means, the soft qualities of the leather or felt will be retained. If you are looking for a very quiet and bouncy hammer, these adhesives are worth a try.

**Never ever** - under any circumstances - use epoxy or super-glue or anything that promises a bond stronger than steel and more durable than Mount Rushmore. You may have to fix this thing at some point and you will be unhappy to find that modern chemistry has trashed your favorite set of hammers.

The material and the adhesive will change the weight and balance of the hammer. You will have to consider this as you alter your hammers. Try not to use very thick coverings and globs of glue. The hammers will be too heavy and the sound will be wimpy, too.



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### Hammers, Materials and the Angle I use

After a lot of experiments I have settled into this pattern. All the hammers I use are flexible shaft hammers. The \$12 hammers work better for me than the \$40 pairs. That's more than just good financial news. It's better music too. Make your own choices. I have lots of pairs of expensive hammers that led up to my decision to use the lower-cost, flexible shaft hammers.

For a hard, bright sound, I use Elmer's White Glue and relatively thin leather. Bootlaces are too thick for this sound. I've been very happy with leather from worn out dress shoes or walking shoes.

For a soft sound I use DAP Weldwood™ Contact Cement. I buy the 3 oz. bottle. That quantity of adhesive will glue hundreds of hammers. Usually the adhesive in the bottle dries out before it runs out! The maker recommends a lengthy drying period before putting the leather and the hammer together. I don't follow that. Usually, by the time I've got the adhesive on all four pieces, I put the first hammer and leather together. If you time this right, it won't be necessary to clamp the leather and hammer together to ensure a good bond.

I continue to experiment with various leathers for soft sounds. Bootlaces are great. But, so too are cast off small leather items. The best set of soft hammers for my fixed-soundboard dulcimer is covered with the leather that snare drummers use as no-slip-grip material for their drumsticks. The best set of soft hammers for my floating-soundboard dulcimer is covered with the leather that sailors use on the lines that tie their boats to a dock. It's called "anti-chafing gear". The message is - be creative in choosing coverings for your hammers!!!

The angle at which I position the dulcimer has change a great deal over the years. When I began playing, I put the instrument at an angle that was not unlike the slope of an expert run at a ski resort. Now the instrument sits at an angle that is more like a tabletop. It's not quite, dead flat, but it is pretty close. The angle at which the dulcimer rests can make a difference in the type of hammer that works best. Again, you must experiment to find what works best for you. The message is, once again, be creative and be prepared to change.

#### FACTOID

##### *"A" Wasn't Always That Way*

John Shore (1662 – 1752) is credited with inventing the tuning fork. Back in his time there was no standard for tuning. By Mozart's day, the tuning fork had become ubiquitous. But arguments over the standard pitch to use for tuning were raging.

During the early 19<sup>th</sup> century, musicians accepted that a concert pitch "A" was 420 Hz (that's 420 cycles per second).

Today the agreed upon standard for concert pitch "A" is 440 Hz. That's almost a half-step difference in tone. Some contemporary symphony orchestras tune as high as 465 Hz. That high, concert pitch gives wind players a fit!

If Mozart heard his music today, he'd probably think it was pretty sharp 😊