The Baginski Beveler
by
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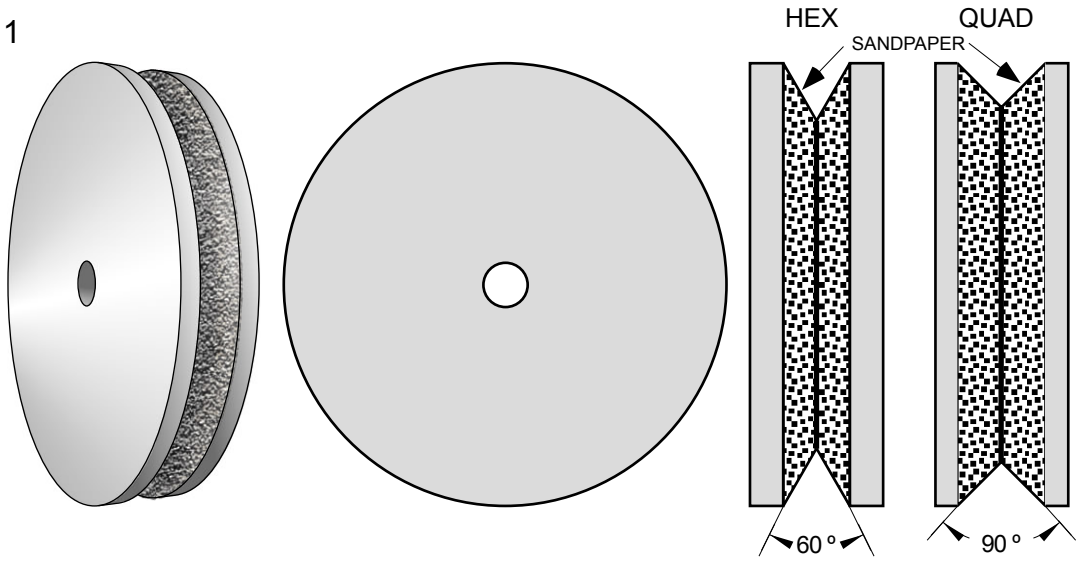
The Baginski Beveler is a roughing beveler that is inexpensive, easy to build, produces accurate strips with edges precisely parallel to the fibers, and is very easy to use. My friend, Rolf Baginski, invented this device. Rolf does not guaranty that someone else didn't invent it before he did, insisting that, if I describe it as the "Baginski Beveler," then I must assume responsibility for claiming he was the first!

Bevelling each strip of bamboo to a 60º (or other) angle is an essential step before planing, and many devices exist to do that job. But the remarkable appeal of Baginski's machine is in both its simplicity and its ability to self-center the strips, parallel to the fibers, as they're being fed. The machine needs no hold-downs or infeed/outfeed guides. The heart of Rolf's machine employs neither a cutter-head nor a router bit, but a simple wheel with a 60º (or other angle) groove let into its circumference. The groove is lined with coarse, replaceable abrasive (from a sanding belt), and the wheel itself is constructed in two, separate halves--each being cut to one-half the total included angle. These halves are then drawn together and fixed by an arbor. The wheel can be made, in a home shop, of wood or metal, and rotation speeds even as low as 800 to 900 rpm work very well. Figure 1 shows what I mean.

Figure 1

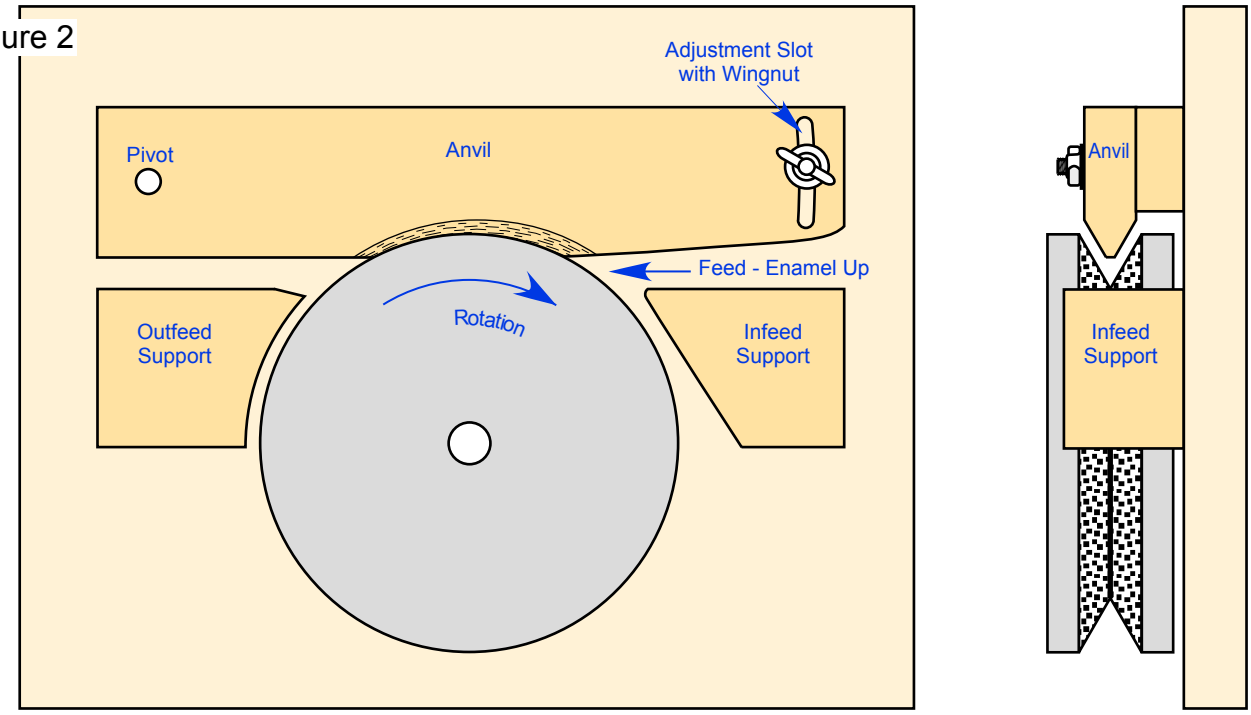


The wheel is mounted on a motor shaft, and a split bamboo strip is fed into the wheel's "slot." Infeed is AGAINST the direction of the spinning wheel's rotation, and the strip's enamel side faces away from the groove. Feeding against the direction of rotation means that, as material is removed, the fibers are actually being split off.

A special characteristic of the Baginski beveler is that the abrasive wheel wants to equalize the amount of material being removed along each side of the groove, and actually self-centers the bamboo as it's being fed. That is, the abrasive wheel will guide a strip's sweeps and bends through the center of its groove, while abrading material, parallel to the fibers, equally along each side. In contrast, many high-speed cutters or router bits are capable of cutting straight through whatever they're fed. They do not care whether the material is straight, bent, fat, or thin and may cut across rather than parallel to the fibers in a strip.

Strips can be fed either across the top or the bottom of the Baginski Beveler wheel, while their finished dimension is determined by an anvil whose height above (or below) the groove is adjustable. An advantage of feeding along the top of the wheel is that the cuttings are thrown down instead of up. A cover and dust

Figure 2



extraction are excellent ideas. Nodes should be flattened, but only the most severe kinks need to be straightened at this point. Figure 2 shows a simple and workable anvil arrangement. The taper of the anvil bed is cut by carefully lowering the anvil onto the groove of the turning disk.

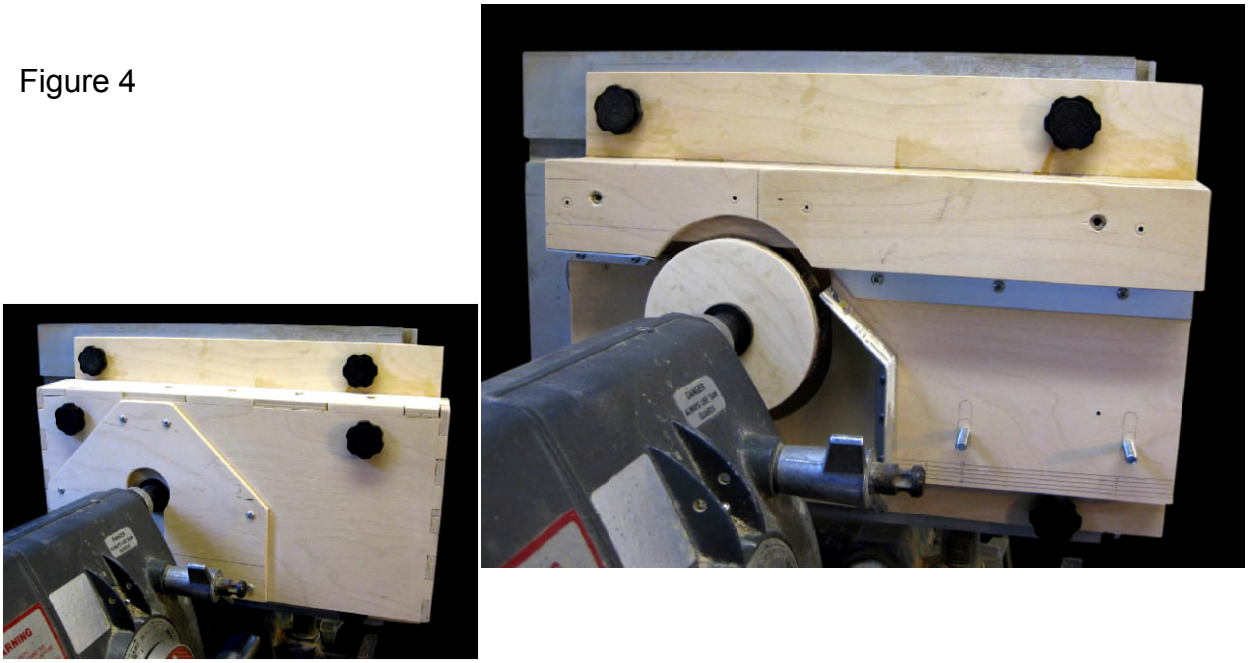
I have made wheels 5 to 7 inches in diameter from baltic birch plywood, and these are used at rotation speeds of 900 to 2800 rpm. I do not recommend using plywood wheels at speeds greater than 3500 rpm. Rolf Baginski first used an old washing machine motor (shown on pages 174 and 175 in his book "Split-Cane Rods -- Bamboo Treasures"), but now uses a variable-speed, heavy-duty router set to a relatively low rotation speed (8000 to 10,000 rpm), and an abrasive wheel made of aluminum. I recommend an enclosing safety cover if the beveler is used at wheel speeds greater than about 1000 rpm.

Drive motors can be almost anything, including grinders, metal and wood lathes, or adjustable-speed routers (used at speeds no more than 8000-10,000 rpm). In most cases, it is useful to mount the wheel somewhat permanently on a mandrel or arbor fitted to the motor shaft (or held in a chuck). The two halves of the wheel can then be separated when it's time to replace the abrasive.

The abrasive material itself is cut from sanding belts; 36-grit is good, but up to 50-grit is also okay. The abrasive pieces are glued with epoxy to each side of the wheel's groove, and should be well-fitted. Replacement requires only a heat gun. Figure 3 (at the end of this article) shows how to make patterns for the sections of abrasive.

Figure 4 shows my version of the Baginski Beveler, adapted to a Shopsmith. Originally, I had built a Medved-type beveler using a router table, but cutting only one side of strip at a time caused difficulties for me. I have had a Shopsmith for many years and finally figured out how I could use it for a Baginski Beveler. My version uses the Shopsmith's table-height adjustment to set the height of the anvil above the wheel's groove. Originally, I had a feather-board on the infeed side to avoid possible kick-back of the strips, but that proved to be unnecessary, so my infeed support is now a simple piece of aluminum. As the photos show, I've also built a removable dust and protective cover, and all cuttings/dust exit handily out the bottom. I used scrap from other projects to make the beveler, so it was cheap.

Figure 4

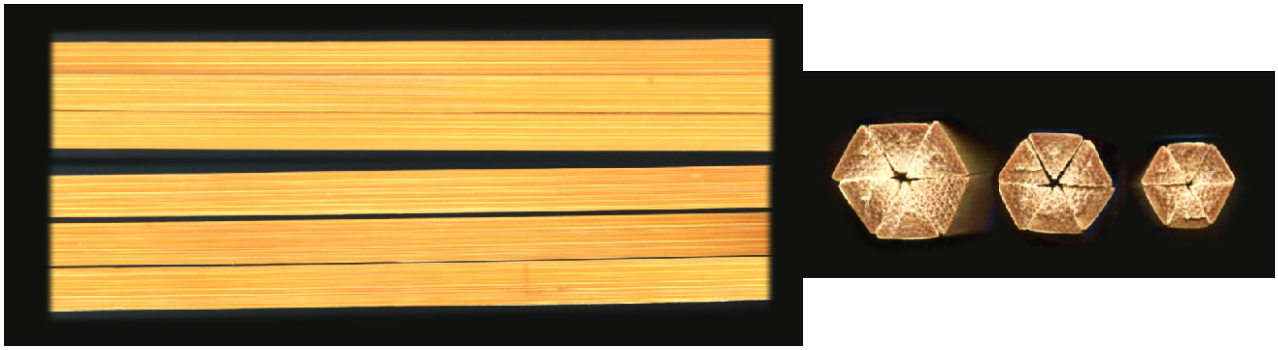


I make about 3 passes through the beveler for most strips. Single-pass beveling is indeed possible, but the process is so fast and easy that I prefer not to take such heavy cuts.

After beveling, I use a dull knife to scrape off the splinters the beveler leaves along each side of the enamel. These are minimal, and their removal isn't really necessary since they'll be planed away quickly anyway. Rolf Baginski points out that higher wheel-rotation speeds result in cleaner, more precise enamel edges. But remember, this is only a roughing stage, preceding all the precision work.

Figure 5 shows strips produced by my Baginski Beveler. The enamel has been removed from the strips, and you can see how uniform they are in cross-sections. Notice, too, that the bamboo fibers remain parallel to the strip edges.

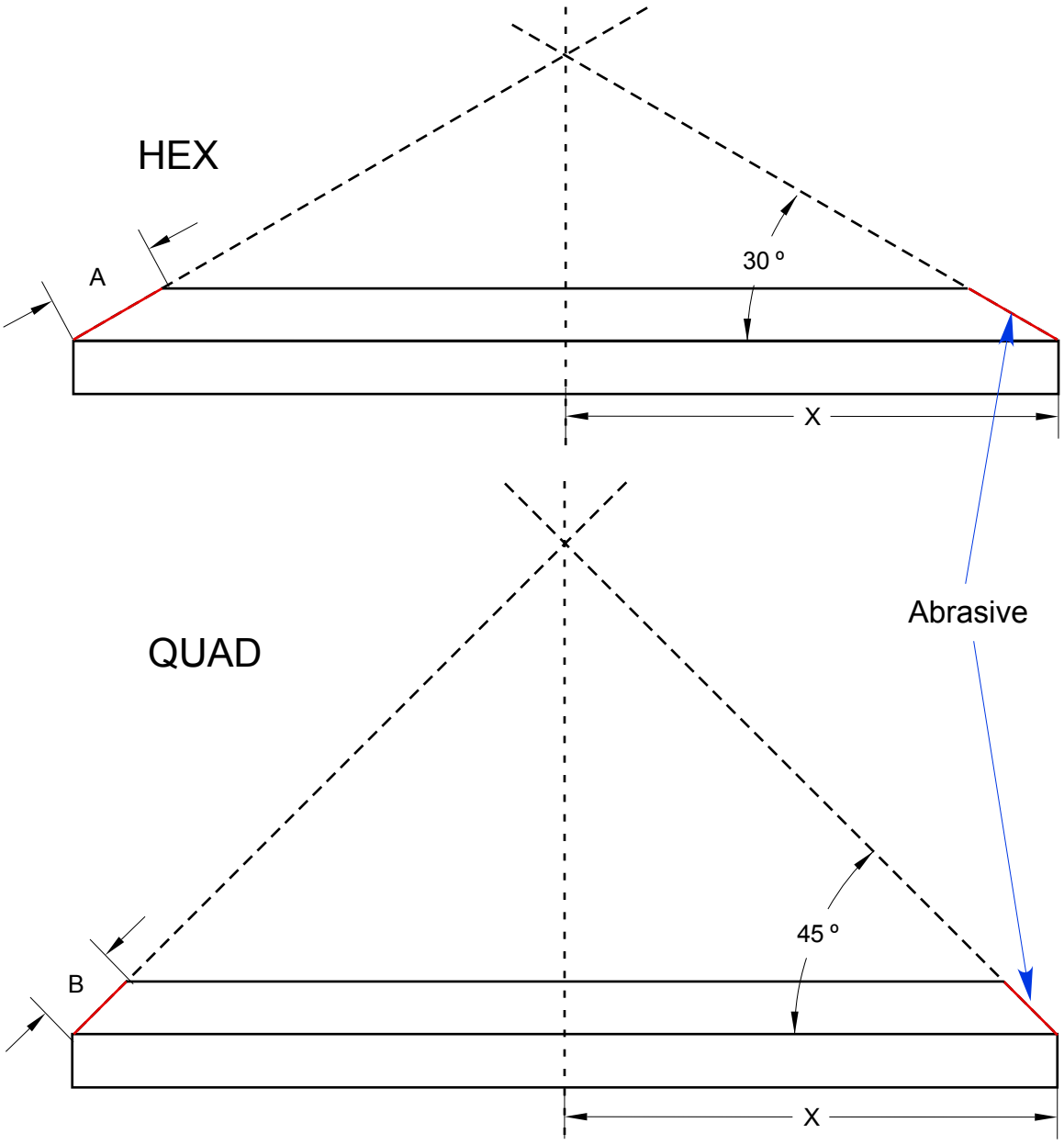
Figure 5



At least one of my good friends uses his Baginski-Beveler wheels on a metal lathe, but at low rotation speeds (800-900 rpm). His wheel turns freely, and he feeds directly by hand--that is, without an anvil, cover, or a dust system. He says that when he got his wheels, he was eager to see how they worked, and just never got around to constructing a finished system. Guiding his strips by eye, he holds a vacuum nozzle with one hand while feeding his strips into the wheel with the other. His results are less precise, but, for him, appropriate for this stage of preparation. Precision comes next, and his Morgan Hand Mill knocks the remaining imperfections down with the first few passes. Except for better dust pick-up, he sees no need for further refinements.

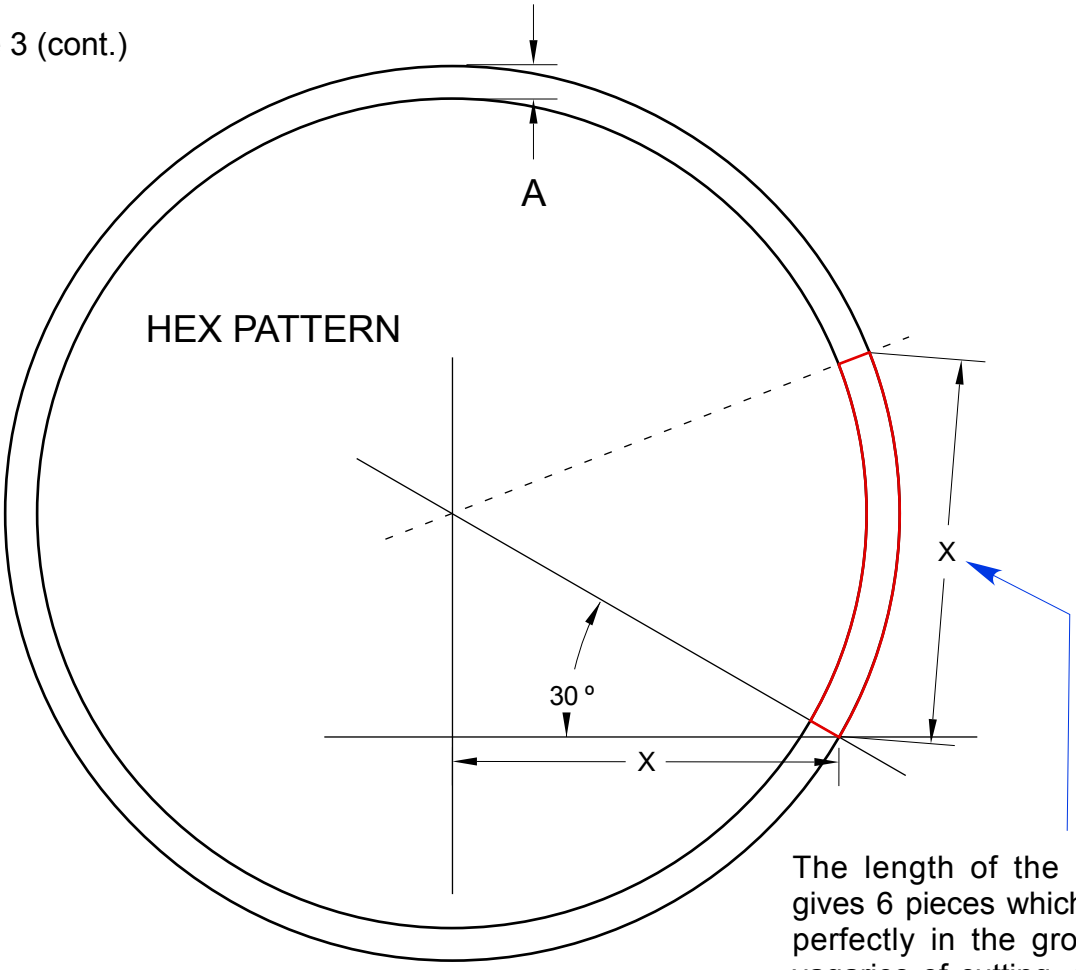
This photo, which was not in the article published in Power Fibers, shows a router-driven Baginski beveler in use and another version of the beveler powered by a different motor. The picture was taken at the Second European Rodmakers' Gathering in September 2009 in Sarnen, Switzerland.

Figure 3



The abrasive strips are part of a cone defined by the radius of the disk and the angle of the cutting surface of the disk.

Figure 3 (cont.)



The length of the radius (X) gives 6 pieces which should fit perfectly in the groove. The vagaries of cutting, gluing, etc. usually make this an imperfect truth. I make the strips longer and trim the last to fit the remaining space. Always cut the ends along a radius of the enclosing circle.