

ENGLISH WARROW SOCIETY

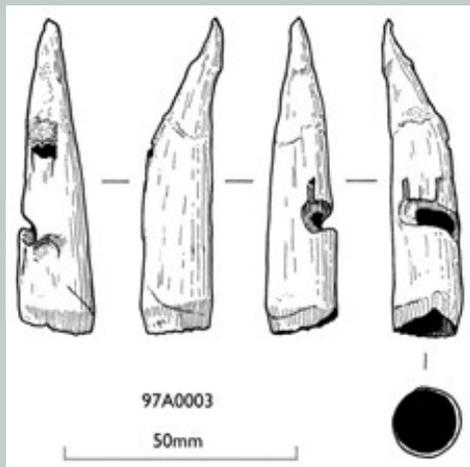
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Sidenocks on Tudor Warbows

by
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Most of the early experiments on how sidenocks function were carried out by former EWBS member Alan Blackham and I cannot claim many original ideas in this direction. Along the way other bowyers, both EWBS and non-EWBS have had a go and produced some fine nocks; the article below is a consolidation of ideas from my own personal experience, based on the initial studies by Alan and these other bowyers.

Horn bow nocks are simply a means of protecting the tips of heavy draw-weight longbows against damage caused by the string. The reason why sidenocks came into existence is probably because they are a simple means of securing a string onto the bow-tips without cutting into the back of the bow, which would infringe the integrity of the sapwood and cause the bow to explode. As draw-weights became heavier, it was recognised that sidenocks needed reinforcing with horn. The fact that earlier bows, from the pre-Viking period had sidenocks and later sporting bows from the 18th and 19th century retained them, allows us to suggest that heavy draw-weight bows throughout the Medieval and Tudor period also had them.



The figure above shows the one horn nock we have as evidence for how they were made. Note that there is a fair amount of spare horn at the tip; an attempt has been made to make the horn aesthetically pleasing. How you decide to do your own horn tips is a matter of personal taste, but I dislike nocks that look like chess pieces and prefer a minimalistic look; the slimmer and lighter a nock, the less inertia and air-resistance it will have during shooting.

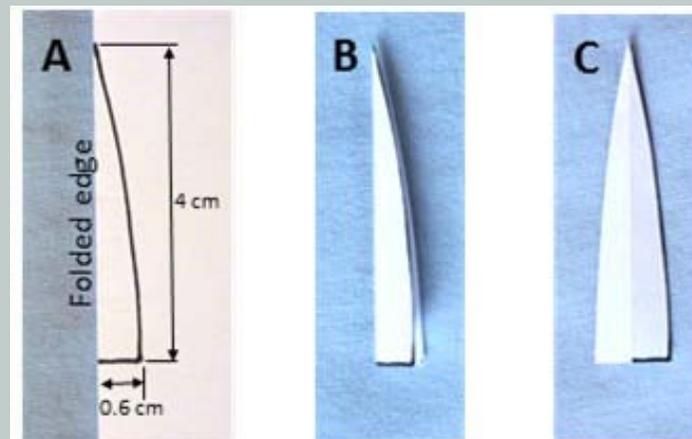
I find sidenocks easier to make and fit than more modern forward nocks. They work extremely well when the string is secured to the bottom nock with a bowyer's knot and slips into the top nock with a small loop; if the nock is done well, there is only a minimal hang of the string to one side. The idea of a bottom knot and top loop is also consistent with the observation from the Mary Rose bows that the slot in the wood on the bottom limb is at less of an angle than at the top, suggesting different attachments for the string at top and bottom. From personal observation, the diameter of the wood where it entered the horn nock varies from just over 1 cm to about 1.4 cm, and around 4 cm of wood went into the horn. The radius of curvature of the piked tips is variable with some nearly straight sided, others markedly curved, as seen in the photos below. The position of the slot in the wood relative to bow-tip and the base of the horn (the change from lighter to darker wood) is also variable; overall, there seems to me altogether too much variability to make bow nocks exchangeable between bows.



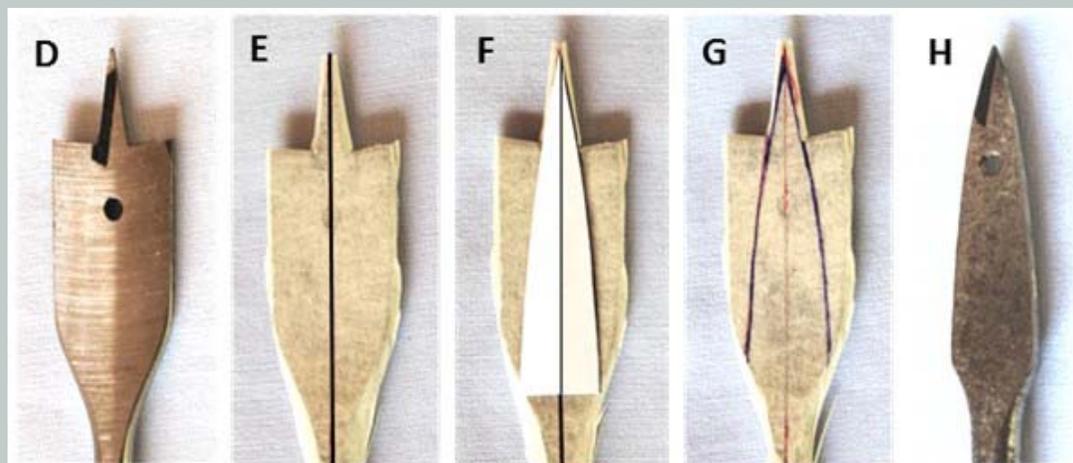
Making sidenocks

To bore out horn for sidenocks, you need to start with a flat wood bit and grind it to a tapered or “piked” profile using a template. To make a template, take a piece of drawing or printer paper, fold in half. Mark your desired tip profile as visualised in half, against the folded edge of the paper (A, below).

At this stage, you need to decide what diameter the bow tip will be, where it enters the horn. If you decide it will be 12mm, your marked profile will need to be 6mm along the bottom edge of your drawn profile. Cut with scissors along the line (B, below) and open out the folded paper (C, below); you now have a perfectly symmetrical template.



Cover both sides of the flat bit (D, below) with masking tape, cut around the edges then mark a centre line down each taped side (E). Locate the folded centre line of your template against the marked centre lines of both sides of your drill bit (F) and draw around your cut pattern with a fine waterproof marker (G). You now need to grind each side of the bit down with a bench grinder, to the pattern you've marked - taking care not to burn the steel, so dunk in water when it gets hot. When completed, the bit looks like as in H. Bear in mind that the drill-bit generally cuts a hole fractionally wider than its maximum diameter; a 1.2 cm bit may cut a hole 1.25 - 1.3 cm diameter. Consequently, grind the bit fractionally narrower than you want the hole's diameter to be.



Cut the tips off your ox horns or buy just the tips from a good supplier. Some people prefer Indian buffalo horn, I prefer European cow or ox horn. Fix your horn in a vice and bore with your drill bit up to its maximum diameter (this can take a few minutes depending on how sharp you've made your bit) periodically removing horn-shavings from the hole (these can be used as combustible material for case-hardening arrow-heads).

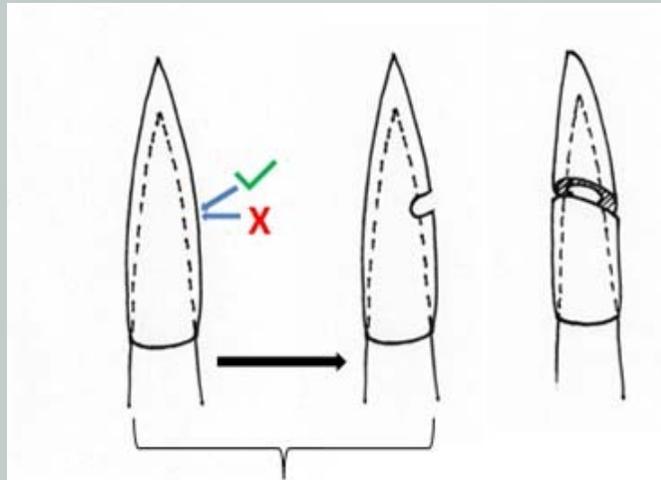
Pike the tips of your bow with a fine rasp, line them up with your drill bit as a rough guide, as shown below; they must be perfectly circular in cross-section at this stage.



Take your drilled horn while it is still bulky, (before grinding it down to its final shape) and force it onto the bow tip with a rotating motion, then remove - you should see marks - particularly at the bottom edge, where the horn is tight; work these down with a fine rasp or file. When everything fits perfectly (rotating the horn leaves no marks and the horn doesn't rock back and forth when the bow-tip is at its deepest point), Fit your horn onto a piece of spare dowelling that you have piked similarly to your bow tip (doesn't need to be a precise fit as long as it stays on!) Grind the horn with the abrasive disc on a belt sander (or by hand with a rasp if you are a masochist) to your desired shape, leaving the wall thickness about 1-1.5 mm at the base.

Fitting

I glue my nocks in place with rapid-setting epoxy resin. The disadvantage of this is that the glue is very viscous and there is a tendency to trap a pocket of air in the tip of the horn, which forces the nock off when fitting. To counteract this, I like to cut the slot in the horn while it is still attached to the bit of spare dowelling, before gluing and this allows air and excess glue to run out of the slot when positioning the nock. Those who use very runny cyanoacrylate adhesives, probably will not have this problem and they may be able to cut the slot after the horn has been glued to the bow-tip. Whether you cut the slot before or after gluing onto the bow-tip, cut the slot with a tile saw as shown in the figure below, starting the cut at just over halfway up the horn (say about 2.2 mm from the base) and at a downwards angle, not horizontally. This will create a lip in the horn. Avoid starting the cut too low down as there will not be enough horn below the slot to support the string, particularly on very heavy bows.



Before gluing, the tip of the bow and the inside of the nock should be cleaned with (preferably) acetone, then glue smeared over the bow tip, then the inside of the nock to ensure there are no “dry” points, then the nock fitted, rotating back and forth as it is pushed into place. Clean off excess glue with acetone and leave to set. When the glue is dry, use the tile saw to make a shallow cut into the wood beneath, and finish the slot carefully with a round needle file and abrasive paper. Avoid sharp angles in and around the slot; be aware of where on the nock the bowstring will hang and rub, and finish these carefully with a round needle file and/or abrasive paper.

To feather the lower edge of the horn into the wood of the bow, wrap 2 layers of duct tape around the bow, immediately under the horn, this gives you a layer of safety and you can then use a fine half-round file to thin the edge of the horn finely without cutting into the wood. The nock can be finished with ever finer grades of abrasive paper and car-polishing pastes; paste smeared into a piece of cordage will allow you to burnish the slot itself. If desired you can add an additional slot above the first as a stringing nock - many MR bows have a second slot in the tip which was quite possibly as a result of the need for a stringer. Below are some examples on bows I have made.

