Steamed & twisted wood items

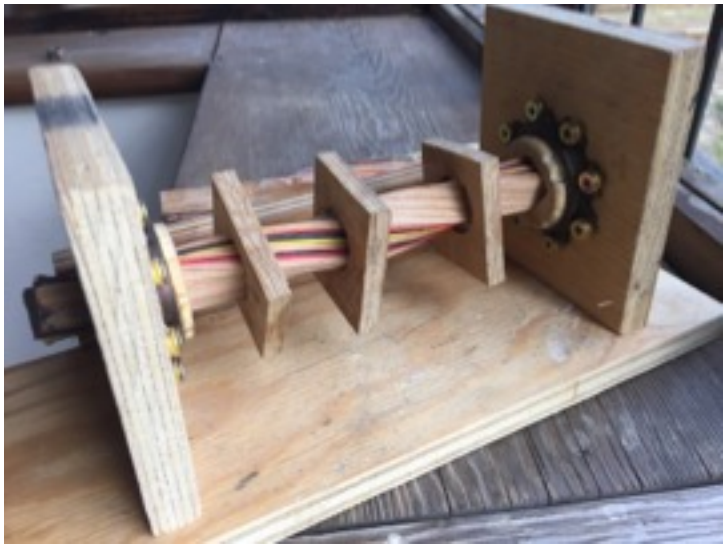
This is a technique used to make some twisted-wood items such as the candlestick stems and (unfinished) plate above, the latter being composed of nine twisted oak sets of 3*20mm strips squared off, glued into a plank and turned. In both cases the sets include contrasting woods and/or commercial dyed veneer layers (standard thickness) for effect.

Of course steam bending is common but I had not found examples of this kind of twist, and thought the method might be of interest. Just like other steam bending the wood makes a difference but most woods work (ash and oak particularly well). The candlestick stems are of sycamore and jarrah (recovered from a railway sleeper). The plate uses bog and recent oak.

The jig used for twisting looks like this:-

Where construction is of softwood ply with a pair of lowish cost (£7) cycle freewheel units (Diamondback DBX160 Freewheel 16T M30) with round-to-square wooden inserts glued in and screwed to holes cut in the ply, facing one another and thus with opposite ratchets. Clearly the ratchets are the point, so that the twisted wood is prevented in a simple and accurate way from untwisting. I have tried the same idea with clamps but it is very tricky!

The square holes are 20mm square or a little greater to accommodate a 200mm long 20 mm square stack of wood strips or rods that is loose at the time of twisting. I have tried stacks of 4 (as shown above) or 9 wooden rods and stacks of about 3*20mm strips of mixed woods (with interleaved veneer if wanted - it tends to be easier to steam twist the veneer as well). Simple geometry suggests that this 200mm length stack (with wood pieces somewhat longer) should allow about 360 degrees of twist after the woods have been steamed (compared to book figures on bending) but in fact anything greater than about 220 degrees or so, relaxing to nearer 180, tends to make the wood split. Splits can be reduced using ply 'washers' with 25mm holes in them, which should be a fairly tight fit onto the 20*20mm stack. These washers are useful anyway for gluing (with waxed interiors) but note that the wood also expands a bit on steaming.



Steaming is done by putting the wood sections on a rack in an ordinary preserving pan with water beneath and steaming (with a foil lid) for 15m or so (much more does not help).

The process is then quite simple - the wood items are stacked together held in the pan (using thick rubber gloves) and then quickly threaded through the twist jig, leaving enough projection at the end to allow twist to be applied outside the jig - since this tends to damage the softened wood, though I have found a square-section piece of steel of appropriate size that can be used as a handle after threading onto the projecting bundle. No great force is needed - with a handle this can be done by hand, twisting until the wood just begins to crack.

The pieces are twisted immediately after steaming and then allowed to cool and dry in the jig for several hours. They are then removed by tapping with a hammer on one end of the wooden stack, with an intermediate piece to enable the stack to be pushed through one ratchet, since there will still be a good deal of elastic stress and the stack will untwist a bit when it can (from 220 to 190 degrees, say). Once it is through one ratchet the stack can be eased through by hand.

The stack is then glued - I mostly use urea-formaldehyde but any glue may be fine. The stack

will need clamping during the gluing process, I used small G clamps at about 40mm intervals for the set above, clearly at rotating positions round the stack. The gluing process tends to be messy - I have not found out how to do this without getting one's hands covered in glue! The twisted pieces are coated and placed together in order one-by-one. Simple but a bit awkward to do.

The resulting stack can easily be squared at the ends (which may not be twisted anyway) and turned to a cylinder - or clamped in a sandwich-like ply jig and cut with two flat facing sides on a bandsaw, then glued with others into a 'plank' that can be turned as in the plate above, giving an interesting twisting-flame effect from the coloured veneer layers - or that is the idea, anyway.

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