

Peter McCormick (*Nafferton, E Yorks*) introduces another method of fabricating an essential component:

Orinda's Propellor

I don't have the means to bend or machine large heavy components so the method used for 'Orinda's propellor was as follows:...

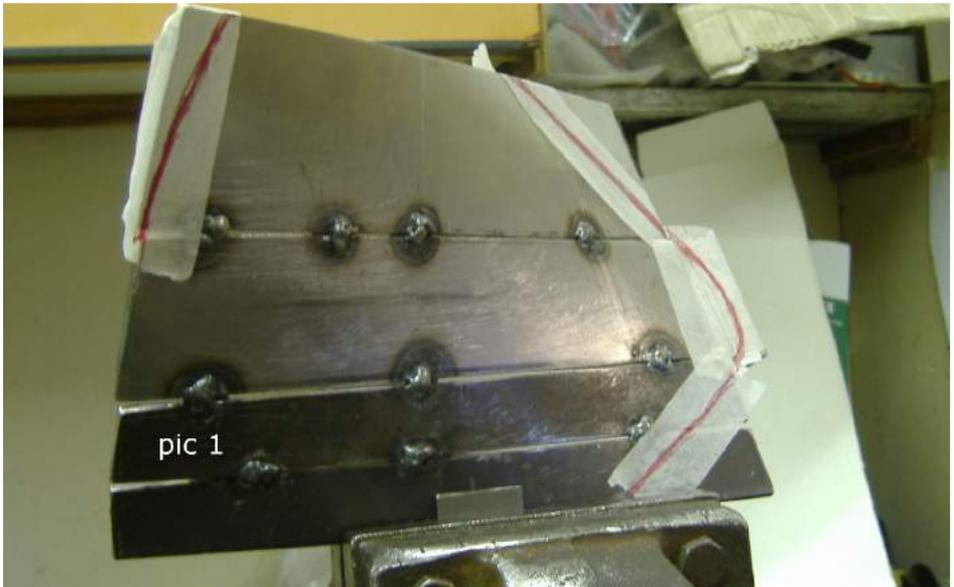
Each blade is made up of several thin strip steel sections welded together horizontally. In Orinda's case the prop OD is 345mm and the boss dia is 65mm, giving a blade length of 145mm. This is made up by, from the root, 2off 25x4 plus 1off 40x3 plus 1off 55x3 strips.

These are easily twisted so that their long edges are at an angle to each other, equal to the change in pitch at their particular radius on the prop.

The width of the strips can become larger towards the tip of the blade because the angular change reduces with increase in diameter for a constant pitch.

For tack welding, the blade strips together a simple jig consisting of two rods at blade thickness apart which clamp the strips at a neutral position, near the mid length of the strip (the exact position is not important, but **must** be the same for each blade).

After welding up each blade their profiles can be marked on them and cut with an angle grinder (pic1).





Note: the strips need to be narrowed towards their middle, as twisting them means that the side elevation is no longer parallel - approx 1.5mm each side in this case.

The boss has grooves to accept the root of the blades and is machined at the root pitch angle. It is jugged (pic2) and welded. I took this jugged assembly to a local welder, and he did it in no time.



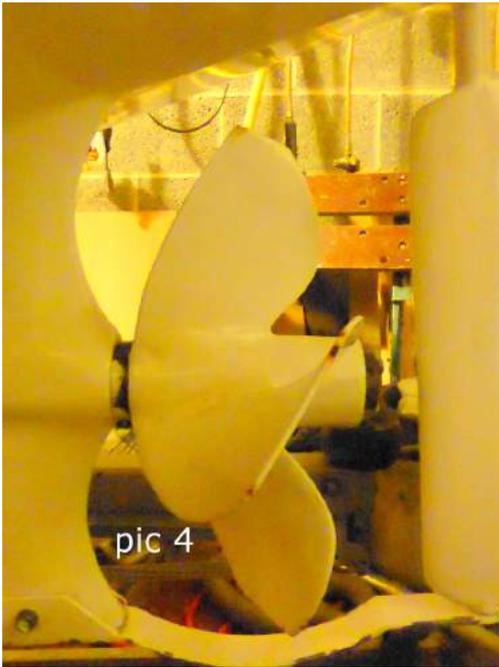
The whole lot is then ground to shape - very noisy!

The blade profile used was large (pic3) and worked very well when driving, but made it near impossible to reverse my single cylinder engine when underway, it made a powerful turbine!

I therefore progressively reduced the blade profile to get a result that worked well in both modes (pic 4).

I gave it a swept leading edge to reduce the risk of collecting weed, but that also tends to reduce prop efficiency in reverse, helping to obtain reverse...

You can shape the basic blade as you like as the pitch remains constant along the strip length.



Tip: Weld both sides of the strip joints in small steps, alternating each side to avoid distortion. For the record, my own arc welding set is a Clarke diy unit and I used 2.5mm rods.

I'm aware that there is compromise in pitch along the length of the blade as it is only correct at the root, each joint and the tip, but it's small and not visually noticeable.

Propellor efficiency increases with the number of blades: four were chosen for Orinda, as it was an easier setup on the equipment available. Odd numbers reduce beating vibration where the blades pass close to fixed members of the hull.



A box of photos and other papers of steamboat interest has been lodged with us by the family of late SBA member **R Keith Messent**.

Mr Messent had a focus on the steamers of the Lake District. We will print selected items from time to time and they may evoke memories...



'Windermere steamer, 'Tern' leaves Bo'ness in August 1951. Mr Bell (Skipper) at the wheel.

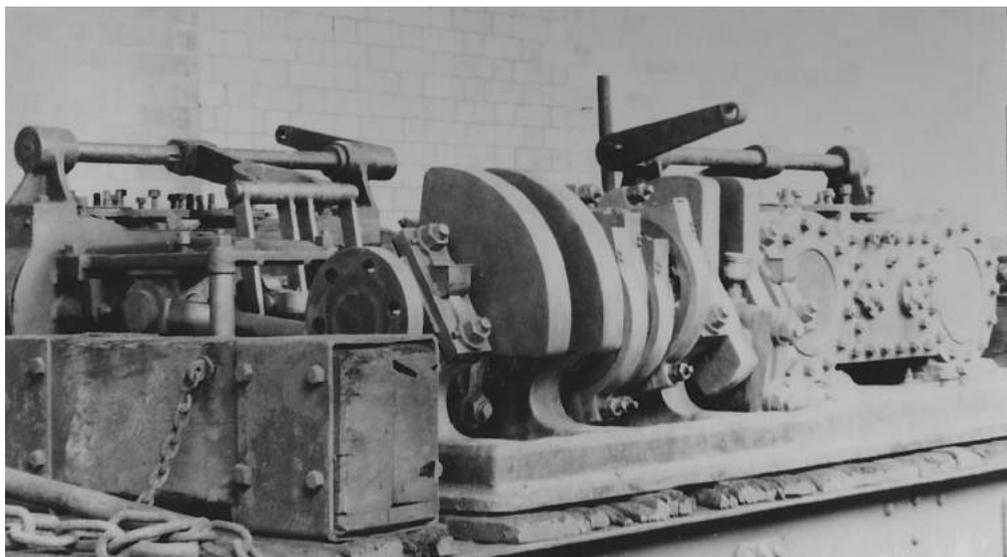
Just enough of 'Tern' is shown to highlight that she is in the twilight of her steam days and in Dec 1957 her steam plant would be removed to make way for a pair of Gleniffer diesels.

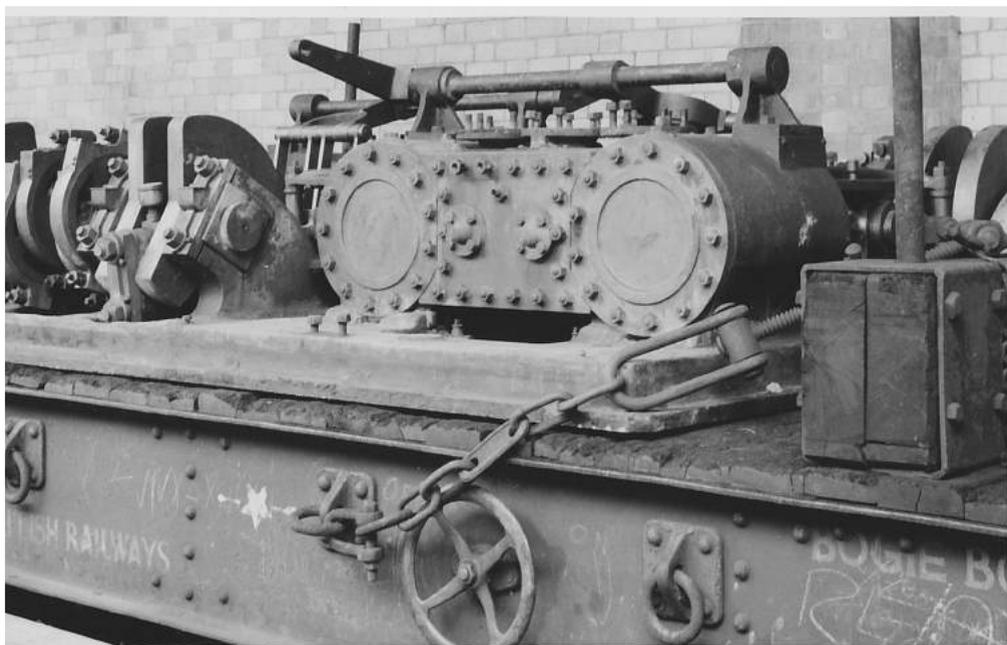
Removing the engines from 'Tern' at Lakeside, Windermere

Food for thought for anyone considering a horizontal engine: Stanley car engines have been used in the USA in the past and 'flat' engines were used in small UK launches too (e.g. Lifu).



The Windermere ships carried large single side-fired loco-type boilers. That from 'Tern' is lifted out and lowered on to a lorry on the wharfside. The unusual horizontal non-condensing twin high 12"x12" main engines from 1891 were taken away on a railway bolster wagon.





These twin engines sat head-to-toe on the same cast baseplate, as can be seen in in the pictures. They had Stephenson's link reversing and ran at 135/140 rpm using steam at 100 p.s.i.. Handsome engines, they must have looked wonderful in action, and as a true 'puffer', 'Tern' chuffed serenely as she made her unhurried progress across the lake.

