

(No Model.)

D. H. WELCH.
PROPELLER BLADE.

No. 469,618.

Patented Feb. 23, 1892.

Fig. 1.

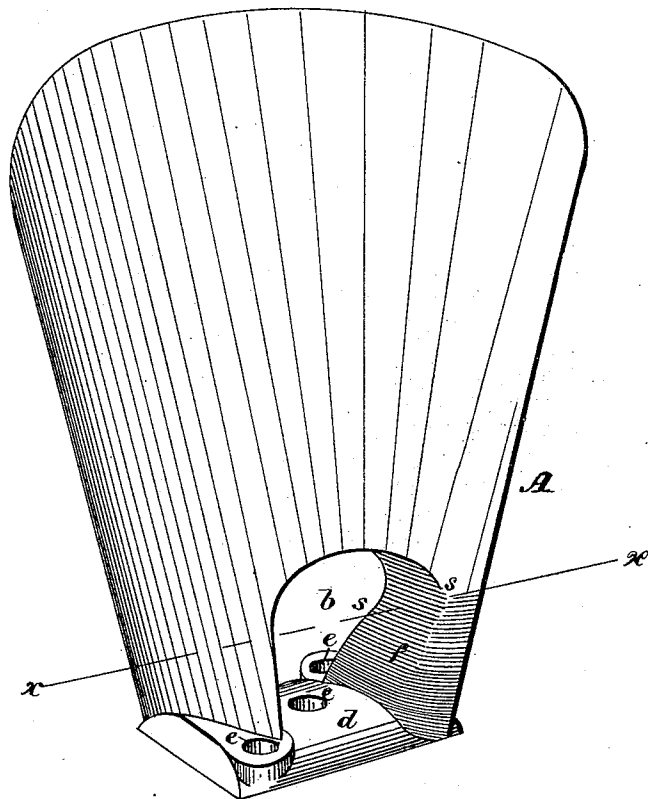


Fig. 2.

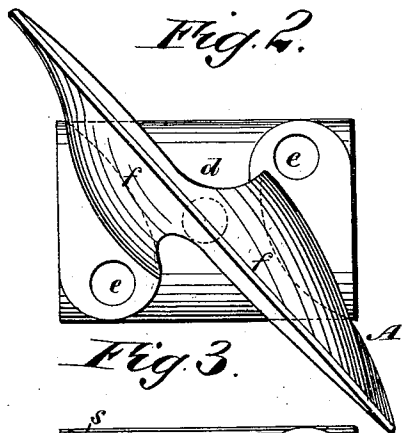
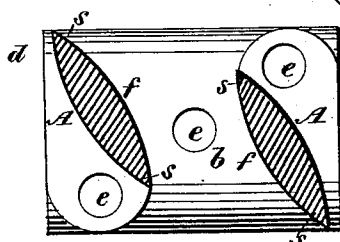


Fig. 3.



WITNESSES:

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DANIEL H. WELCH, OF ASTORIA, OREGON.

PROPELLER-BLADE.

SPECIFICATION forming part of Letters Patent No. 469,618, dated February 23, 1892.

Application filed August 1, 1891. Serial No. 401,344. (No model.)

To all whom it may concern:

Be it known that I, DANIEL H. WELCH, of Astoria, in the county of Clatsop and State of Oregon, have invented a new and useful Improvement in Propeller-Blades, of which the following is a full, clear, and exact description.

This invention, which is applicable to different kinds of ships' screw-propellers, whether constructed in sections or in single piece, consists in a novel construction of propeller-blade having an opening through it at the base and in the construction of the base itself, substantially as hereinafter described, and more particularly pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 represents a view in perspective of a propeller-blade embodying my invention, said view being taken as looking toward the blade when in its angling position on its hub or shaft, Fig. 2, a plan or edge view of the same; and Fig. 3 a sectional view upon the line *x x* in Fig. 1.

A indicates the propeller-blade, of which there may be any number arranged in an angling manner, as in other screw-propellers, around the shaft or hub of the propeller; but the construction of this blade and its base importantly differs from others. Thus the blade A is made with a passage-way *b* through it at its base, of any suitable size and shape, which provides when the propeller is in motion for the water passing freely through said part, or, in other words, gives clearance for all water running toward the hub of the propeller, and consequently does away with dead-water at the base of the blades. The base or base-piece *d*, which is preferably integral with the rest of the blade, is in the form of a plate, which may be arched and extends across both the length and width of the acting portion of the blade at its inner end, being diagonal to it, thus materially strengthening the blade. This base-piece may have any number of bolt-holes *e* through it for the reception of bolts to secure it to the hub of the propeller. The water-passage *b* through the base end of the acting portion of the blade is oblique to the main acting faces of the blade, so that the walls *f* of said passage will form acting or propelling extensions of the main or outer act-

ing surfaces of the blade when the latter is set angling on its hub or shaft. The walls *f* of the passage are chamfered, hollowed, or rounded off, as shown, for instance, at *s*, to give readier clearance to the water running toward the hub and to make them have an easy or gradual junction with the opposite faces of the main acting portion of the blade, as well as to make them form continuations of the main acting surfaces of the blade. Said walls *f* might extend fully across the base-piece *d* and the bolt-holes *e* be otherwise arranged than shown, if desired.

A propeller-blade constructed as described not only does away with all dead-water at the base of the blade and strengthens or stiffens the blade at its base, but substantially an equal pitch or propelling angular surface is obtained all over the blade from its outer end to its base and over the whole surface of it. A stronger blade may thus be made with less material, inasmuch as the metal at the base of the blade stands almost edgewise to its work, and the propeller, having a given pitch, may be run with less power and a greater speed be obtained with such propeller of a given pitch. It also allows a vessel in rough water to rise and fall by the action of the water with much less strain on the propeller-hub, machinery, and hull of the vessel than where the propeller or its blades are as ordinarily or differently constructed.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A propeller-blade comprising the flat base-piece *d*, having bolt-holes, and the integral blade A, mounted obliquely at its inner end upon the outer face of the base-piece, and the oblique clearance-opening *b* through the blade where it joins the base-piece, substantially as set forth.

2. A propeller-blade consisting in the flat rectangular base-piece *d*, having bolt-holes and rounded upon its upper or outer face, and the blade A, mounted obliquely at its inner end on said rounded face and having an oblique clearance-opening *b* through it at the base, the walls of the opening being rounded, as shown at *s*, substantially as set forth.

DANIEL H. WELCH.

Witnesses:

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