H. E. YARROW.

TURBINE BLADE.

APPLICATION FILED JUNE 5, 1918.

1,313,152.

Patented Aug. 12, 1919.

Fig. 3.

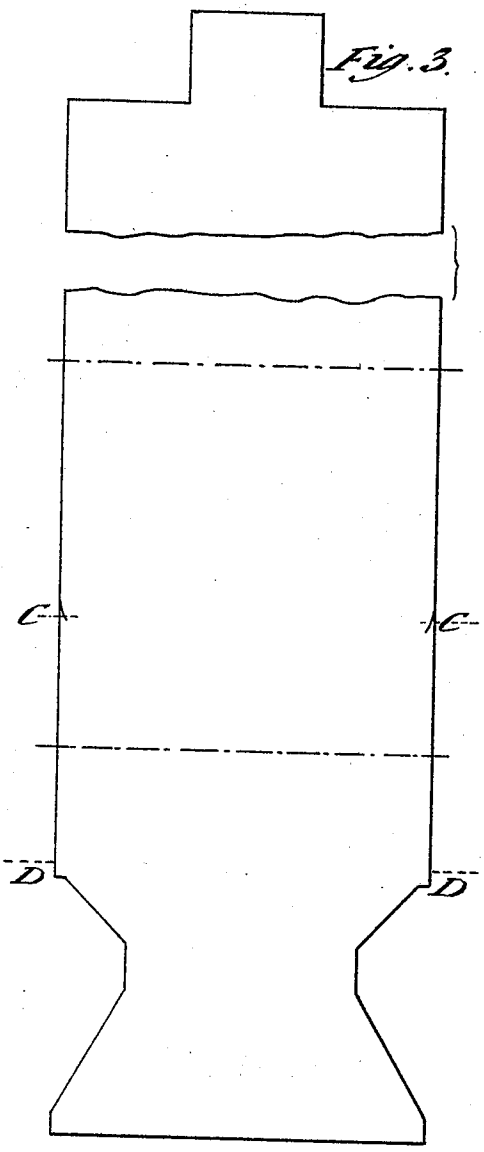


Fig. 4.

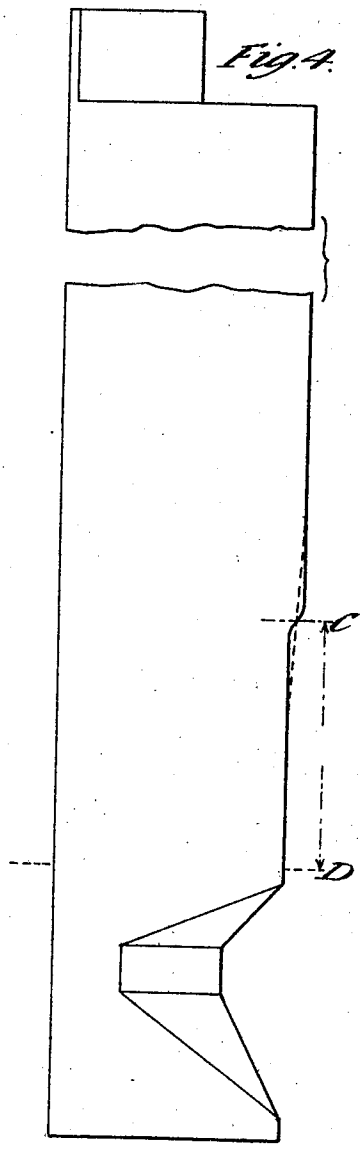


Fig. 1.

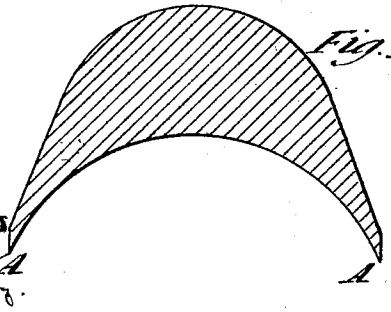
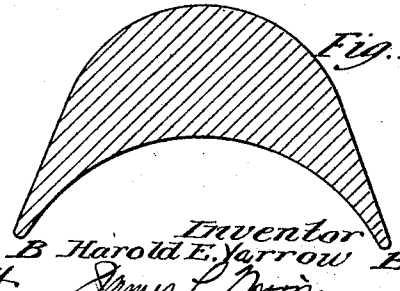


Fig. 2.



Witnesses
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UNITED STATES PATENT OFFICE.

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TURBINE-BLADE.

1,313,152. Specification of Letters Patent. Patented Aug. 12, 1919.

Application filed June 5, 1918. Serial No. 238,347.

To all whom it may concern:

Be it known that I, HAROLD EDGAR YARROW, a subject of the King of Great Britain, residing in Glasgow, Scotland, have invented certain new and useful Improvements Relating to Turbine-Blades, of which the following is a specification.

The invention relates to the blades of turbines and more particularly to the form given to the edges of the blades.

It is found that the blades are liable to crack, especially at the roots of the blades, and this drawback has been accentuated, particularly in marine practice, by the employment of material suited to the use of superheated steam.

The edges of the turbine blades are generally sharp in order to lessen the losses due to eddy currents, but a sharp edge is not suitable for withstanding stresses, especially variable bending stresses, such as occur in a turbine, since it is well known that slight hair cracks are very liable to be formed in edges and sharp corners and, when once formed, extend more deeply.

According to the invention this drawback is obviated by rounding the edges of the blades for a small portion of their length at the end projecting from the drum or casing to which the shank of the blade is secured. As this rounded portion is confined to a short length of the blade and the rest of the edges of the blade is quite sharp, no appreciable loss is incurred by the eddies.

The accompanying drawing shows an example of the improvement according to the invention, in which Figure 1 is a section of a blade as usually fitted showing at A the sharp edges of the blade. Fig. 2 shows at B those edges rounded off at the part where the blade is secured to the drum or casing. Figs. 3 and 4 are two elevations at right angles of the blade.

As shown more particularly in Fig. 4, the rounding may terminate in a comparatively sharp curve, as shown by the full lines at C, and by a long taper, as shown by the broken line. The rounded portion C D may be from 10 to 25 per cent. of the total length of the blade.

Having now described the nature of the said invention and the best means I know of carrying the same into practical effect, I claim:—

A turbine blade, the edges of which are rounded for a short portion of their length at the end projecting from the drum or casing to which the shank of the blade is secured.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

HAROLD E. YARROW.

Witnesses:
JAMES RITCHIE,
J. W. BLACK.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."