J. H. LOFTUS.

Blade for Screw-Propellers.

No. 160,212. Patented Feb. 23, 1875.

Fig. 1.

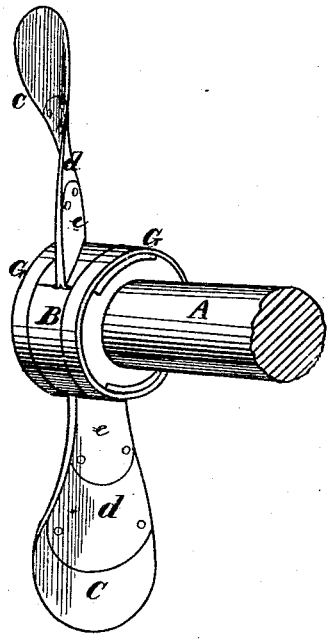
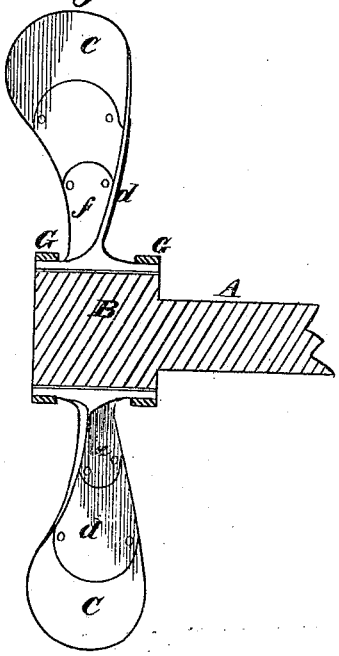


Fig. 2.



Witnesses

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UNITED STATES PATENT OFFICE.

JAMES HART LOFTUS, OF OAKLAND, CALIFORNIA.

IMPROVEMENT IN BLADES FOR SCREW-PROPELLERS.

Specification forming part of Letters Patent No. **160,212**, dated February 23, 1875; application filed November 21, 1874.

To all whom it may concern:

Be it known that I, JAMES H. LOFTUS, of Oakland, Alameda county, State of California, have invented a Device for Securing Propeller-Blades to the Hub; and I do hereby declare the following description and accompanying drawings are sufficient to enable any person skilled in the art or science to which it most nearly appertains to make and use my said invention without further invention or experiment.

My invention relates to an improvement in the construction of propeller-blades, so that they will be greatly increased in strength and adapted to be easily replaced when necessary.

Referring to the accompanying drawing for a more complete explanation of my invention, Figure 1 is a perspective view, showing the back of the blade. Fig. 2 is a side view with a section of the hub and base of the blade.

A is the shaft of a propeller, and B is a hub to which the blades are to be secured. In the face of the hub are formed wide slots parallel with its axis, and of sufficient width and depth to admit of as great a thickness of metal as may be contained in the part of the blade which is fitted to the slot, and also the bracing-plates to be used. As many slots will be made as there are blades to the propeller. The propeller-blades C are formed of sheets of metal of sufficient thickness to withstand the pressure. I prefer boiler-iron, which is shaped as may be desired for the blade. The inner end is bent at right angles and fitted to the slot in the hub. I prefer to make the slot and the plates flat, and then fit a holding-piece over the outside of the whole, which shall correspond to the curve of the hub, and around which the holding-bands pass. In order to strengthen my blade where it is weakest—near the hub—I fit one, two, or more plates, *d e*, upon its back, as shown, and these are bent to fit into the groove or slot upon the similar portion of the blade. These plates are firmly secured to the main blade, and the first one, *d*, will extend to near the outer end, while the plate *e* will only extend up about halfway. Upon the front of the blade I secure a similar plate, *f*, which extends up to about the same distance as the plate *e*, and this plate is also bent to fit into the groove or slot. When three strengthening-plates are used I prefer to bend the inner end of the propeller-blade and one of the plates in one direction, while the other two are bent in the opposite direction, thus filling the slot up ready to receive the outer plates and bands. These bands G are made of wrought-iron or steel, and sufficiently strong for the purpose. They may be shrunk upon the hub, a place being turned for them, so that they will lie flush with the outer face of the hub. The ends of the plates may be bent down over the end of the hub to further secure them, if desired. By this means the propeller-blades are made strong enough to resist any strain which may be brought upon them, and are at the same time elastic.

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

A removable screw-propeller blade, constructed of a series of gradually-reduced plates, *c d e*, fastened rigidly together, and having their ends turned at right angles to fit the recesses in the hub, so as to make the blade strongest near the hub, as set forth.

In witness whereof I hereunto set my hand and seal.

JAMES HART LOFTUS. [L. S.]

Witnesses:

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