C. M. BAILEY.

Means for Reversing Propeller-Blades.

No. 202,396. Patented April 16, 1878.

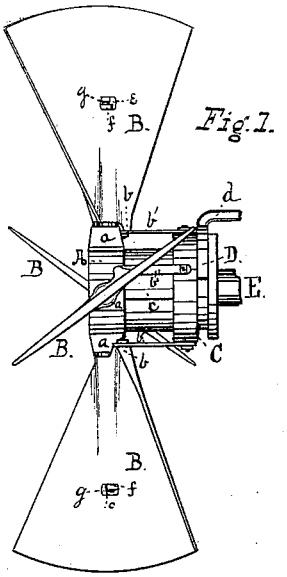

Fig. 1.

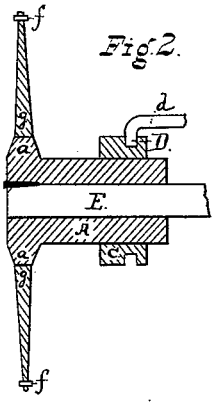

Fig. 2.

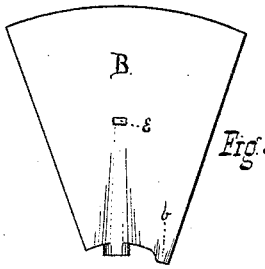

Fig. 3.

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IMPROVEMENT IN MEANS FOR REVERSING PROPELLER-BLADES.

Specification forming part of Letters Patent No. **202,396**, dated April 16, 1878; application filed November 7, 1877.

To all whom it may concern:

Be it known that I, CHARLES M. BAILEY, of the city of Baltimore, State of Maryland, have invented certain new and useful Improvements in Screw-Propeller Wheels; and I hereby declare the same to be fully, clearly, and exactly described as follows, reference being had to the accompanying drawings, in which—

Figure 1 represents a side elevation of my improved propeller-wheel; Fig. 2, a vertical longitudinal sectional view of the same, the blades being removed; and Fig. 3, a plan view of one of the blades, showing the method of attaching it to the hub.

This invention has for its object the attainment of a highly desirable end—namely, the reversal of the blades of a propeller-wheel without the necessity for reversing or stopping the engine. Various devices for accomplishing this end have been proposed, but, owing to complexity of construction, liability to get out of order, and cost, have never come into general use.

The desirability of a device which will accomplish this purpose without being open to the above objections is evident. Emergencies frequently arise, such as when collisions are imminent, in which the second or two required to overcome the momentum of the heavy machinery and reverse the engine is of paramount importance. A reversing propeller-wheel, furthermore, greatly lessens the first cost of its engine, since no necessity then exists for the usual mechanism for reversing the engine.

My propeller-wheel is simple in construction and efficient in operation.

In the accompanying drawings, A represents the hub proper, which is keyed, in the usual manner, to the shaft E. As many projections *a a a* extend from the hub as there are to be blades to the wheel, and to each of these projections is firmly secured a steel rod, *g*. (See Fig. 2.) The blades B B B, preferably true screws, are perforated longitudinally for a part or the whole of their length, in the former case the perforation terminating in an opening, *e*. The ends of the rods *g* are threaded, for securing the blades by means of nuts *f f*, the rods being of course first inserted in the perforations in the blades.

The hub A is provided with one or more ribs, *c*, and a sleeve, C, is adapted to slide freely upon the hub, being carried around with it by means of the rib *c*.

The blades of the propeller are somewhat extended at the side of the pivot, and to the projections *b*, thus formed, are bolted the rods *b' b'*, connecting the blades with the sleeve. The latter is furnished with a clutch, D, and rod *d*, by means of which it may be slid back and forth upon the hub.

The operation of the device is evident. When it is desired to reverse the blades, and consequently the motion of the craft to which the propeller-wheel is attached, it is only necessary to cause the sleeve, by means of the rod *d*, to approach or recede from the blades. The rod *d* is preferably actuated by means of a lever adapted to engage with a slotted arc, similar to the reversing motion of a locomotive, whereby the pitch of the blades may be altered and set at pleasure. The time necessary to effect the reversal of the blades is so short that no danger from racing or backlash during their revolution on the rods *g* is incurred.

Should an accident occur to the reversing mechanism, a contingency rendered remote by the simplicity of the device, the blades may be directly secured temporarily, but efficiently, to the sleeve C by removing the rods *b'*, bringing the sleeve against the end of the hub, and directly attaching the projections upon the blades to the sleeve. This may be accomplished by simply screwing a pin into either the hole in the sleeve or that in the projection of the blade, slightly loosening the nut *f* in order to bring the pin into the other hole, and finally screwing the nut *f* tight again.

I attach especial importance to the means I have described for attaching the blades to the hub, in contradistinction to the means heretofore employed, the latter consisting in pivoting the blades within the hub itself, whereby the leverage of the pivots is very short, speedily resulting in rattle or lost motion.

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

1. In a propeller-wheel, a series of blades constructed as set forth, and adapted to swivel upon rods rigidly secured to the hub, substantially as described.

2. In combination with the sleeve C, the blades B, adapted, by means substantially as described, to be secured directly thereto, as and for the purpose described.

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