

No. 753,717.

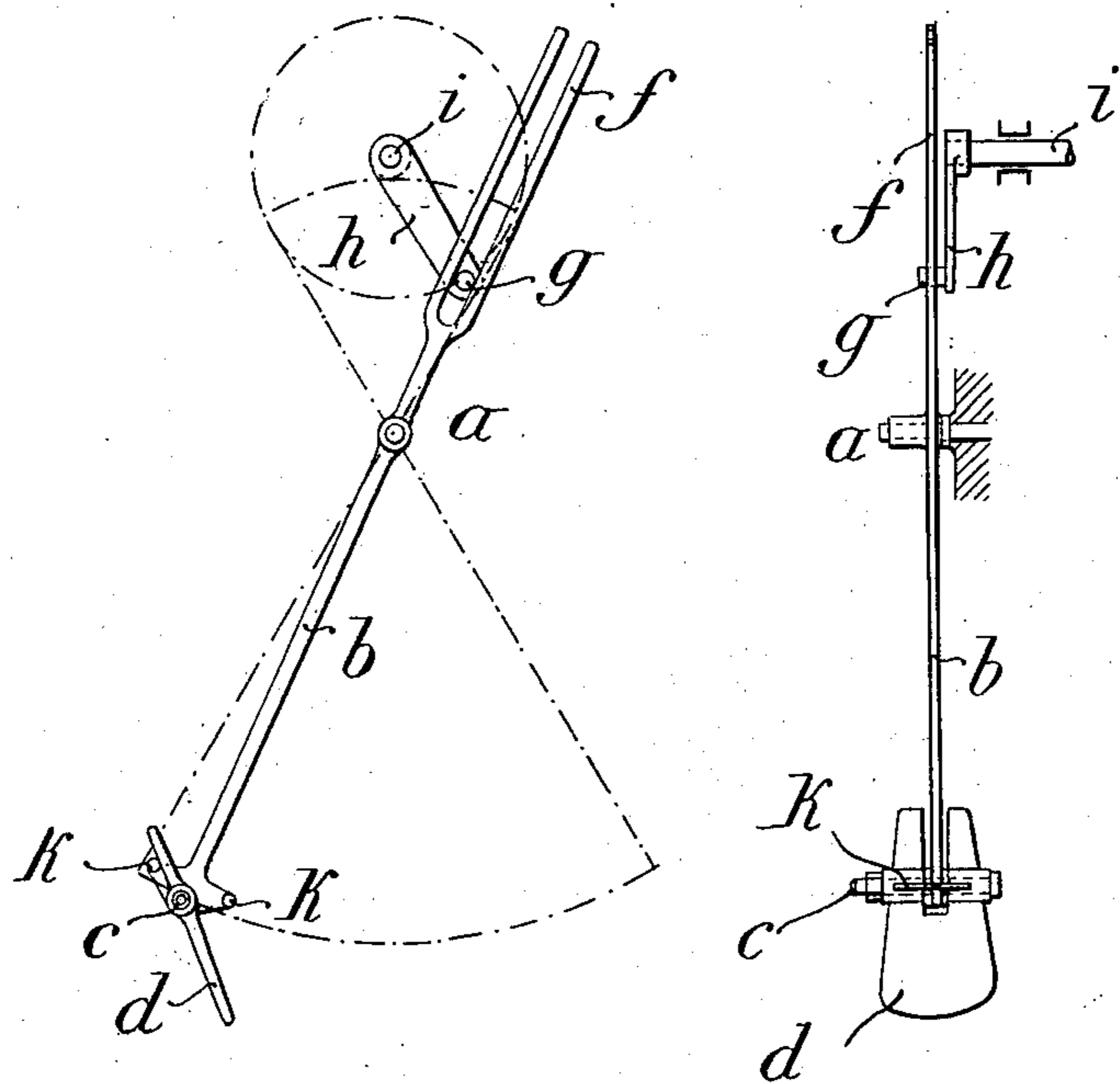
PATENTED MAR. 1, 1904.

Z. VON LIMBECK.
FISH TAIL PROPELLER.
APPLICATION FILED NOV. 2, 1903.

NO MODEL.

Fig.1

Fig.2.



Witnesses:

James L. Norris, Jr.
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Inventor

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By
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attys

UNITED STATES PATENT OFFICE.

ZDENKO VON LIMBECK, OF VIENNA, AUSTRIA-HUNGARY.

FISH-TAIL PROPELLER.

SPECIFICATION forming part of Letters Patent No. 753,717, dated March 1, 1904.

Application filed November 2, 1903. Serial No. 179,623. (No model.)

To all whom it may concern:

Be it known that I, ZDENKO VON LIMBECK, a subject of the Emperor of Austria-Hungary, residing at Vienna, Austria-Hungary, have invented certain new and useful Improvements in Fish-Tail Propellers, of which the following is a specification.

This invention relates to a fish-tail propeller for ships, which instead of a screw-propeller is arranged at the stern part of a vessel and in making alternate oscillations to starboard and to port produces a propelling motion in the way of the caudal fin of a fish. The construction of this propeller is shown in its essence in the accompanying drawings, in which—

Figure 1 is a plan view, and Fig. 2 a side elevation, of the propeller.

The propeller consists of a double-armed lever *b*, pivoted on a vertical axis *a*, on the longer rear arm of which lever a rigid or flexible paddle *d* is likewise pivoted on a vertical axis *c*, said paddle being capable to oscillate within a determined angle. The front arm of the lever *b* is fork-shaped or provided with a slot *f*, in which engages the pin *g* of the crank *h*, the axis *i* of which is rotated by the driving-shaft of the engine in a suitable manner. The amplitude of oscillation of the paddle *d* may be limited by stops *k* or similar devices, which are fixed on separate arms at the bottom end of the lever *b*. The rotation of the crank *h* will impart to the lever *b* an oscillating motion to the right and to the left in such a manner that the velocity of the paddle *d* reaches the highest point in the midst of the stroke and gradually diminishes in either direction toward the limit of the stroke, where it is reduced to zero. In reversing the oscillatory movement of the lever the paddle *d* by reason of the resistance of the water is reversed to its opposite end position and now presses with its other side on the water, thus propelling the vessel in the same manner as during the preceding stroke. Since at the end of each oscillation the velocity is, as above mentioned, equal to zero, the reversal of the paddle *d* takes place without any jerking.

Having described my invention, what I claim is—

1. In a propeller, the combination of a pivoted lever including a blade pivotally connected at a portion of its length and provided with stops arranged to control the movement of said blade, one end of said lever provided with a guide, a rotary shaft, and a crank carried thereby and engaging said guide for imparting oscillatory movement to the lever.

2. In a propeller, the combination of a pivoted lever having a blade arranged at one end thereof and having its opposite end bifurcated, a rotatable shaft and a crank carried thereby and engaging said bifurcated portion of the lever to impart rotary movement to the lever.

3. In a propeller, the combination of a pivoted lever, a blade pivoted at one end thereof, said lever having extensions and provided with stops arranged to limit the movement of the blade, said lever having its opposite end forked, a power-driven member engaging said forked end for imparting oscillatory movement to the lever.

4. In a propeller, the combination of a pivoted lever including a blade hinged at one end thereof and provided with stops to limit the movement of said blade, the opposite end of said lever provided with a guide, a rotatable shaft and a crank carried thereby and engaging said guide to impart oscillatory movement to the lever.

5. A lever mounted for oscillation between its ends, having a bifurcation at one side of its axis of motion and a swinging propeller-blade at the opposite side of said axis, and means for limiting the motion of said swinging blade, and a revoluble crank provided with a pin to play between the branches of said bifurcation for imparting motion to the lever.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

ZDENKO VON LIMBECK.

Witnesses:

JOSEF RUBANCE,
ALVESTO S. HOGUE.