# H Zahn

# Propeller

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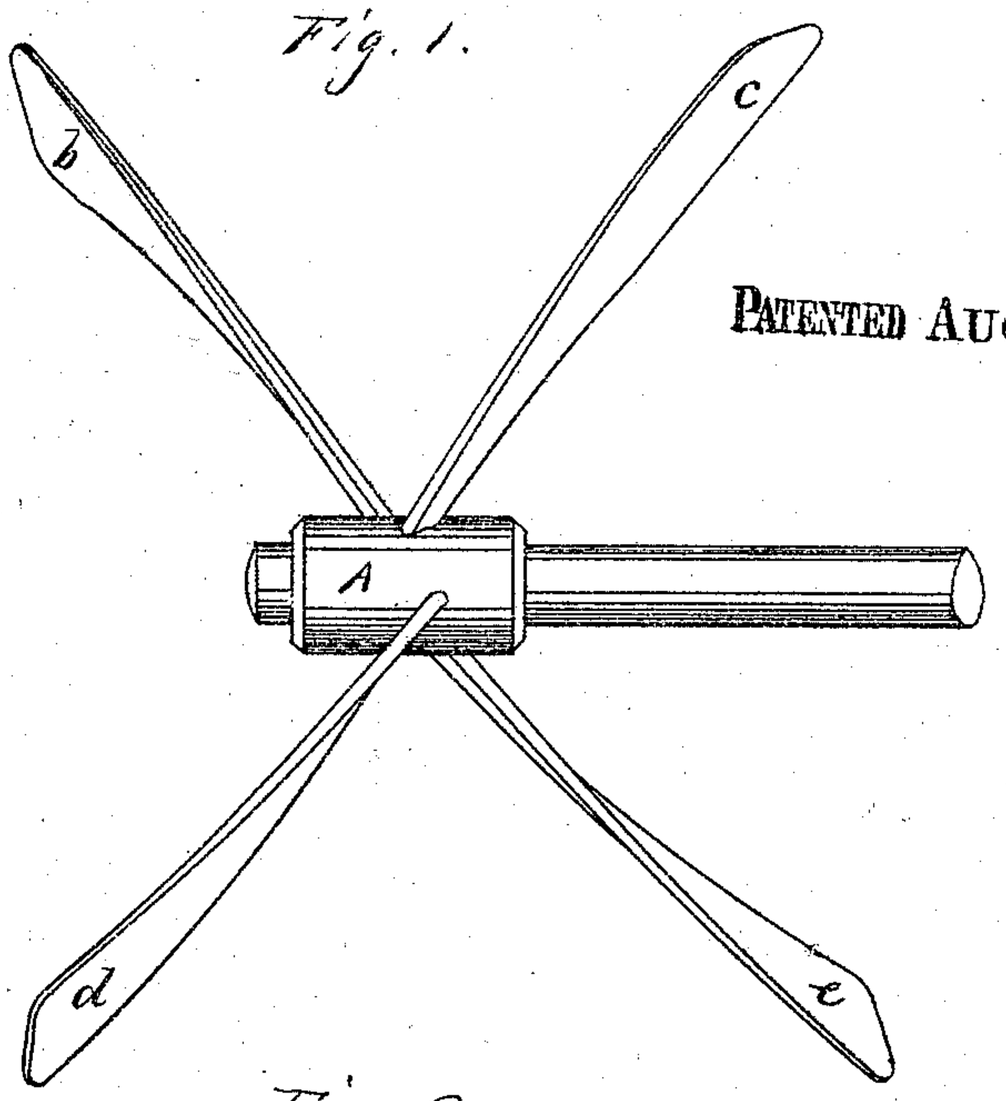
Fig. 1.




PATENTED AUG 22 1871

Fig. 2.

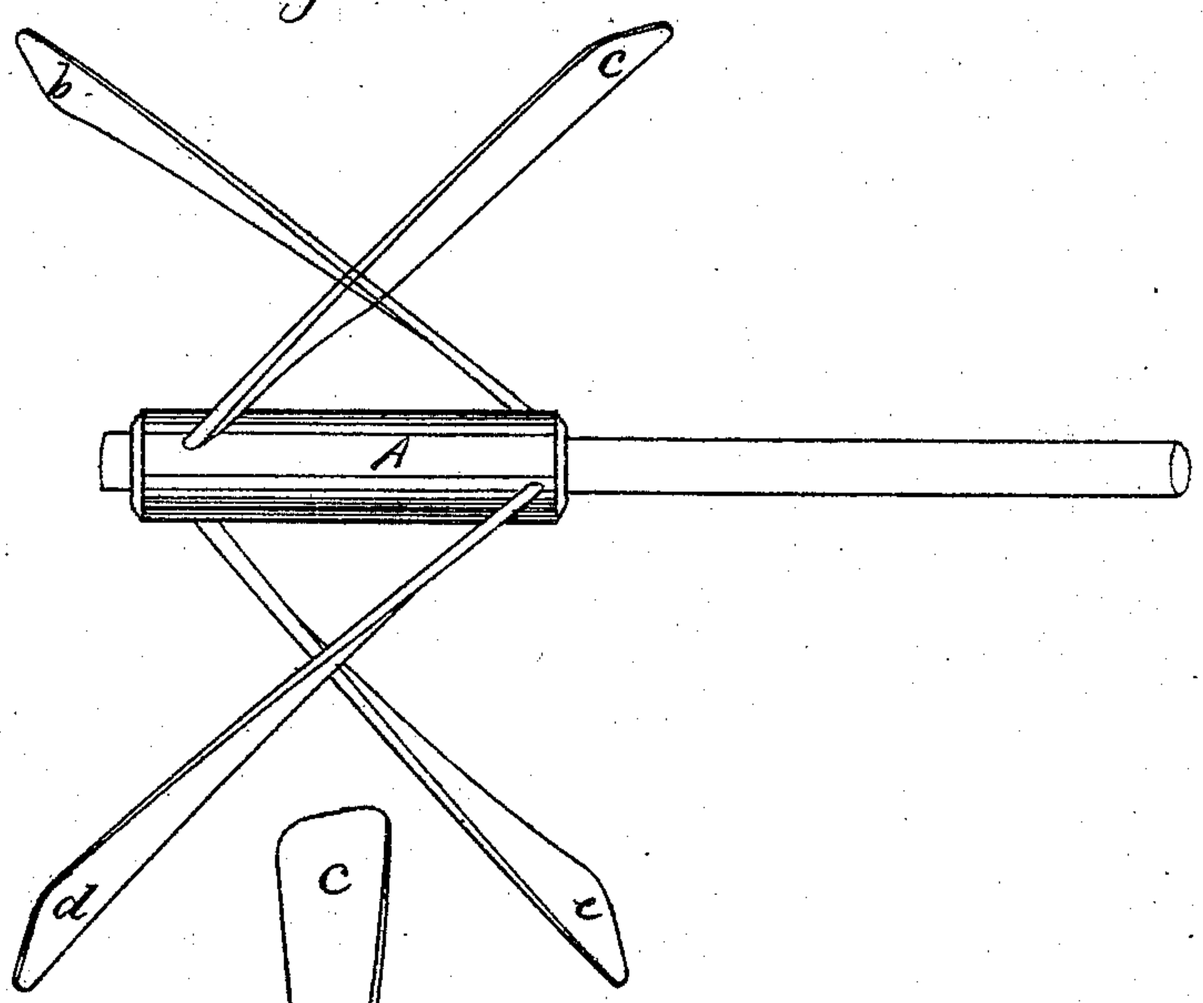
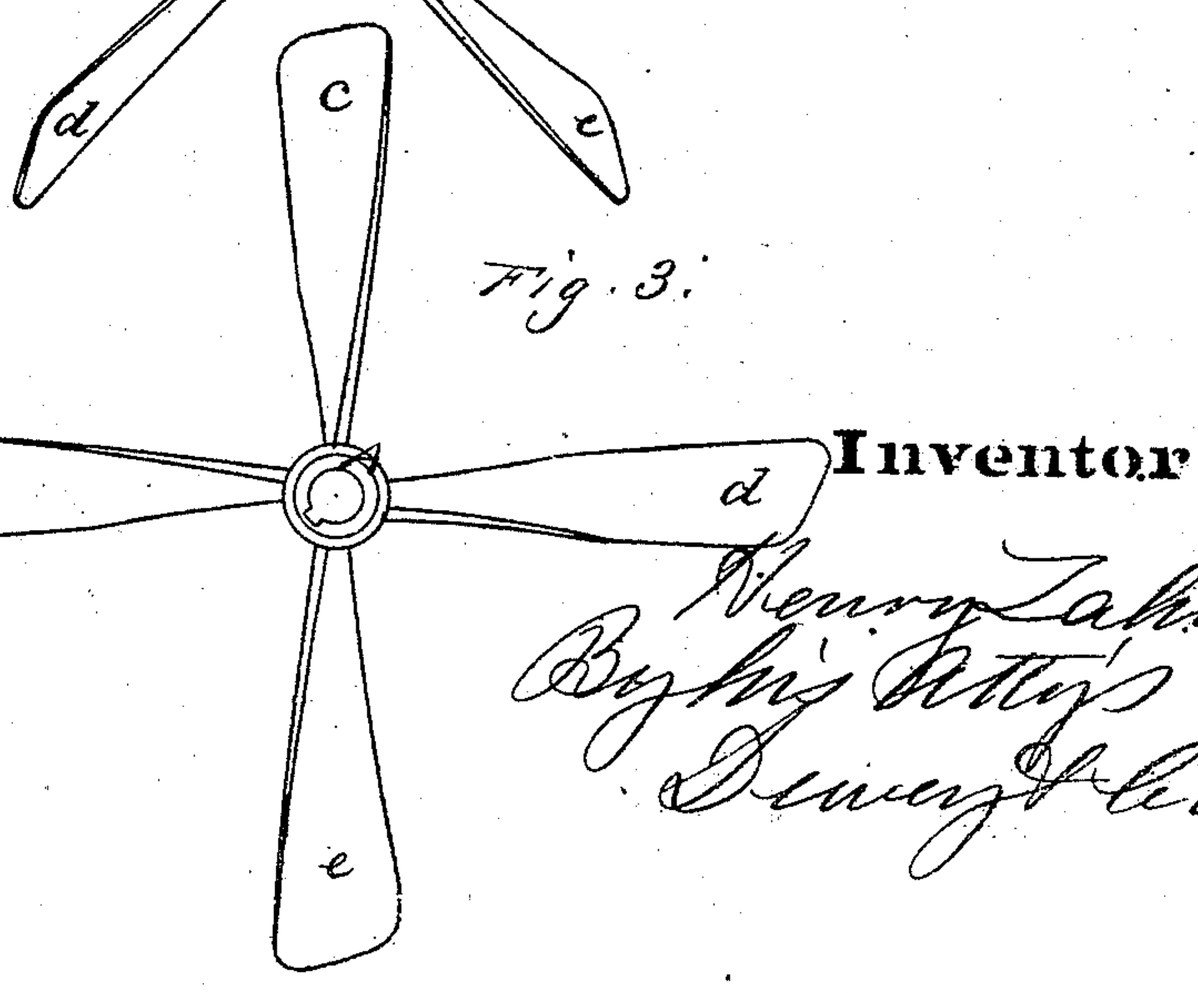



Fig. 3.




**Witnesses**

Geo W. Strong

Benjn. C Fabes

**Inventor**

Henry Zahn

By his Attys

Dewey & Co

# UNITED STATES PATENT OFFICE.

HENRY ZAHN, OF SAN FRANCISCO, CALIFORNIA.

## IMPROVEMENT IN SCREW-PROPELLERS.

Specification forming part of Letters Patent No. 118,325, dated August 22, 1871.

*To all whom it may concern:*

Be it known that I, HENRY ZAHN, of city and county of San Francisco, State of California, have invented an Improved Screw-Propeller; and I do hereby declare the following description and accompanying drawing 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 or improvements without further invention or experiment.

My improvements in screw-propellers consist, first, in a novel arrangement of the wings or blades by which two threads are cut in the water in different planes at each revolution of the propeller; and secondly, in the peculiar curve of the blades by which the propeller is allowed to exert its full driving power without creating a sufficient back current to impede the rear or following threads of the screw.

In order to describe my improved construction of screw-propellers in a proper manner a full description is given below, with reference to the accompanying drawing, in which—

Figure 1 is a side elevation of my propeller. Fig. 2 shows a modification of the device.

A represents the hub from which the propeller-blades radiate and which is keyed upon the shaft in the usual manner. Upon this hub are fixed four blades, *b c d e*, or as many more may be added as may be desired. These blades are arranged upon the hub so as to stand at an angle alternately in opposite directions—that is, the blades *b d*, which are upon opposite sides of the hub A, stand obliquely to it in the same direction, while the blades *c e* stand obliquely to it in the opposite direction, thus causing the two sets of blades to cut two threads in the water in a **V**-form. The blades *b c d e* are slightly twisted from their bases to their points, thus giving them a slight concavity on their inner faces at the middle of the blades. An opposite twist is given to each alternate blade so as to cause each one to drive the water or current which it creates in a line parallel with the currents produced by the other blades and in a direction oblique from the shaft upon which the propeller is fixed, as indicated by the arrows, so that the current or commotion produced by one blade will not affect the blade following it, but each one will move in a solid body of water and thus exert its greatest power. If it should be found desirable that the propeller should occupy less space the hub A could be made longer, as shown at Fig. 2, and the blades be fixed to it so that the two sets will cross each other in the form of an **X**, as shown. In this case the two threads cut by the two sets of blades will also cross each other in the form of an **X**.

By constructing screw-propellers in the manner above recited the wallowing of the blades in an agitated body of water is avoided; consequently greater speed can be obtained from a screw of the same dimension than can be obtained from the ordinary screw.

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

1. In a screw-propeller arranged to cut two threads in the water, the blades *b d c e* arranged in opposite directions alternately, substantially as shown, and for the purpose above described.

2. The blades *b d c e*, when each alternate blade is arranged with an opposite twist, substantially as and for the purpose described.

In witness that the above-described invention is claimed by me I have hereunto set my hand and seal.

HENRY ZAHN. [L. S.]

Witnesses:

GEO. H. STRONG,

BENJN. C. FABRE.