(No Model.)

A. VOGELSANG.

SCREW PROPELLER.

No. 332,309. Patented Dec. 15, 1885.

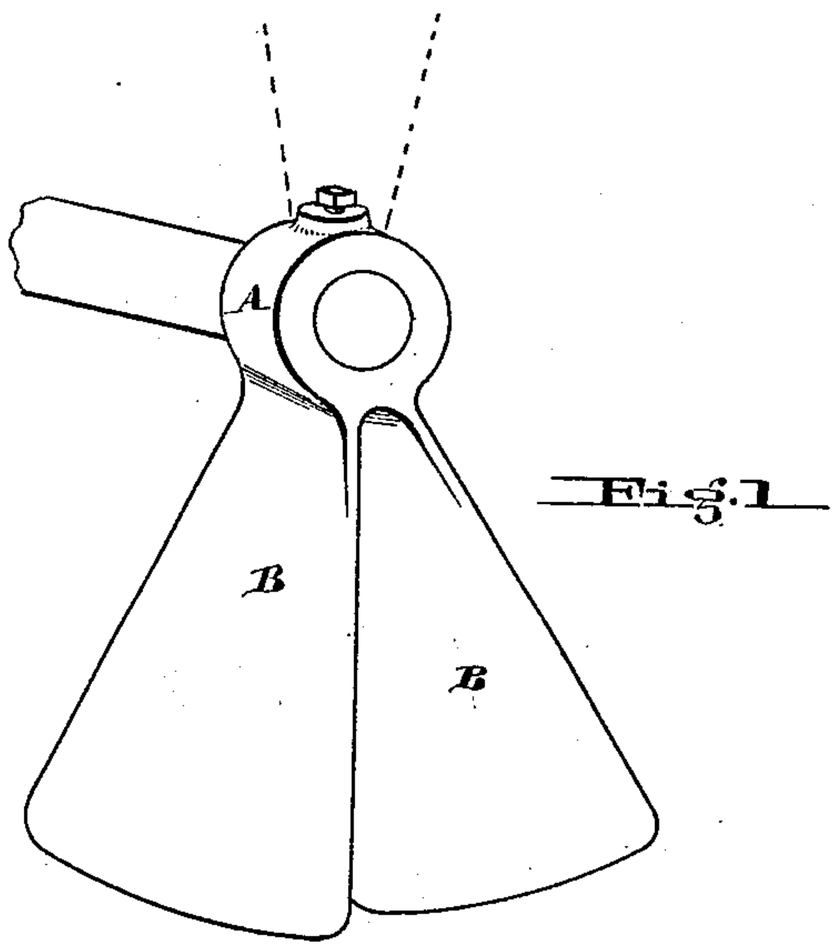


Fig. 1

Fig. 3

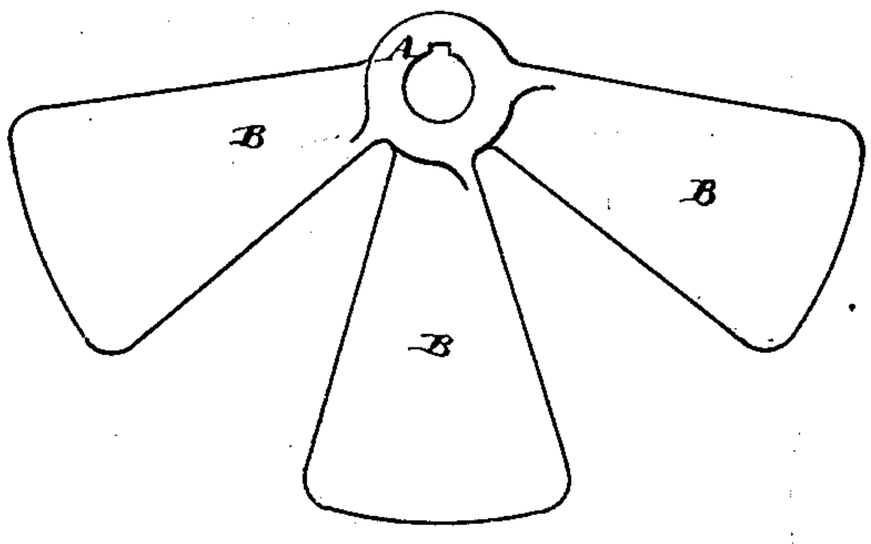
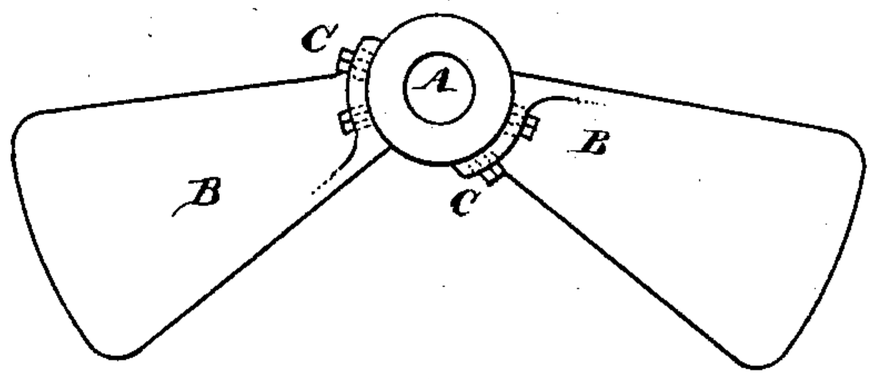


Fig. 2



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UNITED STATES PATENT OFFICE.

ALEXANDER VOGELSANG, OF PHILADELPHIA, PENNSYLVANIA, ASSIGNOR OF ONE-HALF TO THOMAS IRWIN DIXON, OF BROOKLYN, NEW YORK.

SCREW-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 332,309, dated December 15, 1885.

Application filed October 21, 1885. Serial No. 180,491. (No model.)

To all whom it may concern:

Be it known that I, ALEXANDER VOGELSANG, of the city and county of Philadelphia, and State of Pennsylvania, have invented an Improvement in Propellers, of which the following is a specification.

My invention has reference to propellers for the propulsion of vessels on water and in air; and it consists in a central hub provided with two or more blades or wings, substantially similar to those in ordinary screw-propellers for marine and aerial navigation, but which blades are so placed or grouped about the hub as to be unequally distributed—that is to say, in which no two blades of a group of blades are diametrically opposite—as is more fully set forth in the following specification and shown in the accompanying drawings, which form part thereof.

I have found by actual experiment, both in air and water, that propellers constructed in accordance with my invention have far more power with less revolutions than propellers as heretofore constructed, thus insuring a large reduction in the consumption of fuel necessary to operate a propeller to produce a desired speed.

In the drawings, Figure 1 shows a perspective view of a marine propeller embodying my improvements, in which there are two blades located wholly on one side. A third blade may be located as indicated in dotted lines, if desired, but which still leaves an unequal distribution of the wings or blades about the hub or shaft. This additional blade may be of any shape or construction desired, or may be in the form of a counter-balance, having of itself no propulsive effect. Fig. 2 is a front elevation of a propeller in which two blades are arranged substantially opposite each other, but still on one side of the hub, and not diametrically opposite. Fig. 3 is similar to Fig. 2, with the addition of an extra blade between the two others shown.

A is the hub, and B are the blades, which latter may be helical or simply flat, as desired, their particular shape being immaterial to my invention.

In practice there is no jarring or undue vibration due to the unequally-distributed mass of metal forming the propeller. In the case of aerial propellers the wings would of course be formed of canvas or other light material. The power of this propeller is so great that I have with facility driven a vessel through the water by the rotation of the propeller very slowly in the atmosphere. It is evident that the blades may be adjustable, if desired, as shown at C, and the hub may be so shaped by the distribution of metal, or formed with a projecting counter-balance, as to put the propeller in balance. When a counter-balance is used, its object is to counterbalance the weight of the blades which are arranged upon one side, and it is not necessary that such counter-balance should have any propulsive effect whatever.

With propellers in which there are a large number of equally-distributed blades, the water is so greatly churned that it is difficult for the blades to obtain a solid hold in the fluid, and consequently the loss by slippage is very great. By arranging the blades as herein described and shown, forming a more open space between them, they are enabled to take a firm hold upon the water, and the slip is much reduced, and this reduction is shown in an increase of speed with a given number of revolutions. It is also evident that as the blades are located to one side, one side of the shaft will take the wear and will run upon the bearing-box, the pressure traveling around the box instead of around the shaft, as heretofore. This change of pressure is very advantageous, as the box may be made with a replaceable bearing, and the life of the propeller-shaft would be greatly lengthened.

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

1. A propeller consisting of a hub provided with two or more blades or wings grouped upon but one side and unequally distributed about said hub, but in which the distance between the blades is not uniform, and in which no two blades are diametrically opposite, substantially as and for the purpose specified.

2. A propeller having its blades grouped upon one side of the hub or shaft only, and in which no two blades are diametrically opposite, and in which the distance between the blades is not uniform, and a non-propul-

sive counter-balance arranged upon the side of the hub or shaft opposite to that on which the blades are located, substantially as and for the purpose specified.

3. A propeller consisting of a boss or hub provided with two or more blades grouped upon one side only of the said hub, and in which no two blades of the group are arranged diametrically opposite, and a single blade arranged opposite to the group of blades, but in which the distance between the blades is not uniform, substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

ALEXANDER VOGELSANG.

Witnesses:
R. M. HUNTER,
WILLIAM C. MAYNE.