

J. VON BINZER & E. BENTZEN.
Screw-Propeller.

No. 216,136.

Patented June 3, 1879.

Fig. 1.

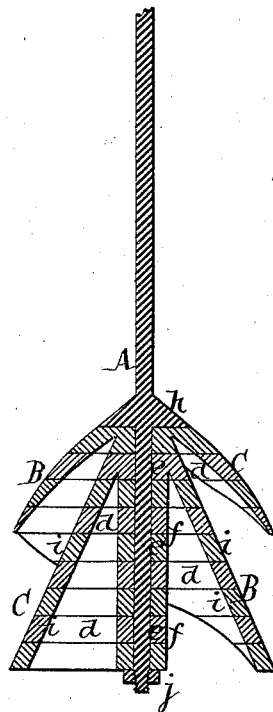


Fig. 2.

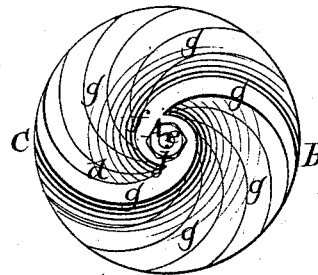
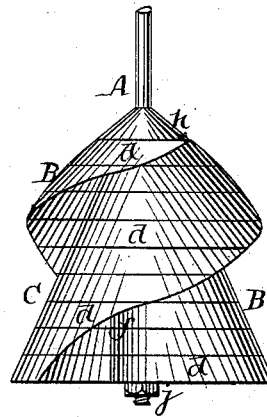


Fig. 3.



Witnesses

Chas Wablers.
William Miller.

Inventor.

Julius von Binzer
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by their attys
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UNITED STATES PATENT OFFICE.

JULIUS VON BINZER AND EDWARD BENTZEN, OF SALZBURG, AUSTRIA.

IMPROVEMENT IN SCREW-PROPELLERS.

Specification forming part of Letters Patent No. **216,136**, dated June 3, 1879; application filed March 19, 1879; patented in France, January 14, 1879.

To all whom it may concern:

Be it known that we, JULIUS VON BINZER and EDWARD BENTZEN, both of Salzburg, Austria, have invented a new and useful Improvement in Screw-Propellers, which improvement is fully set forth in the following specification, reference being had to the accompanying drawings, in which—

Figure 1 represents a longitudinal central section of a propeller embodying our invention. Fig. 2 is an end view thereof. Fig. 3 is a side view of the same.

Similar letters indicate corresponding parts.

Our invention relates to screws for propelling ships or aerial vessels, for raising water, and other purposes; and consists in a screw-propeller having a central shaft, with one or more transversely and rearwardly inclined spiral blades, the inner edge or edges thereof being joined to the shaft, and the said blade or blades increasing in width from front to rear, so that when, for instance, our propeller is applied to a ship, the action of the blades upon the water produces a tendency therein to converge to a point, whereby the greatest possible power is obtained, while at the same time the blades produce less noise, and can be made lighter, than those of ordinary propellers; also, in one or more spiral blades, which are constructed in transverse sections, particularly when they are inclined backward to their axis, to facilitate the construction of the propeller, and permit of replacing any portion that may become broken.

In the drawings, the letter A designates a shaft, carrying two spiral propeller-blades, B C, which are arranged and constructed in accordance with our invention, the same being inclined backward to said shaft, and being formed of a series of transverse sections, *d*.

Any usual or suitable material may be employed in the construction of the blades B C, reference being had to the purpose for which the propeller is intended to be used, and the blade-sections *d* may be cast or formed in any other suitable manner. These blade-sections *d* are constructed as follows: Each section has flat or plain faces, and is provided with a central hole, *e*, either round or square, whereby it is mounted on the shaft A, this hole being surrounded by a hub, *f*, from which project two

(more or less) arms, *g*. (See Fig. 2.) The number of these arms *g* determines the number of blades of our propeller, each arm forming part of a blade, and they are curved tangentially to the shaft A, but may be straight. Said arms *g*, moreover, are tapered toward the outer end, where they are sharp, while both edges thereof are beveled, as at *i*, Fig. 1; and when the blade-sections thus formed are secured on the shaft A, they are so placed that said beveled edges of the arms are flush, whereby the arms are ranged spirally to the shaft, and their said beveled edges present faces which are inclined backward.

For the purpose of securing the blade-sections *d* on the shaft A, they are clamped between a shoulder, *h*, formed on the shaft and a nut, *j*, screwed thereon; but this, obviously, can be accomplished in various other ways.

It is a well-known fact that in the screw-propellers now generally used a large quantity of the water struck by the blades escapes in a lateral or radial direction, which causes a loss of its reaction and of the power of the propeller.

This is obviated in our propeller by the arrangement of the blades B C. Our propeller, moreover, works with the least noise, and requires a much less number of revolutions to produce a certain effect than the ordinary screws—a result which contributes to diminish the wear and tear of the propelling mechanism, and of the ship to which the propeller is applied.

Another advantage of our propeller is, that the blades B C may be constructed much lighter or thinner, especially toward their extremities, than the ordinary screws, inasmuch as the blades sustain the greatest pressure near their axis.

Our propeller, in comparison with an ordinary screw of the same length, produces a like effect thereto with a much less diameter, and owing to this fact the same is adapted to be applied with a proportionately less gage, and is applicable to small vessels without steam, where it can be moved by means of levers, cranks, or other similar means.

The effect of constructing the blades B C in sections is, that our propeller is not liable to be permanently injured or destroyed in case the

blades come in contact with a solid body. Such an occurrence generally will damage merely one or a few of the blade-sections *d*, which can readily be replaced. The construction of the blades B C, moreover, is simplified by making the same in sections.

In the example shown the blades B C are so arranged that our propeller is tapered toward one end, and terminates in the shape of a cone; but the same may also be straight, and may end in the shape of a sphere or of an oval spheroid, and, for certain purposes, the screw may be tapered from the middle toward both ends. Whether tapered or not, our propeller may easily be locked at either or both ends by removing one or more of the blade-sections *d* and replacing them by disks, and in that case the shaft A may be provided with an opening through which the water may escape.

If the propeller is not tapered it is arranged, when applied to a ship, so that the forward blade-sections are against or opposite to a plain surface of corresponding size, to prevent any considerable influx of water at the fore part of the screw.

Our invention is capable of other modifications than those stated, and the sectional construction of the blades, moreover, is applica-

ble to a propeller in which the blades are perpendicular to their axis.

What we claim as new, and desire to secure by Letters Patent, is—

1. A screw-propeller consisting of a central shaft having wound upon it one or more spiral blades inclined transversely rearward, said blade or blades being joined to the shaft continuously, and increasing in width from front to rear, substantially as described.

2. A screw-propeller blade composed of detachable transverse sections, each provided with a sleeve adapted to fit upon a common shaft and hold its section in proper coincidence with those adjacent, substantially as set forth.

3. The combination, with the shaft A, having stop or abutment *h*, of one or more spiral blades, B C, composed of sections *d*, having sleeves *e*, and a suitable device for retaining said sections upon the shaft, substantially as described.

JULIUS VON BINZER.
EDWARD BENTZEN.

Witnesses:

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