

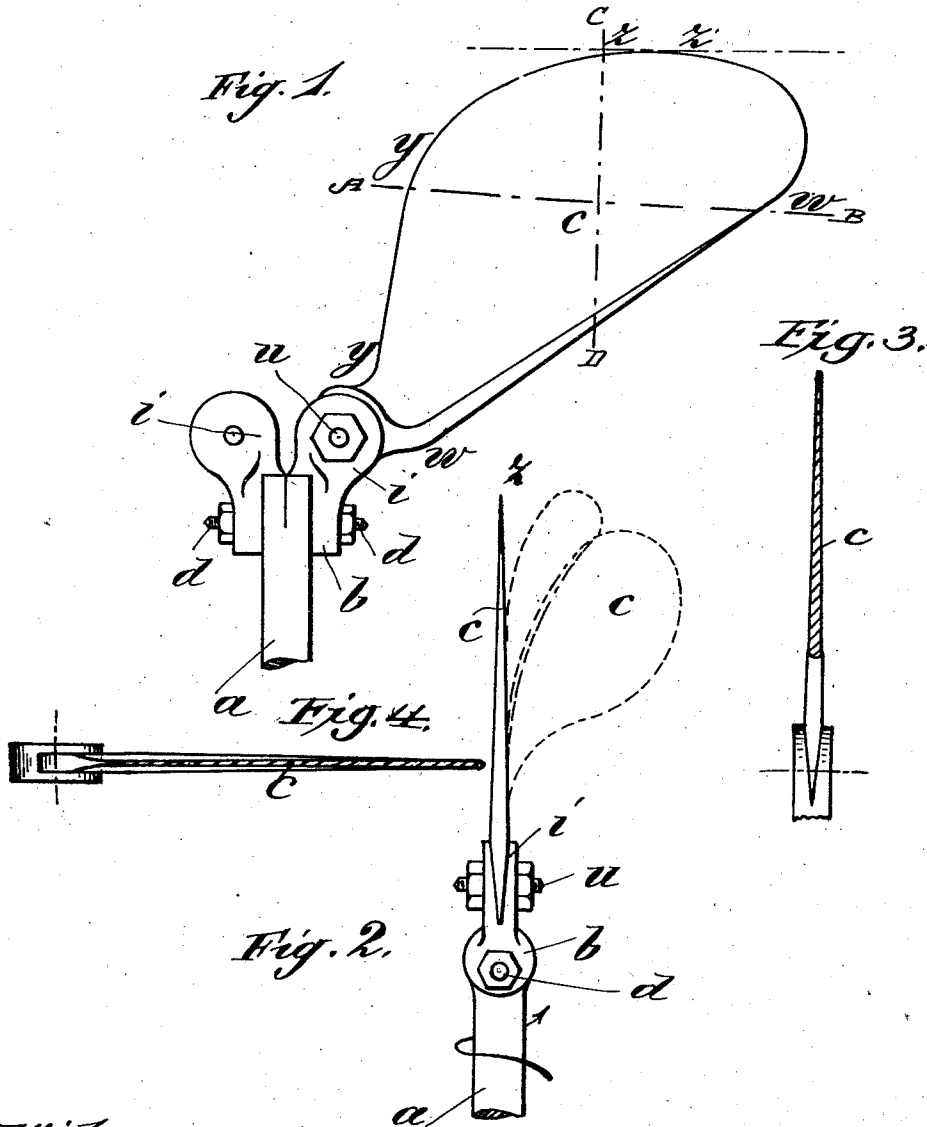
G. & U. ANTONI.

PROPELLER.

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1,002,796.

Patented Sept. 5, 1911.



Witnesses:

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UNITED STATES PATENT OFFICE.

GUIDO ANTONI AND UGO ANTONI, OF PISA, ITALY.

PROPELLER.

1,002,796.

Specification of Letters Patent.

Patented Sept. 5, 1911.

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To all whom it may concern:

Be it known that we, GUIDO ANTONI, draftsman, and UGO ANTONI, employee, subjects of the King of Italy, residing at No. 14 Lungarno Mediceo, Pisa, in the Kingdom of Italy, have invented new and useful Improvements in or Relating to Propellers, of which the following is a specification.

This invention relates to that class of propellers which are provided with flexible blades. Experience has proved that the employment of screws provided with very flexible blades enables the propulsion of bodies in water or in air to be effected much more efficiently than when screws having rigid blades are used.

According to this invention the screw for aqueous or aerial navigation is provided with blades which become gradually thinner from the root to the tip and from the leading edge to the following edge whereby there is obtained in the thinnest parts a very high degree of flexibility. A construction of propeller with flexible blades will now be described by way of example only.

A construction according to this invention is illustrated by way of example in the accompanying drawing, wherein—

Figure 1 represents the propeller blade in elevation and attached to the propeller shaft; Fig. 2 is an edge view of the blade showing diagrammatically the flexed forms which the blade is capable of assuming under the influence of the medium upon which the blade acts. Figs. 3 and 4 represent sections through the blades on the lines C—D and A—B respectively, and showing how the blade diminishes in thickness in a direction from its root to its tip and from its leading edge to its following edge.

a is the propeller shaft having a continuous rotary movement. To its end are secured by means of disks b having double clamp plates i adapted to secure by means of bolts u , the blades c of the propeller. The propeller can have a single blade as in the drawing, or it can have 2, 3 or 4 arranged at uniform angular distances about the axis of the shaft a .

In the construction shown in the drawing, during the erecting, the blade c with the disk b can be turned about the bolt d , its inclination being varied at will. This variability is not always necessary. In practice, it may be found suitable to secure the posi-

tion of the blade c , after having inclined it during construction to the extent which experience may show to be suitable to the conditions which the propeller will have to satisfy in each particular case.

The desired flexibility is obtained by giving to the blade a gradually decreasing thickness from its root or point of attachment to the clamps toward its peripheral end or tip z as well as from the leading edge w toward the following edge y where the flexibility is at the maximum.

Fig. 2 shows in dotted lines merely by way of illustration, the deformation which a blade of this system can experience in certain conditions of working.

The dimensions of the propeller and the degree of flexibility will vary of course in accordance with the work which the propeller has to do, more particularly according to whether the propeller is intended to work in water or in the air.

We claim as our invention:

1. A propeller adapted for water or aerial navigation comprising a driving hub and a blade rigidly and immovably connected thereto and having a diminishing thickness in a direction from its root to its periphery or tip and from its leading edge to its following edge which renders the thinner portions of the blade capable of flexing under the influence of the medium upon which the blade acts.

2. The combination of a propeller shaft, a propeller blade, and a mounting for adjustably connecting such blade and shaft comprising a clamp, a pivot arranged transverse to the axis of the shaft and connecting said clamp thereto whereby the pitch of the propeller blade with respect to the axis of the shaft may be adjusted, and a second pivot arranged transverse to the axis of the shaft and to the axis of the pivot first mentioned, the second pivot connecting said clamp and blade whereby the inclination of the blade with respect to the shaft may be adjusted.

In testimony whereof we hereunto affix our signatures in the presence of two witnesses.

ANTONI GUIDO.
ANTONI UGO.

Witnesses:

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