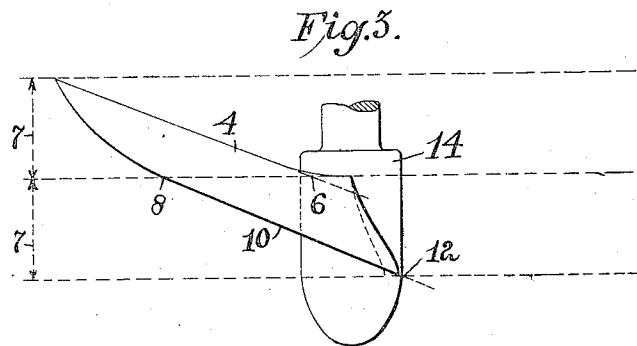
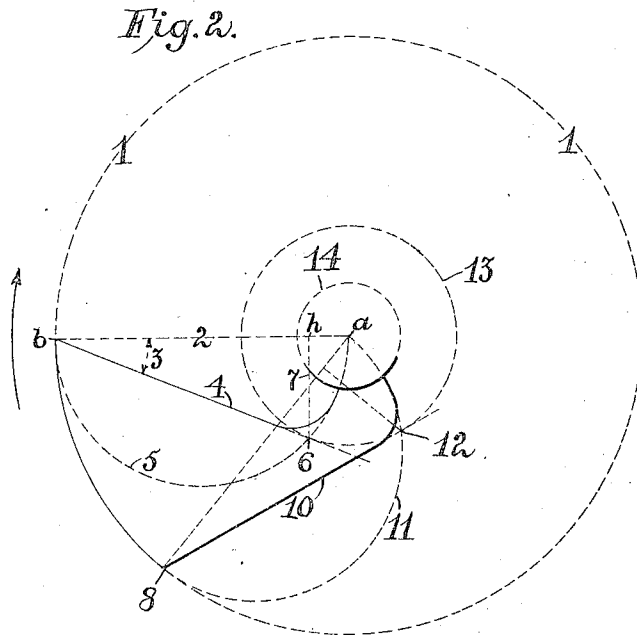
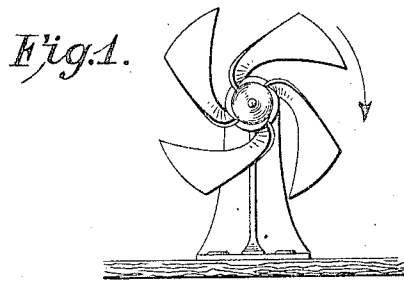


G. A. SCHLOTTER.
SHIP PROPELLER.
APPLICATION FILED DEC. 9, 1907.

921,896.

Patented May 18, 1909.



Attest:
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UNITED STATES PATENT OFFICE.

GEORG ARTHUR SCHLOTTER, OF DRESDEN, GERMANY.

SHIP-PROPELLER.

No. 921,896.

Specification of Letters Patent.

Patented May 18, 1909.

Application filed December 9, 1907. Serial No. 405,733.

To all whom it may concern:

Be it known that I, GEORG ARTHUR SCHLOTTER, a citizen of the German Empire, residing at Dresden, A., Kingdom of Saxony, Germany, have invented new and useful Improvements in Ship-Propellers, of which the following is a description.

My invention relates to propellers for working in elastic or inelastic fluids, and consists in the special construction of blades, as hereafter set forth, and illustrated in the accompanying drawings, in which:—

Figure 1 shows an elevation in a plane at right angles to the axis; Fig. 2 is a diagrammatic illustration of the outline of the blade and the manner in which its form is determined; Fig. 3 is a diagrammatic view of similar character in a plane parallel with the axis.

In these drawings, 1 is a circle assumed as the circumference of the propeller wheel, and the line $a-b$ the radius. The direction of rotation (to the right) is indicated by the arrow. An angle 3 is assumed as the required inclination of the blades. This angle is located at the circumference and in rear of the radius, and is included in this radius and a line 4 extending from the point b on the circumference 1.

From the center of the radius 2 a half circle 5 is struck, and the point of intersection of line 4 and semicircle 5 is indicated at 6. The line $b-6$ determines the generatrix of the blade and its position. Concentric with circle 1 an inner circle 13 is struck tangential to line 4, and determining approximately the inner working extremity of the blade, the boss 14 being farther within, and the root of the blade extended to the boss through this space. It will be understood that we are dealing now with the pressure or working side of the blade, and the generatrix which determines this surface extends from the circumference of the screw, which is the outer extremity of the blade, to this inner circle 13, and lies, as assumed and shown in Fig. 1, at the forward edge of the blade, in regard to the direction of rotation.

From this position of the generatrix 4, in forming or determining the working surface of the blade, the generatrix is led always tangentially to the circle 13, and spirally thereon, so that its outer end moves along an imagined cylindrical surface corresponding to circle 1, from point b to point 8, while its inner end moves in the same manner on the

inner imaginary cylinder corresponding to circle 13 from point 6 to point 12, and thus produces what I call the helicoidal surface of the blade.

I have assumed, in the last preceding paragraph, the extreme points 8 and 12. These points determine the breadth of the blade. To establish these points, I erect upon the line $a-b$, from the point 6 of intersection of lines 4 and 5, a perpendicular 7, the perpendicular striking the line at h . The line $b-h$ (cosine of angle 3), determines the breadth of the blade at the outer edge, that is to say, the rear point 8 is laid off on the circle 1, at a distance from point b , (the most advanced point of the blades) a distance equal to the line $b-h$. The perpendicular 7 determines the height of the blade, that is to say, the generatrix 4 is guided spirally around the circle 1 until it reaches the point 8 and 12, an axial distance equal to the line 7. The generatrix, in the last positions 8 and 12, now determines the rear edge of the blade, and with the section of the circle 1 included between lines 4 and 10 (the initial and the terminal positions) bounds the working face of the blade.

As heretofore stated, the circle 13 indicates the inner boundary of the working parts of the blades. The roots of the blades extend from this line to the boss 14, to which they are fixed in any convenient way.

In the construction above described, the generatrix was assumed as arranged in a plane which is at right angles to the axis of the propeller. It will be evident that this position referred to in the last preceding paragraph may be varied, and that the generatrix may be in a plane inclined to that axis, as shown in Fig. 3, where the line 4 indicated the generatrix so inclined.

It will be obvious that the same description applies to all the blades.

I claim:—

1. A propeller comprising the helicoidal blades, each of which is formed by the movement of a generatrix placed and moved in a plane at right angles to the axis of the propeller, said blades being all bounded by a circular line which determines the circumference of the propeller, and each blade by the lines 4 and 10, which are tangential to a cylinder concentric with the axis of the propeller, said blades also having roots joining their inner ends to the hub or shaft, all substantially as described.

2. A propeller comprising the helicoidal blades, each of which is formed by the movement of a generatrix placed and moved in a plane at right angles to the axis of the propeller, at the angle described, said blades being all bounded by a circular line which determines the circumference of the propeller, and each blade substantially by the lines 4 and 10, which are tangential to a cylinder
5
10 concentric with the axis of the propeller, said

blades also having roots joining their inner ends to the hub or shaft, all substantially as described.

In testimony whereof I affix my signature in the presence of two witnesses.

GEORG ARTHUR SCHLOTTER.

Witnesses:

OTTO WOLFF,

C. FRANZ STAMMER.