E. LA FLEUR.

PROPELLER.

APPLICATION FILED NOV. 7, 1916. RENEWED SEPT. 8, 1919.

1,363,660. Patented Dec. 28, 1920.

Fig. 1.

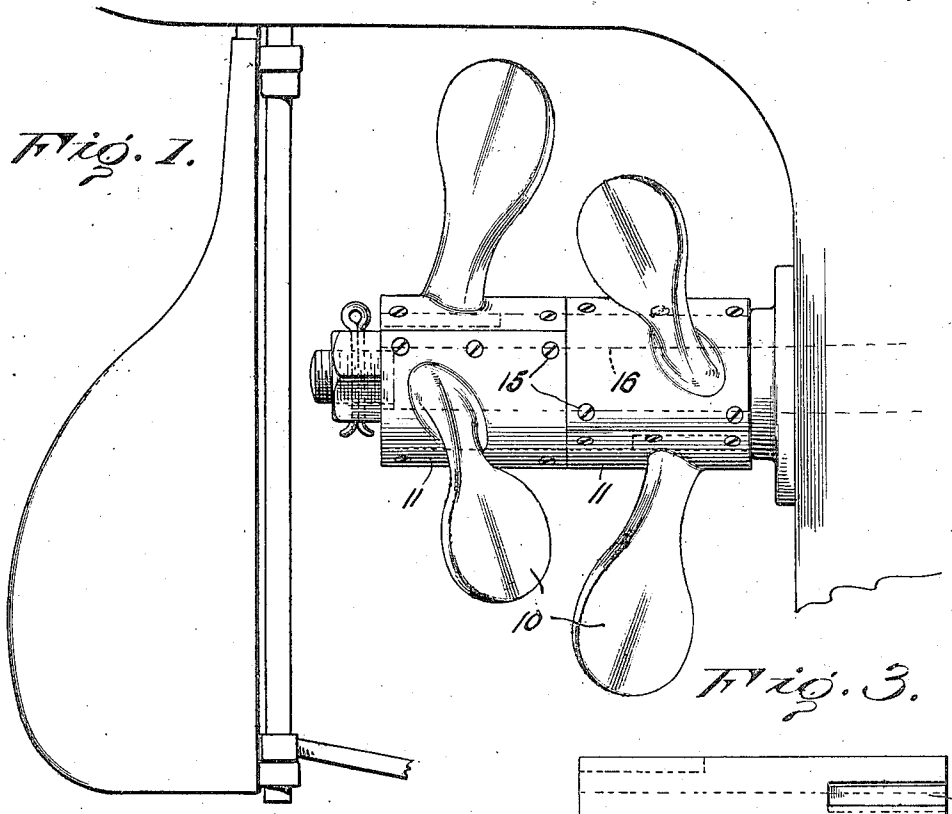
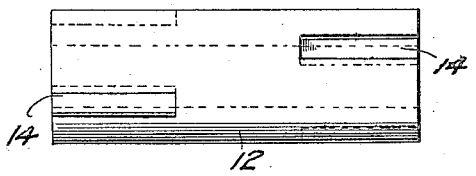


Fig. 3.



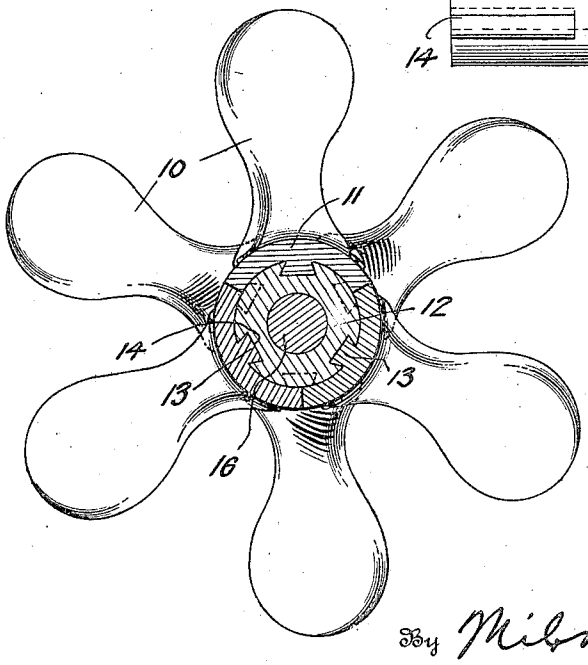


Fig. 2.

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PROPELLER.

1,363,660. Specification of Letters Patent. Patented Dec. 28, 1920.

Application filed November 7, 1916, Serial No. 130,072. Renewed September 3, 1919. Serial No. 322,502.

To all whom it may concern:

Be it known that I, ESSAIE LA FLEUR, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented a new and useful Propeller, of which the following is a specification.

This invention relates to screw propellers having projecting blades, and the invention has for its object to provide a propeller of maximum efficiency, this object being attained by means of a novel arrangement of blades as will be described in detail hereinafter and claimed.

The invention also has for its object to provide the propeller with independently detachable blades and novel and improved means for attaching the same to a hub.

In order that the invention may be better understood, reference is had to the accompanying drawing forming a part of this specification, and in said drawing,

Figure 1 is a side elevation of the propeller;

Fig. 2 is an end view thereof, with parts in section, and

Fig. 3 is a plan view of the propeller hub.

Referring specifically to the drawing, the propeller is provided with a number of blades 10 each being provided at its inner end with an attaching flange 11 curved in cross section to fit a hub 12. From the inner concave face of the flange projects a longitudinal dovetailed rib 13 which seats in a corresponding groove 14 in the surface of the hub. The drawing shows a series of six propeller blades, arranged in two groups of three each. One group of blades is mounted at one end of the hub and the other group at the other end, and in order that the blades may be mounted on the hub from the ends thereof, the grooves 14 open through the hub ends. The grooves however do not extend throughout the entire length of the hub, but extend inward from the ends thereof a distance equal to the length of the ribs 13. The blades are securely fastened on the hub by screws 15 passing through the flanges and into the hub. When the propeller is provided with three blades at each end of the hub, the flanges of the respective blades have a width so as to extend one-third way around the hub, and hence the three flanges, when assembled on the hub, abut at their longitudinal edges and completely encircle the hub. The length of the flanges is such that the inner ends of one set abut against the inner ends of the other set. The ribs 13 and the fastenings 15 rigidly secure the blades to the hub, and at the same time each blade is independently, and separately connected to the hub. Thus, if any one of the blades should become damaged or broken it can be readily taken off without disturbing the others. The hub 12 is suitably fastened to the shaft 16 of the propeller.

The blades 10 of one group are set staggered with respect to the blades of the other group, and it will also be noted that the blades are set obliquely or inclined at an acute angle to the axis of the propeller, the blades of one group all facing one way, and those of the other group facing the other way. The blades of the respective groups therefore converge in the direction of their outer ends, and they are spaced so that the tips of the blades of the respective groups rotate in different circular paths. The blades may be given any desired twist according to the propulsive power required.

When the propeller is in action, the forward blades throw the water toward the axis; whereas the after blades throw the water away from the axis, and the latter blades therefore work in water currents, which are in an ideal direction for the best propulsive effects, and the propeller will also work against the suction of the boat, therefore obtaining greater power in the water. Another advantage of the inclined blades is that the radial distance from the axis of the propeller to the tips of the blades is less than if blades of the same dimensions were set at a right angle to the propeller axis, and consequently the number of blades may be increased in proportion to this difference in the radius of the propeller without the necessity of increasing the power which drives the propeller. It will also be noted that by reason of the slant of the blades the current is met obliquely and more smoothly disposed of, reducing the resistance of the blades to the motion of the vessel. If the blades were set at a right angle to the propeller axis, it will be evident that the current striking the blades perpendicularly, there would be a certain amount of resistance offered, resulting in impeding the progress of the vessel.

I claim:—

1. A propeller having a plurality of pro-

jecting blades of uniform length and spacing arranged in two groups and set at an acute angle to the propeller axis, the blades of the respective groups converging in the direction of their tips, with the tips of the forward group of blades in advance of and spaced from the tips of the aft group of blades.

2. A propeller having a plurality of projecting blades of uniform length and spacing arranged in two groups and set at an acute angle to the propeller axis, the blades of the respective groups converging in the direction of their tips, and the tips of the blades of the respective groups rotating in different circular paths, with the tips of the forward group of blades in advance of and spaced from the tips of the aft group of blades.

3. A propeller having a plurality of projecting blades of uniform length and spacing arranged in two groups and set at an acute angle to the propeller axis, the blades of the respective groups converging in the direction of their tips and being staggered, with the tips of the forward group of blades in advance of and spaced from the tips of the aft group of blades.

ESSAIE LA FLEUR.