Aug. 30, 1932. L. J. KOCH 1,874,545

PROPELLER

Filed Jan. 9, 1931 2 Sheets-Sheet 1

Fig. 1.

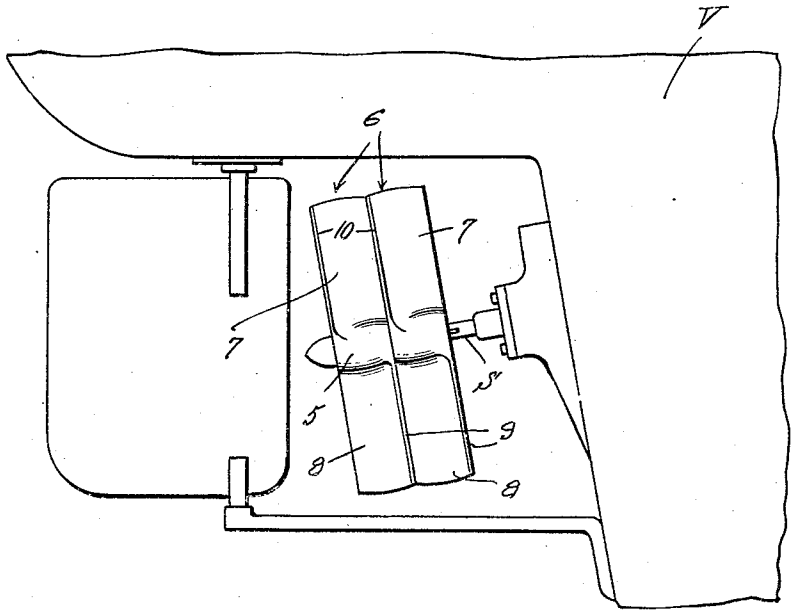
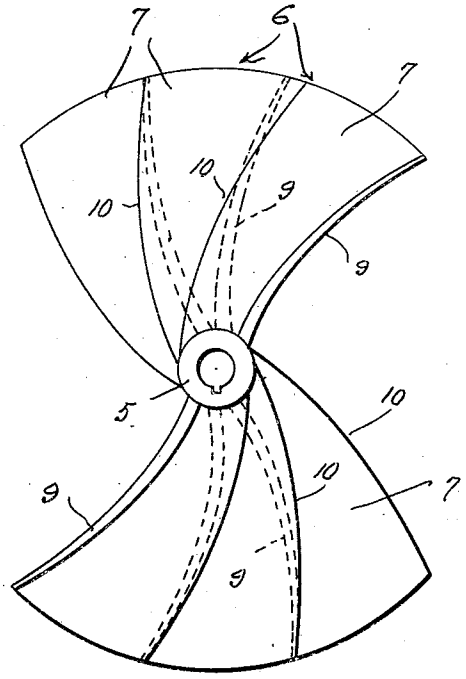


Fig. 6.



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Filed Jan. 9, 1931 2 Sheets-Sheet 2

Fig. 2.

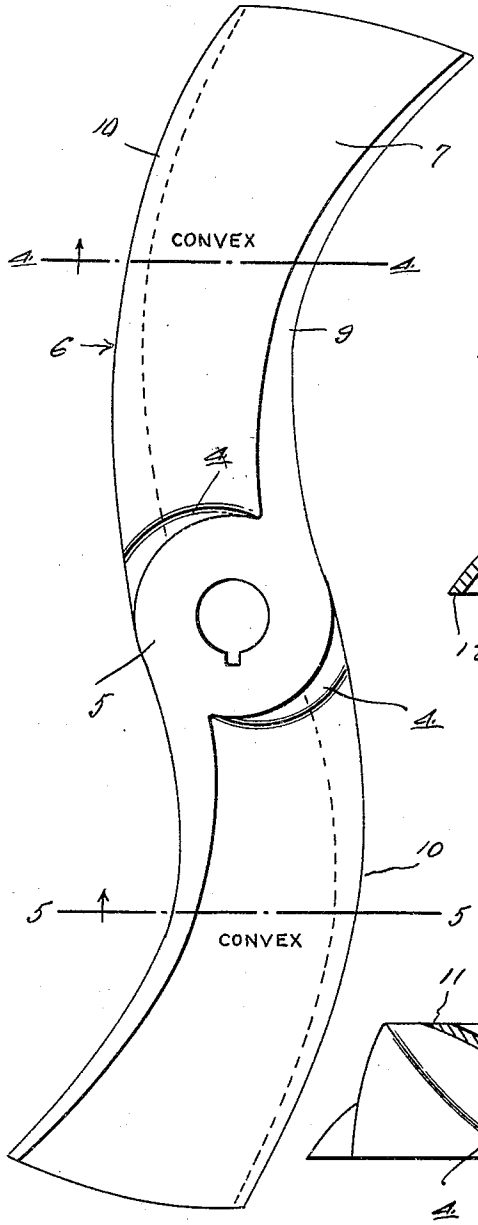


Fig. 4.

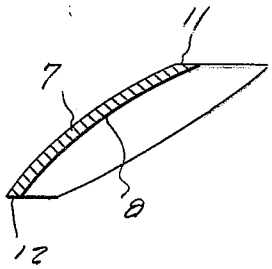


Fig. 5.

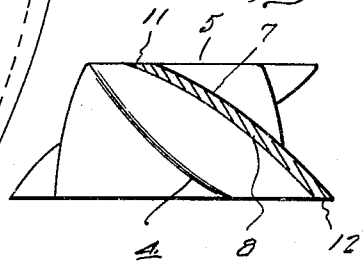
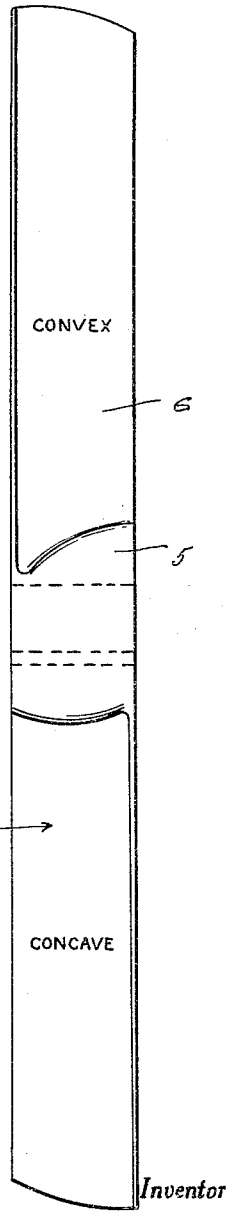


Fig. 3.



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UNITED STATES PATENT OFFICE

LYNN J. KOCH, OF ALLENTOWN, PENNSYLVANIA

PROPELLER

Application filed January 9, 1931. Serial No. 507,729.

This invention relates to certain new and useful improvements in propellers, and the primary object of this invention is to provide a propeller for use in propelling a marine vessel or an airship as may be found desirable.

A very important object of the present invention is to provide a propeller which is capable of great pulling effect with minimum motor speed.

A still further object of the invention is to provide a propeller of such a form in construction to be hereinafter more fully described, as will eliminate the spreading of water over the circumference of the propeller wheel area.

A still further object of the invention is to provide a propeller including a plurality of sections each of which is a complete propeller in itself, and the sections so arranged as to create in operation, equal pressure to all the sections or parts thereof in parallel direction of motion for discharging an equal amount of water at the rear of each unit as is taken in by the unit at the forward end thereof such a discharge being parallel throughout.

A still further object of the invention is to provide a propeller of the above mentioned character, and wherein each unit is of such a construction as to provide for an equal strain throughout the entire unit.

Other objects and advantages of the invention will become apparent from a study of the following description, taken in connection with the accompanying drawings wherein:

Figure 1 is a side elevational view of a sectional propeller, showing the same as applied to a marine vessel.

Figure 2 is an end elevational view of the propeller unit.

Figure 3 is a plan view thereof.

Figures 4 and 5 are transverse sectional views taken substantially on the lines 4—4 and 5—5 respectively of Figure 2.

Figure 6 is an end view of the propeller clearly illustrating the relative positions of the several units.

With reference more in detail to the drawings, it will be apparent that the propeller may be composed of any desired number of sections, respectively including a hub having secured or formed integral therewith the propeller blades 6.

Each of the sections is provided with two blades extending oppositely from the hub, and it is to be noted that the blades join the hub tangentially as shown, the roots or inner edges of the blade being diametrically opposite one another. The blades are oppositely curved longitudinally and in the direction of rotation of the propeller, the front surfaces of the blades being concave, and the rear surfaces being convexed.

The leading edges 9 of the blades are concaved, and the rear or trailing edges 10 convex. Each blade increases in width from the root 4 of the blade to the outer end or tip of the blade, the forward or leading edge 9 of the blade being curved a greater degree than the trailing or rear edge 10 of the blade so that as will be noted, the blades are of greater width adjacent their tips than adjacent the roots of the blades.

The cutting or leading edge 9 of each blade is brought to an edge by beveling away the material from the front or convex side 7 as at 11 instead of from the rear or concaved side 8 of the blade.

Adjacent its trailing edge each blade is beveled on its concave or rear side 8 as at 12. Each of said blades at its root 4 so joins the hub of the propeller that the blades extend from the hub obliquely to the axes of the hub with the leading edge of the blade at the root 4 terminating flush with the forward end of the hub, and the trailing edge of said root terminating flush with the rear end of the hub, the leading and trailing edges respectively of the blades springing from the hub at said roots tangential to the hub.

In Figure 1 I have shown the propeller wheel as applied to a marine vessel designated generally by the reference character V. In this instance the propeller wheel consists of two of such sections herein described in detail the said sections being suitably keyed to the propeller shaft S. In Figure 6 I have shown the propeller wheel as consisting of three of such sections, and as is

apparent, irrespective of the number of sections to be used, it will be noted that when the sections are assembled on the propeller shaft S, each unit is set a fraction of a turn relative to the next preceding unit so that the blades extend fanwise from diametrically opposite sides of the shaft S so that the concave surfaces conform to a continuous rotary surface as shown.

The concave surfaces providing the propelling surface for the propeller, it will be apparent that when the fluid element is gathered in by the blades, it will be forced not only rearwardly but also inwardly toward the axes of the propeller, the hollow sides of the blades holding the water in circumference or pipe line formation thereby delivering the full force of water against the rear body of water by each unit instead of only part of the water being held to the rear, and the remaining part being forced radially outwardly toward the circumference of the wheel.

A still further advantage of an invention of this character will be, that when not in use, the sections may be readily stored, and further, that in the event of breakage to one of the units, the same may be replaced with facility.

It will be also noted that each propeller section is a unit in itself independent of the remaining sections of the propeller, and that the addition or removal of one or more sections will not weaken the remaining sections of the propeller; further the number of sections contituting the propeller may be varied at will.

In making the propeller sectional, and each section or unit being practically an exact replica of the other section, eliminates expensive individual patterns and reduces cost of manufacture.

Even though I have herein shown and described the preferred embodiment of the invention, it is to be understood that the same is susceptible of changes, modifications and improvements coming within the scope of the appended claim.

Having thus described my invention, what I claim as new is:

A propeller comprising a plurality of units having hubs and oppositely projecting blades secured to the hub and having the inner portions thereof overlapping, said blades being longitudinally curved in opposite directions, the blades on corresponding sides of the hubs being so arranged relative to one another as to extend fanwise from the propeller shaft with the tips of the blade edge to edge.

In testimony whereof I affix my signature.

LYNN J. KOCH.