Oct. 29, 1929. A. M. DEERING 1,733,251

PROPELLER

Filed Feb. 3, 1927

Fig. 2.

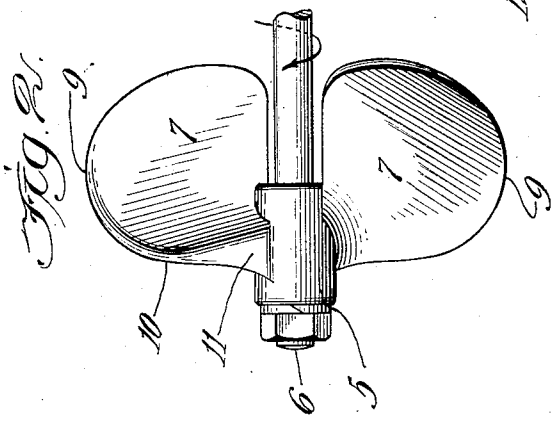



Fig. 4.

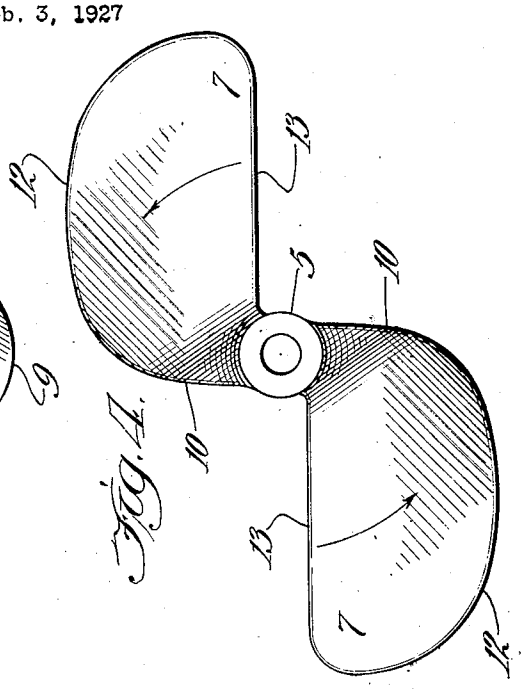



Fig. 1.

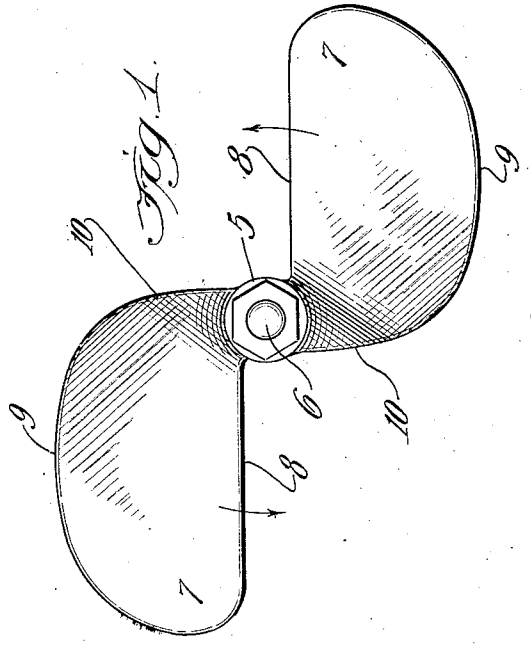
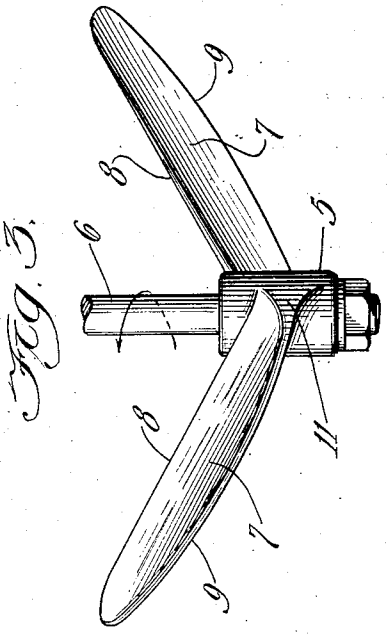



Fig. 3.




Inventor:
August M. Deering
by Wm. O. Belt
Atty

Patented Oct. 29, 1929 1,733,251

# UNITED STATES PATENT OFFICE

AUGUST M. DEERING, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO KENNETH D. CLARK, OF CHICAGO, ILLINOIS

## PROPELLER

Application filed February 3, 1927. Serial No. 165,581.

This invention relates to propellers and it is adapted not only for embodiment in propellers used in the water and in the air on ships, boats and airships, but also in that form of propellers used for agitating and like purposes.

The object of the invention is, broadly, to increase the efficiency of a propeller, without increasing its size, by mounting the blades in a novel manner on the hub of the propeller.

Another object of the invention is to reduce the size of a propeller, without decreasing its efficiency, by mounting the blades in a novel manner on the hub of the propeller.

And a further object of the invention is to increase the efficiency of a propeller by making the blades thereof substantially flat throughout their length and width and avoiding twists or other distortions in the blades.

In the accompanying drawings I have shown a selected embodiment of the invention and referring thereto:

Fig. 1 is a rear end view of a propeller as mounted on a propeller shaft for a boat.

Fig. 2 is a side view of the propeller as shown in Fig. 1.

Fig. 3 is a top plan view of the propeller as shown in Figs. 1 and 2.

Fig. 4 shows a weedless propeller.

Referring to the drawings 5 is the hub of the propeller which is substantially cylindrical in form and bored to receive the engine shaft. I may use any number of blades on the propeller, but in the drawings I have shown two which will be found sufficient for a small boat, for example, and also for other purposes. The two blades 7, 7 are mounted in the same manner and in the same forwardly directed angular relation to the hub but on diametrically opposite sides of the hub. By reference to Fig. 3 it will be noted that each blade projects forwardly, outwardly and angularly to the longitudinal axis of the hub, and this angle will be changed as required to provide a blade of desired pitch. Each blade has a substantially straight entering edge 8 and a curved back edge 9. The blade is inclined rearwardly from its entering edge 8 to its back edge 9 and this angularity of the blade may also be changed if desired, but, in my opinion, will remain relatively constant.

It has been the practice heretofore to mount the blades of a propeller at their inner ends on the hub and in a direction radial to the hub, but I have found that better results can be obtained by mounting the blades edgewise on the hub instead of endwise as heretofore. This is clearly indicated in Fig. 1, referring to which, each blade is mounted substantially tangential to the hub with the inner end of the entering edge 8 merging into the hub and the heel 10 of the blade free from the hub. In other words, the blade is mounted on the hub between the heel and the entering edge of the blade instead of being mounted on the hub at the heel or inner end of the blade, and the blade projects substantially tangential to the hub instead of projecting radially from the hub. The blade is substantially flat throughout its effective operative length. The blade is enlarged at 11 where it joins the hub to increase its strength. Generally speaking, the blades will be cast integral with the hub, but they may be made separate and suitably mounted on the hub to meet some requirements.

To embody the invention in a weedless type propeller I make it as shown in Fig. 4 with the entering edge 12 curved and the back edge 13 straight, being the reverse of the construction shown in Figs. 1–3.

My invention is simple in character, novel in design and in construction, and efficient in results. I have found that a propeller constructed as shown in the drawings has a much greater efficiency than a propeller of the old type of the same diameter and pitch, but having radially disposed blades. From this it is clear that a propeller embodying my invention will have equal efficiency with a propeller of the old type having radially disposed blades and of larger diameter. It is highly desirable to be able to obtain a given efficiency with a propeller of smaller diameter. This is the result of mounting the blades upon the hub in the novel manner herein shown and described, tangenial to the hub.

I am aware that it will be desirable to change the angular disposition of the blades to the longitudinal axis of the hub in order

to vary the pitch of the blades and adapt the propeler for different purposes, and as before stated it may also be desirable under some conditions to change the transverse angularity of the blades, and other changes may be found desirable to satisfy different requirements; therefore I reserve the right to make all such changes as fall within the scope of the following claim.

I claim:

A propeller embodying a hub and blades substantially flat throughout their entire surface, each blade having a substantially straight edge and a curved edge, the straight edges extended tangentially in opposite directions from opposite sides of the hub.

AUGUST M. DEERING.