

F. MÜLLER.
PROPELLER.

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1,054,786.

Patented Mar. 4, 1913.

Fig. 1.

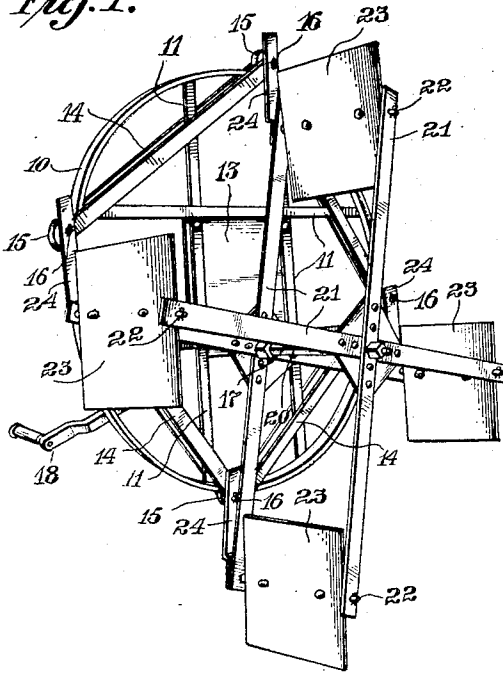


Fig. 2.

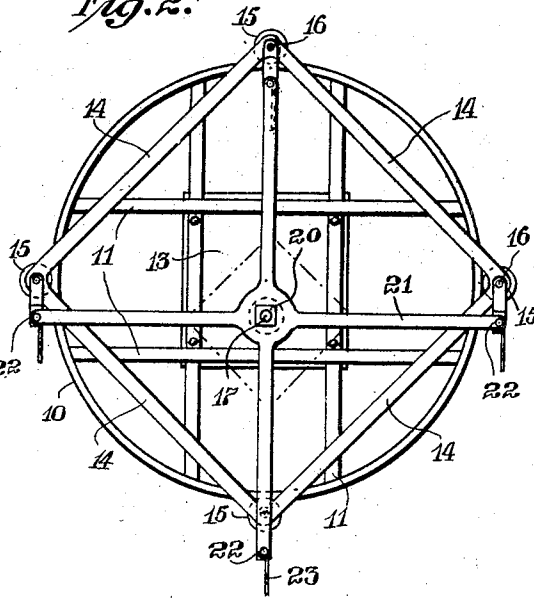
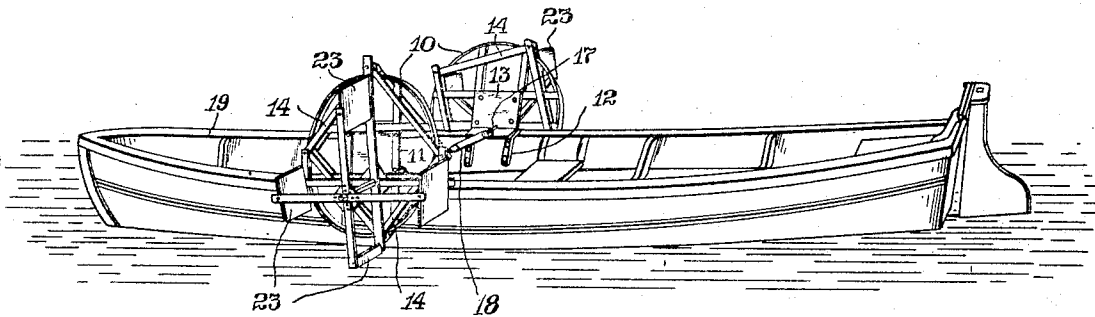


Fig. 3.



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UNITED STATES PATENT OFFICE.

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PROPELLER.

1,054,786.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, FELIX MÜLLER, a citizen of the United States of America, residing at 226 East Seventy-fourth street, New York city, in the county and State of New York, have invented certain new and useful Improvements in Propellers, of which the following is a specification.

My invention relates to propellers for water craft, and has more especial reference to a type of propeller employing blades which are designed to enter, pass through, and out of the water, perpendicularly thereto.

The primary object of my invention is to provide a novel form of propeller by means of which maximum efficiency may be attained with a minimum expenditure of power.

A further object is to so construct the device that friction will be largely eliminated, and there will be no appreciable loss of power during operation.

Other objects and advantages of the invention, and its detail structure and operation will be disclosed in the following specification, reference being made to the accompanying drawing which illustrates one of the embodiments of the invention.

In the drawing Figure 1, is a perspective view of my improved form of propeller; Fig. 2, is a side elevational view thereof; and Fig. 3, is a perspective view of a boat having a pair of propellers, containing my invention, in operative position thereon.

Referring to the drawing by reference characters, the numeral 10 denotes a ring or annular guide, suitably strengthened by the cross braces 11, and firmly held to the side of the boat by the bracket 12. The guide 10 has secured thereto a bearing plate 13 in which the operating shaft for the blades bears, as more fully hereinafter described.

Designed to travel about the guide 10 in a circular path is a blade supporting and guiding frame, substantially rectangular in form, and comprising several pairs of parallel arms 14 provided with the oppositely disposed rollers 15 pivotally supported on the studs 16 and designed to travel about the periphery of the annular guide 10. The arms 14 of the frame are so arranged that the arms of each pair are on opposite sides of the annular guide.

Passing through the bearing 13 and fixed to the supporting and guiding frame, is an

operating shaft 17 which is eccentrically arranged in respect to the annular guide 10. The shaft is preferably below the center of the guide 10, and when the craft is to be manually propelled the shaft is provided with a crank handle 18 projecting into the boat 19. The shaft is provided with an extension 20 which is preferably rectangular in cross section and carries the parallel blade supporting arms 21 arranged in pairs and crossed with respect to each other. The supporting and guiding frame, above referred to, is also carried by the rectangular shaft extension 20, so that said frame and blade supporting arms travel together when actuated through the intermediary of the operating shaft 17.

Mounted for revolution in the free end of each pair of arms 21 is a stud 22 to which is rigidly fixed a suitably formed paddle or blade 23. Links 24, which are fixed to one end of the studs 22 and are pivotally mounted on adjacent ends of the studs 16, serve to cause movement of the paddles 23 as the rollers move about the periphery of the annular guide 10.

As shown in Fig. 3, the improved propellers are arranged in pairs at opposite sides of a boat. By turning the cranks 18 in the same direction the rollers 15 are caused to travel about the periphery of the guide 10, and the arms 14 as well as the arms 21 and the paddles 23 participate in this movement. Owing to the eccentricity of the shaft 17, and the connection of the blades 23 with the studs upon which the rollers 15 are mounted, the blades will successively enter the water perpendicularly thereto, maintain this position in the water, and arise out of the water in the same relative position. In this manner the ideal condition is maintained, that the blades cut the water at absolute right angles in entering and arising therefrom, and their whole surface or width is absolutely at right angles to the direction of travel while the blades are exerting their operative stroke in the water. To turn the boat, back water, etc., the crank handles are manipulated in the same manner that ordinary oars would be used.

I claim:—

1. In a propeller, the combination with a relatively fixed annular guide, of a frame adapted to move about the periphery thereof of said frame including interconnected pairs of arms arranged on opposite sides of said

guide, and a shaft bearing in said frame and passing eccentrically through said annular guide whereby said propeller blades are caused to enter and move out of the water 5 perpendicularly thereto.

2. In a propeller of the character described, the combination with a relatively fixed annular guide, of a substantially rectangular frame including interconnected 10 pairs of arms arranged on opposite sides of said guide, said pairs of arms having rollers therebetween adapted to guide said frame about the periphery of the guide, propellers pivotally supported by said frame and 15 means under control of said rollers for causing said propellers to enter, pass through, and leave, the water perpendicularly thereto.

3. In a propeller of the character described, the combination with a relatively fixed annular guide, of a substantially rectangular frame including interconnected 20 pairs of arms arranged on opposite sides of said guide, said pairs of arms having rollers therebetween adapted to move about the periphery of said guide and guide said frame in an annular path about said guide, propeller blades pivotally supported in said 25 frame and connected to said rollers, and an actuating shaft bearing in said frame eccen-

trically to said guide whereby action of said shaft will cause said propeller blades successively to enter the water, operate therein, and move out of the water, perpendicularly thereto.

4. In a propeller of the character described, the combination with an annular guide, of a supporting frame having arms arranged at each side of said guide, rollers pivotally mounted in said supporting frame and adapted to move about the periphery 40 of the guide and guide the frame in a circular path, a shaft bearing in said frame and passing eccentrically through said guide, arms carried by said shaft, studs passing through said arms and having propeller 45 blades rigidly attached thereto, and links connecting said studs with said rollers, whereby said propeller blades are caused to enter the water, operate therein, and move out of the water, perpendicularly thereto. 50

In testimony whereof I have affixed my signature in presence of two witnesses.

FELIX MÜLLER.

Witnesses:

JOHN ZELEUBER,
CLARISSA FRANCK.