J. HENDERSON.

BOAT PROPELLER.

APPLICATION FILED DEC. 8, 1917.

1,295,315. Patented Feb. 25, 1919.

FIG. 1.

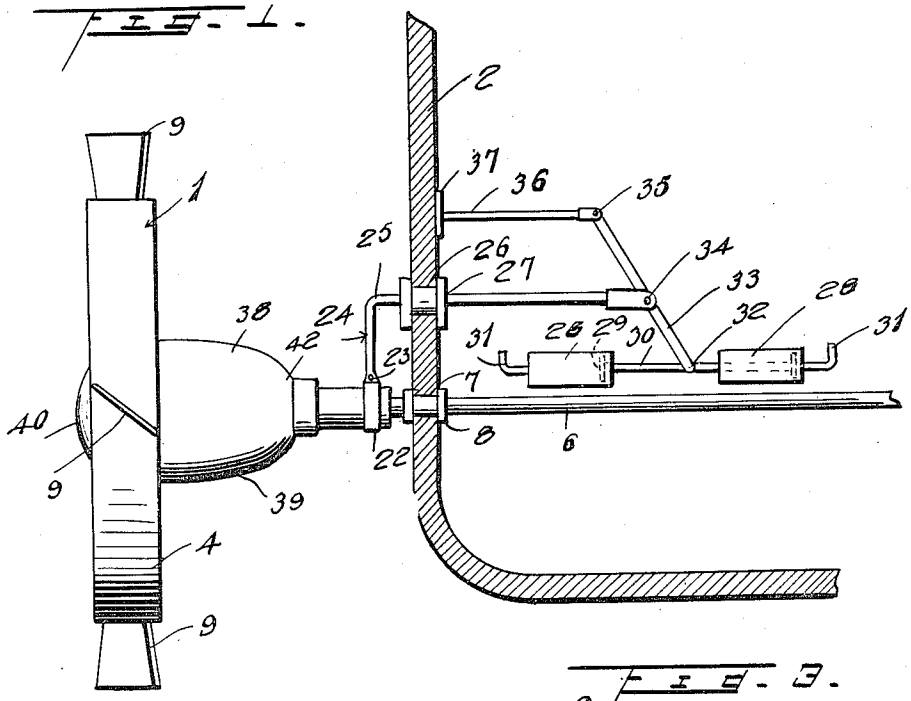


FIG. 2.

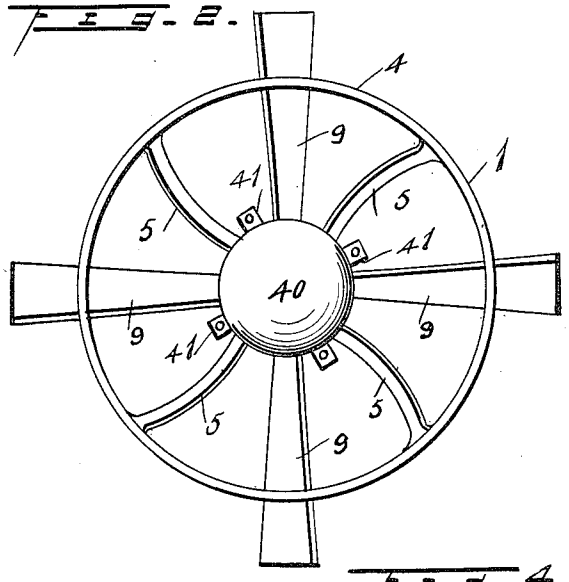


FIG. 3.

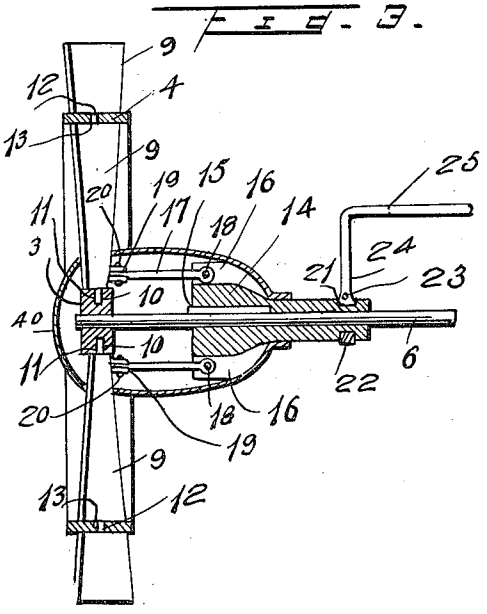
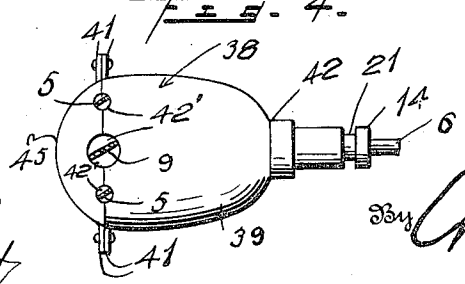


FIG. 4.



Witnesses

E. A. Stanton

W. W. Wright

Inventor

J. Henderson.

By A. Kaufmann Jr.

Attorney

UNITED STATES PATENT OFFICE.

JERRY HENDERSON, OF MADELIA, MINNESOTA, ASSIGNOR OF TWO-FIFTHS TO JAY A. TOMB, OF MADELIA, MINNESOTA.

BOAT-PROPELLER.

1,295,315. Specification of Letters Patent. Patented Feb. 25, 1919.

Application filed December 8, 1917. Serial No. 206,264.

To all whom it may concern:

Be it known that I, JERRY HENDERSON, a citizen of the United States, residing at Madelia, in the county of Watonwan and State of Minnesota, have invented certain new and useful Improvements in Boat-Propellers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to propellers for boats, aeroplanes and the like, and the primary object of the invention is to provide an improved propeller in which the angle of the blades can be varied, so as to reduce or quicken the speed of the device being propelled, or reverse the direction thereof, without changing the speed of or reversing the engine.

A further object of the invention is to provide an improved propeller including a hub, an annular rim, connecting spokes, and pushing blades, which are pivotally carried by the hub and rim, the connecting spokes being so arranged as to help in propelling the device.

A further object of the invention is to provide an improved means for varying the angle of the blades, so that the same can be readily and quickly operated.

Another object of the invention is to provide an improved detachable housing for incasing the hub of the propeller and the connecting links for varying the angle of the blades, so that the same will be prevented from becoming easily broken.

A still further object of the invention is to provide an improved propeller of the above character, which is durable and efficient in use, one that is simple and easy to manufacture and one that can be placed upon the market at a reasonable price.

With these and other objects in view the invention consists in the novel construction, arrangement and formation of parts, as will be hereinafter more specifically described, claimed and illustrated in the accompanying drawings, forming a part thereof in which:

Figure 1 represents a side elevation of the improved propeller and the operating means therefor attached to a boat, the boat being shown in section.

Fig. 2 is a front elevation of the improved propeller.

Fig. 3 is a longitudinal section taken through the improved propeller, and

Fig. 4 is a plan view of the housing for the hub of the propeller and the actuating means of the blades, showing the blades and spokes in section.

Referring to the drawing, in detail, wherein similar reference numerals designate corresponding parts throughout the several views, the numeral 1 generally indicates the improved propeller, which is as shown attached to a boat 2, which may be of any desired shape or form. While the same has been shown in connection with a boat, it is to be understood that the propeller can be used with equal advantage on aeroplanes and the like.

The improved propeller 1 consists of the hub 3, the annular flat rim 4, and the connecting spokes 5, the hub 3 being keyed to the drive shaft 6 of the boat 2, which extends through the boat as at 7. The boat is provided with a suitable stuffing box 8 at this point, which prevents the entrance of water into the vessel. Mounted between the connecting spokes 5 are the propelling blades 9 which are gradually tapered toward their inner ends and the inner end of each propeller is provided with a stub shaft 10 which are rotatably mounted in recesses 11 formed in the hub of the propeller. The spokes 5 form a suitable rigid connection between the rim 4 and the hub 3 and these spokes are flattened and set at an angle to the rim and hub so as to provide an additional propelling means for the propeller. The blades 9 are extended beyond the annular rims 4 so as to provide a relatively wide area to act upon the water or the like. The blades 5 are reduced intermediate their ends to provide a cylindrical connecting shank 12 which are rotatably received in apertures 13 formed in the annular rims. By this construction the blades are rotatably carried by the hub and rim and thus the same can be readily turned, so as to vary the angle of the same and thus reduce or quicken the speed of the article being propelled the blades can be actuated, so as to completely reverse the direction of the article.

Keyed upon the drive shaft 6 for sliding movement is a collar 14, which has one end thereof gradually enlarged as at 15 and provided with spaced ears 16, which receive therebetween the inner ends of the

connecting links 17. Suitable pivot pins 18 extend through the inner ends of the links and the ears 16. The outer ends of the connecting links 17 are apertured and received between spaced ears 19 formed on one of the side edges of the blades and a suitable pivot pin 20 connects the links with the ears. Thus when the collar 14 is slid on the drive shaft 6 the blades 9 will be swung on the stub shafts 10 and the reduced shanks 12. The inner end of the collar 14 is provided with an annular groove 21 which rotatably receives the collar 22 which has connected thereto as at 23 the lower end of the operating arm 24. The operating arm 24 extends upwardly from the collar and is then bent at right angles as at 25 rearwardly toward the boat. The operating rod 24 extends through the hull of the boat as at 26 and the same is provided with a suitable stuffing box 27 to prevent the entrance of water to the boat.

Any suitable means may be provided for actuating the operating rod 25, either by mechanical, manual or motor operated means. The operating rod 25 is here shown as being operated by compressed air and in this connection a pair of spaced cylinders 28 are positioned below the operating rod 24 in any suitable manner and each of the same have reciprocably mounted therein a piston 29, and the pistons are connected by suitable rods 30. The outer ends of the compressed air cylinders 28 are provided with suitable inlet pipes 31, which control the entrance of the operating fluid thereto. The inner ends of the cylinders are provided with suitable outlet openings (not shown). Pivotally secured to the rod 30 at the central portion thereof by a suitable pin 32 is an operating link 33 which is pivotally supported at a central portion by the inner end of the operating rod 24 as at 34. The upper end of the operating link 33 is supported as at 35 by a rearwardly extending arm 36 which is rigidly secured in the hull of the boat by a bracket 37. Thus when the operating fluid is forced in either one of the cylinders the operating rod 24 will be actuated through the medium of the connecting link 33 and the piston rod 30. A suitable valve (not shown) is provided for controlling the entrance of the operating fluid to the cylinders 28.

A protecting casing 38 is provided for the hub and the connecting links 17 and the casing is made in two separate sections, a main cylindrical section 39 and a detachable end section 40, which is positioned on the outer surface of the hub. Each of the sections are provided with projecting ears 41 which are connected together by any suitable detachable means. Each section of the hub has its meeting edges provided with recesses 42', which are adapted to aline with each other, for receiving the spokes 5 and the movable blades 9. The recesses are made of such size as to allow the movement of the blades 9 therein. The inner end of the main sections 39 of the casing 38 is slightly reduced as at 42 and is slidably positioned on the collar 14.

In practice, I have found that the form of my invention, illustrated in the accompanying drawings and referred to in the above description, as the preferred embodiments, is the most efficient and practical; yet realizing the conditions concurrent with the adoption of my device will necessarily vary, I desire to emphasize the fact that various minor changes in details of construction, proportion and arrangement of parts may be resorted to, when required, without sacrificing any of the advantages of my invention as set forth.

What is claimed is:—

1. A reversible propeller comprising a hub, an annular rim, movable blades rotatably supported by the hub and rim and flat spokes rigidly carried by the hub and rim, said spokes being set at an angle to the hub and rim, as and for the purpose specified.

2. In a device of the class described, the combination of a drive shaft, a propeller secured to said shaft and including a hub, an annular rim encircling said hub, longitudinally curved spokes connecting said hub and rim and arranged at angles thereto, said spokes being adapted to function as propeller blades, movable blades having reduced portions journaled in said hub and rim, a slidable element mounted on the drive shaft, means for sliding said element, and links connected to said sliding element and pivotally secured to said blades.

3. In a device of the class described, the combination of a drive shaft, a propeller secured to said shaft and including a hub, an annular rim encircling the hub, spokes connecting the hub and rim and having planes arranged at angles thereto, said spokes being adapted to function as propeller blades, blades journaled in said hub and rim and movable about their longitudinal axes and having portions thereof extending beyond said rim, and means for adjusting said blades about their longitudinal axes.

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

JERRY HENDERSON.

Witnesses:
J. M. KREMER,
O. A. OLSON.