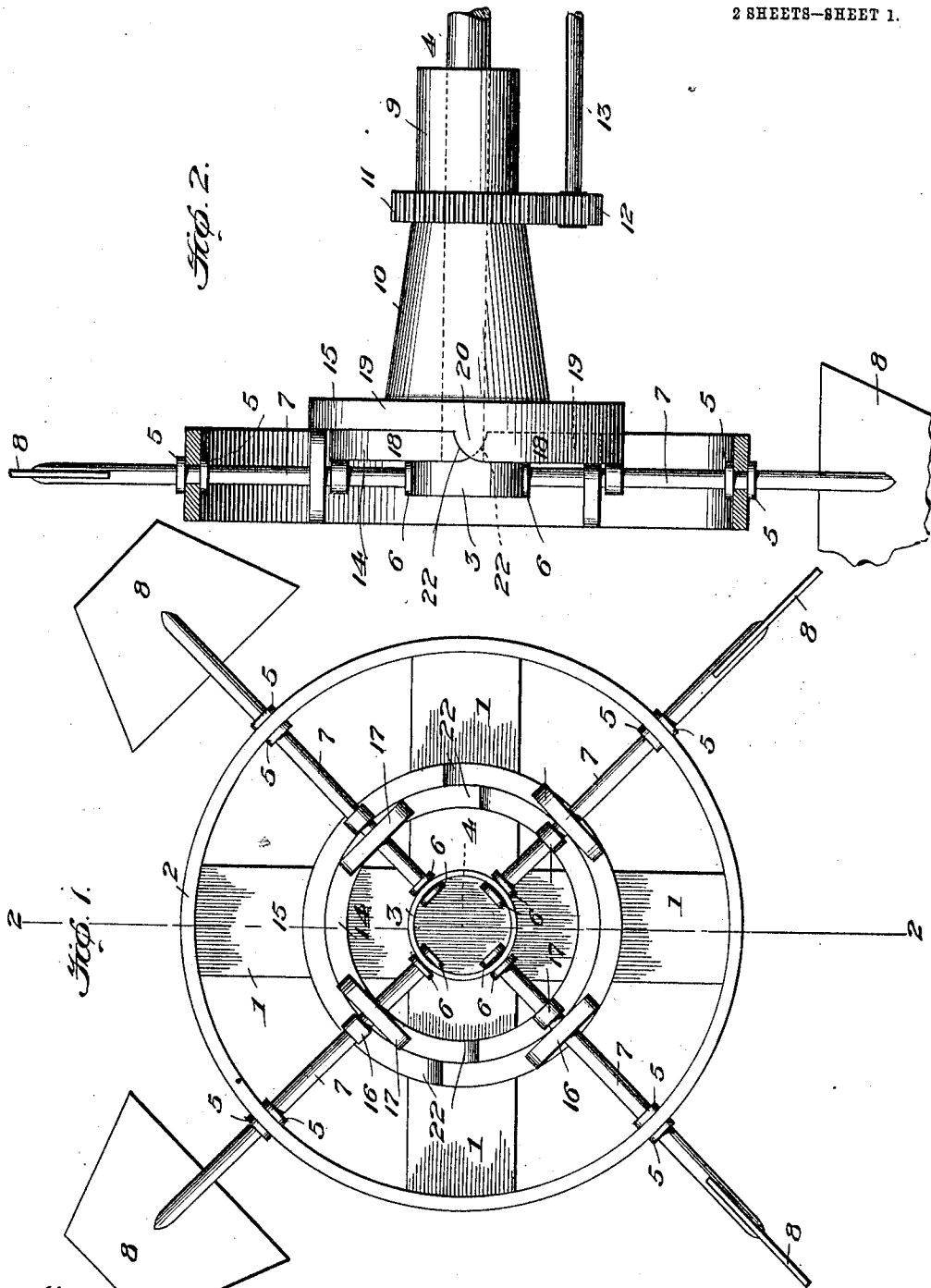


A. S. FRAZIER.
FEATHERING PROPELLER WHEEL.
APPLICATION FILED JAN. 4, 1911.

1,020,274.

Patented Mar. 12, 1912.
2 SHEETS—SHEET 1.



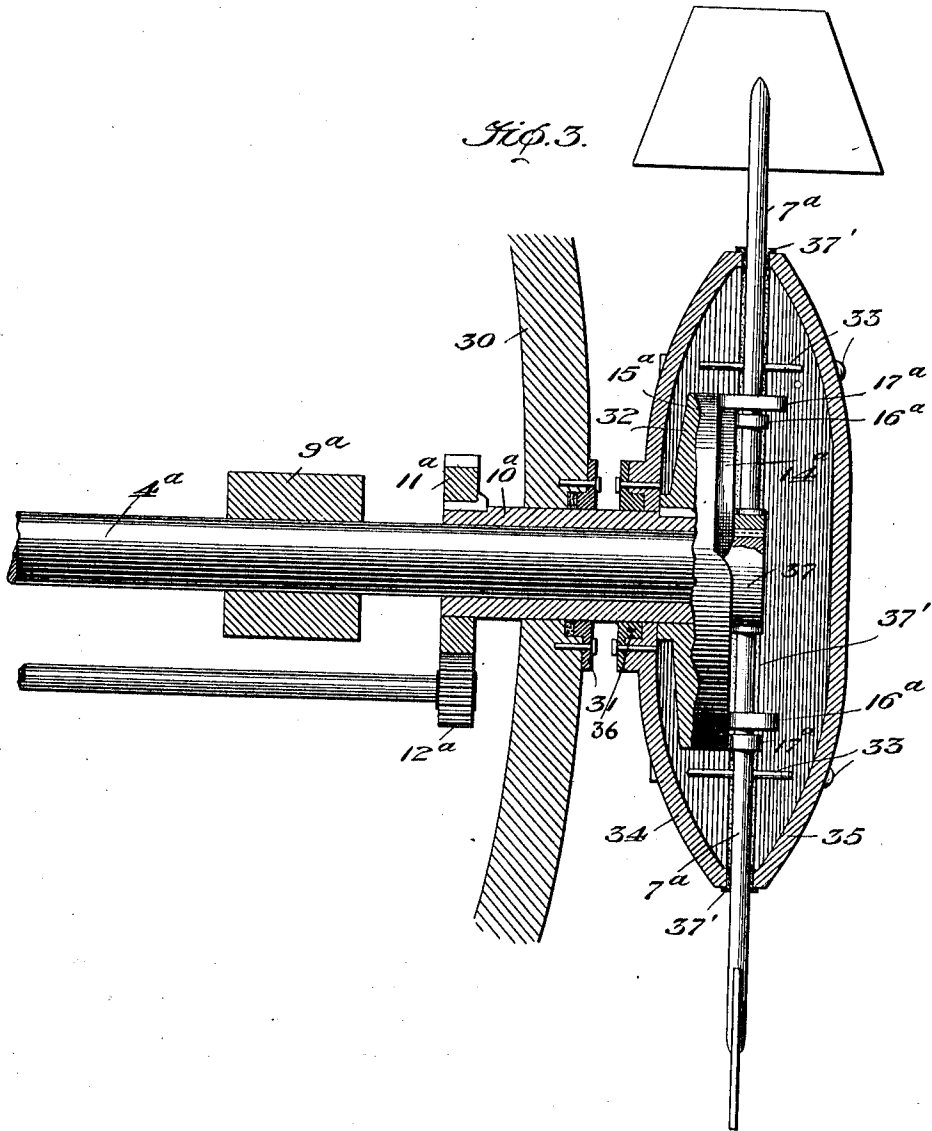
Witnesses
M. L. Newcomb

Albert S. Frazier Inventor
By *Geo. N. Hamilton* His Attorney

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UNITED STATES PATENT OFFICE.

ALBERT S. FRAZIER, OF AMSTERDAM, NEW YORK.

FEATHERING PROPELLER-WHEEL.

1,020,274.

Specification of Letters Patent.

Patented Mar. 12, 1912.

Application filed January 4, 1911. Serial No. 600,787.

To all whom it may concern:

Be it known that I, ALBERT S. FRAZIER, a citizen of the United States, residing at Amsterdam, county of Montgomery, and State of New York, have invented certain new and useful Improvements in Feathering Propeller-Wheels, of which the following is a specification.

This invention relates to feathering propeller wheels.

The present invention has for its objects the provision of a propeller, adapted for use as a paddle wheel, or stern propeller for marine and aerial vessels which will have novel means for automatically feathering the propelling blades, together with novel means for setting or regulating the aforesaid feathering means whereby the feathering action of the blades or propellers may be regulated at will. Having these, and other not specifically mentioned, objects in view, the invention is carried out by the provision of a cam track or tracks, mounted so as to be adapted to be set in different positions, and propelling blades having devices adapted to cooperate with the cam track or tracks to turn or feather said blades, the blades being mounted for rotation together as a propeller, as will more fully appear hereinafter.

In the accompanying drawings: Figure 1 is a face view or front elevation; Fig. 2, a side elevation; and Fig. 3, a section of a modification.

Referring first to Figs. 1 and 2, there is disclosed therein a paddle wheel adapted for use on marine or aerial vessels, the wheel preferably having a rotary frame-work consisting of the radial members 1, the rings or bands 2 and 3, connected thereto, and the shaft 4 to which said parts are secured. Mounted to turn in suitable boxes or bearings 5 carried by the rim 2, and boxes 6 carried by the rim 3, are the shafts 7 of the blades or paddles 8 which are prevented from having longitudinal movement by suitable collars. The shaft 4 may be supported in one or more suitable bearings 9, and on the shaft there is loosely mounted a guide 10 which is preferably provided with a gear 11 whereby the said guide may be turned or set to different positions by hand or power, through the intervention of a pinion 12 on the shaft 13. The guide 10 carries concentric annular tracks 14 and 15 on its outer face and the respective stems or shafts 7 are provided with two trips 16 and 17 set,

preferably at right angles to each other, one being adapted to bear upon track 14 and the other upon the track 15. The tracks, as shown in Fig. 2, are each composed of a raised part 18 both of said raised parts lying in the same plane and a depressed part 19 both of said parts 19 lying in the same plane. The parts 18 and 19 of the respective tracks each occupy nearly one-half of the periphery or extent thereof being, in each instance, provided with a cam or inclined part 22 which connects the raised and depressed parts 18 and 19. The raised parts 18 of the respective tracks being disposed opposite to each other, the cam sections 20 of the track 15 are disposed opposite to the similar parts of the track 14 and in consequence, those paddles or blades 8 which are in position to take against the air or water are disposed with their faces crosswise of the plane of rotation of the wheel and the other paddles are maintained in such position that their edges will be directed to the air or fluid when they are not in proper position to take thereagainst so that the paddles are automatically feathered at the proper periods. The trips 17 by their sliding along the raised parts 18 maintain the paddles in one position during a certain part of the rotation of the wheel, and the trips 16 which, during the aforesaid period, are not touching the depressed part 19 of the other track, strike against the next cam surface 20 encountered and thus give a quarter turn to the given shaft 7. These movements follow in succession and, with a wheel having four paddles, for instance, two of these will be feathering while the other two are acting on the air or water.

Referring to Fig. 3, there is shown the adaptation of the invention as a submerged propeller, especially adapted for use on submarine vessels. A section of the vessel is shown at 30 through which passes a guide 10^a having a gear 11^a whereby the guide may be set to different positions by a pinion and shaft 12^a. The shaft 4^a is suitably mounted in a bearing 9^a and the guide 10^a and said shaft pass through the side of the vessel 30, the guide passing through the packing 31 and being provided with a disk or spider 32 which carries tracks 14^a and 15^a such as heretofore described. Secured to each other by bolts 33 are the housings 34 and 35, the former loosely receiving the guide 10^a, but preferably provided with

packing or packed at 36. In a head 37 on shaft 4^a there are journaled the inner ends of the propeller axles or shafts 7^a provided with suitable blades on their outer parts and
 5 passing through the housing formed by the plates 34 and 35 being suitably journaled or packed at 37' all the way around. The housing formed by the plates 34 and 35 may contain oil in which the parts can run.
 10 The shafts or axles 7^a are provided with trips 16^a and 17^a which coöperate with the tracks 14^a and 15^a in the manner heretofore set forth.

The provision of the rotatably mounted
 15 guide 10 or 10^a enables the person controlling the wheel to set the guide to different positions at will, thus controlling at will the location of the respective blades when they feather. This is of great importance
 20 in the use of the wheel, especially on aerial vessels and sub-marines, in controlling the forward driving, retardation, and raising and lowering of the vessel, as well as the restoration of equilibrium and, with aerial
 25 vessels, permitting the act of alighting to be very gentle.

When the wheel is applied to a sub-marine vessel, the use of devices to effect sink-

ing and lifting of the vessel becomes secondary as the engine acting through the propeller wheel exerts diving and lifting power as well as driving ahead or astern.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent, is:—

In a propelling wheel, the combination with a vessel, of a propeller shaft extending to the exterior thereof, a rotary propeller embodying feathering blades having stems journaled at their inner ends to and carried
 35 by said shaft, a housing or casing disposed exteriorly of the vessel and in which the stems are journaled, said housing being rotatable with the shaft, a head located within said housing adapted for coöperation
 40 with the blades to effect feathering thereof, a sleeve connected to the head and loose on the shaft, and means adapted for turning and setting at will the said sleeve and head.

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

ALBERT S. FRAZIER.

Witnesses:

HARRY SHERBURNE,
 LEONARD H. FRAZIER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."