No. 859,362.

PATENTED JULY 9, 1907.

J. S. BENSON.

REVERSIBLE PROPELLER.

APPLICATION FILED APR. 1, 1907.

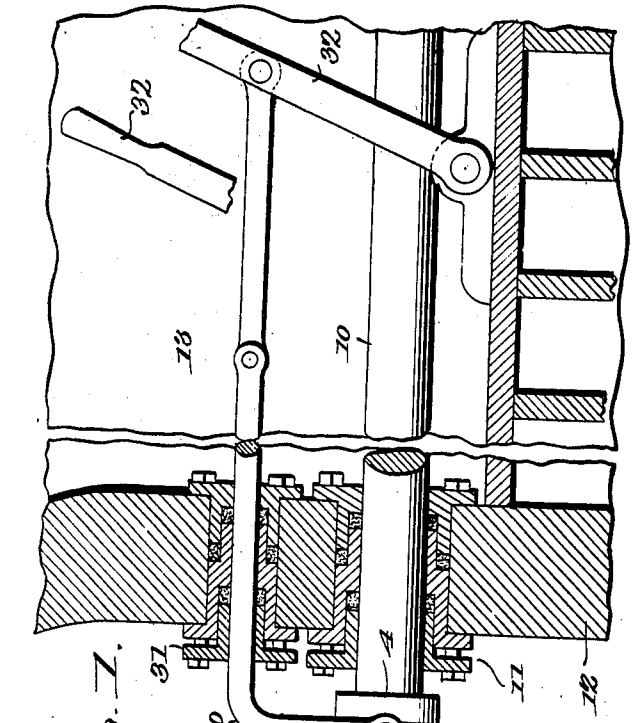

Fig. 1.

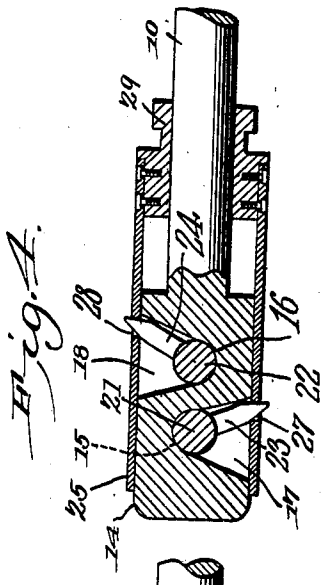

Fig. 4.

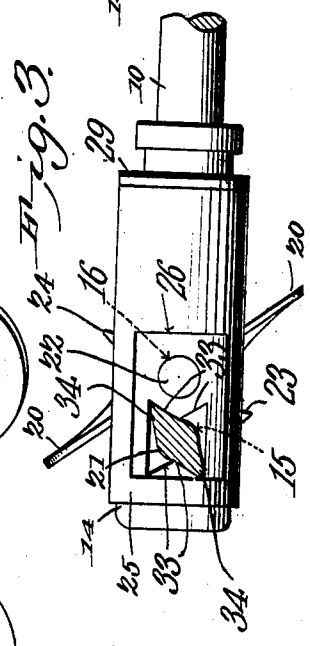

Fig. 3.

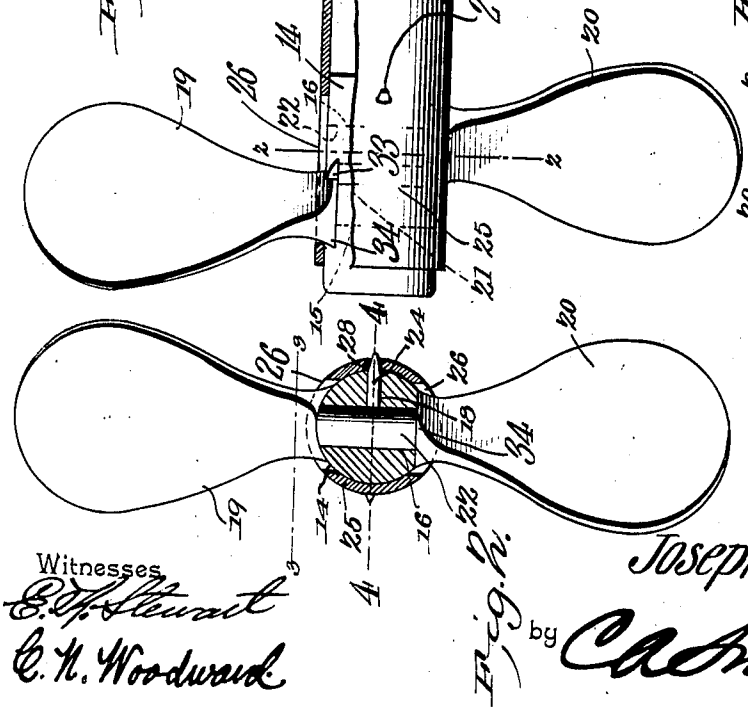

Fig. 2.

Witnesses,

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UNITED STATES PATENT OFFICE.

JOSEPH SCOTT BENSON, OF FRUITLAND, IOWA.

REVERSIBLE PROPELLER.

No. 859,362. Specification of Letters Patent. Patented July 9, 1907.

Application filed April 1, 1907. Serial No. 365,819.

To all whom it may concern:

Be it known that I, JOSEPH SCOTT BENSON, a citizen of the United States, residing at Fruitland, in the county of Muscatine and State of Iowa, have invented a new and useful Reversible Propeller, of which the following is a specification.

This invention relates to screw propellers of the class wherein provision is made for changing the angle of the flukes relative to the plane of their rotation to reverse the motion of the boat or regulate its speed without reversing the engine or changing the direction of the propeller shaft, and has for its object to simplify and improve the construction of devices of this character and increase the efficiency while at the same time reducing the cost of manufacture.

With these and other objects in view, which will appear as the nature of the invention is better understood, the invention consists in certain novel features of construction as hereafter fully described and claimed.

In the accompanying drawings is shown the preferred form of the invention.

In said drawings: Figure 1 is a side elevation of the device applied, with the boat structure in longitudinal section; Fig. 2 is an end view of the propeller shaft and propellers, in section on the line 2—2, Fig. 1; Fig. 3 is a plan view of the propeller in section on the line 3—3, Fig. 1; Fig. 4 is a detail in section on the line 4—4, Fig. 2.

The device herein described is designed more particularly for use upon the smaller sizes of launches equipped with gasolene or naphtha and similar motors which are not easily reversible and not readily stopped and started but may be applied to other forms of motors if required and I do not therefore wish to be limited in its use to any particular class or form of motor.

In the drawings 10 designates a propeller shaft of the usual construction supported in a stuffing box or bearing 11 in the stern post 12 of a boat 13. Upon the outer end of the shaft 10 is secured a housing or hub member 14 having a plurality of bearings 15—16 extending transversely therethrough and spaced apart longitudinally. Each bearing is intersected by intermediate cavities 17—18 extending laterally from the bearings within the housing.

Propeller flukes or blades 19—20 are provided with studs 21—22 respectively for rotatively engaging the bearings 15—16 in the housing and the studs are provided with arms 23—24 extending laterally through the recesses 17—18 and also projecting through the sides of the housing. The bearings are oppositely disposed and the studs 21—22 are inserted from opposite sides of the housing, so that the flukes likewise extend in opposite directions.

For the purpose of illustration two flukes and their studs and arms only are shown which is the number generally employed upon smaller craft, but it will be understood that any desired number may be employed.

Movable longitudinally upon the outer surface of the housing 14 is a sleeve 25 having opposite apertures 26 through which the flukes extend and this sleeve is provided with apertures 27 and 28 at opposite points to receive the ends of arms 23 and 24. Mounted to slide upon the shaft 10 is a sleeve 29 connected to the sleeve 25 and engaged by a shipper rod 30 which passes through a stuffing box 31 and is operated by a lever 32 within the boat 13.

It is obvious that by adjusting the sleeve longitudinally of the shaft the sleeve 25 acting on the arms 23—24 will correspondingly rotate the studs 21—22 and adjust the flukes 19—20 to any desired angle to the plane of their rotation and thus increase or decrease the "pitch" to any required extent or entirely reverse the flukes without changing the direction of motion of the shaft or reversing the engine or motor.

The outer faces of the housing 14 adjacent to the necks of the flukes is formed with oppositely inclined stop shoulders 33 and the butt ends of the flukes next their studs are formed with stop portions 34 extending in opposite directions for alternately engaging the stop shoulders when the flukes are adjusted to the limit of their movements in opposite directions. These shoulders also relieve the arms 23—24 from strains caused by the pressure of the water. This is an important feature of the invention and materially increases the strength, durability, and efficiency of the device, and effectually guards the operating mechanism from the severe strains to which they would otherwise be subjected. The coacting shoulders and stop portions also serve an important purpose in supporting the flukes in event of their striking obstructions when in operation and preventing breakage of the parts by causing the resistance to be borne by the relatively heavy housing member instead of by the relatively weaker and lighter operating means.

What is claimed is:

1. In a propeller the combination with a shaft; of a housing at one end thereof having a plurality of bearings extending transversely therethrough, said bearings being spaced apart, said housing having lateral recesses, propeller flukes having studs mounted to work within the bearings, said flukes extending in different directions, arms extending laterally from the studs and through the recesses in the housing, a sleeve slidably mounted upon the housing and having openings for receiving the arms, and means for actuating the sleeve to lock the arms and studs.

2. In a propeller the combination with a shaft; of a housing at one end of the shaft and having a plurality

of spaced bearings extending therethrough, each bearing communicating with a lateral recess within the housing, a plurality of propeller fluxes, means extending therefrom and reversely mounted within the bearings, projecting devices extending laterally from said means and into the recesses, stop shoulders adjacent the recesses and upon the housing, means movable longitudinally upon the housing and engaging the laterally projecting devices and disposed when shifted to change the angles of the flukes, said flukes being limited in their movement by the shoulders, and means for actuating said movable means.

In testimony that I claim the foregoing as my own, I have hereto affixed my signature in the presence of two witnesses.

JOSEPH SCOTT BENSON.

Witnesses:
WILLIAM MUSSER,
A. E. MAINE.