

F. C. GORDON.

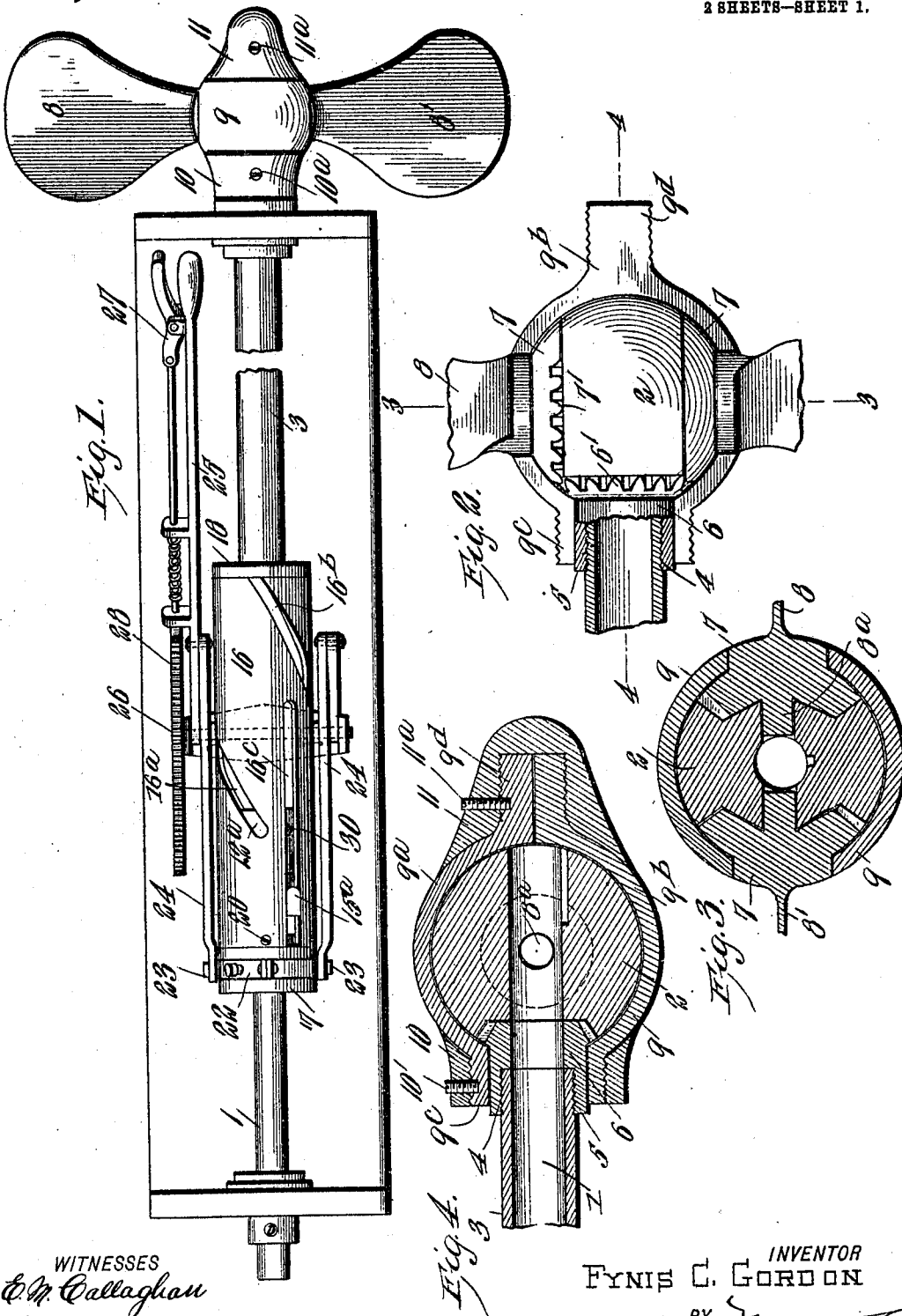
PROPELLER.

APPLICATION FILED OCT. 17, 1908.

945,123.

Patented Jan. 4, 1910.

2 SHEETS—SHEET 1.



WITNESSES
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L. A. Stanley

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2 SHEETS—SHEET 2.

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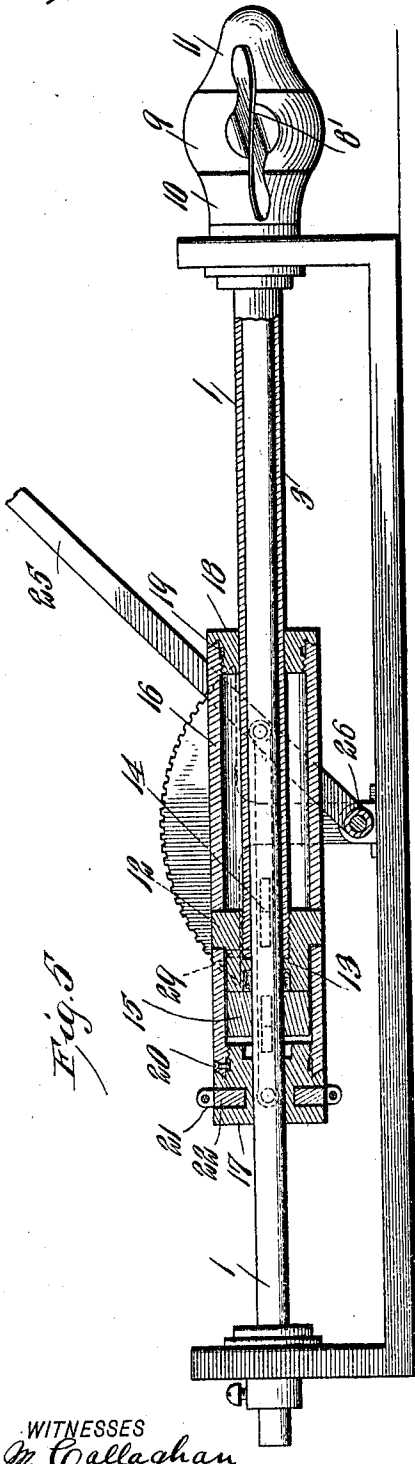


Fig. 5

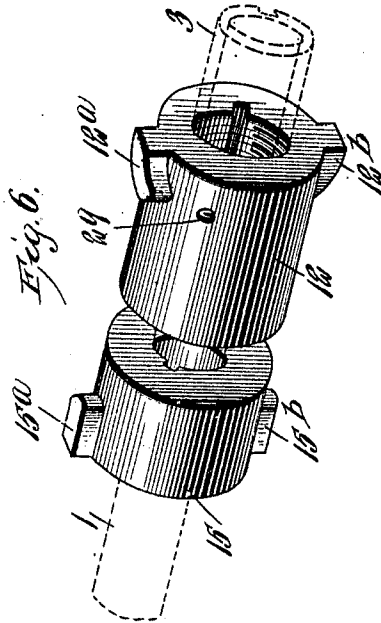


Fig. 6

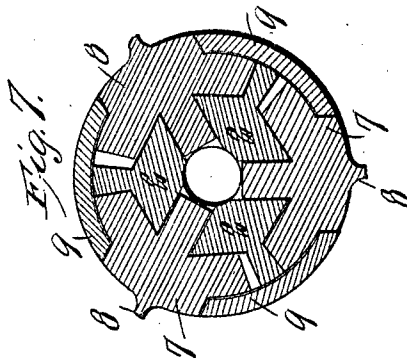


Fig. 7

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UNITED STATES PATENT OFFICE.

FYNIS C. GORDON, OF CLEVELAND, OHIO, ASSIGNOR TO GORDON PROPELLER COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

PROPELLER.

945,123.

Specification of Letters Patent.

Patented Jan. 4, 1910.

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To all whom it may concern:

Be it known that I, FYNIS C. GORDON, a citizen of the United States, and a resident of Cleveland, in the county of Cuyahoga, in the State of Ohio, have made certain new and useful Improvements in Propellers, of which the following is a specification.

My invention relates to a propeller in which the blades are reversible so that the shaft, while turning continuously in one direction may be made to turn the vessel ahead or astern as desired.

The invention herein described is an improvement over a similar device disclosed in my prior patent No. 819,540, dated May 1, 1906, and the invention resides in certain novel features of construction and arrangement of parts which render the present device more efficient in certain particulars than that of the patent above referred to.

An object of the present invention is to provide an improved casing for the propeller blades, the said casing constituting not only a protective and retaining part but a bearing part as well.

A further object of my invention is to provide means by which the reversible propeller blades may be assembled within the casing ready for shipment and can be installed in their assembled positions, thereby doing away with the necessity of disturbing the assembled parts after they have been properly assembled in the factory.

Other objects and advantages will appear in the following specification and the novel features of the device will be particularly pointed out in the appended claims.

My invention is illustrated in the accompanying drawings in which similar reference characters indicate like parts in the several views, and in which—

Figure 1 is a plan view showing one embodiment of my invention. Fig. 2 is an enlarged detail view partly in section of the propeller blades and their inclosing casing. Fig. 3 is a section taken along the line 3—3 of Fig. 2. Fig. 4 is a section taken along the line 4—4 of Fig. 2. Fig. 5 is a vertical sectional view at right angles to Fig. 1. Fig. 6 is a perspective view showing the collars and their integral lugs, and Fig. 7 is a view similar to that of Fig. 3 showing a three-blade propeller.

Referring now to Figs. 4 and 5, I have shown therein the main propeller shaft 1,

which extends from the engine, not shown, to the head 2, the latter being fastened securely thereby by means of a key or in any other suitable manner. Disposed on the shaft is a sleeve 3 provided with a threaded end portion 4 arranged to engage a threaded opening in the cylindrical portion 5 of a gear 6. The latter is arranged to enter a cut-away portion in the head 2 as clearly shown in Fig. 4. Disposed in similar cut-away portions of the head 2 are the inner ends 7 of the propeller blades 8 and 8'. These portions consist of concavo convex flanges and are provided with teeth 7' on the outer circumference arranged to mesh with the teeth 6' on the gear 6, as shown in Fig. 2. Each of the blades 8 and 8' has an inwardly projecting central spindle 8^a arranged to enter openings in the head 2 to permit the rotation of the gears. In order to hold the propeller blades in their proper position I provide a casing 9 consisting of upper and lower parts 9^a and 9^b, one of said parts 9^b being shown in Fig. 2 and both of the parts 9^a and 9^b being shown in section in Fig. 4. These parts are so arranged that they may be put around the assembled blades to form a casing for the inner ends thereof and also for the gear 6, which co-operates therewith. The casing 9 is provided with suitable openings to permit the propeller blades and the cylindrical portion of the gear 6 to project therethrough and has the threaded end portions 9^a and 9^b, adapted to receive the retaining nuts 10 and 11, as shown in Figs. 4, 1 and 5. The nuts are locked in position by means of the set screws 10' and 11'.

It will be seen from the above construction that when the shaft 1 is revolved, the head 2 being fast thereto, will carry the blades around, but that when the sleeve 3 is turned upon the shaft 1 as an axis, the blades 8 and 8' will be rotated around their central axes by the engagement of the teeth of the gear 6 with the teeth of the ends 7 of the blades, thereby turning the blades at varying inclinations to permit the driving of the vessel forward or backward as desired.

Referring now again to Fig. 5, it will be seen that the sleeve 3 is threaded on the end opposite the propeller and is arranged to receive an internally threaded collar 12, which may be screwed upon the sleeve until the latter comes in contact with the annular flange

13 projecting inwardly from said collar. In order to secure the collar to the sleeve a key 14 is provided. The collar 12 is provided with integral lugs 12^a and 12^b for a purpose hereinafter explained. Coöperating with the collar 12 is a collar 15 which is keyed to the shaft 1, and which is also provided with integral lugs 15^a and 15^b, as shown in Fig. 6. The collar 15 fits snugly up against the end of the collar 12. The space between the annular flange 13 and the end of the collar 15 being utilized as a packing gland or stuffing box. The outer sleeve 16 is disposed around the sleeve 3 and is provided with two spiral grooves or slots 16^a and 16^b, and the longitudinal slots 16^c and 16^d, as shown in Fig. 1. The lugs 12^a and 12^b of the collar 12 are arranged to enter the slots 16^a and 16^b respectively, while the lugs 15^a and 15^b enter the slots 16^c and 16^d. The ends of the sleeve 16 are screw threaded on their inner sides to receive the end caps 17 and 18 respectively. Each of these end caps is provided with a groove 19 for the reception of the set screws 20, to keep the caps in their places. The cap 17 is provided with an annular groove 21 arranged to receive a two-part collar 22, which may be fastened together around the cap and the parts of which are adapted to enter the groove 21, as clearly shown in Fig. 5. The collar 22 is provided with laterally extending projections 23 which are arranged to be engaged by the pivoted links 24 attached to the reversing lever 25. The latter member is pivoted at 26 and has attached thereto a spring-actuated locking member 27, arranged to engage the rack 28 for locking the lever in its adjusted position.

From the above description of the various parts the operation thereof can be readily understood. With the shaft 1 turning in a constant direction it will be seen that the propeller blades, which are carried by the head 2, will also be turned and if these blades are set in the proper position, the vessel will be driven forward. Now if it is desired to stop the vessel or to back it, the lever 25 is shifted, thereby forcing the sleeve 16 along the shaft longitudinally thereof. The lugs or cam members 12^a and 12^b will be engaged by the sleeve 16 and therefore, since the collar 15 is keyed to the shaft 1, will cause a rotation of the sleeve 3 with respect to the shaft 1. This will cause a tilting of the propeller blades as already stated. These blades may be set so as to drive the vessel forward or drive it backward or to maintain a neutral position such as shown in Figs. 1 and 5, and they may be adjusted at varying inclinations between these positions.

It will thus be seen that I have provided a casing for the ends of the propeller blades which in itself forms part of the bearing for these ends, so that the blades

may be turned to the proper angle. Now if the collar 12 should become loose from the sleeve 3 the casing would not fall apart but would still remain intact, holding the ends of the propeller blades securely in place. Moreover, with the above described construction, the blades can be assembled in their proper position or attached to the shaft and can be set up without the necessity of dismantling these parts.

I desire to call particular attention to the means for oiling the operating mechanism. This consists of a hole which is filled through the collar 12 and the end of the sleeve 3 as shown at 29, and which has a screw 30, see Fig. 1, seated therein. This screw may be removed and the mechanism oiled without taking these devices apart.

I claim—

1. In a reversing propeller, the combination with a main shaft, a spherical head secured thereto and provided with recesses, a gear disposed in one of said recesses and the ends of propeller blades disposed in other of said recesses said ends being provided with teeth arranged to mesh with teeth on said gear, and a two-part casing provided with openings to permit a portion of said gear and said blade ends to project therethrough, said casing having threaded extensions arranged to receive retaining nuts.

2. In a reversing propeller, the combination of a main shaft provided with an integral head having recesses, propeller blades having their ends journaled in the recesses in said head, a gear in one of said recesses, teeth on the journaled ends of the propeller blades arranged to mesh with said gear and a casing arranged to inclose the journaled end of said propeller blade and said gear end adapted to form exterior auxiliary bearings for said blade ends and for said gear.

3. In a reversing propeller, a main shaft provided with an integral head, a sleeve mounted on said shaft and movable with respect thereto, a gear attached to said sleeve, propeller blades journaled in said head and arranged to be turned around their central axes by said gear, an inclosing casing arranged to form exterior bearings for said gear and for the inner ends of said propeller blades, a collar secured to the opposite end of said sleeve and provided with integral lugs, a second collar secured to said main shaft and provided with integral lugs, an external sleeve provided with slots arranged to receive the lugs of both of said collars, and means for moving the external sleeve to reverse the propeller.

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Witnesses:

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