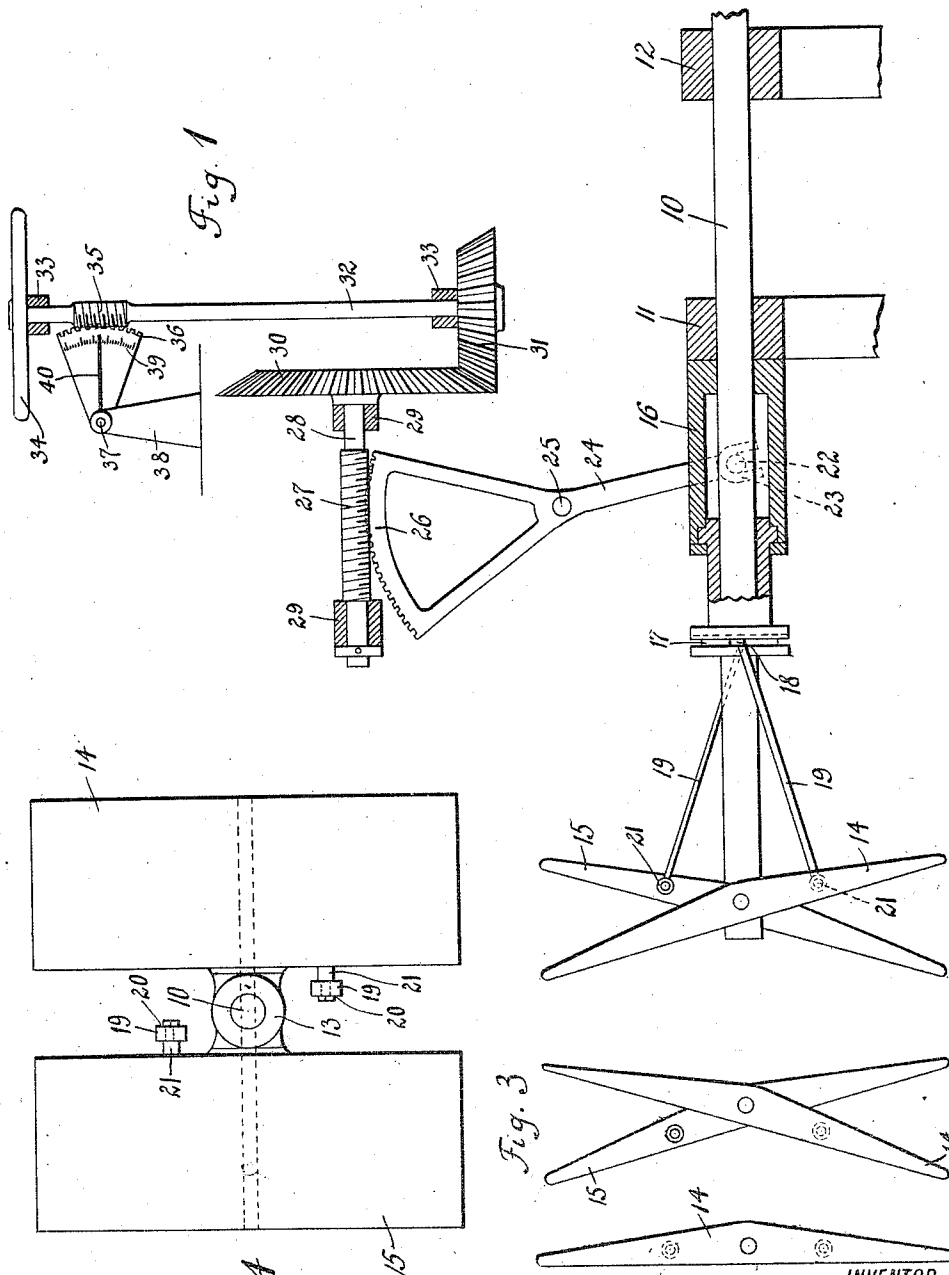


1,019,498.

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SCREW PROPELLER.
APPLICATION FILED FEB. 27, 1911.

Patented Mar. 5, 1912.

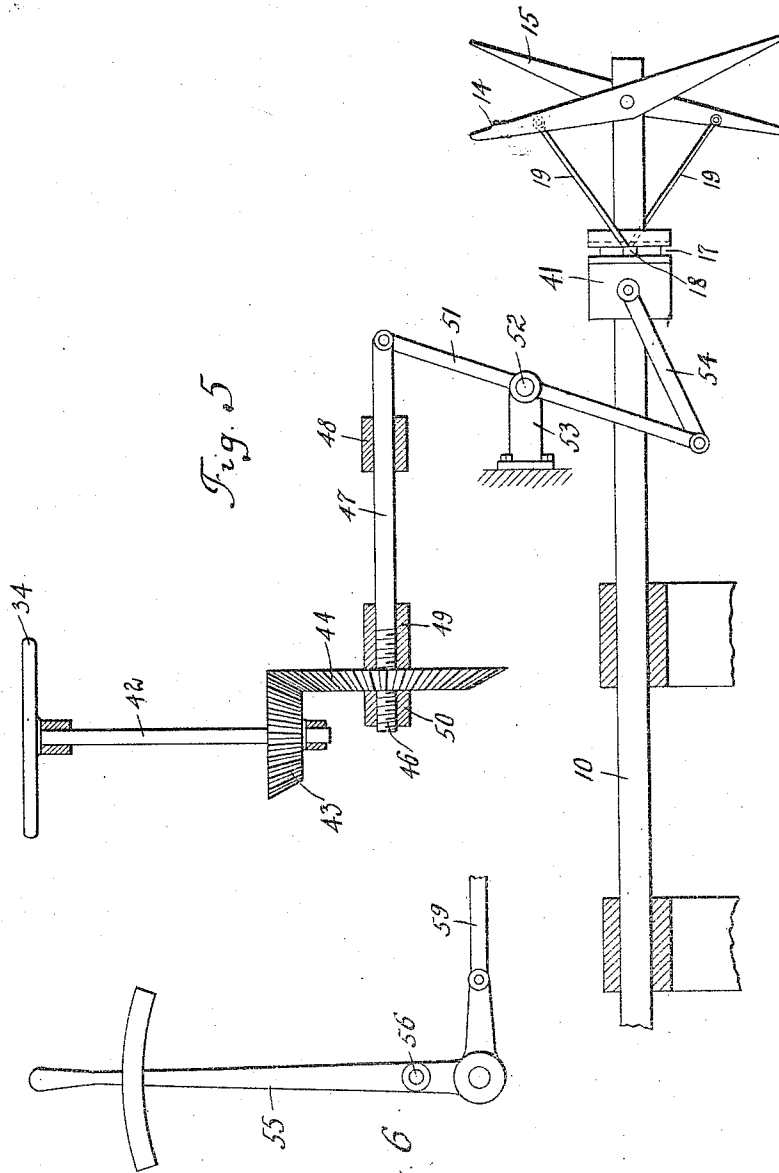
2 SHEETS—SHEET 1.



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Fig. 2
Fig. 3
Fig. 4
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SCREW-PROPELLER.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, JOSEPH LEOPOLD, a subject of the King of Hungary, and resident of South Bethlehem, in the county of Northampton and State of Pennsylvania, have invented certain new and useful Improvements in Screw-Propellers, of which the following is a specification.

The present invention relates to improvements in screw propellers for vessels, and more particularly to propellers having adjustable blades.

One of the objects of the invention is to provide a screw propeller, the blades of which may be quickly and conveniently adjusted to any angle best adapted to special conditions of use, and in which the blades are connected to be readily and conveniently shifted for propelling the vessel forward or backward without the necessity of reversing or stopping the engine.

A further object of the invention is to construct a screw propeller, the blades of which may be set at such an angle relative to the axis of the propeller shaft, that the vessel will come to stand still without stopping the rotation of the propeller blades.

With these and other objects in view, which will appear as the nature of the invention is better understood the same consists in the combination, arrangement and construction of parts hereinafter fully described, pointed out in the appended claim and illustrated in the accompanying drawings, it being understood that many changes may be made in the size and proportion of the several parts and minor details of construction without departing from the spirit or sacrificing any of the advantages of the invention.

A few of the many possible embodiments of the invention are illustrated in the accompanying drawings, in which:

Figure 1 is a side elevation, partly in section, of a pair of propeller blades, constructed in accordance with the present invention, and the means for setting the same; Figs. 2 and 3 are side elevations of the blades, set to positions for stopping the vessel and reversing the direction of travel of the same, respectively; Fig. 4 is a front elevation of the propeller blades; Fig. 5 is a side elevation, partly in section, of a modification of the device; and Fig. 6 is a side elevation of

a modification of the setting means for the blades.

Referring now more particularly to Figs. 1 to 4, inclusive, the numeral 10 indicates the propeller shaft of the vessel, which is journaled in bearings 11 and 12, said bearings being attached to the hull of the vessel in any suitable manner. At the outer end of the shaft is mounted a hub 13, to which propeller blades 14 and 15 are pivoted. The blades are made in the form of oblong plates of any suitable metal, their thickness being proportionate to the size of the propeller. A tubular member 16 is slidably mounted upon the shaft 10, and held against rotation by any suitable means (not shown in the drawings). In the outer end of this tubular member is formed a peripheral groove 17, which is engaged by lugs 18, 18 of rods 19, pivotally attached at 20 to spindles 21, 21. These spindles are carried by the blades 14 and 15. The tubular member 16 carries upon its outer face a pin 22, which is engaged by the forked end 23 of a lever 24, pivoted at 25 to a support. The other end of this lever is formed as a segment gear 26, meshing with the screw threads 27 of a shaft 28, suitably journaled in bearings 29, 29. Upon the shaft 28 is mounted a bevel gear 30, in mesh with a similar gear 31, which is mounted upon a shaft 32, journaled in bearings 33, 33. To the shaft 32 is attached a hand-wheel 34. The shaft 32 is provided with screw threads 35, meshing with a segment gear 36, which is pivotally attached at 37 to a post 38. The segment gear 36 is provided with a graduated scale 39, while a stationary pointer 40 is attached to the post 38.

The operation of this device is as follows: In Fig. 1 of the drawings, the blades 14 and 15 are shown set for the ahead direction of the vessel. In rotating the hand-wheel 34 and shifting thereby the tubular member 16 toward the blades, the same may be brought into the positions shown in Fig. 2, when there will be no propulsion as the blades operate edgewise on the water. In shifting the blades still further until they are brought into the positions shown in Fig. 3 of the drawings, the water will have a motion opposite to the direction created by the blades in their ahead positions, whereby the direction of travel of the vessel will be re-

versed. The segments 26 and 36 are arranged in such a manner that they move in unison, so that the operator will ascertain, by reading the scale upon the segment 36, the angular position of the blades relative to the longitudinal axis of the shaft 10.

The leading edges of the oblong blades are always arranged at right angles to their axes of oscillation, that is to their pivots. As the propeller is rotated in one or the other direction, obviously one or the other longer side of the oblong forms the leading edge.

A modification of the device is illustrated in Fig. 5 of the drawings, in which the blades are operatively connected with a ring 41, which is shiftably mounted upon the propeller shaft. This ring is operated through the intermediary of suitable connections by the hand-wheel 34, which is mounted upon a shaft 42, to which is attached a bevel gear 43, meshing with a similar gear 44. The gear 44 is provided with screw threads in its hub portion, which threads mesh with the screw threads 46 of a rod 47, which is shiftably arranged in guides 48 and 49. A stop 50, coacting with the guide 49, holds the bevel gear 44 against longitudinal movement. The connection between the rod 47 and the ring 41 is made by means of a lever 51, pivoted at 52 to a bracket 53; the other end of said lever being connected by means of an arm 54 to the ring 41.

The operation of this modified device is obvious. In rotating the hand-wheel 34, the ring 41 will be shifted in one or the other direction, and thereby the angular position of the blades varied. If the propeller is arranged upon a small boat, obviously, for shifting the ring 41, a simple lever can be made use of, as illustrated in Fig. 6 of the drawings. This lever 55 is pivoted at 56 to a suitable bracket and connected by means of a bar 59 with the shiftable ring 41.

What I claim is:

In a reversible propeller, the combination with a propeller shaft, of a hub upon one end thereof, a stem passing through said shaft and hub, flat propeller blades provided with holes extending throughout the width of the same, said stem passing through said holes, holding thereby said blades oscillatably on said stem at diametrically opposite points with respect to the axis of said shaft, a reciprocable member carried by said shaft, connecting rods pivoted to said blades and engaging said reciprocable member, and means for operating said reciprocable member, at will, whereby said blades are shifted around said stem.

Signed at South Bethlehem, in the county of Northampton and State of Pennsylvania, this 17 day of February, A. D. 1911.

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Witnesses:

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