

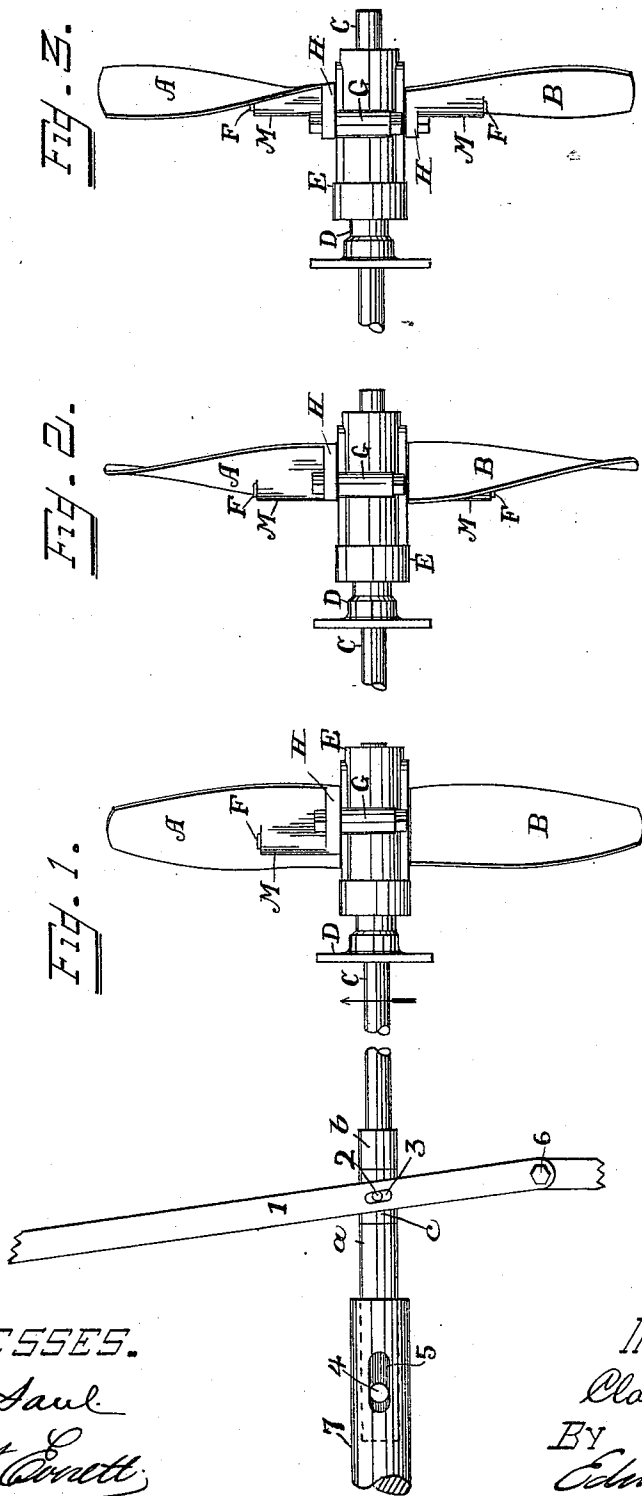
(No Model.)

3 Sheets—Sheet 1.

C. SINTZ.
PROPELLER WHEEL.

No. 512,627.

Patented Jan. 9, 1894.



WITNESSES.

J. A. Saul
Robert Conitt

INVENTOR.

Clark Sintz
By
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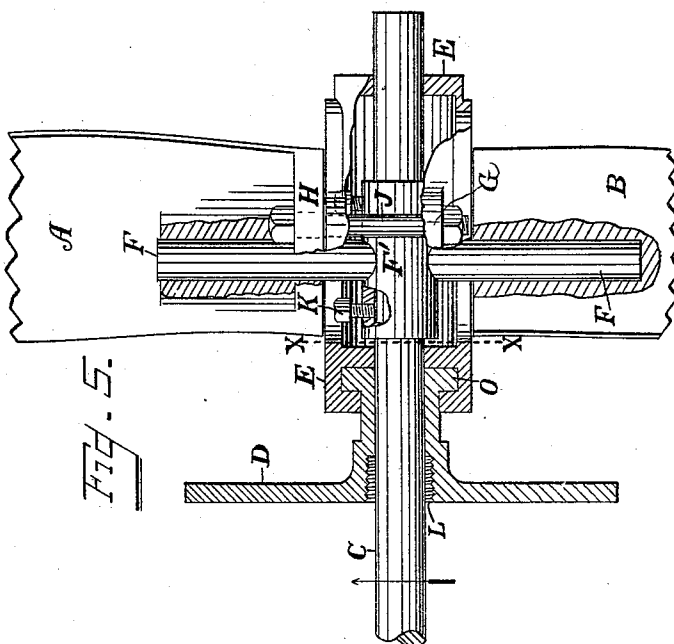
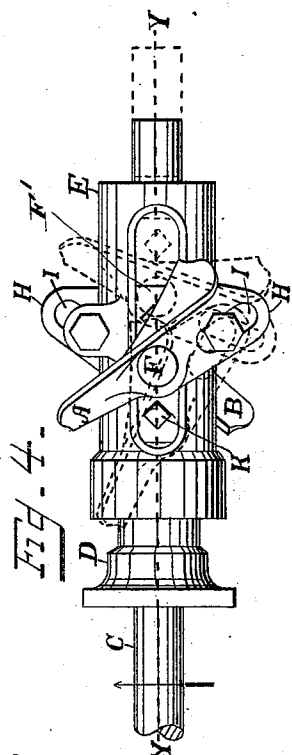
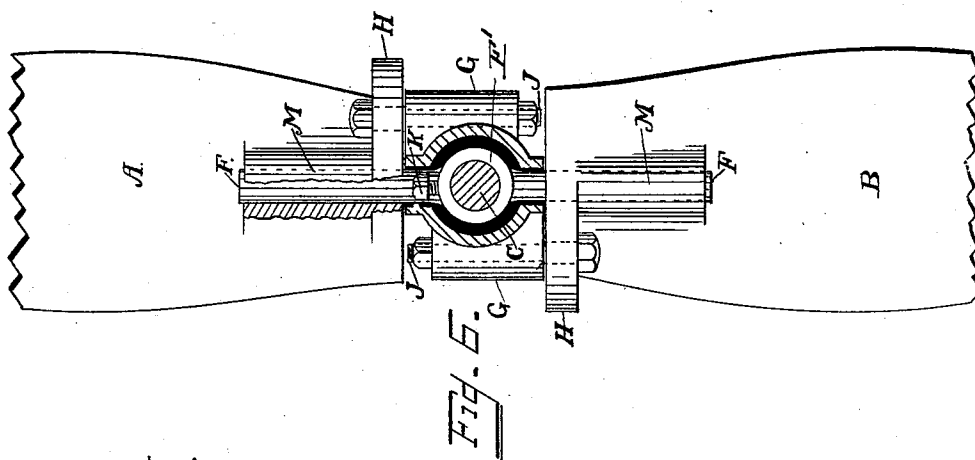
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3 Sheets—Sheet 2.

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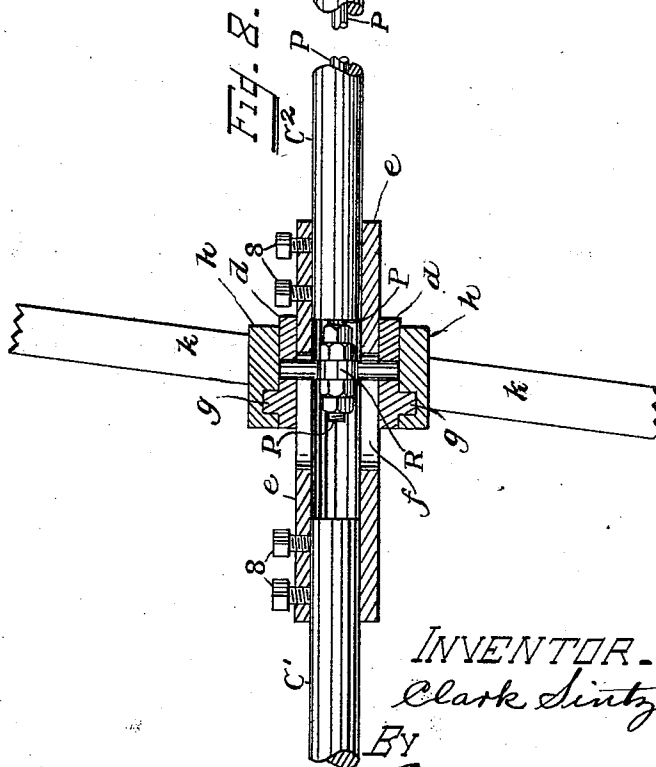
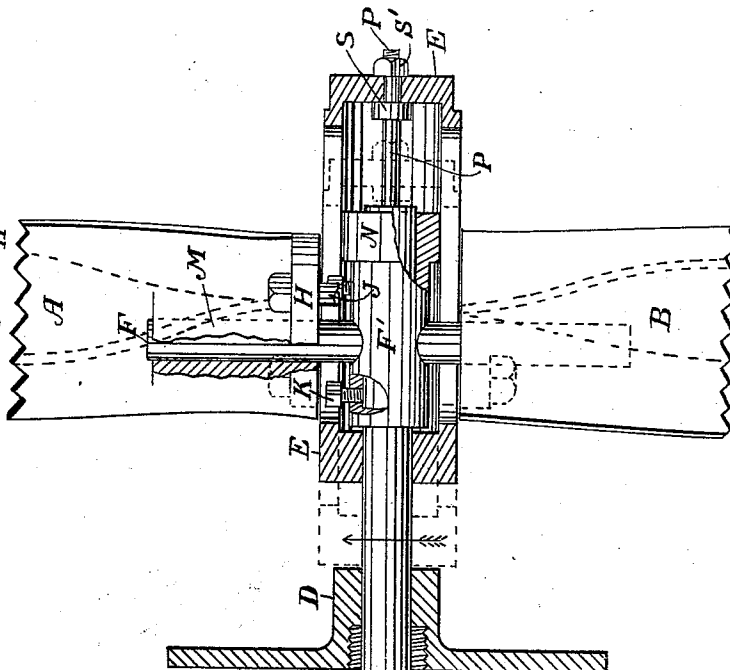
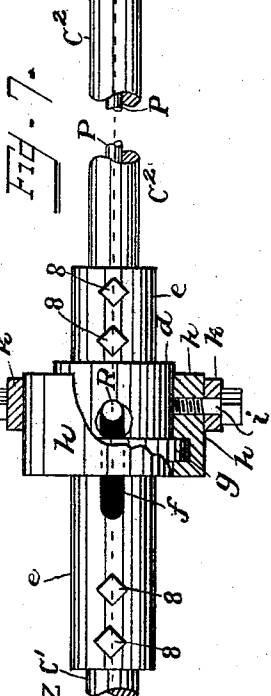
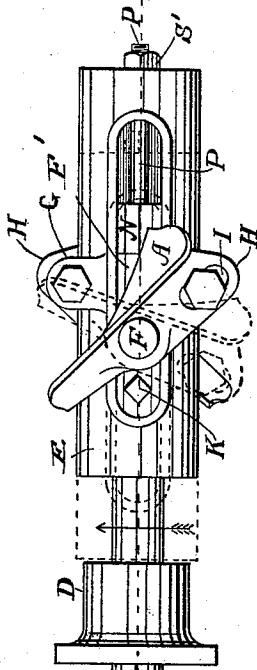
(No Model.)

3 Sheets—Sheet 3.

C. SINTZ.
PROPELLER WHEEL.

No. 512,627.

Patented Jan. 9, 1894.



WITNESSES.

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UNITED STATES PATENT OFFICE.

CLARK SINTZ, OF GRAND RAPIDS, MICHIGAN.

PROPELLER-WHEEL.

SPECIFICATION forming part of Letters Patent No. 512,627, dated January 9, 1894.

Application filed March 2, 1893. Serial No. 464,425. (No model.)

To all whom it may concern:

Be it known that I, CLARK SINTZ, a citizen of the United States, residing at the city of Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Propeller-Wheels, of which the following is a specification.

This invention relates to a new and improved propeller screw or wheel, in which the blades may be shifted at pleasure to propel the boat to which the same is attached, either forward or backward, and also to be shifted into position so as to give the least possible resistance when the boat may be propelled by the air or other means; and the objects of the invention are, to furnish an easy and ready means for shifting the blades of the propeller-wheel or screw, for the purpose above named, so that without reversing the engine, the boat can be readily moved backward or forward; and also, so as to dispense entirely with the use of the propeller whenever it may be desirable to propel the boat by sails. These objects I accomplish by means of the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of the propeller wheel or screw, with its blades in position to drive the boat forward. Fig. 2 is a side elevation of a propeller screw with blades in position to be revolved without moving the boat in either direction. Fig. 3 is a side elevation with blades in position to give a backward motion to the boat. Fig. 4, is a plan view of the shifting mechanism with the blades in position to give a forward movement to the boat; the dotted lines showing a reverse position, which would give the boat a backward movement, and also the position when the propeller is not in use, as when the boat is propelled by sails. It will be observed that said Fig. 4 shows two sets of dotted lines. Fig. 5 is a sectional view on line Y—Y of Fig. 4. Fig. 6 is a sectional view on line X—X of Fig. 5 looking toward the blades. Fig. 7 shows a plan view with a shaft stationary, and the screw blades operated by an internal rod. Fig. 8 shows a sectional view on line Z—Z of Fig. 7 with shaft and surrounding case in elevation.

Similar letters and figures refer to similar parts throughout the several views.

A and B represent the propeller blades.

C represents the propeller shaft, and D represents the support for the propeller shaft 55 which is attached to the boat in any suitable manner.

E represents a sleeve or cylindrical case, support or hub of the propeller-wheel, and is connected to the support D by means of a 60 shoulder shown in Fig. 5 by O.

F, F, are pivotal supports that are rigidly secured to the shell or hub F', of the wheel to support the blades A and B.

G, G, are lugs on the shell E for reception 65 of bolts J, J, that are also passed through slots I in lugs H on the respective propeller blades which are thus so fulcrumed that they will be shifted from one position to the other by a longitudinal movement of the propeller shaft. 70 The slots I, I, allow sufficient movement of the bolts J, J, from one end to the other of the slots, in shifting the blades as above described.

K is a set screw attaching the cylinder or hub F' to the shaft C. 75

L is a screw in the support D for attaching the packing box, which packing box being constructed in the ordinary manner is not shown in the drawings.

M are the enlarged portions of the blades 80 for the reception of the pivotal supports F.

(1) is the operating lever.

(2) is a pin projecting from a sleeve c, that is loosely mounted on the propeller shaft C between rigid collars or shoulders a, b, with 85 which said shaft is provided. The pin 2 is engaged in a slot 3, in the lever 1, which is thus connected with the propeller shaft in such manner as to permit its rotation.

(5) is a slot in the engine shaft (7); and (4) 90 is a pin on the propeller shaft passing through said slot and allowing for the longitudinal movement of the shaft C with reference to shaft (7).

(6) is a pivotal fulcrum for the lever (1). 95

The blades A and B being fulcrumed by means of the bolt or pivot J, passing through the lugs H—H, and also through the lugs G, and the pivotal supports F—F, being supported in the enlarged portions M—M; the longitudinal movement of the shaft C by means of the lever (1) shifts the blades A and B to any required position—that is, by merely operating the lever (1) the blades B—B may 100

beset or shifted into position, either to propel the boat forward or backward, or to a position where the propeller will have no effect whatever upon the movement of the boat.

5 This can be done very readily in small sized boats by means of a hand lever; in larger boats suitable mechanism and power can be used.

10 In the drawings shown in Sheets 1 and 2, the shifting of the blades is done by shifting the propeller shaft.

In Sheet 3 I have shown a modified form, in which A and B represent the blades; C', C² the shaft; D the support; E the shell supporting the propeller screw; F the rigid blade supports; F' the propeller hub; G lugs upon E; H lugs upon the blades; I slots; J bolts; K set screw; L screw in support D; M enlarged part of the blade for the reception of the pivots F; N a journal for the shaft C², which journal is made rigid with F'; P is an actuating rod, preferably extending through the shaft C²; and R is a pin attaching the rod P to a revolving sleeve or collar d which surrounds a longitudinally slotted sleeve e, that serves as a connection for the parts C', C², of the engine shaft. S is a shoulder on the rod P, inside the case or shell E, and S' is a nut on the outer end of said rod and assisting the shoulder S to connect the case E and rod P, and retain them in position. In the connecting sleeve e, is a longitudinal slot f, for passage of the pin R, so as to permit the necessary longitudinal movement of the rod P. The sleeve e, is secured to the parts C', C², of the engine shaft by means of set screws 8, thus forming a rigid connection for the shaft sections. The revolving collar d, is provided on its outside with an annular rib or projection g, that is loosely engaged in a corresponding annular recess formed in an outer non-rotary collar h, which is provided on opposite sides with pivotal connections i, i, to a bifurcated lever k, through which the propeller blades may be shifted.

In this modified form of construction, illustrated in Sheet 3 of the drawings, the lever k acting through the concentric sleeves h, d, and pin R, imparts a longitudinal movement to the rod P and connected slotted shell E, which in turn acts through the lugs G, H, and connecting bolts J to cause the propeller blades to shift position on their pivotal supports.

55 It will be noticed that the only substantial difference between the form shown in Sheets 1 and 2, and the form shown on Sheet 3, consists in the fact, that in the former case, the propeller shaft itself is moved longitudinally

in shifting the blades, while in the latter case, 60 the blades are shifted by a longitudinal movement imparted to the internally arranged rod P, connected with the shell on which the propeller screw is supported.

Having thus described my invention, what 65 I claim to have invented, and desire to secure by Letters Patent, is—

1. The combination of a rotary shaft, a hub F' mounted on said shaft, the supports F projecting from said hub, the longitudinally 70 slotted case or shell E surrounding the shaft and hub and provided with lugs G, the propeller blades A B pivotally mounted on the supports F and provided with slotted lugs H, bolts J pivotally connecting the lugs G and 75 H, and actuating mechanism for shifting the position of the blades, upon their pivotal supports, substantially as described.

2. The combination of a rotary shaft, a propeller-wheel having reversible blades and a 80 hub provided with pivotal supports for said blades, a longitudinally slotted shell or casing surrounding said shaft and wheel-hub and having direct pivotal connection with the propeller blades, and actuating mechanism for 85 shifting the position of the blades upon their pivotal supports, substantially as described.

3. The combination of an engine shaft, a propeller shaft connected with the engine shaft and having a longitudinal movement inde- 90 pendent thereof, a propeller wheel having reversible blades and a hub provided with pivotal supports for said blades, a slotted shell or casing surrounding said shaft and hub, pivotal connections between said shell and 95 propeller blades, and mechanism for imparting a longitudinal movement to the propeller shaft and wheel hub to reverse the blades, substantially as described.

4. The combination of a propeller shaft, a 100 hub mounted upon said shaft, a longitudinally slotted shell or casing mounted on the propeller shaft and surrounding said hub, a pair of propeller blades having direct pivotal connection with said shell or casing, blade 105 supports projecting from the hub through the slots of the shell or casing and pivotally connected with said blades, and means for shifting the pivotal connections of the blades to change the position of the blades, substan- 110 tially as described.

In witness whereof I have hereunto set my hand and seal in the presence of two witnesses.

CLARK SINTZ. [L. S.]

Witnesses:

ARTHUR C. DENISON,
M. E. HEANEY.