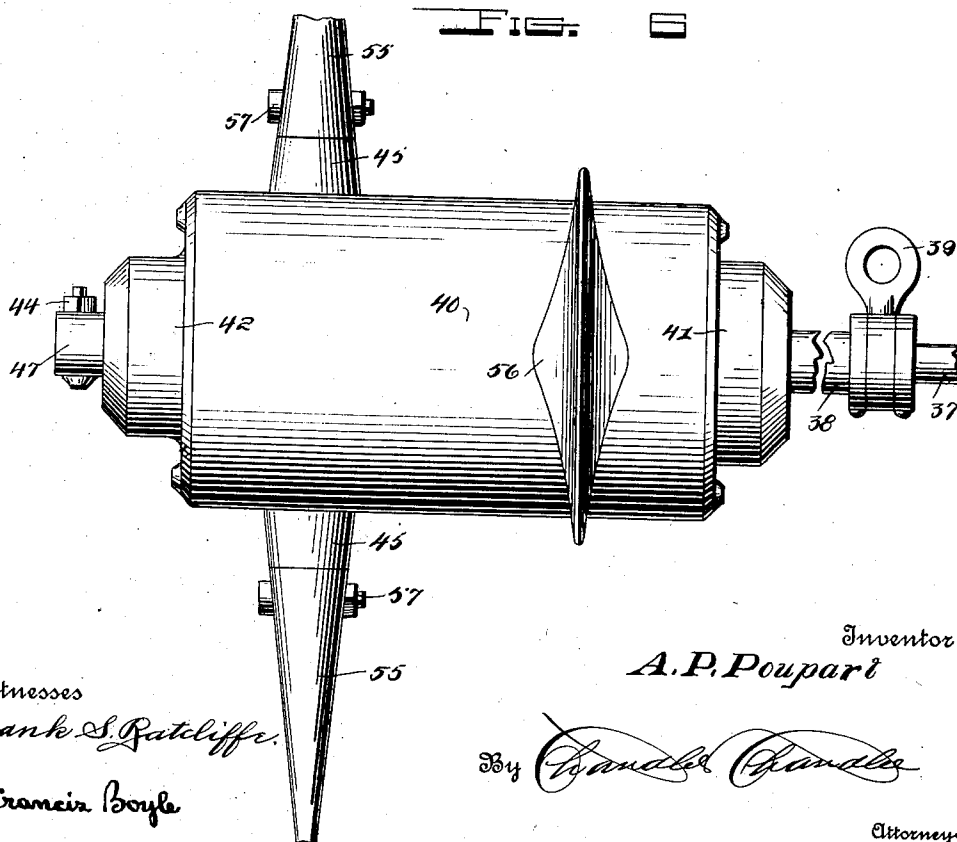
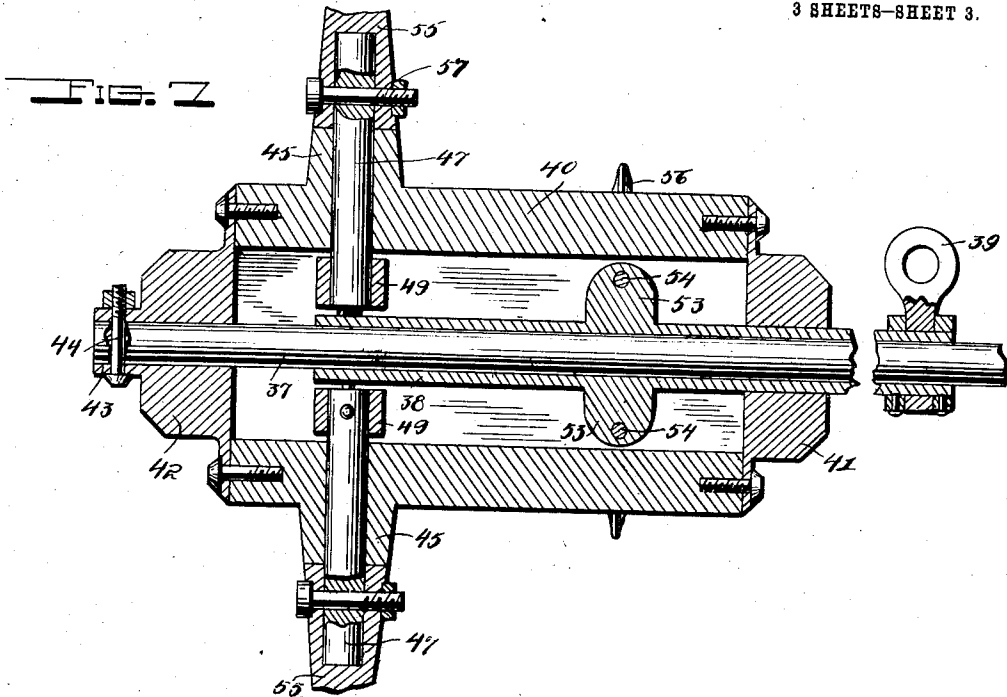


A. P. POUPART.
 REVERSIBLE PROPELLER.
 APPLICATION FILED JUNE 27, 1912.

1,069,026.

Patented July 29, 1913.

3 SHEETS—SHEET 3.



Witnesses
 Frank S. Ratcliffe.
 Francis Boyle

Inventor
 A. P. Poupart

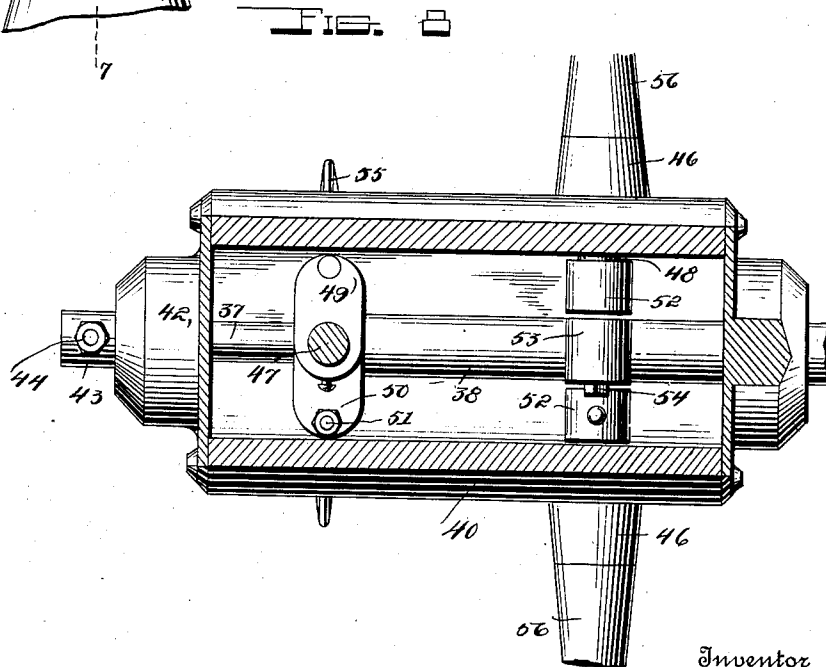
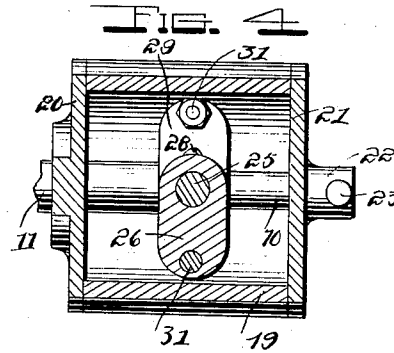
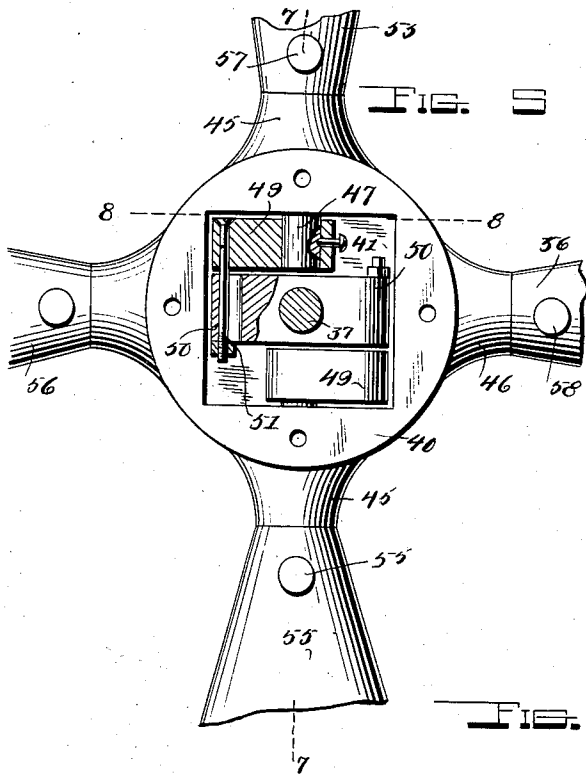
By Charles Chandler

Attorney

A. P. POUPART.
 REVERSIBLE PROPELLER.
 APPLICATION FILED JUNE 27, 1912.

1,069,026.

Patented July 29, 1913.
 3 SHEETS—SHEET 2.



Inventor
 A. P. Poupart.

Witnesses

Frank L. Ratcliffe
 Francis Boyle

By *Charles Chawale*

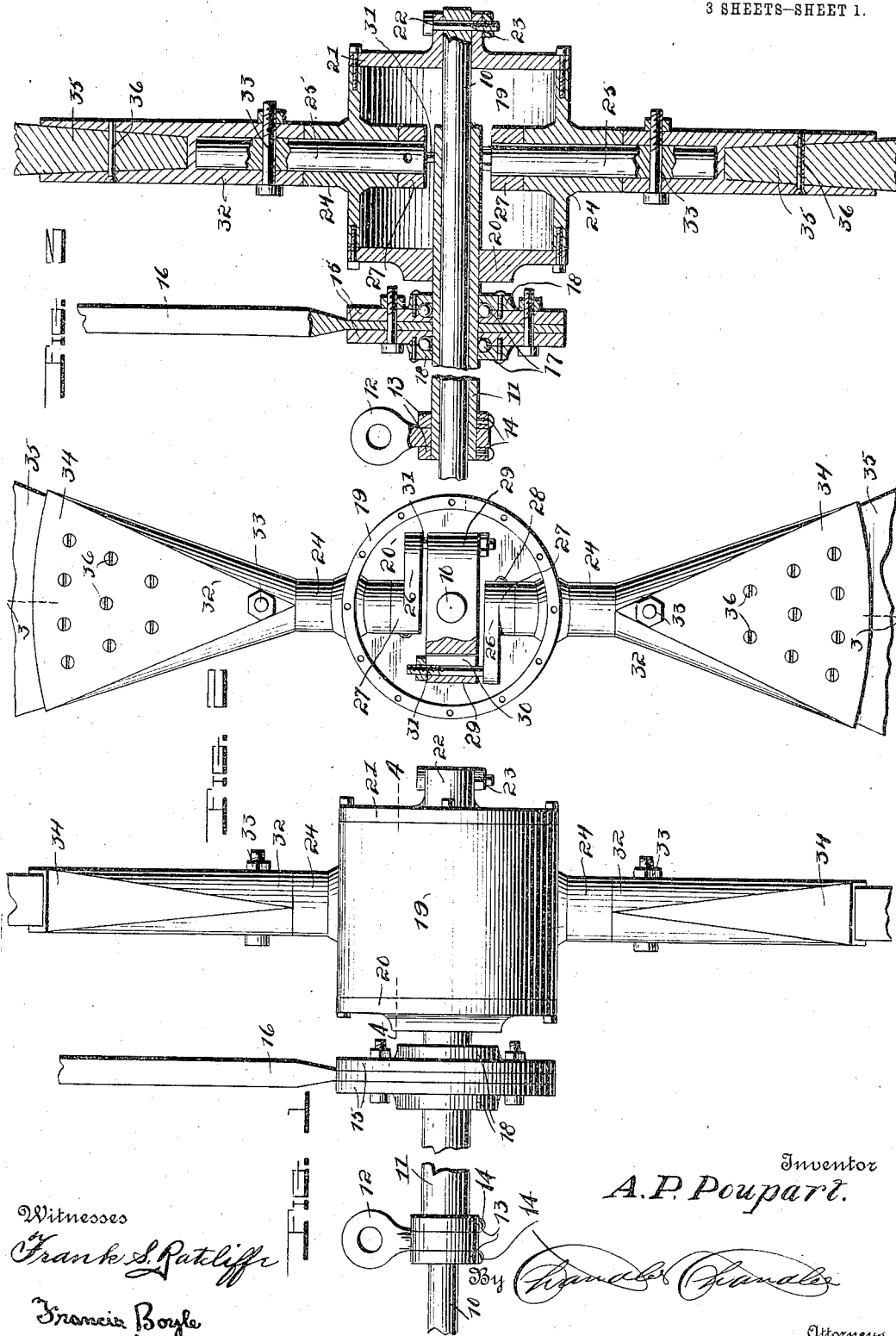
Attorney

A. P. POUPART.
 REVERSIBLE PROPELLER.
 APPLICATION FILED JUNE 27, 1912.

1,069,026.

Patented July 29, 1913.

3 SHEETS-SHEET 1.



Witnesses

Frank S. Rutliff

Francis Boyle

Inventor
 A. P. Poupart.

Charles Chandler

Attorneys

UNITED STATES PATENT OFFICE.

ALBERT P. POUPART, OF NEW ORLEANS, LOUISIANA.

REVERSIBLE PROPELLER.

1,069,026.

Specification of Letters Patent.

Patented July 29, 1913.

Application filed June 27, 1912. Serial No. 796,237.

To all whom it may concern:

Be it known that I, ALBERT P. POUPART, a citizen of the United States, residing at New Orleans, in the parish of Orleans, State of Louisiana, have invented certain new and useful Improvements in Reversible Propellers; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to reversible propellers and has for an object to provide a novel propeller having the blades turnable upon their longitudinal axes, a further object of the invention being to provide a novel means for connecting the blades together for simultaneous rotation upon a driven shaft, and a still further object being to provide novel means for simultaneously turning the blades about their axes during their rotation by the driven shaft.

With the above objects in view the invention consists of certain novel details of construction and combination of parts herein-after fully described and claimed, it being understood that various modifications may be made in the minor details of construction within the scope of the appended claim.

In the accompanying drawings forming part of this specification:—Figure 1 is a side elevation of an air propeller embodying my improvements. Fig. 2 is a front elevation of the propeller applied and with the front cap of the hub removed to expose the blade swiveling means. Fig. 3 is a longitudinal sectional view taken on the line 3—3 Fig. 2 with the driving shaft pedestal and hub front cap in position. Fig. 4 is a cross sectional view taken on the line 4—4 Fig. 1. Fig. 5 is an end elevation of a modified form of my improved propeller designed to be used in connection with boats. Fig. 6 is a front elevation of the modified form of propeller with the front hub cap removed. Fig. 7 is a longitudinal sectional view taken on the line 7—7 Fig. 5. Fig. 8 is a cross sectional view taken on the line 8—8 Fig. 5.

Referring now to the drawings in which like characters of reference designate similar parts, 10 designates a driven shaft and 11 a sleeve thereon which is adapted to be slid longitudinally of the shaft through the instrumentality of a handle 12 clamped to the sleeve through the instrumentality of

spaced collars 13 which are fixed to the sleeve through the instrumentality of set screws 14 or otherwise. The shaft is supported by a bearing preferably formed of spaced collars 15 which surround the sleeve and have clamped therebetween a suspension member 16, there being ball races formed in the collars to receive balls 17 which ride on the sleeve and are clamped in position by washers 18 secured to the outer faces of the collars. The sleeve is adapted to slide through the bearing.

The propeller comprises a hollow cylindrical hub 19 the ends of which are closed by annular caps 20 and 21, the cap 20 revolubly fitting the sleeve 11, and the cap 21 having a securing flange 22 which is bolted to the shaft 10 as shown at 23. The hub is provided at diametrically opposite points with tubular bearing boxes 24 in which are revolubly mounted stub shafts 25 which extend at the ends beyond the inner and outer faces of the boxes. The projecting inner end of each shaft is equipped with a crank arm 26 having a hub 27 which is fixed to the shaft by means of a set screw 28 and which bears against the inner end of the related box 24.

The sleeve 11 terminates in laterally directed integral lugs 29 having slots 30 near the outer ends in which wrist pins 31 carried by the above mentioned crank arms 26 are slidably fitted. Upon the sleeve being slid lengthwise upon the shaft, the crank arms 26 will be simultaneously actuated and will turn the stub shaft 25 in their respective bearing boxes.

The projecting outer end of each shaft is equipped with a socket member 32, the latter being preferably bolted to the shaft as shown at 33 and having a flared mouth 34 to receive the inner end of a propeller blade 35, the latter preferably being bolted to the socket member as shown at 36. The blades are thus fixed to the stub shafts, and upon rotation of the stub shafts in the bearing boxes the blades will be simultaneously rotated on their axes.

In Fig. 5 is shown a modified form of the propeller and in this instance 37 designates a driven shaft upon which a sleeve 38 is slidably mounted and is equipped with an actuating handle 39 as above described. The propeller comprises a cylindrical hollow hub 40 having the opposite ends closed by annular caps 41 and 42, the cap 41 revo-

lably fitting the sleeve, and the cap 42 being provided with a hub 43 which is bolted to the shaft as shown at 44. The hub is provided at diametrically opposite points with 5 tubular bearing boxes 45, and is further provided adjacent to these bearing boxes with a second pair of tubular bearing boxes 46 arranged at diametrically opposite points in the hub and disposed midway between 10 the first named bearing boxes as clearly shown in Fig. 5.

Within the bearing boxes 45 revoluble stub shafts 47 are mounted, and within the bearing boxes 46 a second pair of stub shafts 15 48 are revolubly mounted. The inner ends of the stub shafts 47 are equipped with crank arms 49 which are connected to alined laterally disposed lugs 50 carried by the sleeve 38, by wrist pins 51. Likewise the 20 stub shafts 48 are equipped at the inner ends with crank arms 52 which are connected to integral lugs 53 carried by the sleeve and disposed at a right angle to the first named lugs, connection between the crank 25 arms and lugs being made by wrist pins 54.

When the sleeve is slid longitudinally upon the driven shafts, the crank arms of all of the stub shafts will be simultaneously actuated, and the stub shafts rotated simultaneously in their respective bearing boxes. 30 The outer ends of the stub shafts 47 are equipped with blades 55, and the outer ends of the stub shafts 48 are equipped with blades 56, the blades being secured to the 35 stub shafts by means of bolts 57 and 58.

It will be noted that in both modified and preferred forms of the invention that the

propeller hub is hollow and is closed at the ends by annular caps one of which is fixed to the sleeve and the other of which is fixed 40 to the shaft, and that the hub is provided with alined tubular bearing boxes in which the blade actuating shafts are revolubly mounted. Also in both instances the shafts are actuated through the instrumentality of 45 crank arm connections with integral laterally projecting alined lugs carried by the sliding sleeve.

What is claimed, is:—

A reversible propeller including a driven 50 shaft, a sleeve slidable longitudinally on said shaft, a hollow hub encircling said sleeve, a disk cap closing one end of said hub and fixed to said shaft, a disk cap closing the opposite end of said hub and loosely 55 journaling said sleeve, a radially disposed tubular bearing box carried by said hub, a stub shaft mounted to turn in said bearing box, a blade secured to the outer end of said stub shaft and bearing against the outer 60 end of said bearing box, a crank arm secured to the inner end of said stub shaft and bearing against the inner end of said bearing box, a laterally disposed lug carried by said sleeve having a slot therein, and 65 a wrist pin slidably bearing in said slot and connected to said crank arm.

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

ALBERT P. POUPART.

Witnesses:

CHAS. DHOME, Jr.,

ELIZABETH BRODERICK.