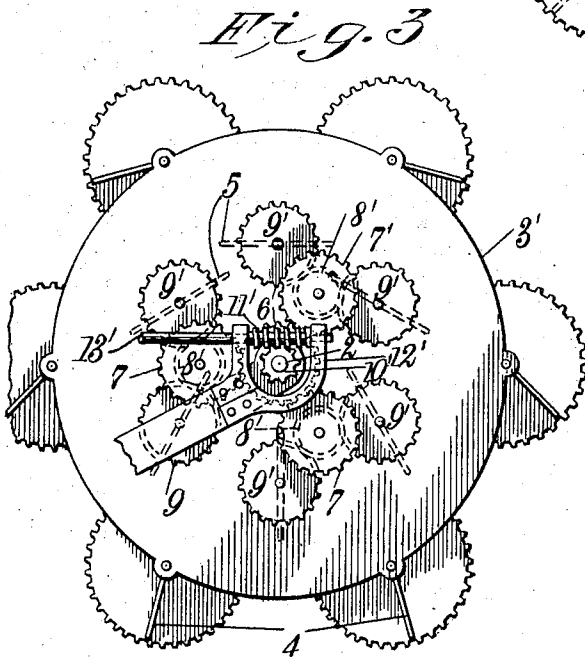
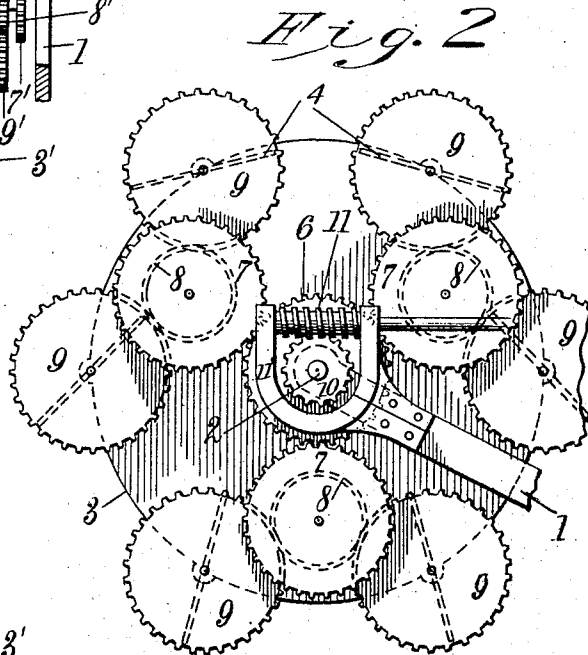
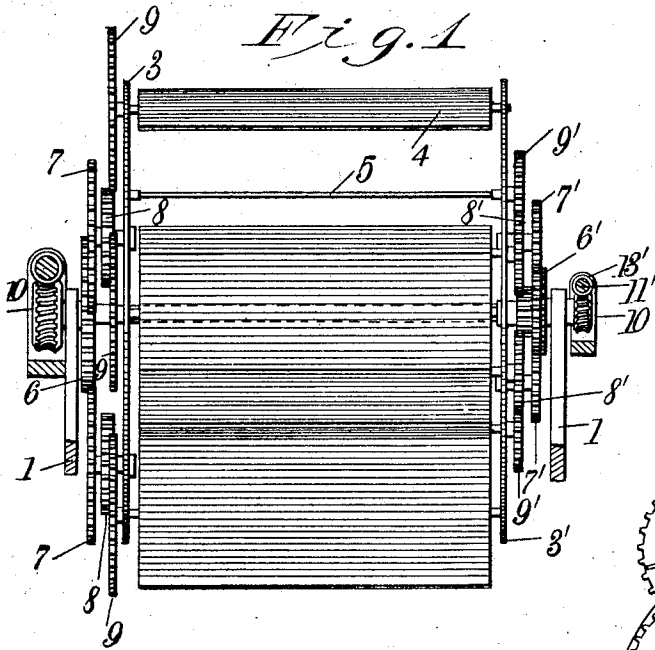


F. J. SCHNEIDER.
FEATHERING PADDLE WHEEL.
APPLICATION FILED JULY 20, 1911.

1,027,217.

Patented May 21, 1912.

2 SHEETS—SHEET 1.



WITNESSES

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Wm. F. Nickel

INVENTOR

Frederick J. Schneider

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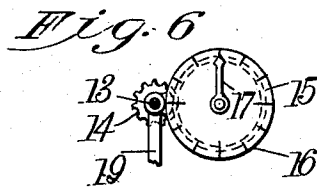
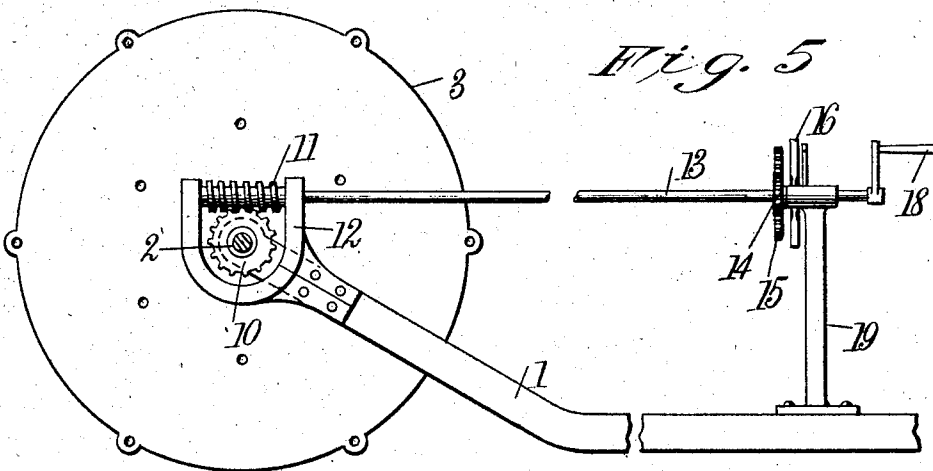
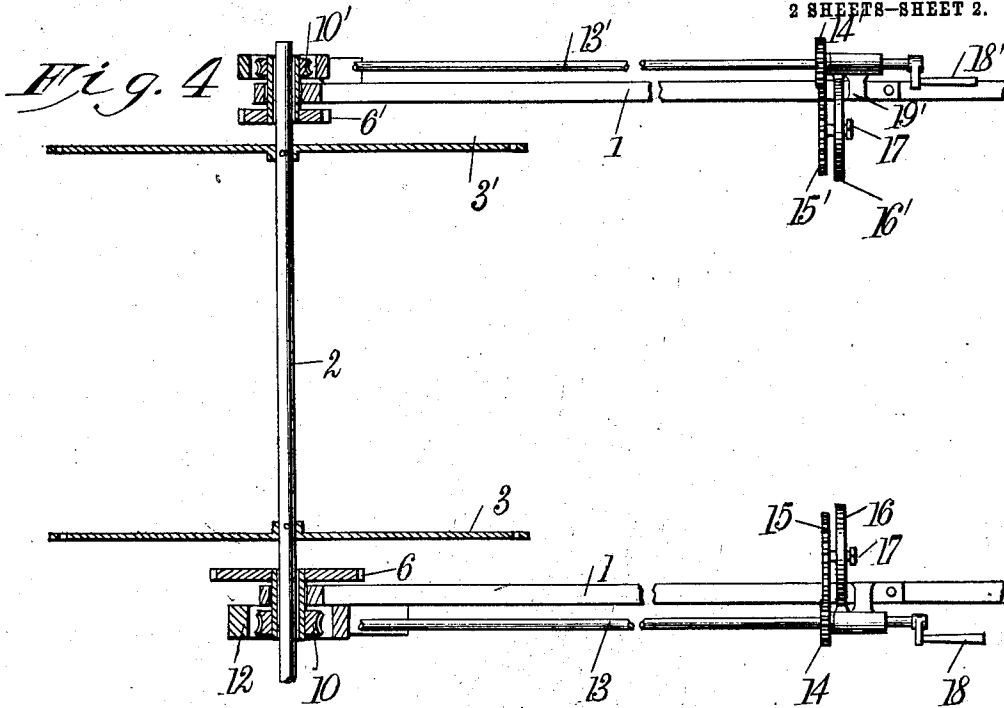
Mumford Co
ATTORNEYS

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UNITED STATES PATENT OFFICE.

FREDERICK JACOB SCHNEIDER, OF NEW YORK, N. Y.

FEATHERING PADDLE-WHEEL.

1,027,217.

Specification of Letters Patent.

Patented May 21, 1912.

Application filed July 20, 1911. Serial No. 639,585.

To all whom it may concern:

Be it known that I, FREDERICK J. SCHNEIDER, a citizen of the United States, and a resident of the city of New York, Middle Village, borough of Queens, in the county of Queens and State of New York, have invented a new and Improved Feathering Paddle-Wheel, of which the following is a full, clear, and exact description.

My invention is an improvement in paddle wheels having means for feathering the blades thereof, and it aims to provide a construction of this type having two sets of paddle blades, an inner set and an outer set, with means for feathering both sets. The feathering means for one set of blades is made adjustable, likewise the feathering means for the other set of blades; and the means for feathering one set of blades is kept independent of the means for feathering the other set, so that the two sets of blades can be caused to feather themselves at different points located in the circle of revolution of said blades, so that the two sets can deliver their working thrust in different directions whenever conditions so require.

It is the aim of my invention to adapt a paddle wheel of this sort for aeroplane work, and by means of a paddle wheel constructed as above described I can use one set of blades to deliver a thrust downward to aid in supporting the aerial vessel, and the other set to deliver a thrust rearward, to propel it.

Reference is to be had to the accompanying drawings forming a part of this specification, in which the same characters of reference indicate the same parts in all the views.

Figure 1 is a front view of my double-bladed paddle wheel; Fig. 2 is a side elevation viewed from the left on Fig. 1; Fig. 3 is a side elevation viewed from the right on Fig. 1; Fig. 4 is a horizontal sectional view taken through the operating shaft, showing the structure of the framework of the wheel with the paddle blades and operating gear removed; Fig. 5 is a side elevation of the parts shown in Fig. 4; and Fig. 6 is a front elevation of the indicator, which shows the point at which the blades are adjusted to be feathered or presented edgewise to the air during part of their revolution.

My improved paddle wheel comprises supports 1, which carry a main operating

shaft 2. On this shaft are mounted plates or disks 3 and 3', by which the paddle blades are carried. The paddle blades are shown at 4 and 5, 4 being the outer blades and 5 the inner ones. The outer blades are adjusted so as to be made to feather at different points in their circle of revolution by means of gearing mounted on the outer face of the plate 3. This gearing comprises a central toothed wheel 6, loosely mounted on the shaft 2, and meshing with a number of gear wheels secured to the disk or plate 3. Each of these gear wheels 7 has a toothed hub extending from its inner face, and each of these toothed hubs engages with a pair of gear wheels 9. Each of the gear wheels 9 is mounted on the outer end of a spindle which supports one of the outer blades 4.

The central gear 6 has an integral hub extending from its outer face, this hub, as well as the shaft 2, being mounted in the upper end of one of the supports 1. The outer end of the hub carries a worm wheel 10, which is engaged by a worm gear 11, mounted in a U-shaped bearing piece 12, carried by the support 1. The worm gear 11 is operated by a rod 13, which carries thereon near one end a pinion 14. The pinion 14 meshes with a gear 15 fixed to a spindle which is rotatably supported by a standard 19. This spindle passes through a fixed circular disk 16, supported by the standard 19, and bears on its opposite end a pointer 17. The disk 16 has indications a certain number of angular degrees apart on one face to indicate the position of the pointer 17; and 18 is a crank on the rear end of the rod 13, by means of which the same is rotated.

The paddle wheel is operated by turning the shaft 2 from any convenient source of power, and as it rotates, the central gear 6 being held stationary, the gears 7 and 8 will be turned on their pivots to rotate the gears 9. This will cause the outer paddle blades 4 to be feathered once in the course of each revolution, the diameters of the gears being designed to secure this result. By turning the rod 13, the central gear 6 can be angularly adjusted, so as to change the point in the circle of revolution of the blades 4, at which the feathering is effected. Normally, the pointer 17 is in upright position and will be so geared to the wheel 6 that the blades 4 will be caused to feather when they

are passing through the highest point, with the pointer arranged as shown in Fig. 6. The point of feathering can be changed at will, and the gearing connecting the pointer to the rod 13 will be so designed that the precise point at which the feathering is effected will always be indicated on the dial 16.

The inner set of blades 5 is operated by mechanism similar to that which operates the blades 4, the gearing for feathering the inner set of blades 5 being mounted on the disk or plate 3', and at the other end of the shaft 2. The mechanism for this purpose is numbered from 6' to 19' inclusive, corresponding numerals applied to the mechanism for feathering the blades 5 indicating parts corresponding to those which have just been described.

By means of a wheel constructed in this way I can use one set of blades to exert a thrust in one direction, and the other set to exert a thrust in the other direction. The wheel can be used in either air or water for a variety of purposes. In aeroplane work, for example, I might locate a double-bladed paddle wheel of this kind on each of the main planes and on the tail plane, using one set of blades, for example, the outer set 4, to exert a thrust downward and support or balance the machine, while relying upon the inner set to exert a thrust rearward and propel the same forward; or I may dispense with the supporting planes which are ordinarily employed on airships of the heavier-than-air type, and use one or more of my improved paddle wheels, making the same of sufficient size to lift the framework of the machine by the downward thrust of one set of paddle blades alone, using the other blades to drive the same forward.

It will be noted by referring to Fig. 3, that, when the paddle blades are adjusted to feather at the topmost point in their circle of revolution, they form channels or passages from below upward. This construction will enable me, when the wheel is used on an aeroplane, to get an effect somewhat similar to that obtained by a parachute, in case there should be an accident to the motive power, necessitating the fall of the machine. In such a case the paddle blades of course would come to a stop, and as the machine sinks the blades would direct the air in toward the center of the wheel and retard the downward progress of the machine to a considerable extent. It is understood that the sets of inner and outer blades are so arranged one relative to the other as to form when they are adjusted to feather at the same points in the circle of revolution of the wheel, a plurality of air passages converging to a common point, thereby producing a buoyant effect.

Having thus described my invention, I claim as new and desire to secure by Letters Patent:

1. A feathering blade paddle wheel having a plurality of sets of blades, means for rotating said paddle wheel, means operated by said first-named means to feather each set of said blades as the wheel rotates, and means for adjusting the feathering means for each set of blades, to cause the said blades to be feathered at different points in the circle of revolution of the paddle wheel, whereby one set of blades can be caused to exert a thrust in one direction and another set in another direction.

2. A feathering blade paddle wheel having a plurality of sets of blades, part of said blades being surrounded by the remainder of said blades, means for rotating said paddle wheel, means operated by said first-named means to feather each set of blades as the wheel revolves, and means for adjusting the feathering means for each set of blades, to cause the said blades to be feathered at different points in the circle of revolution of the paddle wheel, whereby one set can be caused to exert a thrust in one direction and the other blades in another direction.

3. A feathering blade paddle wheel having two sets of blades, one set of blades being located within the other set, means for rotating said paddle wheel, means operated by said first-named means to feather each set of blades as the wheel revolves, and means for adjusting the feathering means for each set of blades independently, to cause the said sets to be feathered at different points in the circle of revolution of the wheel, whereby one set can be caused to exert a thrust in one direction and the other set in another direction.

4. A feathering blade paddle wheel having a plurality of blades, means for causing said wheel to revolve, means connected to part of said blades to feather the same as the wheel revolves, means for feathering the remainder of said blades as the wheel revolves, and means for adjusting said feathering means independently of each other, the said blades being so arranged as to form, when they are all adjusted to feather at the same point in the circle of revolution of the wheel, a plurality of air passages converging to a common point.

5. A feathering blade paddle wheel having a plurality of blades, part of said blades being surrounded by the remainder of said blades, means for causing said wheel to revolve, means for feathering part of said blades as the said wheel revolves, means for feathering the remainder of said blades as said wheel revolves, and means for adjusting the said feathering means independently of each other, said blades being so arranged as to form when they are adjusted to feather

at the same point in the circle of revolution of the wheel, a plurality of air passages converging to a common point.

5 6. A feathering blade paddle wheel having a plurality of sets of blades, means for causing said wheel to revolve, means operated by said first-named means to feather each set of said blades, means for adjusting the feathering means for each set of blades
10 independently, and an indicator connected to the adjusting means for each set of blades to indicate the point at which each set is being caused to feather in the circle of revolution of the wheel.

15 7. A feathering blade paddle wheel having a plurality of blades, means for rotating said paddle wheel, means for feathering part of said blades as the wheel rotates, means for feathering the remainder of said blades as
20 the wheel rotates, and means for adjusting the feathering means independently of each other, whereby part of said blades can be caused to exert a thrust in one direction and the remainder to exert a thrust in another
25 direction, or all can be made to exert a thrust in the same direction.

8. A feathering blade paddle wheel having a plurality of sets of blades, means for rotating said paddle wheel, means operated
30 by said first-named means to feather each

set of said blades as the wheel rotates, and means for adjusting the feathering means for each set of blades independently of each other, to cause the said blades to be feathered at different points in the circle of revolution
35 of the paddle wheel, whereby one set of blades can be caused to exert a thrust in one direction and another set in another direction.

9. A feathering blade paddle wheel having a plurality of sets of blades, part of said
40 blades being surrounded by the remainder of said blades, means for rotating said paddle wheel, means operated by said first-named means to feather each set of blades as
45 the wheel revolves, and means for adjusting the feathering means for each set of blades independently of each other, to cause the said blades to be feathered at different points
50 in the circle of revolution of the paddle wheel, whereby one set can be caused to exert a thrust in one direction and the other blades in another direction.

In testimony whereof I have signed my name to this specification in the presence of
55 two subscribing witnesses.

FREDERICK JACOB SCHNEIDER.

Witnesses:

THEO. J. HOSTER,
JOHN P. DAVIS.