

1,029,057.

2 SHEETS—SHEET 1.

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 PROPELLER FOR AIR OR WATER CRAFT.
 APPLICATION FILED OCT. 28, 1908.

1,029,057.

Patented June 11, 1912.

2 SHEETS—SHEET 2.

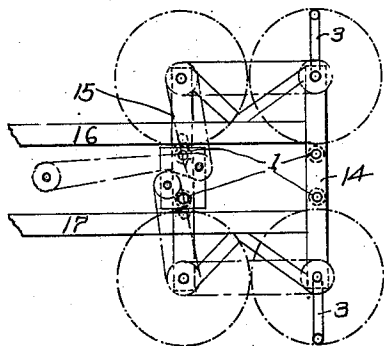


Fig. 3.

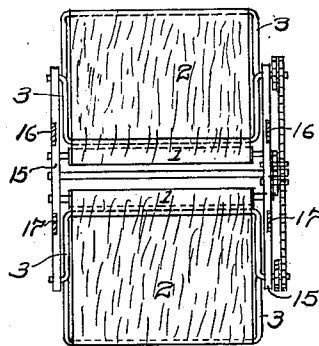


Fig. 4.

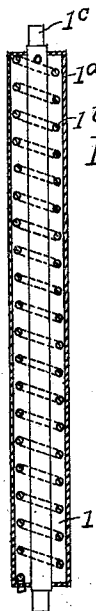


Fig. 5.

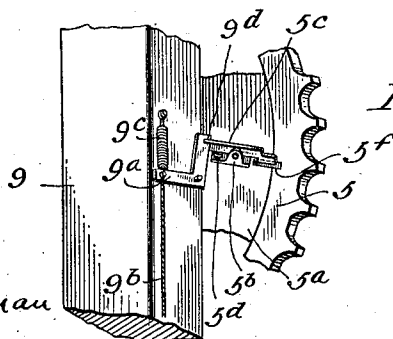


Fig. 8.

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UNITED STATES PATENT OFFICE.

ADOLPH FINCH, OF SAN DIEGO, CALIFORNIA, ASSIGNOR OF ONE-THIRD TO A. B. BOWMAN, OF SAN DIEGO, CALIFORNIA.

PROPELLER FOR AIR OR WATER CRAFT.

1,029,057.

Specification of Letters Patent.

Patented June 11, 1912.

Application filed October 28, 1908. Serial No. 459,923.

To all whom it may concern:

Be it known that I, ADOLPH FINCH, a citizen of the United States, residing at San Diego, in the county of San Diego and State of California, have invented certain new and useful Propellers for Air or Water Craft; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to mechanism for propelling aerial and water locomotives and for varying the direction of movement of aerial locomotives laterally and upwardly and downwardly, and the objects of my invention are to provide a propelling and raising and lowering mechanism which shall operate by resisting the atmosphere or water only during the effective parts of its operative movements, but which shall offer little or no resistance to the atmosphere or water during the remainder or ineffective portion of its movement and further to provide a mechanism that will cause the appliances when used for raising and lowering to stop in a longitudinal position thus providing a plane or flat surface for sailing in the air. I attain these objects by the mechanism illustrated in the accompanying drawings, in which—

Figure 1 is a plan view of the appliance as used for raising and lowering aerial locomotives. Fig. 2 is a side elevation of the same. Fig. 3 is a plan view of the appliance used as a longitudinal propeller for either aerial or water navigation. Fig. 4 is an end elevation thereof. Fig. 5 is a detailed longitudinal section of the spring roller. Fig. 6 is a detail elevational view of the wing regulating mechanism. Fig. 7 is a transverse elevational view thereof, and Fig. 8 is a perspective view of a portion thereof, drawn to a larger scale.

Similar characters of reference refer to similar parts throughout the several views.

The spring roller 1, the canvas 2 and the crank 3, constitute the principal parts of my invention and they involve in their combined construction and operation the action of a wing which is adapted to resist the atmosphere or water during certain effective portions of its movement and to operate without any appreciable resistance to at-

mosphere or water during the ineffective portion of its movement.

I have shown my appliance as it may be used in different ways. In Fig. 1 I have shown it as applied on an airship for raising and lowering said ship and in Figs. 3 and 4 as longitudinal propellers for either air or water navigation ships and used to propel the ship forward or backward as the case may be.

Numeral 1 represents a spring roller which is composed of a hollow tube 1^a which is attached at one end to a long torsional coil spring 1^b which in turn is attached at its other end to a central shaft 1^c which extends centrally through said spring and tube and acts as a bearing on which they revolve. To the outside of the hollow tube 1^a and extending its full length is attached in this case a canvas 2 of sufficient length to reach from said spring roller 1 to and around crank 3 when the revolving portion of said crank is farthest from said roller and which is loosely fastened around the crank 3. The crank 3 is a simple rod pivoted at points 3^a and 3^b and forming a U between said points. It can be seen that with this construction and the spring roller being wound and power compelling the crank 3 to revolve outward and downward will cause the canvas to be extended when out, the spring roller winding it up after passing the center downward. This will cause great resistance on the air or water on the extended and downward portion of its movement and little or no resistance on the air or water on the contracting and upward portion of its movement and by reversing its motion the effect would be the opposite. I prefer to use these appliances in pairs in all cases by connecting the crank by means of sprockets and chains 5 and 6 as shown or any other convenient means and so connecting them that in one the canvas will be extended and the spring wound and in the other the canvas will be contracted and the spring unwound, the unwinding of one spring thus assisting in winding the other and vice versa.

In Figs. 1 and 2, 8, 9 and 10 represent a convenient frame on which I place my appliances for raising and lowering airships and of which there may be a plurality on each side of the center and all operated in unison by means of chain 11 from any driv-

ing mechanism over sprocket 12. I prefer to raise the rollers 1 upon braces 13 which will cause a more inward thrust of the air upon the most efficient portion of the stroke tending to condense the air directly under the ship.

In Figs. 3 and 4 I show two sets set in position for either air or water and placed on a frame composed of members 14—15—16 and 17 and manipulated in unison by means of sprockets and chains. I prefer to place it on the front end of the ship propelled.

In Figs. 6 and 7 I show a special sprocket 5 and lever attachments for the manipulation of said sprockets. Said sprocket is made in two parts the inner part 5^a being keyed to the crank 3 and which is provided with an annular projection on its periphery adapted to fit loosely in a recess in the inner portion of the outer part 5. Upon the inner side of said inner part 5^a are double lugs 5^b between which is pivoted a lever 5^c on pin 5^e, said lever being provided with an outward extending lug 5^f adapted to fit into a recess 5^g in a plate 5^h which is fastened to outer part 5 by means of screws, when said recess is in the right relative position, and said lever 5^c is provided with compression spring 5^d adapted to hold said lever crank in the position shown in Fig. 7. Upon the framepiece 9 I pivot a bellcrank 9^a and connect to one member a wire 9^b for holding said bell crank out of contact with the path of lever 5^c but I have provided a spring 9^c to throw the bellcrank 9^a in contact path of lever 5^c upon the release of the wire 9^b. It will be readily seen that with this construction, the chain will keep the wing in motion at all times while the wire 9^b is taut, but when said wire is released, the spring 9^c will turn the bell-crank 9^a so that the extended end of the other member of said bell-crank projects beyond the edge of the frame support 9, so that the portion including notch 9^d will be in the path of the lever 5^c, which revolves with the inner part 5^a of the sprocket. When the inner end of lever 5^c in its revolution with part 5^a, engages with the angle surface of the extended end of the bell-crank, said inner end will be gradually depressed thereby, causing the lug 5^f on the outer end of said lever to be thrown out of engagement with the recess in part 5^h of said sprocket, and when said lever 5^c reaches the notch 9^d in said bell-crank member, it will engage with said notch, and said lever having been released from the sprocket, will be held in said notch until released therefrom by the tightening of the cable 9^b. This will stop and hold the crank 3, (because of its rigid connection to the inner portion 5^a of the sprocket), in the position which will be the extended position of the wings, which provides for the simultaneous extension of

all of the wings, thereby providing a plane for sailing purposes, and by the tightening of the wire 9^b the crank 3 will be caused to rotate when the outer part of the sprocket comes to a certain position, relatively to the inner portion.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent, is—

1. A propelling appliance for aerial or water locomotives, comprising, a frame, a torsional spring roller, a revoluble crank adjacent thereto, a canvas attached to said roller at one end and to said crank at its other end, a sprocket on said crank and means in connection with said sprocket for facilitating the stopping of said crank in a certain position in any revolution if so desired without stopping the motive power, all substantially as set forth.

2. A propelling appliance for aerial or water locomotives comprising a frame, a pair of extensible and retractable wings comprising torsional spring rollers, revoluble cranks, adjacent thereto, and canvases attached to said rollers at one of their ends and to said cranks at their other ends, a chain connecting said cranks, special sprockets on said cranks, means in connection with said sprockets for facilitating the stopping of said cranks in certain positions in any revolution, if so desired without stopping the motive power, all substantially as set forth.

3. The combination in a propelling appliance for aerial or water locomotives of a frame, a pair of extensible and retractable wings mounted thereon comprising torsional spring rollers, revoluble cranks adjacent thereto, canvases attached to said rollers at one of their ends and to said cranks at their other ends, loose hub sprockets on said cranks, means in connection with said sprockets for stopping said wings in their extended position, for retaining them in said position and for releasing them when desired, all substantially as set forth.

4. In an appliance for propelling longitudinally and upward, aerial or water navigation ships, the combination of a plurality of wings comprising, spring rollers, revoluble cranks, sheets of flexible material connecting said cranks with said spring rollers, a plurality of frames for sustaining said wings, sprocket and chain means for operating said wings in pairs and alternately with each other, lever and spring means in connection with said sprocket and chain means for stopping and retaining said wings in a certain position and for starting them when desired, all substantially as set forth.

5. In an appliance for propelling longitudinally and upwardly aerial or water navigation ships, the combination of a plurality of wings comprising rollers provided with

torsional springs, revoluble cranks, sheets of flexible material attached at one of their ends to said rollers and adapted to roll thereon, the other ends being attached to
5 said cranks, supporting frames for sustaining said wings, sprockets on said cranks, chains connecting said sprockets, levers on said sprockets adapted to stop said cranks
10 when desired in a certain position of their revolution, other levers on said frames

adapted to retain said cranks in said certain positions and for starting them when desired, all substantially as set forth.

In testimony that I claim the foregoing as my invention I hereunto affix my signature in the presence of two witnesses.

ADOLPH FINCH.

Witnesses:

DELMER Q. BOWMAN,
MOSES D. STARR.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
