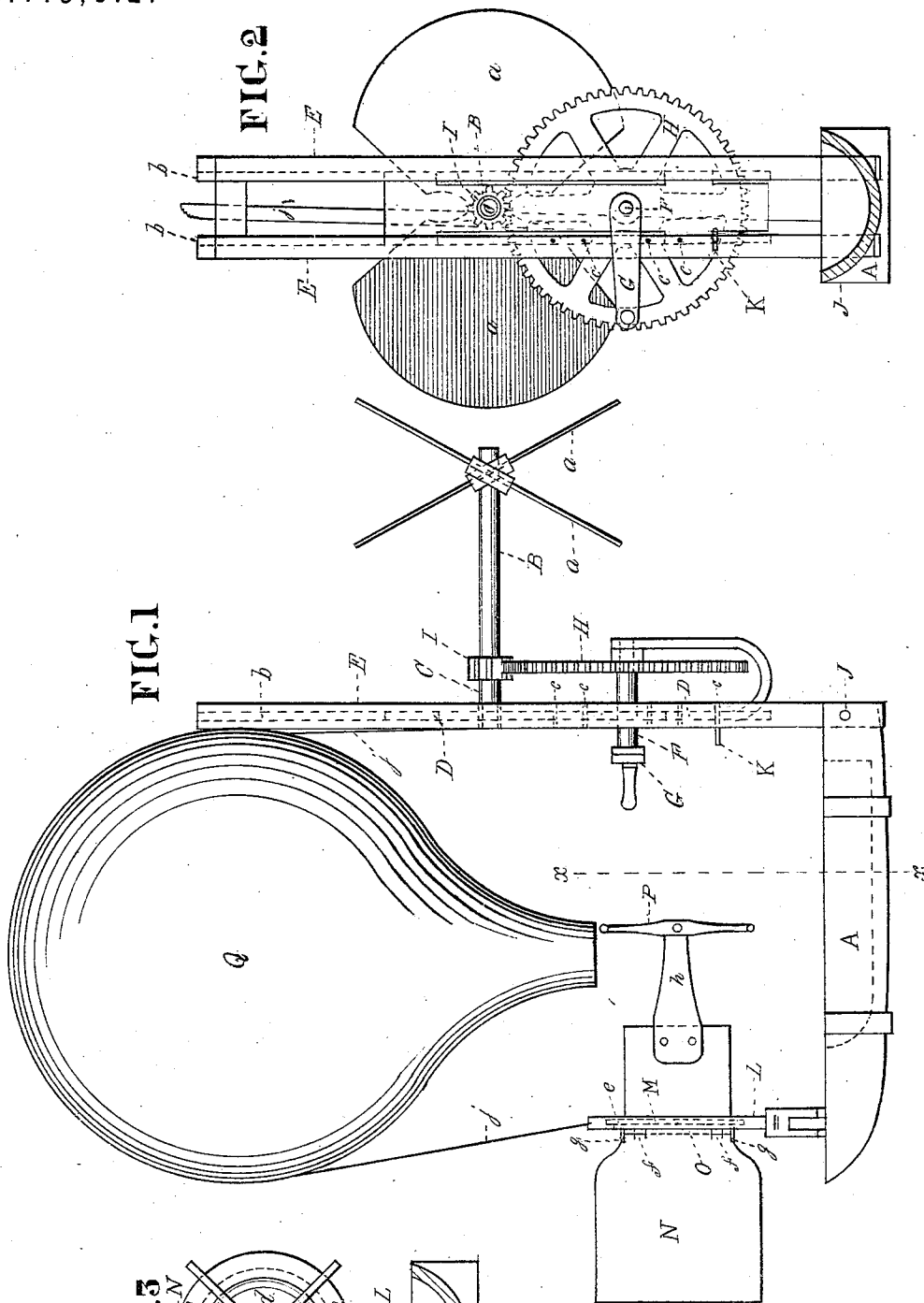


C. B. WAINWRIGHT.

Aërial Steering and Propelling Apparatus.

No. 149,012.

Patented March 24, 1874.



Witnesses.
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UNITED STATES PATENT OFFICE.

CHARLES B. WAINWRIGHT, OF PHILADELPHIA, PENNSYLVANIA.

IMPROVEMENT IN AERIAL STEERING AND PROPELLING APPARATUS.

Specification forming part of Letters Patent No. **149,012**, dated March 24, 1874; application filed March 9, 1874.

To all whom it may concern:

Be it known that I, CHARLES B. WAINWRIGHT, of the city and county of Philadelphia, in the State of Pennsylvania, have invented an Improvement in Aerial Steering and Propelling Apparatus, of which the following is a specification:

The first part of my invention relates to a propeller connected with a slide that has a vertical adjustment in uprights, so as to bring the propeller into proper range with the balloon to regulate its vertical position. The uprights are pivoted at their lower ends to the stern of the carriage in such a manner that their upper ends may be swung from or toward the balloon, to suit the position of the latter. The second part of the invention relates to an air-rudder at the front end of the carriage, provided with cross-handles or equivalent device for manipulating it. The rudder is pivoted to a ring-plate, which is free to turn in an internal groove of an upright; and hence, by means of the pivots and adjustment of the ring-plate, the rudder is capable of being turned in any position required, as hereinafter fully described.

In the accompanying drawings, Figure 1 is a side elevation of my improvement in aerial steering and propelling apparatus. Fig. 2 is a vertical section of the line *xx* of Fig. 1, looking to the right. Fig. 3 is a like view at the same line, looking to the left.

Like letters of reference in all the figures indicate the same parts.

A is the carriage. B is a hollow horizontal shaft, provided at its outer end with propelling-wings, *a a*, placed on a suitable angle, as represented in Fig. 1. The shaft is free to revolve on the internal shaft C, the inner end of which is permanently connected to the upper end of the vertical slide D, that moves in grooves *b b* of the uprights E E. F is a revolving shaft in the lower end of the slide, having a crank, G, on its inner end, and a spur-wheel, H, on its outer end, which gears into the pinion I on the inner end of the hollow shaft B. The lower ends of the uprights E E are placed in suitable slots in the stern of the carriage A, and have a free movement on the pivot-rod J, so as to admit of the upper ends

of the uprights being moved toward or from the balloon to suit its position. One of the uprights has holes *c*, at suitable distances apart, to receive the pin K, upon which the lower end of the slide D rests, to provide for its vertical adjustment, so as to bring the propeller into proper range with the balloon to regulate its vertical position under all circumstances. L is an upright, having a circular opening, *d*, provided with an internal groove, *e*, in which the ring M moves freely. The upright is made in two pieces, as represented, for convenience in attaching or detaching the ring. N is an air-rudder, placed within the ring, and connected therewith by means of the pivot-rod O, which passes through eyes *f f* of the rudder and the ears *g g* of the ring. P is a cross on the inner end of the stem *h* of the rudder for manipulating it. By means of the connection of the ring M with the upright L, in which it is free to turn, and its pivoted connection with the rudder N, the latter is free to be turned in any direction, so as to be placed instantly at any required angle to the balloon for steering it in its proper course. Q is a balloon, to which the carriage A is attached by means of cords *j j*.

I claim as my invention—

1. The combination of the hollow shaft B having wings *a a*, with the internal shaft C, vertical adjustable slide D, and uprights E E, the said shaft B being operated by means of the crank-shaft F, gear-wheel H, and pinion I, or other suitable mechanism, substantially in the manner and for the purpose above described.

2. The combination of the uprights E E with the carriage A, the uprights having a partial turn on the pivot-rod J so as to admit of their adjustment in relation to the balloon Q, substantially as and for the purpose set forth.

3. The combination of the rudder N, ring M, and upright L, having an opening, *d*, and groove *e*, substantially in the manner and for the purpose above described.

CHARLES B. WAINWRIGHT.

Witnesses:

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