

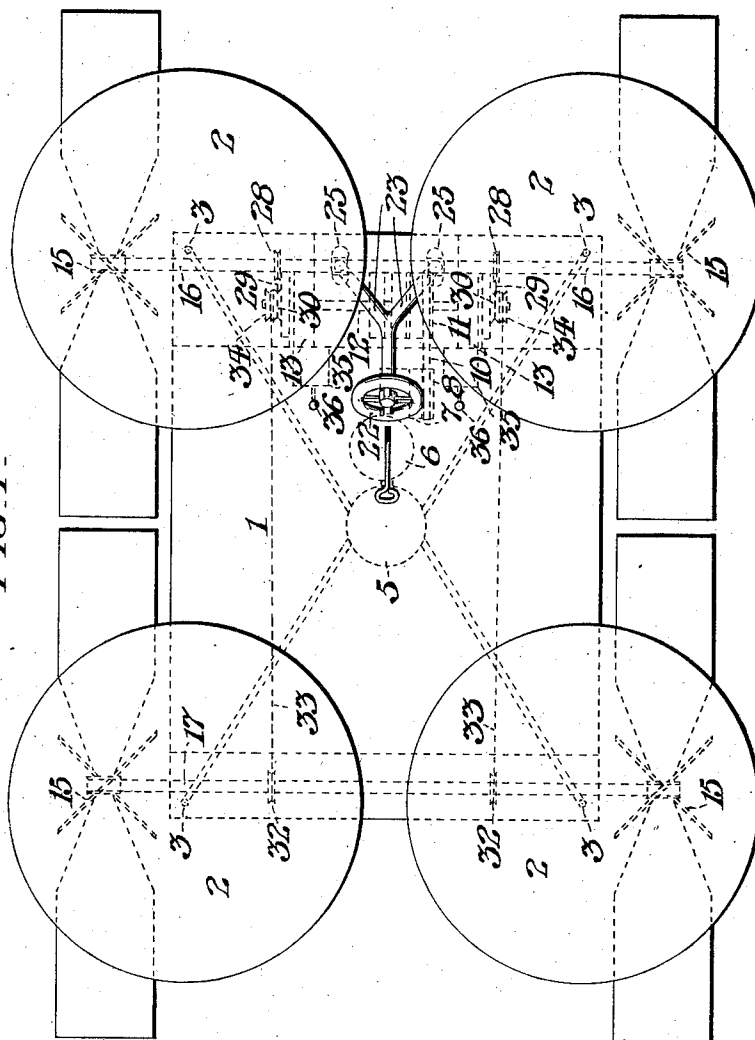
1,025,662.

A. M. WAXLER.
DIRIGIBLE BALLOON.
APPLICATION FILED JAN. 10, 1910.

Patented May 7, 1912.

3 SHEETS—SHEET 1.

FIG. 1.



WITNESSES:

Philip W. Vessey.
Raymond Betts.

INVENTOR:

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By Arthur E. Paige
Attorney.

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3 SHEETS—SHEET 2.

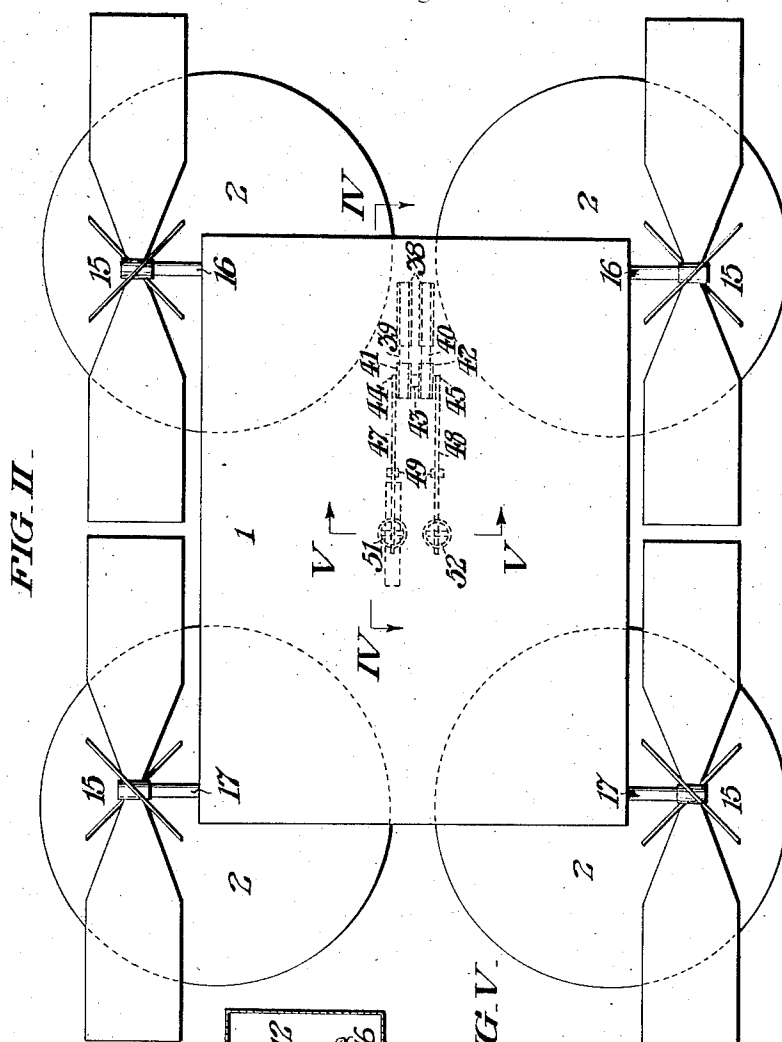
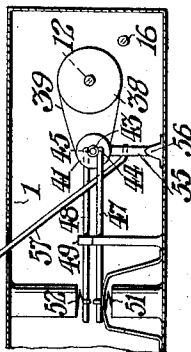


FIG. II.

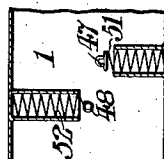
FIG. IV.



WITNESSES:

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FIG. V.



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UNITED STATES PATENT OFFICE.

ABRAHAM MIER WAXLER, OF PHILADELPHIA, PENNSYLVANIA.

DIRIGIBLE BALLOON.

1,025,662.

Specification of Letters Patent.

Patented May 7, 1912.

Application filed January 10, 1910. Serial No. 537,341.

To all whom it may concern:

Be it known that I, ABRAHAM MIER WAXLER, of Philadelphia, in the State of Pennsylvania, have invented a certain new and useful Improvement in Dirigible Balloons, whereof the following is a specification, reference being had to the accompanying drawings.

As hereinafter described my invention includes a four-cornered frame having four levitating bags respectively attached to the corners thereof; a pump on said frame connected with said bags by respective tubes; four propeller wheels extending exterior to said frame and arranged in pairs on respective parallel shafts; movable bearings in said frame for said propeller shafts; a motor provided with a shaft; means connecting said motor shaft with said propeller shafts, arranged to turn the latter in opposite directions; and steering gear operatively connected with one of said propeller shafts including a handle arranged to oscillate said shaft in its bearings.

My invention includes the various novel features of construction and arrangement hereinafter more definitely specified.

In the drawings:—Figure I is a plan view of a balloon embodying my invention. Fig. II is an inverted plan view of said balloon. Fig. III is a front view of said balloon. Fig. IV is a fragmentary sectional view, taken on the line IV, IV in Fig. II. Fig. V is a fragmentary sectional view, taken on the line V, V in Fig. II.

In said figures, the rectangular casing frame 1 has upper and lower walls which are normally horizontal but may be raised and depressed as hereinafter described, and is provided with four levitating bags 2 respectively attached to the four corners thereof by the tubes 3 which extend to the levitating fluid tank 5 in said frame. Said tank is operatively connected with the pump 6 having the tight and loose pulleys 7 and 8 connected by the belt 10 with the pulley 11 on the shaft 12 of the motors 13; said shaft being capable of oscillation as hereinafter described. The four propeller wheels 15, extending exterior to said frame 1 are arranged in pairs on the respective parallel shafts 16 and 17 which are journaled in the movable spring-pressed slide bearings 18 in said frame 1. As shown in Fig. III, said bearings are arranged to move back and forth in the openings 19 in said frame and

are provided with the opposed springs 20 which normally maintain them in central position. It is to be understood that the balloon may be propelled, in either direction, parallel with said shafts 16 and 17 by the means hereinafter described. It is to be understood that said motor shaft 12 is journaled in movable spring-pressed slide bearings similar to the bearings 18 above described, so as to be capable of the slight oscillation herein contemplated. The steering gear includes the handle 22 connected by the bar 23 with said propeller shaft 16, said bar being forked and extending through the openings 25 in the upper wall of said frame 1, so that said shafts 16, 12 and 17 may be oscillated by the movement of said handle; said handle being connected with said shaft 16, and the latter being connected with said shaft 12 by the belts 29 and with the shaft 17 by the belts 33; it being understood that when it is desired to direct the balloon to the right said handle is swung horizontally to the left so as to move said shaft 16 with its bearings 18, in opposition to the pressure of the springs 20 which tend to restore said shaft to its normal position parallel with the end of said frame 1. As shown in Fig. I, said shaft 16 is provided with the two grooved pulleys 28 which are connected by the belts 29 with the corresponding grooved pulleys 30 on said motor shaft 12. It is to be understood that said belts 29 are sufficiently elastic to permit the slight oscillatory movement of the shafts herein contemplated. Said propeller shaft 17 is provided with the two grooved pulleys 32 connected by the belts 33 with the corresponding grooved pulleys 34 on said motor shaft 12, it being noted that said belts 29 are straight and said belts 33 are crossed so that said propeller shafts 16 and 17 are turned in opposite directions. As shown in Fig. I, each of said motors 13 is provided with a controller 35 conveniently operated by a treadle 36. As shown in Figs. II and IV, said motor shaft 12 is provided with the two pulleys 38 respectively connected by the belts 39 and 40 with the pulleys 41 and 42 on the counter-shaft 43. Said pulleys 41 and 42 are respectively provided with the cranks 44 and 45 in operative relation with the pitmen levers 47 and 48 which are arranged to be rocked thereby in the bearings 49. Said levers 47 and 48 are respectively in operative relation with the springs 51

and 52 which respectively bear upon the lower and upper walls of said casing frame 1 and are arranged to respectively depress and raise the same when said pitmen levers 5 47 and 48 are operated by said pulleys 41 and 42. It is to be understood that said bearings 49 are the fulcra of said levers which are free to move longitudinally there-through in accordance with the rotary move- 10 ment of said cranks 44 and 45 with which they are respectively connected. Said pulleys 41 and 42 are supported upon the respectively opposite ends of the shaft 43 carried by the hanger 55 pivoted at 56 and, 15 for rotary movement, provided with the handle 57 extending above said frame so that in accordance with the movement of said handle one or the other of said pulleys 41 and 42 may be caused to engage its belt 20 and operate to effect the compression of the spring 51 or 52 connected therewith as described.

Said belts 39 and 40 being normally loose and inoperative when the shaft 43 is paral- 25 lel with the shaft 12; said pulleys 41 and 42 and the levers 47 and 48 respectively connected therewith remain idle until said handle 57 is shifted as above described to selectively operate one or the other of them 30 by turning said shaft 43 out of parallel relation with the shaft 12 to the slight extent necessary to tighten either of said belts sufficient to render it operative. Such operation is only effected when it is desired to 35 raise or lower the balloon; the lower wall of said frame 1 being depressed from its normal horizontal position to facilitate the downward movement of the balloon, and the upper wall of said frame being raised from 40 its normal horizontal position when it is desired to facilitate the upward movement of the balloon. Such movements of said walls are, of course, limited by the eccentricity of said cranks 44 and 45 shown in Fig. IV, 45 and, when such limit is reached said belts 39 and 40 slip, if not released by movement of the handle 57. In either case such operation provides a shape intended to deflect rather than to catch the air.

I do not desire to limit myself to the precise details of construction and arrangement herein set forth as it is obvious that various modifications may be made without departing from the essential features of my inven- 50 tion as defined in the appended claims.

I claim:—

1. In a dirigible balloon, the combination with a four-cornered frame having four 60 levitating bags respectively attached to the corners thereof; of a levitating fluid reservoir on said frame connected with said bags by respective tubes; a levitating fluid pump connected with said reservoir; four propeller wheels extending exterior to said 65 frame and arranged in pairs on respective

parallel shafts; movable spring-pressed bearings on said frame for said propeller shafts; a motor provided with a shaft; respectively distinct means connecting said motor shaft with said propeller shafts, ar- 70 ranged to turn the latter in opposite directions; and, steering gear operatively connected with one of said propeller shafts, including a handle arranged to oscillate said shaft in its bearings.

2. In a dirigible balloon, the combination with a frame having several levitating bags attached thereto; of a levitating fluid reservoir on said frame connected with said bags by respective tubes; a levitating fluid pump 80 connected with said reservoir; four propeller wheels extending exterior to said frame and arranged in pairs on respective parallel shafts; movable spring-pressed bearings on said frame for said propeller shafts; a motor provided with a shaft; respectively distinct means connecting said motor shaft with said propeller shafts ar- 85 ranged to turn the latter in opposite directions; and, steering gear operatively connected with one of said propeller shafts, including a handle arranged to oscillate said shaft in its bearings.

3. In a dirigible balloon, the combination with a frame having a levitating bag; of a pump on said frame connected with said bag; four propeller wheels extending exterior to said frame and arranged in pairs on respective parallel shafts; movable spring-pressed bearings on said frame for 100 said propeller shafts; a motor provided with a shaft; respectively distinct means connecting said motor shaft with said propeller shafts arranged to turn the latter in opposite directions; and, steering gear operatively connected with one of said propeller shafts, including a handle arranged to oscillate said shaft in its bearings. 105

4. In a dirigible balloon, the combination with a frame having levitating means; of four propeller wheels extending exterior to said frame and arranged in pairs on respective parallel shafts; movable spring-pressed bearings on said frame for said propeller shafts; a motor provided with a shaft; respectively distinct means connecting said motor shaft with said propeller shafts and, steering gear operatively connected with one of said propeller shafts, including a handle arranged to oscillate said shaft in its bear- 110 ings. 115

5. In a dirigible balloon, the combination with a frame having levitating means; of a motor provided with a shaft; two propeller shafts normally extending parallel with 125 said motor shaft, but capable of oscillation; four propeller wheels extending exterior to said frame and arranged in pairs on the respective propeller shafts; the respective propellers of each pair being axially alined in 130

invariable relation; respectively distinct means operatively connecting said motor shaft with said propeller shafts; and, steering gear operatively connected with one of
5 said propeller shafts including means arranged to oscillate said shaft in its bearings and thereby oscillate both of said propeller shafts.

In testimony whereof, I have hereunto signed my name at Philadelphia, Pennsylvania, this fourth day of January, 1910.

ABRAHAM MIER WAXLER.

Witnesses:

ARTHUR E. PAIGE,
ANNA CURTIS.

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