A. KOEGLER & K. STELZER, JR.

MEANS FOR STEERING FLYING MACHINES.

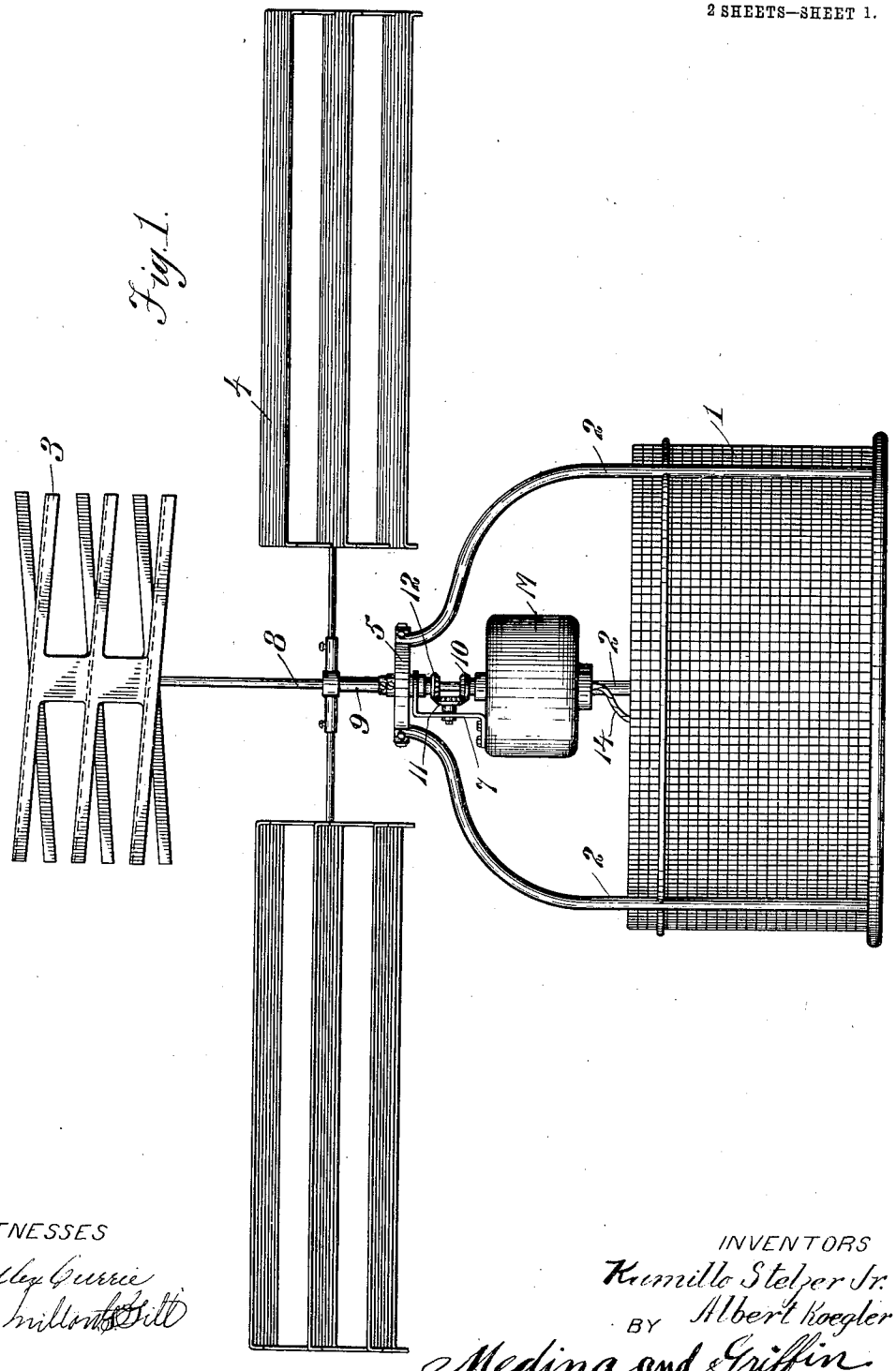
APPLICATION FILED MAR. 3, 1908.

954,574.

Patented Apr. 12, 1910.

2 SHEETS—SHEET 1.

Fig. 1.



WITNESSES

Alex Currie

Milton Bitt

INVENTORS

Kumillo Stelzer Jr.

BY Albert Koegler

Medina and Griffin

ATTORNEYS

A. KOEGLER & K. STELZER, Jr.

MEANS FOR STEERING FLYING MACHINES.

APPLICATION FILED MAR. 3, 1908.

954,574.

Patented Apr. 12, 1910.

2 SHEETS—SHEET 2.

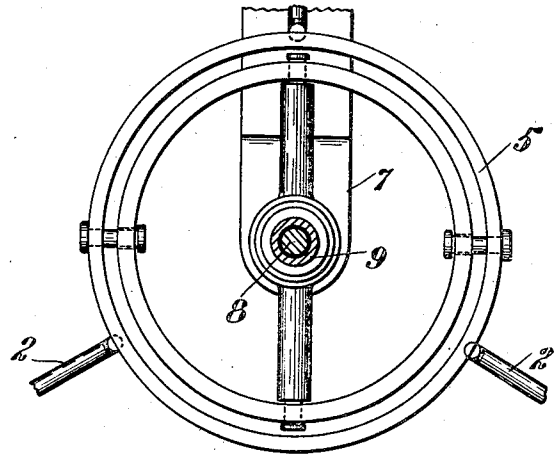


Fig. 2.

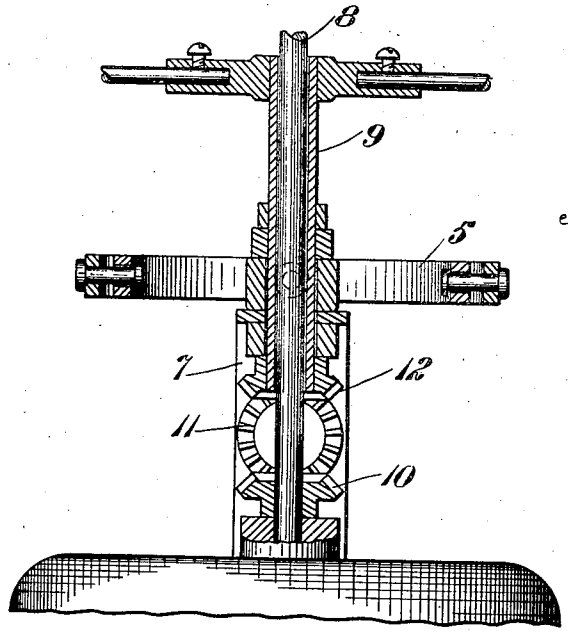


Fig. 3.

WITNESSES

Alex. Currie

Millard Smith

INVENTORS

Kumillo Stelzer Jr.

BY Albert Koegler

Medina and Griffin

ATTORNEYS

UNITED STATES PATENT OFFICE.

ALBERT KOEGLER, OF SAN FRANCISCO, CALIFORNIA, AND KAMILLO STELZER, JR., OF DRESDEN, GERMANY.

MEANS FOR STEERING FLYING-MACHINES.

954,574. Specification of Letters Patent. **Patented Apr. 12, 1910.**

Application filed March 3, 1908. Serial No. 419,058.

To all whom it may concern:

Be it known that we, ALBERT KOEGLER, residing at San Francisco, in the county of San Francisco and State of California, and KAMILLO STELZER, Jr., residing at Dresden, Germany, subjects of the Emperor of Germany, have invented a new and useful Means for Steering Flying-Machines, of which the following is a specification in such full and clear terms as will enable those skilled in the art to construct and use the same.

This invention relates to flying machines and its objects are to make it possible to steer such machines in any desired direction, and to make it possible for the person carried by the machine to move around in the basket thereof without changing the position of the center of gravity of the entire machine and its load enough to disturb the proper action of the machine.

Another object of the invention is to produce such a system of propeller vanes as will insure their proper rotation without the rotation of the parts driving them.

In the drawings in which the same numeral of reference is applied to the same parts throughout, Figure 1 is a side elevation of the entire machine, Fig. 2 is a plan view of a universal connection between the basket and the driving parts, and Fig. 3 is a view similar to Fig. 1 of the driving parts and connections with certain of them in section to show their construction. Figs. 2 and 3 are drawn on a larger scale than Fig. 1.

The basket 1 is supported by means of rods 2 which extend upwardly to a connection with the driving propellers 3 and 4. The propellers are of the common inclined vane type revolving in horizontal planes and in opposite directions. The motor M is suspended from the top of the rods 2 by means of a universal coupling 5 which permits the basket to move at different angles with the vertical shaft 6 to which the propellers are attached. This coupling is of a common type having a floating ring and two pivots at right angles with each other, thus permitting the basket to move out of line with the propeller axis without disturbing the action of the propellers. The motor M is connected with the inner ring of the universal joint by means of an L shaped plate 7, and passing through this plate is the driving shaft 8 of the upper propeller and the driving sleeve 9 which drives the lower propeller. The motor shaft drives the upper propeller directly and carries a bevel gear 10 which drives a bevel gear 11 secured to the plate 7, said gear 11 driving a gear 12 on the sleeve 9, thus turning the lower propeller in the opposite direction from that of the upper propeller. The result of this construction is that the propellers are always driven with respect to the motor and it stands still, as it would not do if only one propeller was used.

Now it will be clear that a load may be moved about in the basket of the machine without disturbing the center of gravity of the machine to any great extent since the basket will simply move out to one side and the propellers will continue to rotate in horizontal planes, thus putting their entire effort into an upward thrust, but if the person in the basket wishes to change the direction of motion of the machine he will pull on the cord 14 which is attached to the lower part of the motor M and then move off to one side of the basket when he will shift the center of gravity to one side of the motor with the result that the vanes will move not in horizontal planes but in planes inclined to the horizontal and the result of this will be that the car will move off in the opposite direction to the pull since when the vanes do not rotate in a horizontal plane there will be a horizontal component in their lifting effect and the car will thus be able to travel in any desired direction, by simply pulling on the cord 14 in the opposite direction to which it is wished to travel.

It will be clear that any type of motor may be used to drive the machine, it only being requisite that the lightest possible type may be selected. The area of vane surface to weight will depend on the actual weight of the basket and motor, but should the vanes not have sufficient lifting force a gas field support may be used, but the steering effect will be the same.

Having thus described our invention what we claim as new and desire to secure by Letters Patent of the United States is as follows:

1. In a flying machine, the combination of a basket, supports extending above the basket, a universal joint carried by the supports, a motor carried by the universal joint,

means secured to the motor for changing the center of gravity of the system, and two pairs of oppositely driven air vanes secured to the motor shaft.

2. In a flying machine, the combination of a basket, supports extending above the basket, a universal joint carried by the supports, a motor carried by the universal joint, means secured to the motor for changing the center of gravity of the system, an air vane secured directly to the motor shaft, a second air vane secured to a sleeve surrounding the motor shaft and driven in the opposite direction thereto, a bevel wheel on the motor shaft, a second bevel wheel on the lower end of the sleeve, and a bevel wheel adapted to drive the sleeve from the bevel wheel on the motor shaft.

In testimony whereof I have set my hand this 9th day of December A. D. 1907, in the presence of the two subscribed witnesses.

ALBERT KOEGLER.

Witnesses:

CARL BÖHME,

CARLOS P. GRIFFIN.

In testimony whereof I have set my hand this 4th day of January A. D. 1908, in the presence of the two subscribed witnesses.

KAMILLO STELZER, JR.

Witnesses:

PAUL ARRAS,

CLÄRE SIMON.