No. 827,157. PATENTED JULY 31, 1906.

J. B. KRAMER.

AERODROME.

APPLICATION FILED MAR. 23, 1905.

2 SHEETS—SHEET 1.

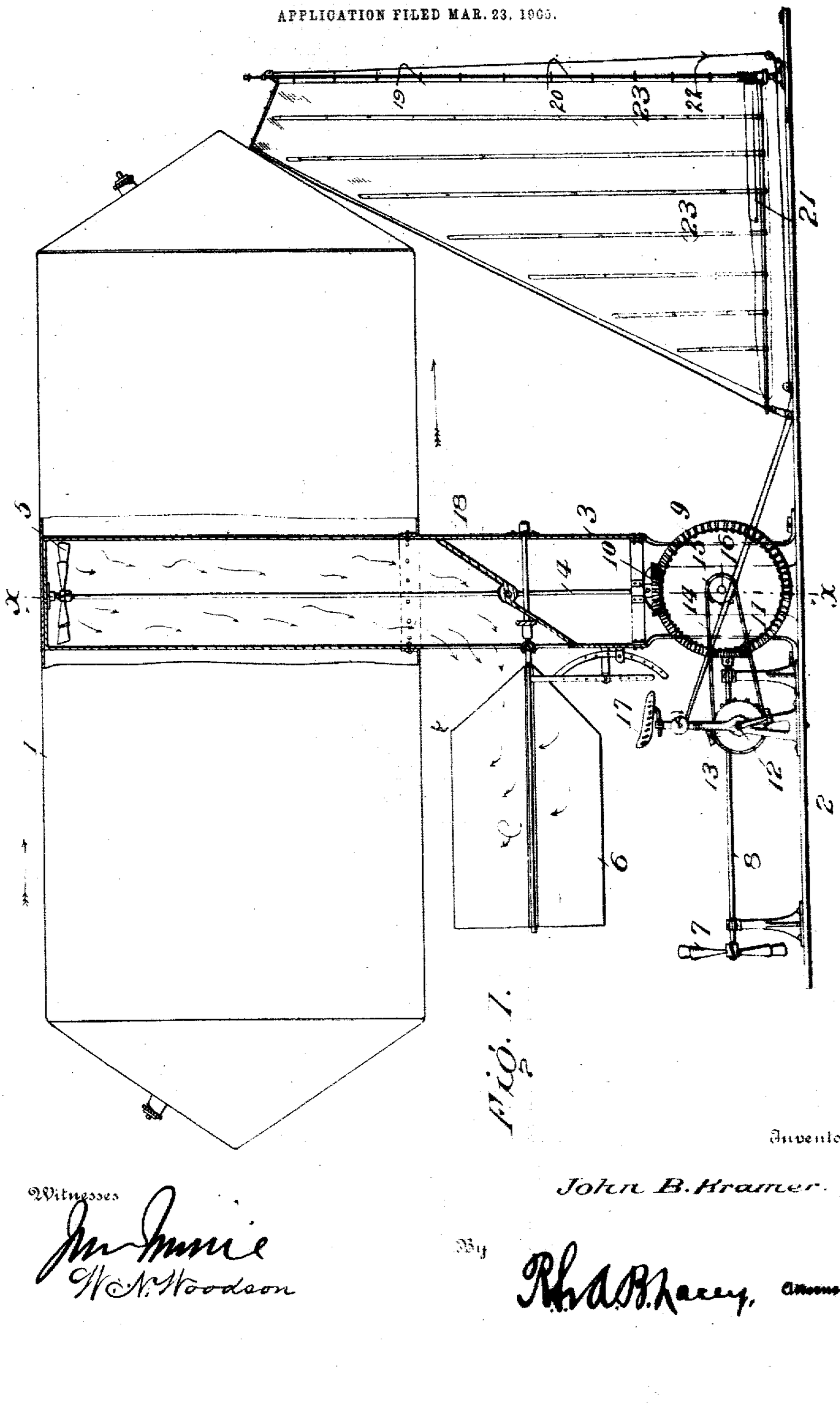

Fig. 1.

Witnesses

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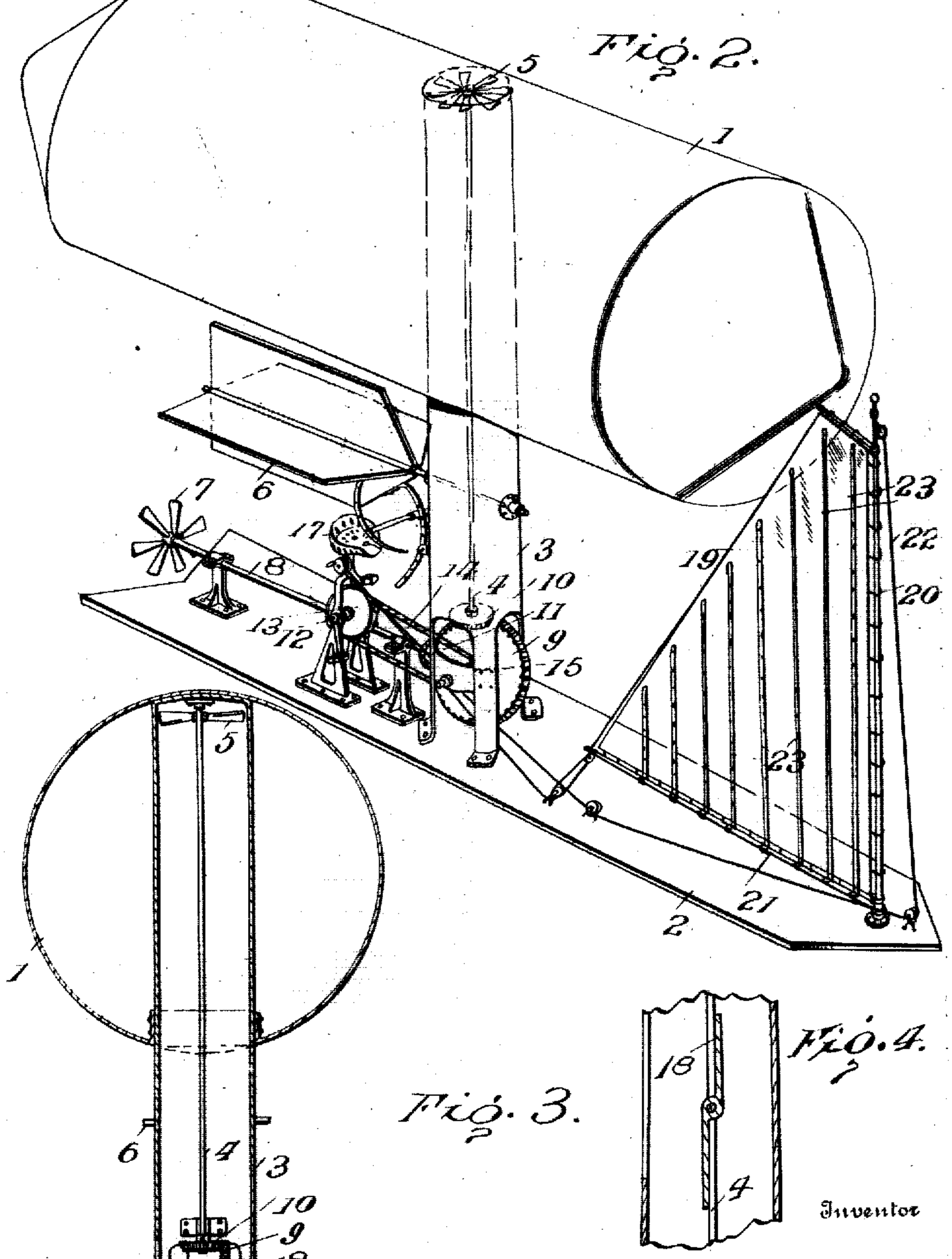
2 SHEETS—SHEET 2.

Fig. 2.



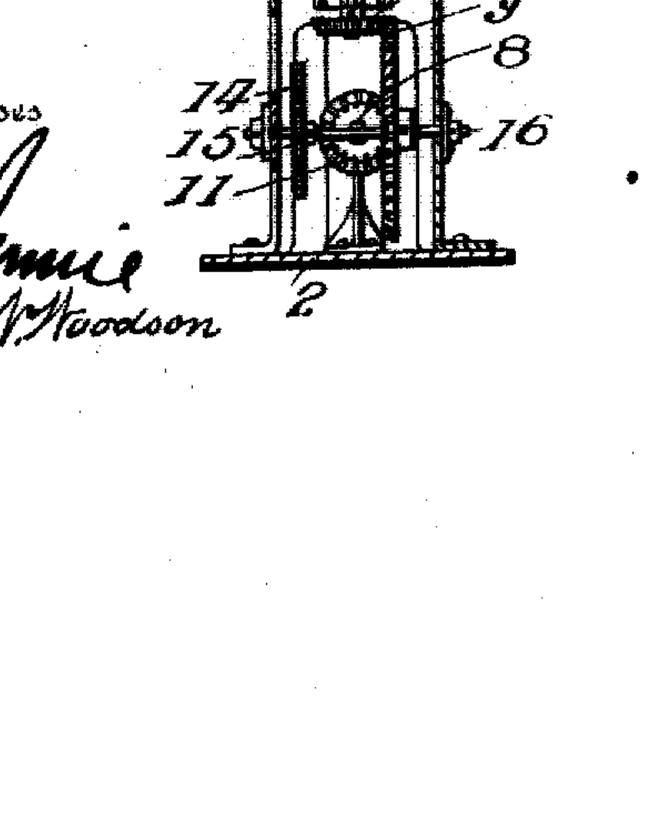


Fig. 3.

Fig. 4.

Witnesses

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UNITED STATES PATENT OFFICE.

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AERODROME.

No. 827,157. Specification of Letters Patent. Patented July 31, 1906.

Application filed March 23, 1905. Serial No. 251,624.

To all whom it may concern:

Be it known that I, JOHN B. KRAMER, a citizen of the United States, residing at Lancaster, in the county of Fairfield and State of Ohio, have invented certain new and useful Improvements in Aerodromes, of which the following is a specification.

This invention appertains to mechanism for navigating air and embodying an aerostat or like contrivance to facilitate rising and insuring safety in alighting.

As an essential part of the machine a vertically-arranged passage is provided, through which a column of air is adapted to be forced in a downward direction, said passage being intersected by means of an inclined plane against which the column of air acts to impel the machine forward, thereby utilizing the power expended to the best possible advantage both for lifting and propelling.

For a full description of the invention reference is to be had to the following description and accompanying drawings.

While the invention may be adapted to different forms and conditions by changes in the structure and minor details without departing from the spirit or essential features thereof, still the preferred embodiment thereof is shown in the accompanying drawings, in which—

Figure 1 is a side elevation of an aerodrome embodying the invention, a portion of the aerostat or like gas-field being broken away to show the vertical passage and the fan-wheel coöperating therewith. Fig. 2 is a perspective view of the aerodrome. Fig. 3 is a transverse section on the line *x x* of Fig. 1. Fig. 4 is a detail view illustrating the manner of adjusting the inclined plane hereinafter described.

Corresponding and like parts are referred to in the following description and indicated in all the views of the drawings by the same reference characters.

The aerodrome comprises a balloon 1, which may be of any construction, size, and capacity and constitutes the gas-field or aerostat. The platform 2 or like support is suspended from the aerostat by suitable means and supports the aeronaut and working mechanisms. A column 3 extends through the gas-bag or aerostat and provides a vertical passage through which a column of air is forced when the aerodrome is in flight. The column 3 may be of textile or like material. A vertical shaft 4 is arranged within the column 3 and is provided at its upper end with a fan-wheel 5 and is adapted to be connected at its lower end with a suitable motor, whereby the fan-wheel may be rotated to force a column of air through the passage to insure either ascent or safe alighting of the machine. A vane 6 constitutes a rudder and enables the machine to be properly steered.

Any suitable motor or operating means may be provided for driving the fan-wheel 5 and propeller 7, the latter being arranged at the rear of the machine and fast upon a horizontal shaft 8. For convenience a drive-wheel 9 is illustrated and is in meshing relation with gear-wheels 10 and 11, the former being secured to the vertical shaft 4 and the latter fast upon the shaft 8. A crank-shaft 12, provided with pedals, has a sprocket-wheel 13, which is connected, by means of a drive-chain 14, with a sprocket-wheel 15 on the shaft 16, carrying the gear-wheel 9. The seat 17 for the aeronaut or operator is mounted upon a post in substantially the same manner as an ordinary bicycle-seat. It is proposed to interpose a clutch between the gear-wheels 10 and 11 and their respective shafts to admit of either or both of the fan-wheels 5 and 7 being thrown into or out of gear, as required.

An inclined plane 18 intersects the vertical passage inclosed by the column 3 and receives the pressure of the downwardly-rushing column of air, with the result that the same is utilized for propulsion of the aerodrome. The rear portion of the column 3 is open opposite to the plane 18, thereby permitting the escaping air to act on the vane or rudder 6, whereby the machine is made more responsive to the steering mechanism. The inclined plane 18 is preferably of textile material, and its end portions may be moved to admit of the column of air passing downward without practically meeting with any obstruction, thereby permitting the machine to rise vertically without having any forward movement imparted thereto.

The adjustment of the inclined plane 18 is illustrated in Fig. 4 of the drawings, where it will be seen that the said plane has been changed from its inclined position and both its upper and lower edges have been brought substantially in line with the vertical shaft 4, so that the air-currents passing down through the column 3 may pass said plane 18 and not effect any forward or backward movement of the aerodrome.

In order that advantage may be taken of favorable air-currents for propelling the machine, a sail 19 is mounted upon the platform or support 2 and when unfurled is supported by means of a mast 20 and boom 21 in the well-known manner. Block and tackle 22 coöperate with the sail to admit of unfurling the same. Springs 23, the tension of which is to normally wind or coil into spirals, are applied to a side of the sail to automatically furl or reef the same when required. When the operating-rope 22 is slackened, the springs 23 come into play and wrap the sail around the boom 21.

The displacement of the balloon, gas-bag, or aerostat 1 may be such as to equal the load of the aerodrome when equipped for flight, including aeronaut and appurtenances, or it may be slightly below the combined weight of the machine, in which case the fan-wheel 5 is utilized for ascent. When rising vertically, the inclined plane 18 is moved in the manner aforesaid to admit of the column of air passing downward through said vertical passage. After the requisite altitude has been reached the inclined plane 18 may be adjusted so that the descending column of air will impact thereagainst and being deflected rearwardly will assist in propelling the machine in the manner well understood.

Having thus described the invention, what is claimed as new is—

1. In an aerodrome the combination of a vertically-arranged hollow column or air-passage, means for creating a current of air therethrough, an inclined plane arranged to deflect said air laterally, and means for adjusting said plane, as and for the purpose set forth.

2. In an aerodrome the combination of a vertically-arranged hollow column or air-passage, means for creating a circulation of air therethrough, an adjustably-inclined plane arranged to deflect said currents of air rearwardly and provided with means whereby its end portions may be adjusted to admit of the air-currents traveling past it in a longitudinal direction.

3. In an aerodrome the combination of a vertically-arranged hollow column or air-passage provided with a rear opening means for creating currents of air through said column, and a screen normally arranged across said column in an inclined plane with its lower end normally adjacent the lower edge of said rear opening, and means whereby said screen may be adjusted with its lower edge away from the lower edge of the rear opening whereby the currents of air may pass the same in a longitudinal direction.

In testimony whereof I affix my signature in presence of two witnesses.

JOHN B. KRAMER. [L. S.]

Witnesses:

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