

W. SINCLAIR.
AERODROME.

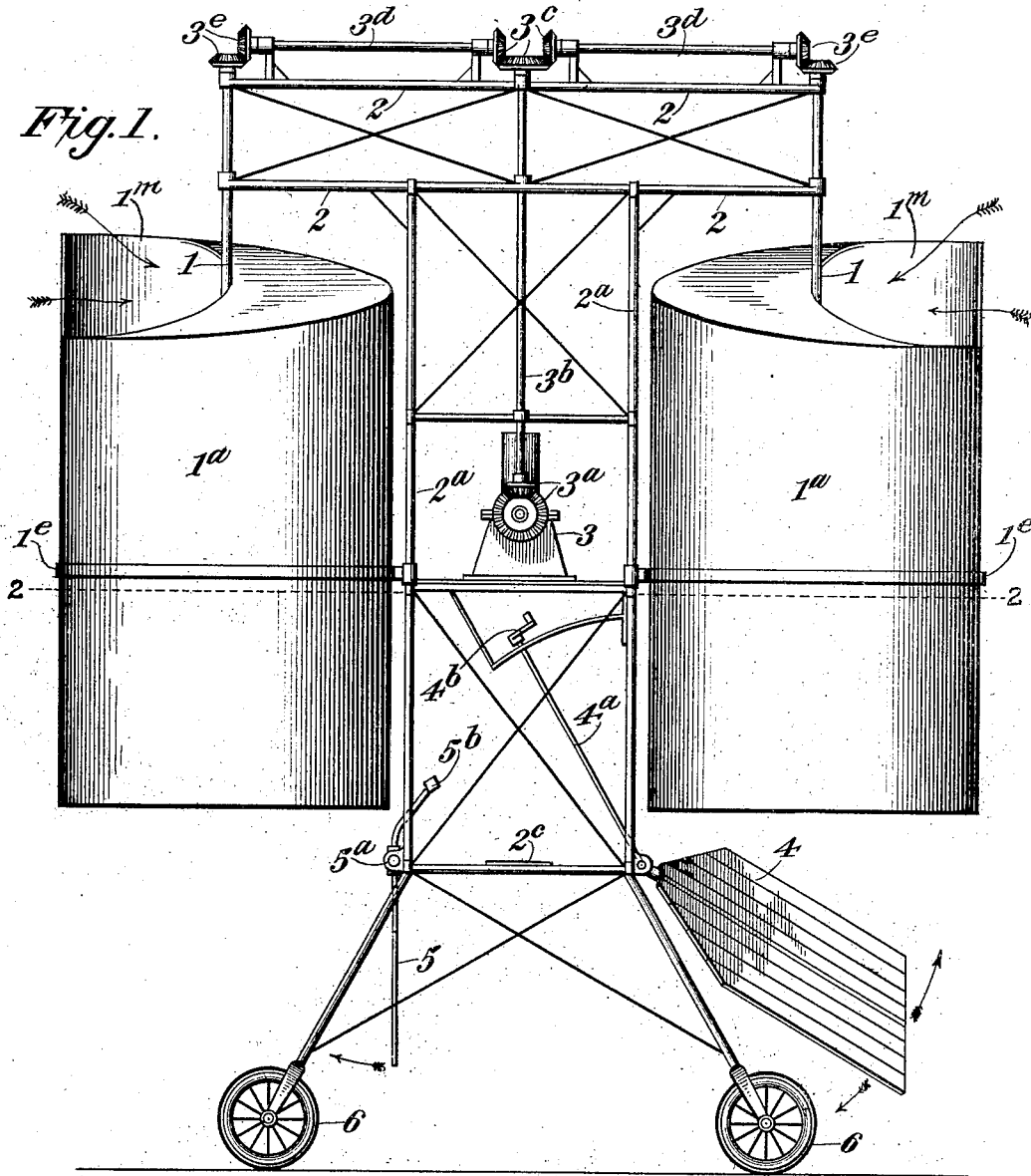
APPLICATION FILED OCT. 21, 1908.

931,966.

Patented Aug. 24, 1909.

3 SHEETS—SHEET 1.

Fig. 1.



Inventor:

William Sinclair

Witnesses:

M. E. Fowler
James D. Mansfield

By *Alexander Soull*
Attorneys

W. SINCLAIR.

AERODROME.

APPLICATION FILED OCT. 21, 1908.

931,966.

Patented Aug. 24, 1909.

3 SHEETS—SHEET 2.

Fig. 2.

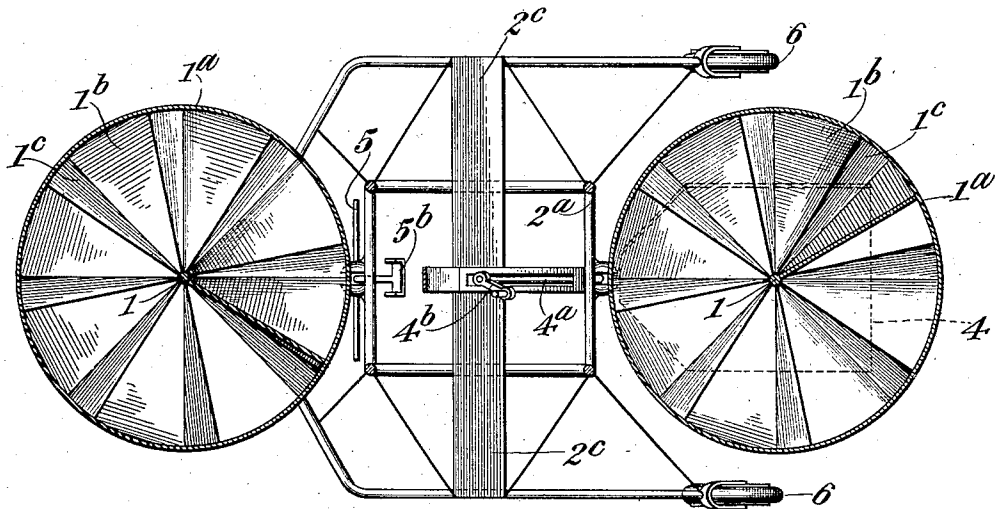
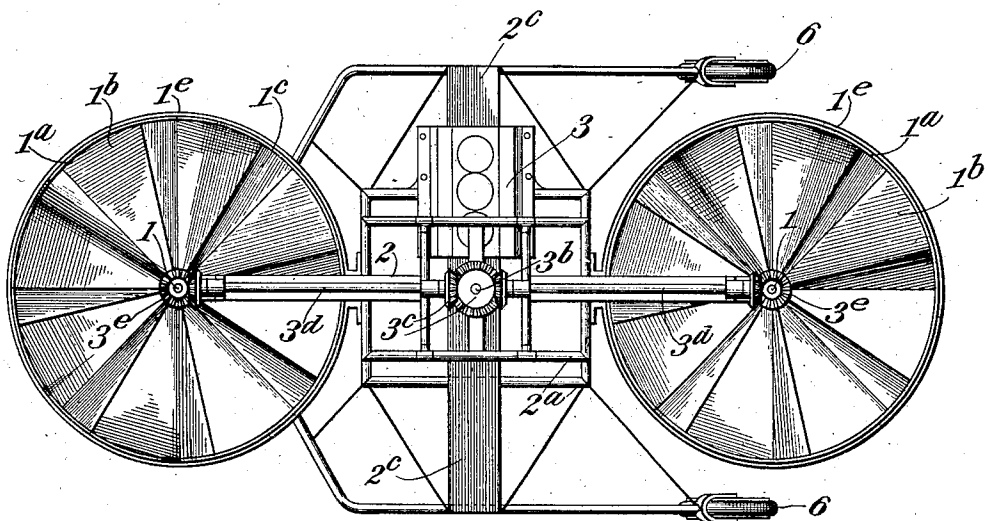


Fig. 3.



Inventor:

Witnesses

James F. Mansfield

William Sinclair

By *Alexander & Sowell*
Attorneys

931,966.

Patented Aug. 24, 1909.

3 SHEETS—SHEET 3.

Fig. 4.

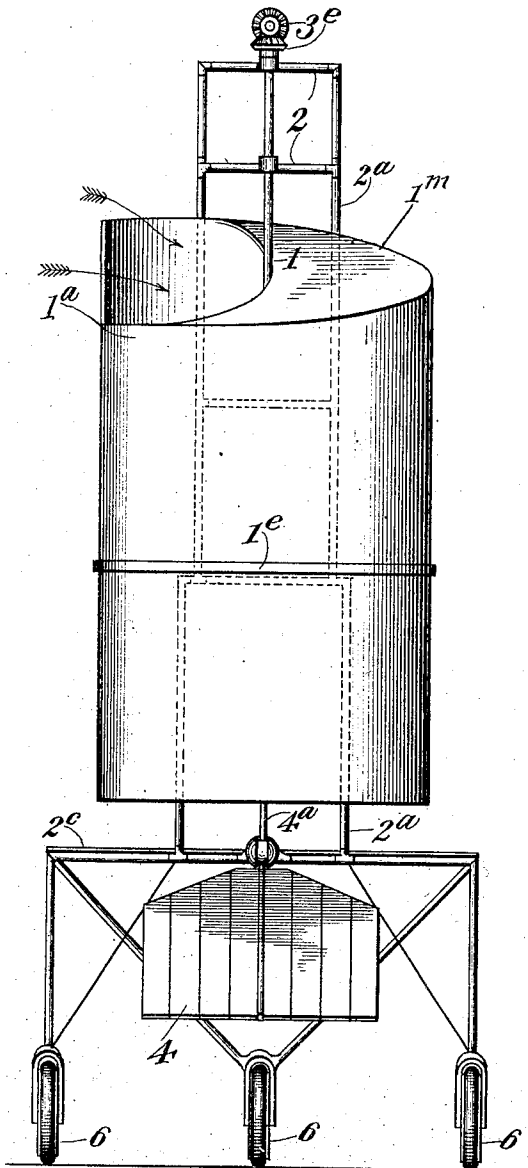
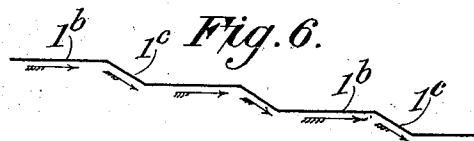
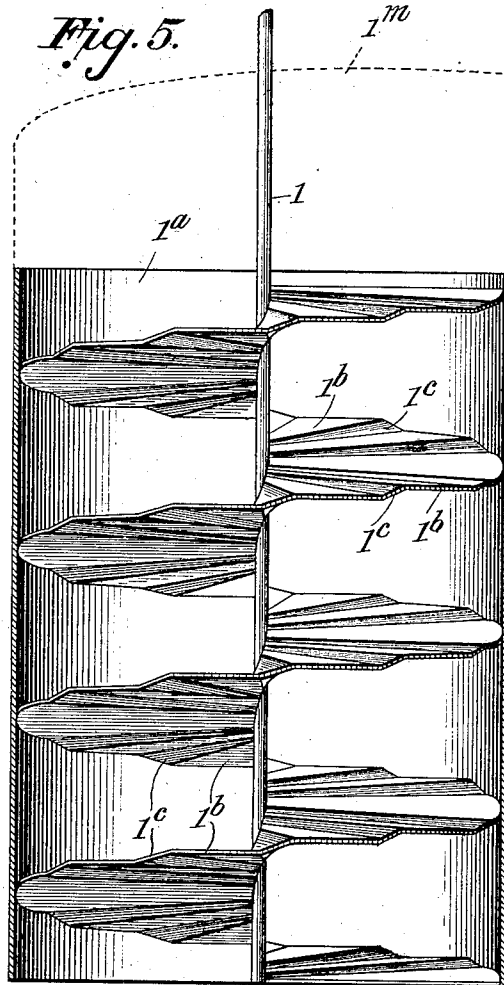


Fig. 5.



Inventor

William Sinclair

Witnesses

James P. Mansfield

By

Alexander Sowell

Attorney

UNITED STATES PATENT OFFICE.

WILLIAM SINCLAIR, OF SAN ANTONIO, TEXAS.

AERODROME.

931,966.

Specification of Letters Patent Patented Aug. 24, 1909.

Application filed October 21, 1908. Serial No. 458,874.

To all whom it may concern:

Be it known that I, WILLIAM SINCLAIR, of San Antonio, in the county of Bexar and State of Texas, have invented certain new and useful Improvements in Aerodromes; and I hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, which form part of this specification.

This invention is an improved aerodrome and its object is to provide a heavier than air flying machine capable of lifting itself and operator, also passengers and freight, and transporting the same through the air by its own motive power, and movable in any direction at the will of the operator. The lifting power is derived from large screw-propellers of novel construction, and the general structure and mode of operation of the aeromotor will be explained with reference to the accompanying drawings which graphically illustrate such a machine, and the essential features of the invention; but of course do not illustrate the proper relative dimensions of parts.

In said drawings—Figure 1 is a side view of the machine. Fig. 2 is a transverse section on line 2—2, Fig. 1. Fig. 3 is a top plan view, with hoods removed. Fig. 4 is an end elevation. Fig. 5 is an enlarged vertical section through one of the lifting propellers. Fig. 6 is a diagrammatical view illustrating the principle of construction of the lifting propellers.

The principal feature of the invention is the novel construction of the lifting propellers of which two are shown arranged side by side and parallel. Each propeller comprises a central shaft 1, a stepped spiral blade, and a cylindrical casing 1^a. The blade or spiral is composed of alternate rigidly disposed segmental-shaped flat portions 1^b and segmental-shaped inclined portions 1^c. The object of this construction is to produce a more efficient lifting action of the air upon the propellers, as at each of the angles formed at the junctions of the flat and inclined portions, the air will be diverted downwardly as indicated by the arrows in the diagrammatic Fig. 6; and the air will strike the underside of the inclines 1^c more forcefully and with greater lifting effect than if the spiral was one continuous incline. In this way the inclines 1^c can be made more steep than would be the case if the spiral was one continuous uniform incline; because in

such case the air becomes nothing more than a strong current rushing through the channel between the spirals of the propeller. Whereas with my construction this current of air is interrupted or changed at each incline, and greater lifting effect is thereby produced. The parts 1^b, 1^c, of the propeller form an interrupted or stepped spiral the inner edges of which are secured to the shaft 1, and the outer edges are fastened to the cylindric casing 1^a, so that the air can enter freely at one end of the casing and escape from the other end thereof, while it is kept from lateral diffusion. The propeller would operate without the cylindrical casing 1^a, but I prefer to use such casing so as to create a strong powerful air draft through the casing.

The shaft 1 of the propellers may be journaled in suitable bearings on the extremities of the upper part or head of the framing 2, and which framing may be substantially T-shaped and has a part 2^a depending between the adjacent propellers. The casings 1^a of the propellers may be loosely guided by rings 1^e fastened to the portion 2^a of the frame as indicated in the drawings. The framing should be constructed as light as possible consistent with necessary strength and may be of skeleton form and suitably braced so as to offer the least resistance to the air. I have not herein attempted to illustrate the exact details of the frame.

Upon portion 2^a of the frame may be mounted an explosive engine 3, the main shaft of which may be geared by bevel gears 3^a to a vertical shaft 3^b, which is in turn geared by beveled pinions 3^c to transverse shafts 3^d that in turn are geared to the upper ends of shafts 1 as indicated at 3^e in the drawings and so that the propellers can be driven by direct gearing from the engine shaft. The invention however is not restricted to the use of beveled gears for use in driving the propellers.

On the lower end of the frame 2^a is a platform 2^c where the operator and passengers or freight may be carried.

In order to steer and control the direction of the flight, rudders are used which are preferably arranged so that they can be projected into the currents of air issuing from the propeller casings. As shown in Fig. 1 a rudder 4 is connected to the lower end of the frame and can be swung beneath the right-hand propeller. This rudder should be made very light, and is so mounted

that it can be turned by any suitable means, such as rod 4^a and handle 4^b,—thus it may be shifted to any desired angle; the angle at which it is held in the current determining the direction of flight of the machine. Another rudder 5 can be pivoted on the lower end of the frame as at 5^a and may be operated by a hand or foot lever 5^b so as to be moved into the current of air issuing from the adjacent cylinder 1^a. The casings and lifting propellers are intended to revolve together. At sufficient speed of rotation of the propellers the machine would rise clear of the ground and the height to which it ascends can be controlled by regulating the speed of the propellers; its forward movements would be controlled by adjusting the propellers 4 and 5, which would cause it to tilt more or less. The center of gravity would be made so low that the machine would naturally tend to remain substantially upright.

The frame-work of the machine may be supported on wheels 6 as indicated in the drawings so that it can be easily transported when not flying.

If desired the cylinders may be provided with mouth-pieces or hoods 1^m, so as to catch the air and direct it into the spiral air channel in the cylinders and thus assist in creating a rapid forcible lifting current through the said channels.

Having described my invention what I claim as new and desire to secure by Letters Patent thereon is:

1. A spiral propeller or fan having its spiral formed of alternating flats and inclines, for the purpose specified.

2. A spiral propeller or fan having its spiral formed of alternating flats and inclines, and a cylindric casing inclosing said spiral.

3. In an aerodrome, a spiral propeller or fan having its spiral formed of alternating flats and inclines, and an open ended cylinder inclosing said spiral and rotatable therewith.

4. In an aerodrome the combination of a frame, a pair of propellers suspended from said frame side by side, each propeller having

a spiral formed of alternating flat and inclined sections, for the purpose specified. 50

5. In an aerodrome the combination of a frame, a pair of propellers suspended from said frame side by side, an open ended cylinder inclosing each propeller, each propeller having a spiral formed of alternating flat and inclined sections, for the purpose specified. 55

6. In an aerodrome the combination of a frame, a pair of propellers suspended from said frame side by side, an open ended cylinder inclosing each propeller and rotatable therewith, a motor on the frame for driving said propellers and rudders connected to the frame adjacent the lower ends of the cylinders. 60

7. In an aerodrome the combination of a frame, a pair of propellers suspended from said frame side by side, an open ended cylinder inclosing each propeller and rotatable therewith, each propeller having a spiral formed of alternating flat and inclined sections, a motor on the frame for driving said propellers and rudders connected to the frame adjacent the lower ends of the cylinders. 70

8. A spiral propeller or fan having its spiral formed of alternating flats and inclines, and a cylindric casing inclosing said spiral, and a mouth-piece or hood on the upper end of the casing adapted to direct air therinto. 75

9. In an aerodrome, a rotatable cylinder, provided with an internal spiral lifting propeller, and a hood adapted to catch and direct air into the receiving end of the cylinder. 80

10. In an aerodrome the combination of a frame, a pair of lifting propellers connected therewith, each comprising a spiral, an inclosing cylinder, and a hood on one end of the cylinder adapted to catch and direct air to the spiral, substantially as described. 85

In testimony that I claim the foregoing as my own, I affix my signature in presence of two witnesses. 90

WILLIAM SINCLAIR.

Witnesses:

BENJAMIN F. SHERMAN,
CHAS. W. MCCONNAUGHY.