J. J. PENNINGTON.

FLYING-MACHINE.

No. 194,841. Patented Sept. 4, 1877.

fig. 1.

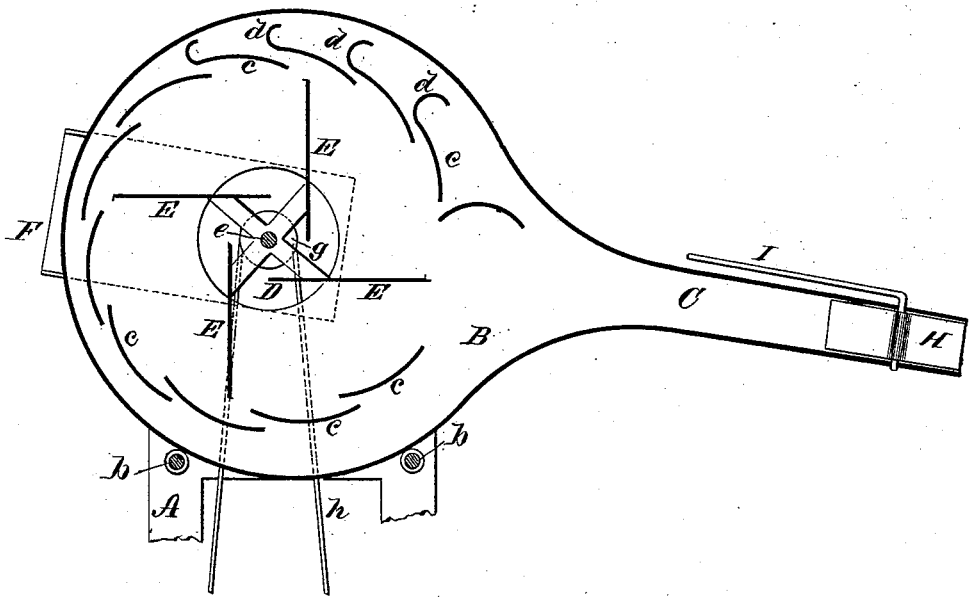
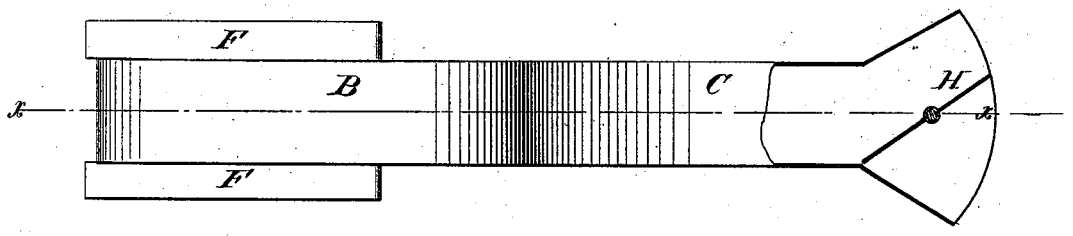


fig. 2.



WITNESSES:

Edgard Tate

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UNITED STATES PATENT OFFICE.

JAMES J. PENNINGTON, OF HENRYVILLE, TENNESSEE.

IMPROVEMENT IN FLYING-MACHINES.

Specification forming part of Letters Patent No. **194,841**, dated September 4, 1877; application filed July 23, 1877.

To all whom it may concern:

Be it known that I, JAMES J. PENNINGTON, of Henryville, in the county of Lawrence and State of Tennessee, have invented a new and Improved Flying-Machine, of which the following is a specification:

Figure 1 is a longitudinal section of my improvement. Fig. 2 is a plan view with a part broken away to show internal parts.

Similar letters of reference indicate corresponding parts.

My invention relates to machines for navigating the air; and it consists in a fan of peculiar construction, which takes air in from the front of the air-ship and forces it out at the rear.

The object of my invention is to provide apparatus by which the air may be navigated with facility and safety.

In the drawing, A is a frame, which is supported by a balloon, or by means of sails of suitable dimensions; and B is a fan-case, mounted in a horizontal position on cross-bars *b* in the frame A.

Curved deflectors *c* are placed in the fan-case for increasing the effectiveness of the fan by keeping the air from the center of the fan-case. They also conduct and force it toward the nozzle of the fan-case. These curved deflectors overlap each other, and those in the upper portion of the case have formed on them the curved part *d*, which curves in the opposite direction from the deflector *c*.

D is a fan, having its wings E inclined or set tangential to a circle described from the center of its shaft *e*. The shaft *e* is journaled in conduits F, that are attached to the sides of the fan-casing, and cover the air-ingress apertures F in the sides of the fan-casing B. The fan-shaft *e* is provided with a pulley, *g*, which receives a belt, *h*, by which it is driven. The conduits F and the discharge-nozzle C are arranged in the same direct line, so that drawing air into the case is effective in propelling as well as the ejection of air through the discharge-nozzle. The end of the discharge-nozzle C is fan-shaped, and in it a gate or deflector, H, is pivoted and a lever, I, is attached to the said gate, by which it may be turned so as to direct the air to either side of the fan-shaped end of the nozzle. The fan D may be driven by any convenient motor which is sufficiently compact, light, and powerful.

The apparatus is suspended by a balloon or upon a rope tramway, and is propelled by drawing the air into the conduits F and driving it out of the discharge-nozzle C. When the apparatus is suspended by a balloon it is raised or lowered by auxiliary fans, and when it is desired to turn the apparatus in a horizontal plane, the gate H is turned so as to direct the air to one side or the other, as may be required.

To steer the air-ship vertically, and to assist in propulsion, I employ a fan having feathering-blades, which are turned on their axis, as the fan is rotated, by a central cam. This cam, being movable, permits of reversing the action of the fan. By means of my improvement air-vessels are rendered as manageable as those upon water, and all the advantages of aerial navigation are secured.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination, in a flying-machine or aerial navigating apparatus, of a movable casing, B, having air-conduits F, and an air-discharge or blast-tube, C, with a revolving fan, E, and supporting-frame A, as and for the purpose set forth.

2. The gate H, in combination with the discharge-nozzle C, having the fan-shaped end, substantially as shown and described.

JAMES JACKSON PENNINGTON.

Witnesses:

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