(No Model.) 3 Sheets—Sheet 1.

E. B. SOWERS.

FLYING MACHINE.

No. 504,631. Patented Sept. 5, 1893.

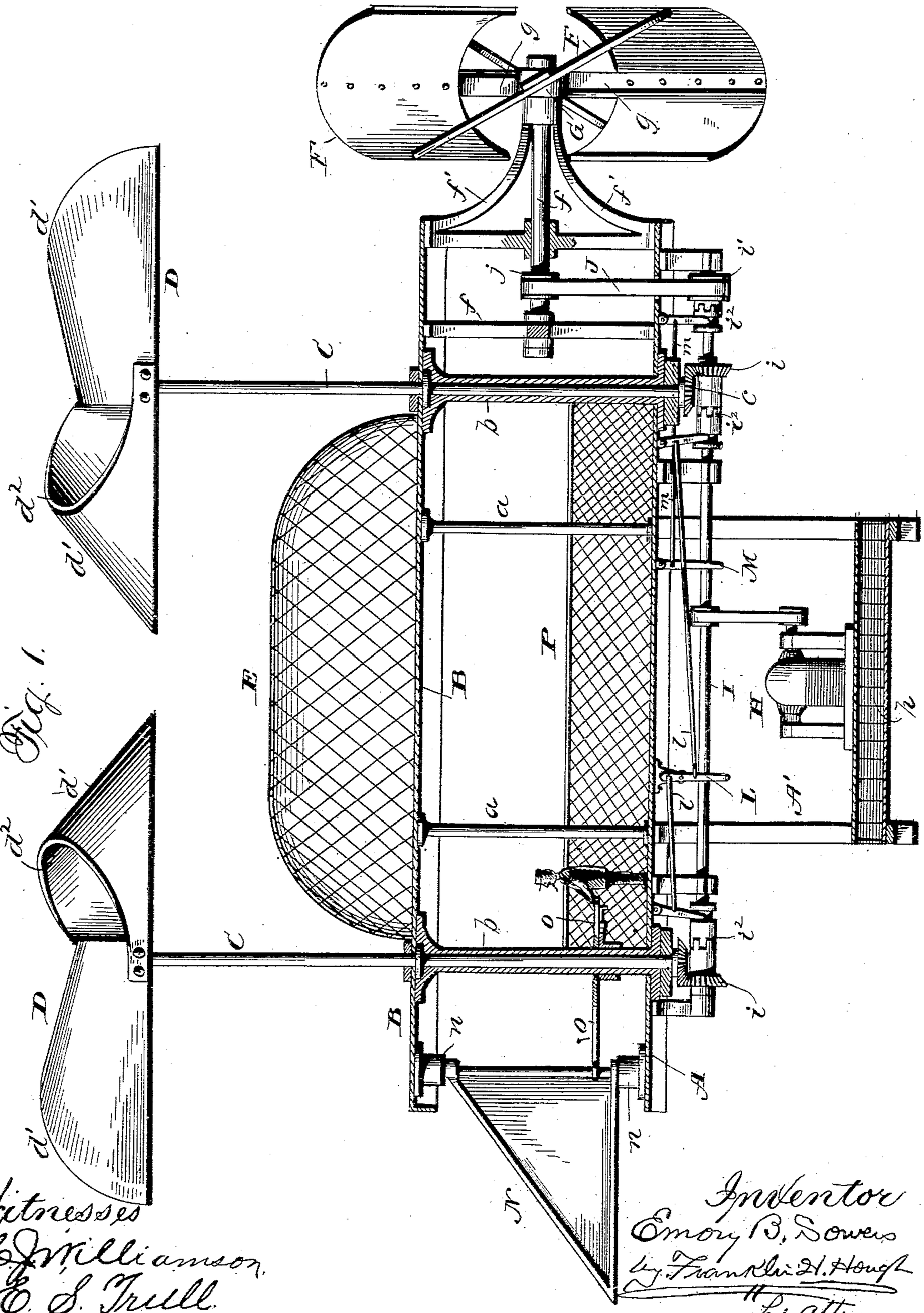

Fig. 1.

Witnesses
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by Franklin H. Hough
his atty.

(No Model.) 3 Sheets—Sheet 2.

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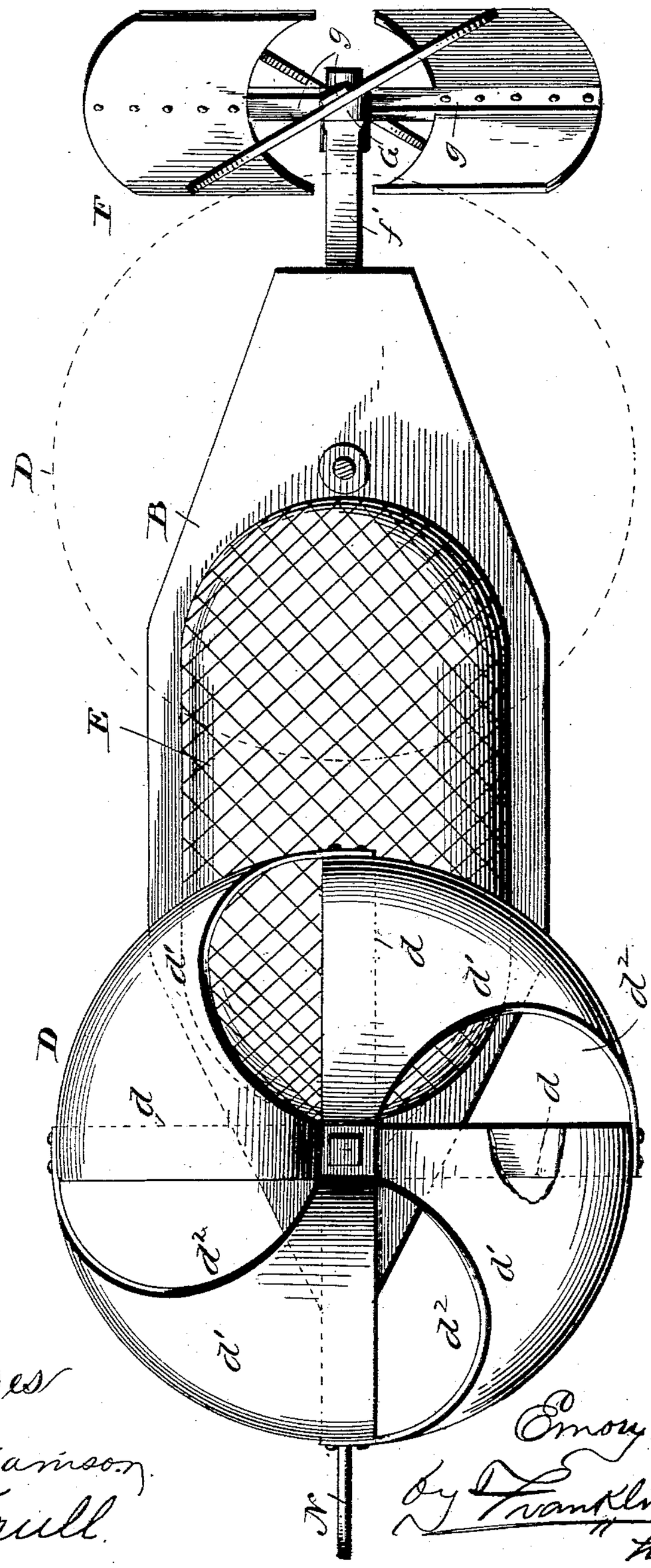

Fig. 2.

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(No Model.)

3 Sheets—Sheet 3.

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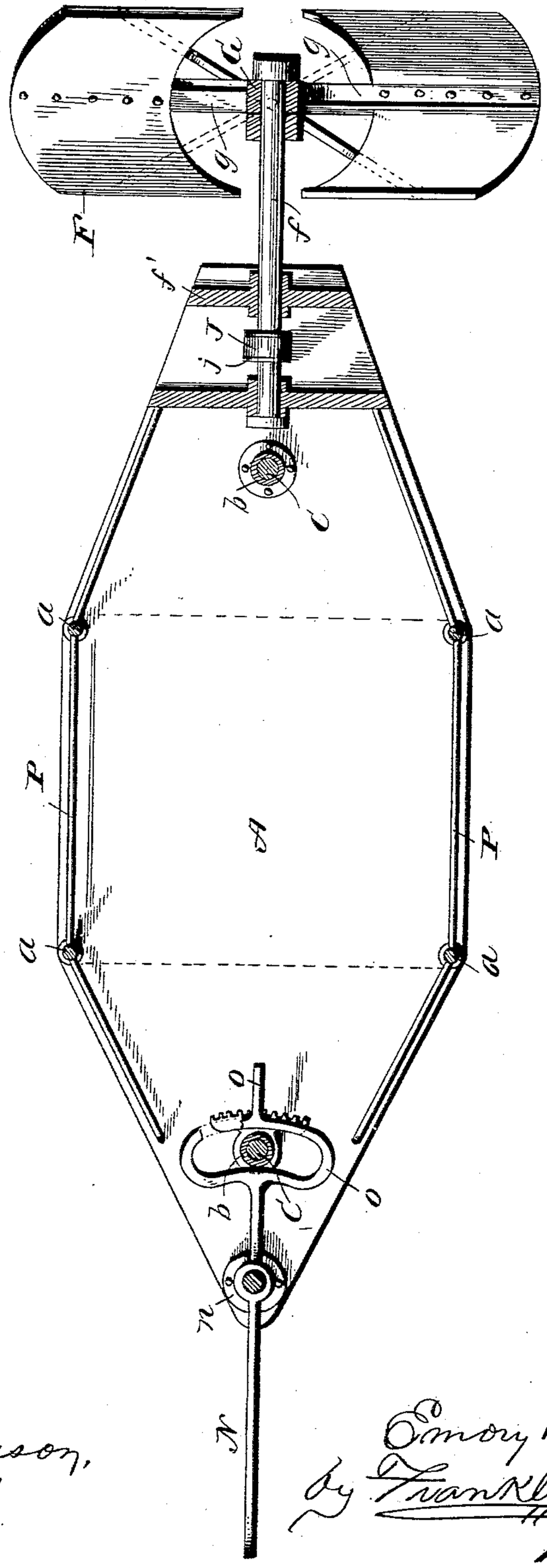
Fig. 3.



Witnesses
C. J. Williamson,
E. L. Trull.

Inventor
Emory B. Sowers,
by Franklin H. Hough,
his Attorney.

UNITED STATES PATENT OFFICE.

EMORY B. SOWERS, OF WESTVILLE, OHIO.

FLYING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 504,631, dated September 5, 1893.

Application filed April 28, 1893. Serial No. 472,241. (No model.)

To all whom it may concern:

Be it known that I, EMORY B. SOWERS, a citizen of the United States, residing at Westville, in the county of Champaign and State of Ohio, have invented certain new and useful Improvements in Flying-Machines; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

My invention relates to mechanism for aerial navigation, and aims to produce an improved and efficient apparatus for this purpose capable of easy vertical movement and propulsion horizontally in a definite course, and having such an arrangement as to admit of a light and strong construction, and one possessing safety and convenience.

To these ends said invention consists in the air ship having the construction and combination of parts hereinafter specified and illustrated in the annexed drawings, in which—

Figure 1. is a vertical longitudinal section through my ship, with parts in elevation; Fig. 2. a plan view with one of the wheels for producing vertical movement removed, and Fig. 3. a horizontal section.

In the drawings A designates the floor and B the roof of the car or passenger holding portion of my ship, of similar outline, and preferably pointed at both ends, and constructed of any material having both lightness and strength.

Posts or uprights *a a* connect these at their edges, and near each end at the transverse center is a hollow column *b*, which journals a vertical shaft C whose upper end is extended well above the roof B, where it carries a wheel D, and whose lower end extends a little below the floor A where it carries a bevel gear *c*. The columns *b*, *b*, while serving to connect the floor and roof thus journal and serve as guards for the shafts.

While the flotation of the car is assured by a balloon E in the form of a gas-filled elongated tank or bag, the vertical movement of the car is positively effected by the rotation of the wheels D. The latter consists each of several thin, or sheet metal pieces attached to radial arms *d* so as to have portions *d'* inclined with reference to a horizontal plane. When rotated in one direction the air passing through openings d^2 will act on the inner surface of the portions *d'* and produce a lifting action.

Two wheels D are provided to insure steadiness of ascent while to cause the ascent to be directly upward, the wheels are made and rotated reverse to each other, so that any horizontal tendency produced by one will be counteracted by the other.

The car is propelled horizontally by means of a screw-form wheel F at the stern mounted on a shaft *f* journaled in a suitable frame *f'*. The wheel F consists of four inclined straight wings, attached to arms *g* radiating from a hub, G. The wheels D, D and F, I drive from a single motor, which is preferably an electric motor H placed in a compartment A' suspended from the floor A, and receiving its energy from a storage battery *h* supported on a false bottom of said compartment. This location of the motor and battery places the center of gravity of the ship quite low and thus insures its equilibrium. The motor is used to drive a longitudinally extending shaft I hung in bearings depended from the car floor A, and carrying two bevel gears *i* and *i* one for each gear *c* of the lifting wheels and a band wheel *i'* connected by a belt J with a band wheel *j* on the shaft *f*. Since the wheels D, D will ordinarily not be operated, simultaneously with the wheel F, I mount the wheels *i*, *i* and *i'* loosely upon the shaft I and provide a clutch i^2 for each whereby connection with and disconnection from the shaft may be effected. As both wheels D, D are in use or out of use at the same time, I preferably connect the bevel wheel clutches to a single clutch shifting lever L by rods *l l* so that both clutches may be simultaneously operated. The clutch for wheel *i'* has its one shifting lever M to which it is connected by rod *m*. Preferably I locate the levers L, M, and the switch for controlling the motor so as to be accessible to persons in the compartment A', but obviously they may be placed for use from the car above.

The steering of the ship is effected by means of a pivoted sail or rudder N journaled in boxes *n*, *n* at the front end of the car, and

having a handle or arm O of such length as to permit its easy manipulation. Any ordinary means may be provided for locating or holding the rudder at any desired position.

The car may be housed in or merely provided as shown with a rail and netting guard P. around its sides.

It is deemed important that the wheels D be arranged at the front and rear of the machine in the longitudinal central line thereof as shown and that they be located entirely above the balloon E whereby they are in position to serve with better effect and the movement of the machine will not interfere with the operation thereof nor produce counter-currents as is liable to occur where the wheels are arranged beneath the machine.

I claim—

1. The combination with the car and its balloon, of the lifting wheels arranged one near each end of the car and wholly above the balloon, substantially as specified.

2. The combination with the car and its balloon, of the lifting wheels arranged one at the front and the other at the rear in the line of the longitudinal center of the machine and wholly above the balloon on independent shafts mounted for rotation in opposite directions, substantially as specified.

3. The combination with the car having a compartment suspended from the floor thereof and having a false bottom, of a motor supported upon said false bottom, the balloon, the propelling wheel, the lifting wheels located wholly above the balloon, and connections from the motor to the shafts of said wheels whereby they may be operated together or separately, as set forth.

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

EMORY B. SOWERS.

Witnesses:

A. J. BROYLES,

ANTRIM BERRY.