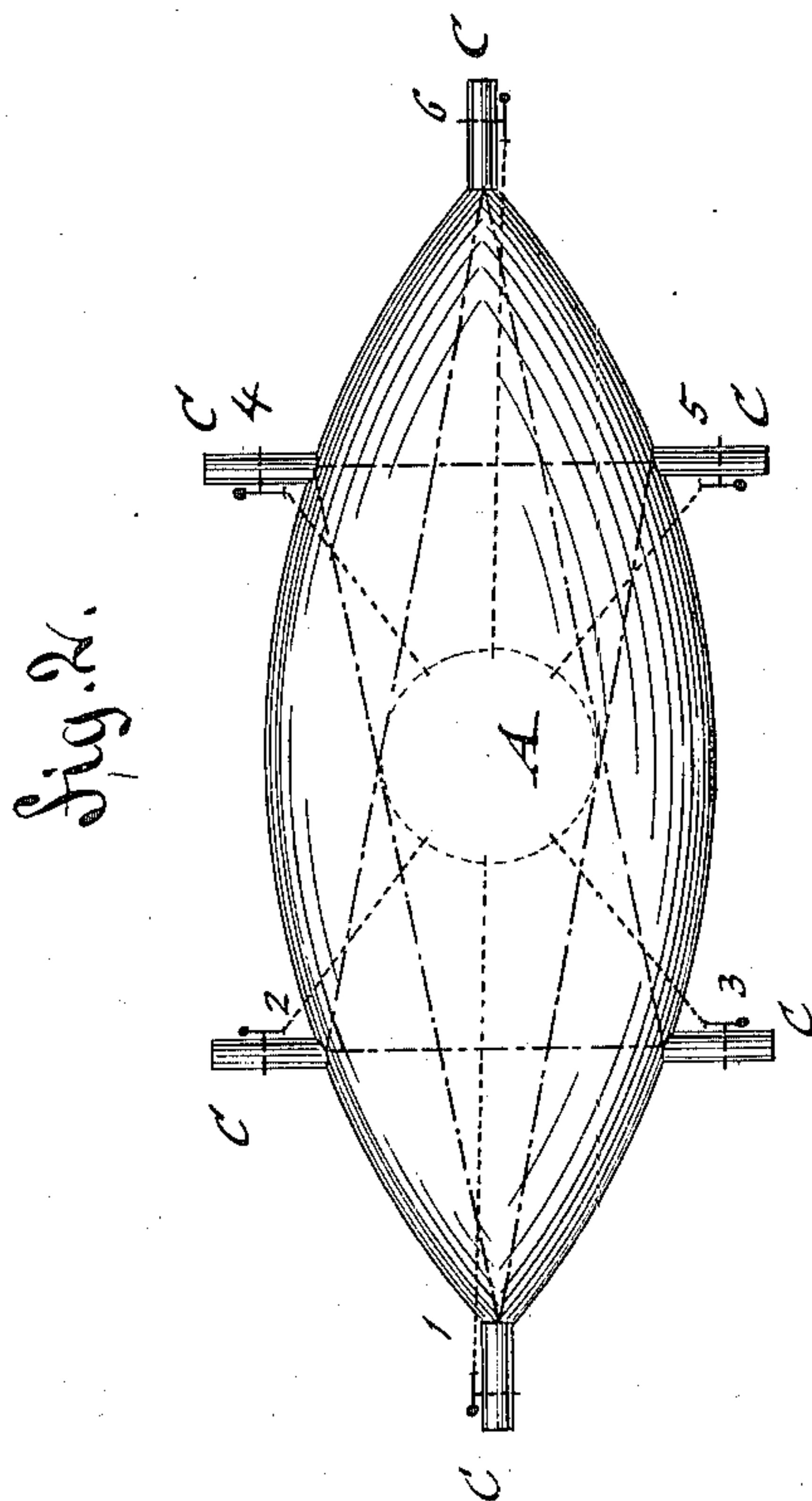
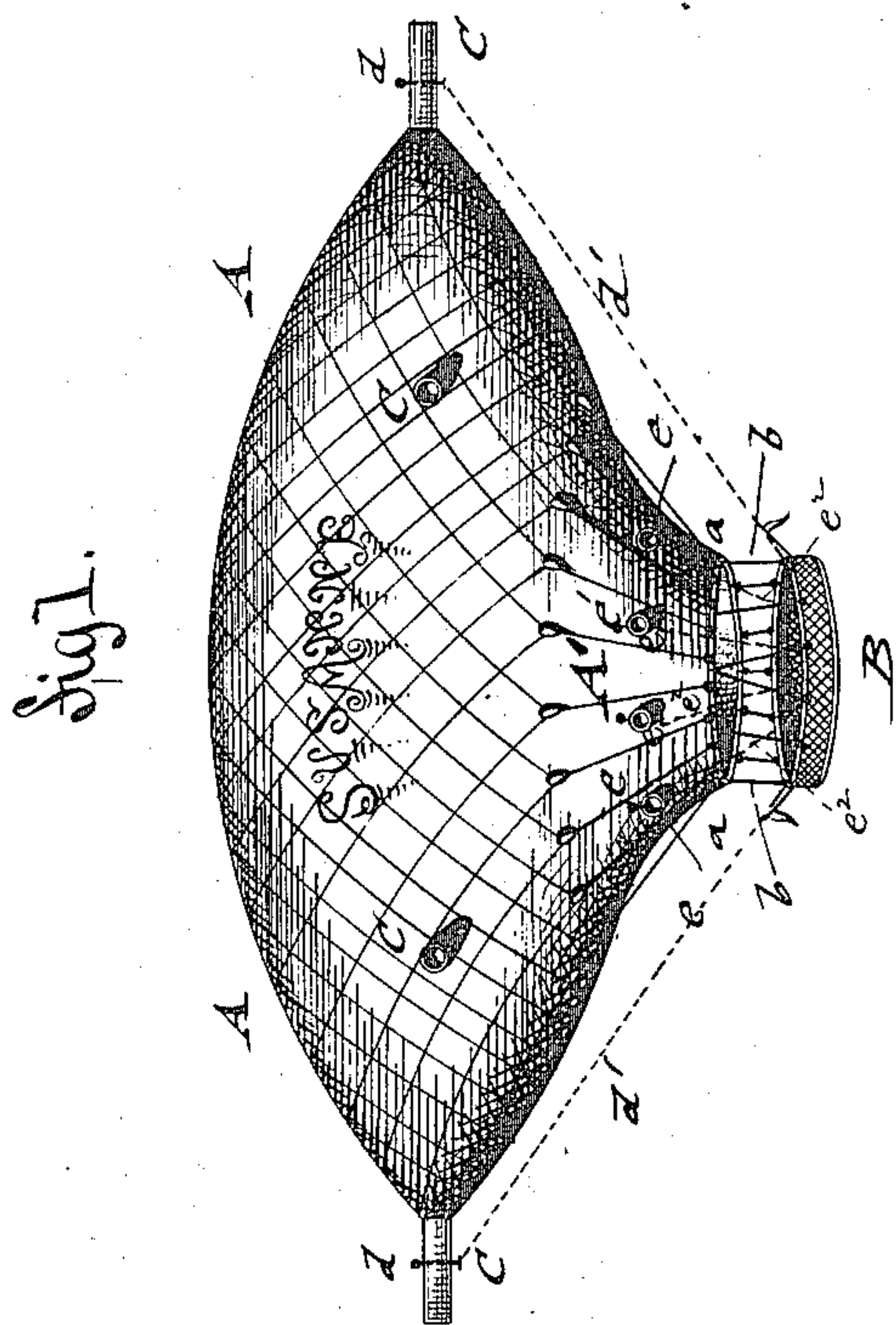
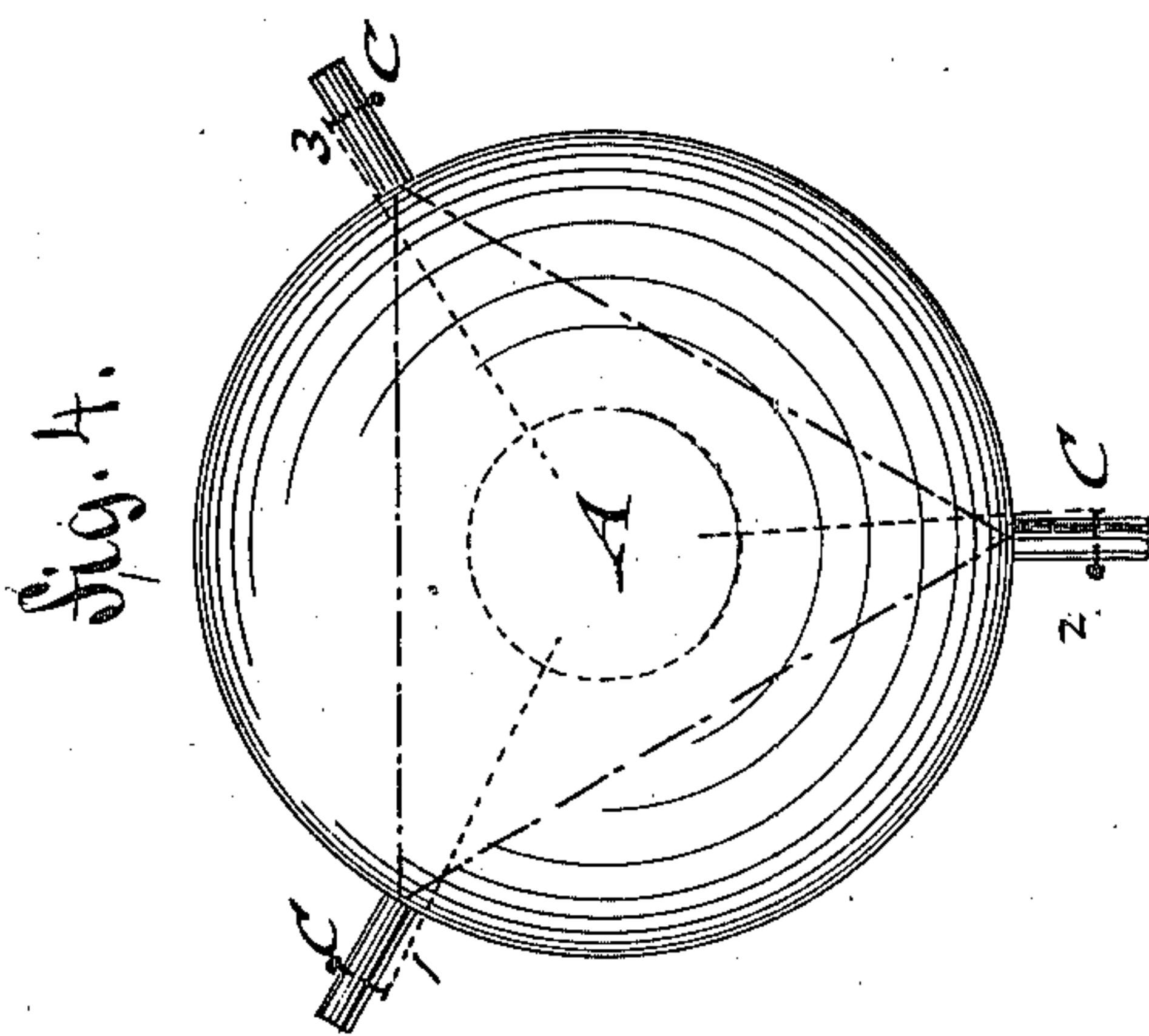
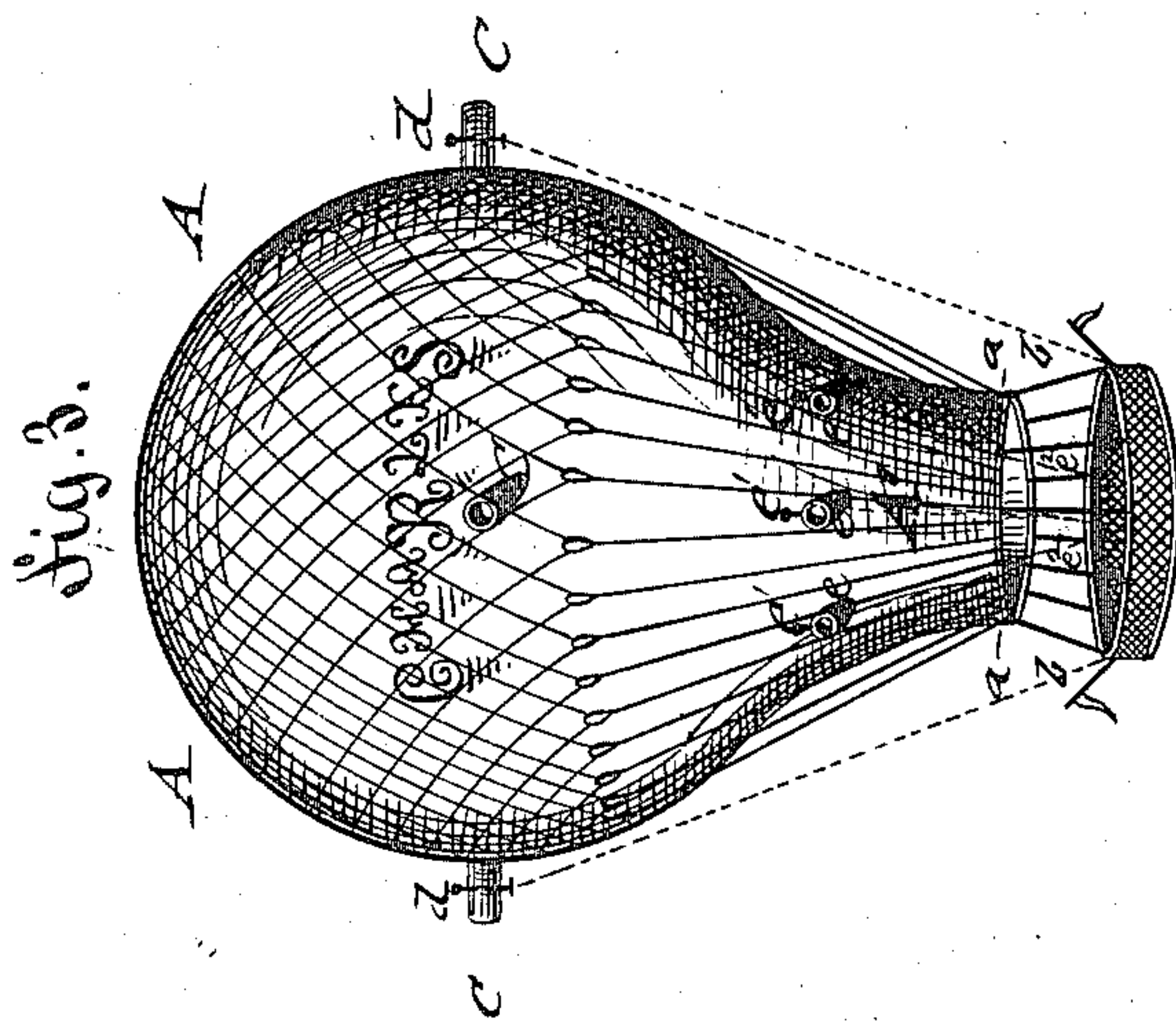


(No Model.)

C. P. FEST.
AIR SHIP.

No. 295,157.

Patented Mar. 18, 1884.



WITNESSES:

Fre. W. Rosenbaum.
Carl Karp

INVENTOR

Charles P. Fest
BY *Paul Goepfer*
ATTORNEY

UNITED STATES PATENT OFFICE.

CHARLES P. FEST, OF PHILADELPHIA, PENNSYLVANIA.

AIR-SHIP.

SPECIFICATION forming part of Letters Patent No. 295,157, dated March 18, 1884.

Application filed January 27, 1883. (No model.)

To all whom it may concern:

Be it known that I, CHARLES P. FEST, of Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Air-Ships, of which the following is a specification.

This invention has reference to certain improvements in the air-ship for which Letters Patent of the United States No. 263,397, dated August 29, 1882, were granted to me, the improvements being designed with a view to accomplish the more effective steering of the balloon.

In the accompanying drawings, Figures 1 and 2 represent, respectively, a side elevation and a plan of an air-ship with my improved steering device, the body of the air-ship being made of elongated shape; and Figs. 3 and 4 are a side view and a plan of this improved air-ship having a round body.

Similar letters of reference indicate corresponding parts.

A in the drawings represents the round or elongated body of my improved air-ship, which is made of a light supporting-frame of corresponding shape, and of a light covering fabric that is rendered fire and water proof by treatment with chemical substances suitable for this purpose. The lower part of the body A is provided with a conically-tapering downwardly-extending portion, A', within which the means by which the air in the body A' is heated are arranged.

The car B is suspended by cords b from the stiffening-frame a, at the lower end of the conical portion A', while to the stiffening-frame a the strands of the covering-netting of the body A are applied.

At the middle part of the body A are arranged horizontal projecting pipes C C, of which, preferably, six or more are used when the body is made of elongated shape, as in Fig. 2, the pipes being arranged one at each end and two at each side, while when a round form of body A is used, three or more projecting pipes, C, are arranged, which extend radially at an equal distance from each other, as shown in Fig. 4. The pipes C C are provided with valves d, of any suitable construction, which are opened or closed at will

by cords d' from the car B, so that any one or more of the pipes C can be opened or closed as required for steering the balloon. The highly-heated air at the interior of the balloon escapes with considerable force through the open pipes C to the outside. In ascending or descending, the pipes C 1 4 5, Fig. 2, are opened, by which the heated air can pass off evenly at three points to the outside, while it also exerts outward pressure on the upper part of the air-ship, in the direction of its longitudinal axis, while a forward motion to the right or left is imparted by the opening of pipe C4 or C5. As soon as the balloon is in the desired direction, the pipe just closed is opened again, so that air can again pass to the outside through pipes C 1 4 5, Fig. 2. If the air-ship is desired to be propelled in the opposite direction, pipes 2 3 6 are opened, and the pipes 1 4 5 closed, the steering to either side being accomplished by the closing of pipe 2 or 3, as required.

In the air-ship shown in Figs. 3 and 4 the pipes C 1 2 3 are open when the balloon is filled with hot air. In ascending or descending, one of the pipes is closed, and the heated air allowed to escape through the remaining pipes to the outside, whereby the air-ship is propelled in the direction of the closed pipe, and steered to either side by closing one of these pipes until the balloon has received the proper direction.

The lower conically-tapering part, A', of the air-ship is provided with pipes e, provided with valves e', connected by actuating-cords e' with the car, so that a greater or lesser quantity of air is admitted to the inside of the balloon, and cause thereby the descending or ascending of the same, as has been fully set forth in the Letters Patent No. 263,397 heretofore mentioned.

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

1. An air-ship having the lower part of its body conically-tapered toward its bottom, and provided above the tapered part with horizontally-projecting valved pipes for the discharge and regulation of heated air, whereby the air-ship may be propelled and steered in either direction, substantially as described.
2. An air-ship the body of which is provid-

ed with valved horizontally-projecting discharge-pipes, and with means for regulating the valves, and at its lower part with a downwardly - extending conically - tapering part,
5 having valved air-inlet openings, substantially as specified.

In testimony that I claim the foregoing as

my invention I have signed my name in presence of two subscribing witnesses.

CHARLES P. FEST.

Witnesses:

WILH. KÖHNCKE,
JOSEPH BOUCHER.