

(No Model.)

C. P. FEST.  
BALLOON.

No. 255,963.

Patented Apr. 4, 1882.

Fig 1.

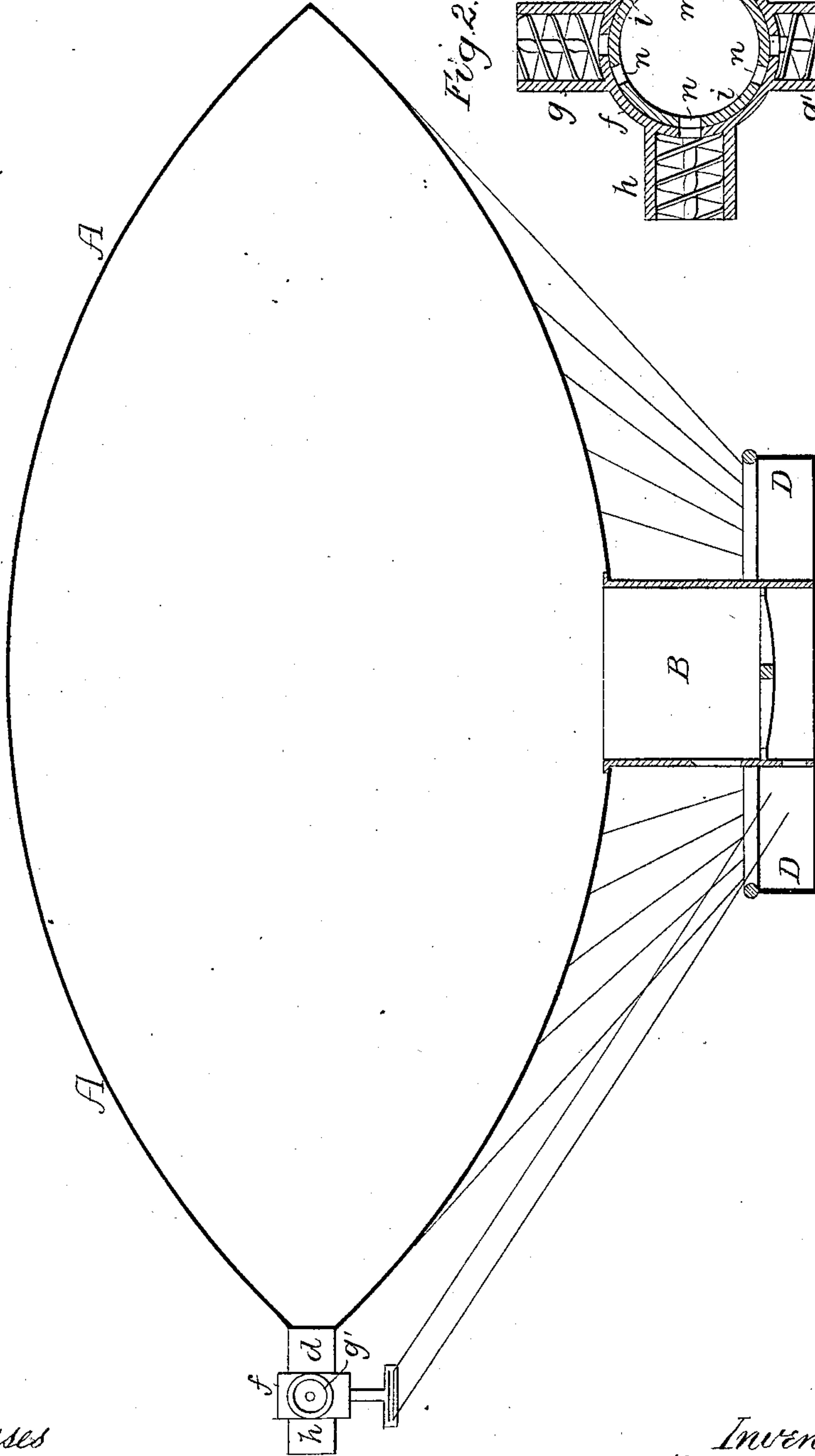
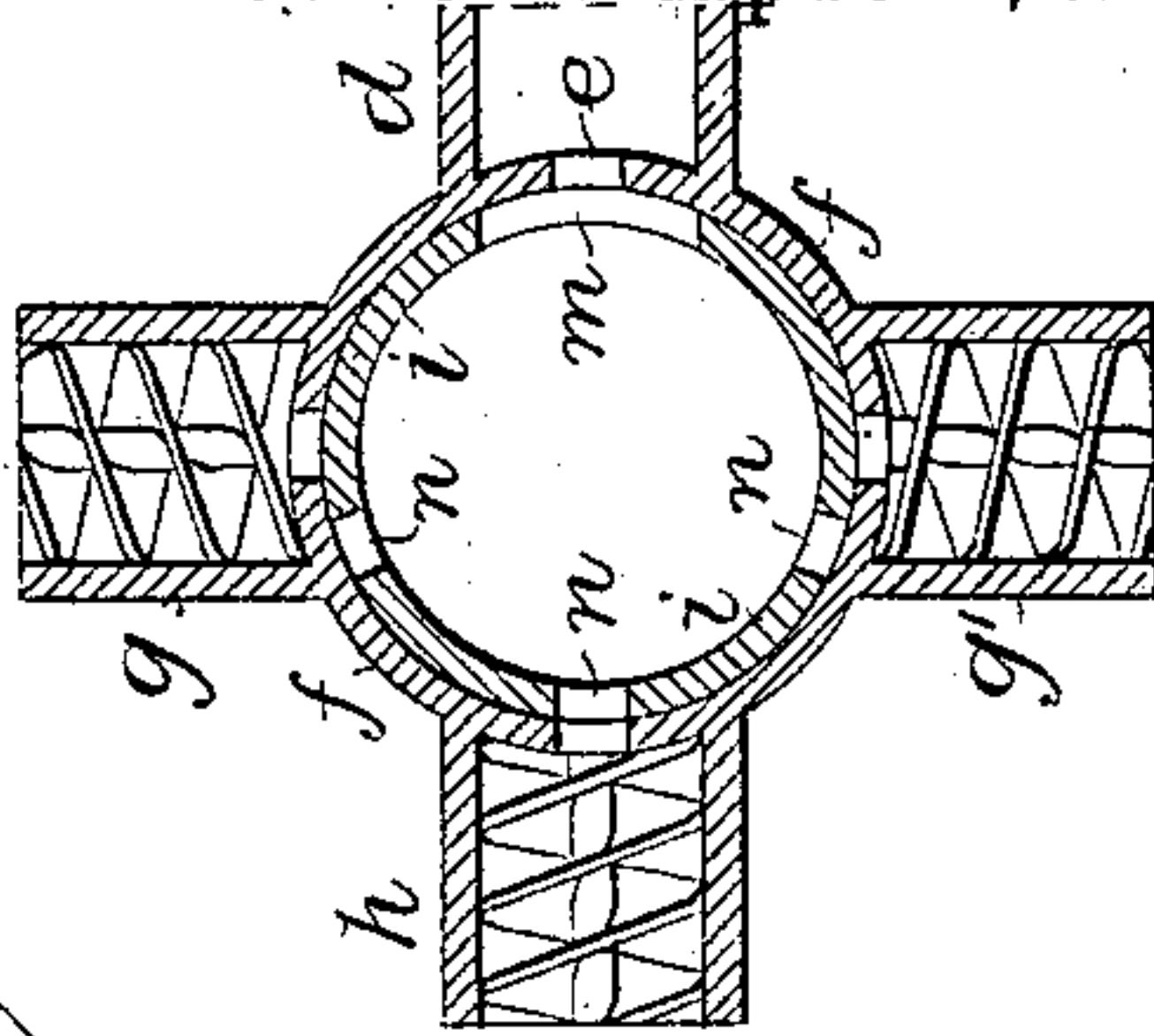


Fig 2.



Witnesses  
Harry Drury  
David S. Williams

Inventor:  
Charles P. Fest  
by his Attorneys  
Howman and Jones

# UNITED STATES PATENT OFFICE.

CHARLES P. FEST, OF PHILADELPHIA, PENNSYLVANIA.

## BALLOON.

SPECIFICATION forming part of Letters Patent No. 255,963, dated April 4, 1882.

Application filed October 10, 1881. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES P. FEST, a citizen of the United States, residing in Philadelphia, Pennsylvania, have invented certain  
5 Improvements in Balloons, of which the following is a specification.

My invention relates to certain improvements in that class of balloons in which the gas or air vessel is elongated, the object of my  
10 invention being to provide such a balloon with means whereby better provision is made than in ordinary balloons for directing the course of the same.

In the accompanying drawings, Figure 1 is a  
15 longitudinal section of my improved balloon; and Fig. 2, a sectional plan view, on a larger scale, of the steering apparatus.

The inflated vessel consists of a bag or receptacle, A, of any of the usual materials, and  
20 of elongated form, the vessel being pointed at both ends.

Suspended from the vessel A is a furnace, B, and gallery or basket D for the passengers, the furnace being adapted for the production  
25 of hot air or any buoyant gas, which has direct access to the interior of the vessel A. The rear end of the vessel A is furnished with a short projecting pipe, *d*, which communicates freely with the interior of the vessel, and also  
30 communicates through an opening, *e*, with the interior of a cylindrical valve-chest, *f*, which also communicates through suitable openings with three branches, *g*, *g'*, and *h*, the passages  
35 *g g'* extending laterally from opposite sides of the chest, and the branch *h* extending from the rear of the same.

Within the chest is a valve, *i*, having an elongated opening, *m*, and three ports, *n*, so that by a proper adjustment of the valve air

or gas from the interior of the vessel A may  
40 be permitted to escape through either of the lateral branches *g* or *g'* of the chest *f*, or through the rear branch, *h*, of the same; or the air or gas may be cut off altogether from the chest, if desired, by turning the valve *i* to such an  
45 extent that the opening *m* fails to coincide with the opening *e*.

When the air or gas is permitted to escape from the rear branch, *h*, it has a certain propelling effect on the balloon, and when it is  
50 permitted to escape from either of the lateral branches *g g'* the effect will be to move the rear end or stern of the vessel A in the opposite direction, so that by a proper adjustment of the valve *f* the head of the vessel may be  
55 kept in any direction which the course of the wind may suggest as the most appropriate.

In order to increase the effect of the escaping air or gas, I cause it to take a spiral course through the branch from which it escapes, a  
60 spiral groove being formed in said branch, as shown in Fig. 2, so that the volume of air or gas in its discharge has an effect somewhat similar to that which would result if the branch contained a rotating screw-propeller.  
65

I claim as my invention—

The within-described steering device for aerial vessels, the said device comprising a valve, *i*, and a valve-chest having discharge  
70 branches with spiral grooves, as set forth.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

CHARLES P. FEST.

Witnesses:

HARRY DRURY,  
HARRY SMITH.