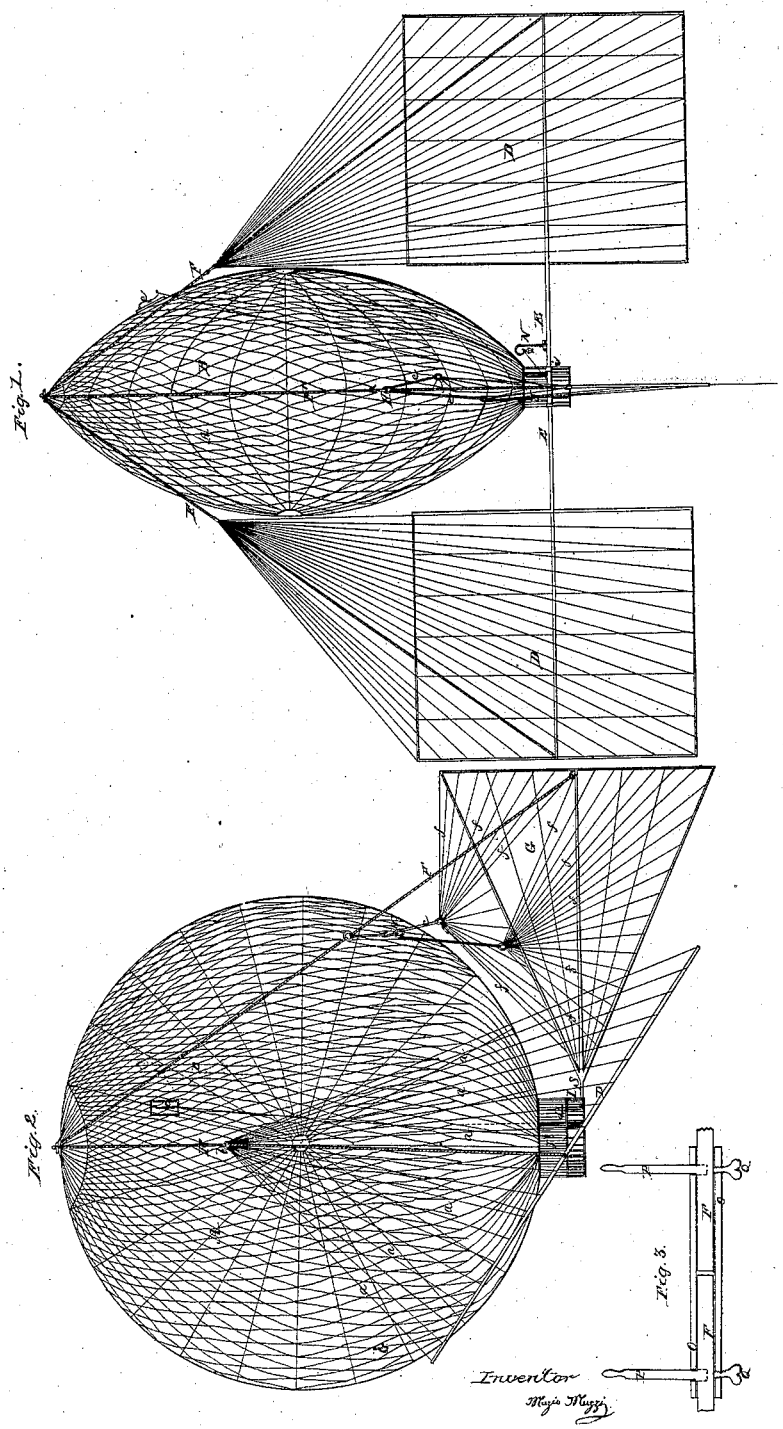
M. Muzzi,

Flying Machine,

No. 3,799. Patented Oct. 16, 1844.



UNITED STATES PATENT OFFICE.

MUZIO MUZZI, OF BOLOGNA, ITALY.

MANNER OF DIRECTING THE COURSE OF AEROSTATS OR BALLOONS OF VARIOUS FORMS.

Specification of Letters Patent No. 3,799, dated October 16, 1844.

To all whom it may concern:

Be it known that I, MUZIO MUZZI, of Bologna, in Italy, but at present residing in the city of New York, N. Y., have invented a new and useful improvement in the manner of directing the course of aerostats or ballons of various forms whether raised by means of hydrogen gas or of rarefied air; and I do hereby declare that the following is a full and exact description thereof.

The balloon which I undertake to direct by means of my apparatus, I prefer to make of a lenticular form, and I have so represented it in the accompanying drawings. In order to direct the balloon in a horizontal line, or in a line differing in any desired degree from the horizontal, I decompose its ascending or descending forces by means of inclined planes which turn upon suitable shafts, or axles, under the care of the aeronaut. By the resistance of the atmosphere against these planes, either in the ascending, or the descending of the balloon, such ascending, or descending motion may be resolved into a horizontal one. The ascending or descending forces may be governed in the ordinary way, namely, by the discharge of ballast, thereby lessening the specific gravity of the balloon, which will, of course, give it an ascending force, or by letting out gas which will increase its specific gravity, and give it a descending force; or, in the case of the employment of one on the mongolfier principle, the specific gravity may be increased, or diminished, by increasing, or diminishing the rarity of the contained air. The planes which I use for the resolving the ascending or descending forces into a progressive one, more or less inclined to the horizontal by the aid of the atmospheric resistance, may be made quadrangular. The shafts to which they are attached cross the car, where they are received within a tube in which they can turn to the necessary extent. The planes are each capable of turning independently of the other, their respective shafts meeting in the center of the tube, but not being united. They are turned by means of a handle attached to each of them, and passing through a notch in the tube; they may be fixed in place by means of set screws. At right angles to the shafts that carry the inclined planes I affix another shaft, which may also be received within a tube, or be otherwise duly confined in place, and allowed to revolve to a given extent, like the shafts first named, the motion being, in like manner, governed by a handle. At its outer end, this shaft carries a triangular plane which is to operate as a rudder; this plane may be made to stand vertically, or be inclined on either side, by means of the handle attached to its shaft.

In the accompanying drawings, Figure 1, represents a lenticular balloon, its shortest diameter being presented to the eye; it also shows the two quadrangular, inclined planes attached to their shafts. Fig. 2, represents the balloon at right angles to the position in which it is seen in Fig. 1, and shows the triangular plane, or rudder, as attached to its shaft.

A, is the body of the balloon. B, a network which serves to sustain the car, and other parts of the apparatus.

C, is a valve of the ordinary kind, for the escape of gas.

D, D, are the quadrangular inclined planes, which are attached to the axes, or shafts, E, E.

In Fig. 3, I have shown the manner in which the shafts, E, may be arranged and actuated, this figure representing the inner ends of said shafts, and the tube in which their inner ends are contained, in section, and drawn on an enlarged scale. E, E, are the shafts, and O, a tube, crossing, and made fast to, the car; each of these shafts is shown as terminating in the middle of the tube. P, P, are handles attached to the shafts, and passing through notches in the tube, O, for moving the planes to their proper angle.

Q, Q, are tightening screws by which the shafts may be permanently held.

The angle which I have found most advantageous for the planes D, D, is that of 35° with the horizon. The length of the planes may be equal to that of the longest diameter of a lenticular balloon, and their width equal to that of the shortest; this, however, will be varied according to the nature and size of the balloon.

F, F, are ropes which extend from the apex of the balloon to the outer ends of the shafts E, E, serving to sustain them; lines, *a*, *a*, attached to the edges of the planes, pass through a ring at *b*, sustaining said edges, and allowing the planes to have their inclinations varied.

G, is the triangular plane, or rudder, the shaft S, of which may enter a tube like that shown in Fig. 3, and it is to be furnished with a handle similarly arranged for turning it, so as to give it any desired inclination; the outer end of its shaft is supported by a rope F′. At H, there is a pulley suspended from the rope, F′, through which is passed a rope *e*, *e*, from the ends of which proceed the cords *f*, *f*, that sustain the edges of the rudder, while they admit of its motion.

I, is the car for the aeronauts.

J, is a stove which may be used to rarefy the air when a mongolfier is employed.

Having thus, fully described the manner in which I construct and operate my balloon, or aerostat, I will remark that I am aware that inclined planes have been applied to aerial machines for the purpose of enabling them to ascend by the resistance of the air; it having been attempted to propel such machines by flapping instruments, called wings, by revolving screws, by paddles, and by other similar means. I am also aware that machines thus attempted to be propelled, have been furnished with jointed inclined planes, for the purpose of guiding them, in the manner of the tail of a bird; it is to be understood, therefore, that I do not claim as of my invention the mere application of inclined planes for the decomposition, or resolution, of the ascending and descending forces; but

What I do claim as of my invention, and desire to secure by Letters Patent, is—

The combination of inclined planes, substantially as herein described, with an aerial machine, or balloon, which is made to ascend and descend by a change in its specific gravity, as set forth; the ascending and descending forces decomposed, or neutralized, and resolved into a horizontal one, or rather into a progressive line more or less incline to the horizon, by the aid of atmospheric resistance, whereby the whole machine is impelled forward, and the direction changed at pleasure, by altering the inclination of the planes; the same being effected substantially as herein described; but it is to be distinctly understood that I do not limit my claim to the number, or to the form, of the inclined planes, or to the particular manner of operating them, or to the manner of obtaining an ascending and descendng force, so long as the same is effected by a change of the specific gravity of the balloon, which, it will be evident, may be effected by the generation of hydrogen gas, as well as by its discharge.

MUZIO MUZZI.

Witnesses:
THOS. P. JONES,
L. MARTINI.