

Dec. 29, 1925.

1,567,670

G. F. MYERS
FLYING MACHINE
Original Filed Dec. 1, 1916

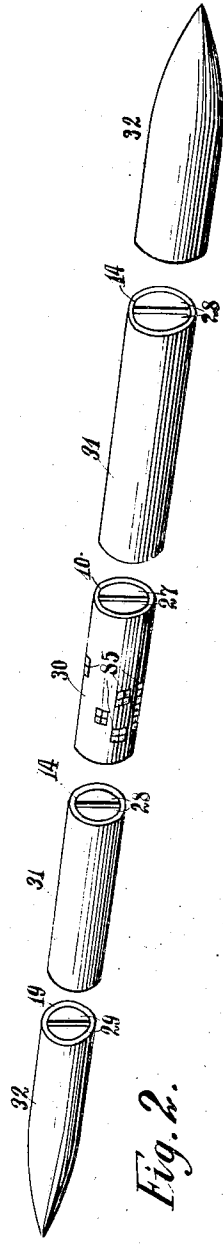


Fig. 2.

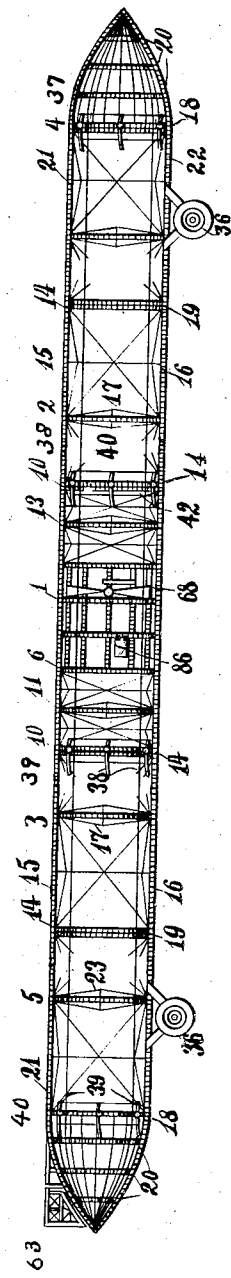


Fig. 1.

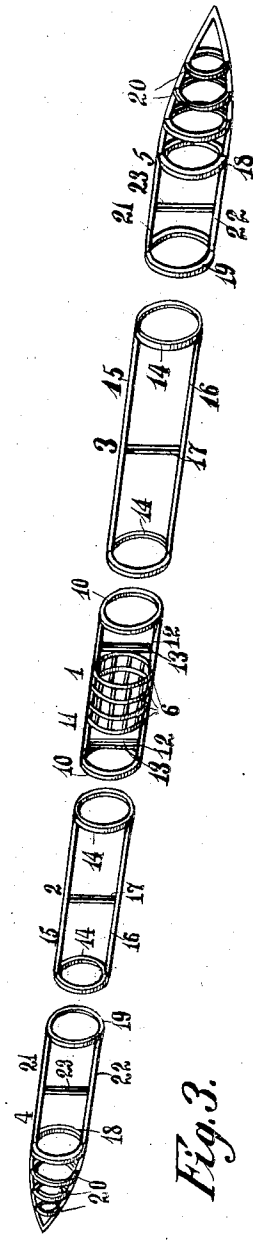


Fig. 3.

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UNITED STATES PATENT OFFICE.

GEORGE FRANCIS MYERS, OF NEW YORK, N. Y.

FLYING MACHINE.

Application filed December 1, 1916, Serial No. 134,547. Renewed May 4, 1922. Serial No. 558,427.

To all whom it may concern:

Be it known that I, GEORGE FRANCIS MYERS, a citizen of the United States, and residing at New York city, in the county of New York and State of New York, have invented a new and useful Flying Machine, of which the following is a specification.

This invention relates to vehicles and more particularly to flying vehicles which embody a gas field, although some of its features are also applicable to other types of flying machines.

One of the problems in connection with comparatively large flying machines has been the difficulty of transporting or storing the same when not in use. This is overcome in the present invention by constructing the body of the machine in sections which may be readily dismembered and each of which constitutes a substantially complete unit containing part of the frame, and when used in connection with a gas field frequent inflations and deflations of the sectional gas field will be thereby avoided.

My invention has the further objects to provide armament for the machine, and to improve the machine in various other respects, the novel features of construction, arrangement and construction of parts being hereinafter more fully described and pointed out in the claims.

This application is a renewal of an application filed December 1, 1916, and serially numbered 134,547, and the contents thereof were disclosed in an application filed July 17, 1909, and serially numbered 508,208; it is also a continuation in part of a companion application filed November 20, 1916, and serially numbered 132,356.

In the accompanying drawings, Figure 1 is a longitudinal cross section of a body or car embodying one of the forms of the invention, and Fig. 2 is a perspective view of the body cut into sections. Fig. 3, is a similar view of the body with its covering removed.

Similar characters of reference indicate corresponding parts throughout the several views.

The machine is constructed and operated substantially and preferably as follows:

In its general organization, the body of this machine consists of or includes or comprises—that is to say that besides other things the machine has—a frame which is divided transversely at different points of

its length, and forming together a plurality of body units which may be connected for using the machine or separated into short lengths for ease of transportation on board of cars, boats or otherwise, or for storage when not in use.

As shown in the drawings, the frame comprises a central section 1 adapted to support the power and propelling mechanism of the machine and also the mechanism whereby the operator controls the machine; front and rear intermediate sections 2, 3, and front and rear end sections 4, 5.

The central frame section is so constructed that a space or chamber is formed within the central part of the same for the reception of the operator and the power mechanism while its opposite ends are constructed to receive gas holder sections. The central frame section comprises a plurality of central annular members or rings 6 arranged axially in line and connected at their peripheries by a plurality of longitudinal girders or beams which are arranged in a circumferential row, transverse cross pieces 13 connecting opposite sides of these rings and extending across the space within the same, two end rings 10 separated a considerable distance from the central rings 6 but arranged axially in line therewith, and longitudinal beams or girders connecting the central parts of the end rings 10 with the central rings 6 and each comprising top and bottom chords 11, 12 and a post or column 13 connecting the top and bottom chords between the respective end ring 10 and the central rings.

Each of the intermediate frame sections comprises two annular members or rings 14 arranged at opposite ends thereof, a longitudinal beam or girder connected centrally and diametrically with the companion rings and consisting of upper and lower chords 15, 16 and an upright post 17 connecting the chords between the companion rings.

Each of the end sections of the frame is so constructed that it has an inner substantially cylindrical part and an outer conical nose and comprises two rings 18, 19 arranged axially in line and at the outer and inner ends of the cylindrical portion, a plurality of rings 20 of gradually smaller diameter arranged axially in line with the cylindrical portion and beyond the outer ring 18 thereof and an upright beam or girder

connecting said rings centrally or midway of opposite sides thereof and comprising upper and lower cords 21, 22 connected with the several rings of this section, and an upright post or column 23 which connects the chords between the rings 18, 19 of the cylindrical portion of this frame.

The several frame sections are adapted to be placed axially in line and the rings on the opposing ends of adjacent sections are adapted to be detachably connected by bolts or otherwise, so that the frame can be converted into a single unitary structure which is rigid as a whole or the several sections may be detached for convenience in storing or transporting the same when not in use.

For the purpose of rendering the frame work of the flying machine very light and strong, the same is made essentially in the form of built up or lattice work and each of the rings, chords and posts is constructed in the form of a truss.

For convenience in transportation, the gas field holder or bag of the machine is also constructed in sections, the same consisting of two pairs of comparatively short central sections, the pairs being arranged in front and in rear of the power compartment of the central frame section and the members of each pair being arranged in the spaces on opposite sides of the respective ends of the frame of this section, two pairs of comparatively long intermediate sections the members of each pair being arranged in the spaces on opposite sides of an intermediate frame section, and two pairs of end sections, the members of each last mentioned pair being arranged in the spaces on opposite sides of an end section of the frame.

These balloon sections may if desired be secured to the respective frame sections by means of lacing or any other suitable fastening which permits of readily connecting and disconnecting these balloon sections and frame sections.

The covering as a whole is of substantially the same general shape as the exterior of the balloon and frame sections around which the covering is placed, and the same is divided into sections which are practically co-extensive with the length of the balloon and frame sections enclosed thereby, so as to permit the body of the flying machine to be divided into complete units each of which comprises an assembled frame section, balloon section and cover section, thereby permitting the machine to be knocked down or dismembered without requiring deflation of the gas field, whereby restoration of the flying machine for use after dismembering the same is facilitated.

Each of these cover sections is preferably wrapped circumferentially around its companion gas bag section and frame section and its ends united by a longitudinal joint

which is arranged on the underside of these sections. Each cover section is provided at one end with a continuation or flap which is adapted to overlap the opposing end of an adjacent cover section and to be connected therewith by lacing or otherwise, so as to produce a comparatively smooth outer surface on the body of the machine and offer a minimum head resistance. This lap of each cover section is preferably arranged at the rear end thereof and overlaps the front end of the next following cover section thereby deflecting the wind from one cover section to another and avoiding the presentation of shoulders to the wind which otherwise would be the case if the flaps were arranged on the front ends of the cover sections and lap forwardly over the cover sections in front of the same.

In order to protect the underside of the body of the machine against undue wear when alighting on water or ground, this side of the body is protected by a longitudinal wearing strip of canvas or other suitable material which may be secured by any suitable means lengthwise to the underside of the body throughout the length of the several sections.

For convenience in starting the machine, and also protecting the same when alighting on the ground the same is provided on its underside with wheels 36 which are mounted on the front and rear sections of the frame, the connection between these wheels and the frame being effected by any suitable means.

If it is desired to start the machine from or alight on water, the bottom of the body may be made water proof so that the same will float on the water.

37 represents a set of front planes, which are arranged on the front part of the body, 38 a set of front-intermediate planes arranged in rear of the front planes but in advance of the power compartment which is located centrally in the body, 40 a set of rear planes arranged on the rear part of the body and 39 a set of rear-intermediate planes which are arranged in front of the rear planes but in rear of the power compartment. Each of these sets of planes consist of two tiers arranged on laterally opposite sides of the body each tier containing a plurality of plane sections, three of such sections being shown in each tier although a greater or lesser number may be employed. The planes of both tiers of the same set which are horizontally in line and the corresponding sections of both tiers forming pairs are secured to horizontal shafts which extend transversely through the body and are journaled in suitable bearings on the frame so that the same turn vertically in a plane lengthwise of the body. The planes of one set are caused

to turn together by connecting the same on opposite sides of their shafts by means of an upright connecting rod or link.

The mechanism for adjusting and controlling these planes is so constructed that the several sets of planes may be adjusted simultaneously or the front and rear planes may be adjusted independently of the front and rear intermediate planes.

The said intermediate planes are so connected that they are compelled to move together and may be adjusted independently of the front and rear planes.

Upper and lower lines, cords or wires are connected respectively with the upper and lower arms or rock levers secured to the lowermost shafts of the front-intermediate and rear-intermediate planes thereby compelling these two sets of planes to always move together while being adjusted.

The shafts which support the several sets of planes may be journaled in bearings arranged between opposite ends of a frame section, as in the case of the front and rear planes, or these shafts may be journaled in bearings which are arranged in the joints between adjacent frame sections, as is the case of the shafts and bearings of the front-intermediate and rear-intermediate planes. The advantage of arranging the plane shafts and their bearings in the joints between the sections of the frame is that it permits of more readily detaching the planes and their shafts from the frame when the flying machine is dismembered for storage or transportation.

63 represents the rudder which is pivoted vertically on the upper side of the rear conical part of the rear body section, so as to be capable of turning horizontally. This rudder may be operated by any suitable means but by means of a hand lever arranged in the power compartment adjacent to the left hand side of the operator's seat and connected above and below its pivot by means of lines, cords or wires with opposite arms of a transverse lever secured to the rudder.

The forward movement of the flying machine is produced by means of two propellers 68 which are arranged on opposite sides of the central or power section of the machine and each having its shaft journaled so as to turn on a horizontal axis lengthwise of the machine in bearings arranged at the outer end of a bracket projecting laterally from the central section of the frame.

Inasmuch as the operator's compartment is so far in rear of the front end of the machine that it would be impracticable to observe the course of the machine by looking through the front end of the same, means as windows and one or more periscopes or mirrors are provided whereby the operator can look sidewise as well as up-

wardly and downwardly through the body of the machine, and also make observation ahead of the course of the machine.

The operation of this machine is as follows:

The engine having been started so as to rotate the propellers oppositely in the proper direction, the machine will be pushed forward along the ground on its wheels or along the surface of the water, as the case may be, until such a speed has been reached that the reaction of the air under the planes will lift the machine into the air. If it is desired to go to a higher altitude, the front planes are operated by a right hand lever so that the inclination of these planes is increased and the machine ascends further. If it is desired to go into a horizontal position, the rear planes may be tilted at an angle to the horizontal position by means of a left hand lever. While thus adjusting the front and rear planes, the front-intermediate and rear-intermediate planes may be kept at a constant angle, if desired.

If the operator desires to look ahead, he adjusts one or the other of the periscopes into the angular position which enables him by looking laterally to see reflected in the glass or periscope the lay of the land on either or both sides of the machine and in front thereof, this being of vital importance during the starting and stopping states of the machine. When up in the air the periscopes are not required and during this time the operator may observe his position by looking either upwardly or downwardly through the windows or observation windows or openings in the body of the car which contain either glass panes or a covering of celluloid as shown at 85 in Fig. 2.

As my invention is in some of its aspects generic I do not limit myself to the particular construction shown and described, but also contemplate the employment of such equivalents for the several elements as fairly fall within the scope of the claims.

Therefore it will be understood that I may make various changes in the form, proportion, size and detail of the several structures shown, the number and position of certain elements used, the kind of lifting medium employed in the gas holder, as well as the character of the motive power employed, without departing from the spirit of the invention.

I claim:

1. In combination with a flying machine, of a gas holder, and a car mounted in the center of the said gas holder, the said car having two complete and separate sections of the said gas holder arranged fore and aft of the said car and having the same cross section as the said gas holder.
2. In combination with a flying machine, of a gas holder, a car mounted adjacent to

the center of the said gas holder the axis of the said car being coincident with the axis of the said gas holder, the said car having two separate sections of the said gas holder arranged for and aft of the said car which has the same cross section as the said gas holder, and a plurality of planes normally having their anterior portions higher than their posterior portions mounted one fore and one aft of the said car.

3. In combination with a flying machine, of a gas holder, a car mounted adjacent to the center of the said gas holder the axis of the said car being coincident with the axis of the said gas holder the said car having two separate sections of the said gas holder arranged fore and aft of the said car which has substantially the same cross section as the said gas holder, and a plurality of planes having their anterior portions higher than their posterior portions one mounted fore and one mounted aft of the said car and in the immediate vicinity thereof, and one set of planes mounted adjacent to the outer ends of each of the said fore and aft sections.

4. The combination with a flying machine, of a gas holder consisting of sections detachably held together, a car between sections of the gas holder, and a plurality of planes on the exterior of the gas holder with connections whereby they may be controlled from within the car.

5. The combination with a flying machine, of a gas holder consisting of sections and a cover for detachably holding the sections together, an operator's compartment between the sections of the gas holder, and a plurality of planes on the exterior of the gas holder, and manipulative devices and connections for controlling the planes.

6. The combination with a flying machine, consisting of sections and a cover for detachably holding the sections together, of an operator's compartment between sections of the holder, a plurality of planes, some fore and some aft of the operator's compartment, manipulating devices in the compartment, and connections whereby the planes may be controlled by means of the manipulative devices.

7. A flying machine comprising a frame composed of a plurality of sections arranged lengthwise one behind the other, a plurality of shafts journaled in bearings arranged in different joints between the several frame

sections, planes mounted on said shafts, and means which permit of adjusting each of said planes independently of the other.

8. A flying machine comprising a frame composed of a plurality of sections arranged lengthwise one behind the other, a support arranged between the opposing ends of adjacent frame sections, and a plane mounted on the said support.

9. A flying machine comprising a frame composed of a plurality of sections arranged lengthwise one behind the other, a shaft journaled in bearings arranged in the joint between adjacent frame sections, and a plane mounted on said shaft.

10. A flying machine comprising a frame built up in longitudinal sections detachably connected together, a plurality of aero surfaces detachably connected to the said frame, means for detachably securing the said sections one to the other, and means for detachably securing the said aero surfaces to the said frame.

11. A flying machine comprising a frame built up in longitudinal sections detachably connected together, a supporting aero surface detachably mounted adjacent to the forward portion of the said frame, a second aero surface also detachably mounted adjacent the rear portion of the said frame, and pivoted to the same, means for detachably securing the said sections one to the other, and means for detachably securing the said aero surfaces to the said frame.

12. A flying machine comprising a frame having different cross sectional areas, and one of the same being tapered, built up in longitudinal sections detachably connected together, a plurality of aero surfaces detachably connected to the said frame, means for detachably securing the said sections one to the other, and means for detachably securing the said aero surfaces to the said frame.

13. A flying machine comprising a gas holder, a framework and a covering therefor forming a housing mounted in axial alignment with the said holder, and a connecting framework comprising a plurality of columns also mounted in axial alignment.

14. A flying machine comprising a frame divided into a plurality of sections, and circular beams mounted at the abutting ends of the said frame.

GEORGE FRANCIS MYERS.