June 27, 1950 G. C. BROWN 2,512,824

HEAVIER-THAN-AIR AIRCRAFT

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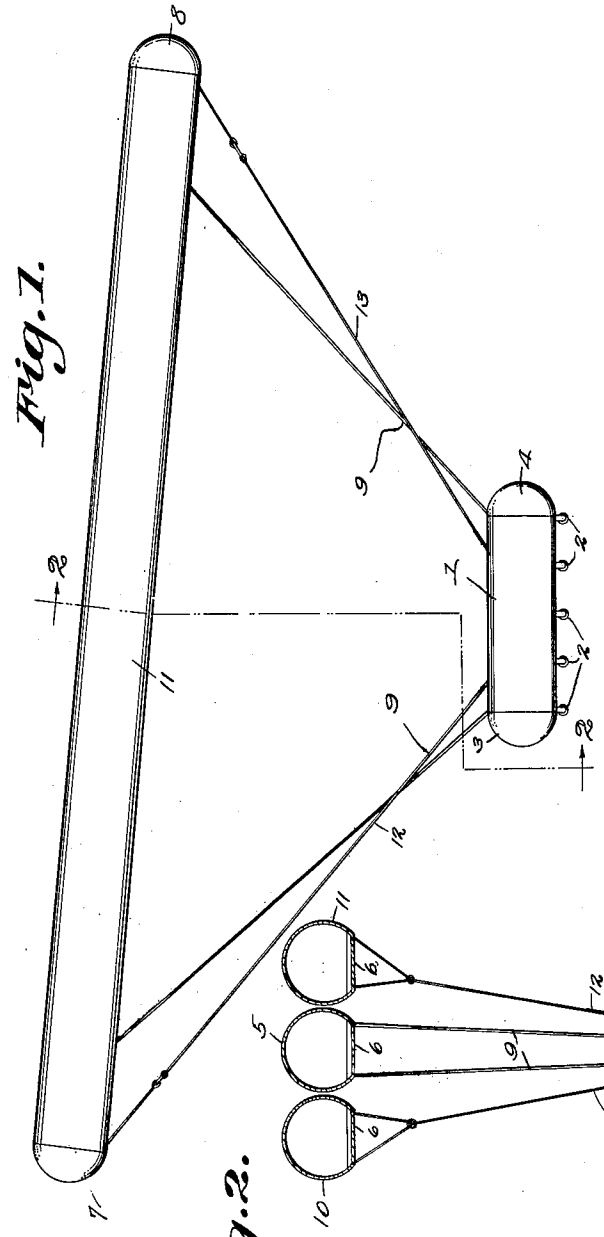


Fig. 1.

Fig. 2.

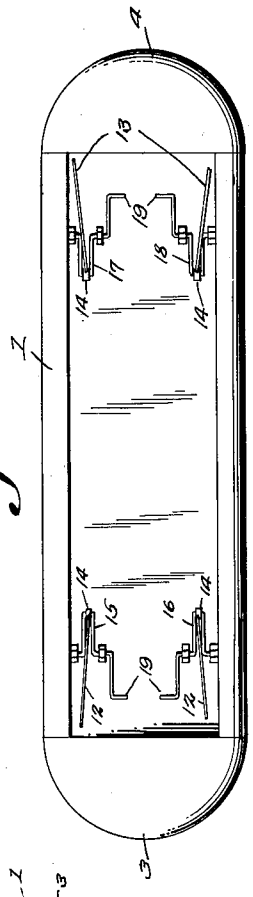


Fig. 3.

G. C. Brown

INVENTOR

BY C. A. Snow & Co.

ATTORNEYS.

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HEAVIER-THAN-AIR AIRSHIP

George Coleman Brown, Dallas, Tex.

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1 Claim. (Cl. 244—30)

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This invention relates to a heavier-than-air airship and to a method of operating the same, it being designed more especially as an improvement upon the structure disclosed in Patent Number 1,315,084 issued to me on September 2, 1919, and in Patent Number 1,718,109, issued to me on June 18, 1929.

One of the objects of the invention is to provide an airship of this type utilizing a central gas container which is connected to the car of the airship, this container being of such size as to partly lift the car and its load, there being aligned on each side a gas charged plane, means being employed by which the planes can be shifted relative to the supported car so as to cause the airship to ascend, descend, go forwardly, and to be turned in any desired direction.

A further object is to provide a novel arrangement of cables or other operating connections so located and proportioned as to shift the planes properly during the actuation of the airship.

With the foregoing and other objects in view which will appear as the description proceeds, the invention consists of certain novel details of construction and combinations of parts, hereinafter more fully described and pointed out in the claim, it being understood that changes may be made in the construction and arrangement of parts without departing from the spirit of the invention as claimed.

In the accompanying drawings the preferred form of the invention has been shown.

In said drawings

Figure 1 is a side elevation of the airship.

Fig. 2 is a section on line 2—2 of Fig. 1.

Fig. 3 is a top plan view of the car.

Referring to the figures by characters of reference, 5 designates an elongated gas container extending above the top of a car 1. Alongside this gas container 5 are placed the gas charged planes 10 and 11, the central gas container and the two gas charged planes being in alignment as shown and the planes and central gas container being inclined upwardly and rearwardly. Relatively short cables 13 are connected to the front ends of the planes and longer cables 12 are connected to the end portions of the planes at the rear end thereof. These cables converge downwardly into the car 1 where they are attached at 14 to operate cranks 15, 16, 17, 18 adapted to be rotated by any suitable power means located in the car.

The container 5, which is connected to the car, is located directly over the car and is separate from the planes. This container has cables

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9 which are extended downwardly and inwardly and connected to the car 1 as shown. The car 1 and the equipment carried thereby constitute a load somewhat heavier than that which can be lifted by the gas contained in the container 5 and the gas charged planes 10 and 11, but the gas in the gas charged planes 10 and 11 will be sufficient to raise the planes 10 and 11 in elevated position above the car after being pulled downward against the air.

In practice it has been found that best results can be obtained by using planes 10 and 11 approximately five or more times as long as the overall width including the gas container 5, and that the planes should be inclined at from 5 to 15 degrees. It has also been found desirable to have the end cables 12 and 13 extended at approximately forty-five degrees in the direction of the length of the airship and approximately five degrees transversely of the airship. These angles are disclosed approximately in Figs. 1 and 2.

It has also been found desirable to make the ends of the container 5 and the gas charged planes 10 and 11 rounded or pointed as at 7 and 8 to facilitate forward travel while the upper surfaces of the container and the planes are rounded to facilitate the ascent of the airship. The bottom surfaces of the planes 10 and 11 are either flat as shown at 6 or concaved transversely so as to insure proper downward displacement of air during the actuation of the mechanism. Supporting wheels 2 can be connected to the bottom of the car 1 to aid it in leaving the ground and while making a landing. The ends of the car are preferably rounded as at 3 and 4 to decrease air resistance.

In practice, the gas container 5 which is arranged directly over and connected to the car, is inflated to sustain a part, but not all, of the weight of the car and its load. By using this container the load which can be carried by the airship is greatly increased over what would be possible should the gas container be eliminated. The airship heretofore described is operated to ascend and to go forward through the air by pulling on and releasing the cables in proper succession, this being done by means of the motor driven cranks 15, 16, 17, and 18, the connection of said cranks to motor means being illustrated at 19. The crank 18 is first operated to pull its cable 13 and thereafter the cranks 15, 17, and 16 are operated to pull their cables, in the order named. This actuation of the cables is effected with sufficient rapidity to produce an

up and down flapping action of the planes which will be sufficient to elevate the entire airship, this lifting action due to the movement of the planes relative to the car 1 being such as to displace sufficient air downwardly to more than compensate for the difference between the weight of the airship and the air displaced thereby. By continuing the operation just described the airship is elevated to a desired altitude where it can be maintained by continuing the actuation of the planes at a lower speed. The airship can be made to ascend perpendicularly by letting out the front cables until the planes are in a flat or horizontal position and operating the cables as described, and the airship can be made to descend perpendicularly in a similar manner. The turning of the airship can be effected by operating the cables controlled by cranks 18 and 15 more rapidly than the cables controlled by cranks 17 and 16 or vice versa, thereby turning the vehicle either to the right or to the left.

An integral part of this invention over that shown in my prior patents is the employment of two elongated planes instead of one. By the use of two separate planes instead of one a heavier load can be carried and flying facilitated. Too, there is produced a smoother, more even flight. By the use of two separate planes there are three supporting contacts to the car and its load, when a cable is let out after pulling a plane against the air, while in the use of one plane only there would be only one support contact, allowing the car and its load to drop more than it would if two planes were used which would have three support contacts during the actuating of the cables.

Too, another integral part is the elongated central gas container 5 which is as long as the gas charged planes 10 and 11, to facilitate forward movement through the air. A short gas container such as previously shown would not operate with the complete efficiency desired, and would tend to retard forward movement, as the angles of the cables attached thereto would not be sufficiently inward from its ends to maintain the container at its proper position above the car. The attaching cables should be inward at angles of forty-five degrees or more. Additionally, it may be noted that a heavier load can be carried by using this longer gas container, and faster forward movement attained. The further characteristic may be noted that the greater the forward movement, the greater the forward momentum, permitting the carrying of a heavier load than the slower movement.

It is to be understood of course that the drawing only illustrates this invention diagrammatically. Any type of car can be used and obviously the shape of the planes can be varied to produce desired results.

This airship is constructed on two basic principles believed to have never before been employed or used. The arrangement of the planes at an incline pressing backward against the air at the same time they press downward is believed new, as is the arrangement of the cables extended inwardly at acute angles to the planes causing the car to be pulled forward at the same time it is pulled upward. The alternate operation of the cables to cause forward flight is new, I believe, and the employment of gas to raise the planes after they are pulled against the air is also believed new and has never before been used to my knowledge for this purpose. So different is this purpose that the difference would not be greater even if an entirely new element were employed. If the planes had to be pushed back, reaction would equal action. With gas raising the planes there is no reaction. In other words, and assuming that a flat board-like plane were used, when the board-like plane would be pulled downwardly against the air, the air would offer resistance pulling the car upward, but when the board-like plane would be pushed upward, reaction would equal action. Assume that this board-like plane would rise naturally, then there would be no reaction. Theoretically, to produce such a board as last mentioned, it would be made hollow and charged with gas.

The planes being elongated, and being placed at an incline, and the cables being extended inwardly from the ends of the planes, the alternate operation of the cables produces forward flight.

An understanding as to the flight of this airship can be obtained by drawing an analogy with the flight of a bird. When a bird brings its wings downward at an incline against the air, the air offers resistance propelling the bird both upwardly and forwardly. Likewise, in the airship illustrated, when the planes are pulled downward and backward against the air, the air offers resistance propelling the airship upwardly and forwardly, producing dynamic flight.

The reason for employing a central elongated gas container is to support a part of the car and its load. Without it the airship would fly, but to carry worthwhile loads it is necessary. Yet, it is to be understood that this is a heavier-than-air airship. For example, the analogy may be drawn of a man swimming in water. Buoyancy supports all but approximately fifteen pounds of an average man, and the exertion necessary is the force to support this difference. Likewise, this airship is heavier than the air displaced just as the man swimming is heavier than the water displaced. Again, consider a fish swimming. The fish has an air bladder supporting a part of its weight. Yet, the fish is heavier than the water displaced. Therefore, the invention can be well termed a heavier-than-air airship.

What is claimed is:

A heavier-than-air airship comprising two elongated gas charged planes and one elongated gas container, the combined width of which is approximately equal to or less than one-fifth the length thereof, a car below the planes, said planes and central gas container being inclined downwardly and forwardly relative to the car at an angle of approximately from five to fifteen degrees, the central gas container being separate from the planes and connected to and directly over the car, said central container being of such size as to partly support the weight of the car and its load, said gas charged planes being aligned along each side of the gas container, a single front cable comprising the sole connection of the front portion of each plane to a side of the front portion of the car, a single rear cable longer than the front cable and comprising the sole connection of the rear portion of each plane to a side of the rear portion of the car, the front cables being connected to the downwardly inclined front ends of the planes, the cables being extended inwardly from the ends of the planes at acute angles of approximately forty-five degrees thereto, means for pulling the four cables in predetermined succession thereby to successively pull upon the front portion of one plane, the rear portion of

the second plane, the front portion of the second plane, and the rear portion of the first plane to elevate the car relative to the planes, and for subsequently paying out the four cables in the same predetermined succession to allow the corresponding portions of the planes to rise under the action of the gas in the planes, the front and rear portions of the gas container being fixed distances away from the car at all times, said relative movement of the gas charged planes operating to propel the airship in a desired direction.

GEORGE COLEMAN BROWN.

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