

J. F. W. BRADSHAW.  
AIRSHIP.  
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Patented June 11, 1912.

2 SHEETS—SHEET 1.

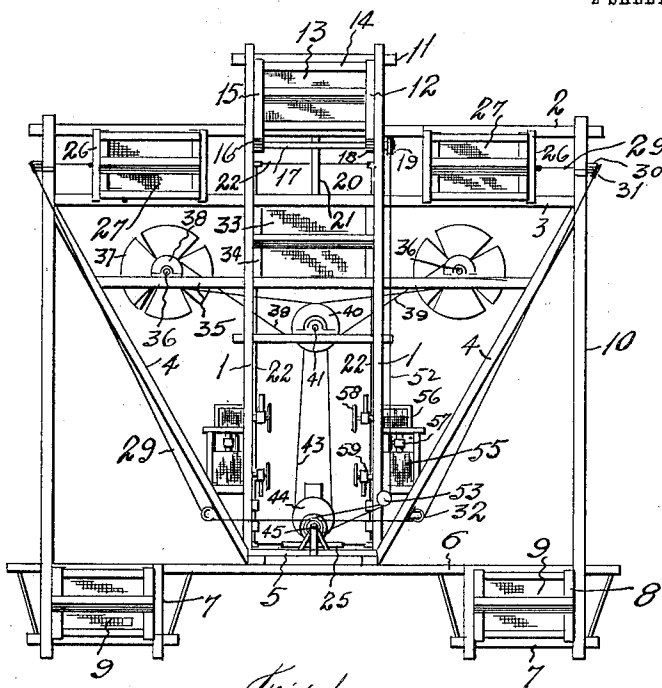


Fig. 1.

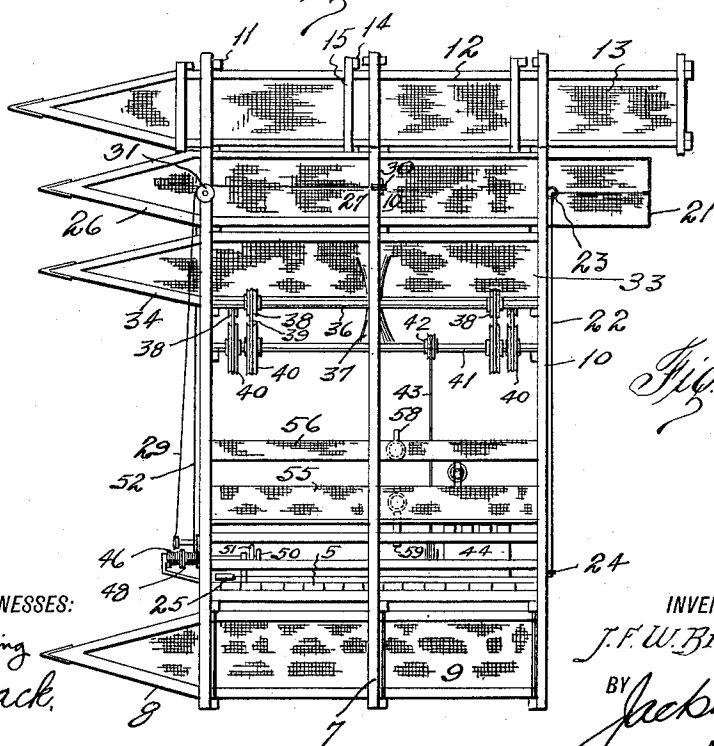


Fig. 2.

WITNESSES:

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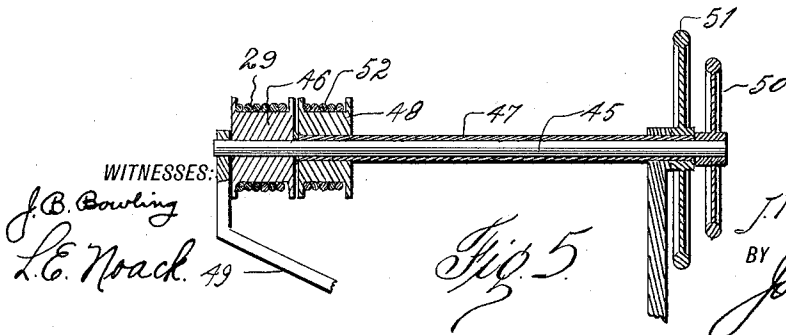
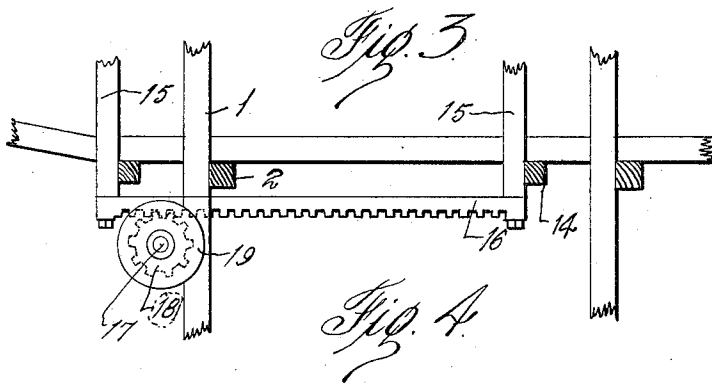
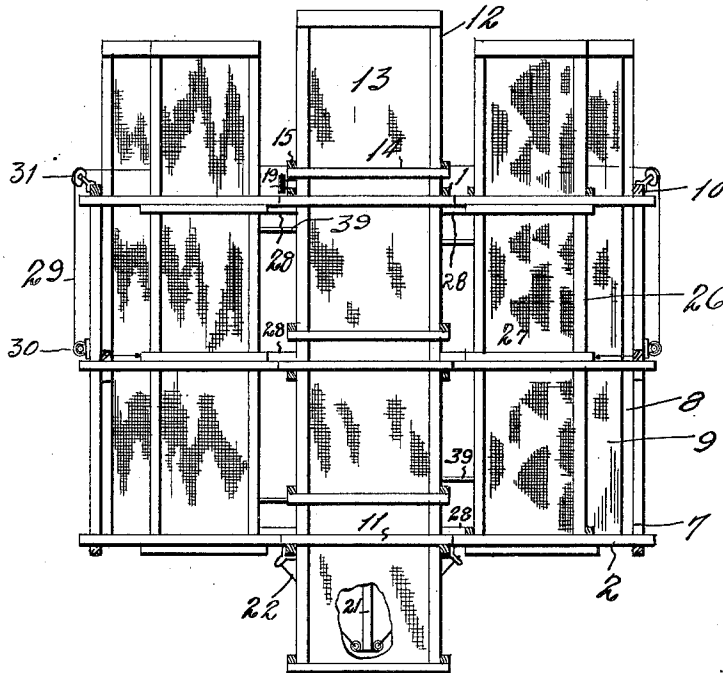
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# UNITED STATES PATENT OFFICE.

JOHN F. W. BRADSHAW, OF NEAR OVERTON, TEXAS.

## AIRSHIP.

1,029,529.

Specification of Letters Patent.

Patented June 11, 1912.

Application filed October 14, 1910. Serial No. 587,049.

*To all whom it may concern:*

Be it known that I, JOHN F. W. BRADSHAW, a citizen of the United States, residing in Smith county, near Overton, in the county of Rusk and State of Texas, have invented certain new and useful Improvements in Airships, of which the following is a specification.

This invention relates to new and useful improvements in air ships.

The object of the invention is to provide a frame having fixed gas bags; a longitudinally adjustable gas bag whereby the ascent and descent of the machine may be controlled; and transversely adjustable gas bags whereby the equilibrium of the ship may be maintained.

Among other features are gas bags supported under the frame whereby the ship will float on bodies of water; and gas bags carried in the frame whereby the elevation of the ship may be regulated.

Finally the object of the invention is to provide means of the character described that will be strong, durable, efficient, and easy of operation, simple and comparatively inexpensive to construct, and also in which the several parts will not be likely to get out of working order.

With the above and other objects in view, the invention has relation to certain novel features of construction and operation, an example of which is described in this specification and illustrated in the accompanying drawings, wherein:

Figure 1 is a front elevation of the air ship, Fig. 2 is a side elevation, Fig. 3 is a plan view, Fig. 4 is a detail of the adjusting means for the longitudinally movable gas bag, and Fig. 5 is a longitudinal sectional view of the steering mechanism.

In the drawings the numeral 1 designates the central uprights of a frame and which uprights project above spaced cross beams 2 and 3. At the bottom of the uprights a central platform 5 is arranged and from this platform braces 4 extend upwardly and outwardly at an angle, terminating at the outer ends of the beams 3. The platform is supported on transverse cross-beams 6 which are in turn provided near each end with hangers 7. In these hangers 7 suitable frames 8 each carrying a gas bag 9 are fixed. At the outer side of each hanger vertical uprights 10 extend upward and are secured to the ends of the beams 2 and 3.

The upper ends of the uprights 1 are connected by transverse horizontal beams 11. These beams in connection with the uprights and the beams 2 form a central guide in which a frame 12 is mounted to slide longitudinally of the air ship. In the frame 12, which exhibits a rectangular shape in cross section, a suitable gas bag 13 is confined. The frame 12 is provided with cross pieces 14 which limit its longitudinal movement rearward by engaging with the cross pieces 11, while the forward movement of the frame is limited by vertical standards 15 on the frame 12 which engage with the said cross pieces.

As shown in Fig. 4 rack bars 16 are secured to the lower ends of the two standards 15 on each side of the frame. A transverse shaft 17 is supported across the two forward uprights 1. On this shaft gears 18 meshing with the rack bars, are fixed. One end of the shaft extends beyond one of the uprights and has fixed on its end a pulley 19. By rotating this pulley the shaft is rotated and a longitudinal adjustment imparted by means of the gears and the rack bars to the frame 12 and its gas bag. When it is desired to ascend the frame 12 is adjusted rearwardly and when it is desired to descend the frame is adjusted forward.

Below the frame 12 and between the beams 2 and 3 and the uprights 1 a longitudinal open space 20 is provided. At the rear end of this space a rudder 21 is pivoted. From each side of the outer end of this rudder flexible connections 22 extend through guides 23 and 24 to a tiller lever 25 pivoted at the forward end of the center of the platform 5. This lever is centrally pivoted and is operated by the feet of the aviator.

On each side of the space 20 and between the beams 2 and 3 elongated longitudinal side frames 26 are arranged. Within each frame a gas bag 27 is confined. These frames are connected by rods 28 so that while they are movable laterally between the beams 2 and 3, they will be moved in unison. From the outer side of each frame 26 a flexible connection 29 extends outward, forward and downward over pulleys 30 and 31 to a pulley 32 mounted on the underlying brace 4. These flexible connections have connection with a steering mechanism hereinafter described. It is apparent that by drawing down on one connection and permitting the other to move upward, the frames 26 are ad-

justed laterally of the air ship and the equilibrium of the same maintained.

Below the space 20 and between the uprights 1 a longitudinal fixed gas bag 33 is mounted in a frame 34 supported on cross beams 35. On each side of the uprights 1 and between the same and the braces 4 propeller shafts 36 are mounted longitudinally of the air ship. On each shaft a suitable propeller 37 is fixed. Each shaft 36 carries two pulleys 38 which are driven by belts 39 running about pulleys 40 fixed on a central drive shaft 41 suitably supported below a gas bag 33. On this drive shaft a pulley 42 fixed thereon is driven by a belt connection 43 from a suitable engine 44 mounted on the platform 5. It is to be understood that any form of driving connection may be used instead of belts and pulleys.

For operating the frames 12 and 26 I provide a steering or controlling mechanism located at the forward central portion of the platform 5 and which comprises a longitudinal shaft 45 having fixed near its outer end a drum 46. A sleeve 47 surrounds the shaft and terminates short of the drum 46. On the outer end of the sleeve a drum 48 is fixed. The sleeve and shaft are supported in standards 49 fixed on the platform. The shaft 45 extends at its inner end beyond the sleeve and has fixed thereon a steering wheel 50, while a larger steering wheel 51 is fixed on the adjacent end of the sleeve. From this it is obvious that the drum 46 and 48 may be revolved independently by manipulating the steering wheels. The flexible connections 29 are wound about the drum 46 and both pass off of the top thereof so that one is wound while the other is unwound. An endless connection 52 is coiled about the drum 48 and passes over a double guide pulley 53 to the pulley 19 whereby the frame 12 is adjusted.

For controlling the elevation of the air ship gas bags 55 are fixed between the uprights 1 and the braces 4. Above each gas bag 55 a smaller gas bag 56 is supported and the gas bags on each side are connected by a valve 57, while each gas bag 56 has a valved outlet 58 whereby the gas or fluid may be exhausted therefrom. Each gas bag 55 has a valved inlet 59 on the platform side whereby a suitable gas or fluid may be introduced into the gas bags 55 by a suitable means not shown. If it is desired to increase the elevation of the air ship the valved outlets 58 may be opened and the gas permitted to escape from the bags 56. If it is desired to increase the elevation or that is maintain the air ship at a certain elevation when carrying a certain load, gas can be admitted to the bags 55 through the inlets 59 and then admitted to the bags 56 through the valves 57. These latter gas bags are used more particularly to maintain the air ship at a given elevation,

the ascent and descent being controlled by the gas bag 13.

The gas bags 9 are used to support the air ship when the same is floating on a body of water. If the air ship should be damaged or become inoperative while passing over a body of water, these gas bags will support it on the water if it should fall and thus prevent injury to the passengers.

What I claim is:

1. In an air-ship, a frame, a gas bag at the upper end of the frame arranged to be moved forwardly and rearwardly of the frame, other gas bags at the upper end of the frame below and normally at each side of the first gas bag and arranged to be moved laterally of the frame, a fixed gas bag under the first gas bag and below the laterally adjustable gas bags, a propeller mounted on the frame, and an engine carried by the frame and having driving connection with the propeller.

2. In an air-ship, a frame, a gas bag adjustable longitudinally of the frame, a pair of connected gas bags adjustable transversely of the frame and at right angles to the first named gas bag, a propeller mounted on the frame, and an engine for driving the propeller.

3. In an air-ship, a supporting frame, a gas bag fixed longitudinally of the frame, a second gas bag adjustable longitudinally of the frame, a pair of connected gas bags adjustable transversely of the frame, a propeller mounted on the frame, and an engine for driving the propeller.

4. In an air-ship, a supporting frame, a gas bag fixed longitudinally of the frame, a second gas bag adjustable longitudinally of the frame, a pair of connected gas bags adjustable transversely of the frame, a pair of fixed gas bags supported from the underside of the frame, a propeller mounted on the frame, and an engine for driving the propeller.

5. In an air-ship, a frame, movable gas bags mounted in the frame, a fixed gas bag mounted in the frame below the movable gas bags, propellers, one mounted at each side of the fixed gas bag and within the frame, a common driving member mounted in the frame, connections between said member and the propellers, and an engine mounted on the frame and having driving connection with the member.

6. In an air-ship, a frame having a platform, an elongated frame mounted to move longitudinally of the first frame, a gas bag confined in the second frame, a controlling device supported on the platform of the first frame, a connection between the controlling device and the second frame for adjusting the latter longitudinally, a pair of connected frames movable transversely of the first frame, gas bags confined in said pair of con-

nected frames, and a second connection extending between the controlling device and the pair of connected frames for adjusting the same transversely of the first frame.

5 7. In an air-ship, the combination with a frame and fixed and adjustable gas bags mounted on the frame, of elevating gas bags mounted in the frame and arranged in pairs, one gas bag of each pair being above the  
10 other, a valve connection between the gas bags of each pair, a valved inlet for one of

the gas bags of each pair, and a valved outlet connected to the other gas bag of each pair.

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

JOHN F. W. BRADSHAW.

Witnesses:

LEE HOLT,

B. F. PALMER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."