

J. F. O'GRADY.

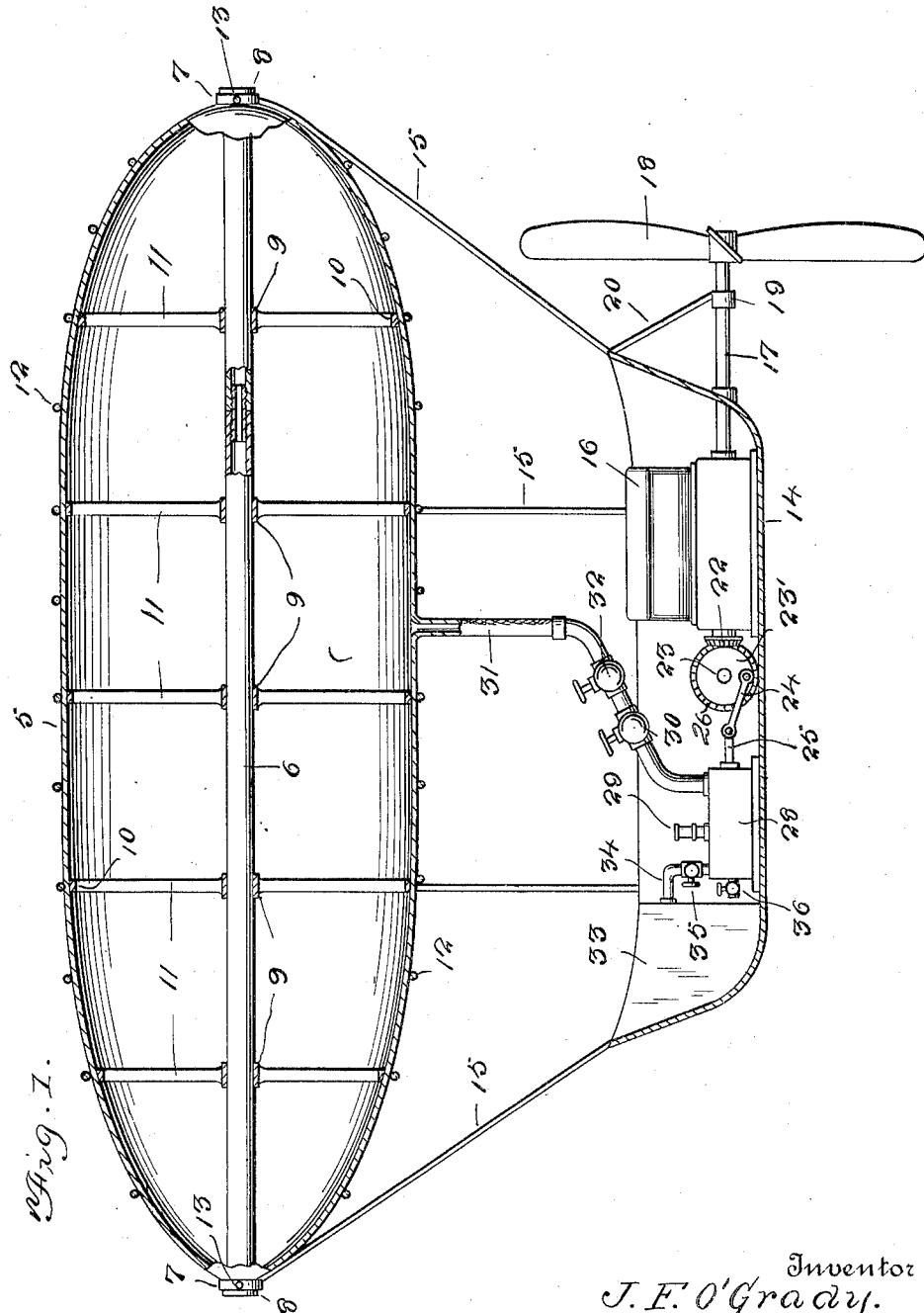
AIRSHIP.

APPLICATION FILED JULY 24, 1918.

1,330,389.

Patented Feb. 10, 1920.

2 SHEETS—SHEET 1.



Witnesses
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Fig. 3.

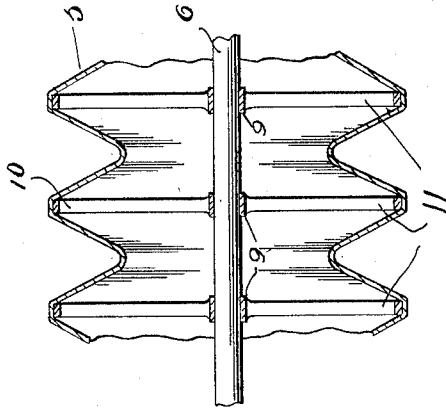
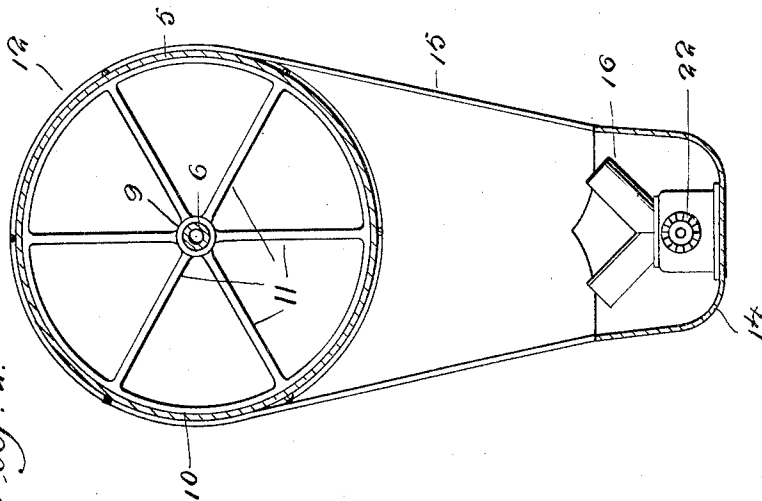


Fig. 2.



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UNITED STATES PATENT OFFICE.

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AIRSHIP.

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To all whom it may concern:

Be it known that I, JAMES F. O'GRADY, a citizen of the United States, residing at Sisseton, in the county of Roberts and State of South Dakota, have invented new and useful Improvements in Airships, of which the following is a specification.

This invention relates to improvements in airships, and it consists in the novel features and combination of parts hereinafter described and particularly pointed out in the claim.

The primary object of the invention is to produce a dirigible airship comprising a balloon portion having a car supported therefrom, means being carried by said car, and if desired actuated by the propelling mechanism therefor, for inflating or deflating the balloon to control the ascending or descending of the craft.

A further object of the invention is to produce an airship in which the balloon portion thereof may be telescoped when the device is not in use, to provide a comparatively small bundle for storage or shipping.

A still further object of the invention is to produce in a dirigible airship means arranged both interiorly and exteriorly of the balloon portion thereof for effectively retaining the same against collapsing, as when a whole or partial vacuum is created therein.

Other objects and advantages will appear as the nature of the invention is better understood, reference being had to the accompanying drawings, in which:

Figure 1 is an approximately central vertical longitudinal sectional view of the improvement;

Fig. 2 is a transverse sectional view approximately on the line 2—2 of Fig. 1; and

Fig. 3 is a detail sectional view illustrating the arrangement of parts when the balloon is in its collapsed condition.

The balloon portion of the airship is indicated by the numeral 5 and comprises an elongated body, the ends of which being reduced or cone-shaped. Arranged centrally in the body 5 is a tube 6 which, as disclosed by the drawings, may comprise a plurality of separable sections, and on the ends of this tube are adjustably secured collars 7 to which the ends of the balloon or bag 5 are connected. The collars 7 are arranged outward of the tube of the balloon and are longitudinally movable over the tube 6 in a direction toward each other, but are held

against outward movement over the ends of the tube by suitable flanges 8 on the said ends of the tube.

On the tube 7 are arranged the hubs 9 of a plurality of ring members 10, the said rings being connected to the hubs by radially disposed spokes 11. The rings 10 are secured, at desired intervals to the bag or balloon 5, and, of course, the rings 10 vary in size to conform to the different parts of the balloon with which they engage, and to which they are secured. Exterior brace elements, in the nature of flexible members, such as cables 12 may be arranged around the balloon, as disclosed by the drawings, and if desired interior flexible brace members may be also provided, the latter, however, being connected to the oppositely disposed rings 10.

In the disclosure in Fig. 1 of the drawings, I have shown the collars 7 adjustably secured on the tube 6 through the medium of binding bolts 13, but, it is to be understood, other and perhaps more effective means may be employed for this purpose, and by reference to Fig. 3 of the drawings, it will be seen that when the binding elements 13 are released from the tube, the bag may be moved longitudinally in an inward direction from the opposite ends of the tube, thus collapsing the bag.

The car or ship 14 is supported from the balloon 5 through the medium of cables 15, the end cables being connected to the collars 8 and the side cables being arranged around the balloon at points where the same will contact with certain of the rings 10. In the ship or car 14 is an engine 16 to the shaft 17 of which is secured the propeller 18, the said shaft outward of the ship or car being journaled in a bearing 19 that is supported by an angle brace 20, to the ship or car. Keyed on the inner end of the shaft 17 is a beveled gear 22 which meshes with a similar gear 26 fixed to a shaft 23. The shaft does not project over one of the faces of the toothed wheel 23, and upon this face of the said wheel is loosely arranged a pitman 24 that is connected with a piston rod 25 secured upon a piston head (not shown), in a suitable pump casing 28. On the pump is arranged a safety valve 29 and a hand controlled outlet valve 30. Connected with the pump casing or cylinder 28 and with the balloon bag 5 is a pipe 31, the portion thereof connected with the bag may, if desired,

be flexible but on the metallic or non-flexible portion of this pipe is a hand control valve 32. The valve 32 is of the two-way construction, when turned to one position the same will open the passage in the pipe 31 in the pump and the bag, and when turned in another direction will close the pipe 31 at the portion thereof communicating with the pump cylinder but will open the end of the pipe connected to the balloon to the atmosphere.

If desired, the ship or car 14 may be provided with a gas tank 33 in which may be stored the gas for inflating the balloon. Between the tank 33 and the pump casing 28 is a pipe 34 having a hand control valve 35, while on the end wall of the cylinder is a one-way opening valve 36. When the valve 35 is open and the cylinder reciprocated, and likewise the valve 32 is opened to permit of a free passage from the pump to the balloon, the gas will be drawn from the storage tank through the pipe 34, valve 35 and pipe 31, inflating the bag. After the bag has been properly inflated the valves 30 and 35 are closed. The closing of the valve 30 prevents the fluid from the balloon being withdrawn therefrom, the valve 35 closing the fluid tank 33, and the valve 36 permitting of the free

reciprocation of the piston in the casing or cylinder 38 and the ejection of compressed air through the port controlled by the said valve. By operating the valve 32 the fluid in the balloon may be permitted to escape, and in this manner the degree or ascent or descent of the airship may be regulated.

If desired, the parts may be so arranged as to permit of the pump acting in a reverse manner to that described, so as to force the air out of the balloon to create either a vacuum or a partial vacuum therein, and from the foregoing description, when taken in connection with the drawings, the construction and operation of the apparatus will, it is thought, be fully understood.

Having thus described the invention, what is claimed as new, is:—

In an airship, a balloon, a sectional tube extending longitudinally through the balloon, rigid wheels having hubs slidable on said tube and loosely engageable with the inner surface of said balloon, collars adjustably secured to the ends of said tube exteriorly of said balloon, flanges on the ends of said tube for confining said collars thereon, cables connected to said collars, and a car supported by said cables.

JAMES F. O'GRADY.