Dec. 1, 1925. 1,563,571

W. E. HUFFMAN ET AL

JUMPING BALLOON

Filed March 29, 1923

FIG. 1.

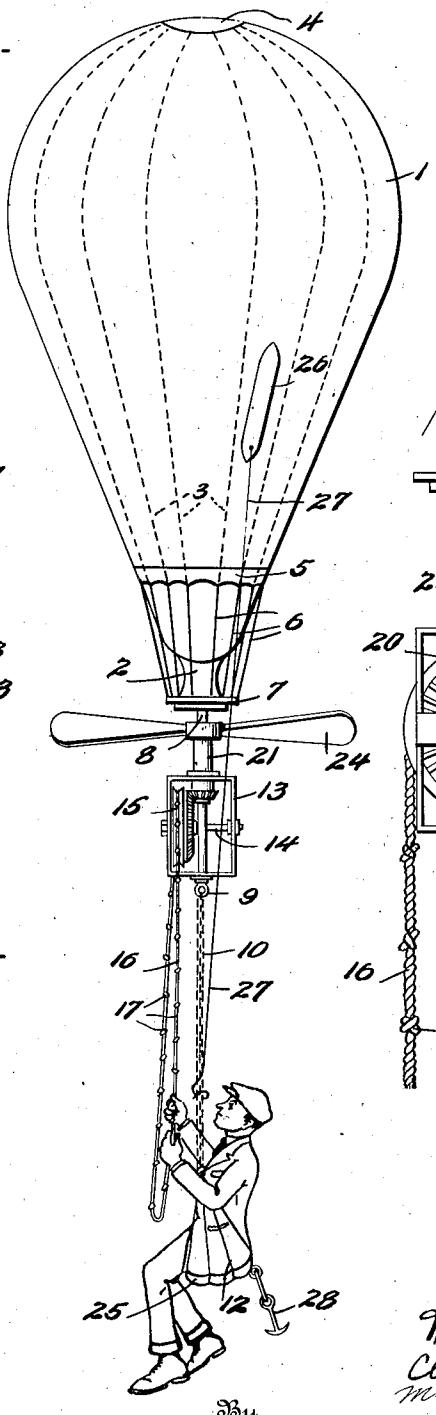


FIG. 2.

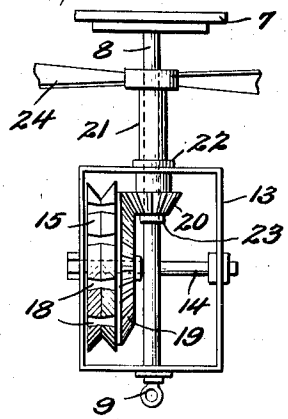


FIG. 3.

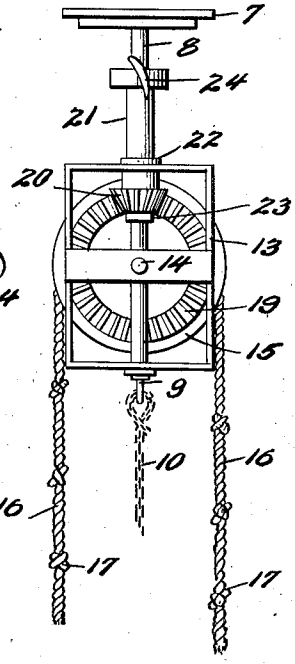
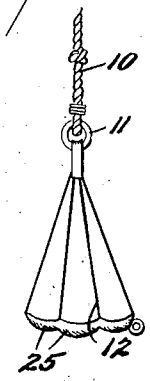


FIG. 4.



Inventor

William E. Huffman

Clarence F. Adams

Matt Q. Corbett

By Robert W. Young Attorney

Patented Dec. 1, 1925. 1,563,571

UNITED STATES PATENT OFFICE.

WILLIAM E. HUFFMAN, CLARENCE F. ADAMS, AND MATT Q. CORBETT, OF DAYTON, OHIO.

JUMPING BALLOON.

Application filed March 29, 1923. Serial No. 628,497.

To all whom it may concern:

Be it known that we, WILLIAM E. HUFFMAN, CLARENCE F. ADAMS, and MATT Q. CORBETT, citizens of the United States of America, residing at Dayton, in the county of Montgomery and State of Ohio, have invented certain new and useful Improvements in Jumping Balloons, of which the following is a specification.

This invention relates to lighter-than-aircraft, the specific object being to produce a practical jumping balloon, or in other words a balloon adapted to sustain the weight of a single passenger or operator and embodying means whereby the operator with the aid of the balloon and propelling mechanism may perfect a jump from the ground to an altitude of several hundred feet.

The balloon is particularly useful in jumping over natural or artificial barriers, such as buildings, trees, rivers, chasms and the like: as a convenient means for quickly obtaining considerable altitude for photographic and observation purposes; as a convenient and safe way to practice parachute landings and gives preliminary instructions in lighter-than-aircraft to students; as a convenient means of quickly and easily ascending to the tops of trees, houses and the like for inspection and other purposes.

With the above and other objects in view, the invention consists in the novel construction, combination and arrangement herein fully described, shown and claimed.

In the accompanying drawings—

Figure 1 is a side elevation of the complete apparatus;

Figure 2 is an enlarged side elevation of the propeller and motor and its frame;

Figure 3 is a view of the same taken at right angles to Figure 2;

Figure 4 is a detail side elevation of the sling.

The apparatus comprises essentially a gas bag or aerostat 1 which is preferably pear shape, as shown in Figure 1, or in other words having a spheroidal main upper portion and a downwardly contracted and tapering lower portion terminating in an appendix 2. The balloon embodies suspension lines 3 which are preferably contained in pockets in the balloon material and secured at the upper extremities to the flexible crown 4 of canvas or other suitable material. The lower extremities of the lines 3 are secured to the suspension band or catenary 5 from which lines 6 extend downwardly to a load or concentrating ring 7 arranged below and adjacent to the appendix 2.

Extending downwardly from the concentrating ring 7 and having its upper end secured thereto, is a normally upright shaft 8 from which the remainder of the apparatus is suspended. Connected to the lower end portion of the shaft 8 by means of an eye 9 is a suspension cable or chain 10, the lower end of which is fastened to an eye 11 at the upper end of a sling 12 which supports the operator, as shown in Figure 1. Mounted upon the shaft 8 is a motor frame 13 of any suitable formation having bearings for the shaft 8 and containing a motor shaft 14 which is normally horizontal or perpendicular to the shaft 8. Mounted upon the shaft 14 is a grooved pulley 15 around which passes an endless flexible driving plate 16 having notches or enlargements 17 at intervals in the length thereof which engage in corresponding notches 18 in the pulley 15. The plate 16 extends downwardly within convenient reach of the operator, as shown in Figure 1, who by pulling downwardly on one side or the other of the plate 16 may turn the pulley 15 in either direction.

Secured to one side of the pulley 15 is a bevel-face ring gear 19 which engages and drives a pinion 20 on the lower end of a tubular shaft 8 by means of bearing collars 22 and 23 on the shaft 8. Fastened to the shaft 21 is a lifting propeller 24 which operates under the balloon and beneath the concentrating ring 7 and is located overhead with respect to the operator and just above the motor frame 13.

The sling 12 is provided at the bottom thereof with a ballast compartment 25 to hold sand or ballast of any kind, suitable means, not shown, being provided to release or to empty the ballast therefrom when necessary. The balloon 1 is provided with the usual rip panel 26 controlled by rip cords 27 extending downwardly to within reach of the operator where it is secured to the suspension member 10, as shown in Figure 1. An anchor 28 is attached to the sling for convenient use when needed.

From the foregoing description taken in connection with the accompanying drawings, the operation of the apparatus will be clearly understood. It will be noted that

the load is suspended from the concentrating ring and carried mainly by the crown 4 at the top of the aerostat. By using the particular shape of balloon shown and the method of rigging suspension illustrated, a very light fabric may be used in the make up of the gas bag enabling the same, when inflated with lifting gas, to be maneuvered in winds ranging up to fifteen or eighteen miles per hour with greater ease than is the case with ordinary spherical balloons, principally for the reason that the lower appendage is held down and presents less surface to the action of the wind in forming pockets on the underside, as in the case of the spherical balloon. The apparatus is designed, not so much to keep the balloon aloft, due to mechanical means alone, as to assist the operator in rising quickly from the ground through the action of the legs and body, as in jumping. With the balloon and load properly weighed off, the operator, who is suspended with legs hanging freely brings his feet against the ground or other support and springs with his whole body from the ground, as in jumping. The result is he is shot upward and his upward climb is assisted by manipulating the propeller operating mechanism, which is set in motion to produce a downward thrust of the propeller. Altitudes of 200 feet or more may be made in this manner by means of the apparatus described and the descent may be gradually accomplished by operating the lift propeller sufficient to prevent an unfavorable or dangerous acceleration. In case a rapid descent is desired the propeller may be revolved to produce the necessary thrust.

It will be obvious that considerable departure may be made from the particular mechanism hereinabove described without departing from the principle disclosed.

We claim—

1. In combination with a balloon having a concentrating ring, a normally upright suspension shaft supported at its upper end by said ring, a man-carrying sling suspended from said shaft, a lifting propeller rotatable around said shaft, and means controlled by the occupant of the sling for operating said propeller.

2. In combination with a balloon having a concentrating ring, a normally upright suspension shaft supported at its upper end by said ring, a man-carrying sling suspended from said shaft, a lifting propeller rotatable around said shaft, and manually operable means for rotating said propeller.

3. In combination with a balloon having a concentrating ring, a normally upright suspension shaft supported at its upper end by said ring, a man-carrying sling suspended from said shaft, a tubular propeller shaft surrounding said upright shaft, a lifting propeller on said tubular shaft, and means operable by the occupant of the sling for imparting rotary motion to said propeller shaft.

4. In combination with a balloon having a concentrating ring, a normally upright suspension shaft supported at its upper end by said ring, a man-carrying sling suspended from said shaft, a tubular propeller shaft surrounding said upright shaft, a lifting propeller on said tubular shaft, and means including an endless driving belt operable by the occupant of the sling for imparting rotary motion to said propeller shaft.

In testimony whereof we affix our signatures.

WILLIAM E. HUFFMAN.
CLARENCE F. ADAMS.
MATT Q. CORBETT.