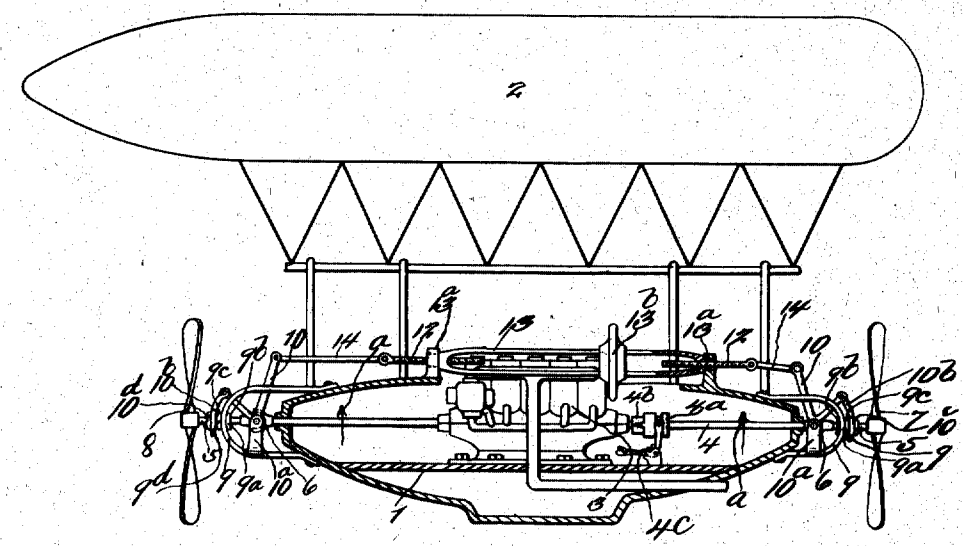
J. O. HUXFORD.

ASCENDING, DESCENDING, AND DRIVING MEANS FOR DIRIGIBLE AIRSHIPS.

APPLICATION FILED OCT. 31, 1918.

1,302,048. Patented Apr. 29, 1919.

Fig. 1.



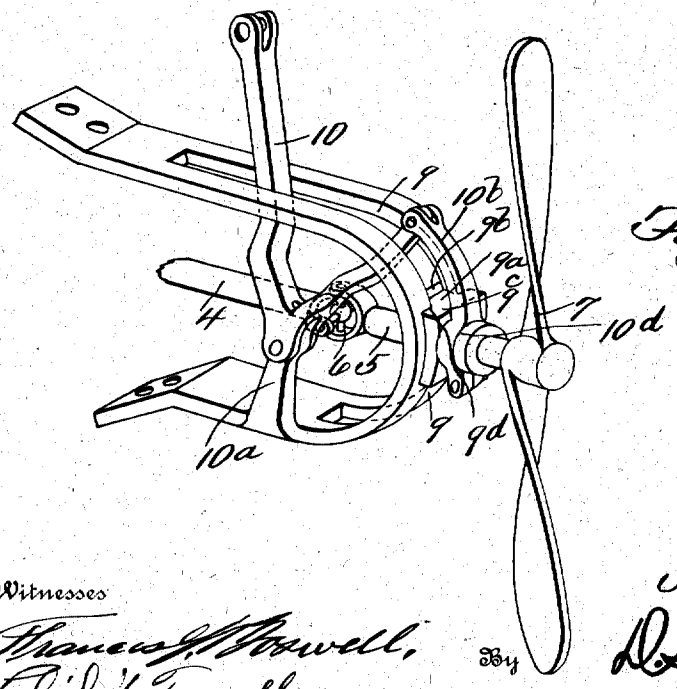


Fig. 2.

Witnesses

Frances J. Boswell.

Alvin J. Terrell.

Inventor

J. O. Huxford

By D. Swift & Co.

Attorneys

UNITED STATES PATENT OFFICE.

JERE ORVIN HUXFORD, OF WAINWRIGHT, ALABAMA.

ASCENDING, DESCENDING, AND DRIVING MEANS FOR DIRIGIBLE AIRSHIPS.

1,302,048. Specification of Letters Patent. Patented Apr. 29, 1919.

Application filed October 31, 1918. Serial No. 260,475.

To all whom it may concern:

Be it known that I, JERE O. HUXFORD, a citizen of the United States, residing at Wainwright, in the county of Monroe, State of Alabama, have invented a new and useful Ascending, Descending, and Driving Means for Dirigible Airships; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to an improved ascending, descending and driving means for airships, particularly of the gas-bag type.

An object of this invention is to provide a device of this kind having driving propellers at opposite ends of the car or body of the airship, whereby increased power may be attained.

A further object of the invention is the provision of an engine or motor intermediate the two driving propellers, for imparting motion to the propellers simultaneously, the motor shaft being alined axially through the body or car of the airship.

A further object of the invention is to provide the motor shaft with movable end sections having universal connections with the central section of the shaft and carrying the driving propellers on their outer ends, whereby the propellers may be directed upwardly toward a perpendicular or directed to a horizontal position or partially downward toward a perpendicular.

A further object of the invention is the provision of means for guiding said movable sections having said propellers.

A further object of the invention is the provision of means for moving said sections.

In practical fields the details of construction may necessitate alterations falling within the scope of what is claimed.

The invention comprises further features and combination of parts as hereinafter set forth shown in the drawings and claimed.

In the drawings:—

Figure 1 is a view in section longitudinally through the body or car of an airship, showing the double driving propellers, and the motor shaft constructed, whereby the propellers may be turned upwardly toward perpendicular or to a horizontal, and the means for adjusting said sections.

Fig. 2 is an enlarged detail view of the guiding means of one of the movable sections of the motor shaft, and the means for manipulating the movable section.

Referring more especially to the drawings 1 designates the car or body of the airship which is suspended in any conventional manner from a conventional form of gas tube 2, and 3 denotes a gasolene motor or engine, which may be of any conventional form or construction. However, this motor is provided with a driving shaft extending forwardly and rearwardly of the car or body and has its opposite ends in bearings of the forward and rear ends respectively of the body. Connected to the forward and rear ends of the motor shaft by means of universal joints are motor shaft sections 5, said universal joints being designated by the number 6. Carried by the motor shaft sections are forward and rear driving propellers 7 and 8. These motor shaft sections are mounted in guides 9, so as to prevent them from moving laterally. The guides 9 each consist of a slotted U-shaped strap, one on each end of the body of the car, as shown in Fig. 1. Engaging the slot of each guide is a cross head 9^a, in a bearing of which a motor shaft section 5 is mounted. Each cross head consists of the two parts 9^b and 9^c, secured in any suitable manner (not shown) to each other. Each cross head is provided with opposite guide recesses 9^d for the reception of the walls of the guide slot. The U-shaped straps which constitute the guides are provided with arms 10^a, and pivoted thereto are angular levers 10, and to one arm of each lever a link 10^b is pivotally connected, which in turn is joined at 10^d to the extension of the cross head, so that as the lever 10 is moved pivotally the motor shaft section 5 may be tilted upwardly or downwardly, as may be obvious. It is to be noted that the pivot of the lever 10 is axially concentric with the universal joint 6. Swiveled in bearings 13^a of the car or body is a turn buckle 13 having a hand wheel 13^b, there being right and left threaded screws or rods 12 engaging the opposite ends of the turn buckle. Pivotally connected to the outer ends of the screws or rods 12 are links 14, which in turn are pivotally connected to the other arms of the levers 10. It is to be noted that the propeller 8 has its blades arranged, so that when the motor shaft is

driven in the direction of the arrow *a*, while the propeller 7 is allowed to remain idle the airship will be driven forwardly that is after it has ascended. It is to be noted that the propeller 7 has its blades twisted just the opposite to the blades of the propeller 8, and in this case, by turning the turn buckle to draw the screws or rods 12 toward each other, the forward and rear propellers 7 and 8 may be adjusted at angles to the car or body, in fact at an acute angle to each other, and since power is transmitted to both propellers, that is when a clutch is thrown in gear, the forward propeller will lift the forward end of the machine and the rear propeller will lift the rear end of the machine. In other words the force of the propellers will be opposite each other, but since the propellers are at angles, the airship will ascend substantially in a perpendicular line. By moving the shaft sections 5 at angles downwardly, the airship will descend. However, after the airship has ascended, and it is desired to drive forwardly, the rear propeller may be uncoupled by means of a coupling device. This coupling device comprises the clutch members 4^a and 4^b, the clutch member 4^b being fixed to one section of the engine shaft, while the other clutch member 4^a is keyed to rotate with but slide on the other section of the motor shaft, there being a lever 4^c for adjusting the clutch member 4^a into and out of gear with the clutch member 4^d.

The invention having been set forth what is claimed as new and useful is:—

In a device as set forth, the combination with a body of an airship, of a motor driven shaft mounted therein and having bearings in the forward and rear ends of said body, motor shaft sections having universal connections with the opposite ends of the motor shaft, guides on the body, cross heads in the guides in bearings of which the motor shaft sections are mounted, angular levers pivotally mounted on the guides axially in alinement with the universal connections and having link connections with said cross heads, right and left threaded screws connected to the angular levers and means connecting the right and left threaded screws for moving them toward and from each other whereby the motor shaft sections may be inclined upwardly or downwardly, and reversed bladed propellers carried by the motor shaft sections.

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

JERE ORVIN HUXFORD.

Witnesses:
R. B. Williams,
W. M. Darrold.