

No. 840,339.

PATENTED JAN. 1, 1907.

H. H. JOHNSON:
AIR SHIP.

APPLICATION FILED JUNE 1, 1905.

2 SHEETS—SHEET 2.

Fig. 2.

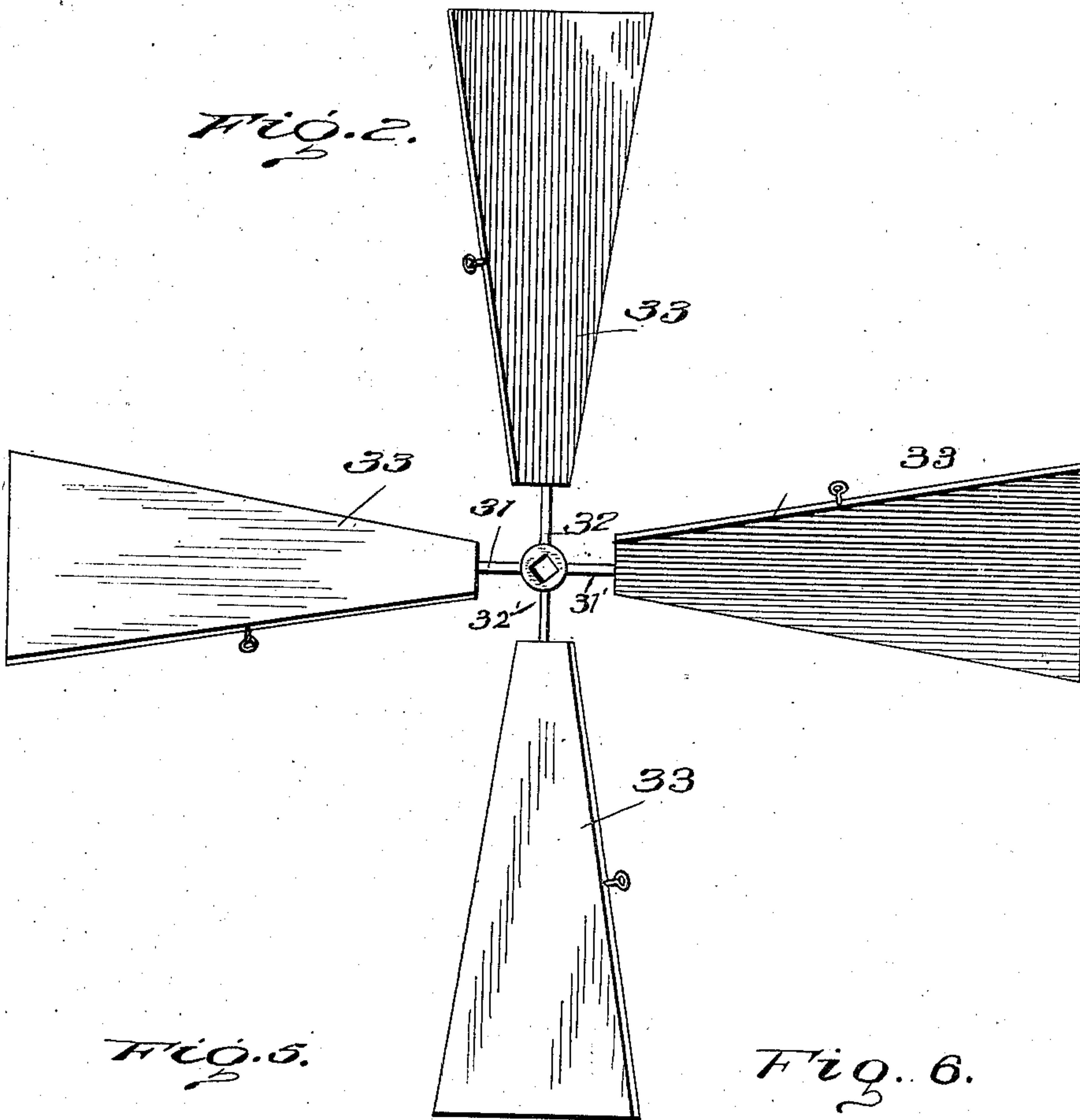


Fig. 5.

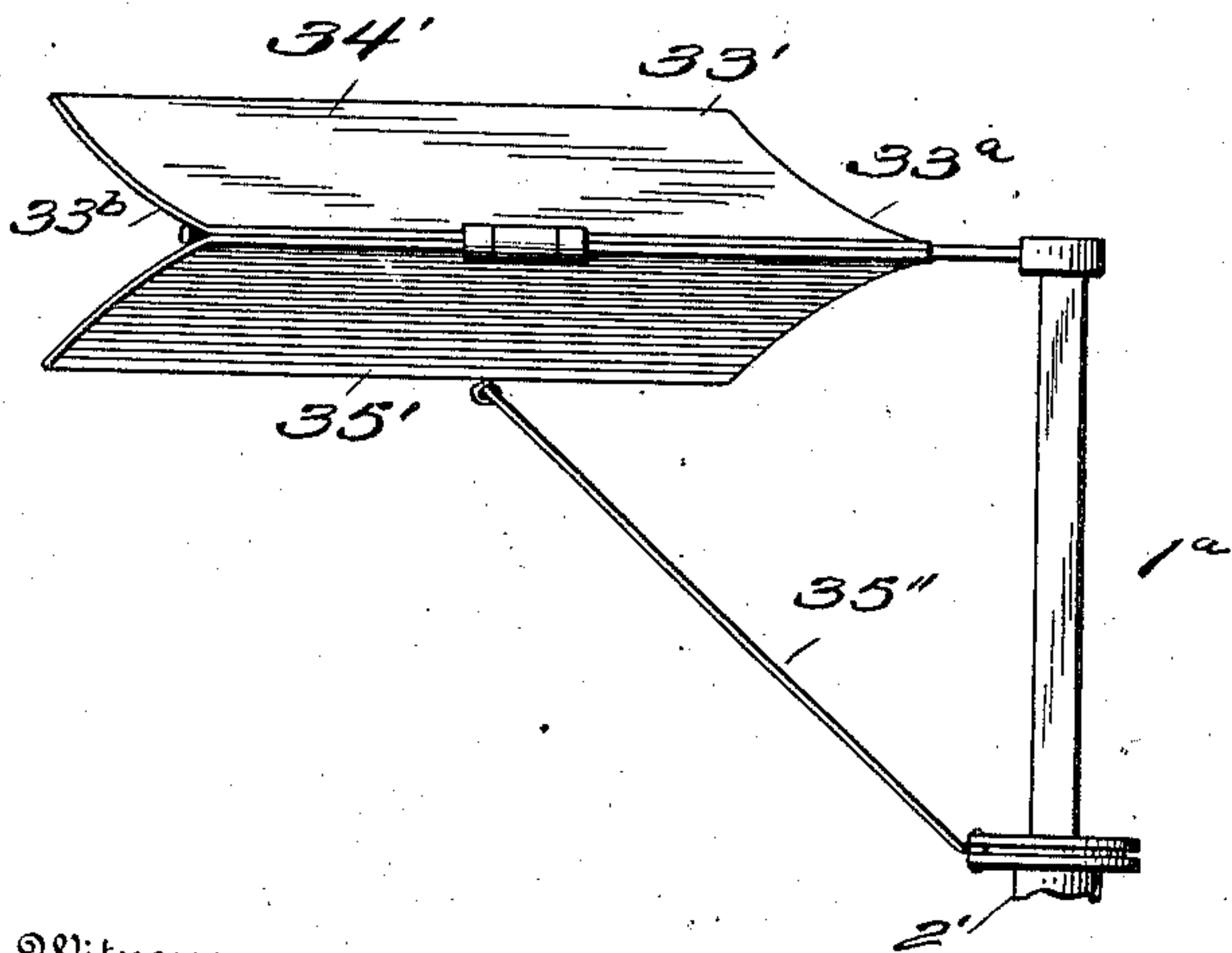
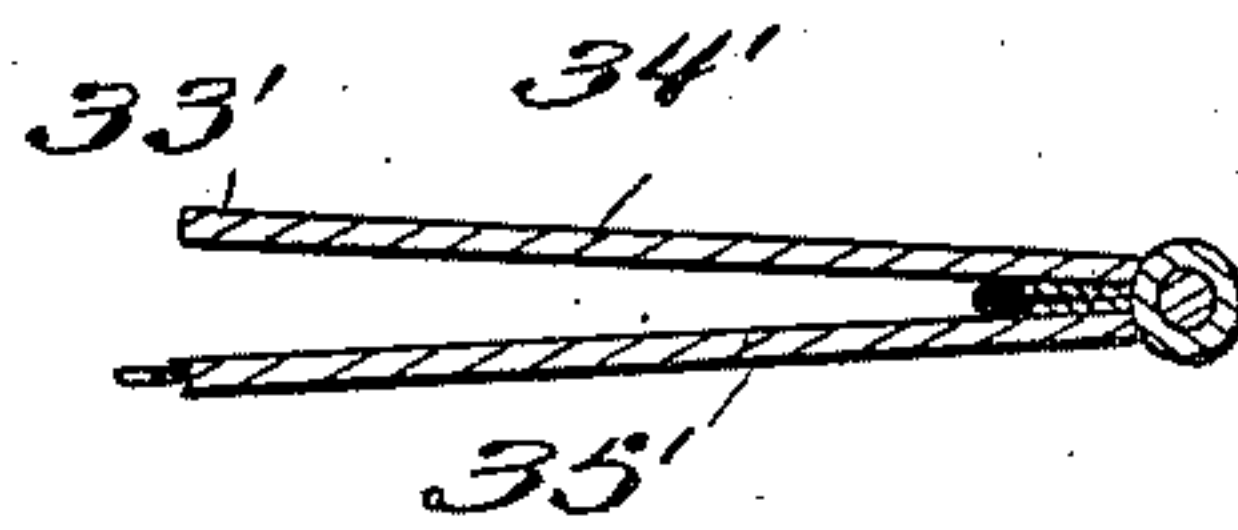


Fig. 6.



Witnesses

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HENRY H. JOHNSON, OF AVOCA, IOWA.

AIR-SHIP.

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Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, HENRY H. JOHNSON, a citizen of the United States, residing at Avoca, in the county of Pottawattamie, State of Iowa, have invented certain new and useful Improvements in Air-Ships; 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 air-ships.

One object of the invention resides in an improved speed mechanism.

Another object of the invention resides in the provision of means whereby the speed of the ship may be increased or slackened during the normal rotation of the engine-shaft, which latter may be rotated continuously in one direction without increasing or slackening the speed of the engine.

A still further object of the invention is to provide mechanism for guiding or steering the ship without the use of a rudder.

With these and other objects in view the present invention consists in the combination and arrangement of parts, as will be hereinafter more fully described, shown in the accompanying drawings, and particularly pointed out in the appended claims, it being understood that changes in the form, proportion, size, and minor details may be made within the scope of the claims without departing from the spirit or sacrificing any of the advantages of the invention.

In the drawings, Figure 1 is a side elevation of a structure embodying my invention. Fig. 2 is a top plan view of the propeller-blades. Fig. 3 is a detail view of one of the propeller-blades, illustrating the manner in which the latter is mounted for pivotal movement. Fig. 4 is an end view of one of the sleeves mounted for sliding movement upon the propeller-shaft. Fig. 5 is a modified form of propeller-blade. Fig. 6 is a sectional view.

Referring now more particularly to the accompanying drawings, the reference character 1 designates an upright propeller-shaft, which is preferably rectangular in cross-section and connected at its lower end to an engine. (Not shown.) Loosely mounted upon the propeller-shaft 1, near the upper end thereof, is a collar 2, having a rectangular-shaped bore 3, whereby it may be slidably mounted upon the rectangular-shaped pro-

PELLER-SHAFT, the collar having upper and lower flanges 4 and 5, respectively. Embracing this collar 2 intermediate its flanges 4 and 5 is an iron or other strap 6, whose free ends receive between them the head 7 of the enlarged portion 8 of the downwardly-directed arm 9, the said head being connected between the ends of said member 6 through the instrumentality of suitable fastenings 10. Formed in the inner face of the enlarged portion 8, immediately beneath the head 7, is a recess 11, whose upper wall 12 is arranged above the flange 5, with its lower wall 13 arranged therebeneath. Journaled upon short stub-shafts 14 and 15 are small wheels 16 and 17, the wheel 16 being arranged to bear upon the upper face of the flange 5 and the lower wheel 17 being designed to bear against the under face thereof, as clearly shown.

Mounted upon the propeller-shaft 1, near the lower end thereof, is a second collar 18, having upper and lower flanges 19 and 20, respectively, there being a second iron or other strap 21 embracing the second collar between its flanges and directed in the same plane as the aforesaid iron or other strap 6. Between the inner faces of the free ends of the second strap 21 the lower end of the arm 9 is pivotally connected through the instrumentality of a suitable pivot-pin 22, the second collar 18 and its connection 21 being slidable upon the propeller-shaft 1 through the instrumentality of a lever 23, fulcrumed, as at 24, upon the upper end of the support 25, the inner end of the said lever 23 being pivotally connected, by means of a suitable pivot-pin or the like 26, between the ends of the aforesaid free ends of the iron or other strap 18, there being a dog 27 associated with the lever 23 for engagement in the rack 28; whereby the lever may hold the aforesaid collars 2 and 18 in adjusted positions upon the propeller-shaft 1, there being a suitable link connection 29 between the said dog 27 and the pivoted hand-lever 30.

The upper end of the propeller-shaft 1 is provided with a collar from which extend bars 31 31' and 32 32', arranged at right angles to each other. Each bar is provided with a suitable propeller-blade 33, each blade being pivotally connected at its under face to its corresponding bar and having its lower edge intermediate its ends connected by a rod 36 to the upper flange 4 of collar 2, whereby the upward and downward movement of collars 2 and 18 will correspondingly swing each

blade upon its bar-face, adjusting the angle of the blades with respect to the horizontal plane of the bars. The blades of opposite bars are of course reversely arranged with respect to each other, as usual.

It will now be understood that the shaft 1 is rotatable and that by reason of the rectangular-shaped bore of the collars 2 and 18 they rotate with the continuously-rotating propeller-shaft. The iron or other straps 6 and 21 and the arm 9 do not rotate. This being understood, it is obvious that rotation of the propeller-shaft 1 will cause the propeller-blade 33 to rotate and that when the lever 23 is depressed upon its fulcrum 24 the collars 2 and 18 will be raised upwardly and longitudinally of the propeller-shaft 1, causing the blade 33, through the connections 35, to assume a more nearly horizontal position, thereby resulting in a slacking of speed of the air-ship. In order to present the blade 33 fully to the wind, it is simply necessary to raise the outer end of the lever 23 to throw the sleeves 2 and 18 downwardly to the desired adjustment. It is obvious, too, that instead of throwing the lower edges of the blades upwardly with respect to the plane of the bars the upper edges may be thrown downwardly with respect to the plane of the bars by the obvious manipulations of the sleeves 2 and 18.

It might be stated that the lower ends of the rod connections 35 between the fan-blades and the upper sleeve 2 are fitted in a groove 36 in the periphery of the flange 4 of the said collar and perforated for the reception of the bolts or other suitable elements 37.

By reason of the wheels 12 and 17 engaging the lower flange 5 of the upper sleeve 2 much friction is reduced in the rotation of the said sleeve, and while the same is not shown in the drawings, for the reason that the change seems obvious, ball-bearings may be used instead of the aforesaid wheels 12 and 17.

From the foregoing it will be seen that the propeller-blades may be adjusted at will for the purpose of increasing or slacking speed of the ship, and that such manipulation is accomplished without slacking the speed of the engine during the normal operation of the latter and its propeller-shaft 1.

In Figs. 5 and 6 of the accompanying drawings there is shown a modified form of propeller-blade 33', which is divided longitudinally and centrally to form upper and lower portions 34' and 35', the said portions being hingedly connected along their opposing longitudinal edges in any suitable manner, so that they may be hinged with respect to each other. The inner end 33^a of each blade 33' is pointed and the outer end thereof

is bifurcated, as at 33^b. This particular form of blade is adapted to fold along the line of its hinge instead of moving upon the pivot, as in the other form. In other words, the upward and downward movement of the sleeve 2' upon a continuously-rotating propeller-shaft 1^a will, by reason of the connection 35' between the said sleeve and the lower portion of each propeller-blade, cause the foldable blades to be folded or unfolded, the unfolded position of the blade being shown in Fig. 5 and the folded position in Fig. 6.

What is claimed is—

1. An air-ship comprising a continuously-rotating propeller-shaft having bars connected to its upper end; a propeller-blade pivotally connected at its under face to the ends of each of said bars; upper and lower sleeves mounted for slidable movement upon said propeller-shaft and for rotation therewith; a rod connection between the lower edge of each of the propeller-blades and the upper sleeve; an arm arranged parallel with the propeller-shaft; a connection between the upper and lower ends of said arm, and the respective sleeves; the said arm having a recess in its inner face; wheels journaled in the said recess of the arm for contact with the upper sleeve; and a lever pivotally connected with the said connection between the lower end of the arm, and the lower sleeve whereby the sleeves and arm may be moved upwardly and downwardly for adjusting the propeller-blades upon their bars to different planes with respect to the plane of said bars.

2. An air-ship comprising a rotatable shaft having bars connected to its upper end; a propeller-blade pivotally connected at its under face to the ends of each of said bars; upper and lower sleeves mounted for sliding movement upon said propeller-shaft and for rotation therewith; a rod connecting the lower edge of said propeller-blade with the upper sleeve; an arm arranged parallel with the propeller-shaft; a strap embracing each sleeve and connected to the respective end of said arm; said arm being formed with a recess in its inner face; wheels journaled in the said recess of the arm for contact with the upper sleeve; and a lever pivotally connected with the lower strap whereby the sleeves and arm may be moved upwardly and downwardly for adjusting the propeller-blades upon their bars to different planes with respect to the plane of said bars.

In testimony whereof I affix my signature in presence of two witnesses.

HENRY H. JOHNSON.

Witnesses:

A. JOHNSON,
FRANK W. WISE.