A. AHLBRECHT.

PROPELLER MECHANISM.

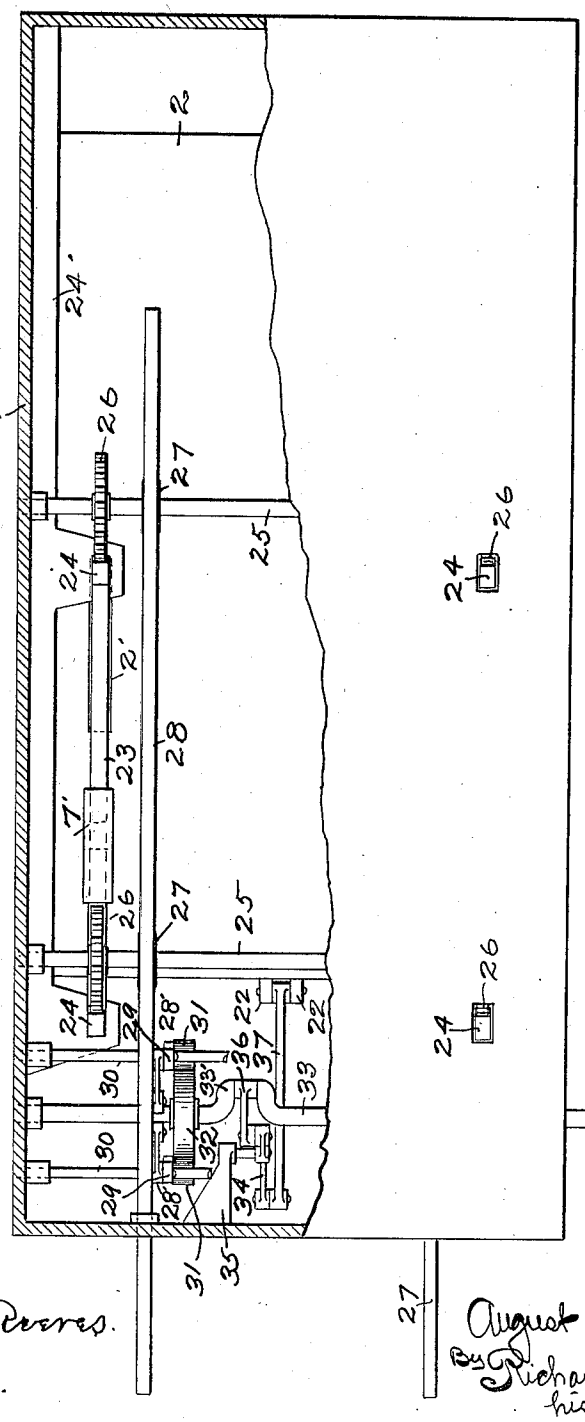
APPLICATION FILED AUG. 3, 1911.

**1,028,093.**

**Patented June 4, 1912.**

3 SHEETS—SHEET 1.

FIG. 1




WITNESSES

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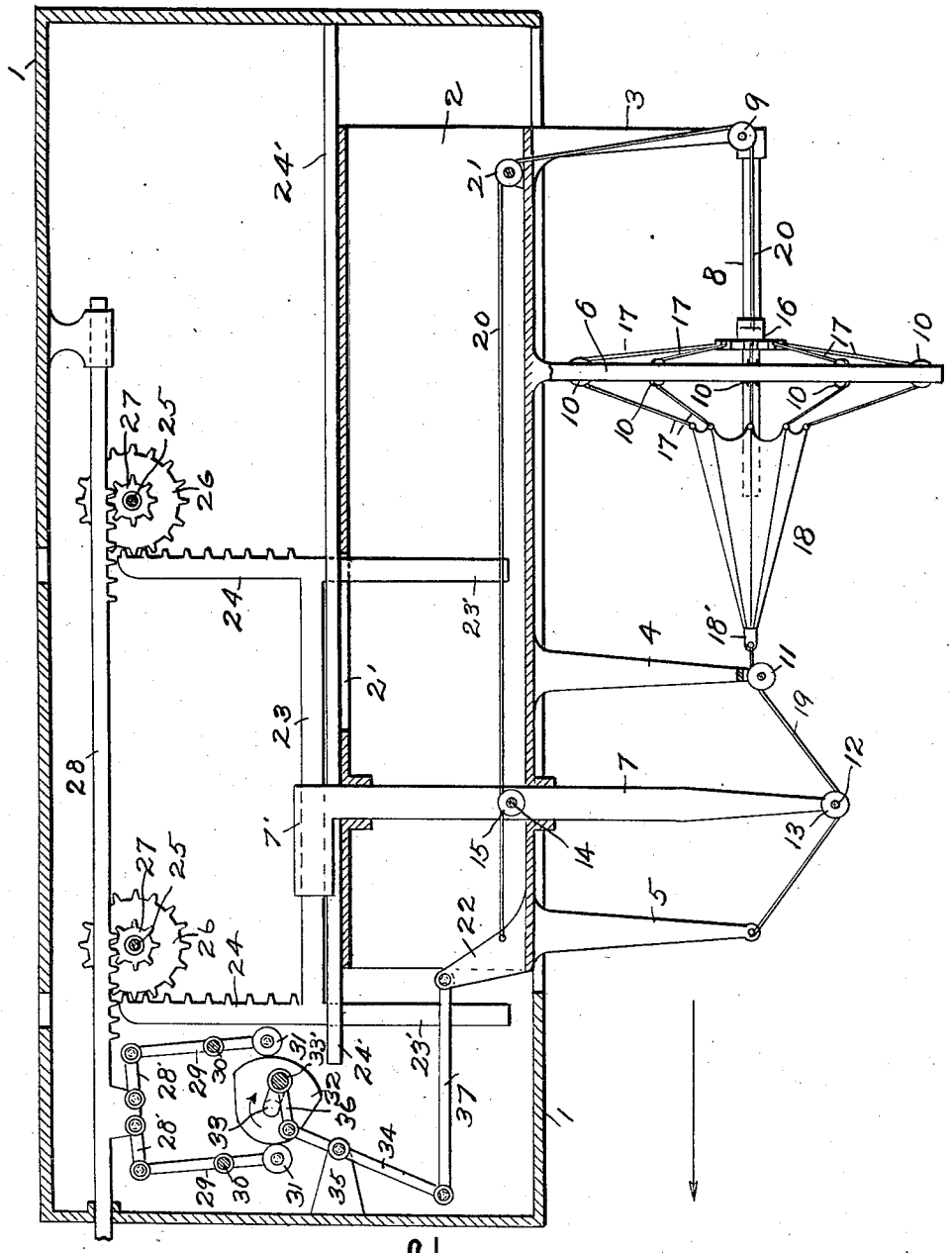

FIG. 2

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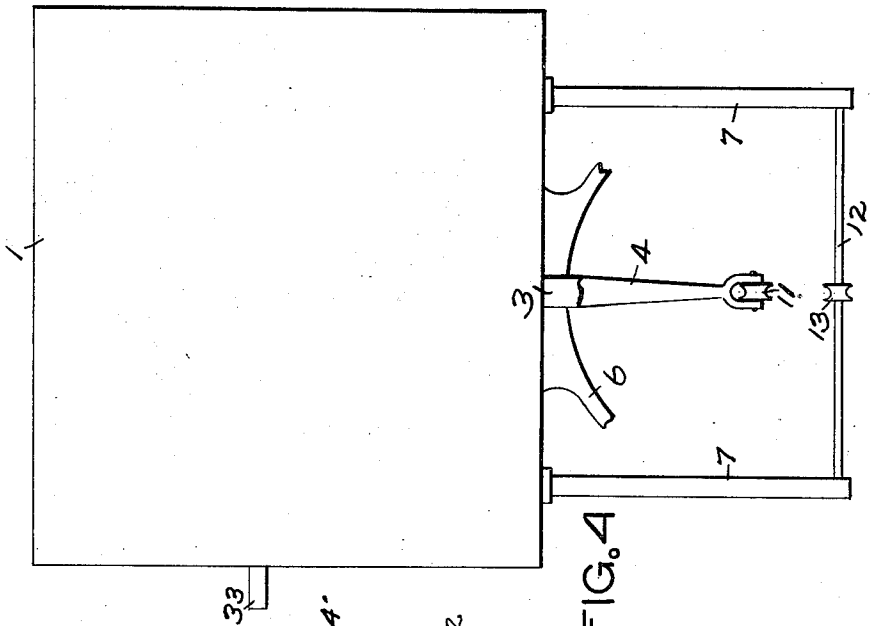

FIG. 4

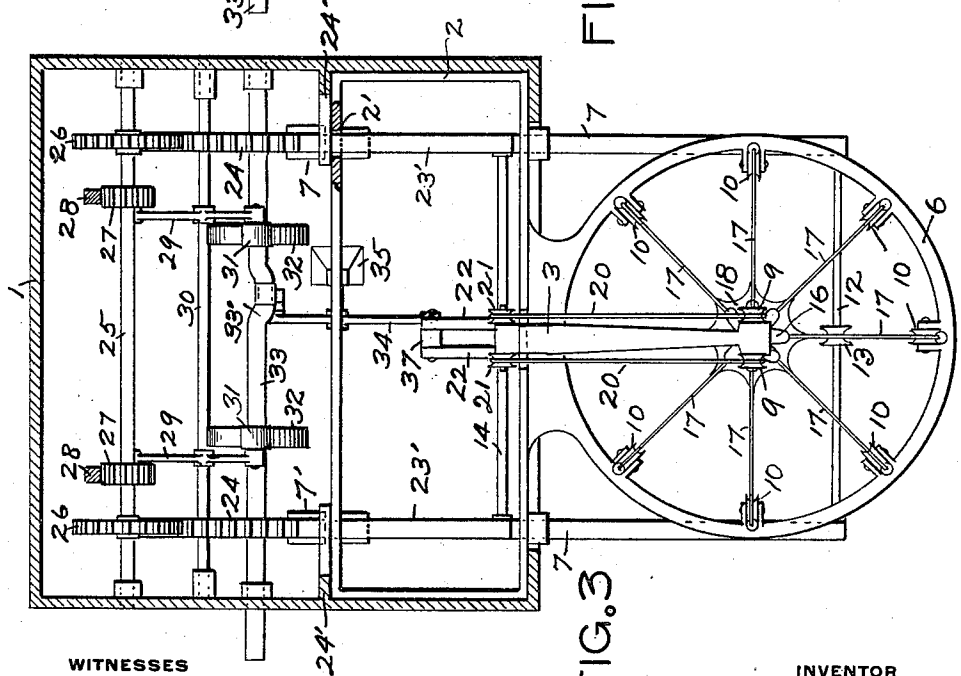

FIG. 3

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# UNITED STATES PATENT OFFICE.

AUGUST AHLBRECHT, OF PITTSBURGH, PENNSYLVANIA.

## PROPELLER MECHANISM.

1,028,093. Specification of Letters Patent. Patented June 4, 1912.

Application filed August 3, 1911. Serial No. 642,087.

*To all whom it may concern:*

Be it known that I, AUGUST AHLBRECHT, citizen of the United States, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Propeller Mechanism; and I do 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, reference being had to the accompanying drawings, and to the letters and figures of reference marked thereon, which form a part of this specification.

My invention relates to an improved apparatus for propelling aerial and other vessels, relating in particular to improvements over that shown and described in my former application for United States patent filed April 27, 1910, Serial No. 557,912, wherein an umbrella-like propeller is employed.

The invention has for its object to provide a collapsible propeller of umbrella-like form with means for reciprocating the same, and for opening and closing the same at proper times during the reciprocating movement.

With the above objects in view, the invention consists in certain novel features of construction, and in certain parts, improvements, and combinations, as will be hereinafter fully described in this specification and pointed out in the appended claims.

The specification includes the accompanying drawings, in which is shown the invention, and in describing the same in detail and operation each of the detail parts is given and referred to by its individual reference numeral, said drawings representing the following views:

Figure 1 represents a plan view, partly in section. Fig. 2 is a side elevation, partly in section. Fig. 3 is an end view, partly in section, and Fig. 4 a view of the same end, unsectioned, but with parts removed and broken away.

As here shown, the structure comprises a box-like support 1 for the mechanism, within the bottom of which is arranged a reciprocating frame or member 2 having the downwardly extended legs 3, 4 and 5, respectively, and the similarly disposed annular frame 6 and the two vertically disposed and operative slide-bars 7—7 extending therethrough, the said leg 3 being provided with a short horizontally disposed shaft 8 and a pair of pulleys 9—9 at right-angles to the shaft, the said annular frame 6 being provided with a plurality of spaced pulleys 10 therein, and the leg 4 being provided with a pulley 11. The vertically disposed slide bars 7—7 are connected at their lower ends by a transversely disposed shaft 12 upon which is mounted the pulley 13, and are further connected, within the member 2, by a like disposed shaft 14 carrying the two pulleys 15—15.

Slidably mounted upon the shaft 8 is a spider 16, to each leg of which is attached a cord or equivalent 17 which passes over one of the pulleys 10 of the frame 6 to and connects with a rib or corner of the umbrella-like propeller 18, said propeller being provided with an end piece 18′ to which is attached one end of a cord or equivalent 19, which cord passes over the pulley 11 and under the pulley 13 to and is connected with its other end to the leg 5. This spider 16 has attached thereto the two cords or equivalents 20—20 which pass rearward to and about the pulleys 9, over the pulleys 21 of the member 2 and then over the pulleys 15 of the slide bars 7 to and connecting at their ends to the brackets 22. Each of these vertically disposed slide bars 7, is provided at its upper end with a horizontally disposed bearing 7′ which is slidably fitted upon a horizontally disposed bar 23, each of said bars being provided at each end with a vertically disposed gear rack 24 terminating in a downwardly disposed portion 23′ slidably fitted within the guide flanges 24′ of the support 1, the two rear portions 23′ passing down through slots 2′ of the reciprocating member 2.

Extending across the support 1 is a pair of shafts 25—25, each having two gear wheels 26—26 mounted thereon in mesh with the said racks 24, said shafts being further provided with two gear pinions 27—27 which mesh with the two horizontally disposed gear racks slidably mounted to the support 1.

The horizontally disposed and slidable gear racks 28—28 are each connected to a pair of links 28′—28′ which are connected to the upper ends of a pair of levers 29—29 mounted upon transverse shafts 30—30 of the support 1, said levers being each provided with a roller 31 engaging opposite sides of the cam 32 mounted upon the main

shaft 33 carried by the support 1, said main shaft having a crank 33′ formed thereon.

The crank of the main shaft 33 is connected to the upper end of a lever 34 pivotally mounted upon a bracket 35 of the support by a link 36, the lower end of said lever being connected to the brackets 22—22 of the reciprocating member 2 by a link 37.

As shown on the drawings, the mechanism is in about neutral position, and upon rotating the shaft 33, in the direction shown on the cam 32 of Fig. 2, the member 2 and connecting parts thereof will move rearward during the one-half revolution of the cams 32, through the medium of the connecting parts, the link 36, lever 34 and link 37 and at the same time the levers 29 will be caused to oscillate and cause the racks 28 to move rearward transmitting a partial rotary motion to the gear wheels 26, by means of the pinions 27, the partial rotation of said gears acting upon the racks 24 and causing them to be elevated and to raise the slide bars 7, which upward movement of the slide bars causes the loop or depression formed in the cord 19 by the pulley 13 to be taken up and formed in the cords 20, thus causing the said cords 19 and 20 to be adjusted, which adjustment of the cords causes the umbrella-like propeller 18 to open out, by means of the attached spider 16 and cords 17, into its active position and thus propel the vessel to which the mechanism be attached in a forward direction, as indicated by the arrow on Fig. 2. During the other half revolution of the cams the propeller closes into an inactive position and the mechanism adjusts itself as shown, the movements being repeated in both directions as long as the shaft 33 be rotated.

Modifications or changes may be made in the mechanism shown and described and yet be within the limits of the invention as set forth within the appended claims.

Having thus shown and described my invention, what I claim is:

1. The combination of a collapsible umbrella-like propeller connected at its closed end with a cord to a reciprocating member and at its open end by a plurality of cords to said member, means for reciprocating said member, and means carried by said member to automatically adjust said cords to open said propeller during the movement of said reciprocating member in one direction and close the same during the movement of said member in the opposite direction.

2. The combination of a collapsible umbrella-like propeller connected at its closed end by a cord to a reciprocating member and at its opposite end by a plurality of cords to said member, means for reciprocating said member, and means to automatically adjust said cords to open said propeller during the movement thereof with the said reciprocating member in one direction and close the same during its movement with said member in the opposite direction.

3. The combination of a collapsible umbrella-like propeller connected at its closed end with a cord to a horizontally disposed reciprocating member and at its open end by a plurality of cords to said member, means for reciprocating said member, and vertically reciprocating members carried by said horizontally disposed reciprocating member to automatically adjust said cords to open said propeller during its movement with the said horizontally disposed reciprocating member in one direction and close the same during their movements in the opposite direction.

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

AUGUST AHLBRECHT.

Witnesses:
R. S. HARRISON,
LILLIAN BATES.