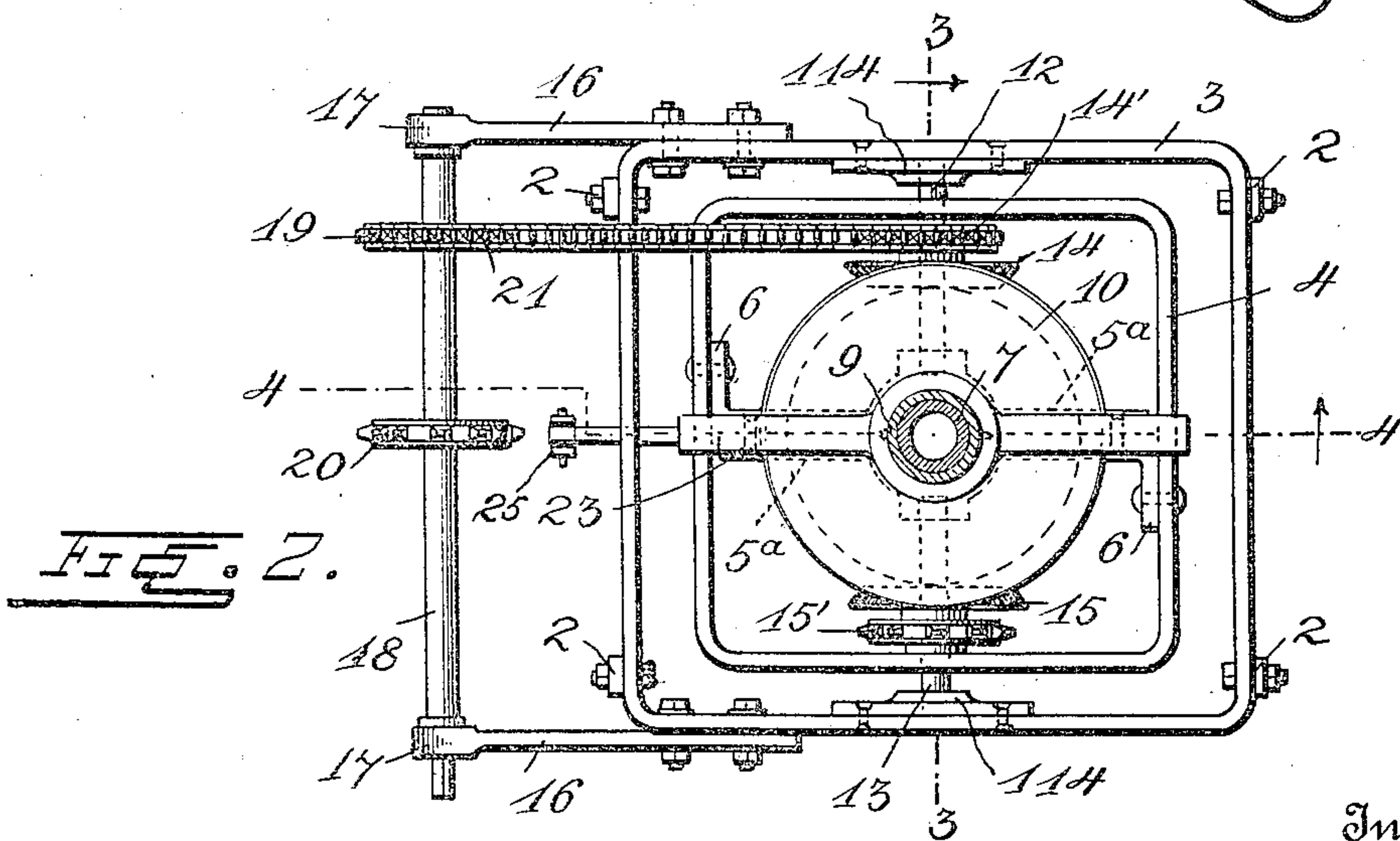
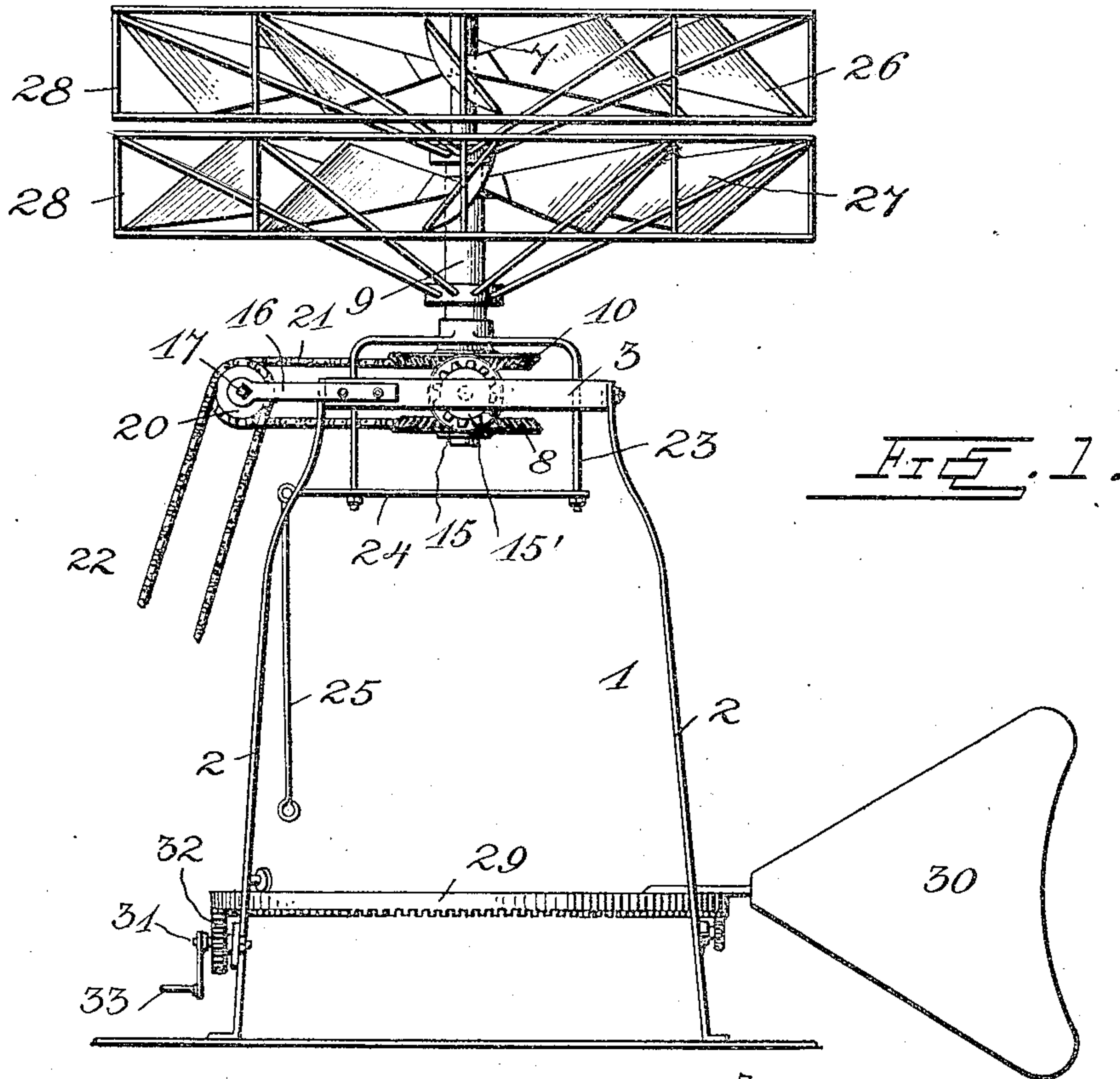


A. BRATSCHIE.
DIRIGIBLE AIR SHIP.
APPLICATION FILED MAR. 14, 1904.

2 SHEETS—SHEET 1.



Witnesses
C. Hunter
C. H. Griesbauer.

Inventor
A. Bratschie
by *A. Bratschie*
Attorney

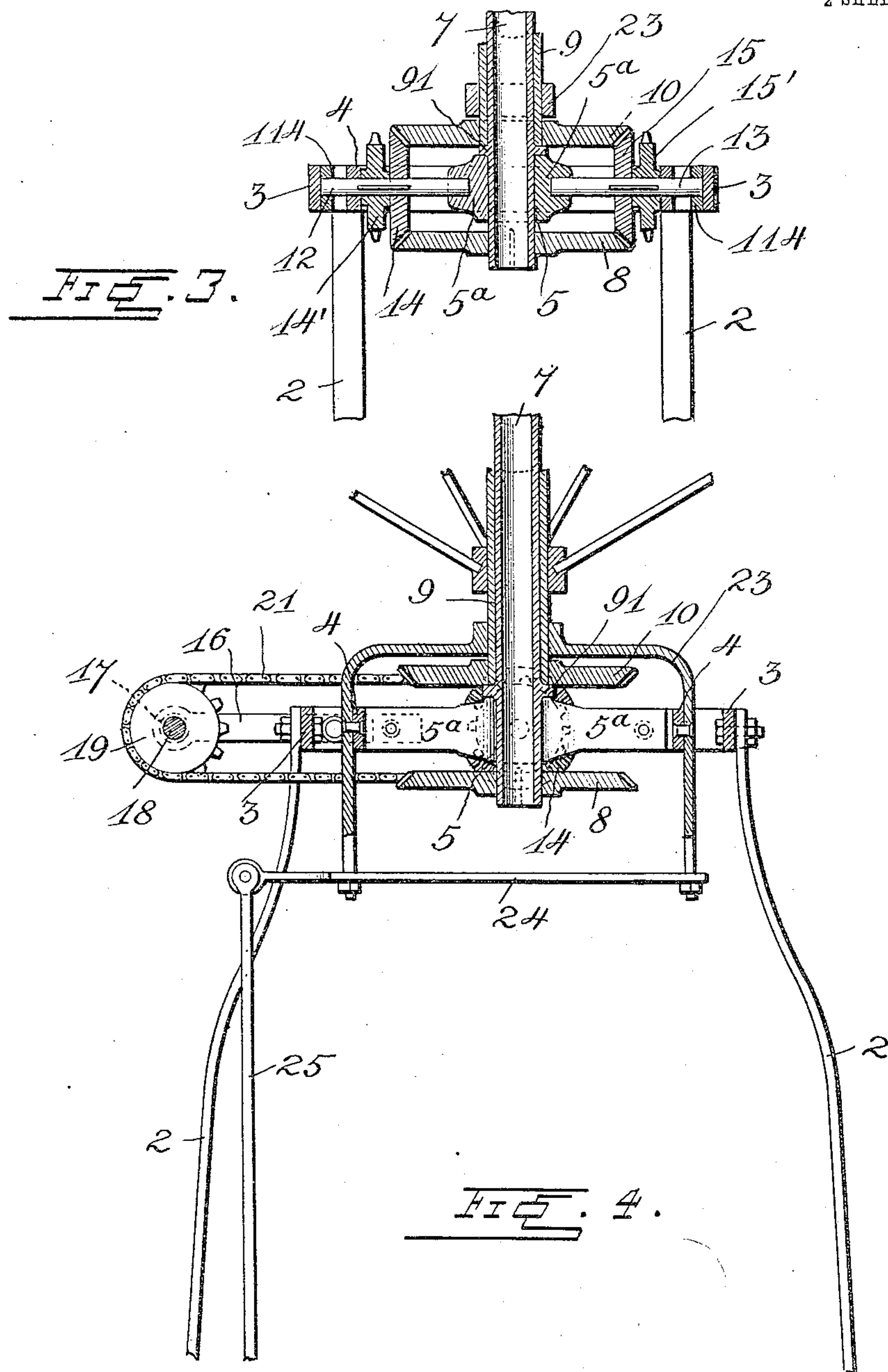
No. 816,706.

PATENTED APR. 3, 1906.

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2 SHEETS—SHEET 2.



Witnesses
C. *[Signature]*
C. H. Griesbauer.

Inventor
A. Bratschie
by *[Signature]*
Attorney

UNITED STATES PATENT OFFICE.

AMIEL BRATSCHIE, OF NEW CASTLE, PENNSYLVANIA.

DIRIGIBLE AIR-SHIP.

No. 816,706.

Specification of Letters Patent.

Patented April 3, 1906.

Application filed March 14, 1904. Serial No. 198,160.

To all whom it may concern:

Be it known that I, AMIEL BRATSCHIE, a citizen of the United States, residing at New Castle, in the county of Lawrence and State of Pennsylvania, have invented certain new and useful Improvements in Dirigible Air-Ships; 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.

My invention relates to improvements in air-ships or flying-machines, particularly with reference to means for raising, lowering, propelling, and steering the same; and it consists in the construction, combination, and arrangement of devices hereinafter described and claimed.

The object of my invention is to provide a novel mechanism for the purposes described which is simple, strong, light, and durable and is not likely to get out of order.

In the drawings, Figure 1 is a side elevation of the supporting, propelling, and steering mechanism of an aeroplane. Fig. 2 is a horizontal section through the drive-shafts, taken above the operating-gearing, and the tilting yoke. Fig. 3 is a vertical sectional view on the line 3 3 of Fig. 2. Fig. 4 is a vertical sectional view of my improved propelling and steering mechanism.

My improved raising, lowering, propelling, and steering mechanism, hereinafter described, may be used in connection with any form of air-ship and may be attached thereto in any suitable manner.

In the drawings, 1 denotes the upper portion of the supporting-frame, consisting of the rods or standards 2, connected at their upper ends to a rectangular frame 3, within which is pivotally supported a similarly-shaped though smaller frame 4.

In the center of the frame 4 is arranged a vertically-disposed bearing 5, formed of two horizontally-disposed plates 5^a, provided at their outer ends with angle-arms 6, bolted to the sides of the frame 4, and into said bearing is journaled the lower portion of a vertically-disposed hollow shaft 7.

On the lower end of the shaft 7 is fixed a bevel gear-wheel 8, the teeth of which project upwardly. Arranged upon the shaft 7 is a similar shaft or sleeve 9, which carries a bevel gear-wheel 10, the teeth of which project downwardly.

12 and 13 denote two short horizontally-

disposed shafts, the outer ends of which are mounted in bearings 114, fixed to the inner sides of the frame 3. The shafts 12 and 13 are adapted to pass through the sides of the frame 4 and to pivotally support the same in the frame 3, and the inner ends of the shafts are journaled in socket-bearings formed in the bearing-plates 5^a. The shaft 7 has a flange-collar 91, which bears on said bearing-plates 5^a and supports the said shaft.

On the shafts 12 and 13 and within the frame 4 are mounted bevel gear-wheels 14 and 15, respectively, and fixed to or formed integral with the gear-wheels 14 and 15 are sprocket-wheels 14' and 15'. The bevel gear-wheels 14 and 15 are adapted to mesh with the gear-wheels 8 and 10, as clearly shown in Fig. 3 of the drawings.

16 denotes two arms bolted to the sides of the frame 3, said arms being adapted to project outwardly and to have formed thereon bearings 17, in which is journaled a horizontally-disposed shaft 18, on which are fixed two sprocket-wheels 19 and 20, the sprocket-wheel 19 being connected to the sprocket-wheel 14', mounted on the shaft 12 by means of a sprocket-chain 21, the sprocket-wheel 20 being adapted to be connected by a sprocket-chain 22 with any suitable motive power. (Not shown.)

By the arrangement of gearing just described it will be seen that the gears on the shaft 7 and sleeve 9 are rotated to drive said shaft and sleeve in opposite directions, the purpose of which will hereinafter appear. The bevel-gear 15 and sprocket-wheel 15' are for use in an emergency and are adapted to run idly when the gears 14 and 14' are being driven.

23 denotes a bail or yoke shaped frame mounted on the sleeve 9, the ends of which are adapted to pass downwardly through the frame 4 and to engage the sides thereof. The extreme lower ends of the yoke are connected by a cross-bar 24. To the projecting end of this bar is connected an operating rod or lever 25, the lower end of which lies within reach of the operator. The object of this yoke and operating-rod is to permit the frame 4, together with the shafts 7 and 9, to be tilted or inclined.

On the upper ends of the shafts 7 and 9 are fixed wind-wheels 26 and 27, arranged one above the other in horizontal planes, the blades of the two wind-wheels being inclined in opposite directions, and the angle of in-

clination in each is upward in the direction in which they rotate. The wind-wheels rotate in opposite directions due to the oppositely-driven shafts 7 and 9 on which they are mounted.

The wind-wheels are protected by a skeleton framework 28, formed of rods or wires suitably mounted on and braced to collars on the shafts 7 and 9, as shown.

29 denotes a circular rack rotatably supported upon the rods or standards 2, preferably mounted upon idle rollers journaled on stud-shafts projecting from said rods 2.

30 denotes a rudder-blade fixed to the rack 29 and adapted to be carried thereby.

31 denotes a short shaft journaled in a bearing fixed to the posts, and on one end of said shaft is fixed a spur-gear 32, which is adapted to mesh with the teeth on the rack 29. On the opposite end of the shaft 31 is mounted a crank-handle 33, by which the gear 32 is rotated, and which in turn rotates the rack 29, which moves the rudder 30 around in any direction desired.

It will be seen from the description and drawings that my improved mechanism provides means for raising, lowering, and propelling air-ships and also for steering the same.

It will be understood that when the wind-wheels are inclined or tilted by the rod or lever 25 they cause the air-ship to move in the direction of such inclination.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. Raising, lowering and propelling mechanism for air-ships, comprising a supporting-frame having an outer frame, an inner frame pivotally mounted in the outer frame and thereby adapted to be tilted or inclined, a bearing on the center of the inner-frame pivot, a shaft extending above the inner frame and journaled in said bearing, a tubu-

lar shaft revoluble on the first-named shaft, a propeller-wheel on each of said shafts, reversely-disposed bevel-gears, one on each of said shafts and respectively above and below said bearing, beveled gears mounted on the inner-frame pivot and engaging said reversely-disposed bevel-gears, means to actuate said gears to rotate the propeller-wheels and their shafts simultaneously in reverse directions, and means to tilt or incline the inner frame at will, substantially as described.

2. Raising, lowering, propelling and steering mechanism for air-ships, comprising a supporting-frame having an outer frame, an inner frame pivotally mounted in the outer frame and thereby adapted to be tilted or inclined, a bearing on the center of the inner-frame pivot, a shaft extending above the inner frame and journaled in said bearing, a tubular shaft revoluble on the first-named shaft, a propeller-wheel on each of said shafts, reversely-disposed bevel-gears, one on each of said shafts and respectively above and below said bearing, beveled gears mounted on the inner-frame pivot and engaging said reversely-disposed bevel-gears, means to actuate said gears to rotate the propeller-wheels and their shafts simultaneously in reverse directions, means to tilt or incline the inner frame at will, a circular rack revolubly supported on the supporting-frame below the outer frame, a rudder-blade fixed to the said rack and carried thereby, a spur-gear mounted on said supporting-frame and engaging said rack, and means to rotate said spur-gear, substantially as described.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

AMIEL BRATSCHIE.

Witnesses:

L. H. SHAFFER,

GEORGE T. WEINGARTNER.