A. BRATSCHIE.

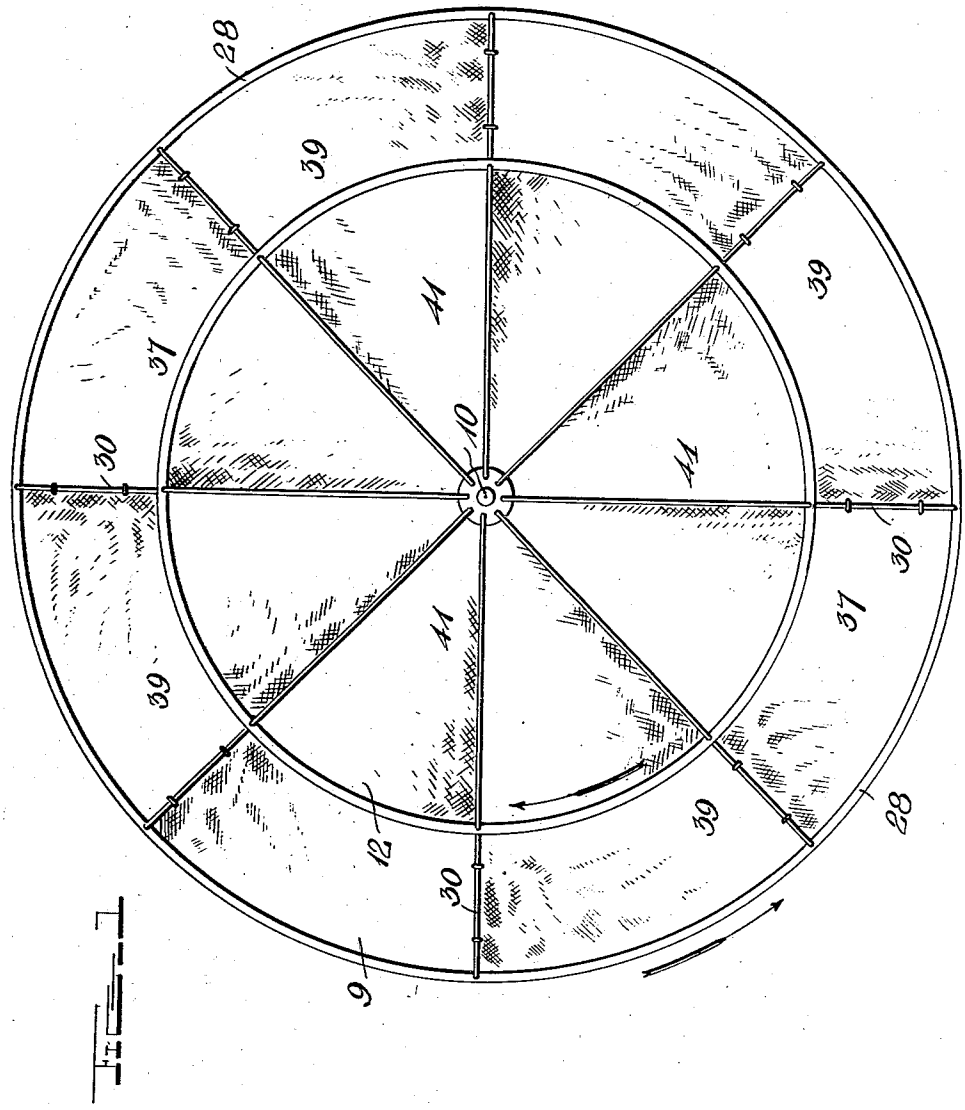
AIR SHIP.

APPLICATION FILED FEB. 4, 1909.

943,732.

Patented Dec. 21, 1909.

3 SHEETS—SHEET 1.



Witnesses

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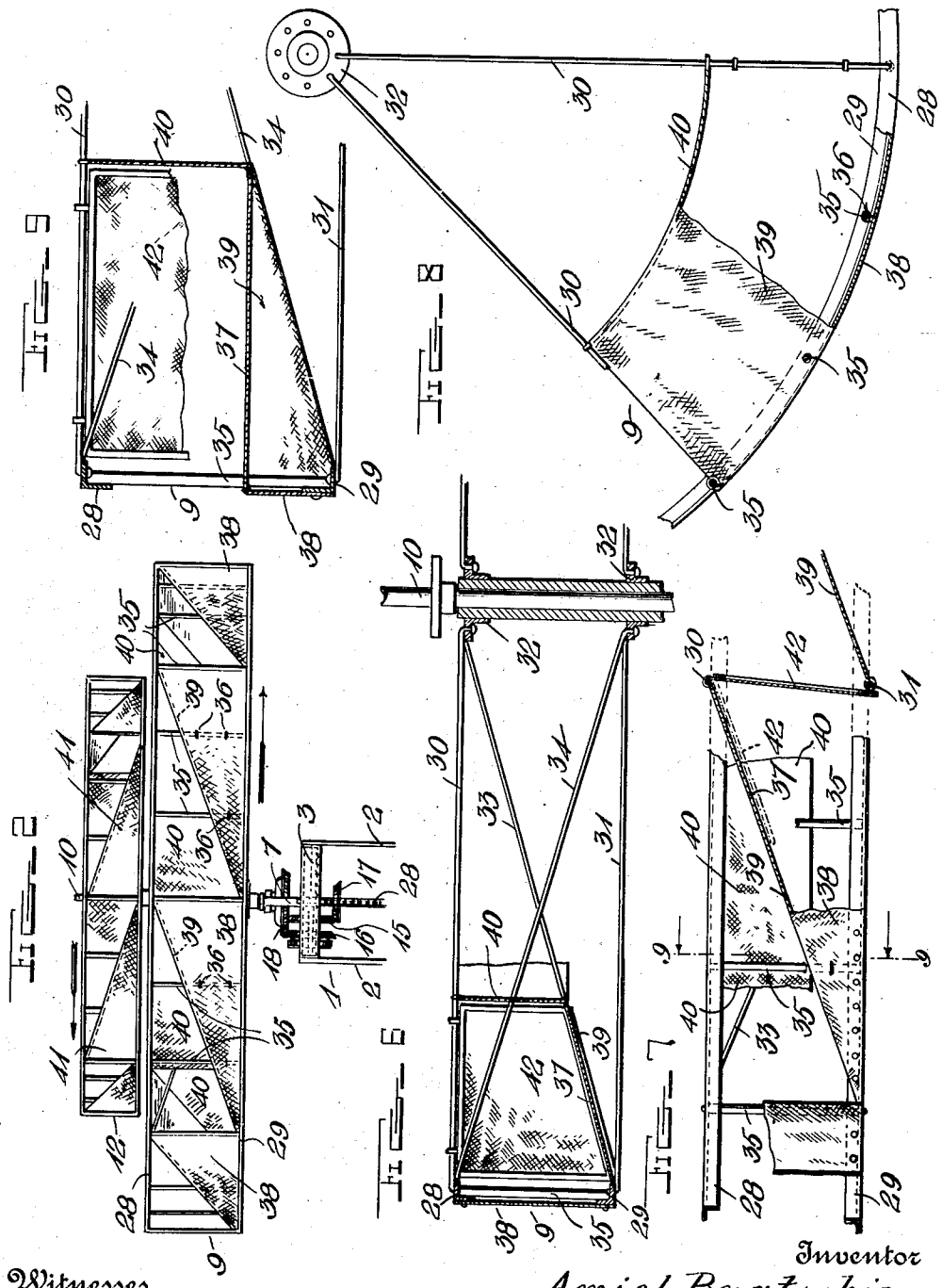

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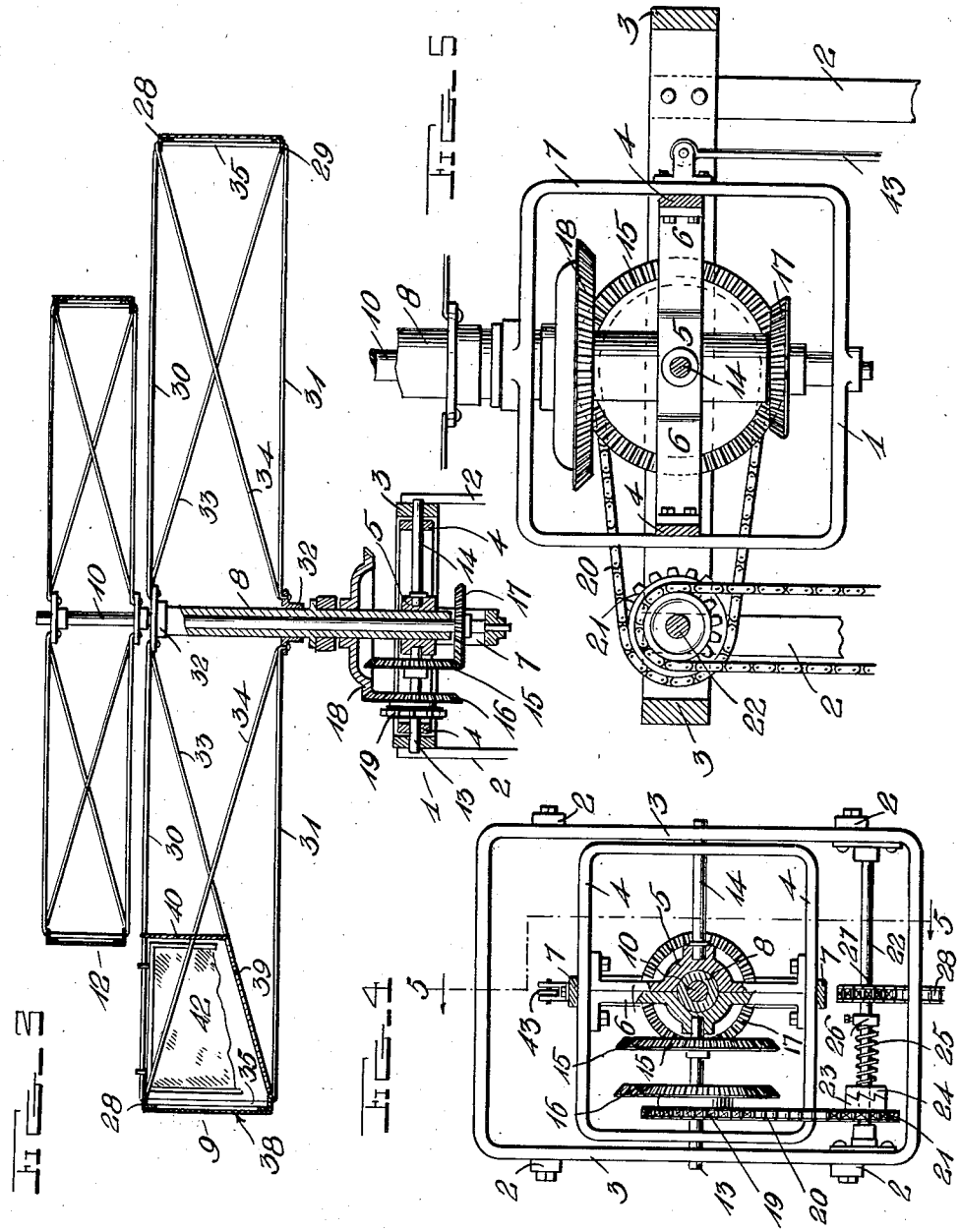

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UNITED STATES PATENT OFFICE.

AMIEL BRATSCHIE, OF NEW CASTLE, PENNSYLVANIA.

AIR-SHIP.

943,732. Specification of Letters Patent. Patented Dec. 21, 1909.

Application filed February 4, 1909. Serial No. 475,988.

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 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.

This invention relates to improvements in air ships.

The object of the invention is to provide an improved construction of raising and propelling mechanism for air ships.

A further object is to provide means whereby when the wind wheels are stopped, they will be caused to act as a parachute to permit the ship to safely descend.

With these and other objects in view, the invention consists of certain novel features of construction, combination and arrangement of parts as will be described and particularly pointed out in the appended claims.

In the accompanying drawing, Figure 1 is a top plan view of my improved air ship; Fig. 2 is a side elevation of the upper portion of the same; Fig. 3 is a central vertical sectional view, parts being omitted to avoid confusion; Fig. 4 is a horizontal sectional view through the operating shafts taken above the operating gears and drive shaft; Fig. 5 is a vertical sectional view taken on the line 5—5 of Fig. 4; Fig. 6 is a detail side view of a portion of the lower wind wheel showing more particularly the arrangement of one of the closing flaps of the wings or blades whereby the wind wheels when stopped will form parachutes; Fig. 7 is a side view, partly in section, of a portion of one of the wind wheels; Fig. 8 is a plan view of the same, with parts broken away and in section; and Fig. 9 is a vertical sectional view on the line 9—9 of Fig. 7.

Referring more particularly to the drawings, 1 denotes the upper portion of the supporting frame, which consists of rods, 2, connected at their upper ends to a rectangular horizontally-disposed frame, 3, in which is pivotally mounted a smaller frame, 4.

In the center of the frame, 4, is arranged a vertical bearing, 5, composed of two horizontally-disposed plates, 6, arranged transversely across the center of the frame, 4, to which they are secured at their outer ends, as clearly shown in Fig. 4 of the drawing. Around the center of the frame, 4, and projecting at right-angles above and below the same, is a vertically-disposed frame, 7.

Revolubly mounted in the bearing, 5, and in the upper portion of the vertical frame, 7, is a tubular operating shaft, 8, on the upper end of which is fixedly mounted a lower wind wheel, 9.

Revolubly mounted in the tubular shaft, 8, is an inner shaft, 10, which extends through the tubular shaft, 8, and projects a suitable distance above the upper end thereof and has fixedly mounted on its projecting upper end an upper wind wheel, 12, which is considerably smaller than the lower wheel, 9. The lower end of the shaft, 10, has a step bearing in the lower portion of the vertical frame 7.

In one side of the horizontally-disposed frame, 4, is arranged a shaft, 13, the inner end of which is mounted in one side of the bearing, 5, of the cross plates, 6, while the outer end of said shaft, 13, extends through the adjacent sides of the inner frame, 4, and the outer frame 3, thereby pivotally connecting this side of the frame, 4, with said outer frame, 3.

In the opposite side of the frame, 4, is arranged a shaft, 14, one end of which is mounted in the opposite side of the bearing, 5, while the outer end projects through the side of the frame, 4, and the adjacent side of the supporting frame, 3.

On the shaft, 13, are fixedly mounted bevel power transmitting gears, 15, and 16, the gear, 15, being adapted to mesh with a smaller bevel gear, 17, fixedly mounted on the projecting lower end of the inner shaft, 10, below the end of the tubular shaft, 8, whereby said inner shaft is driven. The gear, 16, on the shaft, 13, is adapted to engage a larger bevel gear, 18, which is fixedly mounted on the tubular shaft, 8, above the frame, 4, as clearly shown in Fig. 3 of the drawings. By providing a large operating gear, 18, for the lower larger wind wheel and a small gear for the upper smaller wind wheel and connecting said gears with the driving gears 15 and 16, which are of the same size, the upper smaller wind wheel will be driven more rapidly than the lower larger wind wheel thereby compensating for the increased air pressure or resistance which the larger wheel has over the smaller. Also

fixedly mounted on the shaft, 13, is a sprocket gear, 19, which is connected by a sprocket chain, 20, to a gear pinion, 21, which is loosely mounted on a drive shaft, 22, journaled in suitable bearings in the frame, 3. On the gear pinion, 21, is formed one member of a clutch device, 23, the opposite member, 24, of which is slidably mounted on and driven by the shaft, 22. The clutch member, 24, is held in operative engagement with the clutch member, 23, by means of a coiled spring, 25, arranged on the shaft, 22, and held in position by a collar, 26, as shown. When the shaft, 22, is operated the pinion, 21, will be driven thereby through the clutch mechanism herein described, and the motion of the wheel, 21, is imparted to the wheel, 19, through the chain, 20, and from the wheel, 19, to the shaft, 13, and the driving gears mounted thereon. The shaft 22, has mounted thereon a driving sprocket, 27, which is connected by a sprocket chain, 28, to a suitable driving mechanism, not shown. The clutch connection between the drive shaft, 22, and the sprocket pinion, 21, is provided to prevent the sudden stopping of the wind wheels when the power is cut off, as the momentum of the revolving wind wheels if stopped suddenly would tend to twist or break their supporting framework. By means of the clutch, the wind wheels will be permitted to come to a gradual stop after the power has been cut off from the driving mechanism, as the clutch member of the driving pinion, 21, will turn loosely over the clutch member, 24, secured to the shaft, 22.

The lower wind wheel, 9, consists of upper and lower circular frames or rings, 28 and 29, which may be constructed of any suitable material but are here shown and are preferably formed of light angle-iron bars. The rings, 28 and 29, are connected by radially-disposed spokes, 30 and 31, to flanged hubs, 32, secured to the upper portion of the tubular shaft, 8, as shown. The circular frames or rings, 28 and 29, are also connected to the hubs, 32, by oppositely-inclined crossed brace rods, 33 and 34. The circular frames or rings, 28 and 29, are connected together at intervals by vertically-disposed bracing rods, 35. The circular frames or rings, 28 and 29, together with the spokes, brace rods, spacing and connecting rods, form a framework to support a series of flexible wings or blades, 37, each of which comprises an outer triangular wall, 38, the lower edge of which is suitably secured to the lower ring, 29, and the end of the wall, 38, is secured to the adjacent spacing rod, 35. The walls, 38, are secured between their ends as shown at 36, to the intermediate spacing rods, 35, whereby said walls are supported and given substantially the curvature of the rings, 28 and 29. In addition to the wall, 38, each wing is provided with an upper inclined wall, 39, the outer edge of which is secured to the upper edge of the front wall, as shown. The lower end of the upper wall is connected to the inclined brace bar, 33, while the upper end of the wall 39 is connected to one of the spokes 30. The wings or blades are further provided with a rear wall 40 which extends between the upper spokes 30 and braces 33 of the frame and has its upper and lower edges secured to said spokes and braces respectively. The rear wall 40 may be in the form of a continuous circular strip of material and will close the rear sides of the spaces above and below the inclined wall 39, thus forming pockets to catch and deflect the air against said wall 39.

The upper wind wheel 12 is constructed in a manner similar to the lower wind wheel, and is provided with wings or blades 41 which are formed in the same manner as the wings or blades 37 of the lower wind wheel, except that the wings 41 open in a directly opposite direction from the opening in the lower wheel and extend from the rim to the center of the wheel without any rear wall. Arranged in the front end of each of the wings of the lower wind wheel, is a hinged closing flap 42 said flap being preferably formed of a light frame over which is stretched a suitable fabric cover. The flaps 42 are hinged at their upper edges to the upper spokes, 30, of the wheel in position to drop by gravity into the open end of the wing, as clearly shown in Fig. 6 of the drawings. The lower end of the flaps is adapted to engage the outer end of the brace 33 when the flap is dropped to an operative position so that the flap will be held to prevent the escape of air caught within the wings or blades when the ship is descending, thereby causing said wings to form a series of parachutes whereby the ship will gradually descend when the wings have ceased to revolve. The flaps, 42, being hinged at their upper ends to swing inwardly as hereinbefore described and as clearly shown in Figs. 6 and 7 of the drawings, will be forced inwardly by the currents of air passing between the wing so that the elevating and propelling action of the wings will not be interfered with, said flaps dropping by gravity to close the outer ends of the wings as soon as the wheels cease to revolve. While the flaps, 42, are shown and described only in connection with the lower wheel, it is obvious that if found necessary, similar flaps may be arranged in the wings of the upper wheel.

By forming the wings of the wheel as herein shown and described, the revolving of the wheels in opposite directions by the mechanism hereinbefore described, will cause the wings to act on the air currents in such a manner as to raise and propel the air ship.

The rear walls of the wings serve to direct the upper air currents into the open ends of the next adjacent wing.

The pivotally mounted shaft supporting frames 4 and 7, together with the shafts 8 and 10 and the wind wheels mounted thereon, are adapted to be tilted forwardly or rearwardly by means of an operating rod, 43, which extends downwardly to within convenient reach of the operator.

From the foregoing description, taken in connection with the accompanying drawings, the construction and operation of the invention will be readily understood without requiring a more extended explanation.

Various changes in the form, proportion and the minor details of construction may be resorted to without departing from the principle or sacrificing any of the advantages of the invention as defined in the appended claims.

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

1. In an air ship, upper and lower revolubly mounted wind wheels, means to operate said wheels in opposite directions, a series of wings arranged in said wheels, said wings comprising an outer wall, an upper inclined wall, and a rear wall extending above said upper inclined wall.

2. In an air ship, a lower revolubly mounted wind wheel, an upper revolubly mounted wind wheel of less diameter than said lower wheel, means to revolve said wheels in opposite directions, a series of wings arranged in said wheels, said wings comprising substantially triangular walls, an upper inclined wall connected to the upper edge of said triangular wall, a rear wall connected at its lower edge to the inner edge of the upper wall, and a closing flap hinged to swing downwardly between the ends of the inclined walls of said wings when the wheels cease to revolve, thereby forming parachutes of said wings.

3. In an air ship, a lower wind wheel and an upper wind wheel smaller than said lower wheel, said wheels comprising upper and lower circular frames, upper and lower centrally disposed hubs, radially-disposed spokes connecting said frames with said hubs, oppositely inclined brace rods also connecting said frame with the hubs, a series of vertically disposed spacing rods between said frames, a series of wings arranged in said wheels, said wings comprising an outer wall connected at its lower edge to said lower circular frame and at its end with one of said spacing bars, an inclined upper wall connected at its lower end to one of the inclined brace bars of the wheels, and at its upper end to one of the upper spokes of the wheel, and at its outer edge to the upper edge of the front wall, and a rear wall connected at its lower edge to the inner edge of the upper wall and at its opposite ends to the upper spokes of the wheel, said rear wall forming a chute to direct the upper air currents into the open ends of the next adjacent wings, hinged flaps adapted to drop by gravity and to close the openings between the wings when the wheels cease to revolve, and means whereby said wheels are driven in opposite directions.

4. In an air ship, an outer tubular operating shaft and an inner operating shaft in said tubular shaft, an upper smaller wind wheel mounted on said inner shaft, a lower larger wind wheel mounted on said outer tubular shaft, a small operating gear on said inner shaft, a larger operating gear on said outer shaft and power transmitting gears engaged with said operating gears whereby said wind wheels are driven in opposite directions and said smaller wheel driven at a greater speed than the larger wheel.

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

AMIEL BRATSCHIE.

Witnesses:
E. EDMONSTON, Jr.,
J. P. DUFFIE.