

G. WILLIAMSON.
 PROPELLING MECHANISM.
 APPLICATION FILED SEPT. 13, 1910.

1,014,195.

Patented Jan. 9, 1912.

4 SHEETS—SHEET 1.

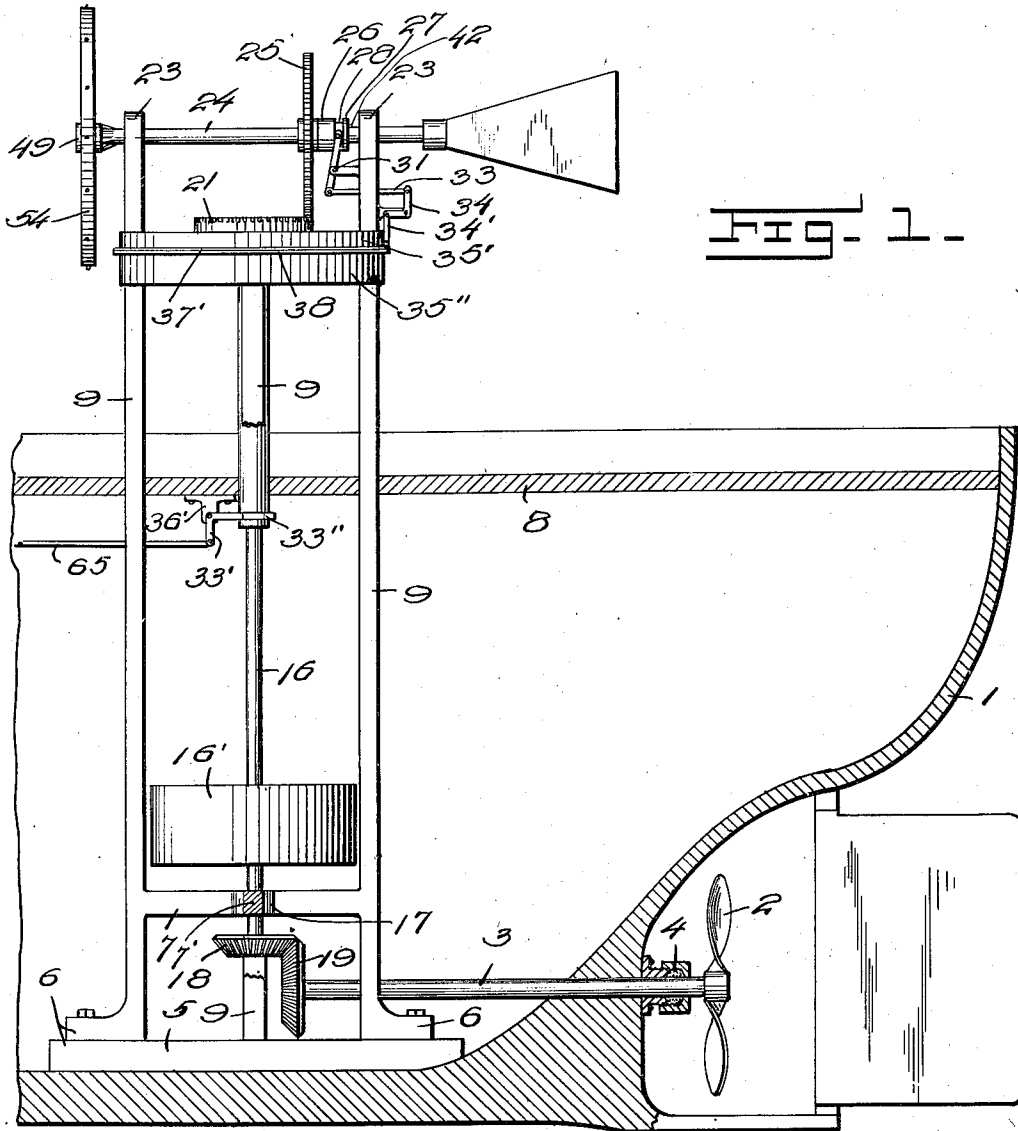


Fig. 1.

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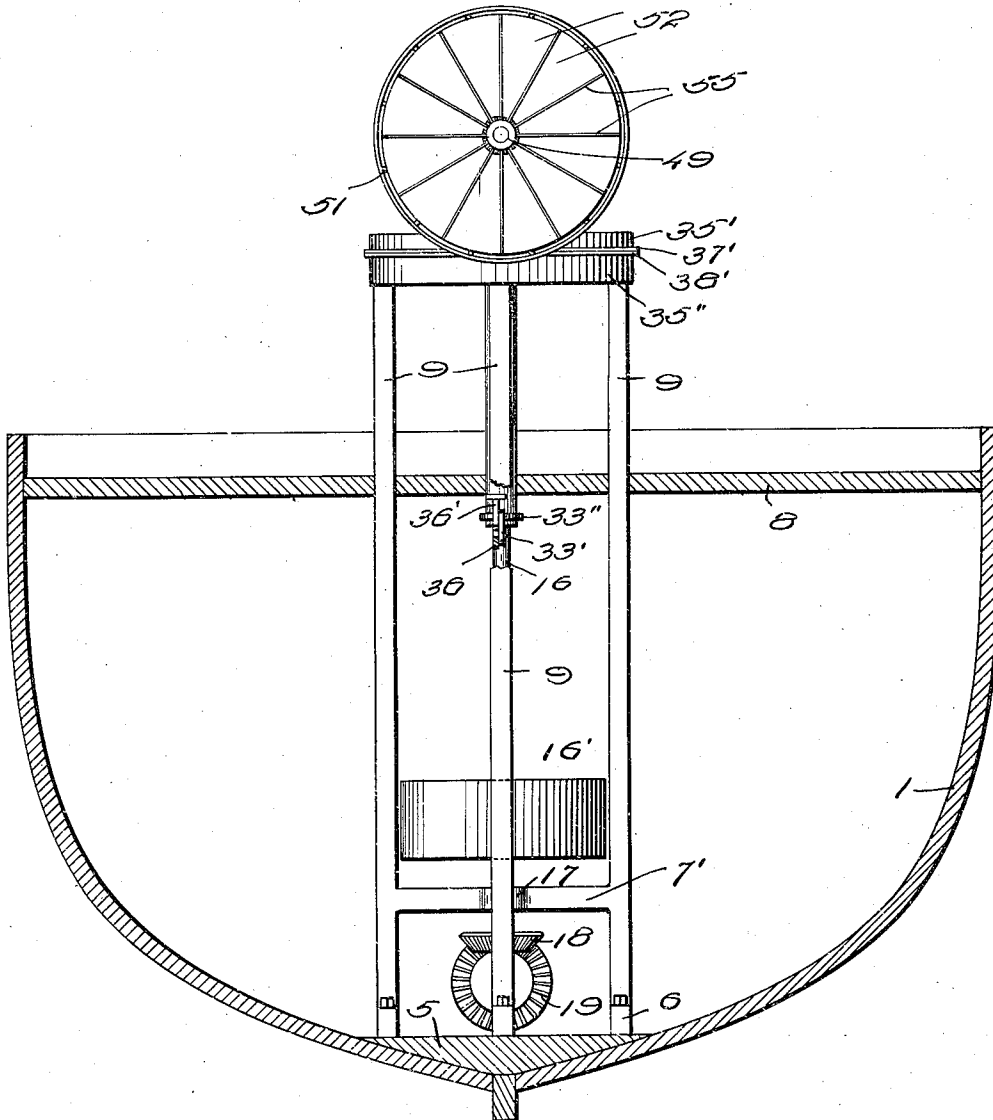
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Fig. 2.



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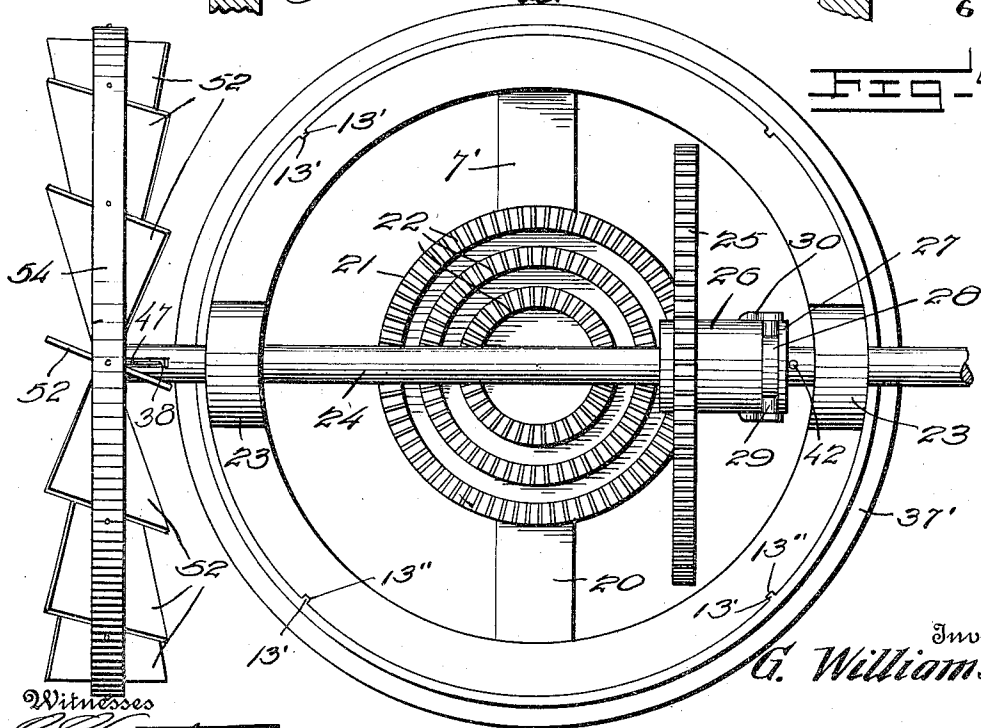
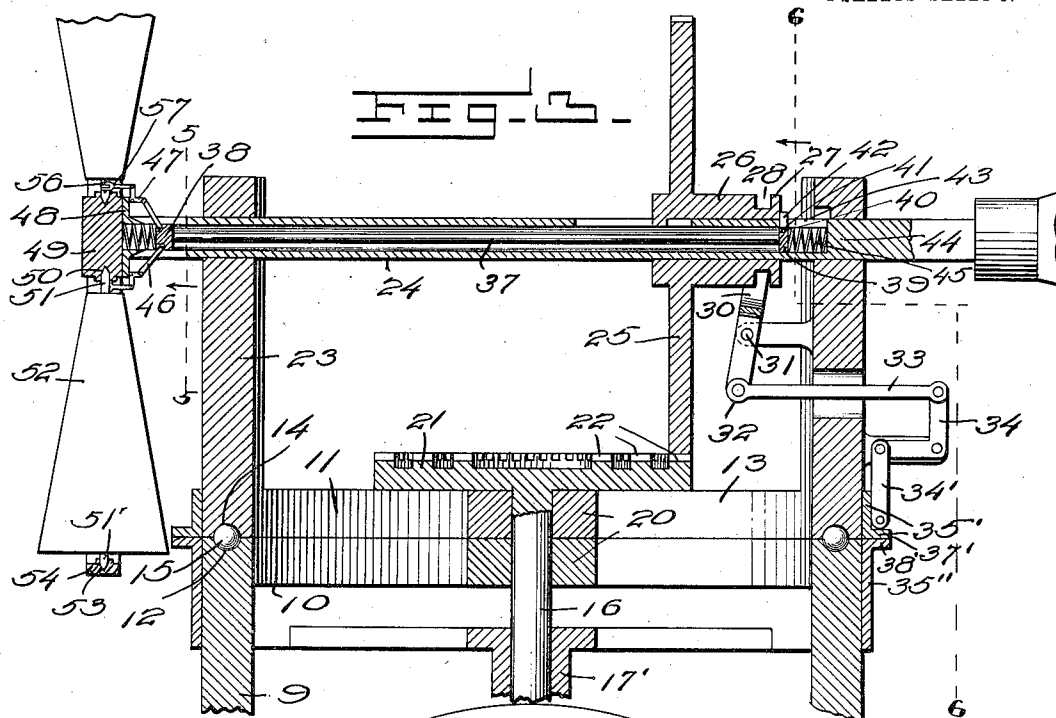
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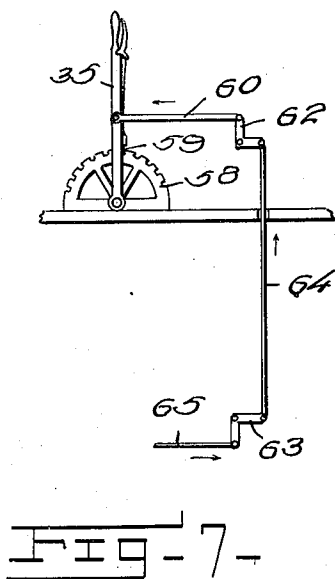
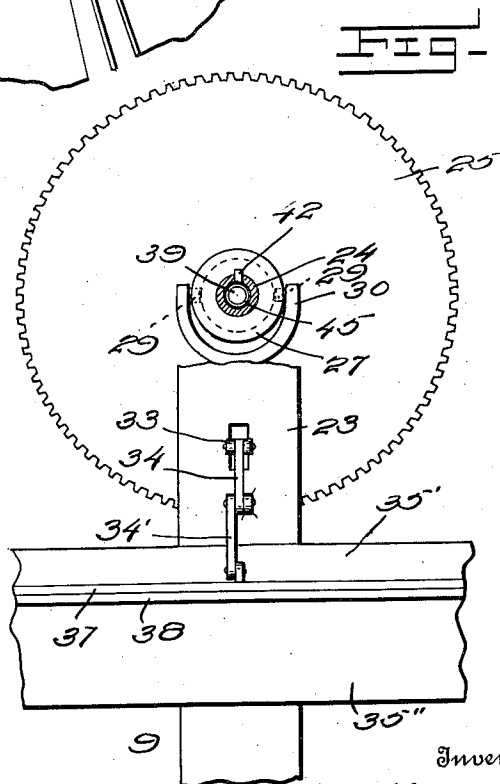
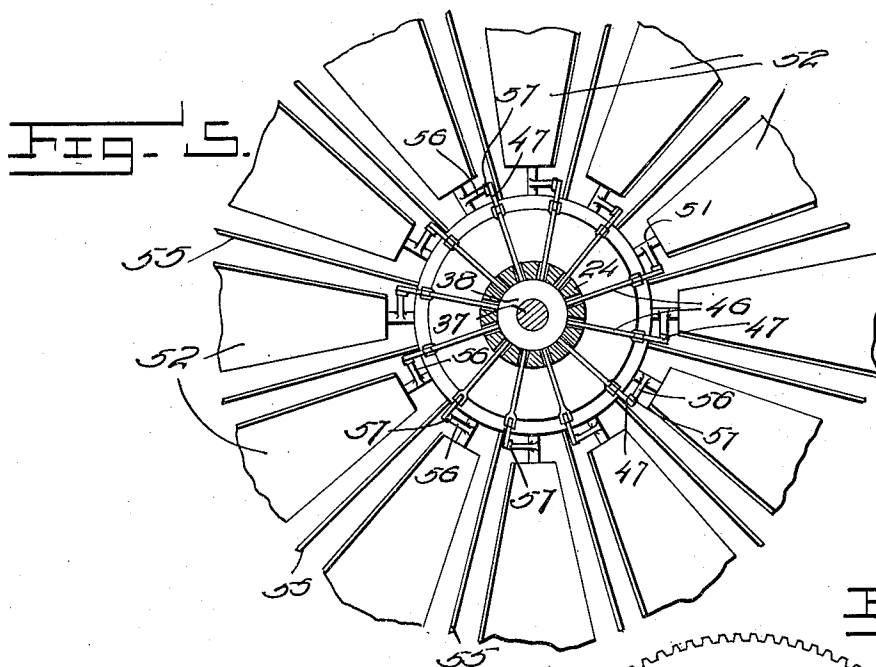
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UNITED STATES PATENT OFFICE.

GUST WILLIAMSON, OF BANGOR, MAINE.

PROPELLING MECHANISM.

1,014,195.

Specification of Letters Patent.

Patented Jan. 9, 1912.

Application filed September 13, 1910. Serial No. 581,782.

To all whom it may concern:

Be it known that I, GUST WILLIAMSON, a citizen of the United States, residing at Bangor, in the county of Penobscot and State of Maine, have invented certain new and useful Improvements in Propelling Mechanism, of which the following is a specification.

This invention relates to improvements in propelling mechanism for ships.

One object of the invention is to provide a pneumatic propelling mechanism for ships by means of which the propeller will be operated by the wind from any direction.

Another object is to provide a manually operated means for changing the speed of the propeller and to throw said mechanism out of gear.

A still further object is to so connect the speed changing means that when the device is thrown out of gear, the wind operated means is also thrown out of gear.

A yet further object is to provide a gyroscope in connection with said propelling mechanism.

These and other objects will be apparent from the following description and with particular reference to the accompanying drawings forming a part of this specification, and in which,

Figure 1 is a vertical longitudinal section through the stern of a ship showing my device applied, Fig. 2 is a vertical section on the line 2—2 of Fig. 1, Fig. 3 is an enlarged vertical longitudinal section through the air wheel and the gearing, Fig. 4 is a top plan of the device as shown in Fig. 3, Fig. 5 is a section on the line 5—5 of Fig. 3, looking in the direction of the arrows, Fig. 6 is a section on the line 6—6 of Fig. 1, looking in the direction of the arrow. Fig. 7 is a detailed view of the controlling lever and connections which are located in the pilot house.

Referring particularly to the drawings, 1 represents the stern portion of a ship fitted with a propeller 2 mounted on the outer end of a shaft 3 and suitably mounted in a journal box 4, which is disposed in the hold of the vessel. Secured in the hold on a suitable bed 5 by means of the lugs 6 is a member 7, extending vertically from which and above the deck 8 of the vessel are the supports 9, the upper ends of which are formed integrally with the lower member 10 of a turntable 11. The upper face of

the member 10 is a circularly disposed ball-race 12. The upper member 13 of the turntable has formed in its lower face a similar ball-race 14, which, when placed on the lower member 10 confines a circular series of balls 15 therein. In the cross connecting arms 7', of the member 7, is formed a vertical journal bearing, which is adapted to receive the vertical shaft 16, said bearing being numbered 17. The lower end of the shaft 16 has keyed thereon, the beveled pinion 18 which meshes with a similar pinion 19 on the inner end of the propeller shaft 3. The upper end of the shaft 16 extends through the journals 20 in the upper and lower members of the turntable and has keyed on its upper end, and disposed above the upper member 13, a gear 21 having formed on its upper face a plurality of concentric series of gear teeth 22. Extending above and positioned on the upper member 13 of the turntable, are a pair of vertical standards 23 in the upper ends of which is journaled an air wheel shaft 24. Slidably keyed on the shaft 24 and movable between the standards 23 is a large pinion 25, which is adapted to mesh with the teeth 22 of the gear 21. Formed integrally with the hub 26 of the pinion 25, is a collar 27 having formed therein a peripheral groove 28, in which is received the inwardly projecting lug 29 of the shifting lever 30. The shifting lever is pivoted below the shaft 24 at a point 31 and has its lower end 32 connected by means of the link 33 to one arm of the bell-crank 34, the outer arm of said bell-crank being connected by means of a link 34' to a ring 35'. On the shaft 7 is a tubular member 7', which is connected on its upper end to a lower ring 35''. This tubular member is pivotally connected to the forked end 33'' of a bell-crank lever 33', which is suitably mounted on a bracket 36'. The upper ring 35' is so mounted on the turntable 13 by means of the tongue and groove joint 13' and 13'', that said ring will rotate with said turntable but may easily be moved upwardly and downwardly with respect thereto. The lower edge of the ring 35' is formed with an outwardly extending annular flange 37', which is adapted to be engaged by a similar flange 38' on the upper edge of the lower ring 35'', so that when said lower ring is raised its flange will engage the flange of the other ring and raise said

upper ring. A rod 36 extends from the other arm of the bell-crank 33' to a controlling lever 35 located in the pilot house, to be later described.

5 The shaft 24 is hollow and has slidably mounted therein, a rod 37 having the heads 38 and 39 formed on either end respectively. The head 39 has a screw threaded socket 40 to receive the threaded shank 41 of the upwardly projecting lug 42, said lug projecting through an elongated slot 43 in the upper portion of said shaft and adjacent the collar 27 of the pinion 25. The lug 42 is adapted to be engaged by the disk 27 upon the movement of said disk to the right in the drawings, to move said rod longitudinally with relation to the shaft. A solid portion 44 is formed in said shaft, and a strong coil spring 45 is positioned between the head 39 and solid portion to hold said rod 37 to the left. The head 38 has pivotally connected thereto, the links 46, the outer ends of which are connected to one arm of each of the bell-crank levers 47. Securely bolted to the flanged portion 48 of the shaft 24 is a hub member 49. Formed on the outer peripheral edge of the hub 49 is a circular series of sockets 50 adapted to receive the lower ends of the pins 51 of the fan blades 52, the ends of another set of pins 51' on the opposite ends of the fan blades being journaled in a similar series of sockets 53 formed in the inner face of a ring 54, said ring being suitably braced to the hub by means of the guys 55. The inner pins 51 are formed with perforated lugs 56 each of which is connected by means of the links 57 to one arm of each of the bell-cranks 47. Thus, when the gear 25 is moved to the right and engages the lug 42, the rod 37 will be moved longitudinally, and through the means of the links 46 and bell-cranks 47, move the rings 57 to turn the blades 52 in a flat plane, but when the gear 25 is moved in the opposite direction, it will engage successively with different series of teeth 22 on the gear 21 to regulate the speed. When the blades 52 are feathered the gear 25 is moved entirely out of engagement with the gear 21, thus throwing out the entire device.

In the pilot house is arranged a hand lever 35, shiftably mounted on a ratchet segment 58 and having the usual pawl 59. At a suitable point on the lever 35 and pivotally secured thereto is a rod 60, pivotally connected at one end to a bell-crank 61. The bell crank 61 is pivotally connected by one of its arms to a rod 36'', the opposite end of said rod being connected to one arm of the bell-crank 33'. The other of said bell-cranks 62 is connected to one arm of a bell-crank 63, by means of a connecting rod 64, said bell-crank 63 being disposed along side of the bell-crank 34 and connected to

the shifting lever 32 by means of the connecting link 65. Thus, when the lever 35 is shoved to the right it will operate through the links 64 and 65 to shift, the pinion 25 to the right to feather the blades of the air wheel, and when thrown to the left will operate through the same links in the opposite direction to shift the pinion 25 to another set of teeth on the gear 21.

Mounted near the lower end of the shaft 16 is a fly wheel 16', which is of sufficient size and weight to perform the functions of a gyroscope to assist in preserving the equilibrium of the ship.

It will thus be seen, that I have provided a simple and efficient device of this character and one wherein the gearing is readily changed by the movement of a lever in one direction, and the gear thrown entirely out of mesh and the blades of the air wheel feathered into inoperative position by movement of the lever in the opposite direction.

It will readily be seen that the device is under perfect control from the pilot house.

It will be apparent that changes in the form, proportions and minor details of construction may be resorted to without departing from the spirit or sacrificing any of the advantages of this invention.

What is claimed is:

1. In combination with a ship, a propeller mechanism comprising a turntable, a vertical shaft journaled in said turntable, a gear mounted on the upper end of said shaft, said turntable comprising an upper and lower member, a shaft journaled in the upper member of the turntable, a gear slidably keyed on said shaft, said air wheel having feathering blades, and means for simultaneously feathering said blades and throwing said gear out of mesh.

2. In combination with a ship having a propeller, a pinion on one end of the shaft of said propeller, a support, a rotary member on the upper end of said support, a vertical shaft passing through said support and said rotary member, a gear on the upper end of said shaft, vertical arms on said rotary member, a hollow shaft journaled in the upper ends of said vertical arms, an air wheel mounted on one end of said shaft having feathering blades, a gear slidably keyed on said shaft and adapted to engage said first named gear, a rod disposed longitudinally within said hollow shaft, said shaft having a slot formed therein, a lug on one end of said rod projecting through said slot, a grooved collar formed on said gear and adapted to engage said lug when said gear is moved to one side, connections between the opposite end of said rod and said feathering blades, an operating lever, a shifting lever loosely connected to said grooved collar and means between said operating lever and said shifting lever, where-

by upon movement of said operating lever in one direction the said second named gear will be moved into engagement with said first named gear, and movement in the opposite direction will cause the movement of said gear away from said second named gear and simultaneously the feathering of said blades.

3. In combination with a ship having a propeller and a support carrying a shaft geared to said propeller, of a rotary member on the upper end of said support, a gear mounted on the upper end of said shaft and having a plurality of series of teeth, a hollow shaft journaled in said rotary member, a gear on said shaft adapted to rotate therewith and be movable longitudinally thereon, a wheel on one end of said hollow shaft, feathering blades on said wheel, a rod disposed longitudinally within said hollow shaft, heads formed on the opposite ends of said rod, pivotal connections between one of said heads and said feathering blades, a lug on the other of said heads and projecting through a slot formed in said shaft, a spring for retaining said rod in its normal position, a grooved collar formed integral with said second named gear, a shifting lever engaging in the groove of said collar, an operating lever, oppositely arranged bell-cranks pivotally mounted on said rotary member, bell cranks disposed on opposite sides of said operating lever, a rod pivotally connected at its central portion to said operating lever and at its ends to the second of said bell cranks, links between the first and second named bell cranks and said shifting lever whereby the movement of said operating lever in one direction will move the said second named gear into successive engagement with the series of teeth of the first named gear, and movement in the opposite direction cause the disengagement of the second named gear and the movement of said rod to effect the feathering of said blades.

4. In combination with a ship having a

propeller and a support carrying a vertical shaft said propeller and shaft having meshing gears, of a rotary platform on said support, a wheel and gearing mounted on said platform, a slidable gear on said air gearing, a gear on said vertical shaft, a shifting lever connected to said slidable gear, a ring on said platform vertically slidable thereon and rotatably movable therewith, connections between said ring and shifting lever, a second ring on said support, a tubular member on said vertical shaft and connected to said second ring, a controlling lever, and connections between said controlling lever and said second ring for raising and lowering said ring to effect the vertical movement of said first ring and the shifting of said slidable gear.

5. In combination with a ship having a propeller and a support carrying a vertical shaft geared to said propeller; of a rotary platform on said support, a horizontal shaft on the platform, a feathering bladed air wheel mounted on said shaft, a slidable gear on said shaft, connections between the slidable gear and the blades of said air wheel, a gear on said vertical shaft, a shifting lever connected to said slidable gear, a ring on said platform vertically slidable thereon and rotatably movable therewith, connections between said ring and shifting lever, a second ring on said support, a tubular member on said vertical shaft and connected to said second ring, a controlling lever, and connections between said controlling lever and said second ring for raising and lowering said ring to effect the vertical movement of said first ring to cause the feathering of said blades and the shifting of said slidable gear.

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

GUST WILLIAMSON.

Witnesses:

MATH. BUTKINEN,
AUKUST KOSK.