June 26, 1923. 1,459,979

F. O. KOHN

WIND PROPELLED SHIP

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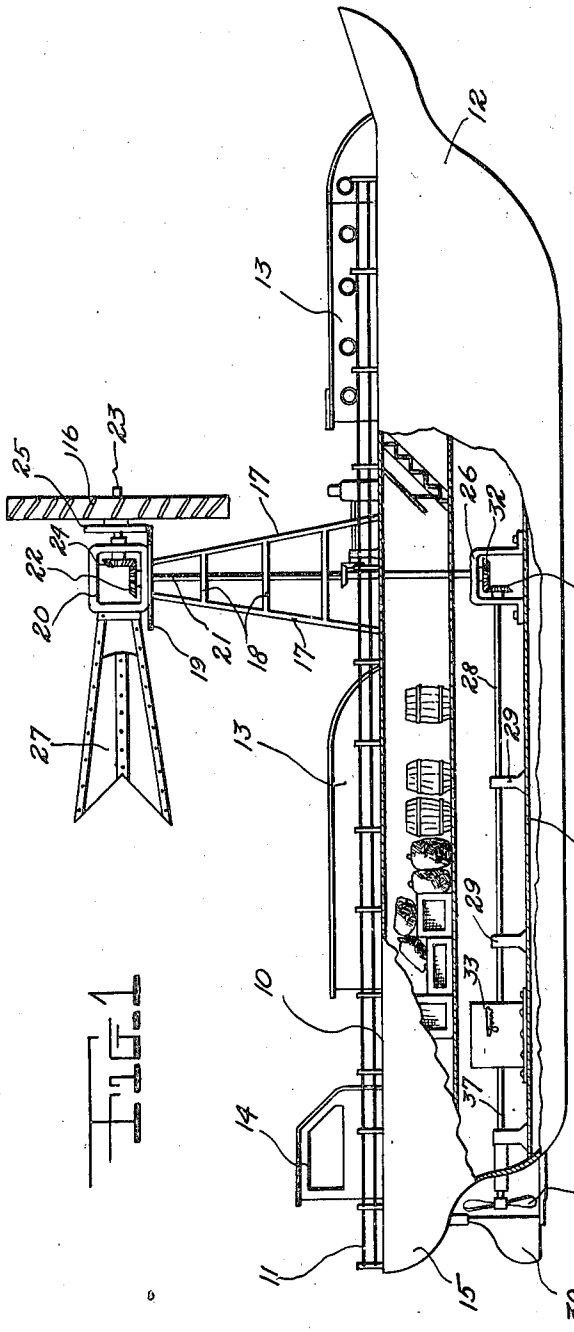


FIG. 1

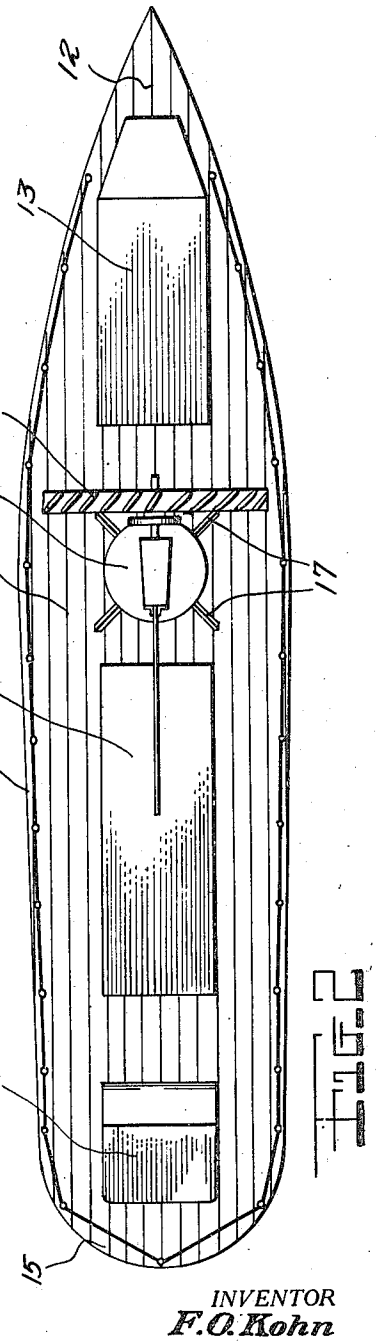


FIG. 2

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FIG. 3

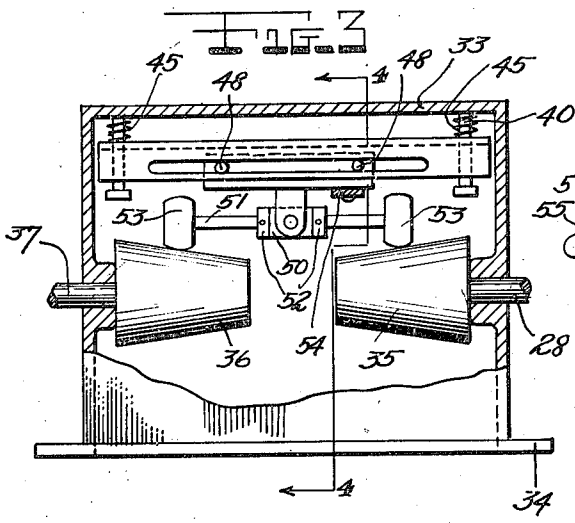


FIG. 4

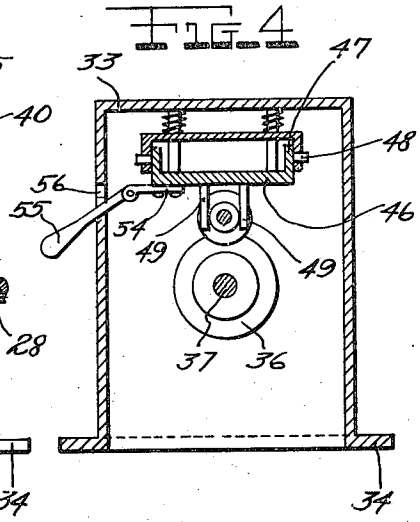


FIG. 5

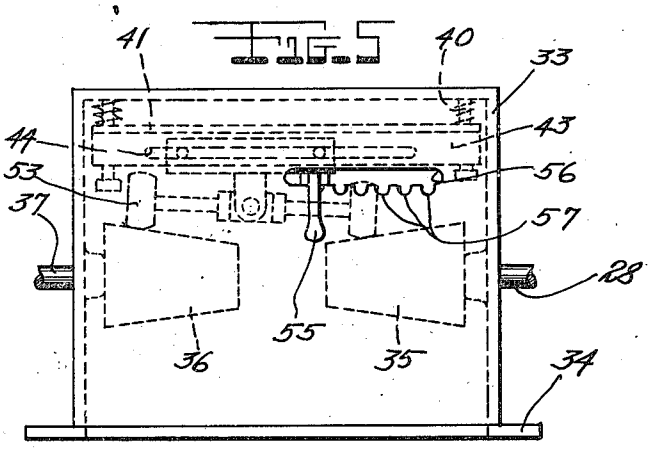
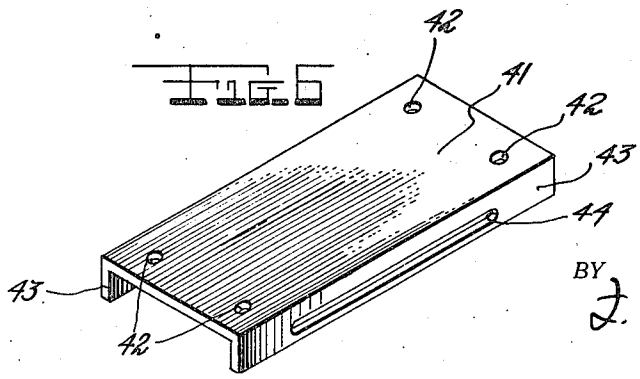


FIG. 6



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UNITED STATES PATENT OFFICE.

FRANK OTTO KOHN, OF HUDSON, IOWA.

WIND-PROPELLED SHIP.

Application filed January 11, 1923. Serial No. 611,914.

To all whom it may concern:

Be it known that I, FRANK OTTO KOHN, citizen of the United States, and resident of Hudson, in the county of Black Hawk and State of Iowa, have invented certain new and useful Improvements in Wind-Propelled Ships, of which the following is a specification.

This invention relates to ships, particularly to the method of propulsion thereof, and the main object is the design of a moderately sized ship provided with propulsion means which takes up very small space.

Another object is to provide a ship as mentioned provided with a superstructure upon which a large wind wheel is mounted, the latter being connected to a propeller shaft.

Still another object is to provide a novel method of changing the speed of the propeller shaft with respect to the speed of the wind fan.

These and other objects will become apparent in the description below, in which characters of reference refer to like-named parts in the drawing.

Referring briefly to the drawing, Figure 1 is a side elevational view of the ship, part being broken away to disclose the interior.

Figure 2 is a top plan view of the same.

Figure 3 is a sectional side elevational view of the speed transmission casing, part being broken away to show the speed changing mechanism.

Figure 4 is a sectional elevational view of Figure 3 taken on line 4—4 of Figure 3.

Figure 5 is a side elevational view of the transmission casing, showing the means for locking the speed change lever in position.

Figure 6 is a perspective view of the tension equalizer platform.

Describing the drawing in detail, the numeral 10 represents the deck of the ship which has a railing 11 encircling its edge, the railing being open at the bow end 12 of the ship. Deck cabins are shown at 13, and the pilot house 14 is at the stern end 15 of the ship.

The propulsion means comprises a wind fan 16 which is elevated from the deck and is mounted on a tower comprising a set of corner frames 17 provided with spaced apart braces 18 at various intervals thruout their length. The upper end of the tower has a flat annular platform 19 fixed thereon. A shaft 21 which has a beveled gear 22 fixed to its upper end passes vertically downward into the hold of the ship. A square hollow frame 20 in which said gear 22 is seated, is rotatably mounted on said shaft 21 and has a short horizontal shaft 23 mounted in one side upon which the aforesaid wind fan is mounted. The inner end of the shaft has a beveled gear 24 fixed thereon which meshes with a gear 22 and is adapted to rotate the shaft 21. An annular disk 25 is rotatably mounted on the shaft 23 between the fan 16 and the gear 24 and rides upon the surface of the platform 19, said disk being adapted to support the overhanging weight of the wind fan 16. The shaft 21 as stated passes into the hold of the ship and is rotatably mounted in a frame bracket 26, the latter being fixed to the lower deck 30 of the ship. The rectangular frame 20 has a vertical wind vane 27 projecting rearward from one of its sides, which at all times keeps the fan 16 pointed into the wind.

A relatively long horizontal transmission shaft 28 is mounted in bearings 29 above the lower deck 30, the forward end having a gear 31 thereon which meshes with a gear 32, the latter being mounted on the lower end of the vertical shaft 21. Said shaft 28 passes rearward to the stern of the ship and enters a box casing 33. A conical pulley 35 is mounted on the shaft within the casing. The casing is of substantial construction and is provided with a floor flange 34 thru which bolts pass into the lower deck 30. A similar cone pulley 36 is mounted on a propeller shaft 27 which courses rearward from the casing 33 to the stern of the ship, at which end a propeller 38 is mounted thereon directly in front of the steering rudder 39.

The roof of the casing 33 has headed studs 40 projecting downwardly within the casing. An equalizer platform 41 in which holes 42 are provided, is slidably mounted on said bolts, the latter passing thru the holes 42. The long sides of the platform have downwardly extending walls 43, each of which has a longitudinal slot 44 formed therein. Said platform 41 hangs suspended from the studs 40 and is normally urged downwardly by the springs 45 which are wound about the studs. A similar platform 46 which has side walls 47 is horizontally slidable between the walls 43 of the first named platform 41 but is inverted, and has its walls 47 provided with pintles 48 which are engaged in the slots 44 of member 41. A pair of ears 49 ex-

tend downwardly from the surface of member 46 which have a trunnion sleeve 50 pivoted therebetween. A spindle 51 rotatably passes thru the sleeve 50 and is held in position thereon by spacer collars 52, the latter being fixed to the spindle. The ends of the spindle have spherical-surfaced rollers 53 fixed thereon which contact with the periphery of the conical pulleys 35 and 36.

The platform 46 has a hinge bracket 54 rigidly fixed to its underside which projects somewhat over the edge near one corner thereof. Said hinge bracket has a lever arm 55 attached thereto which passes thru a slot 56 in the wall of the casing, said slot having a plurality of notches 57 opening therein, which are receptive of the lever arm and lock the latter in its desired position.

From the drawing it is obvious that the propulsion means takes up a minimum of space. The wind which rotates the wind fan 16 may blow in any direction and still be effective as the entire means for rotating the shaft 21 is swivelly mounted on said shaft and is therefore capable of operation in any angle. The vane 27 which is mounted to the rear end of the frame 20 functions in the usual manner and keeps the fan pointing directly into the wind. Rotation is transmitted from the wind fan to shaft 21, which in turn rotates the main transmission shaft 28. The conical pulley 35 at the end of the shaft 28 rotates a similar pulley 36, on the propeller shaft 37, thru the medium of spherical rollers 53 which are mounted on the spindle 51. The rollers are adapted to change the speed of the propeller shaft with respect to the speed of the wind fan, and the platform 46 from which the roller spindle 51 is trunnioned, is therefore longitudinally slidable, so that said rollers may vary their position on the peripheral faces of the conical pulleys. The platform 41 from which the spindle mechanism is suspended, is normally urged downward by the springs 45, and the hinge lever arm 55 is adapted to change the position of the rollers 53 with respect to the pulleys 35 and 36 thereby increasing or decreasing the speed of the propeller shaft.

I claim:—

1. In a ship propulsion means, a propeller shaft, a transmission shaft aligned with and separated therefrom, conical pulleys at the adjacent ends of said shafts, the peripheries of said pulleys converging toward each other, a casing journalling the pulley ends of said shafts, a floating platform, a second platform horizontally slidable in said first-named platform, a spindle rotatably trunnioned from the second named platform, spherical surfaced rollers rigidly mounted on the ends of said spindle contacting with the conical pulleys, said rollers being adapted to shift up on one pulley and down on the other to decrease or increase the speed of the propeller shaft with respect to the transmission shaft, and a lever arm being adapted to shift the spindle rollers.

2. In a ship propulsion means, a propeller shaft, a transmission shaft aligned therewith and separated therefrom, conical pulleys at the ends of said shafts, the peripheries of said pulleys converging toward each other, a casing journalling the pulley ends of said shafts, a floating platform having longitudinal slots therein, a second platform, pintles in said second platform slidable in the slots of said first-named platform, ears on the second-named platform, a sleeve trunnioned between said ears, a spindle rotatably mounted in said sleeve, spherical-surfaced rollers rigidly mounted on the ends of said spindle and contacting with the conical pulleys, said rollers being adapted to shift up on one pulley and down on the other to decrease or increase the speed of the propeller shaft with respect to the transmission shaft, and a lever arm adapted to shift the spindle rollers.

Signed at Hudson, in the county of Black Hawk, and State of Iowa, this 26th day of Dec. A. D. 1922.

FRANK OTTO KOHN.