(No Model.)

E. NYSWANGER.

PARACHUTE PROPELLER.

No. 495,360. Patented Apr. 11, 1893.

Fig 1

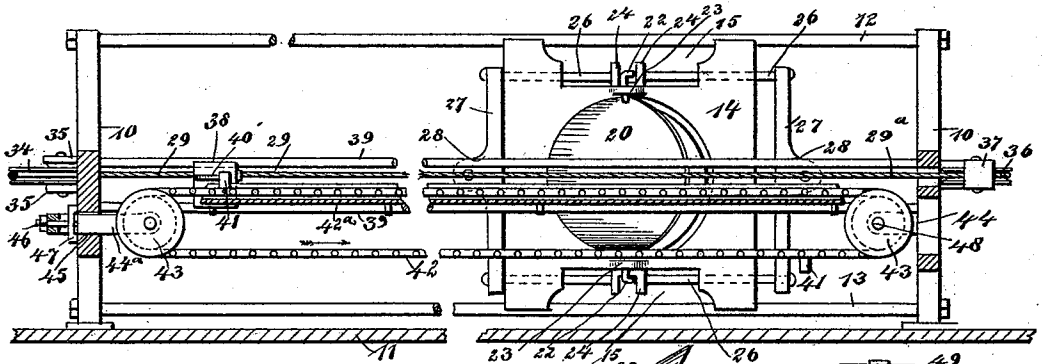


Fig 2

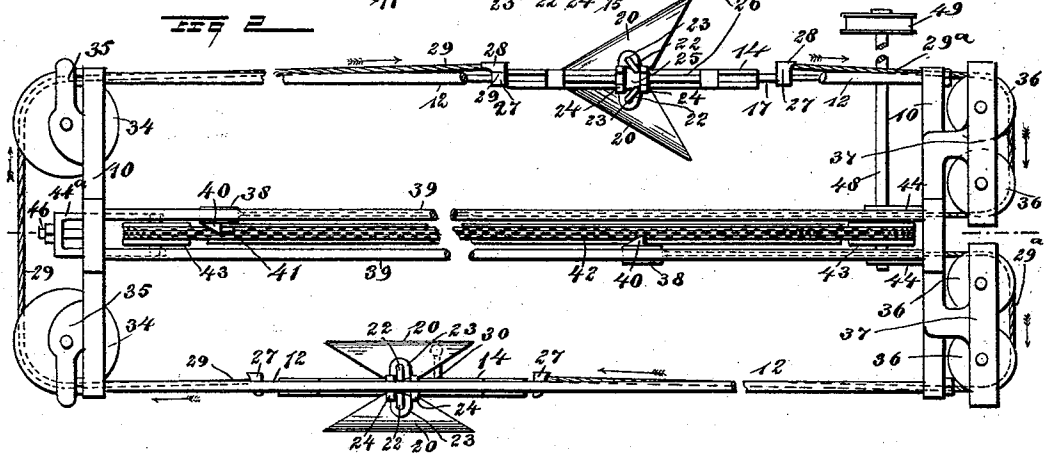


Fig 3

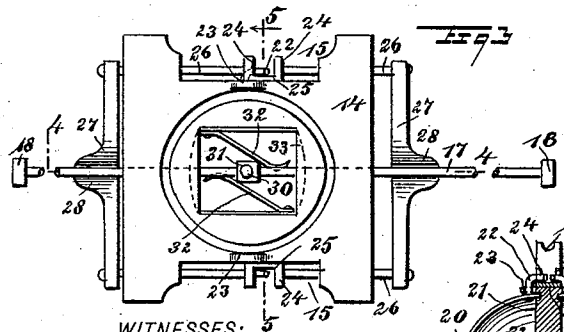


Fig 4

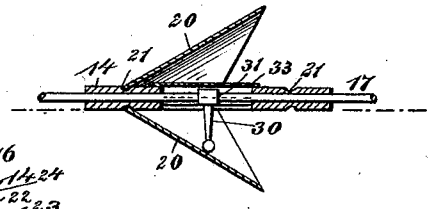
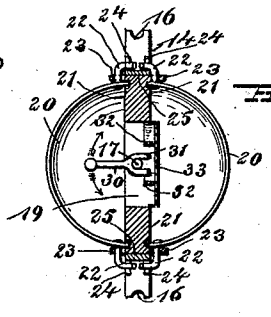


Fig 5



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ELIJAH NYSWANGER, OF HANFORD, CALIFORNIA.

PARACHUTE-PROPELLER.

SPECIFICATION forming part of Letters Patent No. 495,360, dated April 11, 1893.

Application filed July 1, 1892. Serial No. 438,683. (No model.)

To all whom it may concern:

Be it known that I, ELIJAH NYSWANGER, of Hanford, in the county of Tulare and State of California, have invented a new and Improved Parachute-Propeller, of which the following is a full, clear, and exact description.

My invention relates to improvements in propellers; and the object of my invention is to produce a propeller of simple construction which may be easily operated and which will transmit great power in proportion to the energy required to run it, as it has a parachute action; that is, the wings or hinged paddles of the propeller open so as to offer resistance to the air or water in which they are used when pulled in one direction and when pulled in the opposite direction they tilt into a position to pass readily through the air or water with very little resistance. This propeller is adapted for use to propel marine vessels or air ships.

To these ends my invention consists in certain features of construction and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings forming a part of this specification, in which similar figures of reference indicate corresponding parts in all the views.

Figure 1 is a broken side elevation, partly in section, of the propeller embodying my invention. Fig. 2 is a broken plan view of the same. Fig. 3 is an enlarged detail view of one of the wings or hinged paddles carrying slide blocks and the mechanism connected therewith. Fig. 4 is a longitudinal section of the slide block on the line 4—4 in Fig. 3, showing the wings or hinged paddles in position to offer great resistance to the water or air; and Fig. 5 is a cross section on the line 5—5 in Fig. 3.

The propeller is provided with a suitable frame, comprising the end frames 10, which are supported on a suitable base 11, and the end frames are connected at top and bottom and on opposite sides by the rods or rails 12 and 13, which are placed parallel with each other and the rods on each side align vertically. The rods 12 and 13 thus serve as tracks for the reciprocating slide blocks 14, which are cut away or recessed in the center and on the upper and lower sides, as best shown at 15 in Fig. 3, and the outer edges of the slide blocks are grooved, as shown at 16 in Fig. 5, so as to run smoothly and safely on the rods or tracks. Each slide block 14 is held to slide also on a rod 17, which extends centrally and horizontally through it, the rod having a head 18, at each end to limit the movement of the slide block. The slide block has a nearly circular opening 19, in its center, and on opposite sides of the block are pivoted outwardly curved and scoop-shaped wings or hinged paddles 20, having rounded ends, as shown in Figs. 3 and 4, and each hinged paddle has, on opposite sides and near its center, outwardly extending cranks 22 which are journaled in lugs 23 on the slide block and which are bent inward so as to overlap the edges of the slide block, as shown in Fig. 5, and extend between parallel arms 24 which are produced on a plate 25 held to move on the slide block and carried by a rod 26 which extends longitudinally through the outer portion of the slide block. The slide block is provided with grooves 21 to receive the edges of the hinged paddles 20, so that the latter may close very tightly against the block. There is a rod 26 on opposite sides of the slide block and the rods connect at their ends with cross heads 27 which are thickened and curved in the middle, as shown at 28, so as to strengthen them and prevent them from interfering with the rod 17. The cross heads 27 connect with cables 29 and 29ª by means of which the cross heads and slide blocks are pulled first in one direction and then in another, as hereinafter described, and it will be noticed that when the cross heads are pulled in one direction, the arms 24 striking the cranks 22 will tilt the wings or hinged paddles 20 into the position shown in Fig. 4, so that the hinged paddles will offer great resistance to the surrounding water or air, and when pulled in the opposite direction, the cranks will be tilted in the reverse way so as to throw the hinged paddles into the position shown at the bottom of Fig. 2, and they will thus pass readily through the air or water and offer very little resistance.

To provide for the back stroke of the hinged paddles and enable them to offer the least possible amount of resistance, the following mech-

anism is employed:—An arm 30 is mounted centrally on the rod 17 and the outer end of the arm is adapted to contact with one of the abutments 20 at a point in advance of the axis of the hinged paddle, and the arm has the end next the shaft formed into a fork 31 which slides between ribs 32 on a plate 33 which is secured to the slide block 14. The ribs 32 are placed at an angle to the rod 17 and parallel with each other, and at every stroke of the slide block the arm 30 will be tilted by the cam action of the ribs on the fork 31, and the arm will thus swing from side to side, as indicated by the arrows in Fig. 5. When the hinged paddles 20 are pulled forward, as shown in Fig. 4, the arm 30 will have no effect upon them, but on the back stroke of the hinged paddles, the arm 30 will engage one of the hinged paddles as shown at the bottom of Fig. 4, and prevent the hinged paddle, and the one operated in connection with it, from entirely closing so that both hinged paddles will be held with their ends away from the slide block and in a position to slide edgewise through the air or water. The propeller hinged paddles are moved by the cables 29 and 29^a, and the cable 29 extends from the cross head 27 at the front end of one of the slide blocks 14 in a horizontal position over guide pulleys 34 which are journaled in brackets 35 at one end of the machine, as shown in Fig. 2, and connects with the front cross head of the opposite slide block. There is an independent cable 29^a for each slide block, and the cable extends from the rear cross head 27 horizontally, over guide pulleys 36 which are journaled in the bracket 37 at one end of the machine, and the opposite end of the cable is secured to a second slide block 38 which is held to move between parallel rods 39 arranged one above another near the center of the machine and extending from one end frame 10 to the other. There is a pair of these rods 39 for each slide block 38. Each slide block 38 has, on its inner side, a lug 40 which extends into the path of the lugs 41 carried by a chain belt 42 which extends horizontally and longitudinally through the central portion of the machine, being carried by pulleys 43 at the ends, which pulleys are journaled in supporting brackets 44 and 44^a. The lugs 41 are arranged so that one lug will be on the upper side of the belt and near one of the pulleys 43 when the opposite lug is on the under side of the belt and near the opposite pulley. The bracket 44^a is held to slide in a recess 45 in one of the frames 10, as shown in Figs. 1 and 2, and is provided with a bolt 46 which is held to turn in a brace 47 and is adjusted by means of a suitable nut, and by this means the bracket may be adjusted out and in so as to keep the belt 42 taut. The upper portion of the belt 42 is preferably arranged to travel over a race-way 42^a which prevents the belt from wabbling. One of the pulleys 43 is carried by a transverse shaft 48 which has a driving pulley 49 at one end to which power is attached to drive the propeller.

The operation of the machine is as follows:—When it is started, power is attached to the pulley 49 and the belt 42 is thus set in motion, the upper member of the belt, of course, traveling in one direction and the lower member in the other. As the belt moves the lugs 41 engage the lugs 40 of the slide blocks 38, and the cables 29 and 29^a are actuated so that the slide blocks 14 are simultaneously moved, but in opposite directions. As a result, one set of cross heads 27 and arms 24 are moved so as to actuate the cranks 22 and tilt the hinged paddles 20 into operative position, as shown in the upper side of Fig. 2, and the opposite set of cross heads and cranks are tilted so as to throw the hinged paddles into operative position, as shown at the bottom of said figure, and as the movements of the hinged paddles alternate, it will be seen that one will always be in operative position and consequently the propeller will operate continuously to drive the vessel with which it is connected.

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

1. In a propeller, the combination with a reciprocating frame or carrier, of two scoop-shaped paddles which are pivoted oppositely on said carrier and arranged with their concave sides inward or adjacent, and means for throwing the paddles alternately into operative position inclined to each other so that they form a conical pocket, and into inoperative position, or parallel to each other, substantially as shown.

2. A propeller comprising slide blocks held to move in opposite directions, cross heads arranged at the ends of the slide blocks, the cross heads of each block being connected by rods, a cable connection between the cross heads of opposite blocks, whereby the two cross heads and blocks may be simultaneously moved in opposite directions, curved hinged paddles pivoted centrally to opposite sides of the slide blocks, and a crank connection between the hinged paddles and the cross head rods whereby the movements of the cross heads will tilt the abutments, substantially as described.

3. A propeller comprising slide blocks held to move on parallel tracks, a pair of cross heads arranged at the ends of each slide block and provided with rods extending loosely through the slide blocks, hinged paddles pivoted on opposite sides of the slide blocks and having a crank connection with the cross head rods, whereby the movements of the cross heads will tilt the hinged paddles, a cable connected with the front cross head of each slide block and extending over guide pulleys at one end of the machine, a second set of slide blocks held to reciprocate between the hinged paddle carrying slide blocks, a belt mechan-

ism for moving the second set of slide blocks, and an operative cable connection between the second set of slide blocks and the rear cross heads of the hinged paddle carrying slide blocks, substantially as described.

4. The combination of the reciprocating slide blocks carrying movable hinged paddles and connected by a cable as described, of a second set of reciprocating slide blocks operatively connected by a cable mechanism with hinged paddle carrying slide blocks, inwardly extending lugs produced on the second set of slide blocks, and a movable belt arranged adjacent to the second set of slide blocks and having lugs to engage the lugs of said slide blocks, substantially as described.

5. In a propeller, the combination with a slide block, of the scoop-shaped paddles pivoted to said block, a rod arranged centrally between the paddles, and an arm attached to the rod and arranged between the paddles, whereby it is adapted to strike upon and operate them, as shown and described.

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