C. F. MÉNDEZ.

ROTATORY MECHANISM.

APPLICATION FILED AUG. 5, 1911.

1,035,377.

Patented Aug. 13, 1912.

3 SHEETS—SHEET 1.

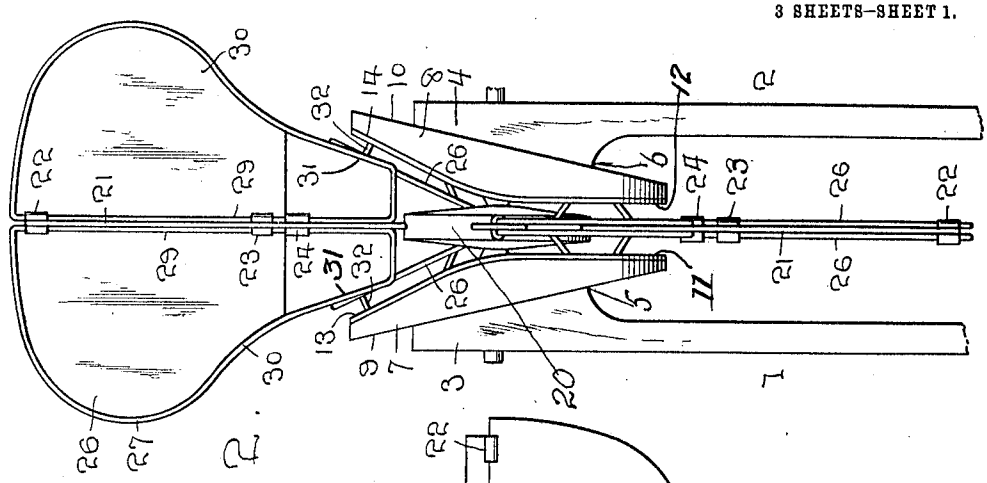

FIG. 2.

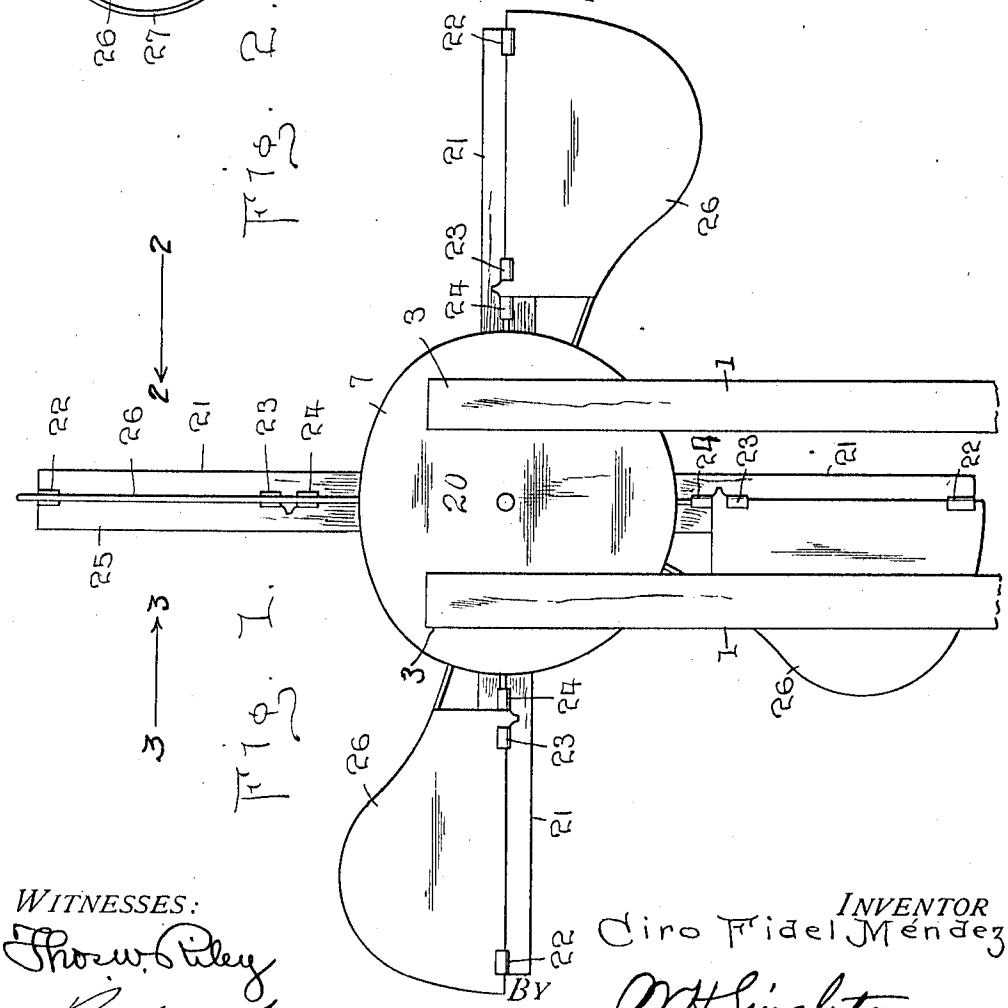

FIG. 1.

FIG. 3.

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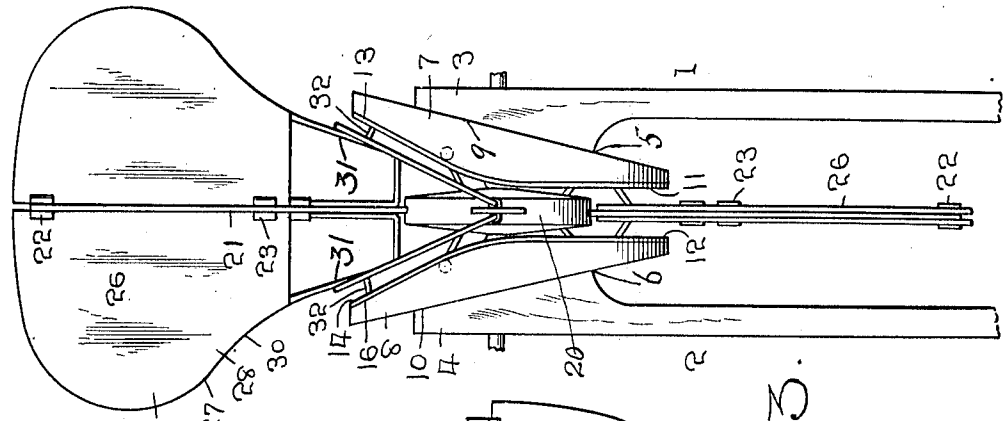

FIG. 3.

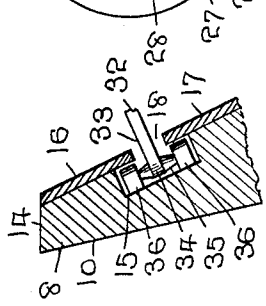

FIG. 5.

FIG. 4.

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3 SHEETS—SHEET 3.

Fig. 6.

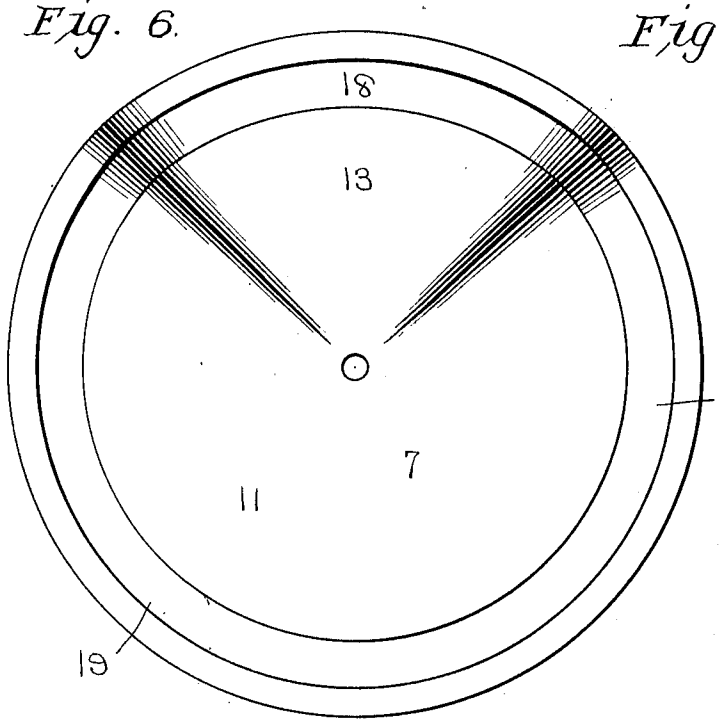


Fig. 7.

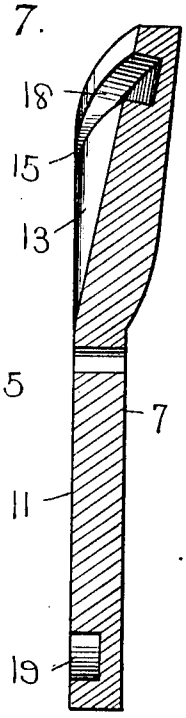
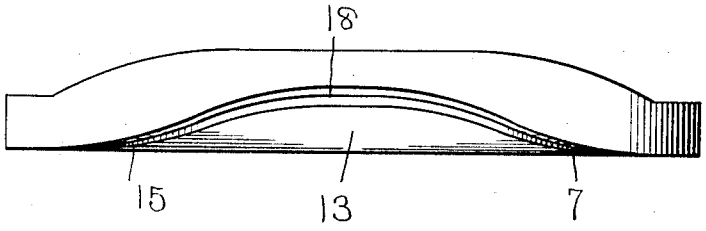


Fig. 8.



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ROTATORY MECHANISM.

1,035,377. Specification of Letters Patent. Patented Aug. 13, 1912.

Application filed August 5, 1911. Serial No. 642,463.

To all whom it may concern:

Be it known that I, CIRO FIDEL MÉNDEZ, citizen of Mexico, residing at San Luis Potosi, State of San Luis Potosi, Mexico, have invented certain new and useful Improvements in Rotatory Mechanism, of which the following is a specification.

This invention relates to a new and useful improvement in devices for propulsion, and relates more especially to the construction of a rotatory motor or propeller, as the device may be used either for generation of power or for utilization of power.

The object of the invention is the production of a device which will have a maximum of efficiency on its working stroke and a minimum of resistance on the recover.

The invention relates more particularly to a rotator provided with blades adapted to be open on the working stroke, remain fixedly open for a portion of the stroke and be closed on the recover.

In the annexed drawings: Figure 1 represents a side view of the device in position for operation. Fig. 2, an edge view looking in the direction of the arrow 22, Fig. 1. Fig. 3, an edge view looking in the direction of the arrow 3—3, Fig. 1. Fig. 4 is a side view of the rotator, one controller being removed and showing the inner face of the other controller. Fig. 5 is an enlarged detailed section of a portion of the rotator showing the connection between the controllers and the blades of the rotator. Figs. 6, 7 and 8 show face, section and top views of a modified form of controller.

In these drawings: the numerals 1 and 2 indicate supports of any suitable kind, depending upon the mechanism to which the invention is to be applied. These supports 1 and 2 carry at their upper ends 3 and 4 the controllers. These upper ends 3 and 4 have inner faces 5 and 6 which may be of any shape, but as shown in the drawings are preferably oblique so as to be better adapted to hold the controllers 7 and 8. These controllers 7 and 8 are duplicates. They have flat backs 9 and 10 which rest against the oblique faces 5 and 6 of the supports 1 and 2, thus giving a flare to the controllers 7 and 8. The controllers 7 and 8 consist of two portions 11 and 12 which are substantially vertical with their inner faces parallel and the portions 13 and 14 having faces flaring outwardly from the other faces. The exact configuration or shape of the inner faces is not important, except that there must be sufficient flare outwardly of these faces for the purpose of the invention. The inner faces of these controllers 7 and 8 are provided with guide channels 15 in the present instance made by grooves in the controllers partially covered by plates 16 and 17 with spaces between them. These guide channels 15 are continuous, but have not the same curvature their entire length, being in two portions. The degree of curvature of the portions 18 in the outwardly flaring portions of the controllers differs materially from the degree of curvature of the other portions 19 of the guide channel.

Passing through the centers of the controllers 7 and 8 and rotatable therein is the rotator shaft, to which between the controllers 7 and 8 is rigidly keyed the hub 20 of the rotator. Projecting radially from this hub are arms 21. These arms are preferably flat, being arranged edgewise in the plane of rotation. Each arm 21 is provided with hinge loops arranged on opposite sides of the arm, in pairs, there being in the present instance three pairs of loops 22, 23, 24. Of these loops the pair 22 is at the end 25 of the arm 21 and the others 23, 24 are placed near the hub 20 and close together with a small space between them. Hinged in these loops 22, 23, 24 are the blades 26, there being a pair for each arm 21. The blades consist of an outer supporting rim 27 and plates 28 secured to such rim across the blades 26. The inner bars 29 of the rims 27 are loosely held in the hinge loops 22, 23, 24. These blades are usually made somewhat paddle-shaped, as shown, the broader portions being at the outer ends.

Connected to and projecting from the lower ends 31 of the outer bars 30 of the rims 27 are guide arms 32. These guide arms 32 are at an angle to the planes of the blades 26 and also extend outwardly therefrom and slightly downwardly or toward the hub 20. The ends 33 of these guide arms 32 pass through the slots into the guide channels 15 and carry the travelers 34 which may be any kind of anti-friction devices. In Fig. 5 is shown one kind, an axle 35, with the two wheels 36, 36.

When the device is used for the application of power, as a propeller, power is ap-

plied to the shaft turning the rotator. This causes the blades to press against the element, air or water, in which they are revolved. As the rotator is turned the travelers move in the guide channels. And the blades are caused to be opened or closed, that is, to be moved together or apart, as the travelers are in different parts of the guide channels. When the travelers are in the portions of the guide channels in the vertical portions of the controllers the blades are closed on the recover, that is, when they are not working. As the travelers leave the portions of the guide channels in the vertical portions of the controllers and enter the portions in the flaring portions of the controllers the flare of these portions of the controllers causes the travelers to move outwardly and by means of the guide arms to move the blades apart. As the travelers move along the tops of the guide channels the blades remain fixedly open for a space of time until the travelers leave these portions of the guide channels. The length of time depends upon the configuration of the portions of the guide channels in the flaring portions of the controllers. In Figs. 1 and 4 is shown one form. Here there is a decided and extended flattening or an enlarged curvature at the top of the guide channel. This flattening or enlarged curvature is coincident with the working stroke or the maximum efficiency of the device, and insures that the blades shall remain open for a large portion of the working stroke. In Fig. 6 there is a slight portion somewhat flattened or of much greater curvature than the rest of the guide channel. Hence for a limited duration of time as the travelers pass along such portions of the guide channels the blades will remain open and will be closed sooner than in the other form.

From the above it will be perceived that the desired efficiency of the device is obtained by the union of the two features, the flare of the controllers and the configuration of the tops of the guide channels. The flare causes the blades to be opened and closed. Were the channels circular from the center of rotation there would be a movement in and out of the blades. But with the configuration of the portions of the guide channels in the flared portions of the controllers such portions of the guide channels being flattened or of much greater curvature than the other portion of the guide channel, the blades remain fixedly open for a portion of the stroke, the extent of time depending upon the length of such flattening or greater curvature.

Such a device is capable of use in many places. It may be used as a propeller, as already stated. Or it may be used as a motor, power being applied to the blades and transmitted through the shaft. It may be located in any position, the flaring portions of the controller being arranged so that the blades shall be at the proper place for the efficiency stroke coming on top or beneath, as desired. If the flattened portions or portions of greater curvature of the guide channels be not of great extent, as, for instance, shown in Fig. 6, there will be given to the blades a quick action similar to the flapping of the wings of a bird, and such form is especially applicable for use for a motor for aeroplanes.

The controllers may be so placed in relation to each other and the guide bars 32 have such length that the plates may be fully opened or in the same plane when at their maximum stroke or they may be not fully opened, but at an angle to each other.

Having described my invention, what I claim is:

1. A rotator provided with blades in pairs and adapted to be opened and closed in combination with controllers, one on each side of the pairs of blades, such controllers having continuous guides, each of two curvatures, the curvatures being of two portions, one of which is greater than that of the other and guide arms extending from the blades and engaging the guides of the controllers.

2. A rotator provided with blades in pairs and adapted to be opened and closed and having guide arms, in combination with controllers consisting of vertical and flaring portions and provided with a guide channel in such portions, the portions of the guide channel in the flaring portions of the controllers being of greater curvature than those portions in the vertical portions of the controllers, the guide bars extending into such guide channels and engaging the same.

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

CIRO FIDEL MÉNDEZ.

Witnesses:

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