

Sept. 11, 1934.

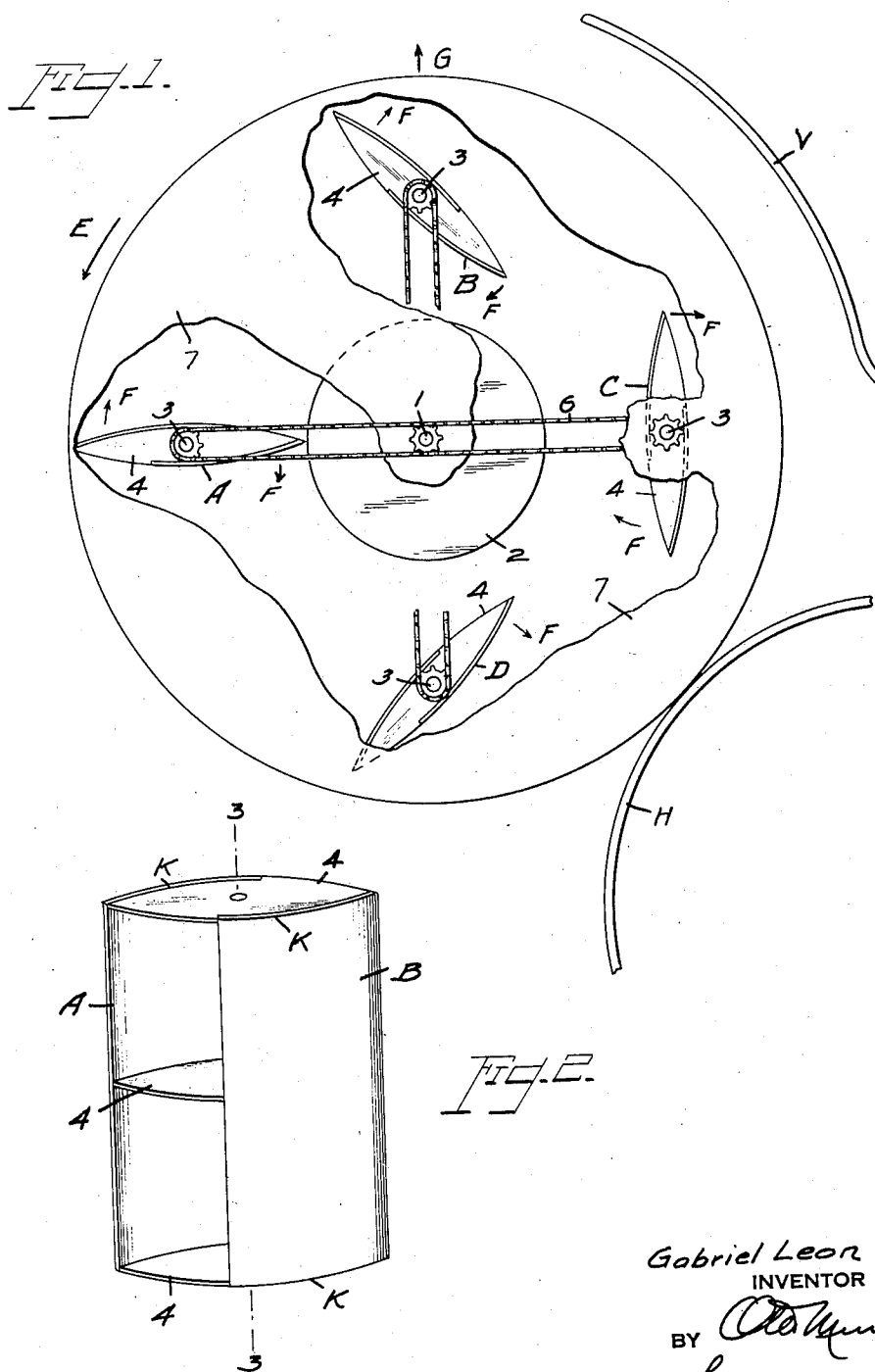
G. LÉON

1,973,290

TURBINE

Filed June 26, 1933

2 Sheets-Sheet 1



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Sept. 11, 1934.

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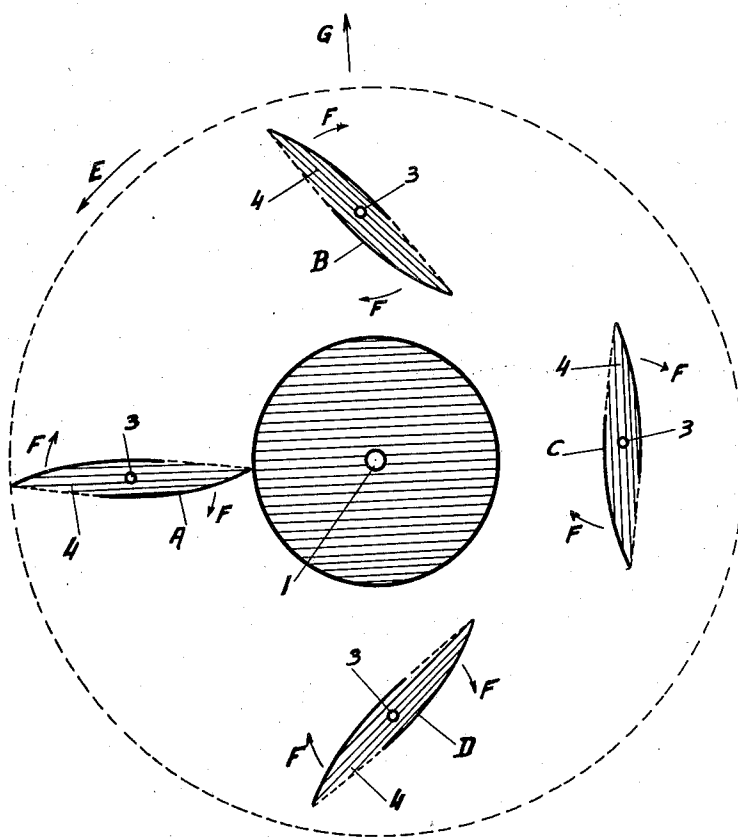
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FIG. 3.



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UNITED STATES PATENT OFFICE

1,973,290

TURBINE

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Application June 26, 1933, Serial No. 677,627
In France July 6, 1932

2 Claims. (Cl. 170—147)

The present invention relates to an improved turbine or the like and has for its object a turbine which, when driven by a motor, can serve for propelling or sustaining; or which can be used as an air or hydraulic motor.

According to the invention, a turbine or the like comprises a plurality of propellers, means for revolving them around the axis of the turbine and means for rotating them at the same time about their own axes.

An important feature of the invention is that as each propeller passes through the same point it takes up the same angular position relative to its axis.

In one form the turbine has a central body or rotor which may suitably occupy about a third of the diameter of the turbine and may be cylindrical or may be composed of an assembly of curved paddles.

A preferred form of propeller comprises a pair of spaced blades having longitudinal slots between their edges. The blades may suitably be of opposite curvature having their concave sides facing one another, and stay or spacing members, which also serve to prevent lateral escape of the driving or driven fluid, may be provided at intervals along their length. In a preferred form the propellers revolve as a whole with the rotor and rotate upon their axes through two right angles per complete revolution. Their rotation takes place in the opposite sense to that of the turbine; it is controlled by chains or gearing connected to a fixed pinion situated on the axis of the turbine.

If the turbine is driven by a motor it can be used for propelling or sustaining according to the orientation of the propeller, for example it may be used in the construction of a helicopter. The orientation of the propellers is dependent upon the central pinion and may be varied while in motion.

The preferred type of propeller comprises two blades of opposite curvature only converging in part, joined to one another by stay members and allows air to circulate freely inside the propeller.

The invention is illustrated in the accompanying figures in which Figure 1 is a diagrammatic end view of a turbine comprising a cylindrical rotor and four propellers; Figure 2 is a perspective view of a single propeller and Fig. 3 is a cross section of a propeller along lines 3—3 of Fig. 2.

Referring to the figures, 2 is the rotor, and A B C D are the propellers; each of which turns upon its axis 3 in the sense indicated by the arrows F; within each propeller the hatching 4 represents one of the stay or spacing members joining the two blades K (see Fig. 2) of the propeller and fixing it on its axis. The propellers turn as a whole with the axis 1 of the turbine in the sense indicated by the arrow E. At each end

of the turbine the axis of each propeller is supported by a supporting member fixed to the axis of the turbine or of the rotor. The chain drive of the turbine and propeller shafts is indicated at 6 and part of the common support at 7. The support members may be replaced by a plate fixed to each end of the turbine. A fixed pinion in which the axis 1 of the turbine turns controls a pinion fixed to the ends of the axis 3 of each propeller. Each propeller turns in the sense opposite to the rotation of the turbine rotating a half turn on its own axis relative to its support per turn of the turbine. The drive, which can be effected by chains, gearing, control shafts and conical pinions etc. is only partly shown.

If driven by a motor the turbine will turn in the sense indicated by the arrow E. Each propeller will take up successively the position of the preceding propeller and will act as a motor throughout its course except at its passage through the position indicated at C in Figure 1. The turbine will then give a propulsive effect in the direction indicated by the arrow G. Fixed vanes, such as V, placed behind and at the side of the vane C may be used to increase the sustaining effect and avoid the air being entrained into rotation by the turbine. An adjustable deflector H may be provided for confining the air stream.

Used as an air or hydraulic motor the sense of rotation of the propellers and of the rotor is the opposite of that indicated in Figure 1.

Having now particularly described and ascertained the nature of my said invention and in what manner the same is to be performed, I declare that what I claim is:—

1. A turbine, or the like, comprising a plurality of propellers, means for revolving them around the axis of the turbine, means for rotating them at the same time about their own axes, and in which the propellers comprise two blades of opposite curvature with their concave sides facing one another, and stay or spacing members provided at intervals along the length of the propellers.

2. A propeller having two blades of opposite curvature with their concave sides facing one another, stay members provided between the blades at intervals along the length of the propeller, and a shaft passing through said stay members.

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