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E. OEHMICHEN

PROPELLING OR LIFTING DEVICE WITH AUTOMATIC CORRECTION

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Fig. 1

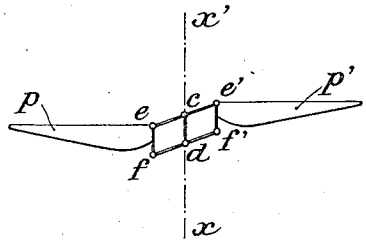
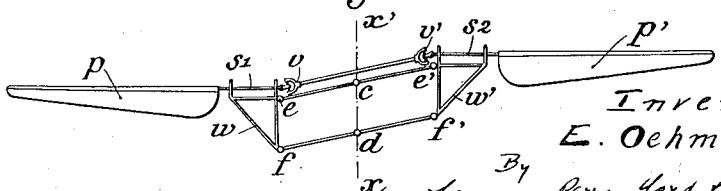


Fig. 2



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PROPELLING OR LIFTING DEVICE WITH AUTOMATIC CORRECTION.

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The present invention relates to a propelling or lifting apparatus of the kind in which the blades are connected with the main axis of rotation by a device which comprises one or more joints by which the blades are allowed to oscillate and which suitably combines the diametrically opposite blades in such manner as to assure the mechanical balancing of the apparatus irrespectively of the position of the blades, while permitting the said blades, by symmetrical modifications in the trajectory or the incidence, to automatically equalize the aerodynamic reactions upon the opposite blades, whatever may be the irregularities in the sustaining atmosphere.

According to the present invention, the connecting mechanism comprises a jointed parallelogram whereof two opposite sides are articulated in the middle of their length on the driving shaft and whereof the two other sides, directed parallelly to the said shaft, carry the blades. These latter may be mounted upon the said sides either rigidly or in a pivoting manner, their axis of pivotation being thus directed perpendicularly to the driving shaft. In all cases, the blades mounted in this manner remain parallel to themselves during their displacements in the direction parallel to the axis of rotation; for a given displacement of the center of each blade, the outer end of this latter moves by the same amount as the said center, so that for an equal efficiency, the whole of the propeller thus arranged is less cumbersome as the analogous propellers, the blades of which oscillate about a transverse axis.

Two embodiments of the object of the invention are represented, by way of example, in the diagrammatic annexed drawings.

Fig. 1 shows a propeller provided with two blades which are rigidly secured upon the sides of the parallelogram.

Fig. 2 shows a propeller, the blades of which are pivotally mounted upon the sides of the parallelogram.

$x\ x'$ indicates the axis of the driving shaft. Upon the said shaft are articulated at c and d, the middle of two sides $e\ e'$ and $f\ f'$ of a jointed parallelogram. The two other sides $e\ f$ and $e'\ f'$ of the latter carry the propeller's blades p and p'.

According to Fig. 1, the said blades are rigidly secured upon the sides $e\ f$ and $e'\ f'$ respectively.

It is shown that if the blade p' rises, the blade p is lowered by an equal amount and vice-versa, the said two blades remaining always parallel to an invariable direction, since the sides $e\ f$, $e'\ f'$ remain parallel to the axis $x\ x'$.

In the case of Fig. 2, the blades p and p' are integral with shafts s^1, s^2 which are pivoted in brackets w, w' integral with the sides $e\ f$, $e'\ f'$ and these shafts are connected together through an intermediary shaft to which they are coupled by means of Cardan joints v and v'. It results therefrom that the shafts s^1, s^2, although they remain in a direction perpendicular to the axis $x\ x'$, are obliged to rotate conjointly with the blades $p\ p'$, so that as the angle of incidence of one of these blades increases, the incidence of the other diminishes, and vice-versa.

It is obvious that the preceding considerations concerning a double-blade device may be applied to a propeller containing any number of blades, with the sole condition that they are to be mounted in pairs or in groups which may be superposed.

Having thus described my apparatus, what I claim as new therein, and my own invention, is:

1. In a propelling or lifting device, the combination of a driving shaft, a jointed parallelogram whereof two opposite sides are jointed at their middle to the said driving shaft, and two blades carried by the two other sides of the said parallelogram.

2. In a propelling or lifting device, the combination of a driving shaft, a jointed parallelogram whereof two opposite sides are jointed at their middle to the said driving shaft, and two blades pivoted to the two other sides of the said parallelogram, the axis of pivotation of every blade being placed in a direction substantially perpen-

dicular to that of the respective side carrying the same.

3. In a propelling or lifting device, the combination of a driving shaft, a jointed parallelogram whereof two opposite sides are jointed at their middle to the said driving shaft, two blades pivoted to the two other sides of the said parallelogram, the axis of pivotation of every blade being placed in a direction substantially perpendicular to that of the respective side carrying the same, and a transverse shaft whose ends are jointed to the inner ends of the blades.

In testimony whereof I have hereunto affixed my signature.

ETIENNE OEHMICHEN.