"COUNTER-TORQUE DEVICE WITH DUCTED ROTOR AND PHASE MODULATION OF THE BLADES, FOR HELICOPTER"

EUROCOPTER FRANCE

ABSTRACT

The blades (10) of the rotor (7) which can rotate in the transverse duct (6) have an angular distribution according to an uneven azimuth modulation given by the following sinusoidal law:

$$\Theta n = n \times \frac{360°}{b} + \Delta\Theta \sin\left(m \times n \times \frac{360°}{b}\right)$$

where Θn is the angular position of the nth of the blades (10) counted in series from an arbitrary origin, b is the number of blades (10), m is a whole number chosen from 1 to 4, which is not prime with the number b of blades (10), chosen from 6 to 12, and $\Delta\Theta$ is chosen to be greater than or equal to a minimum value $\Delta\Theta$ min, which is such that the product $\Delta\Theta$ min × b is chosen within a range of values extending from 1.5 radian to 1 radian.

Figure 1