How the coaxial counter-rotating system works

Instead of using a tail rotor to balance the main rotor torque, the coaxial counter-rotating system has two main rotors, one above the other, turning in opposite directions. This makes it possible that the torque of the two rotors can exactly balance each other so that the fuselage won't be twisted during hovering or in straight flight.

Fig. (1) is a schematic layout of the coaxial counter-rotating system, which includes: two motors, two coaxial main shafts and rotors driven separately by two motors through gears. The actual mechanism is shown in Fig. (2) below.

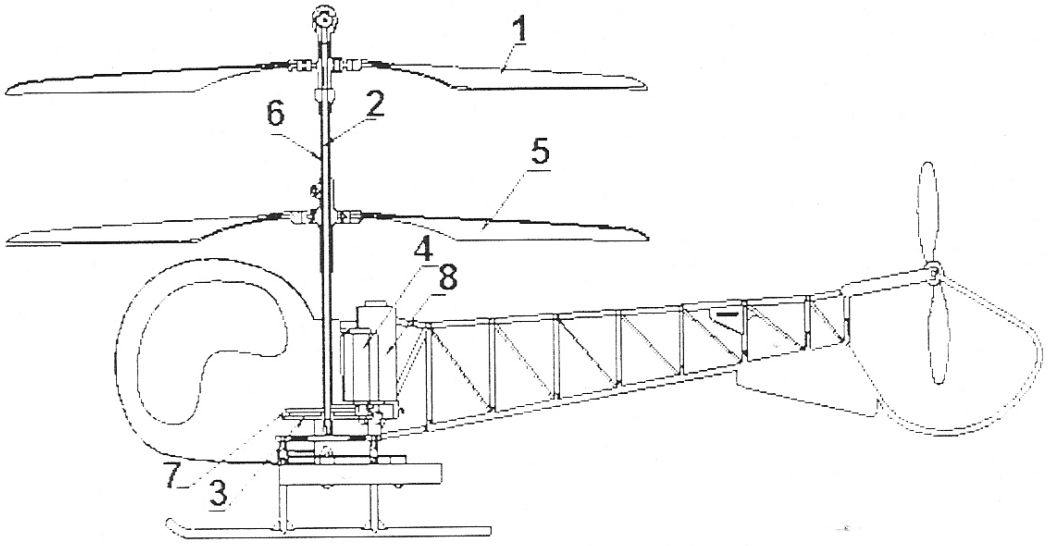

Fig. (1): Schematic layout of the coaxial counter-rotating system
1. Upper rotor blade 2. Inner main shaft 3. Upper rotor drive gear 4. Upper rotor drive motor
5. Lower rotor blade 6. Outer main shaft 7. Lower rotor drive gear 8. Lower rotor drive motor

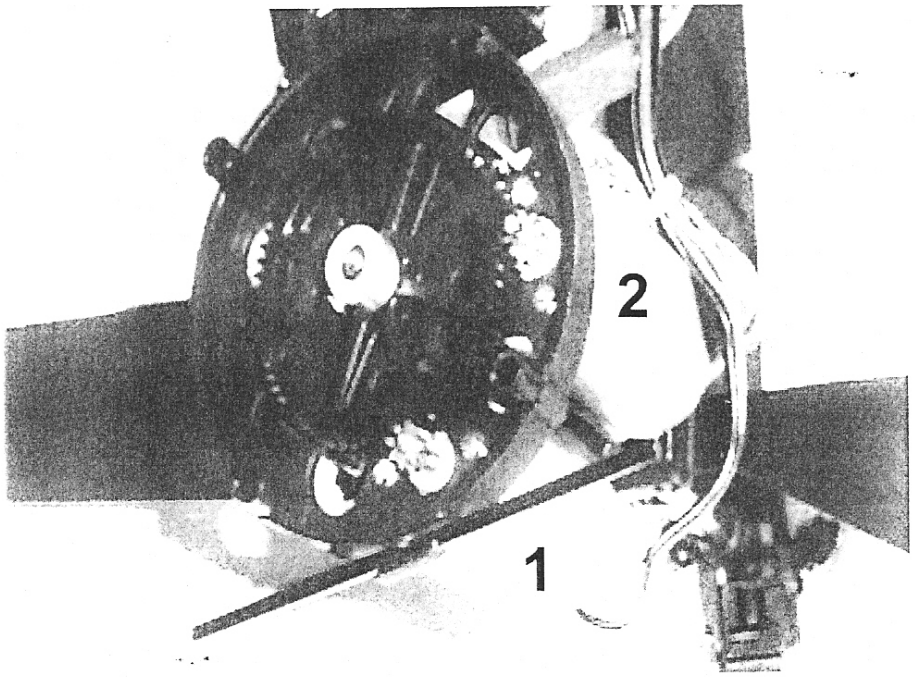

Fig. (2): The actual mechanism of the coaxial counter-rotating system
1. Upper rotor drive motor and gear 2. Lower rotor drive motor and gear