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**RICHARDS**(10) **Pub. No.: US 2022/0352835 A1**(43) **Pub. Date: Nov. 3, 2022**(54) **INTERLEAVED CONTROLLERS**(71) Applicant: **Digipulse Ltd**, Birmingham (GB)(72) Inventor: **Bryn Geoffrey RICHARDS**,  
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**ABSTRACT**

A motor system comprises a motor comprising: a stator with a plurality of subwindings each having a plurality of phase connections for receiving phase voltages, wherein each of the subwindings is electrically insulated from each of the other subwindings; a rotor comprising a plurality of permanent magnets or energisable electromagnets; a controller comprising a plurality of control parts, each control part associated with a respective subwinding, each control part being configured to monitor phase voltages of the associated subwinding, between phase connections. The system further comprises a controller configured to: obtain, from each control part, at set discrete time intervals, a plurality of back measured electromotive force, EMF, readings for each of the respective subwindings; using the plurality of measured back EMF readings and an a priori knowledge of the motor's construction to estimate a commutation event timing.

**• ISOMETRIC DIAGRAM OF A MOTOR WITH  
TWO WINDINGS(SLOTLESS MOTOR)**