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Schuller-Rach et al.(10) **Pub. No.: US 2023/0231436 A1**(43) **Pub. Date: Jul. 20, 2023**(54) **ELECTRIC MOTOR AND BLADE ASSEMBLY
FOR A LAWN MOWER***A01D 34/78* (2006.01)*H02K 7/08* (2006.01)*H02K 21/22* (2006.01)*F16C 19/06* (2006.01)(71) Applicant: **Ariens Company**, Brillion, WI (US)(72) Inventors: **Matthew P. Schuller-Rach**, Kaukauna,
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Berglund, Brillion, WI (US)(52) **U.S. Cl.**CPC *H02K 5/1735* (2013.01); *A01D 34/733*
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ABSTRACT

A configuration of a direct drive lawnmower spindle assembly to protect sensitive electric motor components is provided. A spindle shaft of the spindle assembly is supported by upper and lower bearings. An upper end of the spindle shaft is mounted to a rotor of the electric motor and a lower end of the spindle shaft extends through the clearance opening. The lower bearing is supported by a lower bearing carrier that is mounted to the bottom of the spindle housing. The lower bearing can be serviced by removing the lower bearing carrier. A clearance gap between the spindle shaft and the clearance opening is sufficiently small to limit spindle shaft tipping to a degree that will not damage the motor. The invention also provides a friction coupling system for coupling a blade with the rotating spindle shaft.

