US 20230231442A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2023/0231442 A1**

KEBUKAWA (43) **Pub. Date: Jul. 20, 2023**

(54) **MOTOR**

(71) Applicant: **MINEBEA MITSUMI Inc.**, Nagano (JP)

(72) Inventor: **Kouji KEBUKAWA**, Kitasaku-gun, Nagano (JP)

(21) Appl. No.: **18/000,404**

(22) PCT Filed: **Jun. 7, 2021**

(86) PCT No.: **PCT/JP2021/021488**

§ 371 (c)(1),
(2) Date: **Dec. 1, 2022**

(30) **Foreign Application Priority Data**

Jun. 8, 2020 (JP) 2020-099712

Publication Classification

(51) **Int. Cl.**
H02K 7/08 (2006.01)
H02K 1/2706 (2006.01)

(52) **U.S. Cl.**
CPC ***H02K 7/085*** (2013.01); ***H02K 1/2706*** (2013.01); *H02K 2213/03* (2013.01)

(57) **ABSTRACT**

The application is a motor capable of reducing vibration. A motor includes a shaft, a pair of bearings, a sleeve accommodating the pair of bearings, a magnet fixed at one of the shaft and sleeve, a coil fixed at the other of the shaft or the sleeve and opposing the magnet, and an elastic member disposed between the pair of bearings and satisfying Expression 1. D is an outer diameter [m] of the elastic member, d is a wire diameter (p [m] of the elastic member, γ is a unit volume weight [kg/m^3] of a material of the elastic member, S is a no-load rotation number [rotation/min] of the shaft, and g is gravitational acceleration.

$$S < \frac{20d\sqrt{\frac{gG}{2\gamma}}}{\pi D^2} \quad (1)$$