US 20240178779A1

(19) **United States**

(12) **Patent Application Publication** (10) **Pub. No.: US 2024/0178779 A1**

**Shi et al.** (43) **Pub. Date: May 30, 2024**

(54) **LINEAR DRIVE DEVICE**

(71) Applicant: **AAC Technologies (Nanjing) Co., Ltd.**, Nanjing (CN)

(72) Inventors: **Weiling Shi**, Nanjing (CN); **Xueyuan Zhu**, Nanjing (CN); **Shun Guo**, Nanjing (CN); **Lin Qian**, Nanjing (CN)

(21) Appl. No.: **18/321,787**

(22) Filed: **May 23, 2023**

**Related U.S. Application Data**

(63) Continuation of application No. PCT/CN2022/144285, filed on Dec. 30, 2022.

(30) **Foreign Application Priority Data**

Nov. 30, 2022 (CN) ..... 202223212207.4

**Publication Classification**

(51) **Int. Cl.**
***H02P 25/064*** (2006.01)
***H02K 41/03*** (2006.01)

(52) **U.S. Cl.**
CPC ..... ***H02P 25/064*** (2016.02); ***H02K 41/031*** (2013.01)

(57) **ABSTRACT**

The present disclosure provides a linear drive device, which includes: a stator including a stator body and a plurality of coils. The linear drive device further includes a rotor including a rotor body supported on the stator body, and a magnetic steel fixed on the rotor body, a first position feedback unit fixed on the rotor body, and multiple drivers. The multiple coils arranged in series or parallel are electrically connected to one of the multiple drivers, while remaining coils not arranged in series or parallel are divided into multiple groups, and multiple coils in each of the multiple groups are electrically connected to the other driver. The linear drive device further includes a controller electrically connected to the multiple drivers. The linear drive device in the present disclosure not only saves the number of drivers, but also reduces the difficulty of controlling the entire control system.