

# (19) United States

### (12) Patent Application Publication (10) Pub. No.: US 2024/0215455 A1 Okubo et al.

(43) Pub. Date:

## Jun. 27, 2024

#### (54) MAGNETOSTRICTIVE MEMBER AND METHOD FOR MANUFACTURING MAGNETOSTRICTIVE MEMBER

(71) Applicant: SUMITOMO METAL MINING CO.,

LTD., Tokyo (JP)

(72) Inventors: Kazuhiko Okubo, Ome-shi (JP); Yuki Sendan, Ome-shi, (JP); Kiyoshi Izumi,

Ome-shi (JP)

(73) Assignee: SUMITOMO METAL MINING CO.,

LTD., Tokyo (JP)

(21) Appl. No.: 18/556,133

(22) PCT Filed: Apr. 19, 2022

(86) PCT No.: PCT/JP2022/018229

§ 371 (c)(1),

(2) Date: Oct. 19, 2023

(30)Foreign Application Priority Data

Apr. 23, 2021 (JP) ...... 2021-073603

#### **Publication Classification**

(51) Int. Cl.

H10N 35/85 (2006.01)C22C 38/00 (2006.01)H10N 35/00 (2006.01)H10N 35/01 (2006.01)

(52) U.S. Cl.

CPC ...... H10N 35/85 (2023.02); C22C 38/002 (2013.01); H10N 35/01 (2023.02); H10N 35/101 (2023.02)

(57)ABSTRACT

The magnetostrictive member contains an iron-based alloy crystal having magnetostrictive characteristics and is a platelike body having front and back faces. In one of the front and back faces, a thickness and a surface roughness Ra of the magnetostrictive member satisfy Expression (1): log Ra≥0. 48t-0.62. In Expression (1), log indicates a common logarithm, Ra the surface roughness (µm), and t the thickness of the magnetostrictive member (mm).

