

# (19) United States

## (12) Patent Application Publication (10) Pub. No.: US 2022/0360067 A1 INADA et al.

## Nov. 10, 2022 (43) **Pub. Date:**

### (54) CURRENT INTERRUPTING DEVICE AND **CURRENT INTERRUPTING METHOD**

(71) Applicants: National University Corporation Saitama University, Saitama-shi, Saitama (JP); TOKYO INSTITUTE OF TECHNOLOGY, Meguro-ku, Tokyo (JP); The University of Tokyo,

Bunkyo-ku, Tokyo (JP)

(72) Inventors: Yuki INADA, Saitama-shi, Saitama (JP); Yasushi YAMANO, Saitama-shi, Saitama (JP); Mitsuaki MAEYAMA, Saitama-shi, Saitama (JP); Shungo ZEN, Meguro-ku, Tokyo (JP); Wataru

OHNISHI, Bunkyo-ku, Tokyo (JP)

(73) Assignees: National University Corporation Saitama University, Saitama-shi, Saitama (JP); TOKYO INSTITUTE OF TECHNOLOGY, Meguro-ku, Tokyo (JP); The University of Tokyo, Bunkyo-ku, Tokyo (JP)

17/761,083 (21) Appl. No.:

(22)PCT Filed: Sep. 15, 2020

PCT/JP2020/034978 (86) PCT No.:

§ 371 (c)(1),

(2) Date: Mar. 16, 2022

#### (30)Foreign Application Priority Data

Sep. 17, 2019 (JP) ...... 2019-168601

### **Publication Classification**

(51) Int. Cl. H02H 3/02 (2006.01)H02H 1/00 (2006.01)H02H 3/10 (2006.01)

U.S. Cl. (52)CPC ..... H02H 3/025 (2013.01); H02H 1/0007 (2013.01); H02H 3/10 (2013.01)

#### (57)ABSTRACT

A current interrupting device includes: a current limiting element provided on a power supply path from a predetermined power supply to a load device, the current limiting element being configured to exhibit a current limiting action when current flowing the power supply path exceeds a first current threshold value; a current diversion path switch capable of switching on and off of an electric conduction of a current diversion path, the current diversion path switch being connected in parallel with the power supply path; and a controller configured to control on and off of the current diversion path switch, wherein, the controller is configured to: switch the current diversion path switch on from an off state when it is detected that current flowing the current limiting element is limited to a second current threshold value after the current flowing the current limiting element has exceeded the first current threshold value; and switch the current diversion path switch off again after a predetermined switched-on holding time has elapsed since the current diversion path switch has been switched on.

