



US 20220352697A1

(19) **United States**(12) **Patent Application Publication**  
**TAKANO et al.**(10) **Pub. No.: US 2022/0352697 A1**(43) **Pub. Date: Nov. 3, 2022**(54) **GAS LEAKAGE DETECTION SYSTEM AND  
GAS LEAKAGE DETECTION METHOD***G01F 23/16* (2006.01)*H02B 13/055* (2006.01)*G01K 1/02* (2021.01)(71) Applicants: **KABUSHIKI KAISHA TOSHIBA,**  
Tokyo (JP); **Toshiba Energy Systems  
& Solutions Corporation,**  
Kawasaki-shi Kanagawa (JP)(52) **U.S. Cl.**CPC ..... *H02B 13/065* (2013.01); *H02B 13/025*  
(2013.01); *G01F 23/16* (2013.01); *H02B*  
*13/055* (2013.01); *G01K 1/026* (2013.01)(72) Inventors: **Kei TAKANO,** Kawguchi Saitama (JP);  
**Tooru WASHIYAMA,** Yokohama  
Kanagawa (JP)

(57)

**ABSTRACT**(73) Assignees: **KABUSHIKI KAISHA TOSHIBA,**  
Tokyo (JP); **Toshiba Energy Systems  
& Solutions Corporation,**  
Kawasaki-shi Kanagawa (JP)

A gas leakage detection system 1 with high detection accuracy for a remaining gas amount and a gas leakage amount of an insulation gas 28 in a container 27 forming an electrical apparatus 2 is provided. The gas leakage detection system 1 includes: the electrical apparatus 2 including: the container 27 to which a power distribution apparatus 29 is fixed and in which the insulation gas 28 is contained; a plurality of divided spaces 21 in the container 28 divided in parallel with a ground; a plurality of temperature sensors 22 which detects temperature of the insulation gas 28 and which is positioned in the plurality of the divided spaces 22; and a pressure sensor 23 which detects a pressure in the container 27; and a monitor 3 which calculates the remaining gas amount Mg of the insulation gas 28 remaining in the container 27 based on the temperature Ta and Tb of the insulation gas 28 detected by the plurality of the temperature sensors 22 and the pressure Pg of the insulation gas 28 detected by the pressure sensor 23.

(21) Appl. No.: **17/622,218**(22) PCT Filed: **Jul. 19, 2019**(86) PCT No.: **PCT/JP2019/028444**

§ 371 (c)(1),

(2) Date: **Dec. 22, 2021****Publication Classification**(51) **Int. Cl.***H02B 13/065* (2006.01)*H02B 13/025* (2006.01)