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(12) **United States Design Patent** (10) **Patent No.:** **US D1,089,854 S**  
**Kang et al.** (45) **Date of Patent:** **\*\* Aug. 19, 2025**

(54) **ROBOTIC EXOSKELETON SUIT FOR LIFTING LOADS**

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(30) **Foreign Application Priority Data**

Sep. 30, 2022 (KR) ..... 30-2022-0040232

(51) **LOC (15) Cl.** ..... **29-02**

(52) **U.S. Cl.**  
USPC ..... **D29/101.1**

(58) **Field of Classification Search**

USPC ..... D29/100, 101.1, 101.3, 101.5, 122

(Continued)

(56) **References Cited**

U.S. PATENT DOCUMENTS

D781,430 S \* 3/2017 Konishi ..... D24/190

D784,545 S \* 4/2017 Jangir ..... D29/101.1

(Continued)

FOREIGN PATENT DOCUMENTS

WO D228290-001 \* 3/2024

OTHER PUBLICATIONS

Yahoo, "Need to lift something? Try wearing a Kawasaki robotic exoskeleton", first available Sep. 21, 2011. ([https://www.yahoo.com/news/lift-something-try-wearing-kawasaki-robotic-exoskeleton-161253477.html?guccounter=1&guce\\_ref](https://www.yahoo.com/news/lift-something-try-wearing-kawasaki-robotic-exoskeleton-161253477.html?guccounter=1&guce_ref)) (Year: 2011).\*

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(57) **CLAIM**

The ornamental design for robotic exoskeleton suit for lifting loads as shown and described.

**DESCRIPTION**

1. Robotic exoskeleton suit for lifting loads

1.1 : Perspective

1.2 : Front

1.3 : Back

1.4 : Left

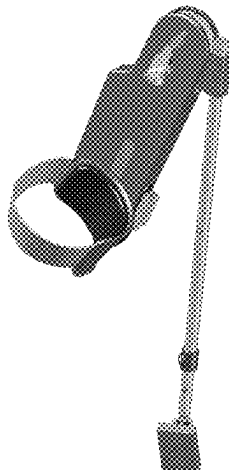
1.5:Right

1.6:Top

1.7: Bottom

Reproduction 1.1 is a perspective view of a robotic exoskeleton suit for lifting loads showing our new design; reproduction 1.2 is a front elevation view thereof; reproduction 1.3 is a rear elevation view thereof; reproduction 1.4 is a left

(Continued)



side elevation view thereof; reproduction 1.5 is a right side elevation view thereof; reproduction 1.6 is a top plan view thereof; reproduction 1.7 is a bottom plan view thereof.

The broken lines and the half-tone areas within the broken lines depict portions of the robotic exoskeleton suit for lifting loads that form no part of the claimed design.

### 1 Claim, 7 Drawing Sheets

#### (58) Field of Classification Search

CPC .. A41D 13/00; A41D 13/012; A41D 13/0125;  
A41D 13/015; A41D 13/05; A41D  
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2003/007; A61H 3/00; A61H 3/008;  
A62B 35/00; A62B 35/0006; A62B  
35/0018; A62B 35/0025; A62B 35/0031;  
A62B 99/00

See application file for complete search history.

#### (56) References Cited

##### U.S. PATENT DOCUMENTS

9,808,073 B1 \* 11/2017 Maxwell ..... A61H 3/008  
D889,817 S \* 7/2020 Jung ..... D3/7  
D901,023 S \* 11/2020 Park ..... D24/190  
D903,881 S \* 12/2020 Ohta ..... D29/101.1  
D946,771 S \* 3/2022 Sato ..... D29/101.1

D950,076 S \* 4/2022 Katoh ..... D29/100  
D1,035,887 S \* 7/2024 An ..... D24/190  
2012/0095373 A1 \* 4/2012 Hirata ..... A61H 3/00  
601/35  
2016/0106615 A1 \* 4/2016 Lee ..... A61H 3/00  
414/4  
2016/0150999 A1 \* 6/2016 Sugata ..... A61H 3/00  
600/587  
2016/0175180 A1 \* 6/2016 Bond ..... A61H 3/00  
602/23  
2019/0151182 A1 \* 5/2019 Kim ..... A61H 1/0266  
2019/0321250 A1 \* 10/2019 Bristol ..... A61H 3/00  
2019/0328605 A1 \* 10/2019 van den Bogert ..... B25J 9/0006  
2019/0336383 A1 \* 11/2019 Song ..... A61H 1/024  
2020/0038279 A1 \* 2/2020 Sarakoglou ..... A61H 3/00  
2023/0414437 A1 \* 12/2023 Lee ..... A61H 1/024

##### OTHER PUBLICATIONS

New Scientist, "Robotic suit gives shipyard workers super strength", first available Jul. 30, 2014. (<https://www.newscientist.com/article/mg22329803-900-robotic-suit-gives-shipyard-workers-super-strength/>) (Year: 2014).\*

NBC News, "Robotic Exoskeletons Are Changing Lives", first available Feb. 21, 2017. (<https://www.nbcnews.com/mach/innovation/robotic-exoskeletons-are-changing-lives-surprising-ways-n722676>) (Year: 2017).\*

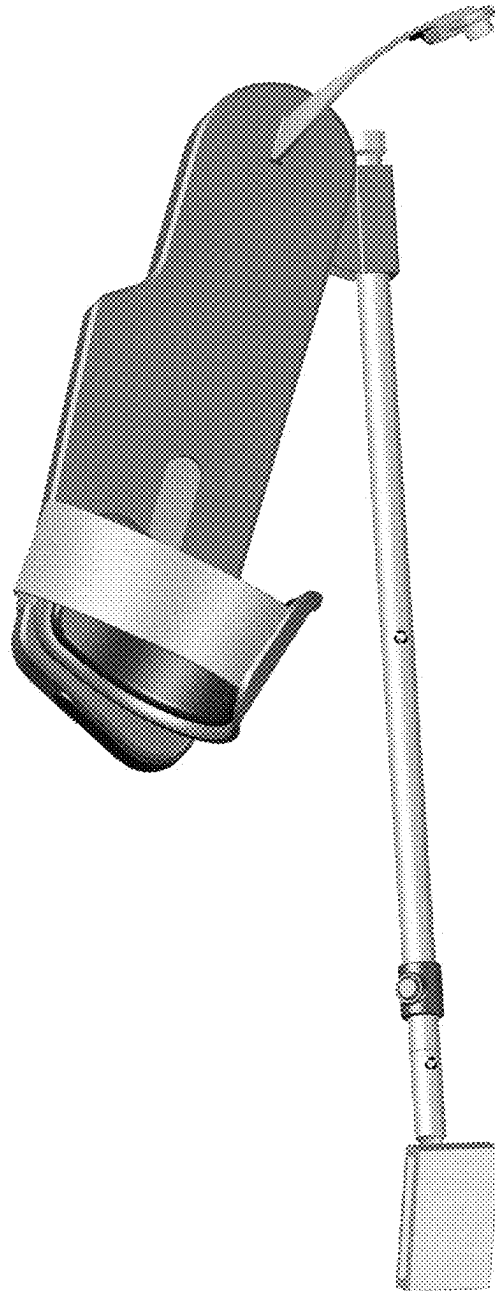
New Atlas, "Hyundai expands its mobility presence with wearable robots", first available Jan. 5, 2017. (<https://newatlas.com/hyundai-exoskeletons-scooter-2017-cs/47233/>) (Year: 2017).\*

\* cited by examiner

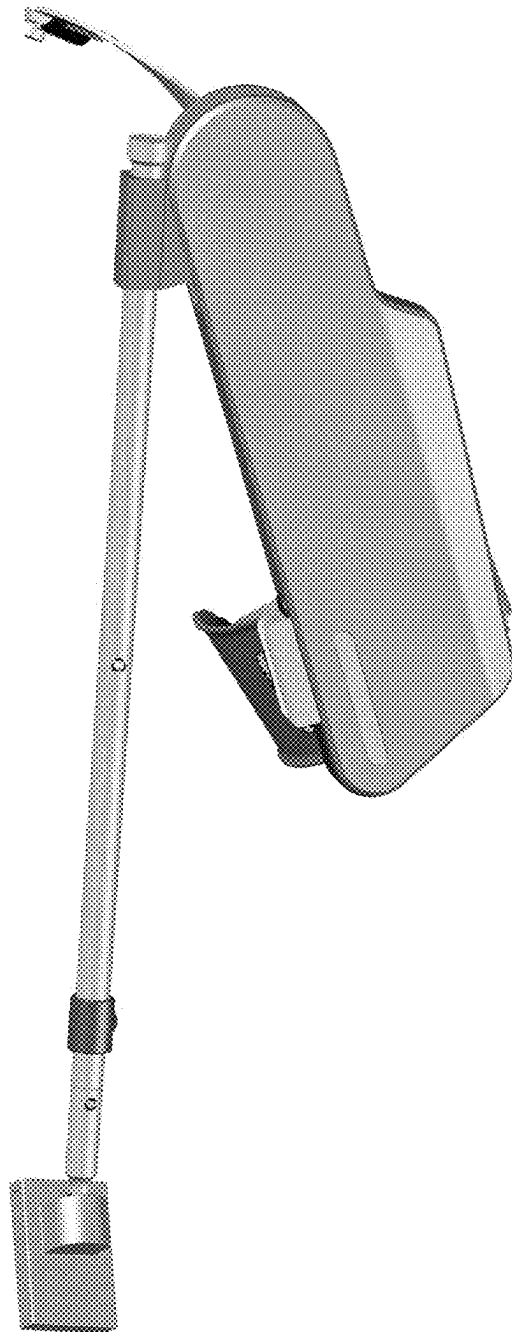
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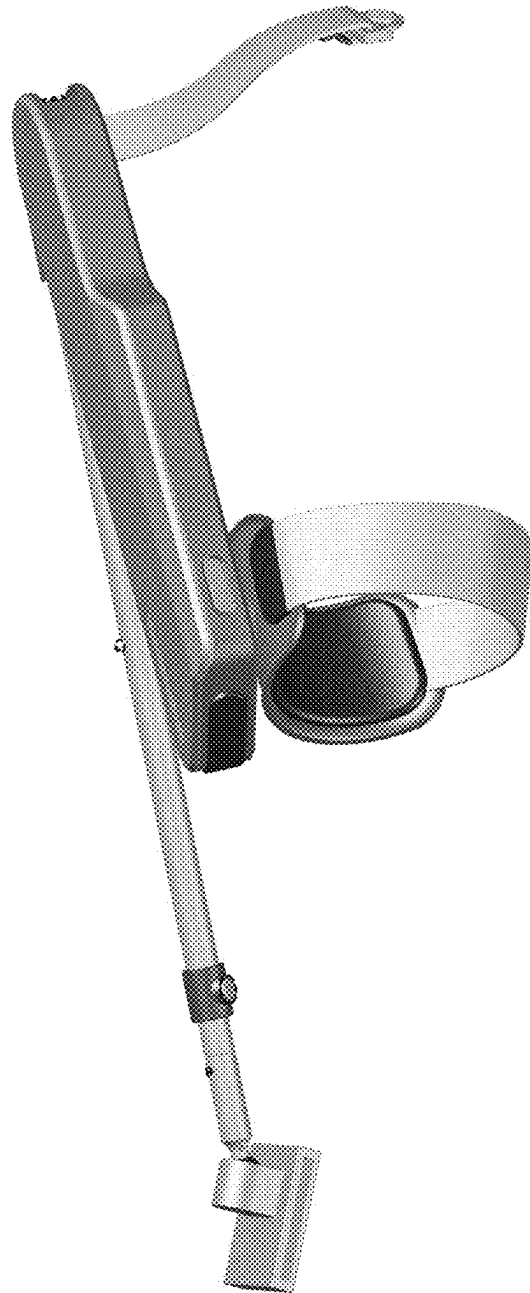
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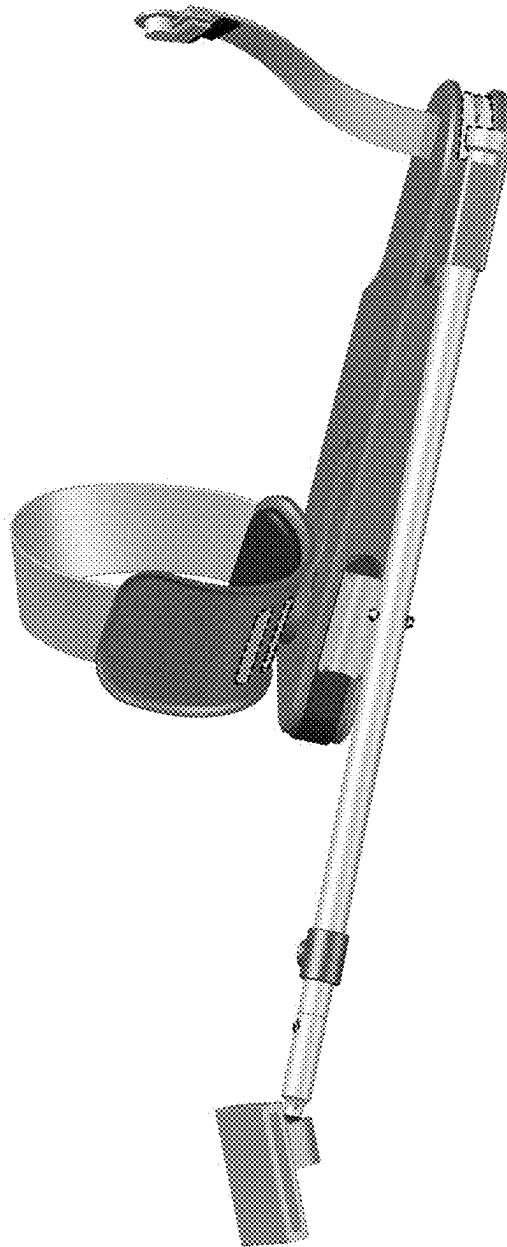
1.3



1.4



1.5



1.6





1.7

