(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) **EP 4 321 467 A1**

(12) **EUROPEAN PATENT APPLICATION**
published in accordance with Art. 153(4) EPC

(43) Date of publication:
14.02.2024 Bulletin 2024/07

(21) Application number: **22783990.9**

(22) Date of filing: **02.04.2022**

(51) International Patent Classification (IPC):
B66B 29/00 *(2006.01)* ***B66B 27/00*** *(2006.01)*

(86) International application number:
PCT/CN2022/085042

(87) International publication number:
WO 2022/213924 (13.10.2022 Gazette 2022/41)

(84) Designated Contracting States:
AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR
Designated Extension States:
BA ME
Designated Validation States:
KH MA MD TN

(30) Priority: **06.04.2021 CN 202110366823**

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(54) AUTOMATIC CONTROL SYSTEM FOR PERSONNEL TRANSPORTATION DEVICE, AND PERSONNEL TRANSPORTATION DEVICE

(57) The present disclosure relates to an automatic control system for a personnel transportation device, which is able to indicate an accident occurring on the personnel transportation device, and includes: a video monitoring device configured to monitor the personnel transportation device and send out a first signal upon an accident occurring on the personnel transportation device; and an indication device communicatively connected to the video monitoring device and configured to receive the first signal from the video monitoring device upon the video monitoring device monitoring the accident occurring on the personnel transportation device, and send a second signal to passenger, the second signal reminds a position where the accident occurs to the passenger.

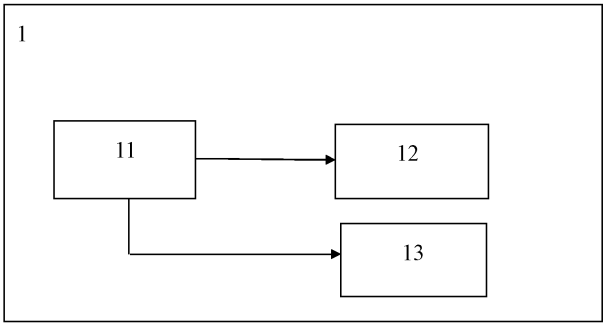

Fig. 1

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Description

TECHNICAL FIELD

[0001] The present disclosure relates to an automatic control system for a personnel transportation device and a personnel transportation device.

BACKGROUND

[0002] In personnel transportation devices, such as escalator and moving sidewalk, when an accident occurs, other passengers or related safety personnel can't know the occurrence and position of the accident in time, so they can't avoid the position or rescue in time.

SUMMARY

[0003] Therefore, the present disclosure provides an automatic control system for a personnel transportation device, the automatic control system is able to indicate an accident occurring on the personnel transportation device, and includes: a video monitoring device, configured to monitor the personnel transportation device and send out a first signal upon monitoring an accident occurring on the personnel transportation device; and an indication device, communicatively connected to the video monitoring device and configured to receive the first signal from the video monitoring device upon the video monitoring device monitoring the accident occurring on the personnel transportation device, and send a second signal to passenger, the second signal indicating a position where the accident occurs to the passenger.

[0004] Advantageously, the video monitoring device includes a plurality of cameras, and visual fields of the plurality of cameras cover an entirety of the personnel transportation device.

[0005] Advantageously, the indication device includes a plurality of light sources arranged along a length direction of the personnel transportation device, and the second signal includes an optical signal of a predetermined color emitted by the plurality of light sources, so as to indicate the position where the accident occurs upon the accident occurring.

[0006] Advantageously, the indication device further includes a first loudspeaker, and the second signal includes a sound signal generated by the first loudspeaker to indicate the position where the accident occurs upon the accident occurring.

[0007] Advantageously, the indication device further includes a display, and the second signal includes a video signal displayed by the display to indicate the position where the accident occurs upon the accident occurring.

[0008] Advantageously, the indication device further includes a projector, and the second signal includes a projection signal projected by the projector to the position where the accident occurs.

[0009] Advantageously, upon the position of the accident occurring on the personnel transportation device changing, the second signal is able to change accordingly to follow a change of the position where the accident occurs.

[0010] Advantageously, the automatic control system further includes a panic button indicator communicatively connected to the video monitoring device, and the panic button indicator is able to generate a third signal to indicate a position of the panic button upon the video monitoring device monitoring the accident occurring on the personnel transportation device.

[0011] Advantageously, the panic button indicator includes a second loudspeaker, and the third signal includes a sound signal generated by the second loudspeaker.

[0012] Advantageously, the panic button indicator further includes a light source arranged near panic button, and the third signal includes an optical signal generated by the light source.

[0013] The present disclosure further relates to a personnel transportation device, which includes the above-mentioned automatic control system.

BRIEF DESCRIPTION OF DRAWINGS

[0014] Advantages and objectives of the present disclosure can be better understood from the following detailed description of preferred embodiments of the present disclosure in conjunction with the accompanying drawings. The drawings are not drawn to scale in order to better show the relationship between the components in the drawings. In the accompanying drawings:

Fig. 1 is a schematic diagram of an automatic control system for a personnel transportation device according to the present disclosure.

DETAILED DESCRIPTION

[0015] Various embodiments according to the present disclosure will be described in detail with reference to the accompanying drawings. Herein, it should be noted that, in the drawings, the same reference numerals are given to components having basically the same or similar structures and functions, and repeated descriptions about them will be omitted. The term "including A, B, C, etc. in sequence" only indicates the arrangement order of included components A, B, C, etc., and does not exclude the possibility of including other components between A and B and/or between B and C.

[0016] The accompanying drawings in the present specification are schematic diagrams to help explain the concept of the invention, and schematically show the shapes of various parts and their relationships.

[0017] Hereinafter, with reference to Fig. 1, a preferred embodiment according to the present disclosure will be described in detail.

[0018] The automatic control system for a personnel transportation device according to the present disclosure

is able to indicate the position of an accident occurring on the personnel transportation device. The accident includes, for example, an accidental fall of passenger, a retrograde movement of passenger, passenger extend his/her body out of the personnel transportation device, and children playing rough, etc.

[0019] The second signal may include an optical signal, a sound signal, a video signal, a projection signal, and the like.

[0020] As illustrated by Fig. 1, the automatic control system 1 includes a video monitoring device 11, the visual field of which preferably covers the entirety of the personnel transportation device, and is configured to monitor whether an accident occurs on the personnel transportation device. If the video monitoring device 11 monitors that an accident has occurred, a first signal will be generated. The indication device 12 is communicatively connected to the video monitoring device, and is able to receive a first signal from the video monitoring device and send out a second signal, and the second signal reminds a position where the accident occurs to the passenger.

[0021] The indication device 12 includes a plurality of light sources arranged along a length direction of the personnel transportation device, and after the indication device receives the first signal, the plurality of light sources emit an optical signal of a predetermined color under the control of the indication device to indicate the position where the accident occurs. For example, the plurality of light sources are arranged along a skirt of the personnel transportation device and correspond to a plurality of steps one by one, so that upon an accident (for example, a passenger falls down) occurring on a certain step, the light source corresponding to the step will emit an optical signal. Upon the fallen passenger moving on the continuous steps, the corresponding light sources can successively send out optical signals to indicate the position where the passenger fell.

[0022] The indication device 12 also includes a first loudspeaker. After the indication device receives the first signal, the first loudspeaker sends out a sound signal under the control of the indication device to broadcast the position of the accident to the passenger.

[0023] The indication device 12 also includes a display. After the indication device receives the first signal, the display sends out a video signal under the control of the indication device to indicate the position of the accident to the passenger.

[0024] The indication device 12 also includes a projector. After the indication device receives the first signal, the projector can project a projection signal to the position where the accident occurs, so as to indicate the position where the accident occurs. The projection signal is in the form of light.

[0025] One or more of the light sources, the first loudspeaker, the display and the projector described above may work at the same time. For example, upon an accident occurring, the corresponding light source among the plurality of light sources generates light of a predetermined color, the first loudspeaker broadcasts the position where the accident occurs, and the display also displays the position, and the projector projects a projection signal to the position and makes the projection signal follow the movement of the position.

[0026] In addition, the automatic control system also includes a panic button indicator 13, which is communicatively connected to the video monitoring device 11. Upon the video monitoring device monitoring the occurrence of an accident on the personnel transportation device, the panic button indicator can generate a third signal to indicate the position of panic button, thus facilitating the surrounding passengers to press panic button in time.

[0027] The panic button indicator 13 includes a second loudspeaker, and upon the video monitoring device monitoring the occurrence of an accident on the personnel transportation device, the second loudspeaker generates a sound signal to accurately indicate the position of panic button.

[0028] In addition, the panic button indicator also includes a light source located near panic button, the light source is able to emit an optical signal to indicate the position of the panic button.

[0029] The above description is only an explanation of the present disclosure, so that those ordinary skilled in the field can fully implement the technical solution, but it is not a limitation of the present disclosure. The technical features disclosed above are not limited to the combination with other features, and those skilled in the art can also combine other technical features according to the purpose of the invention, so as to achieve the purpose of the invention.

Claims

1. An automatic control system for a personnel transportation device, wherein the automatic control system is able to indicate an accident occurring on the personnel transportation device, which is **characterized in that**, the automatic control system comprises:

   a video monitoring device, configured to monitor the personnel transportation device and send out a first signal upon monitoring an accident occurring on the personnel transportation device; and

   an indication device, communicatively connected to the video monitoring device and configured to receive the first signal from the video monitoring device upon the video monitoring device monitoring the accident occurring on the personnel transportation device, and send a second signal to passenger, the second signal indicating a position where the accident occurs to the passenger.

2. The automatic control system according to claim 1, wherein the video monitoring device comprises a plurality of cameras, and visual fields of the plurality of cameras cover an entirety of the video monitoring device.

3. The automatic control system according to claim 1, wherein the indication device comprises a plurality of light sources arranged along a length direction of the personnel transportation device, and the second signal comprises an optical signal of a predetermined color emitted by the plurality of light sources, so as to indicate the position where the accident occurs upon the accident occurring.

4. The automatic control system according to claim 3, wherein the indication device further comprises a first loudspeaker, and the second signal comprises a sound signal generated by the first loudspeaker to indicate the position where the accident occurs upon the accident occurring.

5. The automatic control system according to claim 4, wherein the indication device further comprises a display, and the second signal comprises a video signal displayed by the display to indicate the position where the accident occurs upon the accident occurring.

6. The automatic control system according to claim 5, wherein the indication device further comprises a projector, and the second signal comprises a projection signal projected by the projector to the position where the accident occurs.

7. The automatic control system according to any one of claims 1-6, wherein, upon the position of the accident occurring on the personnel transportation device changing, the second signal is able to change accordingly to follow a change of the position where the accident occurs.

8. The automatic control system according to any one of claims 1-6, wherein the automatic control system further comprises a panic button indicator communicatively connected to the video monitoring device, and the panic button indicator is able to generate a third signal to indicate a position of the panic button upon the video monitoring device monitoring the accident occurring on the personnel transportation device.

9. The automatic control system according to claim 8, wherein the panic button indicator comprises a second loudspeaker, and the third signal comprises a sound signal generated by the second loudspeaker.

10. The automatic control system according to claim 9, wherein the panic button indicator further comprises a light source arranged near panic button, and the third signal comprises an optical signal generated by the light source.

11. A personnel transportation device, which is **characterized in that** the personnel transportation device comprises the automatic control system according to any one of claims 1-10.

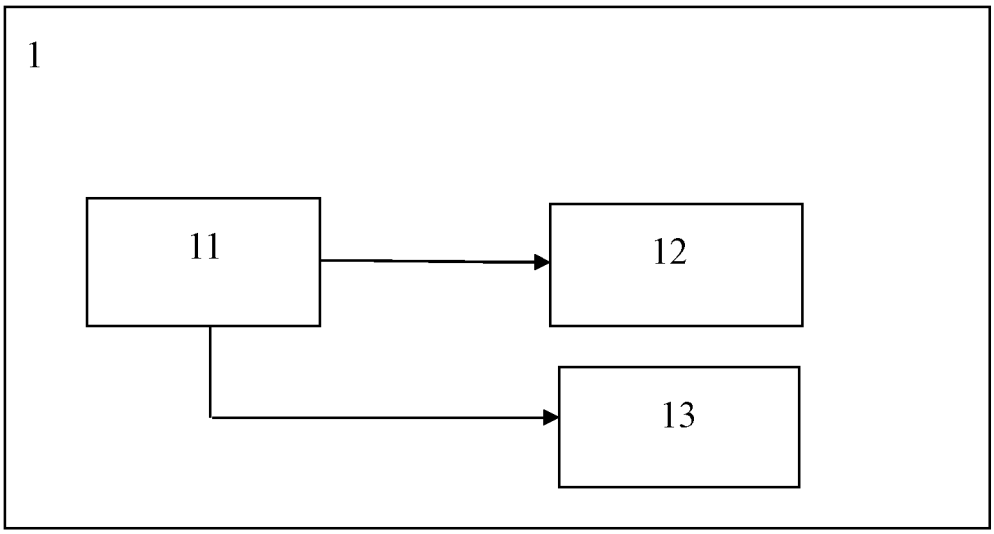

Fig. 1

INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2022/085042

A. CLASSIFICATION OF SUBJECT MATTER

B66B 29/00(2006.01)i; B66B 27/00(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B66B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNKI; CNTXT; ENTXT; VEN; CNABS: 扶梯, 控制, 监控, 监视, 摄像, 相机, 意外, 异常, 指示, 显示, 位置; escalator, conveyor, monitor, camera, emergency, display, indicate

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
PX	CN 112919296 A (KONE ELEVATORS CO., LTD. et al.) 08 June 2021 (2021-06-08) see claims 1-11	1-11
PX	CN 215592314 U (KONE ELEVATORS CO., LTD. et al.) 21 January 2022 (2022-01-21) see claims 1-11	1-11
X	CN 101695983 A (ZHEJIANG UNIVERSITY OF TECHNOLOGY) 21 April 2010 (2010-04-21) see description, paragraphs 86-145, and figures 1-11	1, 2, 7-11
Y	CN 101695983 A (ZHEJIANG UNIVERSITY OF TECHNOLOGY) 21 April 2010 (2010-04-21) see description, paragraphs 86-145, and figures 1-11	3-6
Y	CN 106698171 A (TOSHIBA ELEVATOR CO., LTD.) 24 May 2017 (2017-05-24) see description, paragraphs 7-47, and figures 1-3	3-6
A	CN 107686043 A (HITACHI, LTD.) 13 February 2018 (2018-02-13) see entire document	1-11
A	CN 107662873 A (OTIS ELEVATOR COMPANY) 06 February 2018 (2018-02-06) see entire document	1-11

☑ Further documents are listed in the continuation of Box C. ☑ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
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"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
30 May 2022	**16 June 2022**
Name and mailing address of the ISA/CN **China National Intellectual Property Administration (ISA/CN)** **No. 6, Xitucheng Road, Jimenqiao, Haidian District, Beijing 100088, China** Facsimile No. **(86-10)62019451**	Authorized officer Telephone No.

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/CN2022/085042

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	JP 2003118967 A (SUMITOMO HEAVY INDUSTRIES, LTD.) 23 April 2003 (2003-04-23) see entire document	1-11
A	CN 105438953 A (XING QILIANG) 30 March 2016 (2016-03-30) see entire document	1-11

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/CN2022/085042

Patent document cited in search report	Publication date (day/month/year)	Patent family member(s)	Publication date (day/month/year)
CN 112919296 A	08 June 2021	None	
CN 215592314 U	21 January 2022	None	
CN 101695983 A	21 April 2010	None	
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CN 107686043 A	13 February 2018	JP 2018020876 A	08 February 2018
CN 107662873 A	06 February 2018	US 2018029837 A1	01 February 2018
		EP 3275829 A1	31 January 2018
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CN 105438953 A	30 March 2016	None	

Form PCT/ISA/210 (patent family annex) (January 2015)