

Description

Title of Invention:

CONVEYANCE SYSTEM

5 Technical Field

[0001]

An aspect of the present invention relates to a conveyance system including a conveyance medium that conveys an article.

10

Background Art

[0002]

Various technologies have been proposed to improve convenience in, e.g., conveyance of articles. For example, Patent Literature 1 (indicated below) discloses an example of a weighing device used for picking.

15

Citation List

Patent Literature

20

[0003]

Patent Literature 1

Japanese Patent Application Publication, Tokukai, No. 2015-152440

25

Summary of Invention

Technical Problem

[0004]

An aspect of the present invention has an objective to provide a conveyance system capable of more flexibly setting, compared with a conventional technique, a conveyance permission condition permitting a conveyance medium to convey an article.

Solution to Problem

[0005]

In order to attain the above objective, a conveyance system according to an aspect of the present invention is a conveyance system that includes a conveyance medium that conveys an article, the conveyance system including: a first control device that instructs a worker to carry out a work for the article; and a second control device that controls, in accordance with a command from the first control device, conveyance of the article by the conveyance medium, the first control device carrying out (a) specifying a target number that is the number of articles to be delivered to the conveyance medium by the worker, and (b) setting, on a basis of the target number, a conveyance permission condition for permitting the conveyance medium to convey the article.

Advantageous Effects of Invention

[0006]

According to an aspect of the present invention, it is possible to provide a conveyance system capable of more flexibly setting a conveyance permission condition compared with a conventional technique.

5

Brief Description of Drawings

[0007]

Fig. 1 illustrates an example of a configuration of a conveyance system according to a first embodiment.

10 Fig. 2 illustrates an example of a table used for specifying a target number.

Fig. 3 illustrates a flowchart showing an example of a flow of processing in the first embodiment.

15 Fig. 4 illustrates an example of a configuration of a conveyance system according to a second embodiment.

Fig. 5 illustrates an example of a display screen in the second embodiment.

Description of Embodiments

20 [0008]

First Embodiment

The following will describe a first embodiment. For convenience, constituent elements (components) having identical functions to those described in the first embodiment will be given identical reference signs in a subsequent

25

embodiment(s), and descriptions thereof will be omitted. For simplicity, description of a known technical matter will be omitted as appropriate. Unless otherwise inconsistent, each constituent element and each numerical value described in the present disclosure are merely examples. Thus, for example, unless otherwise inconsistent, a positional relation and a connection relation between the constituent elements are not limited to examples shown in the drawings.

[0009]

Example of Configuration of Conveyance System 1

Fig. 1 illustrates an example of a configuration of a conveyance system 1 according to the first embodiment. The conveyance system 1 includes a conveyance medium HB that conveys an article GD. The conveyance system 1 may be used in a distribution center, for example.

[0010]

In the example illustrated in the first embodiment, the conveyance medium HB is a machine having a self-propelling function. In one example, the conveyance medium HB may be any type of self-propelling carriage. The article GD may be any object that can be conveyed by the conveyance medium HB. In the example illustrated in the first embodiment, the article GD is a product dealt with in a distribution center.

[0011]

The conveyance system 1 includes a first control device 10 that instructs a worker W to carry out a work for the article GD. In the example of Fig. 1, the first control device 10 includes a control section 11, a display section 12, and a barcode reader 13. The control section 11 comprehensively controls each section of the first control device 10. The control section 11 can also give a command to the later-described second control device 20.

[0012]

In the present specification, the number of articles GD to be delivered to the conveyance medium HB by the worker W will be referred to as a “target number”. In one example, the first control device 10 instructs the worker W to deliver the target number of articles GD to the conveyance medium HB. The control section 11 may cause the display section 12 to display a screen indicating a content of the instruction given to the worker W.

[0013]

The conveyance system 1 includes the second control device 20 that controls conveyance of the article GD by the conveyance medium HB. In the conveyance system 1, the second control device 20 accepts a command from the control section 11. Then, in accordance with the command, the second control device 20 controls conveyance of the article GD by the conveyance medium HB. In one example, in accordance with

the command from the control section 11 and the work carried out by the worker W, the second control device 20 controls conveyance of the article GD by the conveyance medium HB.

[0014]

5 In this manner, in the conveyance system 1, the control section 11 controls, via the second control device 20, conveyance of the article GD by the conveyance medium HB. Thus, the control section 11 manages various kinds of information for controlling conveyance of the article GD by the conveyance medium HB. These pieces of information include (a) information indicating a destination of the conveyance medium HB in the distribution center and (b) a content of the instruction given to the worker W. In one example, the control section 11 may obtain these pieces of information from a higher-level controller (not illustrated).

[0015]

Fig. 2 illustrates an example of a table TB used for specifying the target number. In the example illustrated in the first embodiment, the control section 11 specifies the target number by using the table TB. Various kinds of information regarding the work of the worker W are recorded in the table TB. Thus, the table TB may be referred to as a “work information table”. The table TB may be stored in the higher-level controller. In this case, the control section 11 may obtain the table TB from the higher-level controller.

[0016]

In the table TB, a “product code” is associated with a “product name”, an “order number”, a “work quantity”, a “priority order”, and a “work state”. In the first embodiment,
5 each of a plurality of products has a respective individual product code assigned thereto, in order to identify the plurality of products individually. In the example illustrated in Fig. 2, a product code is associated with a product name on a one-to-one basis.

10 [0017]

The order number is assigned to each customer’s order for a product, for example. In one example, in the example illustrated in Fig. 2, the order number “001” represents a customer A’s order, the order number “002” represents a
15 customer B’s order, and the order number “003” represents a customer C’s order. Therefore, in the first embodiment, the order number can be used as a number for identifying a final shipping destination of a product.

[0018]

20 The item “work quantity” in the example illustrated in Fig. 2 represents a quantity (number) of the product(s) to be delivered to the conveyance medium HB by the worker W. Therefore, the work quantity corresponds to the above-described target number. The item “priority order” represents
25 a priority order of a delivery work (i.e., a work of delivering a

product to the conveyance medium HB) by the worker W. The item “work state” represents whether or not the delivery work by the worker W has been completed.

[0019]

5 As an example, the following will consider a case where a barcode representing a product code of an article GD is attached to the article GD. In this case, by having the worker W use the barcode reader 13, the worker W can read the product code from the barcode. In this manner, the control
10 section 11 can obtain the product code via the barcode reader 13.

[0020]

 As an example, the following will consider a case where the product code obtained via the barcode reader 13 is “0001”.
15 In this case, the control section 11 extracts a row matching the product code “0001” from the table TB as a candidate row. In the example illustrated in Fig. 2, the control section 11 extracts the first to third rows of the table TB as candidate rows.

[0021]

20 The control section 11 obtains priority orders and work states indicated in the candidate rows thus extracted. From among the candidate rows, the control section 11 extracts, as a work target row, a row having a work state of “uncompleted” and having a highest priority order. In the example illustrated
25 in Fig. 2, the control section 11 extracts the second row of the

table TB as the work target row. The control section 11 obtains, as the target number, a work quantity indicated in the work target row. In the example illustrated in Fig. 2, the control section 11 specifies that the target number is 1.

5 [0022]

As described above, the control section 11 can specify the target number on the basis of, for example, the barcode attached to the article GD. However, there is no particular limitation on a method for specifying the target number by the control section 11.

10

[0023]

In another example, the control section 11 may obtain the order number for the article GD from the higher-level controller. Then, the control section 11 may determine the target number on the basis of the order number thus obtained. For example, the control section 11 may determine the target number by checking the obtained order number against a table TB1.

15

[0024]

20 In the conveyance system 1, it is intended to cause the conveyance medium HB to convey the article GD after the delivery work of the article GD by the worker W is completed. In the present specification, a condition for permitting the conveyance medium HB to convey the article GD will be referred to as a “conveyance permission condition”.

25

[0025]

In the first embodiment, the control section 11 sets the conveyance permission condition on the basis of the target number. Therefore, with the control section 11, individual conveyance permission conditions can respectively be set, for example, for (a) a case where the target number is 1 and (b) a case where the target number is not less than 2. In this manner, with the control section 11, it is possible to change the conveyance permission condition in accordance with the target number.

[0026]

Example of Case Where Target Number is 1

In a case where the target number is 1, it is considered that, after the worker W has delivered one article GD to the conveyance medium HB, the conveyance medium HB may convey the article GD without any problem. For the worker W to deliver one article GD to the conveyance medium HB, the worker W first gets closer to the conveyance medium HB. Then, after delivering the one article GD to the conveyance medium HB, the worker W moves away from the conveyance medium HB.

[0027]

In view of this, as illustrated in Fig. 1, the conveyance system 1 may include a sensor 30 that detects whether or not an object is present. The sensor 30 only needs to be capable of detecting whether or not a part of the worker W's body is

present. In the example illustrated in Fig. 1, the second control device 20 includes the sensor 30. Alternatively, the sensor 30 may be provided outside the second control device 20.

[0028]

5 In one example, when the worker W who is close to the conveyance medium HB moves away from the conveyance medium HB, a change may occur in a detection result of the sensor 30. Therefore, when the control section 11 specifies that the target number is 1, the control section 11 may set, as the
10 conveyance permission condition, a predetermined change event in the detection result of the sensor 30.

[0029]

 Using the change event as the conveyance permission condition eliminates the need to cause the worker W to carry
15 out a predetermined input operation for indicating that the delivery work has been completed, unlike the later-described case where the target number is 2 or more. Thus, with the control section 11, it is possible to improve convenience for the worker W in the case where the target number is 1.

20 [0030]

 The sensor 30 according to the first embodiment may be an optical sensor that optically detects whether or not an object is present. In one example, the optical sensor may be a light curtain. In another example, the optical sensor may be a
25 camera.

[0031]

In one example, if the sensor 30 detects that an object is present, the sensor 30 outputs an ON signal as the detection result. On the other hand, if the sensor 30 detects that an object is absent, the sensor 30 outputs an OFF signal as the detection result. The ON signal may alternatively be referred to as a “presence signal”, and the OFF signal may alternatively be referred to as an “absence signal”.

[0032]

When the worker W who is close to the conveyance medium HB moves away from the conveyance medium HB, it is highly likely that the detection result of the sensor 30 transitions from the ON signal to the OFF signal. In view of this, in the first embodiment, an event indicating that the detection result of the sensor 30 has transitioned from the ON signal to the OFF signal may be set as the above-described change event.

[0033]

The second control device 20 obtains the detection result of the sensor 30, and determines whether or not the conveyance permission condition is satisfied. If the second control device 20 determines that the conveyance permission condition is satisfied, the second control device 20 may control, in accordance with a command from the control section 11, the conveyance medium HB to which the article GD has been delivered. For example, the second control device 20 may

permit the conveyance medium HB to move to the above-described destination. After receiving the permission, the conveyance medium HB moves toward the destination.

[0034]

5 Example of Case Where Target Number is 2 or More

 In a case where the target number is 2 or more, after the worker W has completed the work of delivering the target number of articles GD to the conveyance medium HB, the conveyance medium HB should be made to convey the articles
10 GD. However, in the case where the target number is 2 or more, the number of times the above-described change event occurs does not always match the target number. The reason for this is that, for example, the worker W can in some cases deliver a plurality of articles G to the conveyance medium HB at once,
15 depending on the size or weight of the article GD.

[0035]

 Therefore, in the case where the target number is 2 or more, it is not always appropriate to use the change event as the conveyance permission condition. In the case where the
20 target number is 2 or more, it is preferable to have the worker W indicate completion of the work of delivering the target number of articles GD to the conveyance medium HB. This reduces a risk that a false positive determination may be made for the conveyance permission condition.

25 [0036]

In view of this, when the control section 11 specifies that the target number is 2 or more, the control section 11 may set, as the conveyance permission condition, an event indicating that the worker W has carried out a predetermined input operation. In one example, when the control section 11 specifies that the target number is 2 or more, the control section 11 may set, as the conveyance permission condition, an event indicating that the worker W has pressed a predetermined complete button.

[0037]

Thus, as illustrated in Fig. 1, the conveyance system 1 may include a hardware button 35. The hardware button 35 is an example of the complete button. In the example illustrated in Fig. 1, the second control device 20 includes the hardware button 35. Alternatively, the hardware button 35 may be provided outside the second control device 20. In one example, after the work of delivering the target number of articles GD to the conveyance medium HB is completed, the control section 11 may cause the display section 12 to display a text or an image prompting the worker W to press the hardware button 35.

[0038]

When the second control device 20 obtains, from the hardware button 35, a pressing event of the hardware button 35, the second control device 20 determines that the

conveyance permission condition is satisfied. Subsequent processing that is to be carried out by the second control device 20 is similar to that in the example where the target number is 1.

5 [0039]

Effects

In a conventional conveyance system, a single conveyance permission condition is generally set regardless of whether the target number is 1 or 2 or more. Thus, in one
10 example, in the conventional conveyance system, a predetermined input operation by the worker W (e.g., pressing of the hardware button 35) may be set as the conveyance permission condition regardless of the target number. In this case, even in the case where the target number is 1, the worker
15 W is required to carry out the predetermined input operation. This may reduce convenience for the worker W in the case where the target number is 1.

[0040]

In another example, in the conventional conveyance
20 system, a predetermined change event in the detection result of the sensor 30 may be set as the conveyance permission condition regardless of the target number. In this case, when the target number is 2 or more, a false positive determination for the conveyance permission condition is likely to occur.

25 [0041]

On the other hand, the inventors of the present application created the conveyance system 1, based on a novel idea of “setting a conveyance permission condition on the basis of a target number”. With the conventional conveyance system, after obtaining information about each article, the first control device supplies, to the second control device, only the information indicating the destination of the conveyance medium. On the other hand, with the conveyance system 1, unlike with the conventional conveyance system, the first control device 10 can specify the target number on the basis of, for example, information about each article included in the above-described work information table. Then, the first control device 10 can change the conveyance permission condition on the basis of the specified target number. That is, with the conveyance system 1, the conveyance permission condition can be set more flexibly compared with a conventional technique. With the conveyance system 1, unlike with the conventional conveyance system, the first control device 10 can supply, to the second control device 20, the conveyance permission condition set by itself.

[0042]

As a result, with the conveyance system 1, unlike with the conventional conveyance system, it is not necessary to cause the worker W to carry out a predetermined input operation in order to satisfy the conveyance permission

condition, in a case where the target number is 1. This can improve convenience for the worker W in the case where the target number is 1. Further, with the conveyance system 1, in the case where the target number is 2 or more, the predetermined change event in the detection result of the sensor 30 is not set as the conveyance permission condition. Therefore, in the case where the target number is 2 or more, it is also possible to reduce a risk that a false positive determination may be made for the conveyance permission condition.

[0043]

Example of Flow of Processing in Conveyance System 1

Fig. 3 illustrates a flowchart showing an example of a flow of processing in the conveyance system 1. The order of the steps in the example illustrated in Fig. 3 may be changed as appropriate, as long as there is no contradiction. In the following description, a conveyance permission condition that is to be set in the case where the target number is 1 will be referred to as a “first permission condition”, and a conveyance permission condition that is to be set in the case where the target number is 2 or more will be referred to as a “second permission condition”. As described above, the first permission condition may be a predetermined change event in the detection result of the sensor 30, and the second permission condition

may be an event indicating that the worker W has carried out a predetermined input operation.

[0044]

5 In step S1, the first control device 10 obtains pieces of information about an article GD. For example, the first control device 10 obtains a product code of the article GD via the barcode reader 13 that is used by the worker W. Then, the first control device 10 obtains pieces of information about the article GD from the higher-level controller by carrying out checking
10 involving use of the product code.

[0045]

Subsequently, in step S2, the first control device 10 specifies a target number on the basis of the pieces of information about the article GD obtained in step S1.

15 [0046]

Next, in step S3, the first control device 10 obtains a destination of the article GD from the pieces of information about the article GD. Then, the first control device 10 gives the second control device 20 an instruction on the destination of
20 the article GD.

[0047]

In step S4, the first control device 10 determines whether or not the target number specified in step S2 is 2 or more.

[0048]

If YES in step S4, that is, if the target number is 2 or more, the process advances to step S5. In step S5, the first control device 10 sets the second permission condition as the conveyance permission condition. Then, the process advances
5 to step S7.

[0049]

On the other hand, if NO in step S4, that is, if the target number is 1, the process advances to step S6. In step S6, the first control device 10 sets the first permission condition as the
10 conveyance permission condition. Then, the process advances to step S7.

[0050]

In step S7, the first control device 10 displays delivery information on the display section 12. The delivery information
15 generically refers to information regarding the delivery work by the worker W. A display screen 120, which will be described in the later-described second embodiment, is an example of a screen on which the delivery information is displayed.

[0051]

20 In step S8, the second control device 20 determines whether or not the conveyance permission condition having been set in accordance with the target number is satisfied. If the second permission condition is set as the conveyance permission condition in step S5, the second control device 20
25 determines whether or not the second permission condition is

satisfied. On the other hand, if the first permission condition is set as the conveyance permission condition in step S6, the second control device 20 determines whether or not the first permission condition is satisfied.

5 [0052]

If YES in step S8, that is, if the conveyance permission condition is satisfied, the process advances to step S9. On the other hand, if NO in step S8, that is, if the conveyance permission condition is not satisfied, the process returns to step S8. In this manner, the determination processing in step S8 is repeated until the delivery work by the worker W is completed and the conveyance permission condition is satisfied.
10 [0053]

In step S9, the second control device 20 permits the conveyance medium HB to convey the article GD to the destination designated by the first control device 10 in step S3. In this manner, triggered by satisfaction of the conveyance permission condition, the second control device 20 permits the conveyance medium HB to convey the article GD.
15

20 [0054]

Second Embodiment

Fig. 4 illustrates an example of a configuration of a conveyance system 2 according to a second embodiment. In the second embodiment, a control section 11 may display, on a display screen, a software button as the above-described
25

complete button. In the example illustrated in the second embodiment, the control section 11 displays the software button on a display section 12. Alternatively, the control section 11 may display the software button on a display screen of a device outside a first control device. Thus, as illustrated in Fig. 4, the conveyance system 2 may not include a hardware button 35.

[0055]

Fig. 5 illustrates an example of a display screen 120 displayed on the display section 12. The display screen 120 includes a software button 125. In the example illustrated in Fig. 5, the fourth row of the table TB in Fig. 2 is extracted as a work target row. Thus, a target number in the example illustrated in Fig. 5 is 2.

[0056]

A worker W may operate a predetermined input device (e.g., a mouse) to press the software button 125. In a case where the display section 12 is a touch panel, the worker W may press the software button 125 with his/her own finger. When the control section 11 obtains a pressing event of the software button 125 from the display section 12, the control section 11 determines that a conveyance permission condition is satisfied.

[0057]

The notation “1/2” on the display screen 120 indicates that the number of articles GD delivered to a conveyance medium HB at the present time is “1” and the target number of articles GD is “2”. In the following description, the number of the articles GD delivered to the conveyance medium HB at the present time will be referred to as a “work completed number”.
[0058]

In one example, the conveyance system 2 may include a weight sensor (not illustrated) that measures a weight sensor of the article GD. In this case, for example, the control section 11 may calculate the work completed number on the basis of a measurement result given by the weight sensor. By displaying the work completed number and the target number on the display screen 120, the worker W can press the software button 125 after confirming that the work completed number has reached the target number.

[0059]

Modifications

(1) In one example, a conveyance system according to an aspect of the present invention may further include a camera that captures an image in which an article GD is shown. In this case, a control section 11 may apply an arbitrary image recognition technology to the image obtained from the camera, thereby deriving the number of article(s) GD shown in the image.

Then, the control section 11 may determine the derived number of article(s) GD as a work completed number.

[0060]

(2) In the examples illustrated in the first and second
5 embodiments, the conveyance medium HB is the machine
having the self-propelling function. However, the self-
propelling function is not necessarily essential for the
conveyance medium HB. The conveyance medium HB may be
any member, provided that it can accommodate the article GD
10 therein.

[0061]

For example, a conveyance system according to an aspect
of the present invention may include, as a conveyance medium
HB, a pouch that can accommodate an article GD therein. In
15 this case, the conveyance system further includes a conveyance
device that conveys the pouch. In this case, in the conveyance
system, a second control device 20 controls movement of the
pouch by controlling the conveyance device in accordance with
a command from the control section 11.

20 [0062]

In this manner, the control section 11 controls movement
of the pouch by controlling the conveyance device via the
second control device 20. Therefore, also in this example, the
control section 11 may set a conveyance permission condition

on the basis of a target number, as described in the first embodiment.

[0063]

Software Implementation Example

5 The functions of the conveyance system 1, 2 (hereinafter, referred to as “device” for convenience) can be realized by a program for causing a computer to function as the device, the program causing the computer to function as the control blocks of the device.

10 [0064]

 In this case, the device includes a computer that has at least one control device (for example, a processor) and at least one memory device (for example, a memory) as hardware for executing the program. The control device and the memory
15 device execute the program, so that the functions described in the above embodiments are realized.

[0065]

 The program can be stored in one or more non-transitory computer-readable storage mediums. The storage medium can
20 be provided in the device, or the storage medium does not need to be provided in the device. In the latter case, the program can be supplied to the device via any wired or wireless transmission medium.

[0066]

Some or all of the functions of the control blocks can be realized by a logic circuit. For example, an integrated circuit in which a logic circuit that functions as each of the control blocks is formed is also encompassed in the scope of an aspect
5 of the present invention. In addition, the function of each of the control blocks can be realized by, for example, a quantum computer.

[0067]

Each of the processes described in the above
10 embodiments can be executed by artificial intelligence (AI). In this case, the AI may be operated by the control device or may be operated by another device (for example, an edge computer and a cloud server).

[0068]

15 Further, an aspect of the present invention encompasses a computer program product that realizes each function of the device. The computer program product causes a program provided via an arbitrary transmission medium to be loaded through at least one computer and causes the computer to
20 execute at least one program command. This causes a processor provided in the at least one computer to execute processing according to the program command, so that each function of the device is realized. The computer program product causes the at least one computer, which has loaded

the program, to execute each step of a method for controlling the device.

[0069]

Aspects of the present invention can also be expressed
5 as follows:

A conveyance system according to a first aspect of the present invention is a conveyance system that includes a conveyance medium that conveys an article, the conveyance system including: a first control device that instructs a worker
10 to carry out a work for the article; and a second control device that controls, in accordance with a command from the first control device, conveyance of the article by the conveyance medium, the first control device carrying out (a) specifying a target number that is the number of articles to be delivered to
15 the conveyance medium by the worker, and (b) setting, on a basis of the target number, a conveyance permission condition for permitting the conveyance medium to convey the article.

[0070]

A conveyance system according to a second aspect of the present invention may be configured such that, in the first
20 aspect, the conveyance system includes a sensor that detects whether or not an object is present; and in a case where the first control device specifies that the target number is 1, the first control device sets, as the conveyance permission

condition, a predetermined change event in a detection result of the sensor.

[0071]

A conveyance system according to a third aspect of the present invention may be configured such that, in the second aspect, the sensor is an optical sensor that optically detects whether or not the object is present.

[0072]

A conveyance system according to a fourth aspect of the present invention may be configured such that, in the second or third aspect, in a case where the sensor detects that the object is present, the sensor outputs an ON signal as the detection result; in a case where the sensor detects that the object is absent, the sensor outputs an OFF signal as the detection result; and the change event is an event indicating that the detection result has transitioned from the ON signal to the OFF signal.

[0073]

A conveyance system according to a fifth aspect of the present invention may be configured such that, in any one of the first to fourth aspects, in a case where the first control device specifies that the target number is 2 or more, the first control device sets, as the conveyance permission condition, an event indicating that the worker has carried out a predetermined input operation.

[0074]

Supplementary Notes

An aspect of the present invention is not limited to the above-described embodiments, but can be altered by a skilled person in the art within the scope of the claims. An aspect of the present invention also encompasses, in its technical scope, any embodiment derived by combining technical means disclosed in differing embodiments.

10 Reference Signs List

[0075]

1, 2: Conveyance system

10: First control device

11: Control section

15 12: Display section

20: Second control device

30: Sensor

35: Hardware button

125: Software button

20 GD: Article

HB: Conveyance device

W: Worker

Claims

[Claim 1]

A conveyance system that includes a conveyance medium that conveys an article, the conveyance system comprising:

5 a first control device that instructs a worker to carry out a work for the article; and

 a second control device that controls, in accordance with a command from the first control device, conveyance of the article by the conveyance medium,

10 the first control device carrying out

 (a) specifying a target number that is the number of articles to be delivered to the conveyance medium by the worker, and

 (b) setting, on a basis of the target number, a
15 conveyance permission condition for permitting the conveyance medium to convey the article.

[Claim 2]

The conveyance system according to claim 1, wherein:

20 the conveyance system includes a sensor that detects whether or not an object is present; and

 in a case where the first control device specifies that the target number is 1, the first control device sets, as the conveyance permission condition, a predetermined change
25 event in a detection result of the sensor.

[Claim 3]

The conveyance system according to claim 2, wherein:

the sensor is an optical sensor that optically detects
5 whether or not the object is present.

[Claim 4]

The conveyance system according to claim 2, wherein:

in a case where the sensor detects that the object is
10 present, the sensor outputs an ON signal as the detection
result;

in a case where the sensor detects that the object is
absent, the sensor outputs an OFF signal as the detection
result; and

15 the change event is an event indicating that the detection
result has transitioned from the ON signal to the OFF signal.

[Claim 5]

The conveyance system according to claim 1, wherein:

20 in a case where the first control device specifies that the
target number is 2 or more, the first control device sets, as the
conveyance permission condition, an event indicating that the
worker has carried out a predetermined input operation.