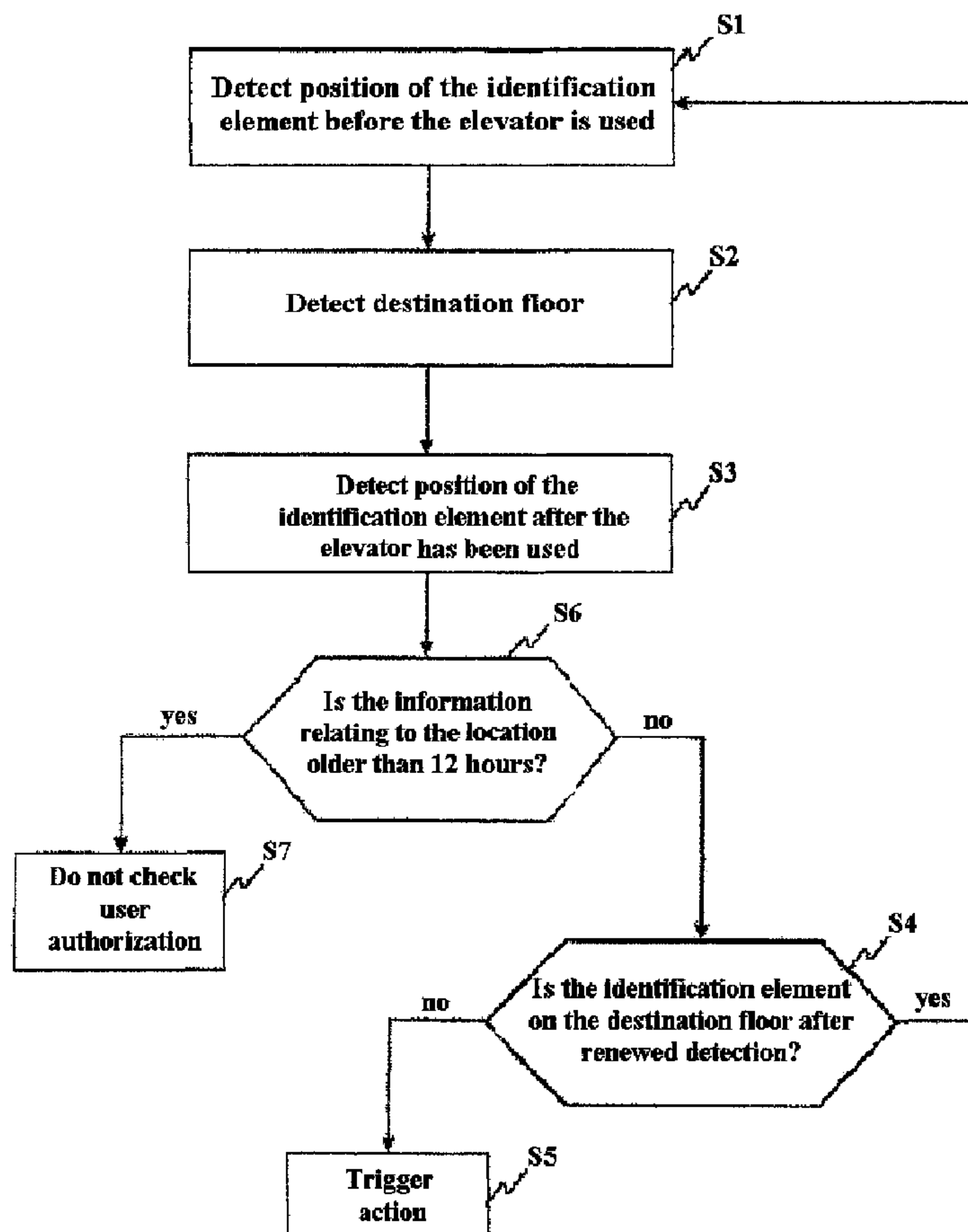




(86) **Date de dépôt PCT/PCT Filing Date:** 2010/04/21
(87) **Date publication PCT/PCT Publication Date:** 2010/10/28
(45) **Date de délivrance/Issue Date:** 2017/06/06
(85) **Entrée phase nationale/National Entry:** 2011/09/14
(86) **N° demande PCT/PCT Application No.:** EP 2010/055234
(87) **N° publication PCT/PCT Publication No.:** 2010/122040
(30) **Priorité/Priority:** 2009/04/24 (EP09158678.4)

(51) **Cl.Int./Int.Cl. B66B 1/46** (2006.01)
(72) **Inventeur/Inventor:**
GERSTENKORN, BERNHARD, CH
(73) **Propriétaire/Owner:**
INVENTIO AG, CH
(74) **Agent:** RICHES, MCKENZIE & HERBERT LLP

(54) **Titre : PROCEDE DE GESTION DE PERSONNES EN FONCTION DU LIEU DANS UN BATIMENT**
(54) **Title: METHOD FOR LOCATION-DEPENDENT MANAGEMENT OF PERSONS IN A BUILDING**



(57) **Abrégé/Abstract:**

The method for location-dependent management of persons in a building comprises the following steps. Using a detecting device (6), the person (13) is detected before entering an elevator (2) present in the building (1) and the destination floor (ZSW) desired by



(57) Abrégé(suite)/Abstract(continued):

said person is detected. When the person (13) leaves the elevator (2), the floor (SW) on which the person leaves the elevator (2) is detected using a further detecting device (7; 12). An action is triggered using a control device (5) if said floor (SW) and the destination floor (ZSW) do not match.

(12) NACH DEM VERTRAG ÜBER DIE INTERNATIONALE ZUSAMMENARBEIT AUF DEM GEBIET DES
PATENTWESENS (PCT) VERÖFFENTLICHTE INTERNATIONALE ANMELDUNG(19) Weltorganisation für geistiges Eigentum
Internationales Büro(43) Internationales Veröffentlichungsdatum
28. Oktober 2010 (28.10.2010)(10) Internationale Veröffentlichungsnummer
WO 2010/122040 A1(51) Internationale Patentklassifikation:
B66B 1/46 (2006.01)

(21) Internationales Aktenzeichen: PCT/EP2010/055234

(22) Internationales Anmeldedatum:
21. April 2010 (21.04.2010)

(25) Einreichungssprache: Deutsch

(26) Veröffentlichungssprache: Deutsch

(30) Angaben zur Priorität:
09158678.4 24. April 2009 (24.04.2009) EP(71) Anmelder (für alle Bestimmungsstaaten mit Ausnahme von US): **INVENTIO AG** [CH/CH]; Seestrasse 55, CH-6052 Hergiswil (CH).

(72) Erfinder; und

(75) Erfinder/Anmelder (nur für US): **GERSTENKORN, Bernhard** [CH/CH]; Wydenhofstrasse 9, CH-6030 Ebikon (CH).(74) Gemeinsamer Vertreter: **INVENTIO AG**; Seestrasse 55, Postfach, CH-6052 Hergiswil (CH).

(81) Bestimmungsstaaten (soweit nicht anders angegeben, für jede verfügbare nationale Schutzrechtsart): AE, AG, AL, AM, AO, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CL, CN, CO, CR, CU, CZ, DE, DK, DM, DO, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PE, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, ST, SV, SY, TH, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Bestimmungsstaaten (soweit nicht anders angegeben, für jede verfügbare regionale Schutzrechtsart): ARIPO (BW, GH, GM, KE, LR, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), eurasisches (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), europäisches (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HR, HU, IE, IS, IT, LT, LU, LV, MC, MK, MT, NL, NO, PL, PT, RO, SE, SI,

[Fortsetzung auf der nächsten Seite]

(54) Title: METHOD FOR LOCATION-DEPENDENT MANAGEMENT OF PERSONS IN A BUILDING

(54) Bezeichnung : VERFAHREN ZUM ORTSABHÄNGIGEN PERSONENMANAGEMENT IN EINEM GEBÄUDE

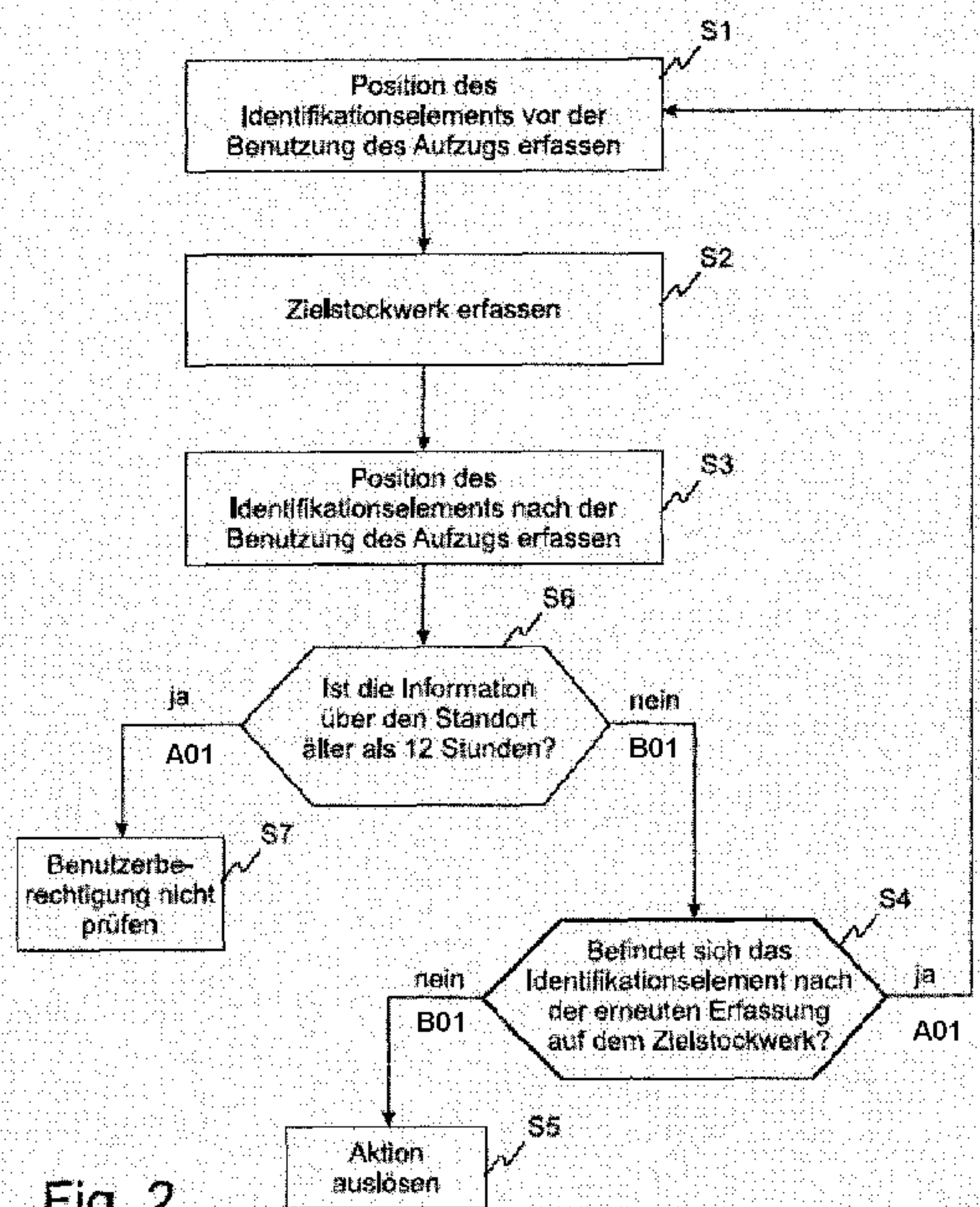


Fig. 2

A01 yes

B01 no

S1 Detect position of the identification element before use of the elevator

S2 Detect destination floor

S3 Detect position of the identification element after use of the elevator

S4 Is the identification element on the destination floor after redetection?

S5 Trigger action

S6 Is the information about the location older than 12 hours?

S7 Do not check user authorization

(57) Abstract: The method for location-dependent management of persons in a building comprises the following steps. Using a detecting device (6), the person (13) is detected before entering an elevator (2) present in the building (1) and the destination floor (ZSW) desired by said person is detected. When the person (13) leaves the elevator (2), the floor (SW) on which the person leaves the elevator (2) is detected using a further detecting device (7; 12). An action is triggered using a control device (5) if said floor (SW) and the destination floor (ZSW) do not match.

(57) Zusammenfassung: Das Verfahren zum ortsabhängigen Personenmanagement in einem Gebäude umfasst folgende Schritte. Mit einer Erfassungseinrichtung (6) werden die Person (13) vor dem Betreten eines im Gebäude (1) vorhandenen Aufzugs (2) und das von ihr gewünschte Zielstockwerk (ZSW) erfasst. Wenn die Person (13) den Aufzug (2) wieder verlässt, wird das Stockwerk (SW), auf dem sie den Aufzug (2) wieder verlässt, mit einer weiteren Erfassungseinrichtung (7; 12) erfasst. Mit einer Steuerungseinrichtung (5) wird eine Aktion ausgelöst, falls dieses Stockwerk (SW) und das Zielstockwerk (ZSW) nicht übereinstimmen.

WO 2010/122040 A1



SK, SM, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Veröffentlicht:

Erklärungen gemäß Regel 4.17:

- hinsichtlich der Berechtigung des Anmelders, ein Patent zu beantragen und zu erhalten (Regel 4.17 Ziffer ii)
- Erfindererklärung (Regel 4.17 Ziffer iv)

- mit internationalem Recherchenbericht (Artikel 21 Absatz 3)
- vor Ablauf der für Änderungen der Ansprüche geltenden Frist; Veröffentlichung wird wiederholt, falls Änderungen eingehen (Regel 48 Absatz 2 Buchstabe h)

Description

Method for location-dependent management of persons in a building

5

Technical field

The invention relates to a method for location-dependent management of persons in a building comprising one or more elevators.

10

Prior art

15

The document WO 2007/014477 discloses a method for guiding a passenger to an elevator car of an elevator system in a building. For this purpose, the passenger on a starting floor uses a mobile communication unit to deliver a destination call to a destination call control unit of the elevator system. The destination call control unit determines a group of elevator cars for handling the destination call and transmits this group to the mobile communication unit. The passenger uses the mobile communication unit to select an elevator car and transmits this selection to the destination call control unit. The destination call control unit then transmits the information for guiding the passenger to the selected elevator car on the starting floor. However, this method does not make it possible to determine the whereabouts of the passenger without the passenger himself actively informing the system of his location.

20

25

30

In addition, the document EP 1 433 735 A1 discloses a method for evacuating persons in a building in an emergency. For this purpose, the number of persons in the building is measured and it is detected whether an
5 emergency occurs in the building. This method also does not make it possible to determine the whereabouts of the persons.

10 **Description of the invention**

One object of the invention is to specify a method for location-dependent management of persons in a building, which method can be used to determine the whereabouts of
15 a person in the building without the person himself having to contribute anything.

The method according to the invention advantageously makes it possible to reduce the number of journeys with
20 an elevator, in which a person has not stated a destination floor but rather is using the elevator together with another person.

The object is achieved by a method for location-dependent
25 management of persons in a building having the features according to patent claim 1.

The method according to the invention for location-dependent management of persons in a building comprises
30 the following steps. A detection device is used to detect the person before entering an elevator present in the building. The destination floor selected by the person is also detected. When the person leaves the elevator again,

the floor on which he leaves the elevator again is detected using a further detection device. A control device is used to trigger an action if this floor and the destination floor do not match.

5

Advantageous developments of the invention emerge from the features specified in the dependent patent claims.

In one development of the method according to the invention, the action may thus result in the person being deprived of the authorization to access the elevator.

Alternatively or additionally, the action may also result in the person being issued with a message, for example in the form of an SMS or an e-mail, in which the person is advised of the discrepancy.

In addition, the action may also result in the person being provided with an elevator car so that the person reaches the destination floor ZSW.

The action may also result in the person only being entitled to travel downward with the elevator, preferably to the lobby.

25

Which action is initiated can be made dependent on the status of the person. For example, an elevator installer entrusted with maintenance work can be assigned a special status.

30

In addition, the action can also be made dependent on the time at which the mismatch between the destination floor and the floor on which the person left the elevator is

detected. For example, the detection of the whereabouts of the person can be restricted to the usual business or office hours.

- 5 The action can also be made dependent on the location of the person.

Irrespective of the action initiated, the information relating to the whereabouts of the person can be taken
10 into account in an emergency plan.

In one of its aspects, the present invention resides in a method for location-dependent management of persons in a building, in which a detection device is used to detect
15 whereabouts of a person before entering an elevator present in the building, in which a destination floor desired by the person is detected, in which a further detection device is used to detect a floor on which the person leaves the elevator, in which a control device is
20 used to trigger an action if the floor on which the person leaves the elevator and the destination floor do not match, characterized in that the action results in the person only being entitled to travel downward with the elevator, or in that the action results in the person
25 being provided with an elevator car so that the person reaches the destination floor.

Further aspects of the invention will become apparent upon reading the following detailed description and drawings,
30 which illustrate the invention and preferred embodiments of the invention.

4a

Brief Description of the Drawings

The invention is explained further below using two figures.

5

Figure 1 shows the side view of a building having an elevator in section, the method according to the invention being used in the building.

10 Figure 2 shows one possible embodiment of the method according to the invention in the form of a block diagram.

Ways of Implementing the Invention

15

Figure 1 illustrates the side view of a building 1 having an elevator 2 in section. The building comprises seven floors SW0 to SW6, the entrance to the building 1 being on the floor SW0. The elevator 2 comprises a car 3 which is
20 moved via a drive 4. The drive 4 is controlled with

the aid of a controller 5. A respective detection device 6 to 12 is provided on each of the floors SW0 to SW6 in order to detect the position of the identification element 14 carried by a person 13. For example, the
5 detection device 11 is used to detect whether and, if appropriate, when the person 13 is on the floor SW5. The detection devices 6 to 12 may be placed on the wall in the vicinity of the elevator or else on doors or passageways.

10

The identification element 14 preferably operates in a contactless manner, for example using radio. The identification element 14 may be, for example, a contact-type chip card or else a contactless chip card. The
15 latter may have an RFID (Radio Frequency Identification) tag and can be connected to the corresponding detection device 6, 7, 8, 9, 10, 11 and 12 via a radio link. However, the identification element 14 may also be a mobile telephone carried by the person 13. In this case,
20 the mobile telephone and the detection devices 6-12 may be connected via Bluetooth or WIFI (Wireless Fidelity), for example.

A destination call keypad 15 to 21 which can be used by
25 the person 13 to input the desired destination floor ZSW is also respectively provided on each of the floors SW0 to SW6.

Like the detection devices 6 to 12, the destination call
30 keypads 15 to 21 are connected to a controller 5. The controller 5 may also be simultaneously the controller for the elevator 2.

For simplicity and better understanding, the following explanations are based on an individual person 13.

However, it goes without saying of course that the method according to the invention is suitable for managing or
5 dealing with a multiplicity of persons.

The method of operation of the method according to the invention is explained further by way of example below using the two figures 1 and 2. As soon as the person 13
10 carrying the identification element 14 enters the building 1 and passes into the detection range of the detection device 6, a radio link is set up between the detection device 6 and the identification element 14 and the identification code stored on the identification
15 element 14 is transmitted to the detection device 6 (fig. 2, step S1). The detection device 6 forwards the identification code to the controller 5. In this manner, the controller 5 now knows that the person 13 is on the floor SW0 and since when. If the person 13 now calls the
20 elevator 2 with the aid of a destination call controller 15 by inputting the desired destination floor ZSW (the floor SW4 in the present example) on the keypad of the destination call controller, the information relating to the desired destination floor ZSW is likewise transmitted
25 to the controller 5 by the destination call keypad 15 (fig. 2, step S2). The controller 5 thus knows the floor on which the person 13 is currently situated, namely the floor SW0, and also his destination floor, namely the destination floor ZSW = SW4.

30

If the person 13 does not leave the elevator 2 on the destination floor ZSW = SW4, but rather already before said floor, for example on the floor SW1, this is

detected by the detection device 7 as soon as the person 13 passes into the detection range of the detection device 7 (fig. 2, step S3). A radio link is set up between the detection device 7 and the identification element 14 and the identification code stored on the identification element 14 is transmitted to the detection device 7. The detection device 7 forwards the identification code to the controller 5. The controller 5 now checks whether the floor on which the person 13 was detected matches the destination floor ZSW (fig. 2, step S4). Since this is not the case in the present example, the controller 5 can now trigger a particular action (fig. 2, step S5).

The action may result, for example, in the person 13 being deprived of the authorization to access the elevator 2. The person 13 must then report to the reception staff, for example, and must again acquire authorization to use the elevator there.

Alternatively or additionally, the action may also result in the person 13 being issued with a message in the form of an SMS or an e-mail in which the person is advised of the discrepancy.

Additionally or alternatively, a message may also be sent to the reception staff so that the latter knows that the person 13 is possibly still in the building.

In addition, the action may also result in the person 13 being provided with the elevator car 3 so that the person reaches the destination floor ZSW.

The action may also result in the person 13 only being entitled to travel downward with the elevator 2, preferably to the floor SW0.

5 If the person 13 was not detected by the detection device
6 as early as in the entrance area of the building but
was only detected on one of the floors SW1 to SW6, the
person 13 may also be denied use of the elevator in
principle.

10

A bonus system may also be provided in order to avoid
inadvertently triggered sanctioning actions. The bonus
system may be advantageous if the database used by the
controller 5 does not yet contain any entries and only
15 gradually receives new entries. For this purpose, a
somewhat higher bonus may be initially provided and is
then reduced over the course of time.

The situation may occur in which the bonus value is
20 changed in the database and is set to a particular value
B1 for reasons which are not caused by the behavior of
the person 13. If, at the time at which the person 13 is
detected, the entry belonging to this person in the
database has a bonus value which is lower than the bonus
25 value B1, the controller 5 does not initiate an action,
that is to say the use authorization is not checked. As a
result, inadvertently triggered sanctioning actions with
respect to the person 13 can be avoided.

30 Which action is initiated can be made dependent on the
status of the person 13. In addition, the action can also
be made dependent on the time at which the mismatch
between the destination floor ZSW and the floor on which

the person 13 left the elevator is detected. The action can also be made dependent on the location of the person 13.

- 5 However, if the person 13 actually gets out on the destination floor (ZSW = SW4 in the example), the controller 5 does not carry out any of the abovementioned actions.
- 10 In addition, the controller 5 can check how old the last item of information relating to the whereabouts of the person 13 is (fig. 2, step S6). If this information is older than 12 hours for example, the authorization of the person to use the elevator 3 is not checked (fig. 2, step
- 15 S7). This may be important when the person is not in the building for a relatively long time, for example on account of a vacation.

Irrespective of the action initiated, the information

20 relating to the whereabouts of the person 13 may be taken into account in an emergency plan. This information may be useful, in particular, when evacuating the building 1.

Instead of inputting the desired destination floor ZSW

25 via the destination call keypad 15-21, provision may also be made for the destination floor which is generally desired to be stored on the identification element 14 and for the detection device 6 to also detect the information relating to the desired destination floor.

30

If desired, the method according to the invention can also be used only for one part or section of the building 1. In this case, it is useful to respectively provide a

detection device 6 both in the entrance area and in the exit area. The controller 5 ensures that the database then stores whether the person 13 has entered or left the building section provided with the method for managing
5 persons.

The previous description of the exemplary embodiments according to the present invention is used only for illustrative purposes and not for the purpose of
10 restricting the invention. Different amendments and modifications are possible within the framework of the invention without departing from the scope of the invention and its equivalents. For example, it is also not important how many floors the building has in which
15 the method according to the invention is used. In addition, the method according to the invention can also be used in a building having a plurality of elevators.

Patent claims

1. A method for location-dependent management of persons in a building,
 - in which a detection device is used to detect whereabouts of a person before entering an elevator present in the building,
 - in which a destination floor desired by the person is detected,
 - in which a further detection device is used to detect a floor on which the person leaves the elevator,
 - in which a control device is used to trigger an action if the floor on which the person leaves the elevator and the destination floor do not match, characterized in that the action results in the person only being entitled to travel downward with the elevator, or in that the action results in the person being provided with an elevator car so that the person reaches the destination floor.
2. The method of claim 1,
 - in which information relating to the whereabouts of the person is taken into account in an emergency plan.
3. The method of claim 1 or 2,
 - in which the action results in the person being issued with a message.

4. The method of any one of claims 1 to 3,
in which the action is made dependent on a status of
the person.
5. The method of any one of claims 1 to 4,
in which the action is made dependent on the time at
which a mismatch was determined.
6. The method of any one of claims 1 to 5,
in which the action is made dependent on a location
of the person.
7. The method of any one of claims 1 to 6,
in which the detection device detects the whereabouts
of the person using a contactlessly operating
identification element carried by the person.
8. The method of any one of claims 1 to 7,
- in which the person is assigned a bonus, and
- in which the bonus is changed on the basis of
behavior of the person.
9. A computer program product
- which is stored on a medium that can be used by a
computer,
- which contains program code that can be read by the
computer, and
- which ensures that the computer carries out the
method as claimed in one of claims 1 to 8.

10. A computer program product
having a controller which is designed and can be
operated in such a manner that it can be used to
carry out the method as claimed in one of claims 1 to
8.

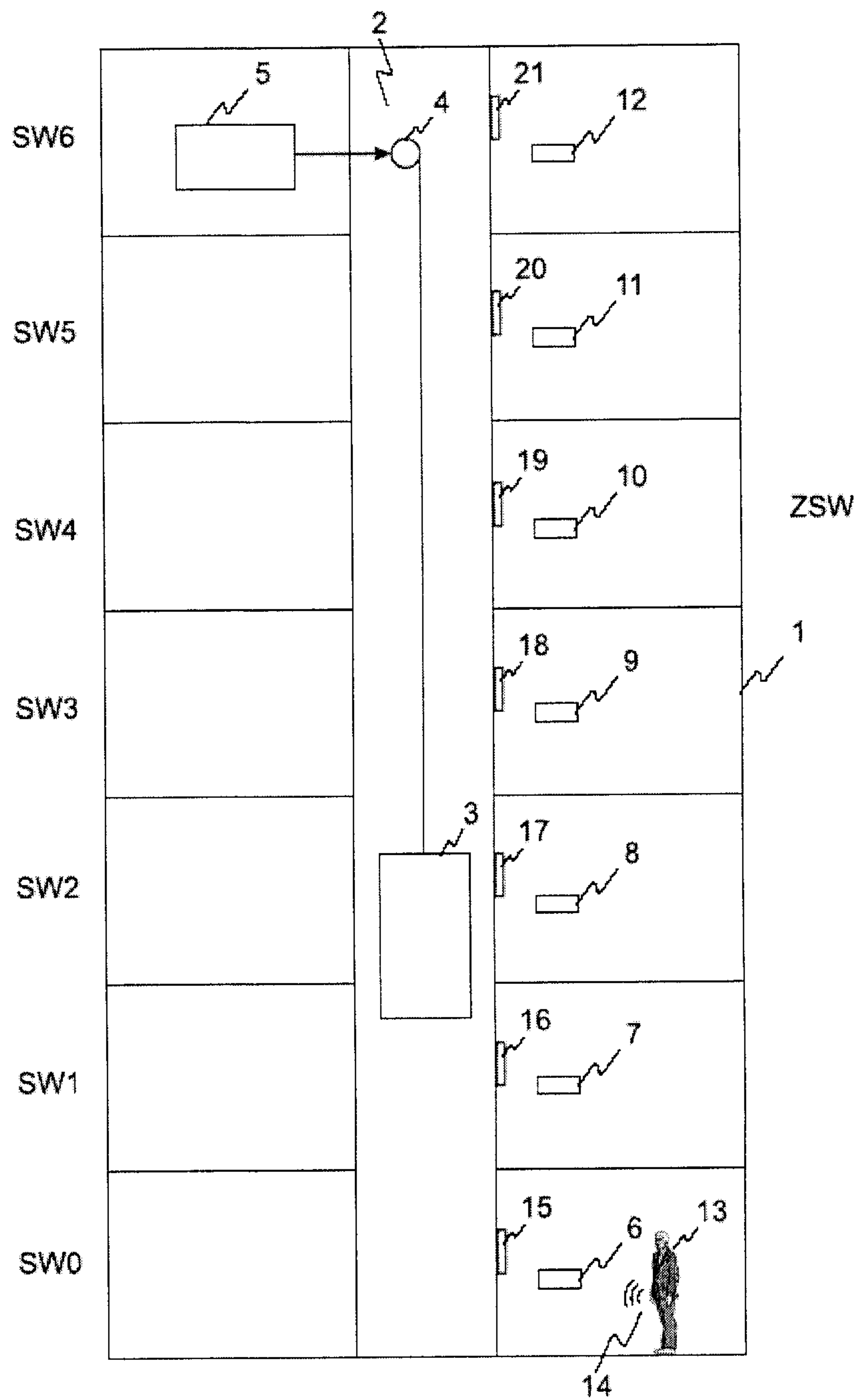


Fig. 1

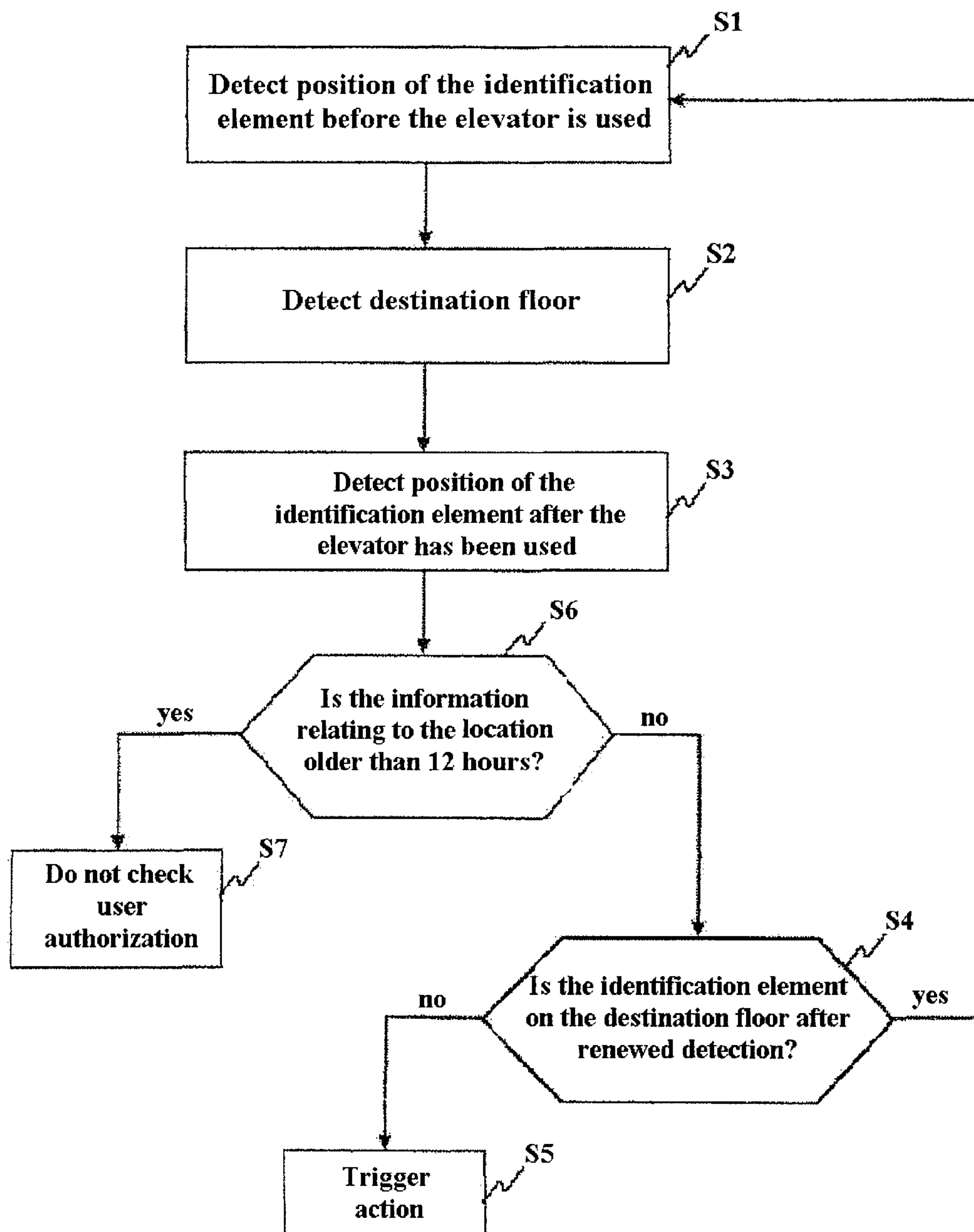


Fig. 2

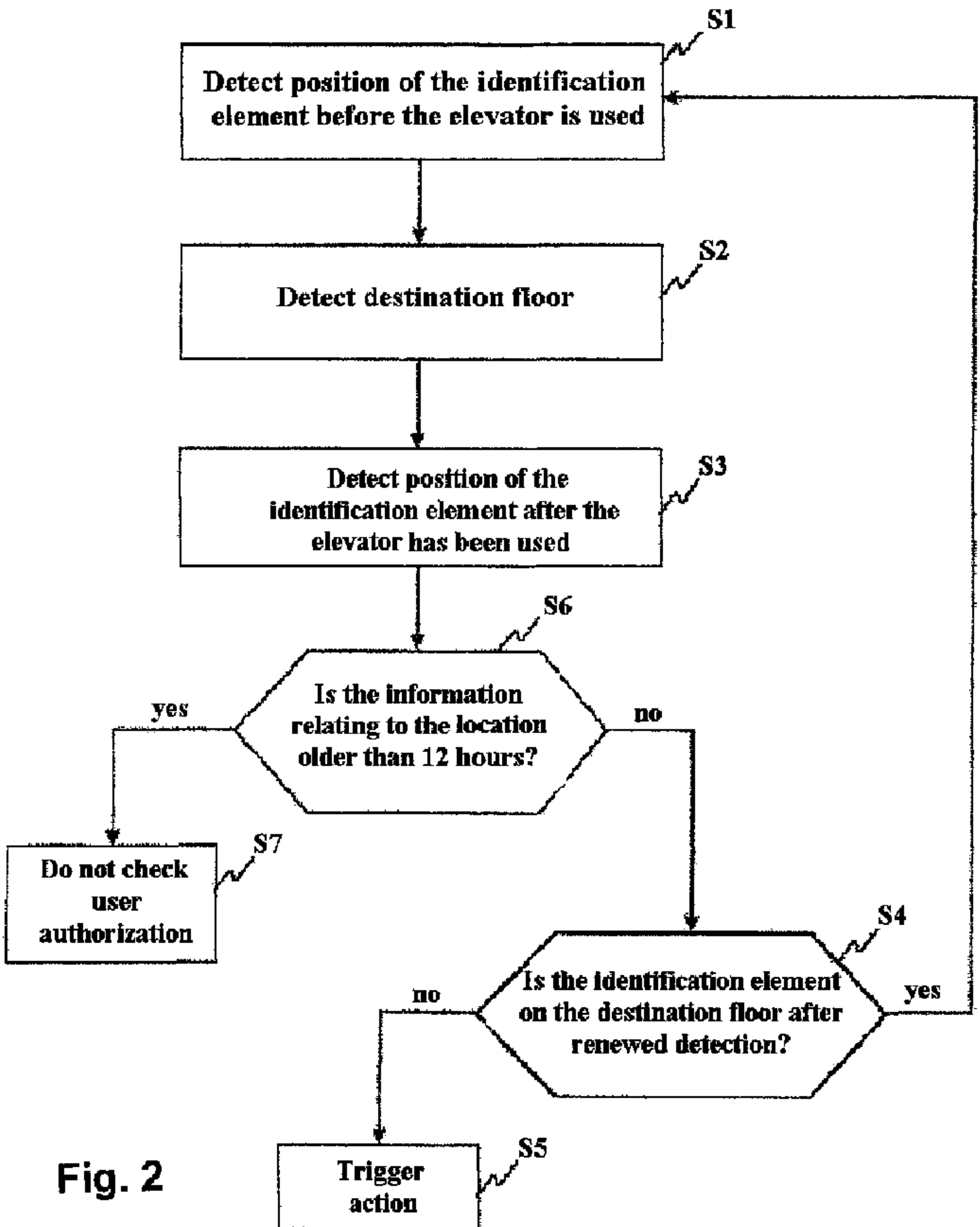


Fig. 2