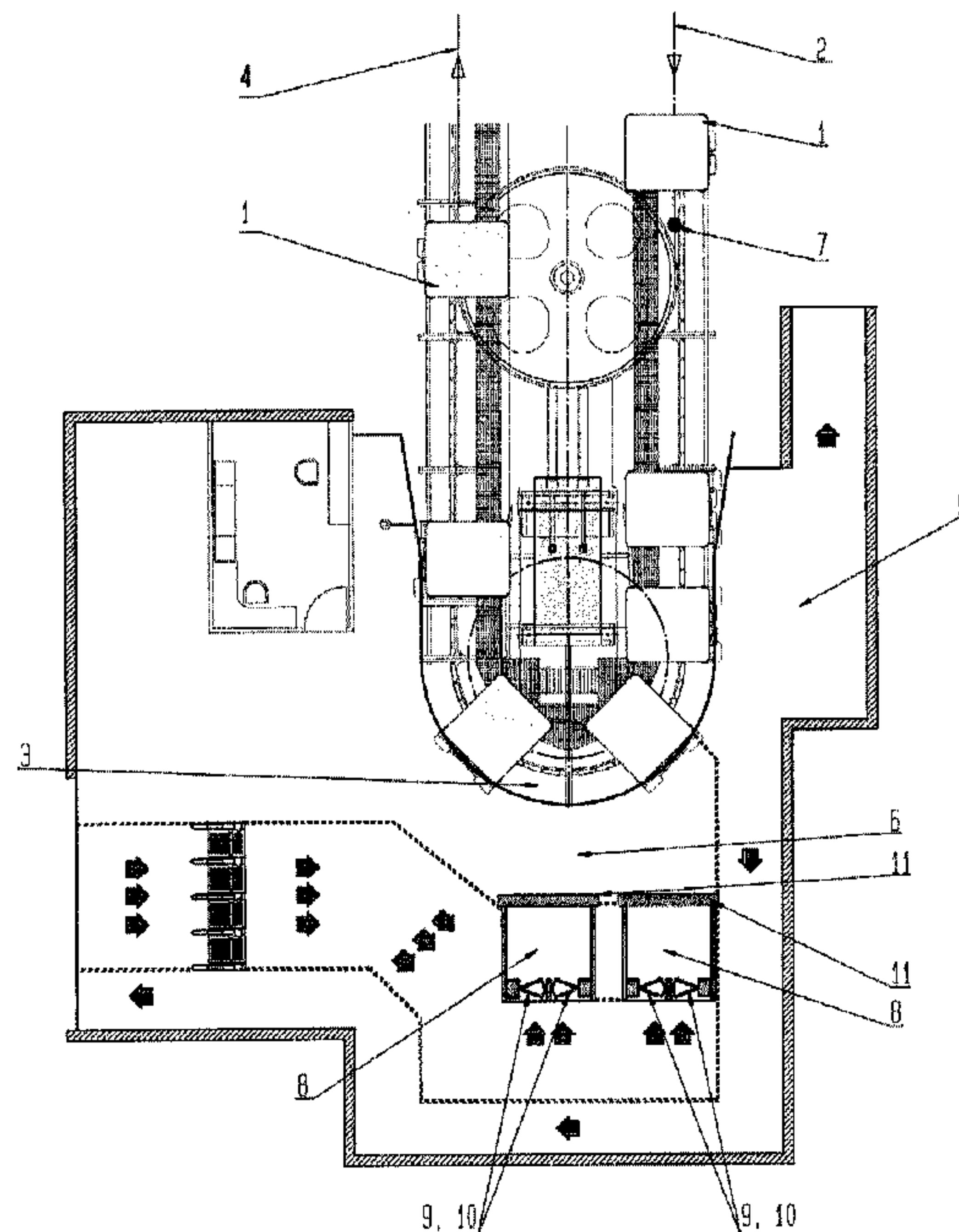




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(72) Inventeurs/Inventors:
NATTER, ANDREAS, AT;
BENZER, MARIO, AT
(73) Propriétaire/Owner:
INNOVA PATENT GMBH, AT
(74) Agent: RIDOUT & MAYBEE LLP

(54) Titre : SYSTEME DE PASSAGE DE CABLAGE AERIEN
(54) Title: AERIAL CABLEWAY SYSTEM



(57) Abrégé/Abstract:

An aerial cableway system comprises at least two stations between which vehicles (1), especially cars, can travel as they are pulled by a cable; the stations include a boarding zone (6) for passengers to board vehicles (1) and a disembarking zone (5) for getting off vehicles (1). A sensor (7) can be activated by a vehicle (1) entering a station. At least one restricted area (8) comprising at least one gate (9, 11) that includes a controller which can be activated by the sensor (7) is located in the station.

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(71) Anmelder: **INNOVA PATENT GMBH** [AT/AT];
Rickenbacherstrasse 8-10, A-6922 Wolfurt (AT).

(72) Erfinder: **NATTER, Andreas**; Unterdorf 214, A-6858
Bildstein (AT). **BENZER, Mario**; Apfelgasse 1/04, A-
6858 Schwarzach (AT).

(74) Anwalt: **BEER & PARTNER PATENTANWÄLTE**
KG; Lindengasse 8, 1070 Wien (AT).

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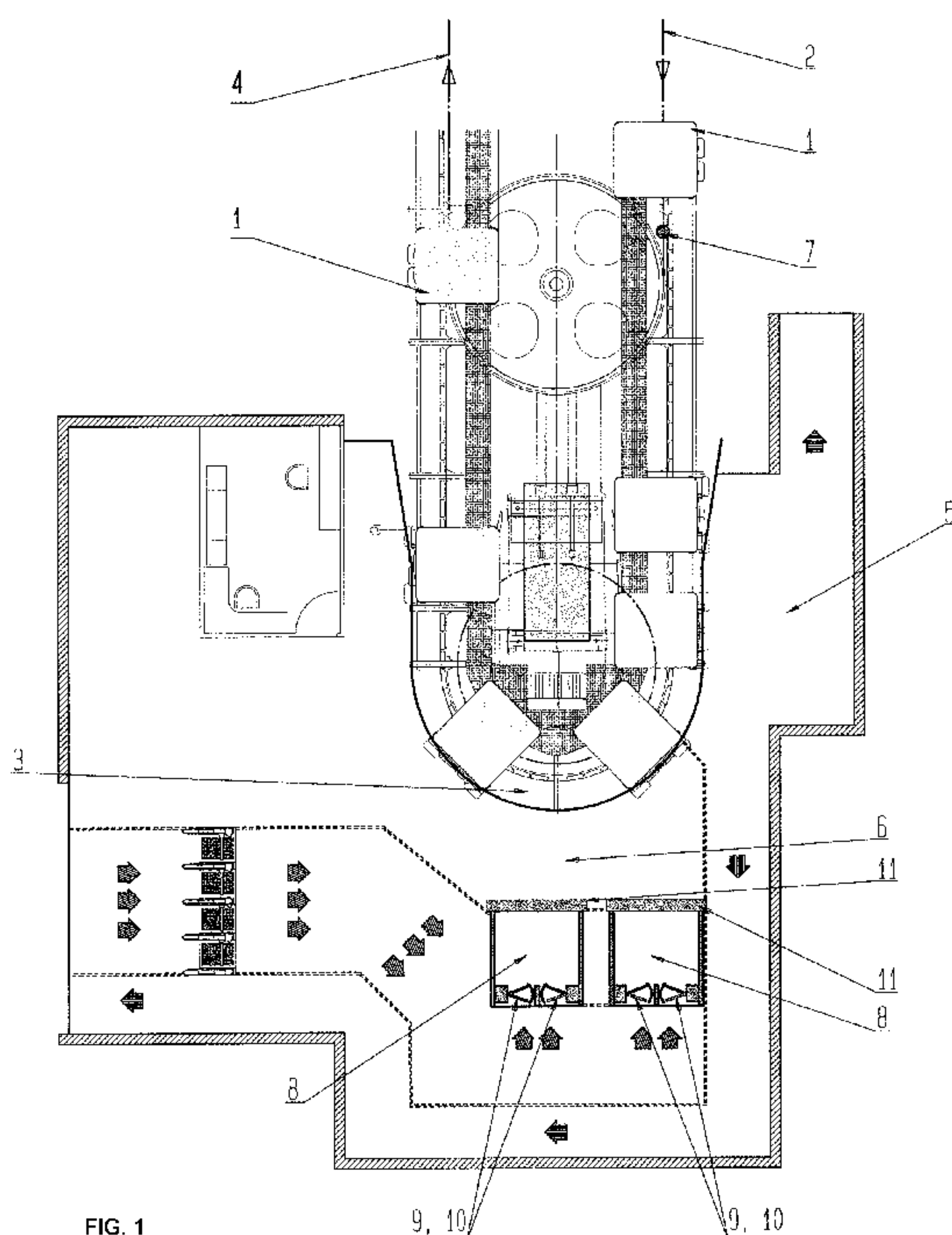


FIG. 1

(57) Abstract: An aerial cableway system comprises at least two stations between which vehicles (1), especially cars, can travel as they are pulled by a cable; the stations include a boarding zone (6) for passengers to board vehicles (1) and a disembarking zone (5) for getting off vehicles (1). A sensor (7) can be activated by a vehicle (1) entering a station. At least one restricted area (8) comprising at least one gate (9, 11) that includes a controller which can be activated by the sensor (7) is located in the station.

(57) Zusammenfassung: Eine Seilbahnanlage weist wenigstens zwei Stationen, zwischen welchen Fahrzeuge (1), insbesondere Kabinen, seilgezogen fahrbar sind, auf wobei in den Stationen ein Einstiegsbereich (6) für Fahrgäste in Fahrzeuge (1) und ein Ausstiegsbereich (5) aus Fahrzeugen (1) vorgesehen ist. Ein Sensor (7), der von einem in eine Station einfahrenden Fahrzeug (1) ist ansteuerbar ist. In der Station ist wenigstens ein abgegrenzter Bereich (8) mit wenigstens einer Begrenzung (9, 11) mit einer Steuerung, die von dem Sensor (7) ansteuerbar ist, angeordnet.

WO 2016/077854 A1

Aerial Cableway System

The invention relates to an aerial cableway system comprising at least two stations between which vehicles,
5 in particular cars, can travel as they are pulled by a cable; the stations include a loading area for passengers to board vehicles and an unloading area for passengers to deboard vehicles.

10 Aerial cableway systems, for example, gondola lift systems or chairlift systems, comprise an unloading area and a loading area for passengers to be transported, in one station. When a vehicle, such as a car or a chairlift, enters a station, the unloading area is passed through
15 first, followed by the loading area. A redirection area can be provided between the unloading area and the loading area, if necessary, in order to change the direction of travel of the vehicle.

20 In an aerial cableway system comprising continuously circulating vehicles, the passengers must deboard the vehicles or board these vehicles, in the areas provided therefor, in the stations, while the vehicles continue to move. It must therefore be ensured that it is possible
25 for passengers to deboard and board within the period of time within which the vehicle moves through the unloading area and the loading area.

In the previously known aerial cableway systems having
30 such a design, it can be problematic that an uncertain and essentially uncontrolled number of passengers is located in the loading area. If this number of passengers exceeds the maximum possible number of passengers for a vehicle, uncertainty can arise regarding which passenger
35 can board the vehicle and which passenger must wait for the next vehicle. Consequently, there is the risk, on the one hand, that there will be a big push by the passengers toward a vehicle, which can pose a potential risk to the

passengers. On the other hand, this can result in vehicles being under-occupied even when there is a high volume of passengers.

- 5 The problem addressed by the invention is that of providing an aerial cableway system which better coordinates the boarding of passengers into the vehicles.

10 This problem is solved according to the invention by an aerial cableway system which has the features disclosed herein.

Preferred and advantageous embodiments of the invention are also disclosed herein.

15

According to the invention, a sensor is provided, which can be activated by a vehicle entering a station, and at least one delimited area situated in the station, which comprises at least one restrictor that includes a
20 controller which can be activated by the sensor. It is therefore possible to avoid an excessive number of passengers in the loading area, to increase the safety in the loading area, and to avoid an under-occupation of the vehicles. In particular, it is clarified as to which
25 passengers can board an approaching vehicle and which cannot.

Within the scope of the invention, "entering a station" means that a vehicle in the area upstream from the station
30 moves toward the station, and that a vehicle moves out of the area upstream from the station into the station, and that a vehicle within the station moves toward the loading area for the passengers.

35 Within the scope of the invention, the vehicles, which can be pulled by a cable by means of a suspension and/or hauling cable, are preferably cars or chairs of a chairlift, in particular cars. The invention relates, in

particular, to detachable lifts, in which the vehicles in the station are decoupled from the hauling cable and are conveyed through the station at a slower speed.

- 5 Within the scope of the invention, each of the vehicles can comprise an information transmitter which activates the sensor, or the vehicles can trigger an information transmitter which is situated, in particular, in the area of a station, and activates the sensor.

10

In order to continue to ensure a sequence of events in the loading area that is as rapid and safe as possible, it is provided in one preferred embodiment that the sensor is situated – as viewed in the direction of travel
15 of the vehicle – upstream from the loading area into the vehicle, for example, is assigned to the area in which a vehicle enters a station.

Advantageously, the controller can comprise a time-switch
20 element, and therefore the restrictor permits passage by a predefined number of individual passengers after a predefined period of time after the activation of the sensor by a vehicle. In order to permit the filling of the delimited area to be controlled in the event of an
25 interference, it is advantageously provided that the period of time can be changed depending on the current speed of the vehicles into and/or through the station.

In order to ensure a sequence of events in the loading
30 area that is as rapid and safe as possible, it is provided in one preferred embodiment that the delimited area is assigned to the loading area, in particular being situated upstream from the loading area.

35 In one preferred embodiment of the invention, it is provided that a restrictor to enter the delimited area is situated in the access direction, as viewed toward the vehicle, wherein the restrictor to enter the delimited

area is preferably a person-separating system, in particular a turnstile. A person-separating system is a device that permits passage by only one individual passenger. Within the scope of the invention, a person-separating system can also be understood to be a non-mechanically acting device, but also an optical display device, as defined in the following.

In yet another preferred embodiment of the invention, it is provided that a restrictor to exit from the delimited area is situated in the access direction, as viewed toward the vehicle.

Within the scope of the invention, the restrictor to exit from the delimited area can be a mechanical barrier and/or a display device which provides information regarding when the passengers are permitted to exit from the delimited area. The barrier, when used as intended, indicates that passengers are permitted to exit from the delimited area, in particular when the vehicle has reached the loading area or is close to reaching the loading area.

The (optical) barrier can be, for example, a display, in particular a screen, on which safety-relevant information is presented. The (optical) barrier can also be a projector which projects, for example, "STOP" or "GO" or the like onto a surface that is visible to passengers located in the delimited area. The safety device can also be a passage provided with a traffic light system, for example in the form of illuminated bars, wherein the color "red" means that the delimited area may not yet be exited, and the color "green" means that the delimited area may be exited. If necessary, the color "yellow" can be used, which can mean that the passengers may exit the delimited area soon.

Barriers can be provided at the sides of the delimited

area, and therefore a clearly defined area is formed, which cannot be improperly entered. The size of this delimited area is preferably designed for the maximum number of passengers for a vehicle.

5

In one preferred embodiment of the invention, it is provided that the sensor activates the controller of the restrictor to exit from the delimited area, and the restrictor to enter the delimited area can be activated
10 by the controller of the restrictor to exit from the delimited area.

Alternatively thereto, it can be provided that the restrictor to enter the delimited area can be activated
15 by one further sensor which can be controlled by a vehicle entering the loading area, or by one further time-switch element.

In order to ensure that passengers can enter the
20 delimited area only when said area is empty, it can be advantageously provided that the restrictor to enter the delimited area is opened only when the restrictor to exit from the delimited area is closed.

25 In order to ensure that no passengers improperly enter the loading area, it can be advantageously provided that the restrictor to exit from the delimited area is opened only when the restrictor to enter the delimited area is closed.

30

Within the scope of the invention, the term "opened" means mechanically opened as well as that passage is permitted by way of suitable, for example, optical signals. Within the scope of the invention, the term
35 "closed" means mechanically closed as well as that passage is not permitted by way of suitable, for example, optical signals.

Within the scope of the invention, it is preferred when the restrictor to enter the delimited area is closed before its activation.

- 5 Within the scope of the invention, it is preferred when the restrictor to enter the delimited area is closed after the predefined number of passages has been reached, until the next activation by the sensor.
- 10 In one embodiment of the invention, it is provided that the controller of the restrictor to enter the delimited area comprises a counting device as well as a memory in which a predefined number of passengers for one vehicle is stored. It can therefore be ensured that the suitable
15 number of passengers is or will be provided for each vehicle, whereby the safety in the loading area is increased.

Within the scope of the invention, it can be provided,
20 in particular, that the passage by a predefined number of individual passengers through the restrictor to enter the delimited area is permitted before the vehicle has reached the loading area. It is therefore ensured that the desired number of passengers has gathered in the
25 delimited area when the vehicle reaches the loading area.

In yet another preferred embodiment, it is provided that, after activation, a predefined number of passages by individual passengers, which corresponds to the maximum
30 number of passengers permitted for the vehicle, through the restrictor to enter the delimited area is permitted.

Within the scope of the invention, for example, a first station and a second station, in particular a valley
35 station and a mountain station, can be provided, wherein at least one intermediate station can also be provided. The aerial cableway systems or the stations can be situated not only in open areas, e.g., in ski resorts or

recreational parks, but also in urban regions. Within the scope of the invention, the cable-drawn vehicles can be used in an aerial cableway system as well as a funicular system.

5

It is therefore possible that only the boarding by a number of passengers is possible in the first station, for example, wherein this number does not correspond to the maximum possible number of passengers per vehicle.

10 It is therefore ensured that further passengers can board this vehicle in an intermediate station. If a car is intended for eight persons, for example, it can be ensured according to the invention that only four passengers can board the car in the first station, and
15 therefore four further passengers can board this car in an intermediate station, or only, e.g., every second vehicle is occupied.

A display can be provided, on which the predefined number
20 of passengers as well as the number of passengers currently located in the delimited area is displayed.

Within the scope of the invention, one or several, preferably two, person-separating systems situated next
25 to each other can be provided as the restrictor to enter the delimited area, and can be activated in alternation, for example. Within the scope of the invention, two or more delimited areas situated next to each other can also be provided, which are activated in alternation, for
30 example.

According to the invention, a method for operating an aerial cableway system is provided. The features described with respect to the aerial cableway system can
35 also be implemented as method features.

Further details, features and advantages of the invention result from the following description with reference to

the attached drawings in which preferred embodiments are represented.

Therein: Figure 1 shows an aerial cableway system
5 according to the invention in the area of a station, and
figures 2 to 5 show a delimited area for passengers.

Figure 1 shows an aerial cableway system in the area of
a station, wherein the vehicles 1 are cars. The cars 1
10 and the guidance or the drive of the cars can be designed
as is known from the prior art. The cars 1 enter the
station in direction of travel 2, are redirected there
in a redirection area 3, and exit the station in direction
of travel 4. An unloading area 5 for the passengers is
15 provided upstream from the redirection area 3. A loading
area 6 for the passengers is provided in the redirection
area 3.

A sensor 7, which is activated by a vehicle 1 entering
20 the station, is situated upstream from the loading area
6, as viewed in direction of travel 2 of the vehicle 1,
namely in the area in which a vehicle 1 enters the
station, in the exemplary embodiment shown. Two delimited
areas 8 for passengers are situated next to the loading
25 area 6. In the access direction as viewed toward the
vehicle, the delimited areas 8 each comprise a first
restrictor 9 to entry into the delimited area 8 in the
form of two turnstiles 10 situated next to each other.
The delimited areas 8 each comprise a second restrictor
30 11 to exit from the delimited area 8, a better view of
said restrictors being provided in 2 to 5. The second
restrictor 11 to exit from the delimited area 8 is a
passage provided with a traffic light system which
comprises illuminated bars 13, wherein the color "red"
35 means that the delimited area may not yet be exited, and
the color "green" means that the delimited area may be
exited. If necessary, the color "yellow" can be used,
which can mean that the passengers may exit the delimited

area soon. Barriers 12 are provided at the sides.

When a vehicle 1 entering the station activates the sensor 7, the sensor 7 activates a controller of the
5 second restrictor 11 to exit from the delimited area 8, whereby the second restrictor 11 to exit from the delimited area 8 is opened after a certain period of time has passed, and displays color "green". Persons located
10 6. While the second restrictor 11 to exit from the delimited area 8 is open, the first restrictor 9 to enter the delimited area 8 is closed in order to ensure that other passengers do not inadvertently enter the loading area 6.

15

After a further period of time has passed or if the passengers have exited the delimited area 8, the second restrictor 11 to exit from the delimited area 8 closes again, wherein the color "red" is displayed and its
20 controller opens the first restrictor 9 to enter the delimited area 8. While the first restrictor 9 to enter the delimited area 8 is open, the second restrictor 11 to exit from the delimited area 8 is closed ("red").

25 A controller of the turnstiles comprises a counting device as well as a memory in which a predefined number of passengers for one vehicle 1 is stored. After activation of the turnstiles by the controller of the second restrictor 11 to exit from the delimited area 8,
30 a predefined number of individual passengers can enter the delimited area 8. When the predefined number of passengers has entered the delimited area 8, the turnstiles are blocked again until the next activation by the sensor 7. The persons located in the delimited
35 area 8 remain in the delimited area 8 until a new vehicle 1 entering the station activates the sensor 7, which activates the controller of the second restrictor 11 to exit from the delimited area 8, whereby the second

restrictor 11 to exit from the delimited area 8 is opened again ("green") after a certain period of time has passed.

- 5 In summary, an exemplary embodiment of the invention can be represented as follows:

10 An aerial cableway system comprises at least two stations between which vehicles 1, in particular cars, can travel as they are pulled by a cable, wherein the stations include a loading area 6 for passengers to board vehicles 1 and an unloading area 5 for passengers to deboard vehicles 1. A sensor 7 which is can be activated by a vehicle 1 entering a station. At least one delimited area 15 8 comprising at least one first restrictor 9, one second restrictor 11, which includes a controller which can be activated by the sensor 7, is located in the station.

Claims:

1. An aerial cableway system comprising at least two stations between which vehicles can travel as they are pulled
5 by a cable, wherein the stations include a loading area for passengers to board vehicles and an unloading area for passengers to disembark vehicles, comprising a sensor, which can be activated by a vehicle entering a station and comprising a controller which can be activated by the sensor, wherein at
10 least one delimited area situated in the station is delimited by a first and a second restrictor, wherein the first restrictor to enter the delimited area is opened only when the second restrictor to exit from the delimited area is closed, and wherein the second restrictor to exit from the delimited
15 area is opened only when the first restrictor to enter the delimited area is closed.
2. The aerial cableway system as claimed in claim 1, wherein the vehicles are cars.
- 20 3. The aerial cableway system as claimed in claim 1 or 2, wherein each of the vehicles comprises an information transmitter which activates the sensor.
- 25 4. The aerial cableway system as claimed in claim 1 or 2, wherein the vehicles trigger an information transmitter and activates the sensor.
- 30 5. The aerial cableway system as claimed in claim 4, wherein the information transmitter is situated in the area of a station.
6. The aerial cableway system as claimed in any one of claims 1 to 5, wherein the sensor is situated – as viewed in
35 direction of travel (2) of the vehicle – upstream from the loading area.

7. The aerial cableway system as claimed in claim 6, wherein the sensor is situated in the area in which a vehicle enters a station.

5 8. The aerial cableway system as claimed in any one of claims 1 to 7, wherein the controller comprises a time-switch element, and therefore at least one of the restrictors permits passage by a predefined number of individual passengers after a predefined period of time after the activation of the sensor
10 by a vehicle.

9. The aerial cableway system as claimed in claim 8, wherein the period of time can be changed depending on the current speed of the vehicles into and/or through the station.

15

10. The aerial cableway system as claimed in any one of claims 1 to 9, wherein the delimited area is assigned to the loading area.

20 11. The aerial cableway system as claimed in any one of claims 1 to 9, wherein the delimited area is situated upstream from the loading area.

25 12. The aerial cableway system as claimed in any one of claims 1 to 11, wherein the first restrictor to enter the delimited area is situated in the access direction, as viewed toward the vehicle.

30 13. The aerial cableway system as claimed in claim 12, wherein the first restrictor to enter the delimited area is a person-separating system.

14. The aerial cableway system as claimed in claim 13, wherein the person-separating system is a turnsite.

35

15. The aerial cableway system as claimed in any one of claims 1 to 14, wherein that the second restrictor to exit

from the delimited area is situated in the access direction,
as viewed toward the vehicle.

16. The aerial cableway system as claimed in claim 15,
5 wherein the second restrictor to exit from the delimited area
comprises a mechanical barrier.

17. The aerial cableway system as claimed in claim 16,
wherein the mechanical barrier is a passage provided with a
10 traffic-light system.

18. The aerial cableway system as claimed in claim 16 or 17,
wherein the second restrictor to exit from the delimited area
further comprises a display device which provides information
15 regarding when the passengers are permitted to exit from the
delimited area.

19. The aerial cableway system as claimed in claim 18,
wherein the display device comprises at least one of a display
20 and a projector.

20. The aerial cableway system as claimed in claim 15,
wherein the second restrictor to exit from the delimited area
comprises a display device which provides information
25 regarding when the passengers are permitted to exit from the
delimited area.

21. The aerial cableway system as claimed in claim 20,
wherein the display device comprises at least one of a display
30 and a projector.

22. The aerial cableway system as claimed in any one of
claims 1 to 21, wherein the sensor activates the controller of
the second restrictor to exit from the delimited area, and the
35 first restrictor to enter the delimited area can be activated
by the controller of the second restrictor to exit from the
delimited area.

23. The aerial cableway system as claimed in any one of
40 claims 1 to 22, wherein the first restrictor to enter the

delimited area can be activated by one further sensor which can be controlled by a vehicle entering the loading area, or by one further time-switch element.

- 5 24. The aerial cableway system as claimed in any one of claims 1 to 23, wherein the controller of the first restrictor to enter the delimited area comprises a counting device as well as a memory in which a predefined number of passengers for one vehicle is stored.

10

25. The aerial cableway system as claimed in claim 24, wherein, after activation, a predefined number of passages by individual passengers through the first restrictor to enter the delimited area is permitted.

15

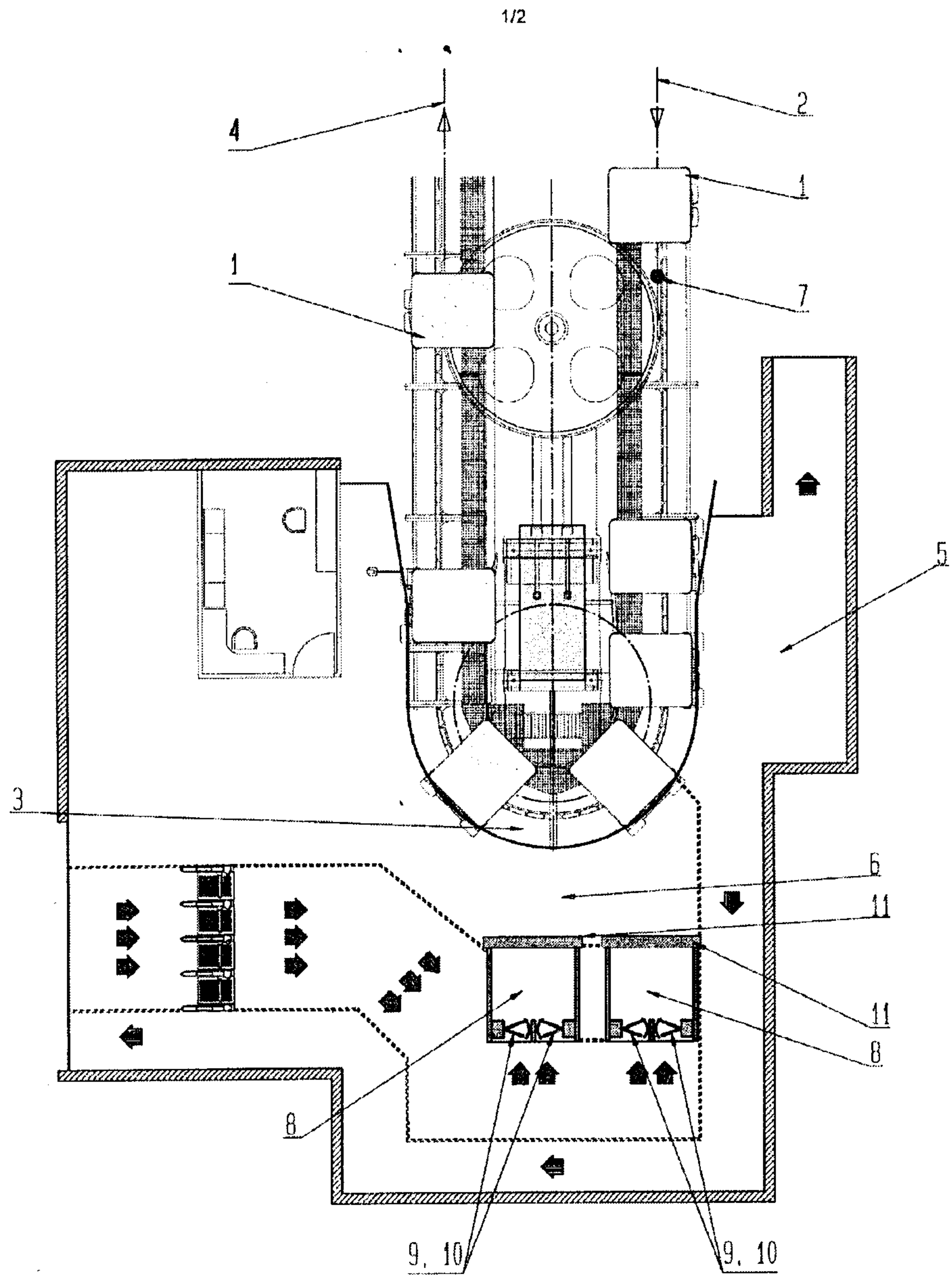
26. The aerial cableway system as claimed in claim 25, wherein the first restrictor to enter the delimited area is closed after the predefined number of passages has been reached, until the next activation.

20

27. The aerial cableway system as claimed in any one of claims 4 to 26, further comprising a display on which the predefined number of passengers as well as the number of passengers currently located in the delimited area is
25 displayed.

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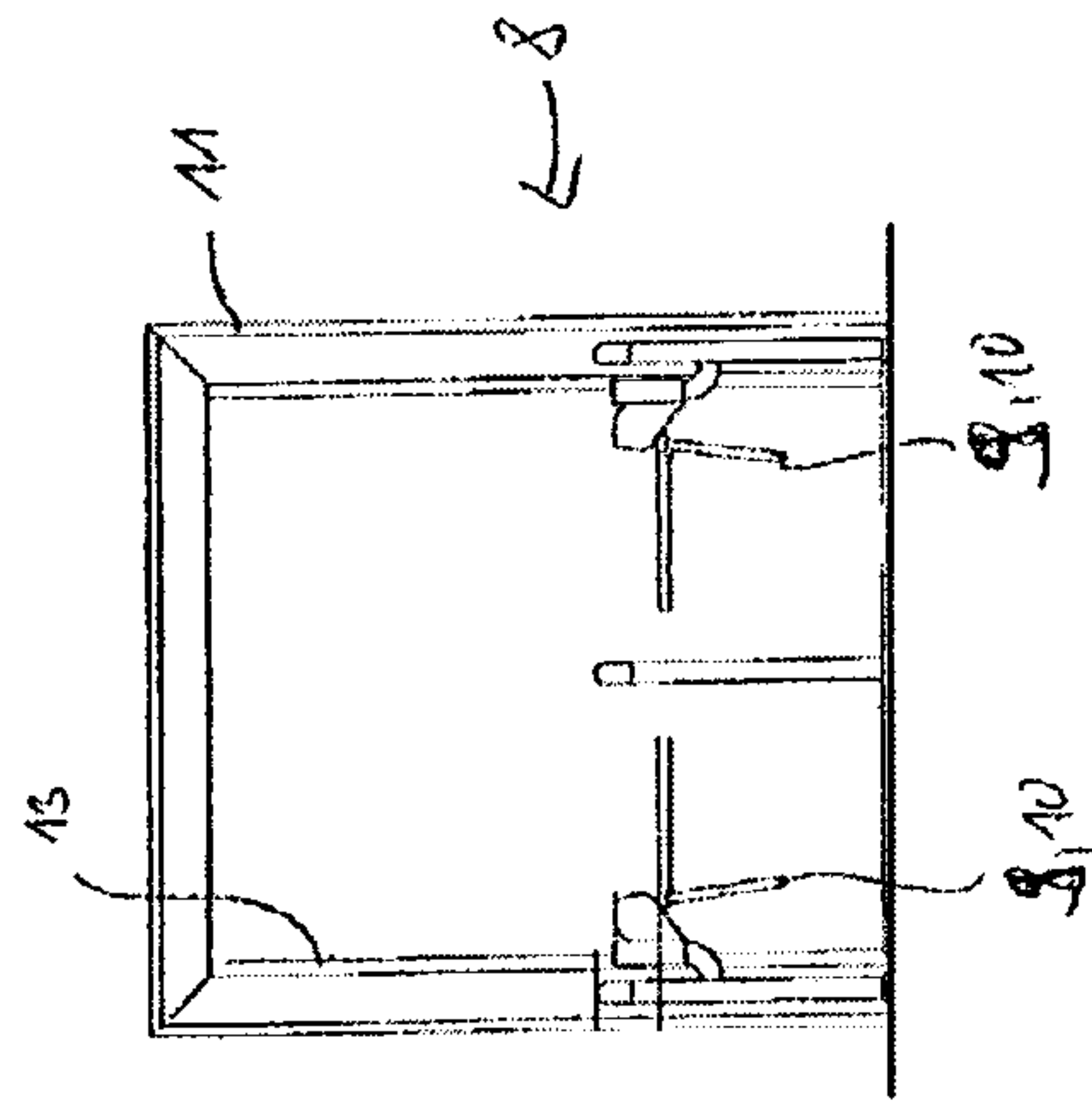


Fig. 3

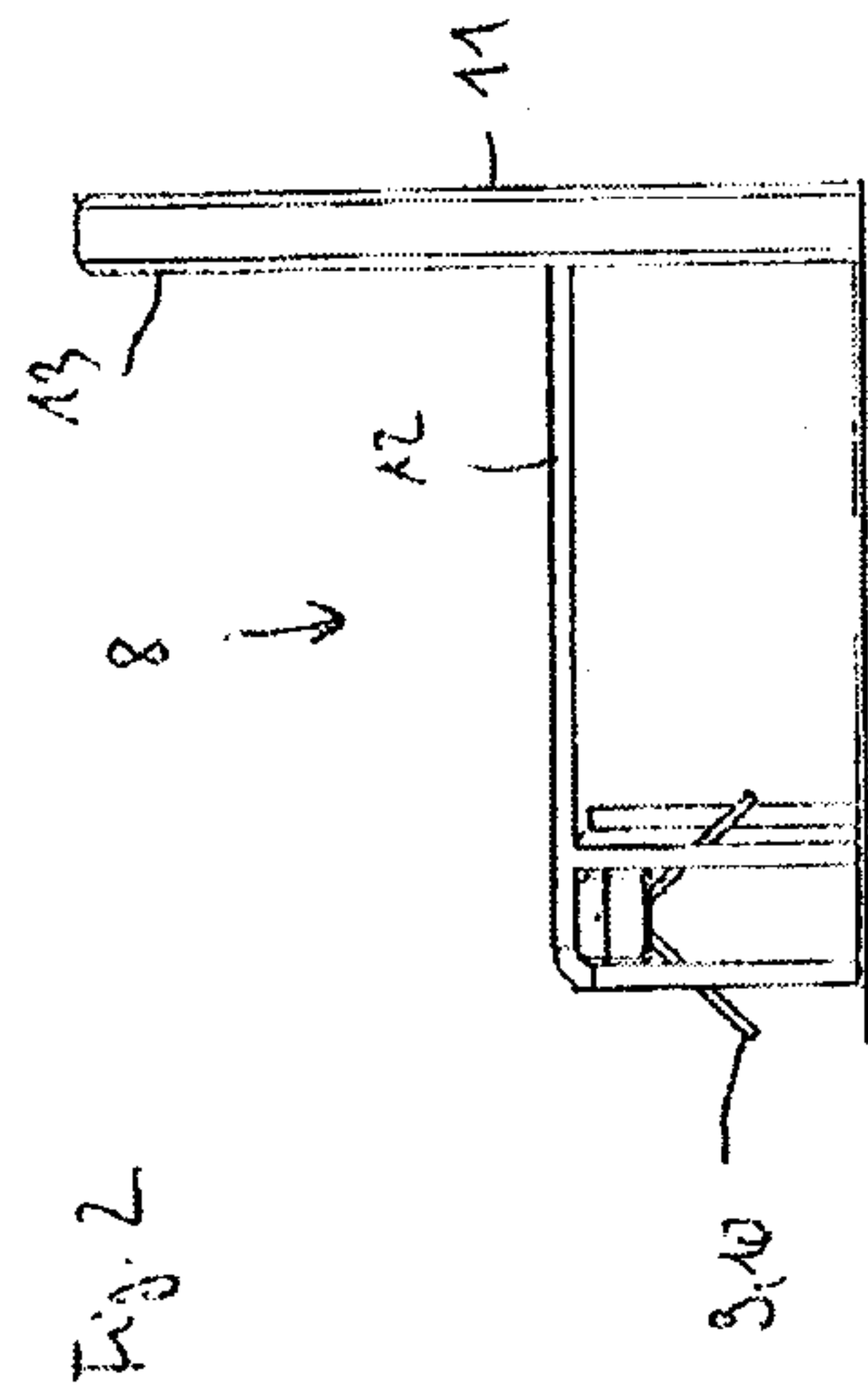


Fig. 2

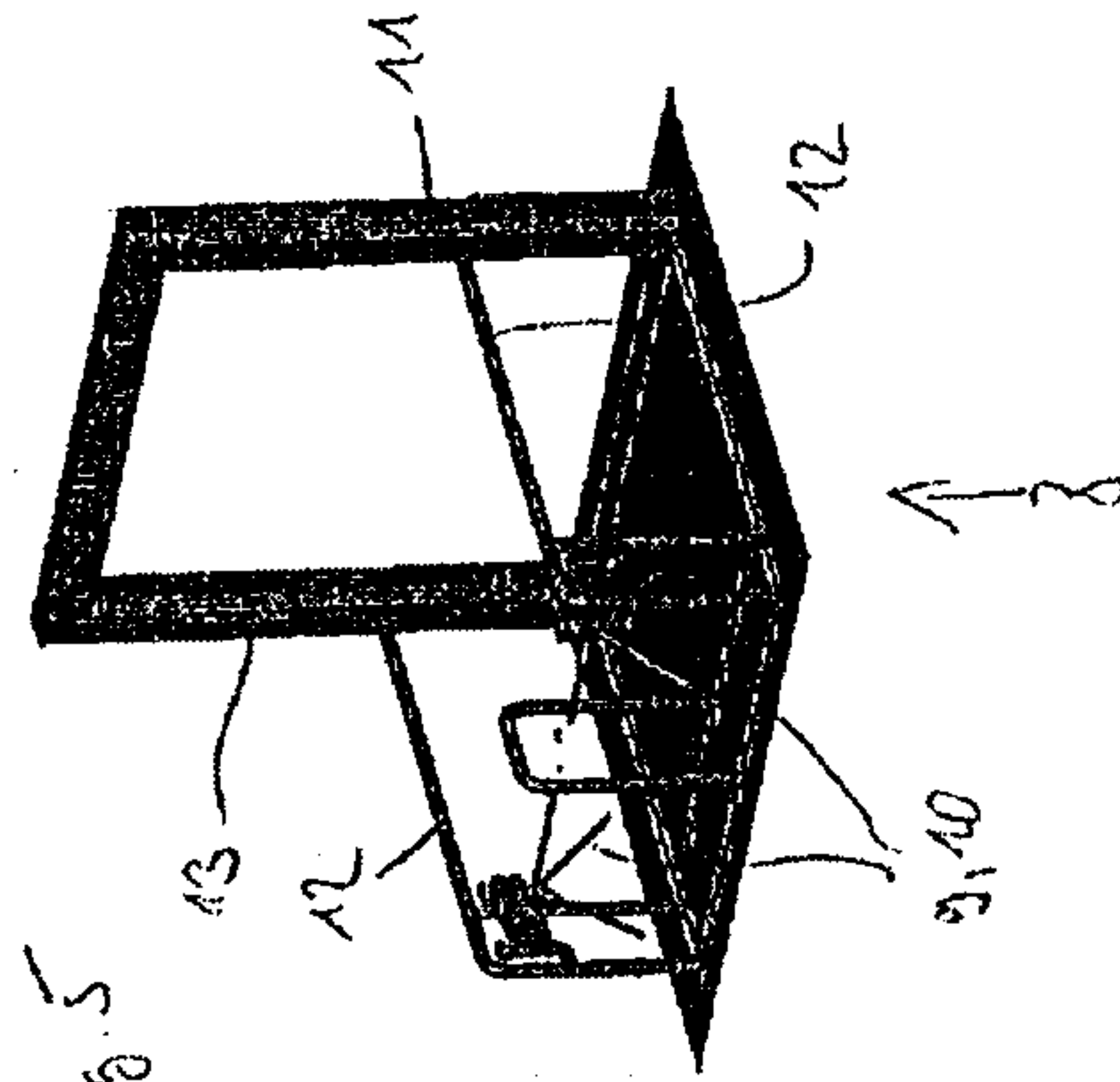


Fig. 5

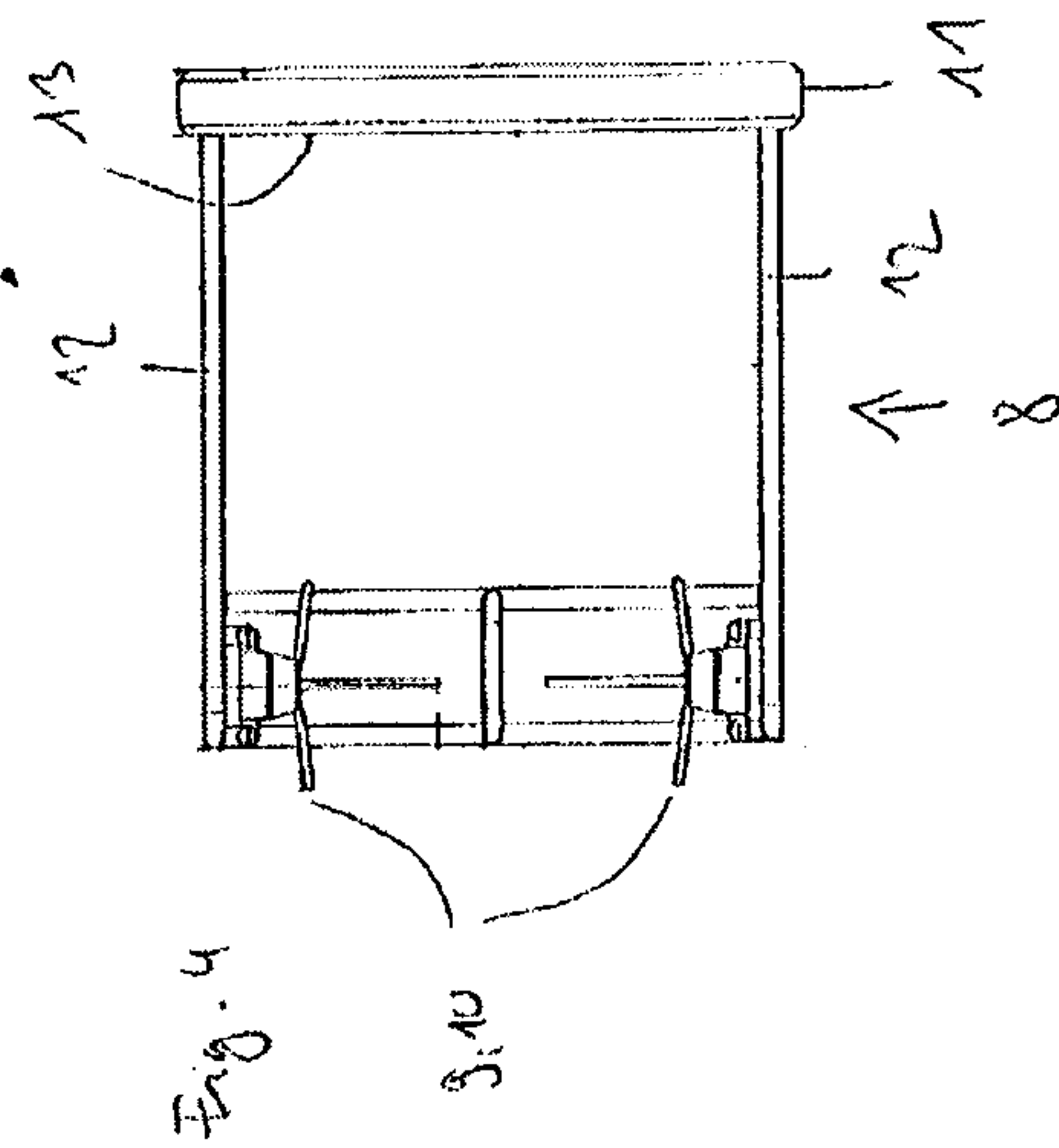


Fig. 4

