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(54) **Apparatus for controlling access to restricted zone**

(57) The invention provides an apparatus (1) for controlling access to, an especially ingress into and egress from, a restricted zone or compartment, the apparatus (1) comprising: a frame (2) configured to be mounted fixed in an access area having at least two access openings (5, 6); and a gate (8) movably mounted to said frame (2) for movement around a longitudinal gate axis (A) to open and close the at least two access openings (5, 6). The gate (8) comprises two or more gate members (9, 9') which are configured for movement in a combined state and in a separated state. In the combined state, the gate members (9, 9') are configured to be moved together as an integral or unitary gate structure and the gate (8) is configured to maintain at least one of the access openings (5, 6) closed at all times. In the separated state, the gate members (9, 9') are movable independently of one another to open both access openings (5, 6) simultaneously.

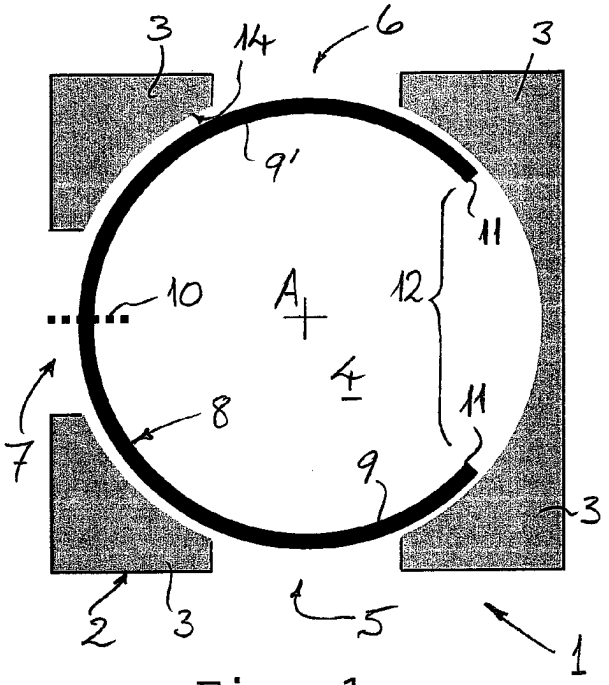


Fig. 1

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Description

[0001] The invention relates to an apparatus for controlling access to, and especially ingress into and egress from, a restricted zone or compartment, particularly in a vehicle, such as an aircraft or a spacecraft.

[0002] In recent years, the danger of aggressive acts conducted by persons in aircraft has increased, particularly in commercial passenger aircraft. Such aggressive acts, including acts of terror and hijack attempts, endanger not only individual passengers, but the entire aircraft and all persons on board. In this regard, the possibility of uncontrolled access by unauthorized persons to a cockpit of an aircraft can endanger not only the safety of the operation of the aircraft but also the safety and even the lives of the crew and passengers. This danger exists not only in relation to aircraft, but also in respect of unauthorized operation of public transportation vehicles such as trains, buses, ships, ferries and the like. In all such instances the health and safety of the passengers and crew may be endangered.

[0003] In practice, a dangerous situation can always become critical when there are no suitable countermeasures to prevent an intruder or unauthorized person from gaining access to the controls in a cockpit of the vehicle. The term "cockpit" as used in this disclosure is intended to encompass not only a cockpit in an aircraft, but also a driver's cab in a train, a bridge on a ship, and indeed any compartment or zone in which an operator has the ability of controlling the operation of a vehicle.

[0004] For improved protection of the cockpit in an aircraft, it is known, for example, to make the door to the cockpit from a bulletproof material. This may provide an increased level of passive protection, but bulletproof doors do not provide any means for actively constraining an intruder or eliminating the intruder's ability to cause damage. In banks and other security-critical buildings or facilities it is known, for example, to provide access through a security passage which encloses a closeable and lockable space, whereby entry into a restricted or critical area can be prevented in response to certain criteria. A security passage has the advantage that a person or persons in the passage can be observed prior to being admitted into the critical area. The observation may be visual (e.g. by a guard or a camera and display in a control area) or by other sensors. Furthermore, in the event of a detected danger, it is possible to activate the closing and locking functions of the security passage to thereby actively constrain or impede an intruder. A simple example of such a security passage is a so-called vestibule in buildings. Such a vestibule comprises two conventional hinged doors, one at each end, which can be locked so that a person in the space between the doors can be trapped, so to speak. Such doors, however, require a certain space for their installation and for the spacing between the doors. Such a space is normally not available in passenger conveyances, particularly in a passenger aircraft.

[0005] One solution to the above issues is described in the granted US Patent No. 6,925,756 B2. The apparatus described in that patent includes a revolving gate or door arrangement that provides excellent security features for controlling access to the cockpit of an aircraft. Significantly, however, that apparatus may be sub-optimal in the event of an emergency in the aircraft: for example, if due to a sudden deterioration in the health of a crew-member in the cockpit (e.g. from heart-attack or stroke), rapid access to the cockpit were to be required by a medical team, or if, due to an emergency situation, the cockpit needed to be evacuated quickly. The same is true in the event that rapid decompression relief is required.

[0006] It is therefore an object of the present invention to provide a new and improved apparatus for controlling access to, and especially ingress into and egress from, a restricted zone or compartment, such as a cockpit in an aircraft, which is able to address or overcome one or more of the above issues.

[0007] In accordance with the invention an apparatus for controlling ingress into and egress from a restricted zone or compartment having the features recited in claim 1 is provided. Preferred features are recited in the dependent claims.

[0008] According to one aspect, therefore, the invention provides an apparatus for controlling access to, and especially ingress into and egress from, a restricted zone or compartment, the apparatus comprising:

> a frame configured to be mounted fixed in an access area having at least two access openings; and
> a gate movably mounted to said frame for movement around a longitudinal gate axis to open and close the at least two access openings;
> wherein the gate comprises two or more gate members which are configured for movement in a combined state and in a separated state,
> wherein, in the combined state, the gate members are configured to be moved together as an integral or unitary gate structure and, in the separated state, the gate members are movable independently of one another.

[0009] By designing the apparatus with a gate comprising a plurality of gate members that can be deployed in either a combined or separated state, the apparatus of the invention is able to provide one mode of operation (i.e. with the gate members in the combined state) that provides excellent security features for controlling access to a restricted compartment, such as a cockpit of an aircraft, and an alternative mode of operation (i.e. with gate members in the separated state) that provides excellent emergency access features for permitting unfettered ingress to and egress from the restricted compartment in an emergency situation.

[0010] In this regard, in a preferred embodiment of the apparatus, the gate members in the separated state are

movable to open both of the access openings simultaneously, thereby allowing ready access to and from the restricted zone or compartment. It will be appreciated that the term "gate" as used in this disclosure is intended to encompass a door, a barrier, and indeed any structure for closing a port, opening or passage for human access.

[0011] In a preferred embodiment of the apparatus, the gate members in the combined state are configured to meet and/or join with one another along a line or interface. In this regard, the gate members may respectively present interlocking or inter-engaging profiles along said line or interface. Accordingly, the gate members of the gate may be physically locked with one another to form an integral or unitary gate structure along the join line or interface; for example, by means of a latching or locking bolt arrangement. Alternatively, however, the gate members may merely engage with one another along the join line or interface and may be physically locked to form the integral or unitary gate structure at another location. The gate members are preferably substantially the same size, such that, in a gate comprising only two gate members, each of the gate members forms an approximate half of the gate, and in a gate comprising only three gate members, each of the gate members forms an approximate third of the gate.

[0012] In a particularly preferred embodiment, the gate members are configured to rotate or revolve about the longitudinal gate axis in the combined state and/or the separated state. That is, the gate of the apparatus is preferably mounted to rotate or revolve about the gate axis to open and close each of the access openings. The gate itself preferably has a partially circular cylindrical form and the gate axis corresponds to a central axis of that cylindrical form. As such, the gate axis extends generally vertically. The frame of the apparatus may therefore enclose or define a generally circular cylindrical space in which the gate is movably mounted for rotation about the gate axis, and this space may form an intermediate zone between the respective access openings. The access openings themselves may, for example, be formed in the apparatus frame or they may alternatively be formed in an access area of an internal structure of a vehicle or building into which the apparatus frame is mounted and fixed.

[0013] In a preferred embodiment, a first one of the access openings communicates with a public zone and at least a second one of the access openings communicates with the restricted zone or compartment. As noted above, the apparatus preferably defines an intermediate zone between the access openings and this intermediate zone may be configured to accommodate one or two or a few persons. Furthermore, the gate is preferably movable in the combined state to close or to isolate the intermediate zone from either or from both of the public zone and the restricted zone. That is, in the combined state, the gate is preferably configured to maintain at least one of the access openings closed at all times. In this way, the apparatus can be designed to limit the number of persons entering or exiting the restricted zone at any given time. In particular, the gate can be configured to ensure that only one or two or perhaps a select few persons are permitted to enter or exit the restricted zone or compartment at any given time.

[0014] In a particularly preferred embodiment, the intermediate zone of the apparatus comprises means to review the individual(s) seeking access to the restricted zone or compartment. The review may be conducted visually, for example by means of one or more cameras (visible-light or infrared cameras), and/or non-visually by means of other sensor or scanner devices. Examples of such non-visual review means include a pressure- or weight-sensor (e.g. piezo-electric elements) in a base or floor of the intermediate zone, metal detectors, solid object detectors. In the event that security doubts exist or arise with respect to the individual(s) during the review, access to the restricted zone or compartment may be denied. In such a case, the gate may maintain the access opening to the restricted zone or compartment closed and the individual(s) may be permitted to return to the public zone. In the event that the review determines a high security risk, it is contemplated that the individual(s) could be held or detained in the intermediate zone of the apparatus.

[0015] In a preferred embodiment, in the combined state, movement of the gate is controlled between open and closed positions for each of the access openings. To this end, the apparatus may further comprise a control device for controlling movement of the gate between open and closed positions for each of the at least two access openings. The apparatus preferably includes a controllable stop means for arresting the gate, in the combined state, in any of at least three discrete positions including a first open position permitting passage between the public zone and the intermediate zone, a second open position permitting passage between the intermediate zone and the restricted zone, and a third position for preventing unauthorized entry to and/or exit from the intermediate zone. Preferably, the gate members in the combined state together define a gate opening and the gate is movable to align the gate opening with any one of said access openings in an open position (e.g. the first or second open position) to permit passage therethrough. By designing the gate opening or cutout larger than was previously contemplated, in the separated state the gate may provide an uninhibited path between the public zone and the restricted zone in an emergency. The stop means preferably include automatic spring loaded stops and/or automatic electrically or magnetically operated stops for the particular positions. Further, operating or control buttons for the stops means are preferably provided in the restricted zone or compartment, e.g. the cockpit.

[0016] According to another aspect, the present invention provides a vehicle, especially an aircraft or spacecraft, incorporating an apparatus for controlling ingress into and egress from a restricted zone or compartment

of the vehicle, particularly a cockpit, according to the invention as described above with respect to any one of the embodiments.

[0017] For a more complete understanding of the invention and the advantages thereof, exemplary embodiments of the invention are explained in more detail in the following description with reference to the accompanying drawing figures, in which like reference characters designate like parts and in which:

Fig. 1 is a schematic plan view of an apparatus according to an embodiment of the invention with the gate in a closed position at all access openings;

Fig. 2 is a schematic plan view of the apparatus in Fig. 1 with the gate in an open position at a cabin access opening;

Fig. 3 is a schematic plan view of the apparatus in Fig. 1 with the gate in an open position at a cockpit access opening;

Fig. 4 is a schematic plan view of the apparatus in Fig. 1 with the gate in an open position at an ancillary access opening;

Fig. 5 is a schematic plan view of the apparatus in Fig. 1 with the gate in an open position for both cockpit and cabin access openings simultaneously;

Fig. 6 is a schematic cross-sectional view of an interface between gate members of a gate in one embodiment of an apparatus according to the invention;

Fig. 7 is a schematic cross-sectional view of an interface between gate members in an alternative embodiment of an apparatus of the invention;

Fig. 8 shows an aircraft according to an embodiment of the invention.

[0018] The accompanying drawings are included to provide a further understanding of the present invention and are incorporated in and constitute a part of this specification. The drawings illustrate particular embodiments of the invention and together with the description serve to explain the principles of the invention. Other embodiments of the invention and many of the attendant advantages of the invention will be readily appreciated as they become better understood with reference to the following detailed description.

[0019] It will be appreciated that common and well understood elements that may be useful or necessary in a commercially feasible embodiment are not necessarily depicted in order to facilitate a less abstracted view of the embodiments. The elements of the drawings are not necessarily illustrated to scale relative to each other. It will further be appreciated that certain actions and/or steps in an embodiment of a method may be described or depicted in a particular order of occurrences while those skilled in the art will understand that such specificity with respect to sequence is not necessarily required. It will also be understood that the terms and expressions used in the present specification have the ordinary meaning as it accorded to such terms and expressions with respect to their corresponding respective areas of inquiry and study, except where specific meanings have otherwise been set forth herein.

[0020] With reference firstly to Figs. 1 to 4 of the drawings, an embodiment of an apparatus 1 designed to control access to, and especially entry to and exit from, restricted parts of an aircraft, including the cockpit, is illustrated schematically in plan or cross-sectional views. In this regard, the granted US Patent No. 6,925,756 B2 is particularly instructive for a full understanding of the present invention and the entire contents of US 6,925,756 B2 are therefore incorporated herein by direct reference to complement the following description.

[0021] The schematic plan or cross-sectional views of Figs. 1 to 4 are in a direction transverse to a central vertical axis A of the apparatus 1, and show a generally rectangular frame 2 having frame elements 3 that together substantially enclose or define a generally cylindrical space or zone 4 centered on the axis X. The frame 2 also includes or defines three access openings 5, 6, 7 between the respective frame members 3 on three respective sides of that generally rectangular frame 2. The apparatus 1 furthermore includes a partially cylindrical gate 8 which is arranged in the cylindrical space or zone 4 and is mounted to the frame 2 for revolving or rotatable movement about the vertical axis A (i.e. clockwise or anti-clockwise). In this embodiment, the gate 8 comprises two gate members 9, 9' which form approximate halves of the gate 8 and which, in a combined state (i.e. as shown in Figs. 1 to 4), join with one another along a line or interface 10 to form an integral or unitary gate structure. At a circumferentially opposite side of each gate member 9, 9', however, opposing edge regions 11 of the two gate members 9, 9' in the combined state together define a gate opening 12 in the cylindrical gate 8. Thus, by revolving the gate 8 about the axis X, the gate opening 12 is movable to align the gate opening 12 with any one of the access openings 5, 6, 7 in an open position to permit passage there-through.

[0022] Referring now to Fig. 1, the access opening 5 at the lower side of the frame 2 communicates with a public zone, such as a passenger cabin of an aircraft. The access opening 6 at the upper side of the frame 2, on the other hand, communicates with a restricted zone or compartment, such as the cockpit of the aircraft. The access opening 7 at the left-hand side of the frame 2 is an ancillary access opening that communicates with an additional restricted zone or compartment, such as a crew toilet or a crew resting compartment. Thus, the cen-

tral space or zone 4 in the apparatus 1 substantially encompassed or surrounded by the gate 8 is an intermediate zone between each of the access openings 5, 6, 7 and this intermediate zone 4 may be configured to accommodate one or two or perhaps even a few persons.

[0023] The partially cylindrical gate 8 is fitted within the frame 2 so that, in the combined state, the gate members 9, 9' are movable to snugly and sealingly close each respective access opening 5, 6, 7. That is, an outer surface 13 of the gate 8 fits snugly and sealingly with respect to an inner surface 14 of the frame members 3. The gate members 9, 9' may be guided in tracks, for example, provided in a base and/or a top of the frame 2 of apparatus 1. Alternatively, each of the gate members 9, 9' may incorporate a segment of a rotatable base and/or a segment of rotatable top, such that the gate 8 may itself have a top and/or a bottom mounted in the frame 2. The position of the gate 8 shown in Fig. 1 represents a closed and locked default position for the apparatus 1 during aircraft flight, in which all of the access openings 5, 6, 7 are simultaneously closed and sealed by the gate 8. In this way, the flight crew in the cockpit is well isolated from any possible disturbing influences from the passenger cabin.

[0024] In the event that a person in the passenger cabin, such as a flight steward, wishes to gain access to the cockpit when the apparatus 1 is in the default position of Fig. 1, that person may firstly need to operate a control device (not shown) of the apparatus 1 for controlling movement of the gate 8. For example, the control device may include a user-interface with a screen or pad and the person may be required to input the particular access desired, e.g. access to cockpit via access opening 6. The control device may further require input of a security code, such as a numerical code, a fingerprint, eye-scan, RFID or the like, before movement of the gate 8 may be activated or operated. After inputting a valid security code, a degree of authorization is already established and the gate 8, with the gate members 9, 9' in the combined state, may be rotated by the control device (and an associated drive mechanism) about axis A in the clockwise direction to the position shown in Fig. 2, such that the gate opening 12 is aligned with the access opening 5 to open the gate 8. This enables the person to enter the intermediate zone 4 of the apparatus 1, where-upon the control device may then move the gate 8 back in the anti-clockwise direction to the position of Fig. 1. At this position, the access opening 5 is again closed but the access opening 6 to the cockpit is not yet open. At this position, a visual and/or non-visual inspection of the person in the intermediate zone 4 may be undertaken (e.g. via a window, via visible- and/or IR-light cameras, via pressure- or weight-sensors, metal detectors, and/or other sensor devices) to assess the level or degree of security risk associated with that person. If a security risk is determined, then gate 8 will not be rotated further to permit access to the cockpit. The person could even be detained in intermediate zone 4. If no security risk is determined, however, the control device and the associated drive mechanism may then rotate the gate 8 further in the anti-clockwise direction to align the gate opening 12 with the access opening 6 as shown in Fig. 3 and thus permit ingress into the cockpit. The gate 8 then, in the combined state, returns to the default position of Fig. 1.

[0025] If a person in the cockpit wishes to return to the passenger cabin, the process may optionally be rendered simpler and may not require the previously described input of a security code or security risk assessment, as those persons already in the cockpit may be assumed to have the necessary authorization. If, for example, a member of the flight crew in the cockpit wishes to use a flight-crew lavatory or rest facilities which also belong to the restricted zone and are accessible via the access opening 7, that flight-crew member may only need to input the desired access to the control device via a user-interface (e.g. a screen or pad or a dedicated button) and the control device and associated drive mechanism may rotate the gate 8, again with the gate members 9, 9' in the combined state, about axis A in the anti-clockwise direction from the default position to the position shown in Fig. 3 to enable the crew member to enter the intermediate zone 4 and then further to the position in Fig. 4, where the gate opening 12 is aligned with the access opening 7. Thus, the flight crew may have dedicated control buttons for the apparatus 1 in the cockpit for selecting egress either to access opening 7 (i.e. to the rest facilities) or to access opening 5 (i.e. to the passenger cabin) by a simple push of the associated button.

[0026] With reference to Fig. 5 of the drawings, the gate 8 is shown with the gate members 9, 9' in the separated state. As the name suggests, in the separated state the gate members 9, 9' are separated from one another along the join or interface 10 and are movable about the gate axis A in the frame 2 of the apparatus 1 independently of one another. In particular, the gate members 9, 9' are separately movable in this state or mode of operation to open both the passenger cabin access opening 5 and the cockpit access opening 6 simultaneously, as seen in Fig. 5. This is particularly important in emergency situations where rapid access is required between the cockpit and the passenger cabin. In the separated state, therefore, the gate members 9, 9' are configured to revolve or rotate about the axis A in different directions, e.g. in tracks provided in a base and/or top of the apparatus frame 2.

[0027] The separated state of the gate members 9, 9' in the gate 8 may be initiated or deployed in an emergency situation from the cockpit and/or from the passenger cabin by an authorized member of the crew via the control device user-interface. In addition, the control device may be adapted to automatically initiate or deploy the gate 8 in the separated state when one or more condition is detected by sensors that indicates an emergency situation; e.g. major pressure drop in the cockpit. The control device may automatically move the gate members 9, 9' to the positions shown in Fig. 5 to open the cabin access

opening 5 and the cockpit access opening 6 simultaneously. Also, the control device may decouple or deactivate any stop means for arresting the gate 8 in a particular position (e.g. as in positions of Figs. 1 to 4, when the gate members 9, 9' are in the combined state), so that the gate members are able to be moved manually (i.e. by hand) in the separated state. In this way, the apparatus 1 provides a hitherto unavailable combination of both security and emergency access.

[0028] Referring now to Figs. 6 and 7 of the drawings, two examples of the join or interface 10 between gate members 9, 9' in the gate 8 of the apparatus 1 are illustrated. In particular, in the interface 10 of Fig. 6, the gate member 9 includes a slot or groove 15 and the gate member 9' includes a corresponding key or tongue element 16 for receipt therein and interlocking engagement therewith. In Fig. 7, on the other hand, each of the gate members 9, 9' includes a flange 17 and shoulder 18 to respectively overlap and abut the corresponding flange 17 and shoulder 18 of the other. Each of these interfaces 10 may include a locking mechanism which is releasable either by the control device and/or manually.

[0029] By virtue of the circular cross-section of the gate 8 to form a generally cylindrical enclosure, it is possible to minimize the volume or surface area size of the gate 8 by making the diameter of the intermediate zone 4 as small as possible for the intended purpose. Accommodating but one person at a time in the gate is preferred for normal operation, though the gate may need to accommodate two or even three people in an emergency situation. By limiting the size of the gate 8 to two or three people, the amount of bullet-proof material that lines an interior of the gate 8 can be minimized. Preferably, the entire gate 8 is made of a high strength bullet-proof material which also meets the weight requirements typical in aircraft construction. For example, the gate members 9, 9' may comprise a polyamide fabric which is known under the tradename CETEX HPPE (made by Ten Cate in the Netherlands). With the cylindrical geometry and circular cross-section of the gate 8, it is possible to install the apparatus 1 in a minimum of space. It will be noted that the mechanisms and features described in US Patent No. 6,925,756 for evacuating intermediate zone 4 of the gate 8 (e.g. via a suction pipe), and/or for equalizing pressure in the gate 8 in the event of an explosion in intermediate zone 4 and/or for incapacitating an intruder or high-risk unauthorized person in intermediate zone 4, may be adopted or incorporated in the apparatus 1 of the invention in a corresponding way.

[0030] Finally, an aircraft 20 is shown schematically in Fig. 8 that incorporates an apparatus 1 of the invention as described in detail above with reference to the embodiments of Figs. 1-7 fixed in a frame structure of its fuselage 21 for controlling access to the cockpit 22 from a passenger cabin.

[0031] Although specific embodiments of the invention have been illustrated and described herein, it will be appreciated by those of ordinary skill in the art that a variety of alternate and/or equivalent implementations exist. It should be appreciated that the exemplary embodiment or exemplary embodiments are only examples, and are not intended to limit the scope, applicability, or configuration in any way. Rather, the foregoing summary and detailed description will provide those skilled in the art with a convenient road map for implementing at least one exemplary embodiment, it being understood that various changes may be made in the function and arrangement of elements described in an exemplary embodiment without departing from the scope as set forth in the appended claims and their legal equivalents. Generally, this application is intended to cover any adaptations or variations of the specific embodiments discussed herein.

[0032] In this document, the terms "comprise", "comprising", "include", "including", "contain", "containing", "have", "having", and any variations thereof, are intended to be understood in an inclusive (i.e. non-exclusive) sense, such that the process, method, device, apparatus or system described herein is not limited to those features or parts or elements or steps recited but may include other elements, features, parts or steps not expressly listed or inherent to such process, method, article, or apparatus. Furthermore, the terms "a" and "an" used herein are intended to be understood as meaning one or more unless explicitly stated otherwise. Moreover, the terms "first", "second", "third", etc. are used merely as labels, and are not intended to impose numerical requirements on or to establish a certain ranking of importance of their objects.

[0033] List of Reference Signs

1	apparatus
2	frame
3	frame member
4	intermediate zone
5	access opening for passenger cabin
6	access opening for restricted zone or cockpit
7	access opening for crew rest area
8	gate
9	gate member
9'	gate member
10	join or interface
11	edge of gate member
12	gate opening
13	outer surface of the gate
14	inner surface of the frame member
15	slot or groove
16	key or tongue
17	flange
18	shoulder
20	aircraft
21	fuselage
22	cockpit
A	longitudinal axis or gate axis

Claims

1. An apparatus (1) for controlling ingress into and egress from a restricted zone or compartment, comprising:

   a frame (2) configured to be mounted fixed in an access area having at least two access openings (5, 6); and
   a gate (8) movably mounted to said frame (2) for movement around a longitudinal gate axis (A) to open and close the at least two access openings (5, 6);
   wherein the gate (8) comprises two gate members (9, 9') which are configured for movement in a combined state and in a separated state,
   wherein, in the combined state, the gate members (9, 9') are configured to be moved together as an integral or unitary gate structure and wherein, in the separated state, the gate members (9, 9') are movable independently of one another.

2. An apparatus (1) according to claim 1, wherein, in the combined state, the gate (8) is configured to maintain at least one of the access openings (5, 6) closed at all times.

3. An apparatus (1) according to claim 1 or 2, wherein, in the separated state, the gate members (9,9') are movable to open both the access openings (5, 6) simultaneously.

4. An apparatus (1) according to any one of claims 1 to 3, wherein, in the combined state, the gate members (9, 9') are configured to meet or join with one another along a line or interface (10).

5. An apparatus (1) according to claim 4, wherein the gate members (9, 9') respectively present inter-engaging or interlocking profiles along said line or interface (10).

6. An apparatus (1) according to any one of claims 1 to 5, wherein a first one (5) of the access openings (5, 6) communicates with a public zone and at least a second one (6) of the access openings (5, 6) communicates with a restricted zone, wherein the apparatus (1) defines an intermediate zone (4) between the access openings (5, 6) for accommodating at least one person, and wherein the gate (8) is movable to respectively close or isolate the intermediate zone (4) from either or both of the public zone and the restricted zone.

7. An apparatus (1) according to any one of claims 1 to 6, wherein, in both the combined state and the separated state, the gate members (9, 9') are configured to rotate or revolve about the longitudinal gate axis (A) to open and close the access openings (5, 6).

8. An apparatus (1) according to any one of claims 1 to 7, wherein, in the combined state, the gate members (9, 9') together define a gate opening (12) and the gate (8) is movable to align the gate opening (12) with one of said access openings (5, 6) in an open position to permit passage there-through.

9. An apparatus (1) according to any one of claims 1 to 8, wherein, in the combined state, movement of the gate (8) is controlled between open and closed positions for each of the access openings.

10. An apparatus (1) according to any one of claims 1 to 9, further comprising a control device for controlling movement of the gate between open and closed positions for each of the at least two access openings (5, 6).

11. An apparatus (1) according to any one of claims 1 to 10, further comprising controllable stop means for arresting the gate (8), in the combined state, in one of at least three discrete positions including a first open position permitting passage between the public zone and the intermediate zone (4), a second open position permitting passage between the intermediate zone and the restricted zone, and a third position for preventing unauthorized entry to or exit from the intermediate zone (4).

12. A vehicle, especially an aircraft (20) or a spacecraft, having an apparatus (1) for controlling ingress into and egress from a restricted zone or compartment of the vehicle, especially a cockpit (22), according to any one of the preceding claims.

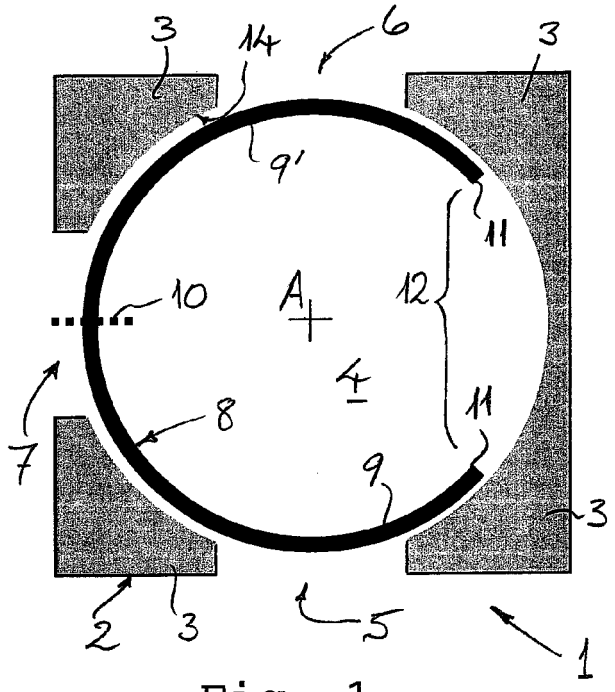


Fig. 1

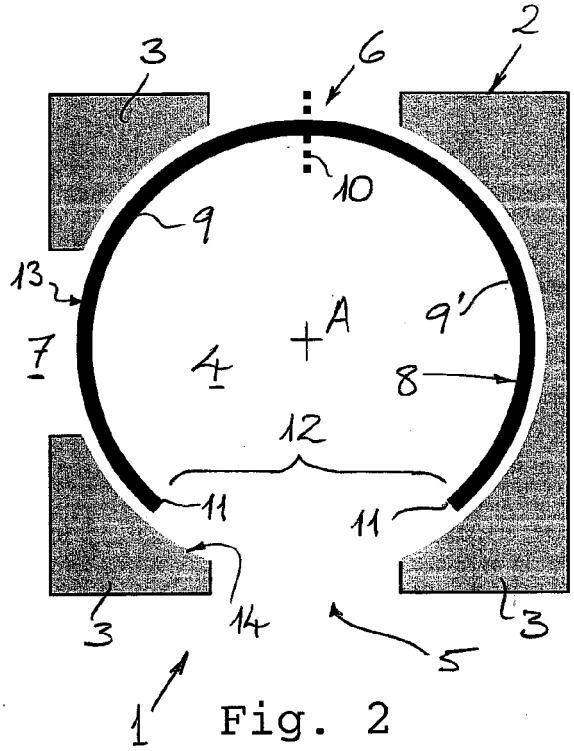


Fig. 2

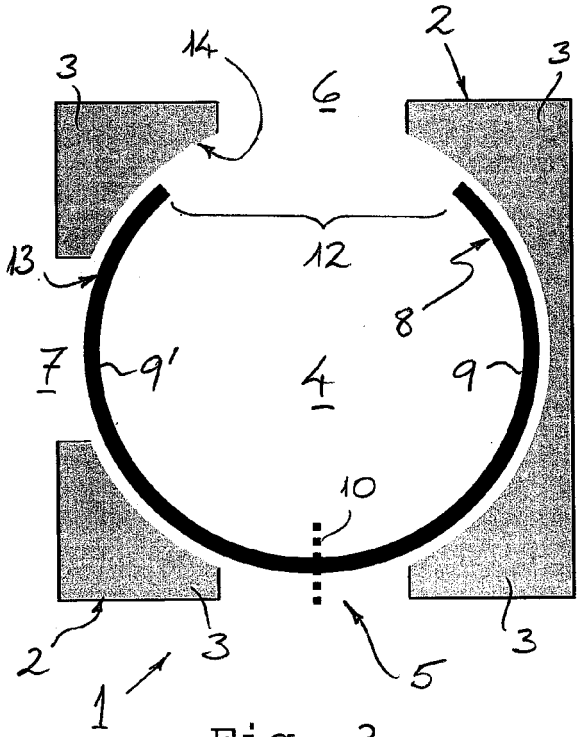


Fig. 3

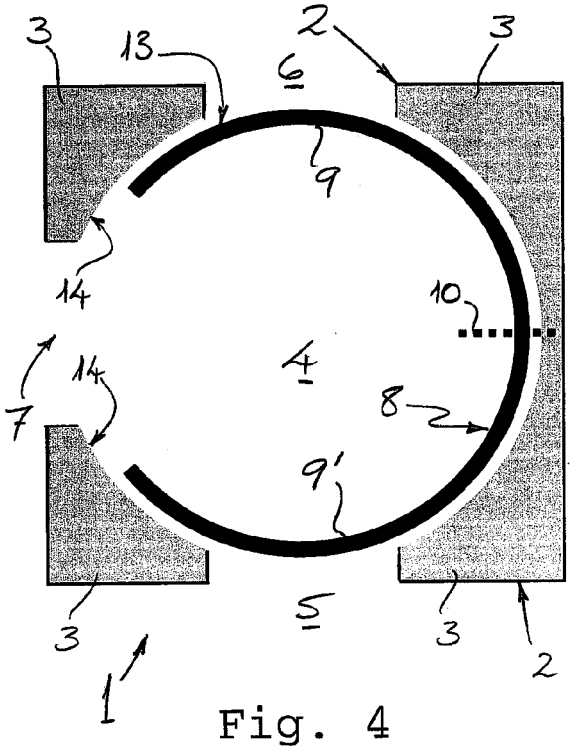


Fig. 4

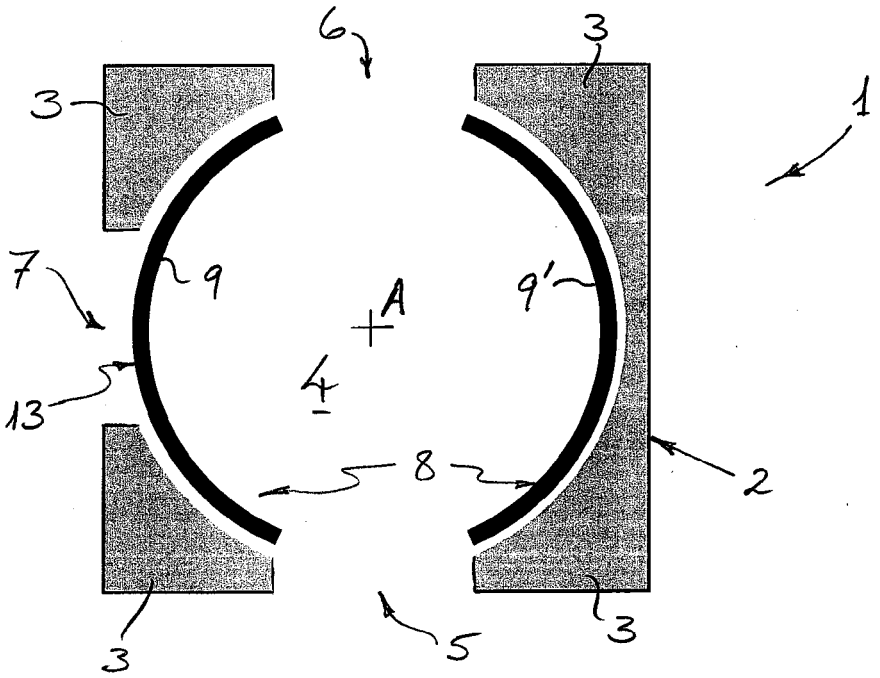


Fig. 5

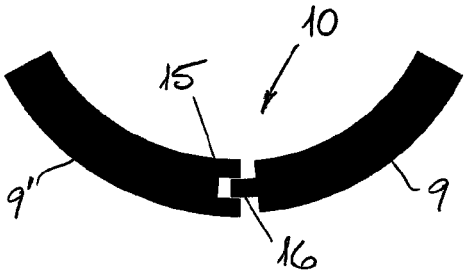


Fig. 6

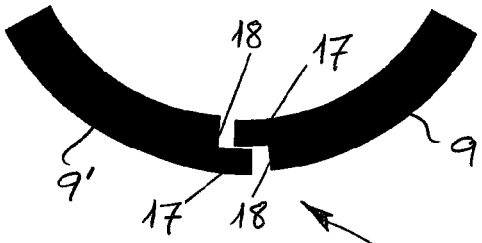


Fig. 7

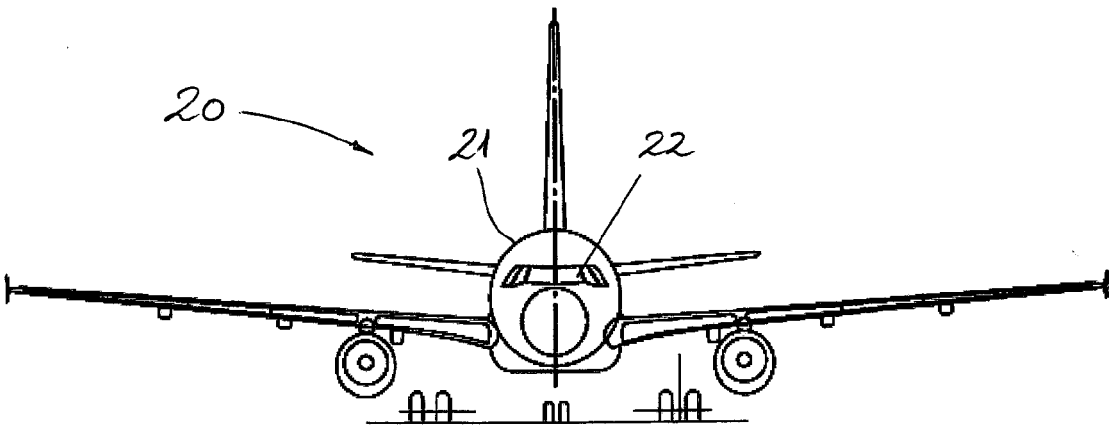


Fig. 8

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EUROPEAN SEARCH REPORT

Application Number
EP 12 17 8735

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TECHNICAL FIELDS SEARCHED (IPC)

E06B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	16 January 2013	Gallego, Adoración

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