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(54) **DOOR FOR LIFTS AND ELEVATORS**

TÜR FÜR AUFZÜGE UND FÖRDERVORRICHTUNGEN

PORTE POUR ASCENSEURS ET MONTE-CHARGES

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- **PATENT ABSTRACTS OF JAPAN** vol. 096, no. 001, 31 January 1996 & JP 07 247084 A (MITSUBISHI DENKI BILL TECHNO SERVICE KK), 26 September 1995
- **PATENT ABSTRACTS OF JAPAN** vol. 096, no. 002, 29 February 1996 & JP 07 267557 A (MITSUBISHI DENKI BILL TECHNO SERVICE KK), 17 October 1995

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Description

[0001] The present invention relates to a door for lifts and elevators.

[0002] In doors for lifts and elevators it is already known to use anti-closing safety devices which intervene to stop the movement of the door and reverse the direction thereof, in the case where the door encounters an obstacle along its path.

[0003] In particular a known device as disclosed in US-A-5,394,961 for example, comprises a first fixed component, associated with the frame of the doorway and acting as a supplier of energy for a second component which is associated with the door, movably therewith, and is provided with means for generating a plurality of signals (in particular a network of infrared rays which intersect each other so as to monitor the doorway zone) and communicates with the fixed component in order to activate, if necessary, stoppage of the movement of the door with subsequent reversal of the direction of movement.

[0004] The first and the second components are electrically connected together only when the door is in the completely closed or completely open condition, while in the other situations the second component has its own independent energy supply which is sufficient to cover the travel of the door.

[0005] The second component, in fact, is provided with an energy storage cell of the chemical or capacitive type which supplies power to the signal generating means and is periodically recharged at the end-of-travel points where it is coupled to the first fixed component.

[0006] Said safety device requires, however, the creation of a special longitudinal member for housing the infrared sensors/emitters, which is mounted on the outside of each door as a separate element.

[0007] Moreover, the component associated with the door and containing the electronic circuitry for managing the sensors and for managing communication with the fixed component associated with the frame of the doorway requires a box-shaped housing which is in turn mounted on the door.

[0008] It is therefore necessary to provide a special member and a special box-shaped housing which must be mounted on the door in order to convert it into an "electronically sensitive" door.

[0009] The object of the present invention is to eliminate the abovementioned drawbacks and provide an electronically sensitive door which incorporates directly the electronic anti-closing safety means without requiring the presence of the member and the box-shaped housing mentioned above.

[0010] Said objects are fully achieved by the door according to claim 1 of the present invention, wherein the door is formed so as to have seats which incorporate the electronic anti-closing safety means associated with the door itself, without the need for providing special members or additional box-shaped housings.

[0011] In particular the door comprises a plurality of sensors which are arranged in a first channel formed by the profile of the door; an electronic circuit for controlling said sensors, which is directly fixed to ribs reinforcing the door itself and connected by means of cables to the sensors; a connector connected to the electronic control circuit by means of cables and positioned in a second channel formed by the profile of the door. Said connector is coupled to a corresponding connector of a power supply device fastened to the fixed frame of the doorway, whenever the door reaches the end of its opening or closing travel movement.

[0012] These and other characteristic features will emerge more clearly from the following description of two preferred embodiments illustrated, purely by way of a non-limiting example, in the accompanying illustrative plates, in which:

- Figures 1 and 2 show a front view of the door according to two different embodiments of the connections of the anti-closing safety device;
- Figure 3 shows a cross-section along the line A-A of the door according to Figure 1;
- Figure 4 shows a cross-section through the door, the same as that of Figure 3, according to a variation of embodiment which envisages a substantially symmetrical profile of the door.

[0013] With reference to the Figures, 1 denotes in its entirety a door for lift or elevator doorways, the profile 2 of which is configured so as to form a first channel 3 and a second channel 4 and reinforcing ribs 5.

[0014] The first channel 3 and the second channel 4 are positioned on the two opposite vertical longitudinal sides of the door and may be different from one another (as in the case of Figure 3) or coincide, as in the case of Figure 4, where the door thus becomes reversible, being able to be symmetrically mounted either as a right-hand or left-hand door.

[0015] The first channel 3 houses internally a so-called light barrier, of the known type, consisting of a plurality of sensors which are arranged longitudinally inside the first channel 3 and schematically denoted by 6 and are designed to detect the presence of obstacles such as persons, objects or animals along the opening or closing path of the door, namely along the threshold of the doorway.

[0016] Said sensors are connected by means of cables 7 to an electronic circuit 8 for controlling and managing said sensors, which is in turn connected by means of cables 9 to a connector 10 which is located in an original manner inside the second channel 4 of the door, in accordance with that shown in Figure 1.

[0017] The ribs 5 act as support and seat for the electronic circuit 8.

[0018] The connector 10 is coupled to a corresponding connector 12 represented by a component fastened to the fixed frame of the door.

[0019] This component, which is also known, has the function of supplying power to the electronic circuit 8 and hence the sensors 6 whenever the door reaches the end of its opening or closing travel path in accordance with a known technique.

[0020] According to the variation of embodiment shown in Figure 2, the cables 9 connect the electronic circuit 8 directly to a power source associated with the fixed frame of the doorway or the cage.

[0021] The original feature of the present door lies in the particular configuration thereof which allows the sensors 6 and the connector 10 and the electronic circuit 8 to be housed without requiring an additional member for the sensors or a special box-shaped housing for the electronic circuit 8.

[0022] As a result of the constructional design with symmetrical and opposite channels 3 and 4, it is moreover possible to use the door equally well as a right-hand or left-hand door, namely a reversible door is obtained.

[0023] 11 denotes a protection cover mounted on the electronic circuit 8.

[0024] As a result of the present invention it is therefore possible to obtain an electronically "sensitive" door, namely a door incorporating the electronic means for creating an anti-closing safety system.

of the door (1).

3. Door according to Claim 2, in which the first channel (3) and the second channel (4) are positioned on the two opposite vertical longitudinal sides of the door (1).
4. Door according to Claim 2, in which the first channel (3) and the second channel (4) are opposite and identical to one another so that the door is symmetrical and may be reversibly mounted as a right-hand or left-hand door.
5. Door according to Claim 2, in which the second component comprises a plurality of sensors (6) housed in the first channel (3), an electronic circuit (8) for controlling said sensors, which is housed inside the ribs (5), a connector (10) positioned inside the second channel (4), and cables (7,9) for connecting together electronic circuit (8) and sensors (6) and electronic circuit (8) and connector (10).
6. Lift or elevator, **characterized in that** it comprises one or more doors according to any one of the preceding claims.

Claims

1. Door (1) for lifts and elevators, of the type for doorways provided with electronic anti-closing safety means comprising at least a first main component (12) associated with the fixed structure of the doorway and at least one second component (6, 8, 10) associated with one or more doors and hence movable with respect to the fixed first main component (12), in which said first and second components are not necessarily connected together by means of cables (7, 9) and the second component (6, 8, 10) draws power from the first component (12), in a continuous manner if they are connected by means of cables or in a discontinuous manner whenever the door, at the end of the opening or closing travel movement, couples together the first and second components if they are not connected by means of cables, **characterized in that** the door (1) is configured so as to have seats (3, 4, 5) inside which said at least one second component (6, 8, 10), is incorporated without the presence of special members or box-shaped housings.
2. Door according to Claim 1, in which said seats comprise:
 - a first channel (3) formed by the profile (2) of the door (1);
 - ribs (5) for reinforcing the door (1);
 - a second channel (4) formed by the profile (2)

Patentansprüche

1. Tür (1) für Lifte und Aufzüge, der Art für Eingänge, die mit elektronischen Sicherheitseinrichtungen zur Schliesskontrolle ausgestattet sind, umfassend mindestens ein erstes, der feststehenden Eingangsstruktur zugeordnetes Hauptbauteil (12) und mindestens ein zweites, einer oder mehreren Türen zugeordnetes und demzufolge gegenüber dem feststehenden, ersten Hauptbauteil (12) bewegliches Bauteil (6, 8, 10), wobei das genannte erste und das zweite Bauteil nicht unbedingt über Kabel (7, 9) miteinander verbunden sind, und das zweite Bauteil (6, 8, 10) dem ersten Bauteil (12) regelmäßig Energie entzieht, wenn diese beiden Bauteile mit Hilfe von Kabeln miteinander verbunden sind, bzw. unregelmässig immer dann, wenn die Tür bei Beendigung der Öffnungs- bzw. Schliessbewegung das erste mit dem zweiten Bauteil koppelt, sofern diese Bauteile nicht mit Hilfe von Kabeln verbunden sind, **dadurch gekennzeichnet, dass** die Tür (1) mit Sitzen (3,4,5) ausgebildet ist, in denen das genannte mindestens eine zweite Bauteil (6, 8, 10) ohne Anordnung von Spezialelementen oder kastenförmigen Aufnahmen eingebaut ist.
2. Tür nach Anspruch 1, bei der die genannten Sitze umfassen:
 - einen ersten, aus dem Profil (2) der Tür (1) bestehenden Kanal (3);

- Rippen (5) zur Verstärkung der Tür (1);
 - einen zweiten, aus dem Profil (2) der Tür (1) bestehenden Kanal (4).
3. Tür nach Anspruch 2, bei dem der erste Kanal (3) und der zweite Kanal (4) auf zwei einander gegenüberliegenden, senkrechten Längsseiten der Tür (1) angeordnet sind.
4. Tür nach Anspruch 2, bei dem der erste Kanal (3) und der zweite Kanal (4) gegengleich ausgebildet sind, so dass die Tür symmetrisch ist und als rechts- oder linksöffnende Tür einbaubar ist.
5. Tür nach Anspruch 2, bei der das zweite Bauteil eine Vielzahl von in dem ersten Kanal (3) angeordneten Sensoren (6), einen elektronischen in den Rippen (5) angeordneten Schaltkreis (8) zur Steuerung der genannten Sensoren, einen in dem zweiten Kanal (4) angeordneten Schalter (10) und Kabel (7, 9) zum Verbinden des elektronischen Schaltkreises (8) mit den Sensoren (6) sowie des elektronischen Schaltkreises (8) mit dem Schalter (10) umfasst.
6. Lift oder Aufzug, **dadurch gekennzeichnet, dass** dieser eine oder mehrere Türen nach einem der vorhergehenden Ansprüche umfasst.

Revendications

1. Une porte (1) pour ascenseurs et élévateurs, du type pour encadrements de porte pourvus de moyens électroniques de sécurité anti-fermeture comprenant au moins un premier composant principal (12) associé à la structure fixe de l'encadrement de porte et au moins un second composant (6, 8, 10) associé à une ou plusieurs portes et donc mobile par rapport au premier composant principal fixe (12), dans laquelle lesdits premier et second composants ne sont pas nécessairement reliés entre eux au moyen de câbles (7, 9) et le second composant (6, 8, 10) est actionné par le premier composant (12) de manière continue s'ils sont reliés par des câbles ou de manière discontinue si les portes, à la fin du mouvement d'ouverture ou de fermeture, accouplent entre eux le premier et le second composant s'ils ne sont pas reliés par des câbles, **caractérisée en ce que** la porte (1) est configurée de manière à présenter des logements (3, 4, 5) à l'intérieur desquels est incorporé au moins ledit second composant (6, 8, 10).
2. Une porte selon la revendication 1, dans laquelle lesdits logements comprennent:
- un premier canal (3) formé par le profilé (2) de la porte (1);

- des nervures (5) pour renforcer la porte (1);
 - un second canal (4) formé par le profilé (2) de la porte (1).
3. Une porte selon la revendication 2, dans laquelle le premier canal (3) et le second canal (4) sont positionnés sur les deux côtés verticaux longitudinaux opposés de la porte (1).
4. Une porte selon la revendication 2, dans laquelle le premier canal (3) et le second canal (4) sont opposés et identiques l'un à l'autre de manière à ce que la porte soit symétrique et puisse être montée de manière réversible en tant que porte s'ouvrant à gauche ou à droite.
5. Une porte selon la revendication 2, dans laquelle le second composant comprend une pluralité de capteurs (6) logés dans le premier canal (3), un circuit électronique (8) pour contrôler lesdits capteurs, logé dans les nervures (5), un connecteur (10) positionné dans le second canal (4), et des câbles (7, 9) pour relier entre eux le circuit électronique (8) et les capteurs (6), ainsi que le circuit électronique (8) et le connecteur (10).
6. Ascenseur ou élévateur, **caractérisé en ce qu'il** comprend une ou plusieurs portes selon n'importe laquelle des revendications précédentes.



