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(54) **Closing systems for movable platforms**

Schließsysteme für bewegliche Plattformen

Systèmes de fermeture pour plateformes mobiles

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Description

Field of the Invention

[0001] The present invention relates to a system for operating the opening and closing of doors in movable platforms pertaining to a universal and accessible transport system for people/goods.

Background of the Invention

[0002] In reference to the field of actuating transport systems for passengers/goods including closing doors in the passenger platform, the need for a solution that reduces the overall dimensions of the equipment and that protects the user during the path in dangerous situations such as possible falls and blows is detected.

[0003] The most common transport systems having a platform for passengers on the market with closing means are vertical moving equipment such as elevators. These elevators use a door closing and opening system located both in the passenger car (car doors) and on the floor (floor doors), the operation of which is located in the upper part of the car and it has a telescopic horizontal movement that increases its constructive dimensions since it requires space in the side part in order to open the doors.

[0004] A need to find an improved movable car closing system which allows increasing the possibilities of the movement of the different cars in these systems for allowing new movement trajectories without limiting them to vertical movement trajectories of elevators and which in turn allow improvements in terms of the overall dimensions of the equipment which entail reduced construction work is detected.

[0005] WO 00/07922 A1, EP 0 650 918 A2, DE 202 01 676 U1 and JP 52 103568 U all disclose a closing system for movable transport platforms according to the preamble of claim 1.

Description of the Invention

[0006] The present invention relates to a system for closing and opening doors in a platform pertaining to a system for the transport of people/goods, with the fundamental feature that the opening/closing movement is performed following a curved trajectory. Therefore, the invention relates to a closing system for movable platforms as defined in the set of claims.

[0007] The system comprises drive means, which comprise a rack and pinion system moving the door which is supported on a set of support wheels on a V-shaped guiding which provides rigidity to the door and geometrically determine the trajectory of the closing/opening movement of the door. Once closed, the doors project over the floor of the platform, preventing having to make a slot in the floor, as occurs with current doors with mechanism located in the lower part. The distance between

the floor and the lower part of the projecting door in the closed position is in accordance with the parameters indicated in the regulations in force on transport systems and goods for preventing trapping.

[0008] An aspect of the invention relates to a closing system for movable platforms as defined in the set of claims.

Brief Description of the Drawings

[0009] A series of drawings which aid in better understanding the two proposals of the invention and which are expressly related to the embodiment of said invention presented as a non-limiting embodiment thereof is very briefly described below.

Figure 1 shows a perspective view of the system of the invention.

Figure 2 shows a perspective view of one of the support and drive columns.

Figure 3 shows a detailed view of the support and drive column.

Figure 4 shows a perspective view of the support column.

Figure 5 shows a perspective view of the door of the system.

Description of Preferred Embodiments of the Invention

[0010] The system described in detail below.

[0011] The system comprises two clearly distinguished areas; on one hand there is the door (1) itself which has an inner structure (10) providing it with rigidity and on which the V-shaped guides (4) and the lower rack (5) are secured. The V-shaped guides (4) are located: two in the upper part and two in the lower part, and the rack (5), is located in the lower part and in the area outside the passenger area, such that the rack (5) and, therefore, the drive system are not within reach of the user. At the same time, there will be a coating which covers the structure of the door and serves as an element providing comfort to the user and an aesthetic appearance to the platform. The second element forming the system is formed by the support columns (2, 3), which are fixed to the structure of the platform (15). These support columns (2, 3) can be tubular elements for reducing the weight of the assembly. The height-adjustable supports (6) for the support wheels (7) are located on these columns. The V-shaped guides (4) slide on these support wheels (7) and will provide the rolling path of the door (1), since the profile of these support wheels (7) copies the profile of the guide (4) and, therefore, the support wheels (7) have a V-shaped rolling profile. The shape of the V-shaped profile of the support wheels (7) conjugated with the V-shaped guide (4) allows a more guided rolling. Each support column (2, 3), one on each side of the structure of the door (10), will have 4 support wheels (7) distributed as follows, two in the upper part and two in the lower part, whereby

providing great stability to the closing/opening movement of the door (1). On the other hand, said support wheels (7) are assembled on height-adjustable supports (6) which are adjusted in height in order to align and fix the support wheels (7) against the V-shaped guides (4) and to allow a precise adjustment of the assembly of the door (1) to prevent vibrations in the closing/opening movement of the door (1). These height-adjustable supports (6) are fixed to the support columns (2, 3). One of the two support columns is referred to as support and drive column (2), since the part of the drive system made up of a pinion (9) operated by a gear motor (8) is assembled therein. The rotating movement of the pinion (9) allows the rack (5) assembled on the door (1) to be moved following the trajectory of the V-shaped guides (4) and performing the closing and opening movements of the door. The gear motor (8) and pinion (9) assembly is fixed in the inner part of the support and drive column (2) and distanced from the useful passenger area such that it is inaccessible for the passenger.

[0012] The invention thus relates to a closing system for movable transport platforms for passengers/goods having:

- front doors (1, 11), configured for:
 - allowing/preventing an entrance/exit of passengers/goods to a floor of the movable platform in loading/unloading areas;
 - preventing passengers/goods from falling from the floor of the movable platform in transport during an outbound path from the loading area to the unloading area;
- opening/closing means for moving the front doors (1, 11) between an opened position and a closed position;

[0013] In the closing system:

- the front doors (1, 11):
 - are curved for reducing the width necessary for housing the platform inside the system and for increasing the rigidity for impacts of the door against a flat door;
 - have an inner wall oriented towards an inner part of the movable platform;
 - have an outer wall visible from a part outside the movable platform;
 - have an inner reinforcement structure (10) between the inner wall and the outer wall configured for increasing the rigidity of the front door (1, 11);
- the opening/closing means:
 - comprise operating means for generating an

opening/closing movement;

- comprise drive means connected at a first end to the operating means and at a second end to the front doors (1, 11), configured for transmitting the opening/closing movement from the operating means to the front doors (1, 11);

- are located in areas inaccessible for the passengers from inside the movable platform.

[0014] Other features of the invention are included below:

- The front doors (1, 11) comprise 2 independent leaves having a movement:
 - synchronized by an element selected from the drive means and the operating means;
 - configured for reducing a front door (1, 11) opening/closing time and a loading/unloading time.
- The movable platform has a platform side height and the front doors (1, 11) have a door height h less than the platform side height H , $h < H$.
- The front doors (1, 11) further comprise telescopic panels (1', 11') configured for being vertically moved;
 - between a drawn-in position in an inner part of the front door (1, 11);
 - and an extended position for reaching a minimal safety height at least equal to an anti-fall protective barrier height. The minimal safety height will be at least 900 mm.

[0015] The closing system for movable platforms further comprises:

- guiding means configured for guiding the doors (1, 11) in the opening/closing movement for defining a movement trajectory of the doors (1, 11) assuring geometric tolerances of the opening/closing movement.
- The operating means comprise a plurality of gear motors (8, 13).
- The drive means comprise a plurality of mechanical gears (5, 9 and 12, 14).

[0016] In the transmission mechanism of the opening/closing movement of the doors, which is of the rack and pinion type:

- the doors (1) comprise:
 - a plurality of guides (4) fixed to the inner structure (10):
 - two guides (4) in an upper part of the door (1):

- a guide (4) in the inner wall;
 - a guide (4) in the outer wall;
 - a rack (5) fixed to the inner structure (10) located in a lower part of the outer wall of the door (1); 5
 - the movable platform comprises:
 - a plurality of support wheels (7) assembled in height-adjustable supports (6): 10
 - four support wheels (7) in an upper part of the movable platform: 15
 - two support wheels (7) in a support column (3) facing the inner wall;
 - two support wheels (7) in a drive column (2) facing the outer wall;
 - a pinion (9) configured for engaging with the rack (5) and generating the opening/closing movement of the door (1), assembled in the drive column (2); 20
 - a gear motor (8) configured for operating the pinion (9), assembled in the drive column (2). 25
- [0017]** The doors (1) comprise: 25
- two guides (4) in a lower part of the door (1):
 - a guide (4) in the inner wall;
 - a guide (4) in the outer wall. 30
- [0018]** The movable platform comprises:
- four support wheels (7) in a lower part of the movable platform: 35
 - two support wheels (7) in a support column (3) facing the inner wall;
 - two support wheels (7) in a drive column (2) facing the outer wall. 40
- [0019]** The guides (4) and the support wheels (7) have conjugated V shapes wherein:
- the guides (4) have a V-shaped cross-section forming a protuberance; 45
 - the support wheels (7) have a V-shaped cross-section forming a groove having a depth configured for allowing a guided rolling of the guides (4) on the support wheels (7). 50
- [0020]** The front doors (1, 11) are configured for maintaining a distance between a lower part of the front doors (1, 11) and the floor of the movable platform selected from greater than 20 mm and less than 6 mm. 55

Claims

1. A closing system for movable transport platforms for passengers/goods comprising:

- front doors (1, 11), configured for:

- allowing/preventing an entrance/exit of passengers/goods to a floor of the movable platform in loading/unloading areas;
- preventing passengers/goods from falling from the floor of the movable platform in transport during an outbound path from the loading area to the unloading area;

- opening/closing means for moving the front doors (1, 11) between an opened position and a closed position;

- the front doors (1, 11):

- are curved;
- have an inner wall oriented towards an inner part of the movable platform;
- have an outer wall visible from a part outside the movable platform;
- have an inner reinforcement structure (10) between the inner wall and the outer wall configured for increasing the rigidity of the front door (1, 11);

- the opening/closing means:

- comprise operating means for generating an opening/closing movement;
- comprise driving means connected at a first end to the operating means and at a second end to the front doors (1,11), configured for transmitting the opening/closing movement from the operating means to the front doors (1,11);
- are located in areas inaccessible for the passengers from the inside of the movable platform,

the closing system **characterized in that**

- the doors (1) comprise:

- a plurality of guides (4) fixed to the inner structure (10):

- two guides (4) in an upper part of the door (1):

- a guide (4) in the inner wall;
- a guide (4) in the outer wall;

- a rack (5) fixed to the inner structure (10)

- located in an inner part of the outer wall of the door (1);
- the movable platform comprises:
 - a plurality of support wheels (7) assembled in height-adjustable supports (6):
 - four support wheels (7) in an upper part of the movable platform:
 - two support wheels (7) in a support column (3) facing the inner wall;
 - two support wheels (7) in a drive column (2) facing the outer wall;
 - a pinion (9) configured for engaging with the rack (5) and generating the opening/closing movement of the door (1), assembled in the drive column (2);
 - a gear motor (8) configured for operating the pinion (9), assembled in the drive column (2).
2. The closing system for movable transport platforms for passengers/goods of claim 1, **characterized in that** the front doors (1, 11) comprise two independent leaves having a movement synchronized by an element selected from the driving means and the operating means; configured for reducing a front door (1, 11) opening/closing time and a loading/unloading time.
3. The closing system for movable transport platforms for passengers/goods of any of claims 1-2, **characterized in that** the movable platform has a platform side height H and the front doors (1, 11) have a door height h less than the platform side height H, $h < H$.
4. The closing system for movable transport platforms for passengers/goods of any of claims 1-3, **characterized in that** the front doors (1, 11) further comprise telescopic panels (1', 11') configured for being vertically moved;
 - between a drawn-in position in an inner part of the front door (1, 11);
 - and an extended position for reaching a minimal safety height at least equal to an anti-fall protective barrier height.
5. The closing system for movable transport platforms for passengers/goods of any of claims 1-4, **characterized in that** it further comprises guiding means configured for guiding the doors (1, 11) in the opening/closing movement for defining a movement trajectory of the doors (1, 11) assuring geometric tolerances of the opening/closing movement by means of V-shaped guides (4) for guiding curved doors.
6. The closing system for movable transport platforms for passengers/goods of any of claims 1-5, **characterized in that** the operating means comprise a plurality of gear motors (8, 13).
7. The closing system for movable transport platforms for passengers/goods of any of claims 1-6, **characterized in that** the driving means comprise a plurality of mechanical gears (5, 9, 12, 14).
8. The closing system for movable transport platforms for passengers/goods of claim 1, **characterized in that**
 - the doors (1) comprise:
 - two guides (4) in a lower part of the door (1):
 - a guide (4) in the inner wall;
 - a guide (4) in the outer wall;
 - the movable platform comprises:
 - four support wheels (7) in a lower part of the movable platform:
 - two support wheels (7) in a support column (3) facing the inner wall;
 - two support wheels (7) in a drive column (2) facing the outer wall.
9. The closing system for movable transport platforms for passengers/goods of claim 8, **characterized in that** the guides (4) and the support wheels (7) have conjugated V shapes wherein:
 - the guides (4) have a V-shaped cross-section forming a protuberance;
 - the support wheels (7) have a V-shaped cross-section forming a groove having a depth configured for allowing a guided rolling of the guides (4) on the support wheels (7).
10. The closing system for movable transport platforms for passengers/goods of any of claims 1-9, **characterized in that** the front doors (1, 11) are configured for maintaining a distance between an lower part of the front doors (1, 11) and the floor of the movable platform selected from greater than 20 mm and less than 6 mm.

Patentansprüche

1. Schließsystem für bewegliche Transportplattformen für Passagiere/Waren, umfassend:
- Vordertüren (1, 11), die ausgebildet sind, um:

- einen Eingang/Ausgang von Passagieren/Waren auf dem Boden der beweglichen Plattform in Belade-/Entladebereichen zu ermöglichen/verhindern;
 - ein Fallen der Passagiere/Waren vom Boden der beweglichen Plattform beim Transport während eines abgehenden Weges vom Beladebereich zum Entladebereich zu verhindern;
 - Öffnungs-/Schließmittel zum Bewegen der Vordertüren (1, 11) zwischen einer geöffneten Position und einer geschlossenen Position;
 - die Vordertüren (1, 11):
 - sind gebogen;
 - haben eine zu einem Innenteil der beweglichen Plattform hin ausgerichtete Innenwand;
 - haben eine von einem Teil außerhalb der beweglichen Plattform aus sichtbare Außenwand;
 - haben eine innere Verstärkungsstruktur (10) zwischen der Innenwand und der Außenwand, ausgebildet für die Erhöhung der Steifigkeit der Vordertür (1, 11);
 - die Öffnungs-/Schließmittel:
 - umfassen Betriebsmittel zur Erzeugung einer Öffnungs-/Schließbewegung;
 - umfassen Antriebsmittel, die an einem ersten Ende mit den Betriebsmitteln und an einem zweiten Ende mit den Vordertüren (1, 11) verbunden sind, ausgebildet für die Übertragung der Öffnungs-/Schließbewegung von den Betriebsmitteln zu den Vordertüren (1, 11);
 - befinden sich in für die Passagiere vom Innenraum der beweglichen Plattform aus unzugänglichen Bereichen,
- wobei das Schließsystem **dadurch gekennzeichnet ist, dass**
- die Türen (1):
 - eine Vielzahl von Führungen (4), die an der Innenstruktur (10) befestigt sind;
 - zwei Führungen (4) an einem oberen Teil der Tür (1):
 - eine Führung (4) an der Innenwand;
 - eine Führung (4) an der Außenwand;
 - eine Zahnstange (5), die an der Innenstruktur (10), die sich in einem Innenteil der Außenwand der Tür (1) befindet, festge-
- setzt ist, umfassen;
- die bewegliche Plattform:
 - eine Vielzahl von Stützrädern (7), die an höhenverstellbaren Stützen (6) angeordnet sind;
 - vier Stützräder (7) an einem oberen Teil der beweglichen Plattform:
 - zwei Stützräder (7) an einer Stützsäule (3) gegenüber der Innenwand;
 - zwei Stützräder (7) an einer Antriebssäule (2) gegenüber der Außenwand;
 - ein Ritzel (9), das für den Eingriff mit der Zahnstange (5) und die Erzeugung der Öffnungs-/Schließbewegung der Tür (1), an der Antriebssäule (2) angeordnet, ausgebildet ist;
 - einen Getriebemotor (8), der für den Betrieb des Ritzels (9), an der Antriebssäule (2) angeordnet, ausgebildet ist, umfasst.
2. Schließsystem für bewegliche Transportplattformen für Passagiere/Waren nach Anspruch 1, **dadurch gekennzeichnet, dass** die Vordertüren (1, 11) zwei unabhängige Blätter, die durch ein Element, ausgewählt aus den Antriebsmitteln und den Betriebsmitteln, eine synchronisierte Bewegung haben, umfassen; ausgebildet zur Reduzierung einer Öffnungs-/Schließzeit und einer Belade-/Entladezeit einer Vordertür (1, 11).
 3. Schließsystem für bewegliche Transportplattformen für Passagiere/Waren nach einem der Ansprüche 1-2, **dadurch gekennzeichnet, dass** die bewegliche Plattform eine Plattform-Seitenhöhe H hat und die Vordertüren (1, 11) eine Türhöhe h geringer als die Plattform-Seitenhöhe H haben, $h < H$.
 4. Schließsystem für bewegliche Transportplattformen für Passagiere/Waren nach einem der Ansprüche 1-3, **dadurch gekennzeichnet, dass** die Vordertüren (1, 11) ferner Teleskopplatten (1', 11') umfassen, die ausgebildet sind, um vertikal bewegt zu werden;
 - zwischen einer eingezogenen Position in einem Innenteil der Vordertür (1, 11);
 - und einer ausgefahrenen Position zum Erreichen einer Mindestsicherheitshöhe mindestens gleich einer Absturzsicherheitsbarrierenhöhe.
 5. Schließsystem für bewegliche Transportplattformen für Passagiere/Waren nach einem der Ansprüche

- 1-4, **dadurch gekennzeichnet, dass** es ferner Führungsmittel umfasst, die zur Führung der Türen (1, 11) bei der Öffnungs-/Schließbewegung ausgebildet sind, um eine Bewegungsbahn der Türen (1, 11) zu definieren und dabei geometrische Toleranzen der Öffnungs-/Schließbewegung durch V-förmige Führungen (4) zur Führung gebogener Türen zu gewährleisten.
6. Schließsystem für bewegliche Transportplattformen für Passagiere/Waren nach einem der Ansprüche 1-5, **dadurch gekennzeichnet, dass** die Betriebsmittel eine Vielzahl von Getriebemotoren (8, 13) umfassen.
7. Schließsystem für bewegliche Transportplattformen für Passagiere/Waren nach einem der Ansprüche 1-6, **dadurch gekennzeichnet, dass** die Antriebsmittel eine Vielzahl von mechanischen Zahnrädern (5, 9, 12, 14) umfassen.
8. Schließsystem für bewegliche Transportplattformen für Passagiere/Waren nach Anspruch 1, **dadurch gekennzeichnet, dass**
- die Türen (1):
 - zwei Führungen (4) an einem unteren Teil der Tür (1) umfassen:
 - eine Führung (4) an der Innenwand;
 - eine Führung (4) an der Außenwand;
 - die bewegliche Plattform:
 - vier Stützräder (7) an einem unteren Teil der beweglichen Plattform umfasst:
 - zwei Stützräder (7) an einer Stützsäule (3) gegenüber der Innenwand;
 - zwei Stützräder (7) an einer Antriebs säule (2) gegenüber der Außenwand.
9. Schließsystem für bewegliche Transportplattformen für Passagiere/Waren nach Anspruch 8, **dadurch gekennzeichnet, dass** die Führungen (4) und die Stützräder (7) konjugierte V-Formen haben, wobei:
- die Führungen (4) einen V-förmigen Querschnitt haben, der eine Erhöhung bildet,;
 - die Stützräder (7) einen V-förmigen Querschnitt haben, der eine Nut bildet, die mit einer Tiefe ausgebildet ist, die ein geführtes Abrollen der Führungen (4) auf den Stützrädern (7) zulässt.
10. Schließsystem für bewegliche Transportplattformen für Passagiere/Waren nach einem der Ansprüche

1-9, **dadurch gekennzeichnet, dass** die Vordertüren (1, 11) zur Aufrechterhaltung eines Abstandes, ausgewählt aus größer als 20 mm und kleiner als 6 mm, zwischen dem unteren Teil der Vordertüren (1, 11) und dem Boden der beweglichen Plattform ausgebildet sind.

Revendications

1. Un système de fermeture pour des plateformes de transport mobiles pour des passagers/biens comprenant :
- des portes frontales (1, 11), configurées pour :
 - permettre/empêcher une entrée/sortie de passagers/biens sur un sol de la plateforme mobile dans des zones de chargement/déchargement ;
 - empêcher des passagers/biens de tomber du sol de la plateforme mobile en transport durant un parcours en partance de la zone de chargement vers la zone de déchargement ;
 - des moyens d'ouverture/fermeture pour bouger les portes frontales (1, 11) entre une position ouverte et une position fermée ;
 - les portes frontales (1, 11) :
 - sont courbées ;
 - ont une paroi interne orientée vers une partie interne de la plateforme mobile ;
 - ont une paroi externe visible depuis une partie à l'extérieur de la plateforme mobile ;
 - ont une structure de renforcement interne (10) entre la paroi interne et la paroi externe configurée pour augmenter la rigidité de la porte frontale (1, 11) ;
 - les moyens d'ouverture/fermeture :
 - comprennent des moyens d'actionnement pour générer un mouvement d'ouverture/fermeture ;
 - comprennent des moyens d'entraînement connectés à une première extrémité des moyens d'actionnement et à une deuxième extrémité des portes frontales (1, 11), configurés pour transmettre le mouvement d'ouverture/fermeture aux portes frontales (1, 11) depuis les moyens d'actionnement ;
 - sont localisés dans des zones inaccessibles pour les passagers depuis l'intérieur de la plateforme mobile,

le système de fermeture est **caractérisé en ce que**

- les portes (1) comprennent :
 - une pluralité de guides (4) fixées à la structure interne (10) :
 - deux guides (4) sur une partie supérieure de la porte (1) :
 - un guide (4) dans la paroi interne ;
 - un guide (4) dans la paroi externe ;
 - une crémaillère (5) fixée à la structure interne (10) localisée dans une partie interne de la paroi externe de la porte (1) ;
 - la plateforme mobile comprend :
 - une pluralité de roues de support (7) montées sur des supports réglables en hauteur (6) :
 - quatre roues de support (7) sur une partie supérieure de la plateforme mobile :
 - deux roues de support (7) dans une colonne de support (3) en regard de la paroi interne ;
 - deux roues de support (7) sur une colonne d'entraînement (2) en regard de la paroi externe ;
 - un pignon (9) configuré pour engager la crémaillère (5) et générer le mouvement d'ouverture/fermeture de la porte (1), monté sur la colonne d'entraînement (2) ;
 - un moteur à engrainage (8) configuré pour actionner le pignon (9) monté sur la colonne d'entraînement (2).
- 2. Le système de fermeture pour des plateformes de transport mobiles pour des passagers/biens selon la revendication 1, **caractérisé en ce que** les portes frontales (1, 11) comprennent deux vantaux indépendants ayant un mouvement synchronisé par un élément sélectionné dans les moyens d'entraînement et les moyens d'actionnement ; configurés pour réduire le temps d'ouverture/fermeture d'une porte frontale (1, 11) et un temps de chargement/déchargement.
- 3. Le système de fermeture pour des plateformes de transport mobiles pour des passagers/biens selon l'une quelconque des revendications 1-2, caractérisé en ce que la plateforme mobile a une hauteur latérale de plateforme H et les portes frontales (1, 11) ont une hauteur de porte h inférieure à la hauteur latérale de la plateforme H, $h < H$.
- 4. Le système de fermeture pour des plateformes de transport mobiles pour des passagers/biens selon l'une quelconque des revendications 1-3, **caractérisé en ce que** les portes frontales (1, 11) comprennent en outre des panneaux télescopiques (1', 11') configurés pour être déplacés verticalement ;
 - entre une position ramassée dans une partie interne de la porte frontale (1, 11) ;
 - et une position étendue pour atteindre une hauteur de sécurité minimale au moins égale à une hauteur de barrière de protection anti-chutes.
- 5. Le système de fermeture pour des plateformes mobiles pour des passagers/biens selon l'une quelconque des revendications 1-4, **caractérisé en ce qu'il** comprend en outre des moyens de guidage configurés pour guider les portes (1, 11) dans le mouvement d'ouverture/fermeture pour définir une trajectoire de mouvement des portes (1, 11) garantissant des tolérances géométriques du mouvement d'ouverture/fermeture au moyen de guides en forme de V (4) pour guider des portes courbées.
- 6. Le système de fermeture pour des plateformes de transport mobiles pour des passagers/biens selon l'une quelconque des revendications 1-5, **caractérisé en ce que** les moyens d'actionnement comprennent une pluralité de moteurs à engrainage (8, 13).
- 7. Le système de fermeture pour des plateformes de transport mobiles pour des passagers/biens selon l'une quelconque des revendications 1-6, **caractérisé en ce que** les moyens d'entraînement comprennent une pluralité d'engrenages mécaniques (5, 9, 12, 14).
- 8. Le système de fermeture pour des plateformes de transport mobiles pour des passagers/biens selon la revendication 1, **caractérisé en ce que** :
 - les portes (1) comprennent :
 - deux guides (4) dans une partie inférieure de la porte (1) :
 - un guide (4) dans la paroi interne ;
 - un guide (4) dans la paroi externe ;
 - la plateforme mobile comprend :
 - quatre roues de support (7) dans une partie inférieure de la plateforme mobile :
 - deux roues de support (7) dans une colonne de support (3) en regard de la paroi interne ;

- deux roues de support (7) dans une colonne d'entraînement (2) en regard de la paroi externe.

9. Le système de fermeture pour des plateformes de transport mobiles pour des passagers/biens selon la revendication 8, **caractérisé en ce que** les guides (4) et les roues de support (7) ont des formes conjuguées en V dans lesquels :

- les guides (4) ont une coupe transversale en forme de V formant une protubérance ;
 - les roues de support (7) ont une coupe transversale en forme de V formant une rainure ayant une profondeur configurée pour permettre un roulement guidé des guides (4) sur les roues de support (7).

10. Le système de fermeture pour des plateformes de transport mobiles pour des passagers/biens selon l'une quelconque des revendications 1-9, **caractérisé en ce que** les portes frontales (1, 11) sont configurées pour maintenir une distance entre une partie inférieure des portes frontales (1, 11) et le sol de la plateforme mobile sélectionnée pour être supérieure à 20 mm et inférieure à 6 mm.

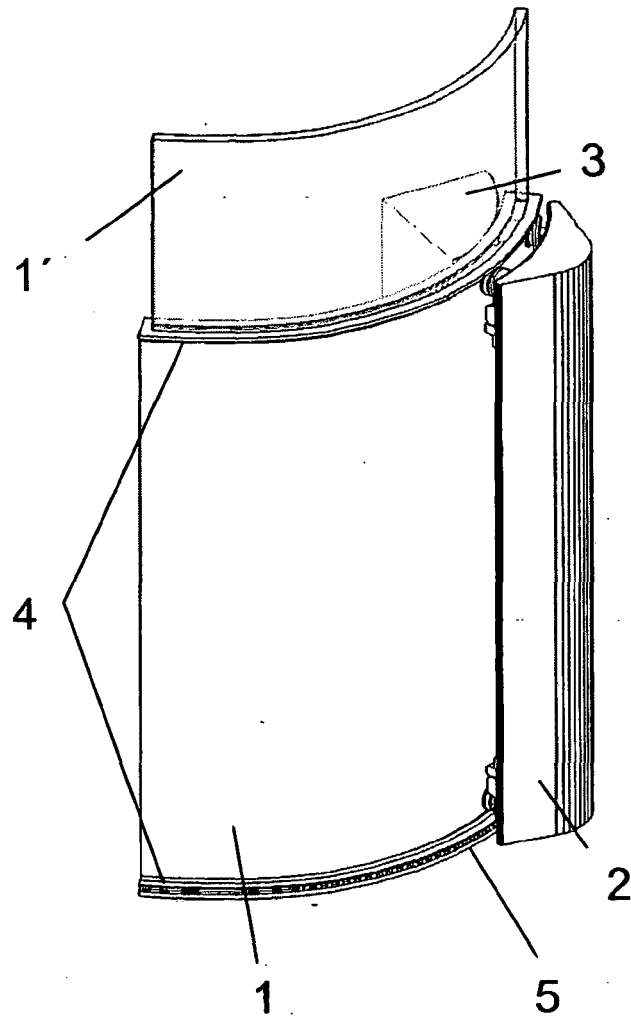


Fig. 1

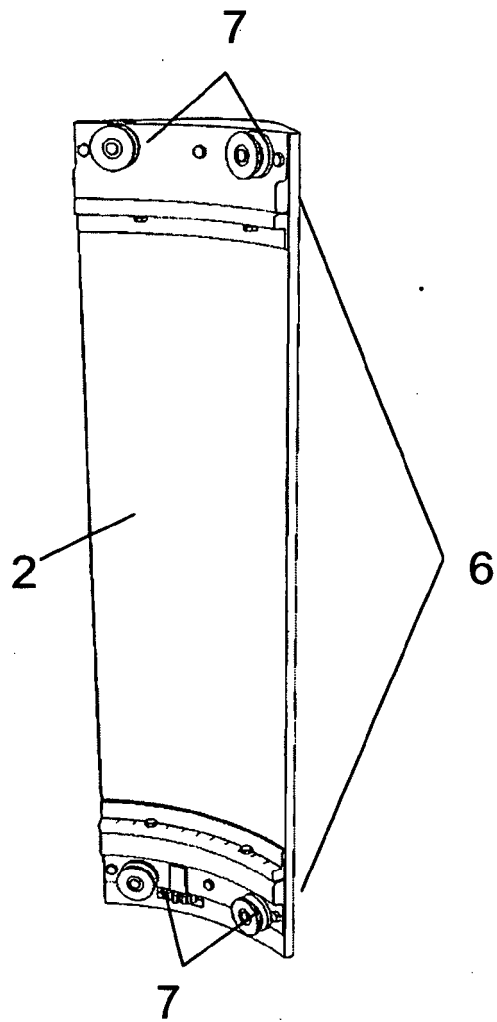


Fig. 2

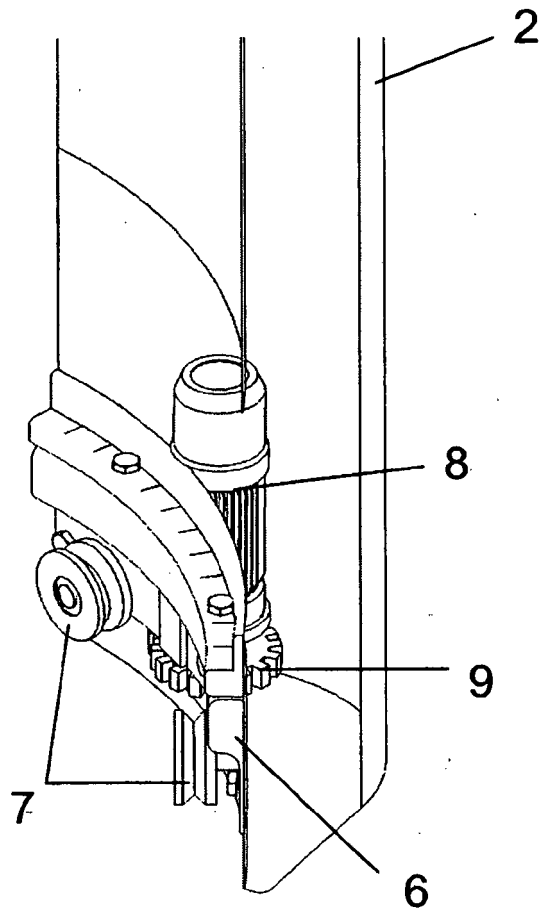


Fig. 3

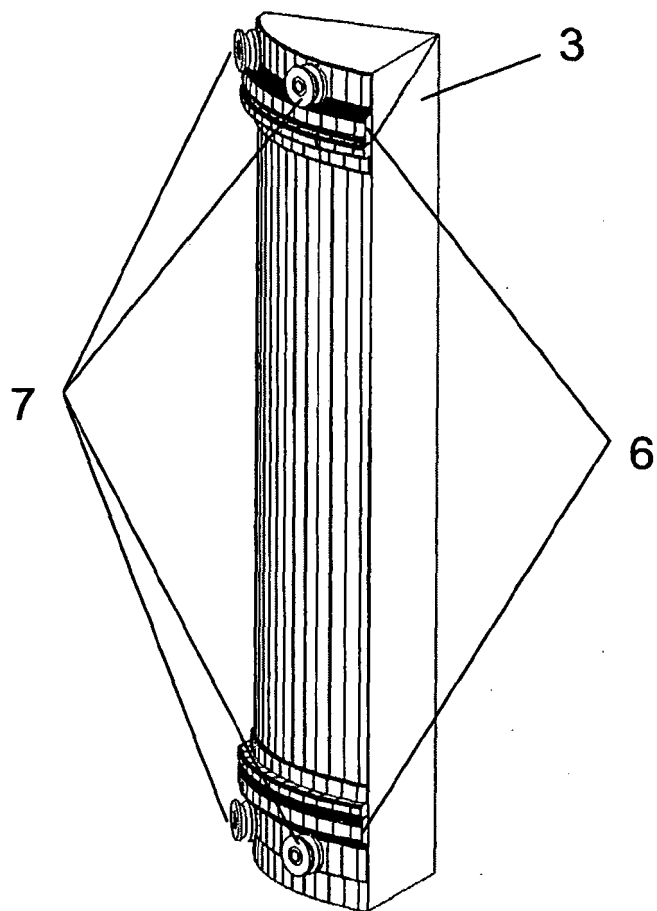


Fig. 4

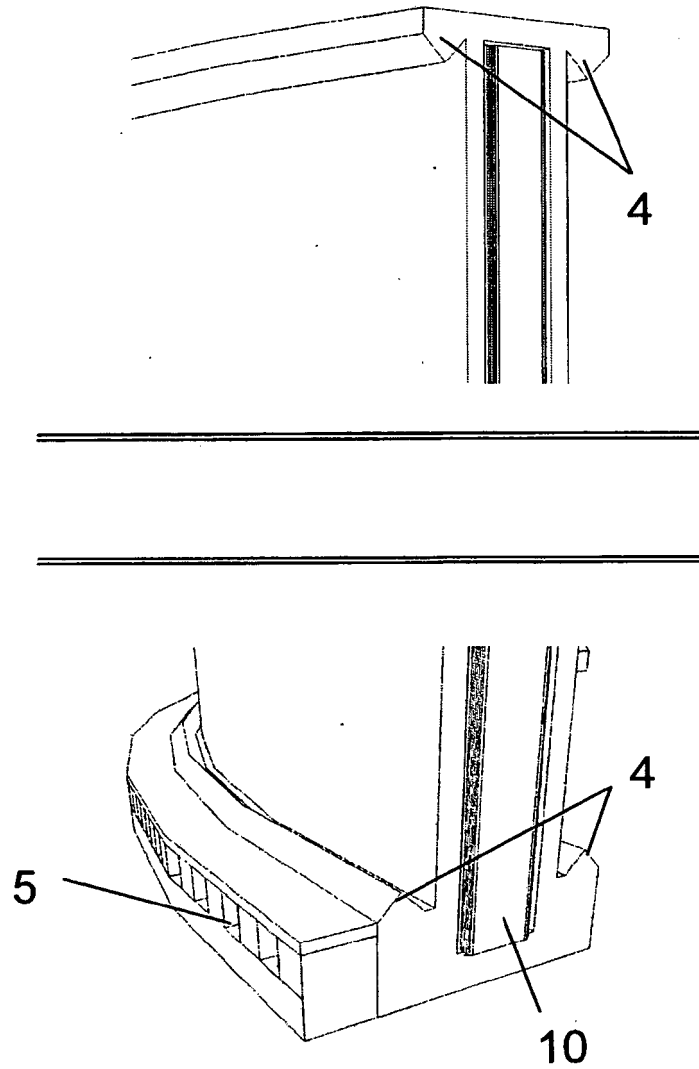


Fig. 5

REFERENCES CITED IN THE DESCRIPTION

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