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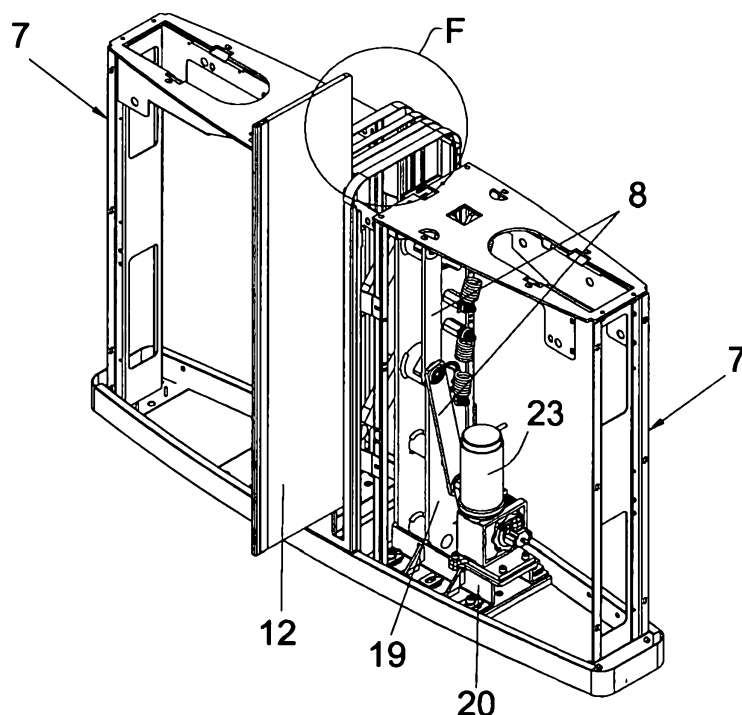
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(54) Title: PROTECTION SYSTEM FOR MOTORIZED PEDESTRIAN ACCESS PASSAGEWAYS



(57) Abstract: A protection system for motorized pedestrian access passageways, comprising a mechanism for the closing or opening of said passageways, suitable for activating at least one sliding and oscillating shutter (12), which emerges from and re-enters, respectively, the interior of at least one seat (25) of a shaped structure positioned to the side of the access passageway; the shutter (12) is fixed to a longitudinal covering strip (17) which is thus entrained along the seat (25), by means of side guides (9, 10), so as to inhibit access to the seat (25) when the shutter (12) is in a position which closes the passageway.

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PROTECTION SYSTEM FOR MOTORIZED PEDESTRIAN ACCESS PASSAGEWAYS

5 The present invention relates in general to a protection system for motorized pedestrian access passageways, such as those used for controlling the passage of people in places such as subways, airports, factories, offices, etc.

10 More specifically, the invention relates to a protection device for the sliding openings of oscillating shutters, which normally close said access passageways, suitable for covering said openings when the shutter is moved to close the access passageway.

15 A reference herein to a patent document or other matter which is given as prior art is not to be taken as an admission that that document or matter was known or that the information it contains was part of the common general knowledge as at the priority date of any of the claims.

Throughout the description and claims of this specification the word "comprise" and variations of that word, such as "comprises" and "comprising", are not intended to exclude other additives, components, integers or steps.

20 Motorized access passageways of the traditional type use a mechanism, activated by an alternate or direct current electric motor and relative power transformer, which supports the shutter and allows it to slide perpendicularly in the passage direction to open or close the passageway.

25 The movement of the shutter is preferably effected along a circumference arc, centered on the vertical line, so that the anticlockwise rotation of the electric motor allows the complete opening of the passageway, by the re-entry of the shutter itself, whereas the closing of the passageway is  
30 obtained with the clockwise rotation of the motor, through the exit of the shutter.

The activating logic of traditional movement devices varies according to the specific application and envisages the possibility of opening the passageway normally closed, after

appropriate activation (as in the case of subways), or closing the passageway normally open, in the case of the detection of an error condition (for example, in access passageways connected to a metal detector).

5 As already mentioned, these operations are effected as a result of an oscillating movement, according to which the shutter respectively moves downwards and re-enters the interior of a longitudinal seat of a specific structure, in order to allow the opening of the access passageway, and upwards, 10 emerging from the above longitudinal seat, to allow the closing of the access passageway.

In order to comply with the safety regulations of pedestrian access passageways, however, the absence of any type of opening and/or seat in general is increasingly requested, as 15 these can represent an evident danger for the users, above all during the automatic movement phase of the shutter.

It would therefore be desirable to overcome the above drawbacks and, in particular, to provide a protection system for motorized pedestrian access passageways, which allows the 20 passage of people under substantial safety conditions, avoiding accidents which can occur through the inexperience of the users.

It may also be desirable to provide a protection system for motorized pedestrian access passageways, which also has 25 antivandalism properties, in any case preventing the passage of people under control conditions of the passageway.

It may also be desirable to provide a protection system for motorized pedestrian access passageways, which is extremely practical, safe, functional and reliable, as well as 30 economical, in terms of production and operating costs, also in consideration of the advantages obtained.

According to the present invention, there is provided a protection system for motorized pedestrian access passageways, comprising a shaped structure with at least one seat situated

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5 to the side of the access passageway, a mechanism for the  
closing or opening of said passageway, at least one sliding  
shutter, which moves with an oscillating movement for the  
closing or opening of the passageway itself, respectively  
10 emerging from or re-entering said seat of said shaped  
structure, wherein said mechanism includes means for supporting  
and activating said sliding shutter, said sliding shutter being  
provided with fixing means to at least one portion of a  
longitudinal strip which is entrained by the sliding shutter  
15 along said seat, said longitudinal strip sliding inside side  
guides or aisles provided in prefixed positions of said shaped  
structure, so as to inhibit access to the seat when the sliding  
shutter is positioned to close the access passageway, wherein  
said sliding shutter is fixed to said longitudinal strip by  
20 means of at least rod-shaped hooking support, so that said  
sliding shutter integrally entrains said strip during the  
closing and opening movement of the passageway, said rod-shaped  
hooking support being constrained, by means of a sliding  
element, to guiding rod.

20 The system advantageously allows an active protection of  
the longitudinal seat where the sliding shutter is housed under  
open passageway conditions, when said passageway is closed,  
following the oscillating translation movement of the closing  
shutter.

This protection also avoids the accumulation of dust and/or the insertion of objects inside the seat which would jeopardize the opening and closing functioning of the passageway; in this sense, the system in question has important antivandalism characteristics, as it has a strong, solid and functional structure, and is also resistant to attempts at tampering and violation.

Further characteristics and advantages of a protection system for motorized pedestrian access passageways, according to the present invention, will appear more evident from the following illustrative and non-limiting description, referring to the enclosed schematic drawings, in which:

- 15 - figure 1 is a perspective view of a typical structure of a motorized pedestrian access passageway, in a closed passageway position;
- figure 2 is a side view of the structure according to figure 1;
- 20 - figure 3 is a sectional view along the line III-III of figure 2;
- figure 4 is an enlarged view of the detail indicated with E in figure 3, which illustrates a construction portion of the protection system for motorized pedestrian access passageways, according to the present

invention;

- figure 5 is an enlarged view of the detail indicated with F in figure 1;

- figure 6 is a partial perspective view of the  
5 structure according to figure 1;

- figure 7 is an enlarged view of the detail indicated with A in figure 6, which illustrates a further construction portion of the protection system for motorized pedestrian access passageways, according to  
10 the present invention;

- figure 8 is a side view of the construction detail according to figure 7;

- figure 9 is a partial sectional view along the line IX-IX of figure 8.

15 With reference to the above figures, a typical structure, suitable for controlling pedestrian access passageways, such as that shown in figure 1, generally has an outer shaped framework 7, positioned to the side of the access passageway and in which a movement and  
20 supporting mechanism is installed, of at least one oscillating shutter 12 (normally consisting of simple shaped and tempered glass), which is fixed to the supporting rod 6.

The movement and supporting mechanism of the  
25 oscillating shutter 12 envisages a jointed system

consisting of a series of rods and/or levers 8 and a pair of movement arms 28, hinged to the supporting rod 6 of the sliding shutter 12.

The levers 8 are centrally hinged on one side of a supporting structure 19, which in turn is fixed onto a base section 20 and, on the opposite side, supports arms 28 which are fitted in correspondence with the fulcra of the levers 8, so as to rotate integrally therewith.

Elastic elements 21 are also envisaged, fixed, in predetermined positions, to the central structure 19 and levers 8, which move in translation, causing the movement of the shutter 12.

This movement is transmitted to the levers 8 by a crank 22, by means of the electric motor 23.

At the base of the structure 19, there is a plate 24, positioned in vertical, which, in correspondence with the upper and lower run-end of the crank 22, carries a stop buffer and a micro-switch (not illustrated in the figures), to reveal the position of the crank 22.

The motor 23 can be of the direct current or alternate current type and incorporates a power transformer.

The particular arrangement of the jointed

mechanism described ensures that the movement of the oscillating shutter 12 effects a symmetrical oscillation of the levers 8 and arms 28.

In the position defined in the enclosed figures 1-5, the crank 22 is positioned just before its upper run-end and the shutter 12 is extended almost completely closing the access passageway, whereas figures 6-9 show the open position of the passageway, according to which the rotation of the arms 28 causes the lowering of the oscillating shutter 12, which re-enters one of the guiding seats 25 of the central comb element 26.

According to the present invention, access is inhibited from the outside to each of the above housing seats 25 envisaged in the element 26, in which the respective oscillating shutter 12 re-enters, in an open passageway position, by means of a strip 17, which is moved to cover the relative seat 25 as the oscillating shutter 12 translates into a closed position of the passageway and which, analogously, is moved backwards when the shutter 12 re-enters the housing seat, opening the passageway.

In particular, according to the invention, respective side guides or aisles 9 are created on the inner sides of the shaped portions 27 of the comb

element 26, arranged on both the vertical rest portions 30 of the rear of the shutter 12, and also on the facing horizontal portions 31 of the element 26, in addition to respective curved guides or aisles 10, 5 positioned in correspondence with the curvilinear connecting portions 29 between the respective horizontal portions 31 and vertical portions 30.

The guides 9 and 10 allow the covering strip 17 to slide in correspondence with the top of the respective 10 seats 25 of the central comb element 26, so as to totally cover the above seats 25 when the shutter 12 has emerged from the relative seat 25 closing the pedestrian access passageway (figures 1-5).

More specifically, the rear of the oscillating 15 shutter 12 is fixed to the covering strip 17 by means of a rod-shaped hooking support 18, in correspondence with the pin indicated with 11 in figure 4, so that the same oscillating shutter 12, during its closing and opening movement of the passageway, causes the 20 entrainment of the strip 17, which can therefore respectively close the seat 25, extending along the whole horizontal portion 31 of each shaped element 27, or open the seat 25, in which the shutter 12 is housed with the opening of the access passageway, withdrawing 25 inside the guide 9 situated along the vertical portion

30 of the element 27.

For this purpose, the hooking support 18 is also constrained, by means of a sliding element 15, to a guiding rod 14, fixed by means of supporting elements  
5 13.

The functioning of the protection system for motorized pedestrian access passageways, according to the present invention, is substantially as follows.

Starting from a position of the oscillating  
10 shutter 12 inside the respective seat 25 of the element 26, whereby the access passageway is left open (position shown in figures 6-9 enclosed), when the above oscillating shutter 12 is moved in translation to close the access passageway, the rear portion of the  
15 same shutter 12 is lifted, following the typical swinging movement of the closing shutter 12, entraining with it the covering strip 17 (fixed to the shutter 12 as described above), which is guided inside the aisle 9 and, in particular, between the shaped elements 3 fixed  
20 to the portion 30 by means of the fixing elements 5.

The profile 1 of the oscillating shutter 12 also causes the lifting of the wedge 2, which is interposed with respect to the element 27 by means of an elastic element, such as a spring 4, and in correspondence with  
25 which the strip 17 is hooked to the shutter 12.

In this way, as a result of the movement of the supporting and hooking element 18, which moves in a horizontal direction, and the guiding rod 14, which is moved first in a horizontal direction from the support  
5 18 and subsequently in a vertical direction, upon the lifting of the shutter 12 for the closing of the access passageway, each seat 25 is totally covered by the sliding of the strip 17 inside the guides 9, 10.

The characteristics of the protection system for  
10 motorized pedestrian access passageways, object of the present invention, appear clear from the above description, as also the advantages.

Finally, numerous other variants can obviously be applied to the protection system in question, all  
15 included in the novelty principles inherent in the inventive concept. It is also evident that, in the practical embodiment of the invention, the materials, forms and dimensions of the details illustrated can vary according to requirements and can be substituted  
20 with other technically equivalent elements.

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS:

5 1. A protection system for motorized pedestrian access passageways, comprising a shaped structure with at least one seat situated to the side of the access passageway, a mechanism for the closing or opening of said passageway, at least one sliding shutter, which moves with an oscillating movement for the closing or opening of the passageway itself, respectively  
10 emerging from or re-entering said seat of said shaped structure, wherein said mechanism includes means for supporting and activating said sliding shutter, said sliding shutter being provided with fixing means to at least one portion of a longitudinal strip which is entrained by the sliding shutter  
15 along said seat, said longitudinal strip sliding inside side guides or aisles provided in prefixed positions of said shaped structure, so as to inhibit access to the seat when the sliding shutter is positioned to close the access passageway, wherein said sliding shutter is fixed to said longitudinal strip by  
20 means of at least rod-shaped hooking support, so that said sliding shutter integrally entrains said strip during the closing and opening movement of the passageway, said rod-shaped hooking support being constrained, by means of a sliding element, to guiding rod.

25 2. The protection system according to claim 1, wherein said means for supporting and activating said sliding shutter comprise an activation motor with a power transformer, whose outlet shaft is hinged onto a crank, which moves a jointed system consisting of a series of rods and/or levers and of  
30 movement arms of said shutter, which rotate integrally with the levers and create a symmetrical oscillation, and a series of elastic elements, fixed to said levers, which move in translation.

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3. The protection system according to claim 1 or 2, wherein said shaped structure has a series of elements, situated in parallel, which define a series of said seats.

4. The protection system according to claim 3, wherein said side guides or aisles are positioned, for at least a prefixed section, on the opposite sides of said parallel elements, allowing the sliding of the longitudinal strip.

5. The protection system according to claim 3, wherein the closing movement of the sliding shutter causes a lifting of an upper profile of said shutter, said upper profile thus contacting connection and guiding means of the longitudinal strip, which are interposed with respect to said parallel elements of the shaped structure, by means of at least one elastic element.

6. The protection system according to any proceeding claim, wherein, during the movement of said sliding shutter for the closing of the access passageway, said rod-shaped hooking support can be moved in a horizontal direction, whereas said guiding rod can be moved in both a horizontal and vertical direction.

7. A protection system for motorized pedestrian access passageways substantially as herein described with reference to the accompanying drawings.

Fig. 2

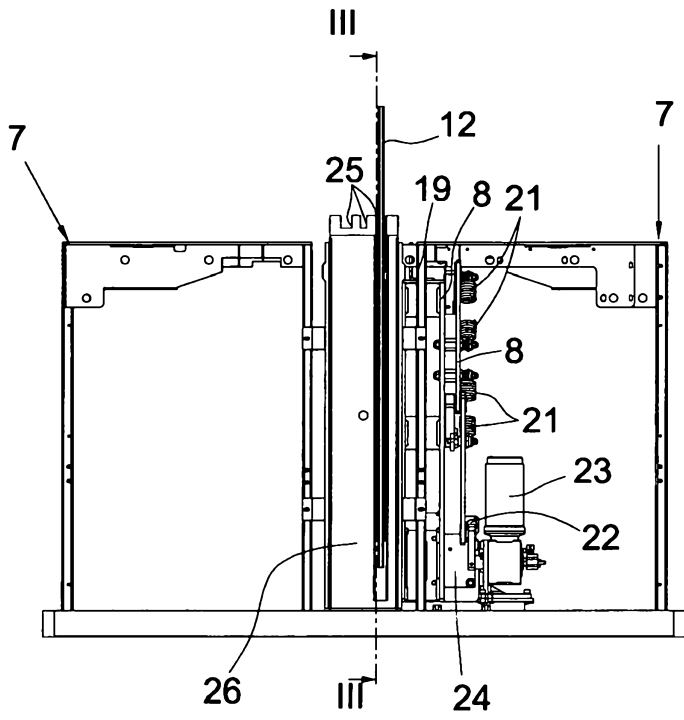


Fig. 3

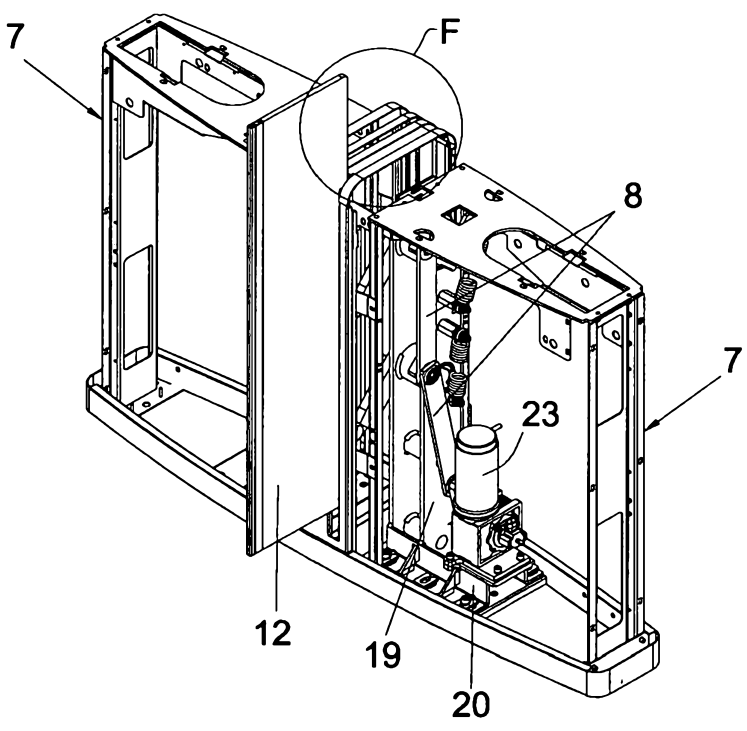
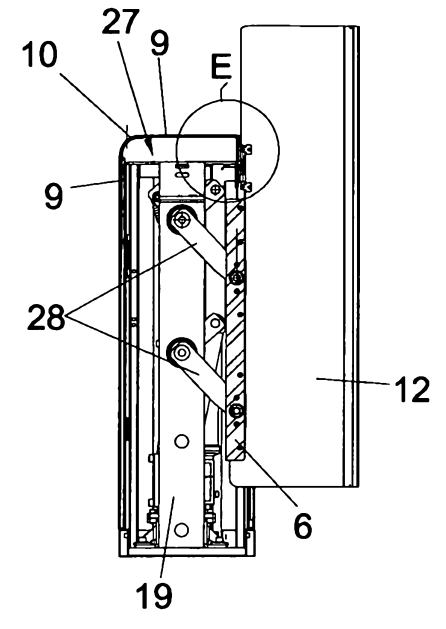


Fig. 1

Fig. 4

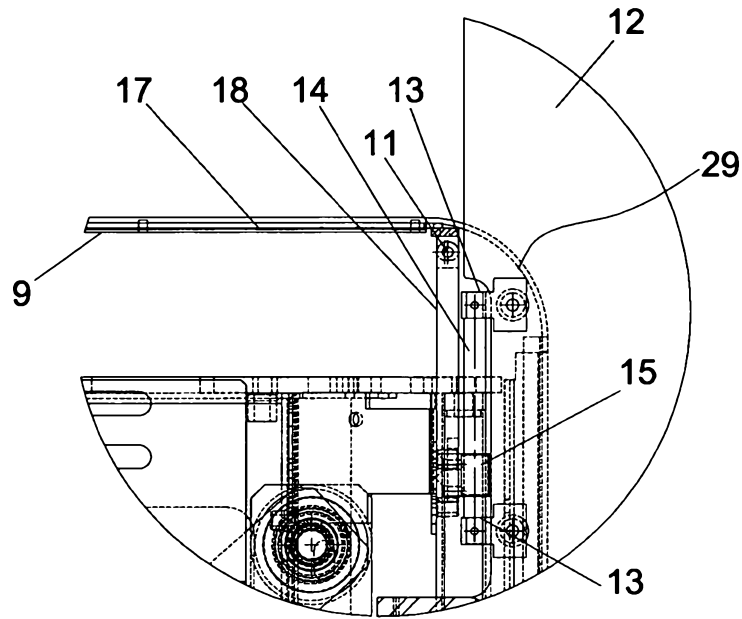
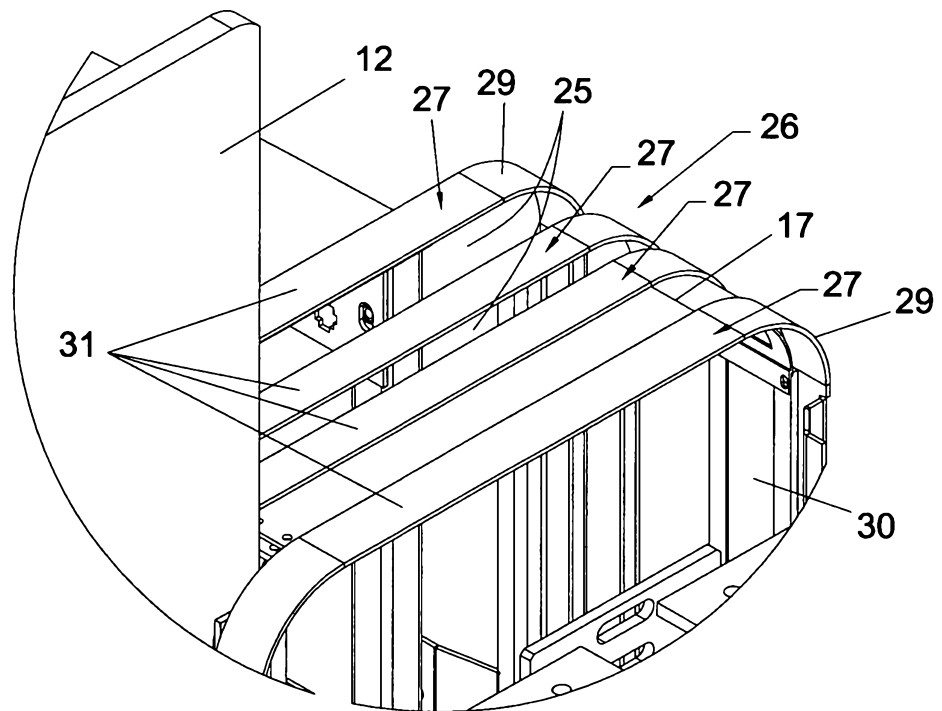
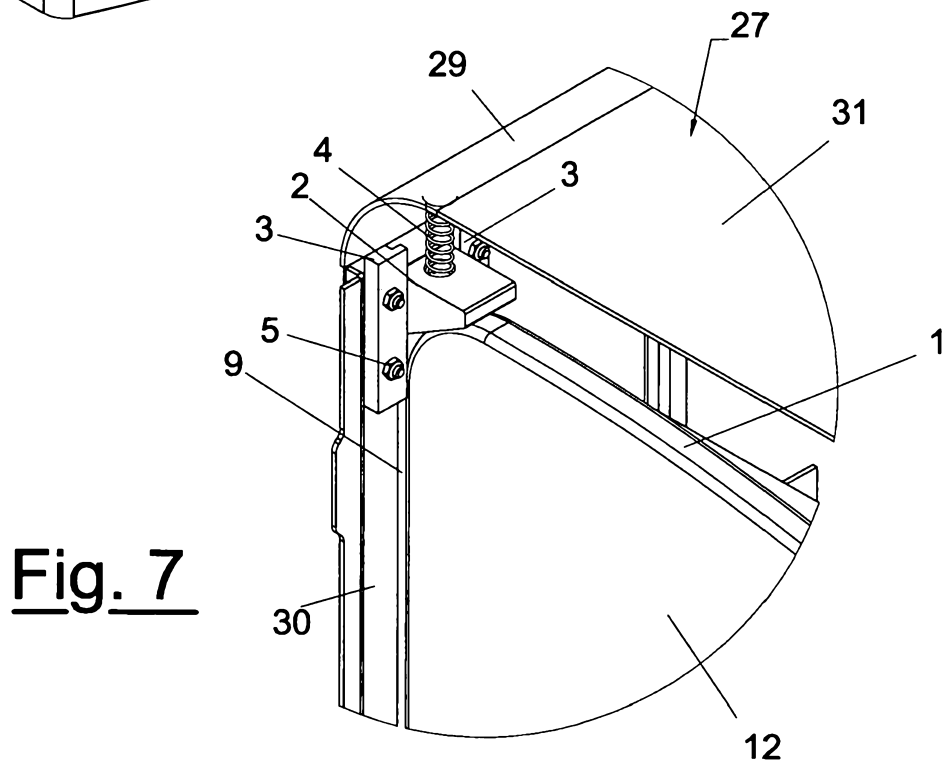
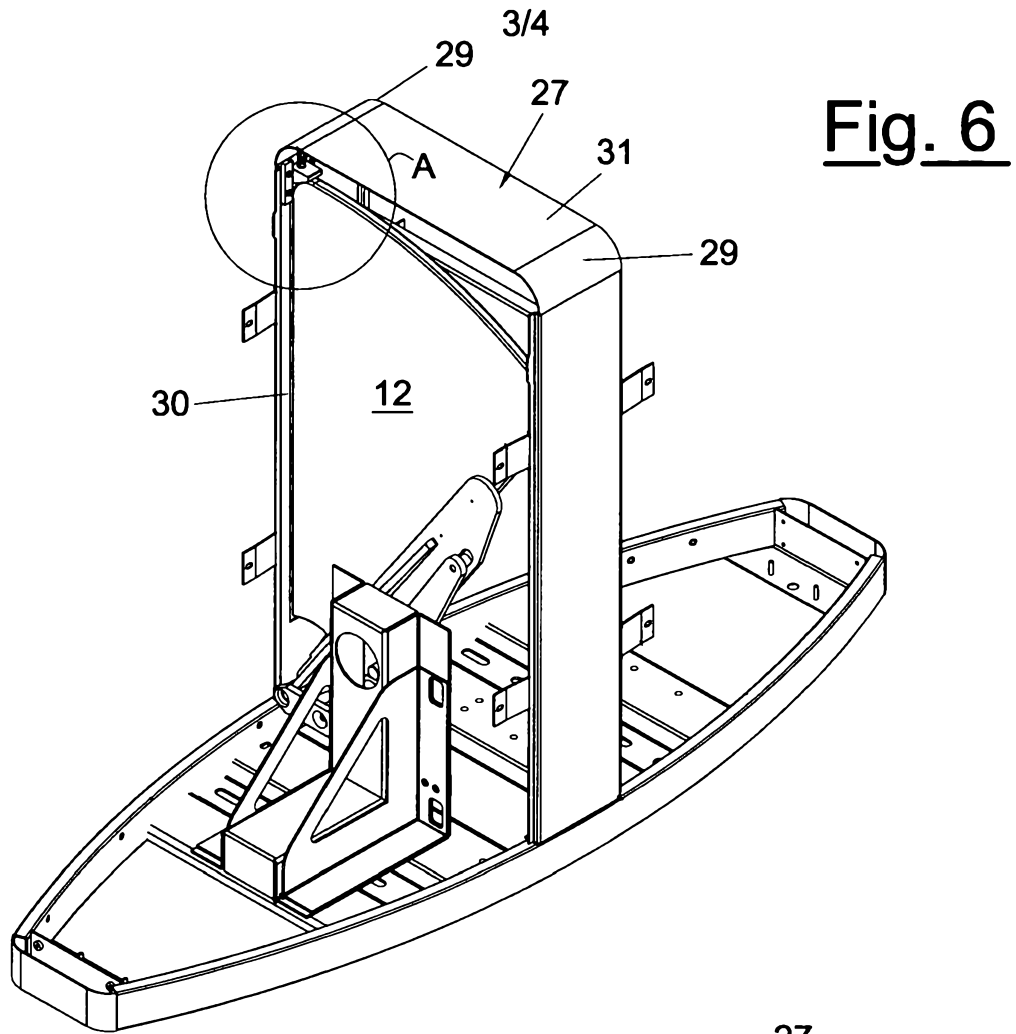


Fig. 5





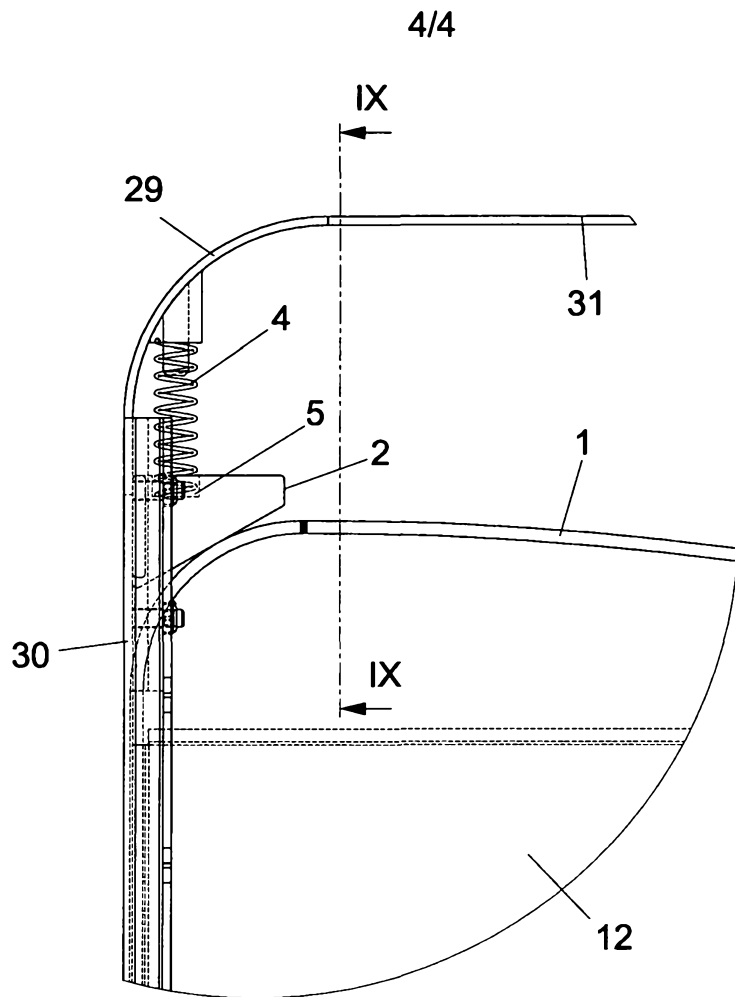


Fig. 8

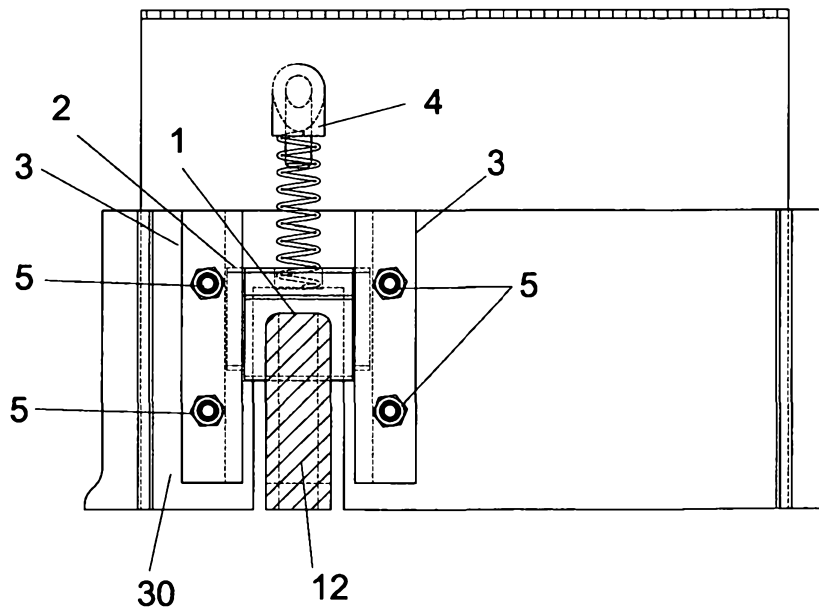


Fig. 9