Title: COMPACT, HIGHLY PREASSEMBLED, SECTIONED DOORS AND GATES

Abstract: The subject of the invention is a compact, highly preassembled, sectioned gate, which has a row of panels composed at least of two panels connected to each other, a vertical support and guide rail comprising it on both sides, at the edge, a horizontal support and roller rail attached to it at least on two points, the upper panel is closed to a brow element, it has on both sides a vertical roller rail on the vertical support and guide rail, which is fastened to the vertical support and guide rail, on both sides in the vertical roller rail there are guide rollers fastened onto the panels in the number equivalent at least to the number of the panels, moreover it has balancing springs. The invention is characterized by the fact that the horizontal support and roller rail (7) is interconnected by a swivel pin (8) to the vertical support and guide rail (2), the rear interconnecting rail (9) otherwise keeping the distance, interconnecting the rear ends of the two horizontal support and roller rails (7), used as a temporary threshold upon transportation, are fastened with a releasable joint to the lower ends of the two vertical support and guide rails (2), the brow element (3), the two vertical support and guide rails (2), as well as the rear interconnecting rail (9) are constructed as a compact frame comprising in this way the panels (1) and the pre-wound balancing springs (6).
For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.
COMPACT, HIGHLY PREASSEMBLED, SECTIONED DOORS AND GATES

The subject of the utility design covers compact, greatly preassembled, sectioned doors and gates, which can be used to close the large-size openings of buildings destined generally to vehicle traffic.

In practice a great number of solutions have been developed to open and close openings and gateways of different sizes. For garages, e.g. for passenger cars, doors and gates movable in vertical direction are used for opening and closing approx. 3 to 4 metres wide gates and doors. For a part of solutions like this the structure can either be wound like a roller blind onto an upper take-up drum and can be lowered therefrom or the elements can be telescoped and they ensure the closing of the opening by passing downwards from the upper edge of the opening.

The so-called garage gates of sectioned or lamellar system have similarly received a wide spread, for which the operation is ensured by counterbalancing by torsion or tension spring.

The solution set forth in the HU patent specification "Pull-up Lamellar Gate" with file number of 253/91 describes a solution linked up with this state of art, for which the gate has two vertical side posts, fastened to the ground, ensuring a penetration to the lamellas on two sides, a first axle winding up the lamellas and a driving unit found in driving connection with the axle. Pursuant to the solution, an element releasably supporting and embedding the upper axle winding up the lamellas, preferably an axle journal, is fastened onto the top of each vertical side post and the driving unit is mounted in the side posts.

A deficiency of this solution is that the lamellas are wound up in the opened state of the gate, therefore they are made of thin sheets, in consequence of which their thermal insulation is low and it is complicated, time-consuming and so uneconomical to mount and dismount in case of failure the axle to pull up the lamellas, as well as the axle journals supporting and embedding the former.

Moreover, such a solution is also known for which the folding-up of the panels takes place in a concertina-like manner, as for example described in the HU patent specification "Vertically Moved Door Structure of Concertina-like System" with file number of P9900465 published on 28.04.1999, but assembling the product in a compact way with pre-installed elements and in this manner its transportability to the site are not solved. In pursuance of the established practical experience accumulated over about 50 years it can be told in
summary that the considerable manufacturers of the world do use a unified design to a
great extent as regards the essential elements of doors and gates such as their panel
sizes, hinges, their guide rails, rollers etc. There are differences mostly in the outer
appearance and in the mode and conditions of "packaging". As regards the
commissioning of doors and gates, two main methods have got spread. Under one of
them, the manufacturer insists that the product should be incorporated only specially
qualified fitters, because this is the way that he can undertake guarantee for the safe
operation of the biggest gate of the residential building or industrial hall. In a contrary
case the incorporation can be exposed to accident risks. Under the other method the
manufacturer puts into circulation the so-called "kits" in a circumspect, more detailed
description, which can be installed by anybody at his own responsibility. For the on-site
installation the structure consists of three main parts, such as: panels, guide rails, springs
and other accessories.

As evidenced by the report published by „DODep" (American Gate Association), having
regard to the number of accidents, there is not any significant difference between the
two methods.

Due to the set-up of the doors and gates, the critical points are the same, such as:

- inaccurate installation of the guide rails
- wrong fitting of the panels
- incorrect adjustment of the guide rollers
- wrong assembly and/or adjustment of the compensation and safety structures
  (e.g. springs, fall inhibitior etc.).

The utility design has set it as an objective to eliminate the shortcomings of the solutions
described, so that of the critical points set forth in the foregoing and to produce
compact, sectioned doors and gates with high degree of preassembly, which can be
transported to the location of installation easily and free from damages, can be set up
without any problems by an unskilled user (manpower) on the site, can be installed during
a short time, exactly, with considerable reduction in the risks of accident, allowing in this
way an economical use.

The utility design is based on the recognition if a compact, highly preassembled, well
transportable, sectioned gate having a row of panels composed of at least two panels
connected to each other, vertical support and guide rail covering the former at the edge
on two sides, horizontal support and roller rail attached to the former at least on two
points, vertical roller rail fastened to it on the vertical support and guide rails on both sides,
terminating the upper panel by a brow element, a guide roller fastened onto them, equivalent on both sides at least to the number of the panels, moreover balancing springs which can be wound up in advance, as well as a swivel pin interconnecting the support and roller rail to the vertical support and guide rail, a rear interconnecting rail otherwise keeping the distance, interconnecting the rear ends of the two horizontal support and roller rails, and upon shipment a temporary threshold interconnecting the lower ends of the two vertical support and guide rails and in this way a framework consisting of the brow cornice element, of the two vertical support and guide rails, as well as of the rear interconnecting rail, then the gate so produced can be transported easily, free from damages, to the place of installation, can be set up without any problems by an unskilled user (manpower) on the site, can be installed during a short time, exactly, with a considerable reduction of the risks of accident and allowing in this way an economical use.

Thus, the subject of the utility design is covered by compact, highly preassembled, sectioned doors and gates, which have a row of panels composed of at least two panels connected to each other, vertical support and guide rails covering the former at the edge on two sides, horizontal support and guide rail attached to the former at least on two points. The upper panel is closed to a brow element, it has on both sides a vertical roller rail on the vertical support and guide rail, which is fastened to the vertical support and guide rail. The vertical roller rail houses on both sides guide rollers fastened onto the panels, equivalent at least to the number of panels, moreover it has counterbalancing springs.

The essence of the utility design is that the horizontal support and guide rails are interconnected by swivel pin to the vertical support and guide rails, upon transportation the rear interconnecting rail otherwise keeping the distance, interconnecting the rear ends of the two horizontal support and roller rails are as a temporary threshold fastened with releasable joint to the lower ends of the two vertical support and guide rails, the brow cornice element, the two vertical support and guide rails, as well as the rear interconnecting rail are constructed as a compact frame including in this way the pre-windable balancing springs and panels as well.
In an advantageous construction example of the gate under the utility design the pre-windable, balancing springs are fastened between the vertical support and guide rail and the row of panels.

In another advantageous construction example of the gate under the utility design the gate has a preinstalled motor located on the brow element to control the opening - closing of the gate.

The solution under the utility design is outlined in more details based on Figure 1, which represents the block diagram of an advantageous construction example of the gate, in closed condition, in rear view.

The gate under an advantageous construction example shown on Figure 1 does have a row of panels composed four panels 1 attached one to the other, vertical support and guide rails 2 comprising the four panels 1 at the edge on two sides, horizontal support and roller rail 7 connected at least on two points to the former. The upper panel 1n is closed to brow element 3, it has on both sides a vertical roller rail 4 on the vertical support and guide rail 2, which is fastened to the vertical support and guide rail 2. There are four guide rollers 5 located in the vertical roller rail 4 each on both sides and guide rollers 5 fastened onto the four panels, in addition, it has pre-windable balancing springs 6. The horizontal support and roller rail 7 is interconnected to the vertical support and guide rail 2 by swivel pin 8.

The rear ends of the horizontal support and roller rail 7 are interconnected by rear interconnecting rail 9 in order to observe distance.

The balancing springs 6 are constituted by the draw-spring system between the vertical support and guide rail 2 and the row of panels, for which the upper end of the spring is firmly fastened to a mobile roller G2 and its lower end is firmly fastened to the lower part of the vertical support and guide rail 2. There is a firm fling-over roller G1 fastened on the upper part of the vertical support and guide rail 2. Pretensioning of the spring takes place by means of a rope K so that one end of rope K is fastened to the lower point "D" of the lower panel 11 and its other end is fastened on a fixed point "C" in the vertical support and guide rail 2 through the fixed fling-over roller G1 and the mobile roller G2. The pretensioning of the spring takes place by means of the fixed point "C" for the first or the possible subsequent adjustment. The balancing springs 6 can be used in any of the known
solutions, the main point is that the manufacturer should produce the so that they should be "pre-windable". Such is e.g. the system of the draw-springs located behind the vertical support and guide rail 2, but the tension or torsion springs mounted on the lower panel 11 or upper panel 1n of the row of panels, possibly on the brow element 3 can also be used, it is only essential that they should be pretensioning at the manufacturer in compliance with the weight of the gate to the value corresponding to this.

The gate has a preinstalled motor 10 for its opening-closing, which is indicated by broken line on the Figure, located as known on the brow element 3 in an advantageous construction example, which drives the drum of the fixed fling-over roller G1, it winds up rope K in this way, which moves panels 1. In addition to this, the preinstalled motor 10 can be located e.g. on the lower panel 11 or the upper panel 1n of the row of panels, depending on the purposeful design of the construction.

The most important new element of the gate under the utility design is the swivel pin 8, which interconnects in point "A" shown on Figure 1 the horizontal support and roller rail 7 to the vertical support and guide rail 2. Swivel pin 8 allows that the two horizontal support and roller rails 7 can be folded in ninety degrees above the upper panel 1n to the brow element 3. And as regards the screwed joints found at the interconnection of the vertical roller rail 4 and the vertical support and guide rail 2 on point marked with "B", they conventionally work.

The solution under the utility design excludes in this way the inexact rail installation and upon transportation it, however, provides opportunity for simplification and easy haulage.

It can be well seen on Figure 2 that the two horizontal support and roller rails 7 are bent in ninety degrees above the upper panel 1n of the row of panels to the brow element 3. Moreover, it can be seen that the rear interconnecting rail 9, which serves for keeping the rear distance for the two horizontal support and guide rails 7, is used upon the solution under the utility design for the time of delivery and assembly as a temporary "threshold" so that it is fastened with a releasable joint to the lower end of the vertical support and guide rail 2. This results in the realization of the condition that the brow element 3, the two vertical support and guide rails 2 and the rear interconnecting rail 9 are designed as a unit closed by a compact (unified) frame comprising the panels 1 and the pre-wound balancing springs 6 for the time of transportation and up to a certain phase of the
assembly, ensuring hereby the exact installation of the exclusion of the error possibilities to a great extent.

The gate under the utility design produced in this way at the manufacturer can be assembled and installed at the site of the incorporation within a comparatively short time and with exactitude. After the appropriate fastening upon the cross parts of the two vertical support and the guide rails 2 and of the brow element 3, after folding out the two horizontal support and roller rails 7 and after the interconnection with the rear interconnecting rail 9 and the vertical fixation the gate can be used at once, can be taken into use, is the so-called floating cable necessary for the operation of the preinstalled motor 10 is connected. The preinstalled motor 10 can be operated by remote guidance (remote control) as well in compliance with the User's needs.

The gate under the utility design has realized its objectives, since it can be transported easily, free from damages to the place of incorporation, can be set up without any problems by unskilled users (manpower) on the site, can be installed in a short time, exactly, with the reduction of the risks of accident to a great extent, thus allowing an economical use.
LIST OF TERMS

1      panel
11     lower panel
1n     upper panel
2      vertical support and guide rail
3      brow element
4      vertical roller rail
5      guide roller
6      balancing springs
7      horizontal support and roller rail
8      swivel pin
9      rear interconnecting rail
10     preinstalled motor
„A“    point "A"
„B“    point "B"
„C“    fixed point
„D“    lower point
G1     fixed fling-over roller
G2     mobile roller
K      rope
CLAIMS

1.) Compact, highly preassembled, sectioned door and gate, which has a row of panels composed of at least two panels connected to each other, vertical support and guide rail covering the former at the edge on two sides, horizontal support and roller rail attached to the former at least on two points, the upper panel is closed to a brow element, it has a vertical roller rail on the vertical support and guide rail on both sides, which is fastened to the vertical support and guide rail, there are guide rollers fastened onto the panels in the vertical roller rail on both sides in a number equivalent at least to the number of panels, moreover it has balancing springs, wherein said that the horizontal support and roller rail (7) is interconnected by a swivel pin (8) to the vertical support and guide rail (2), the rear interconnecting rail (9) otherwise keeping the distance, interconnecting the rear ends of the two horizontal support and roller rails (7), as a temporary threshold upon transportation is fastened with a releasable joint to the lower end of the two vertical support and guide rails (2), the brow element (3), the two vertical support and guide rails (2), as well as the rear interconnecting rail (9) are constructed as a compact frame comprising in this way the panels (1) and the pre-wound balancing springs (6).

2.) The gate under claim 1, wherein said that its pre-windable, balancing springs (6) are fastened between the vertical support and guide rail (2) and the row of panels.

3.) The gate under claims 1 and 2, wherein said that the gate has a preinstalled motor (10) located on the brow element (3) for the control of its opening-closing.
INTERNATIONAL SEARCH REPORT

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 E05D15/38 E05F15/16 E05D15/24

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 E05D E05F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

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C. DOCUMENTS CONSIDERED TO BE RELEVANT

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Date of the actual completion of the international search

6 August 2002

Date of mailing of the international search report

14/08/2002

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