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Remarks:
Amended claims in accordance with Rule 137(2) EPC.

(54) A sliding door locking mechanism

(57) The present invention relates to a sliding door locking mechanism (1) which enables the sliding doors of the passenger and/or commercial vehicles to be locked. By means of the inventive locking mechanism (1) standardization can be provided by using single locking system for all vehicle models. By this means opening-closing and locking mechanism which is low cost, ergonomic and comfortable can be achieved.

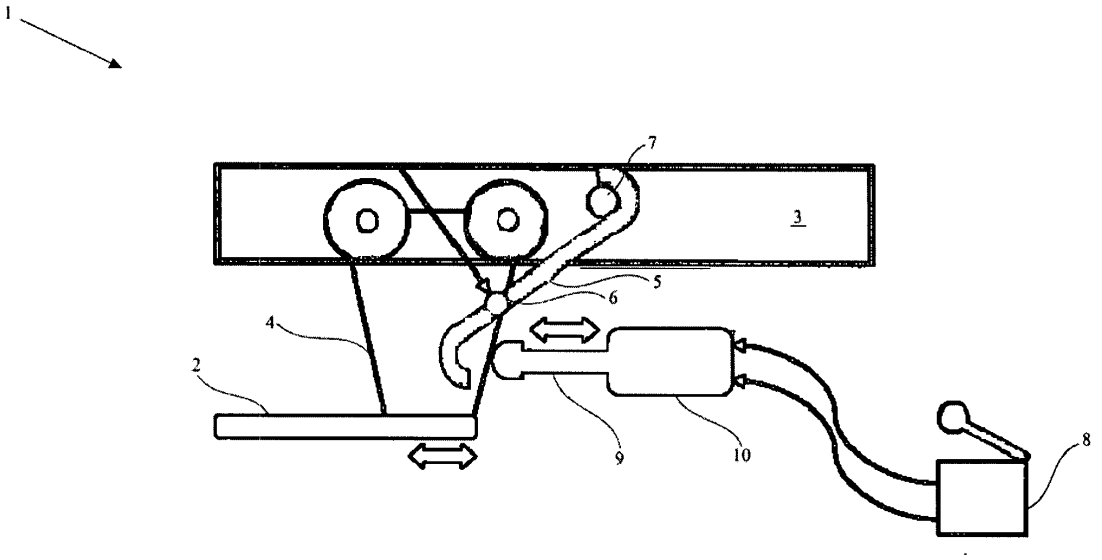

Figure 1

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Description

Field of the Invention

[0001] The present invention relates to a sliding door locking mechanism which enables the sliding doors of the passenger and/or commercial vehicles to be locked.

Background of the Invention

[0002] Today sliding doors are used in the vehicles to provide more comfortable and easy access inside the vehicles. Locking mechanisms are used to keep the said sliding doors to remain in closed position and to prevent them from closing unintendedly when they are opened. By this means the said sliding doors remain in locked position in fully open and closed positions.

[0003] In the state of the art, when the sliding door is opened, a cam system which is located on the lower carrier roller carries out the locking operation. The unlocking of the said lock is achieved by a wire mechanism triggering the cam. Since the wire mechanism is used for the triggering process, during the production zero adjustment should be done with inside and outside opening handles in order that the lock is opened securely. Also parts such as spring, cam, and bushing are used in sliding door carrier mechanism used today.

[0004] Using the said mechanisms both increases the cost of the locking mechanism and causes quality problems such as noise and functionality.

[0005] The German patent document no DE202006-011637, an application known in the state of the art, discloses a runner having a locking element which is fixed in the running direction and sprung by rotation towards a stop.

[0006] The German patent document no DE3842569, an application known in the state of the art, discloses a system which is specifically developed for automatic sliding doors and windows. The system comprises a bolt which is actuated either electrically or manually in case of an emergency.

[0007] Japanese patent document no. JP2007-077694, an application known in the state of the art, discloses a system enabling the sliding doors to stop in an intermediate position. The system comprises the motor enabling the window on the door to be opened and stopping mechanisms for restraining the door in the middle of operation.

Summary of the Invention

[0008] The objective of the present invention is to realize a sliding door locking mechanism which is low cost, ergonomic and comfortable.

[0009] Another objective of the present invention is to realize a sliding door locking mechanism which enables the quality problems such as noise, quality and the like to be eliminated.

Detailed Description of the Invention

[0010] The sliding door locking mechanism realized to fulfill the objective of the present invention is illustrated in the accompanying figure, in which:

Figure 1 is the schematic view of the inventive sliding door locking mechanism.

[0011] The components shown in the figure are individually numbered where the numbers refer to the following:

1. Sliding door locking mechanism
2. Sliding door
3. Slideway
4. Carrier roller mechanism
5. Cam
6. Connection member
7. Locking member
8. Triggering member
9. Pushing shaft
10. Drive member

[0012] The sliding door locking mechanism (1) essentially comprises at least one sliding door (2) which comes to the open and closed positions by moving in horizontal axis with the user's preference, allows access into the vehicle, has at least one opening handle (not shown in the figures) thereon; at least one slideway (3) which is placed inside the vehicle and enables the sliding door (2) to move on the horizontal axis thereon; at least one carrier roller mechanism (4) which enables the sliding door (2) to move on the slideway (3) in a controlled way, is connected to the sliding door (2) from one end and connected to the slideway (3) from the other end; at least one cam (5) which is connected to the carrier roller mechanism (4) and moves together with the carrier roller mechanism (4) on the horizontal axis, enables the sliding door (2) to be locked in full open and closed positions; at least one connection member (6) which enables the cam (5) to be connected to the carrier roller mechanism (4); at least one locking member (7) which is located on the slideway (3) and when the sliding door (2) is in open position, prevents the cam (5) from locking in the said position, and by this means prevents the sliding door (2) from closing unintendedly.

[0013] The inventive sliding door locking mechanism (1) also comprises at least one triggering member (8) which is connected to the sliding door (2) opening handle; at least one drive member (10) which is connected to the triggering member (8) and becomes active or passive state according to the directives of the triggering member (8); at least one pushing shaft (9) which enables the cam (5) which is in locked position when the sliding door (2) is in completely open position to be detached from the locking member (7) as a result of the drive coming from the drive member (10) and enables the sliding door (2)

to become closed.

[0014] When the sliding door (2) is wanted to be locked in fully open position by using the inventive sliding door locking mechanism (1), first the sliding door (2) is opened completely, in other words it goes to the farthest position it can go on the slideway (3) and the cam (5) locks in the said position via the locking mechanism (7). By this means the sliding door (2) is enabled to remain in its current position securely. When the sliding door (2) is wanted to be closed, the door handle is pulled and the triggering member (8) which is connected to the door handle actuates the drive member (10). And the drive member (10) moves the pushing shaft (9). The pushing shaft (9) releases the cam (5) from the locking member (7) with the said motion it gets and enables the sliding door (2) to be closed.

[0015] In a preferred embodiment of the present invention there is only one cam (5) present in the sliding door locking mechanism (1). One end of the said cam (5) has the suitable form to contact the locking member (7) located on the slideway (2) and the other end has the form to contact the pushing shaft (9).

[0016] In the preferred embodiment of the present invention a microswitch is used as the triggering member (8).

[0017] In the preferred embodiment of the present invention an electric motor giving linear movement is used as the triggering member (10).

[0018] It is possible to develop various embodiments of the inventive sliding door locking mechanism (1). The invention cannot be limited to the examples described herein; it is essentially according to the claims.

Claims

1. A sliding door locking mechanism (1) comprising at least one sliding door (2) which comes to the open and closed positions by moving in horizontal axis with the user's preference, allows access into the vehicle, has at least one opening handle thereon; at least one slideway (3) which is placed inside the vehicle and enables the sliding door (2) to move on the horizontal axis thereon; at least one carrier roller mechanism (4) which enables the sliding door (2) to move on the slideway (3) in a controlled way, is connected to the sliding door (2) from one end and connected to the slideway (3) from the other end; at least one cam (5) which is connected to the carrier roller mechanism (4) and moves together with the carrier roller mechanism (4) on the horizontal axis, enables the sliding door (2) to be locked in full open and closed positions; at least one connection member (6) which enables the cam (5) to be connected to the carrier roller mechanism (4); at least one locking member (7) which is located on the slideway (3) and when the sliding door (2) is in open position, prevents the cam (5) from locking in the said position, and by this means prevents the sliding door (2) from closing unintendedly, and **characterized by** at least one triggering member (8) which is connected to the sliding door (2) opening handle; at least one drive member (10) which is connected to the triggering member (8) and becomes active or passive state according to the directives of the triggering member (8); at least one pushing shaft (9) which enables the cam (5) which is in locked position when the sliding door (2) is in completely open position to be detached from the locking member (7) as a result of the drive coming from the drive member (10) and enables the sliding door (2) to become closed.

2. A sliding door locking mechanism (1) according to claim 1, **characterized by** cam (5) which has the form one end of which can contact the locking member (7) located on the slideway (2) and the other can contact the pushing shaft (9).

3. A sliding door locking mechanism (1) according to claim 1 or 2, **characterized by** triggering member (8) which is a microswitch.

4. A sliding door locking mechanism (1) according to any of the preceding claims, **characterized by** drive member (10) which is an electric motor giving linear movement.

Amended claims in accordance with Rule 137(2) EPC.

1. A sliding door locking mechanism (1) comprising at least one sliding door (2) which comes to the open and closed positions by moving in horizontal axis with the user's preference, allows access into the vehicle, has at least one opening handle thereon; at least one slideway (3) which is placed inside the vehicle and enables the sliding door (2) to move on the horizontal axis thereon; at least one carrier roller mechanism (4) which enables the sliding door (2) to move on the slideway (3) in a controlled way, is connected to the sliding door (2) from one end and connected to the slideway (3) from the other end; at least one cam (5) which is connected to the carrier roller mechanism (4) and moves together with the carrier roller mechanism (4) on the horizontal axis, enables the sliding door (2) to be locked in full open and closed positions; at least one connection member (6) which enables the cam (5) to be connected to the carrier roller mechanism (4); at least one locking member (7) which is located on the slideway (3) and when the sliding door (2) is in open position, prevents the cam (5) from locking in the said position, and by this means prevents the sliding door (2) from closing unintendedly; at least one triggering member (8) which is connected to the sliding door (2) opening

handle; at least one pushing shaft (9) which enables the cam (5) which is in locked position when the sliding door (2) is in completely open position to be detached from the locking member (7) as a result of the drive coming from the drive member (10) and enables the sliding door (2) to become closed and **characterized by** at least one drive member (10) which is connected to the triggering member (8) and becomes active or passive state according to the directives of the triggering member (8).

2. A sliding door locking mechanism (1) according to claim 1, **characterized by** cam (5) which moves together with the carrier roller mechanism (4) on the horizontal axis, enables the sliding door (2) to be locked in full open and closed positions and has the form one end of which can contact the locking member (7) located on the slideway (2) and the other can contact the pushing shaft (9).

3. A sliding door locking mechanism (1) according to claim 1 or 2, **characterized by** triggering member (8) which is connected to the sliding door opening handle and which is preferably a microswitch.

4. A sliding door locking mechanism (1) according to any of the preceding claims, **characterized by** drive member (10) which moves the pushing shaft (9) and which is an electric motor giving linear movement.

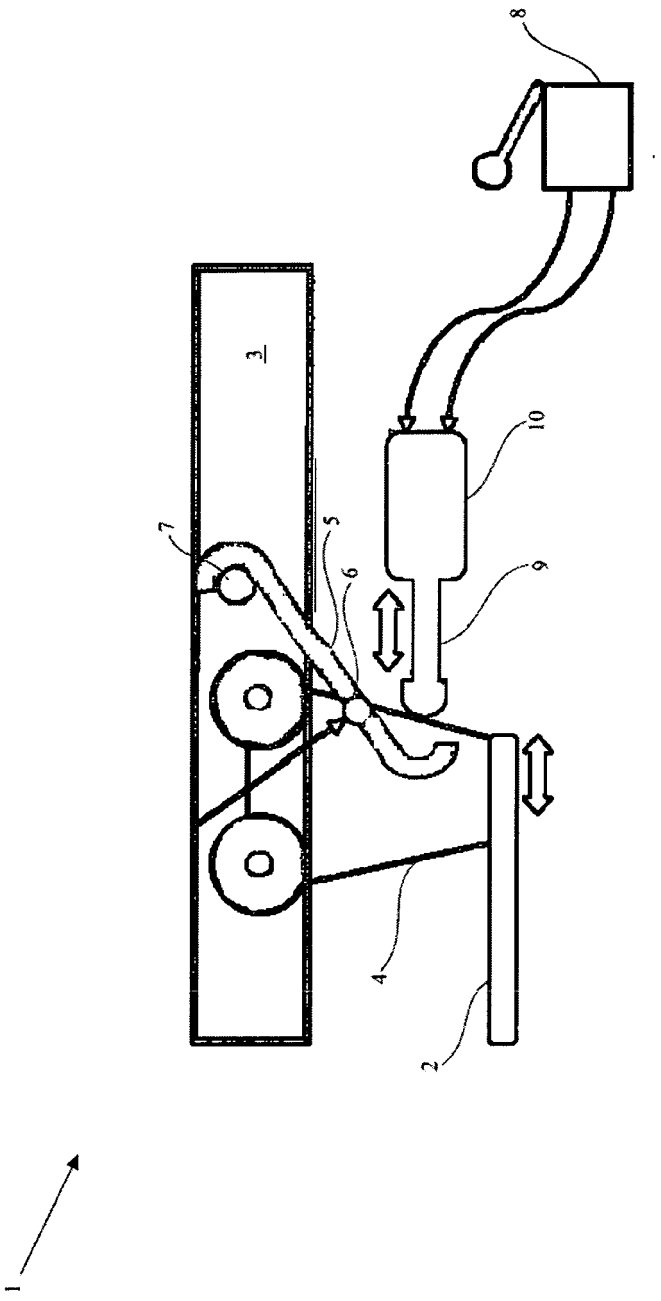

Figure 1

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EUROPEAN SEARCH REPORT

Application Number
EP 11 16 2563

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	DE 20 2005 017077 U1 (BROSE SCHLIESSSYSTEME GMBH [DE]) 8 March 2007 (2007-03-08) * paragraph [0041] - paragraph [0045] * * figures 1,4 *	1-4	INV. E05C17/60 E05B65/12
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X	FR 2 900 184 A1 (PEUGEOT CITROEN AUTOMOBILES SA [FR]) 26 October 2007 (2007-10-26) * page 6, line 30 - page 8, line 21 * * figures 1-7 *	1-4	

TECHNICAL FIELDS SEARCHED (IPC)
E05C
E05B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	1 November 2011	Bitton, Alexandre

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 11 16 2563

This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report. The members are as contained in the European Patent Office EDP file on
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01-11-2011

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

REFERENCES CITED IN THE DESCRIPTION

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