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(54) A child lock for a motor vehicle

(57) A locking system (4) for the rear doors (3) of a motor car which includes a lock (5) for each door (3) with a device 12 for preventing the associated rear doors from being opened from the inside. The device includes a safety lever (12) movable between a first, or locking position and a second, or rest position which allows the lock (5) to be operated freely from the inside. According to the present invention, the locking system also includes control means (9, 13) which include an electric motor (13) for each lock coupled to the safety lever (12) and operating means (9) associated with the front door on the driver's side and operable to send a control signal to each electric motor (13) for moving the safety levers (12) and activating the child lock on both rear doors (3).

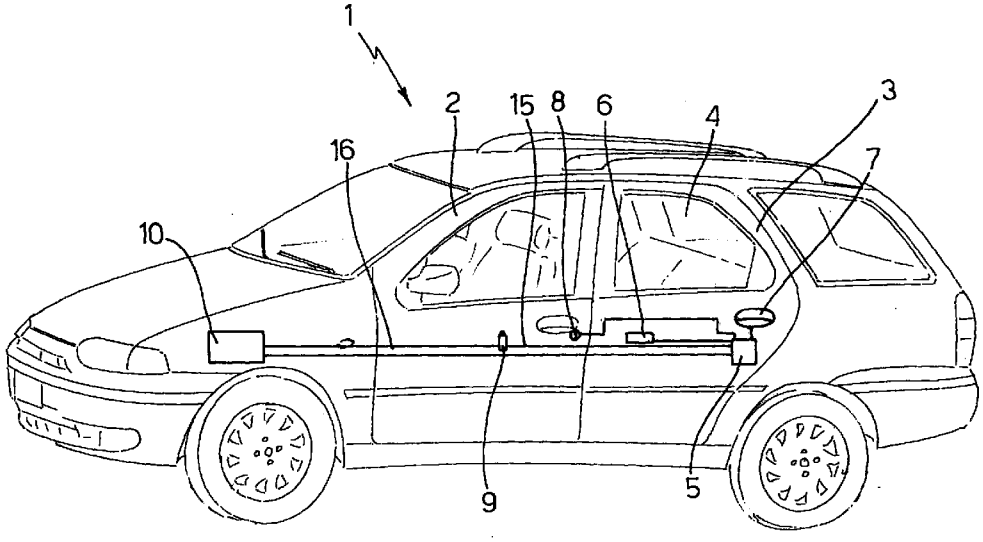

Fig. 1

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Description

[0001] The present invention relates to a motor vehicle fitted with a locking system which includes a device inhibiting the opening of the rear doors, which acts to prevent the doors from being opened from the inside without authorization and is commonly known as a child lock.

[0002] Known systems for locking the rear doors of a motor car also include a device for preventing the doors from being opened from the inside, commonly known as a child lock, in which the rear doors are locked by means of a manually operated mechanical device. This mechanical device is fitted to each rear door and comprises a pawl which can be rotated with a key supplied with the vehicle, or with another tool, and is normally arranged on a side portion of the car door, facing the body.

[0003] However, the mechanical device described above is somewhat difficult and awkward to engage and disengage, mainly because it is only possible to engage/disengage the safety catch when the door is open, which means that the driver needs to get out of the vehicle each time he wants to engage or disengage the child lock.

[0004] Furthermore, the presence of this device means that the lock on the rear doors must be different from the others used in the vehicle and, in particular, different from those on the front doors, with a consequent increase in costs.

[0005] The object of the present invention is to provide a locking system for the rear doors of a car which is free of the above disadvantages and which, in particular, makes the child lock easy to engage and disengage while being simple to manufacture and to assemble.

[0006] This object is achieved according to the present invention by providing a system for locking the rear doors of a motor vehicle which includes a lock for each rear door with a device for preventing the associated rear door from being opened from the inside, the said device including a safety lever which is movable between a first, or locking position and a second, or rest position which allows the lock to be freely operated from inside the motor car, and control means for moving the said lever between the said locking and rest positions, characterised in that the said control means include an electric motor for each lock, coupled to the said lever, and operating means common to the locks of all rear doors, arranged in the vehicle in a position other than that of the said rear doors and operable to send a control signal to each said electric motor to activate the said locking device on each of the said rear doors.

[0007] In order better to understand the invention, a preferred embodiment thereof is now described, purely by way of non-limitative example, with reference to the appended drawings, in which:

Figure 1 illustrates schematically and substantially by block diagrams a locking system according to the present invention; and

Figure 2 illustrates some components of Figure 1, with portions cut away for greater clarity.

[0008] In Figure 1, a vehicle is generally indicated 1 which includes a pair of front doors 2, only one of which is visible in the drawing, and a pair of rear doors 3, only one of which is visible in the drawing. The car includes a locking system 4 for the rear doors 3 and includes in turn a lock 5 for each door, an associated internal handle 6 for operating the associated lock 5 from inside, an associated external handle 7 for operating the associated lock 5 from the outside, either mechanically or by means of an electric opening system, and an associated key 8. The locking system also includes a push-button 9 and a control unit 10, both common to the two doors.

[0009] With reference, in particular, also to Figure 2, the lock 5 includes an opening lever 11 connected mechanically to the external handle 7 and a safety lever 12 operable by means of an electric motor 13 connected, by wiring not shown in the appended drawing, to a connector 14.

[0010] In the example described, the push-button 9 is arranged on a front door on the driver's side and is connected to the locks 5 of each rear door 3 and supplied by the control unit 10 by means of electrical wiring circuits indicated 15 and 16 respectively.

[0011] The operation of the locking system 4 will now be described starting with the rest position in which the safety lever is arranged so that it is possible to open a rear door by operating the internal handle.

[0012] In this condition, when the push-button 9 is pressed a signal is sent to the motor 13, by means of the connector 14 and the wiring 15, which moves the safety lever 12 into a locking condition in which it prevents the door from being opened by operating the internal handle 6, thus providing a child lock. In this condition, it remains possible to release the door from the outside by using the electric unlocking system fitted in the vehicle and linked to the child lock system, by sending a signal to the control unit 10 or actuator which allows the doors the be opened. Mechanical unlocking of the rear doors is still prevented, however.

[0013] By pressing the push-button 9 once again, it is possible to return the system to the rest position and to enable the doors to be opened by using either of the handles.

[0014] An examination of the characteristics of the locking system of the invention clearly demonstrates the advantages that it provides.

[0015] In particular, it resolves all the disadvantages described above, since the child lock can be engaged/disengaged by the driver without having to get out of the vehicle while, in addition, according to the present invention the lock on the rear doors is the same as that on the front doors, thereby simplifying manufac-

ture and reducing costs compared to prior art arrangements.

[0016] Finally, it is clear that modifications and variations may be made to the locking system described and illustrated here without departing thereby from the scope of the present invention. For example, instead of being associated with a door 2, the push-button 9 could be arranged on the dashboard or in another part of the vehicle.

Claims

1. A locking system (4) for the rear doors (3) of a motor vehicle which includes a lock (5) for each rear door with a device (12) operable to prevent the associated rear doors (3) from being opened from the inside, the said device including a safety lever (12) movable between a first, or locking position and a second, or rest position which allows the lock (5) to be operated freely from inside the motor vehicle, and control means for moving the safety lever between the said locking and rest positions, characterised in that the said control means (9, 13) include an electric motor (13) for each lock, coupled to the said lever (12), and operating means (9) common to the locks of all the said rear doors, arranged in the vehicle in positions other than the said rear doors (3) and operable to send a control signal to each said electric motor (13) for activating the said locking device (12) on both said rear doors.

2. A locking system according to Claim 1, characterised in that the said control means (9, 13) include a single push-button (9).

3. A locking system according to Claim 2, characterised in that the said push-button (9) is associated with a front door (2).

4. A motor car which includes a locking system (4) for the rear doors (3) thereof, which includes a lock (5) for each rear door with a device (12) operable to prevent the associated rear doors (3) from being opened from inside the car, the said device including a safety lever (12) movable between a first, or locking position and a second, or rest position, in which the said lock (4) is freely operable from inside the vehicle, and control means for moving the said safety catch (12) between the said locking and rest positions, characterised in that the said control means (9, 13) include an electric motor (13) for each lock, coupled to the said lever (12) and operating means (9) common to the locks of the said rear doors (3) and operable to send a control signal to each said electric motor (13) for activating the said locking device (12) on each of the said rear doors.

5. A motor car according to Claim 4, characterised in that the said control means (9, 13) include a single control button (9).

6. A motor car according to Claims 4 or 5, characterised in that the said push-button (9) is associated with a front window (2).

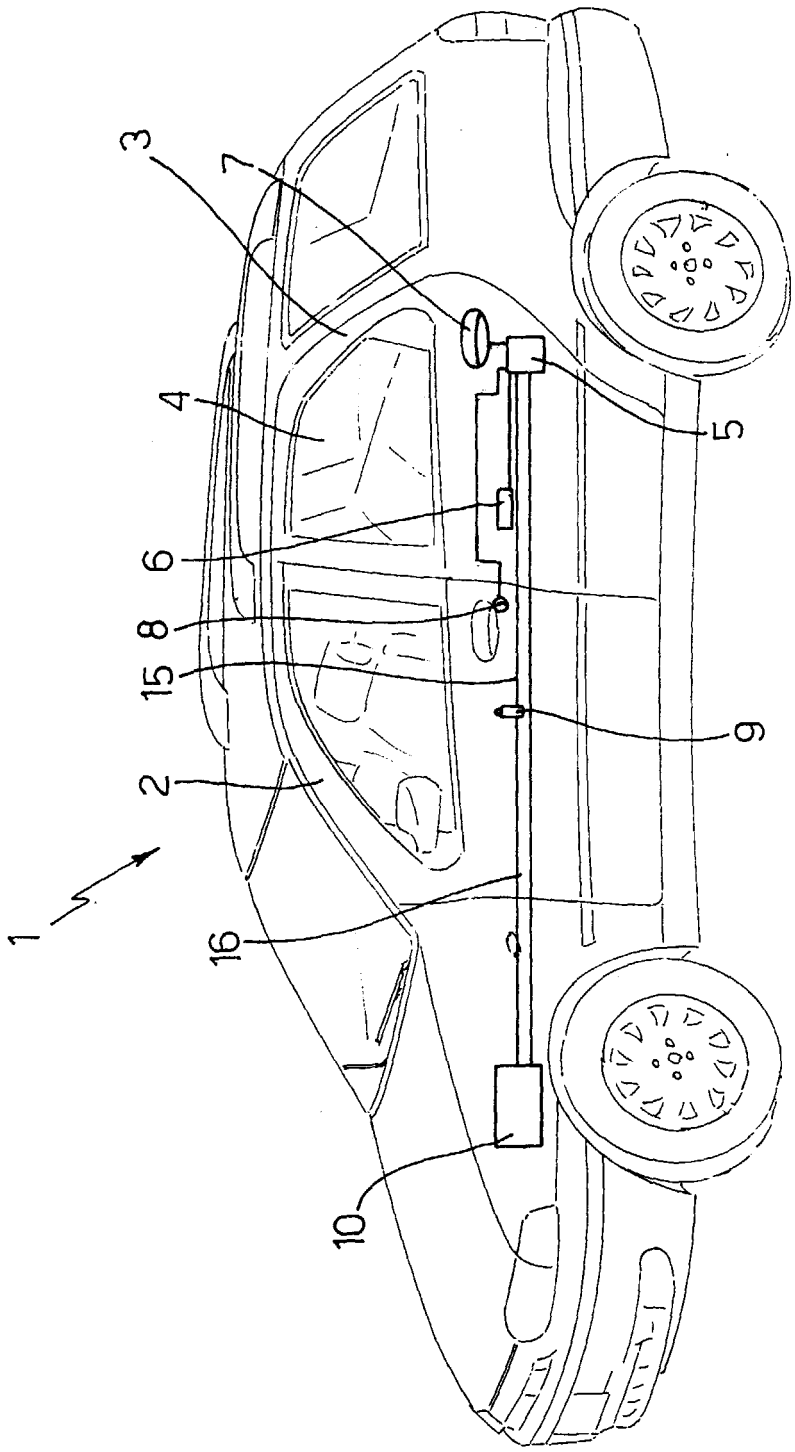

Fig. 1

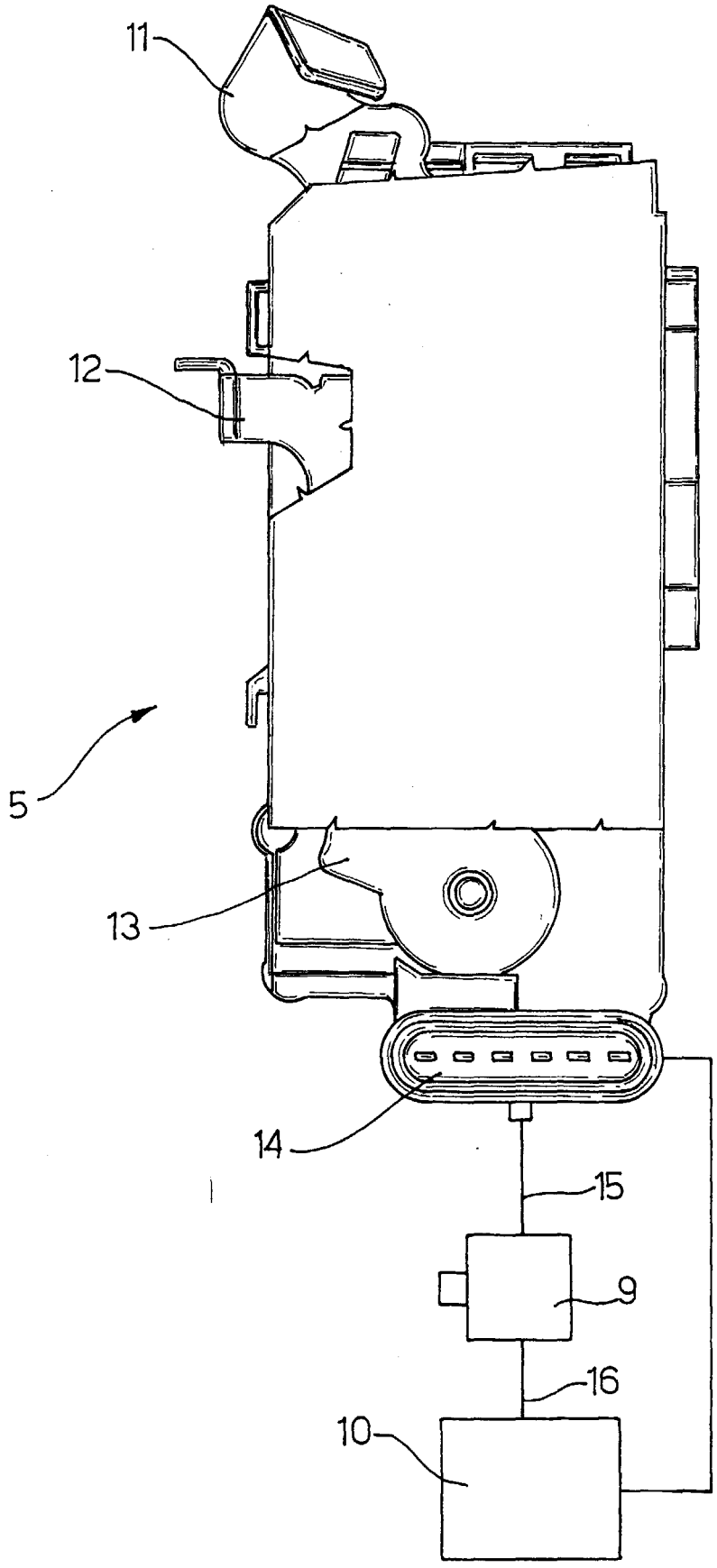

Fig.2

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EUROPEAN SEARCH REPORT

Application Number
EP 00 11 0534

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.7)
X	PATENT ABSTRACTS OF JAPAN vol. 1997, no. 08, 29 August 1997 (1997-08-29) & JP 09 112106 A (HARNESS SOGO GIJUTSU KENKYUSHO:KK;SUMITOMO WIRING SYST LTD; SUMITOMO E), 28 April 1997 (1997-04-28) * abstract *	1-6	E05B65/20
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X	DE 196 52 717 A (DAIMLER-BENZ AG) 25 June 1998 (1998-06-25) * abstract; claim 1 *	1,4	
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			TECHNICAL FIELDS SEARCHED (Int.Cl.7) E05B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	11 December 2000	Van Beurden, J

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 00 11 0534

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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11-12-2000

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