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(54) A deadlatch device for doors of various types, comprising means adapted to prevent locking in a closed position in the event of breakage

(57) The present invention relates to a deadlatch device for doors of various types, comprising a latch apparatus such as to allow the door to be closed and opened even in the presence of hooking pins of the non-protruding type, fixed to the upright of the door, or also in the presence of the upright only, strengthened in the hooking area. The device according to the present invention is further equipped with means adapted to allow it to open even in the event of breakage of the return spring of the closing lever thereof. Finally, the device according to the present invention is adapted to support longitudinal and transverse loads and comply with the current safety regulations concerning resistance to longitudinal load and transverse load.

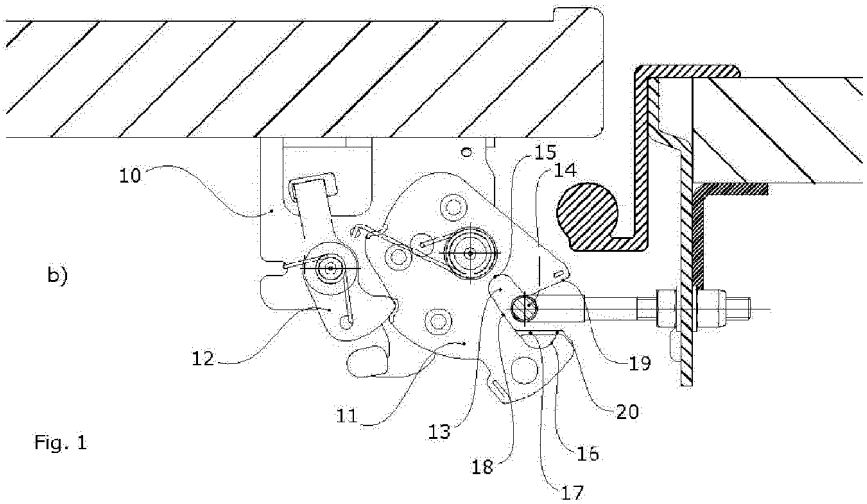

Fig. 1

EP 2 538 003 A1

Description

Field of the invention

[0001] The object of the present utility model refers to the field of closures and safety locks for doors of various types, with particular reference to the doors of motor vehicles, such as vans, camper vans, caravans, motor caravans, motor homes and the like.

State of the art

[0002] The locks currently included in the state of the art and used in doors of various types for motor vehicles such as vans, camper vans, caravans, etc. consist of a series of mechanical elements, such as one or more latches, integrated into the door and of such a shape to allow said door to be hooked to a pin which protrudes from the door frame and is permanently fixed to said frame, in particular to the upright of the frame which is not hinged to the door.

[0003] The presence of said pin in state-of-the-art closures is disadvantageous since, firstly, it decreases the minimum aperture, in width, of the opening between the two uprights of the frame and, secondly, the protuberance of said pin can prove to be a hindrance to the passage of people, representing a projection upon which the clothing of a person may be accidentally caught as they cross the threshold to enter or exit the vehicle.

[0004] Examples of state-of-the-art closures are described, amongst others, in the patents CH205471 and CH501814.

[0005] State-of-the-art closing devices also have the further common disadvantage, in the event of breakage of the return spring of the internal lock mechanism, of locking the door in a closed position without any opening possibility by means of a simple movement of the handle. This particularly occurs in closing devices used in motor cars and motor vehicles.

[0006] Furthermore, cars and motor vehicles must comply with specific regulations concerning the resistance to longitudinal and transverse loads of doors and their closing systems for each of the closing positions. An example of a regulation of this type is that related to attachment 2 of the directive 70/378/CEE.

[0007] Therefore, in the event of breakage of the return spring of the internal mechanism of a large part of state-of-the-art locks, there is the problem of how to open the door containing the damaged lock.

[0008] Therefore, the object of the present invention is to obviate the aforementioned disadvantages and provide a lock with structural characteristics adapted to comply with specific regulations concerning the resistance to longitudinal and transverse loads of doors and their closing systems, such as the regulation related to attachment 2 of directive 70/387/CEE.

Brief description of the figures

[0009]

Fig. 1 shows a section view of the closing device object of the present invention in three different positions in the closing step.

Summary of the invention

[0010] The present invention relates to a deadlatch device for doors of various types, comprising a latch apparatus such as to allow the door to be closed and opened even in the presence of hooking pins of the non-protruding type, fixed to the upright of the door, or even in the presence of the upright only, strengthened in the hooking area. The device according to the present invention is further equipped with means adapted to allow it to open even in the event of breakage of the return spring of the closing lever thereof. Finally, the device according to the present invention is adapted to comply with the current safety regulations concerning longitudinal and transverse load.

Detailed description of the invention

[0011] With reference to the accompanying figure 1, the device according to the present invention consists of a lock comprising a support member 10, a closing lever 11 and a hooking lever 12 integrally connected to said support member 10 at a point and free to rotate thereabout between three positions, two end positions (Fig. 1, positions a and c) and one intermediate position (Fig. 1, position b), elastic means associated with said closing 11 and hooking 12 levers and adapted to convey a resisting moment to the rotation thereof.

[0012] Furthermore, with reference to the accompanying figures 1 and 2, said closing lever 11 comprises a housing 13 adapted to engage a pin 14 integral with the door frame and a profile which is suitably shaped and adapted to slidingly engage said hooking lever 12.

[0013] When the door is closed and the surface 19 of said closing lever 11 begins to slide with pin 14, said closing lever 11 begins to rotate about the fixing axis thereof on said support member 10, starting from the first of said end positions and beginning to slide on the profile of said hooking lever 12 until it reaches the second intermediate position and the third end position, the latter corresponding to the locking of the closure, in which said pin 14 is permanently housed in said housing 13 and the closure, as it occurs in the second intermediate position, can only be unlocked by actuating the door handle.

[0014] Advantageously, said housing 13 is of elongated shape and comprises an opening and two ends 15, 16 shaped with a curved profile and adapted to house said pin 14. A shape of this type allows locking of the closure such as to comply with the safety regulations concerning the resistance to longitudinal load (by means

of the engagement between pin 14 and housing 13) and transverse load (by means of the engagement between pin 14 and end 16) of doors and their closing systems for each of the closing positions. In the event of failure and/or breakage of the return spring associated with said closing lever 11, for example, the door comprising the lock cannot be opened in a simple manner.

[0015] In order to obviate this disadvantage, the device according to the present invention comprises an element 17 arranged so as to connect the edge 20 to the bottom 18 of said housing 13 so as to cover said end 16 and offer to said pin 14 an easier exit path from said housing 13, thus allowing the door to be opened even in the event of failure and/or breakage of said return spring associated with said closing lever 11.

[0016] Said element 17 will preferably comprise a strip, made of plastic material for example, of sufficient thickness to ensure the sliding of said pin 14 during the step of opening the lock even in the event of failure and/or breakage of the return spring of said lever 11, but to shatter and therefore allow the sliding of said pin 14 into said end 16 in the event of the lock being subject to transverse load resistance tests. Thereby, the lock in accordance with the present invention will still comply with the aforementioned safety regulations.

Claims

1. A deadlatch device for doors of various types, adapted to support longitudinal and transverse loads, comprising a support member (10); a closing lever (11) and a hooking lever (12) integrally connected to said support (10) at a point and free to rotate about the same between three positions, two end positions and one intermediate position; elastic means associated to said closing (11) and hooking (12) levers and adapted to convey a resisting moment to the rotation thereof, said closing lever (11) comprising, in turn, a housing (13), adapted to engage a pin (14) integral with the frame of said door, and a profile which is suitably shaped and adapted to slidingly engage said hooking lever (12), **characterized in that** it comprises means adapted to allow the opening of said deadlatch device also in the event of breakage of said elastic means associated to said closing lever (11).

2. A device according to claim 1 wherein said housing (13) is of elongated shape and comprises an opening and two ends (15, 16) shaped with a curved profile and adapted to house said pin (14).

3. A device according to claims 1 - 2 wherein said means adapted to allow the opening of said deadlatch device also in the event of breakage of said elastic means associated to said closing lever (11) comprise an element (17) arranged so as to connect the edge (20) to the bottom (18) of said housing (13) so as to cover said end (16) and offer to said pin (14) an easier exit path from said housing (13), thus allowing the opening of the door also in the event of breakage of said elastic means associated to said closing lever (11).

4. A device according to claims 1 - 3 wherein said elastic means associated to said closing (11) and hooking (12) levers comprise return springs.

5. A device according to claims 1 - 4 wherein said element (17) comprises a strip of sufficient thickness to guarantee the sliding of said pin (14) during the phase of opening of the lock also in the event of breakage of said elastic means associated to said closing lever (11), but to shatter and therefore allow the sliding of said pin (14) into said end (16) in the event of the lock being subject to transverse load resistance tests.

6. A device according to claim 5 wherein said element (17) is made of plastic material.

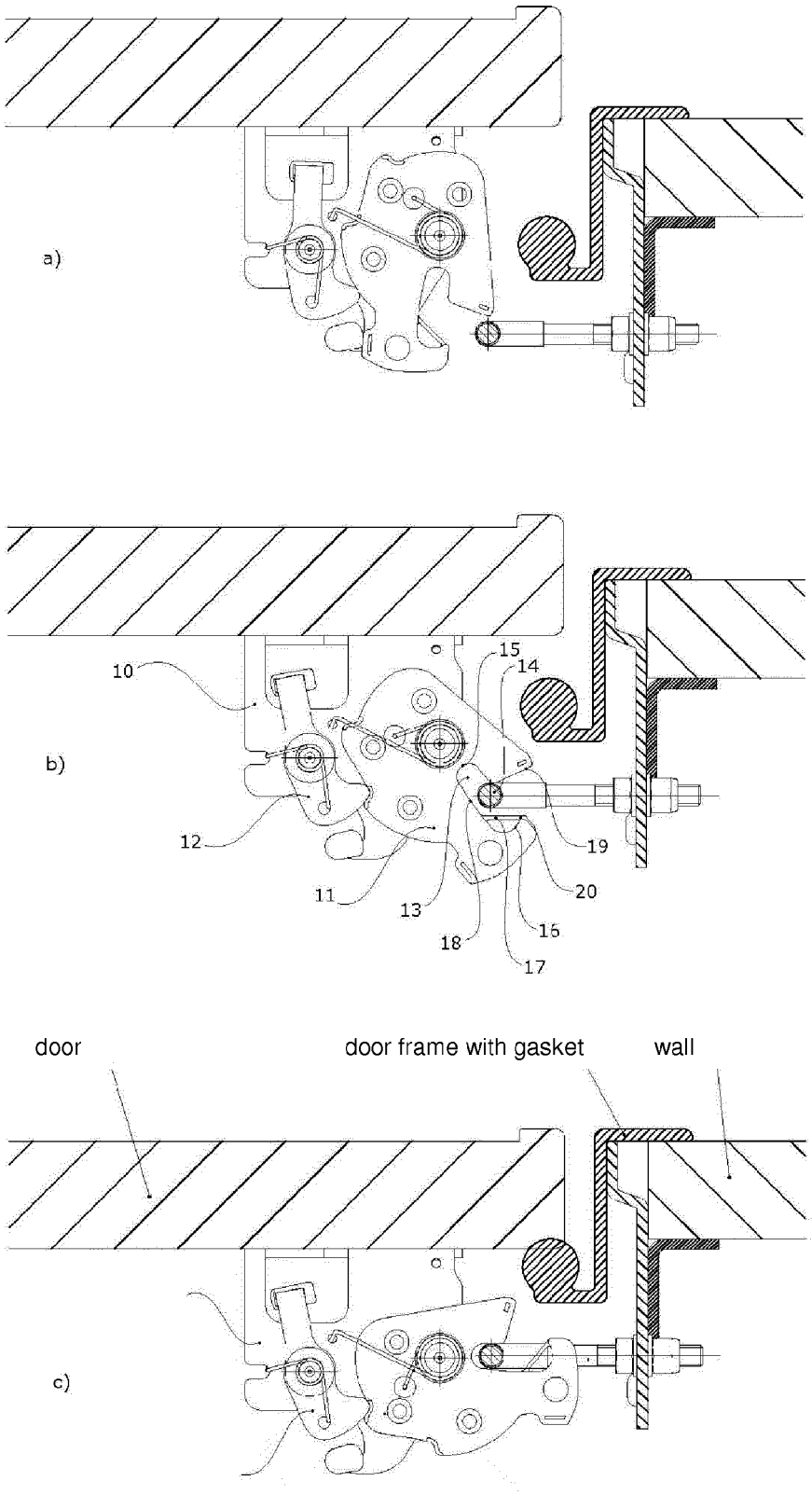
a)
b)
10
15
14
12
19
11
13
20
18
16
17
door
door frame with gasket
wall
c)

Fig. 1

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EUROPEAN SEARCH REPORT

Application Number
EP 12 17 2978

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Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
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TECHNICAL FIELDS SEARCHED (IPC)
E05B
E05C

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	25 September 2012	Cruyplant, Lieve

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 12 17 2978

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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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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- CH 205471 **[0004]**
- CH 501814 **[0004]**