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(54) **Snap-closing device for doors**

(57) A snap-closing device for doors (17) comprising an inner lock body (14) of the door (17) and an outer lock body (10) of the door (17), said outer lock body (10) comprising, in turn, a handle (11), said inner lock body (14) comprising, in turn, a sliding bar (20) adapted to translate parallel to the surface of said door (17) so as to engage appropriate backing means (21) on the frame (25) of said

door (17), wherein said handle (11) is associated with said sliding bar (20) so as to control the movement thereof through the movement of said handle (11) to three different positions: a start-of-travel position, a central position, and an end-of-travel position, corresponding to the steps of locking, closing and opening said door (17), respectively.

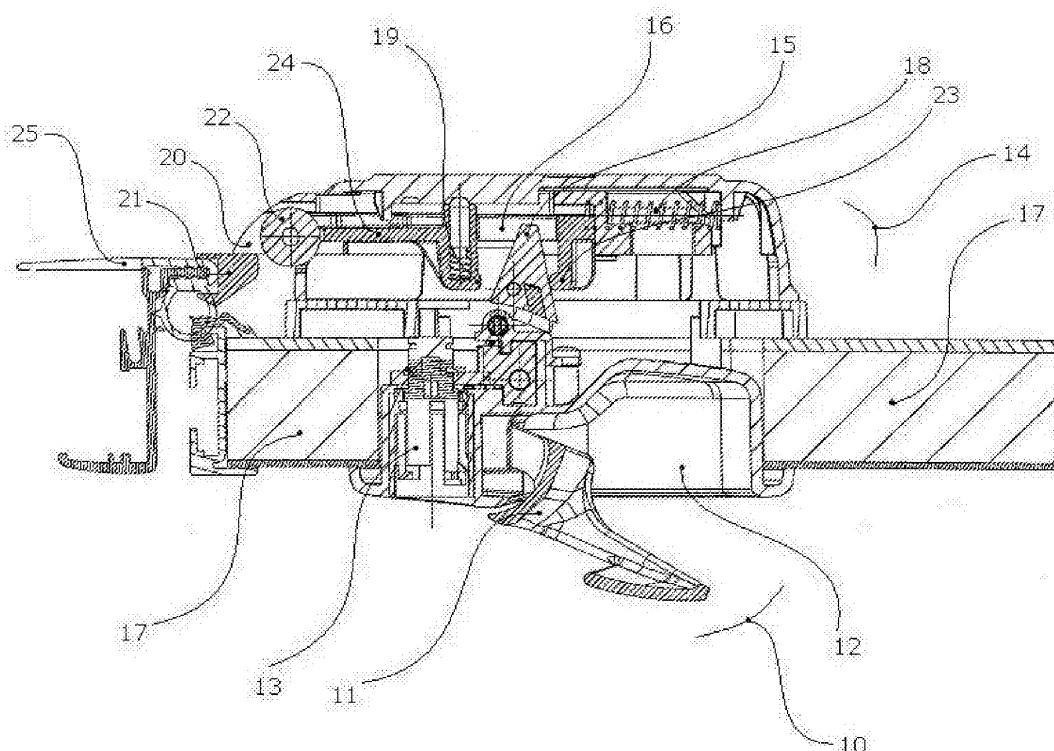


Fig. 1

Description

Field of the invention

[0001] The present invention relates to the field of closing devices and safety locks for doors, in particular for doors of motor vehicles, especially vans, caravans, motor-homes and the like.

State of the art

[0002] In the field of closing devices and safety locks for doors, devices generally comprising a lock body integrally applied to the concerned door, which houses a shaft adapted to guide a closing sliding bar integral with one end of said shaft, are available on the market. A rotating actuating knob is associated with said shaft, and is adapted to actuate it by rotating and then translating it in the axial direction so as to close the so-called screw lock to which it belongs.

[0003] Said rotating knob is further generally provided with a cylinder lock, or similar key locking means, which make key locking possible.

[0004] In the closing systems used in the field, closing devices and safety locks for doors, and in particular in the field of doors of motor vehicles such as vans, caravans, motor-homes and the like, the so-called screw lock generally always provides for actuating the handle, which must be rotated by 180 degrees to close and then lock, and the possibility of snap-closing which occurs by simply resting the lock onto the frame of the door with a certain pressure, as occurs in normal entrance doors of homes, is not provided.

[0005] This type of lock has the advantage of a greater ease of use as compared to screw locks because it can be actuated without needing to operate the handle.

[0006] It is an object of the present patent application to introduce a snap-closing device, also said of the latch lock or snap lock type, for doors with particular reference to doors for motor vehicles such as vans, caravans, motor-homes and the like, which allows greater simplicity and use practicality to be introduced with respect to the screw locks of the prior art.

[0007] The closing device of the present invention can be applied to doors of vans, caravans, motor-homes and the like, and is characterized by a simplified handle with respect to the rotating-translational handles of the screw lock devices and is adapted to carry out a simple translation movement to lock the closing device.

Brief description of the drawings

[0008]

Fig. 1 shows a section view of the lock according to the present invention in a closed position.

Fig. 2 shows a section view of the lock according to the present invention in a locked position.

Fig. 3 shows a section view of the lock according to the present invention in an open position.

Summary of the invention

[0009] The present invention relates to a snap-closing or latch lock or snap lock type device, in particular for doors of motor vehicles, such as vans, caravans, motor-homes or the like.

Detailed description of the invention

[0010] With reference to accompanying Fig.1, the snap-closing device object of the present patent application comprises: an inner lock body 14 and an outer lock body 10 associated by means of appropriate fastening means - e.g. screws and threaded seats, adapted to promote their installation on a door 17 - or made in one piece only. Said outer lock body 10 comprises, in turn, a handle 11, associated with a specific seat 12 adapted to contain it when it is in the locking position, and a possible key locking device, preferably of the cylinder type 13. Said inner lock body 14 comprises, in turn, a sliding bar 20 adapted to translate parallel to the surface of said door 17 so as to engage appropriate backing means 21 on the frame 25 of said door 17, said sliding bar 20 being associated with elastic means adapted to oppose the movement of said sliding bar 20 in a direction such as to allow said door 17 to be snap-closed. Said elastic means preferably comprise a compression spring 23, integral at one end with the movable end of said sliding bar 20, and at the other end with the structure of said inner lock body 14.

[0011] In a preferred embodiment of the present invention, said handle 11 is associated with a control lever 15, preferably wedge-shaped, adapted to engage a specific housing 16 inside said inner lock body 14 and provided with two abutments 18, 19. Handle 11 actuates said control lever 15 so as to control the translation of said sliding bar 20 parallel to the surface of said door 17 by operating on a slider 24 integral with said housing 16 and preferably provided with a roller 22 at one end thereof adapted to slide, under the bias of said slider 24 on said backing means 21.

[0012] Furthermore, said sliding bar 20 comprises one end provided with a profile adapted to slide on the corresponding profile of said appropriate backing means 21 on the frame 25 of said door 17.

[0013] Said handle 11 is free to move in the various steps of its operation between three different positions, shown in accompanying Figs. 1 - 3.

[0014] In the position shown in accompanying Fig. 1, door 17 is closed but not locked. Snap closing occurred by means of the reciprocal sliding between said profile on the end of the sliding bar 20 and said profile of the backing means 21 present on the frame 25, which first allows the locking bar 20 to translate such as to compress said compression spring 23 and then the sliding bar 20

to translate in the opposite direction, so that the end of said sliding bar 20 engages the end of said backing means on frame 25, thus keeping door 17 closed.

[0015] In this position, handle 11 is in approximately central position with respect to its travel and protrudes from the plane of door 17 with an inclination of preferably about twenty degrees.

[0016] By pushing handle 11 so as to accommodate it into said seat 12, as shown in accompanying Fig. 2, said handle 11 is in start-of-travel position and operates the locking of the closing device object of the present invention, which occurs by means of the translation of slider 24, caused by the bias operated by said control lever 15 on abutment 19, so that said roller 22 overlaps said backing means 21 on frame 25. Thereby, the door is locked and may be locked with a key by operating on the specific locks arranged on the outer side of said door 17.

[0017] With reference to accompanying Fig. 3, in order to open the closing device according to the present invention, said handle 11 must be extracted from its housing 12 to approximately reach its end-of-travel position and an inclination, with respect to the plane of door 17, greater than the inclination which occurs in case of closed door condition, as shown in accompanying Fig. 2 and described above. When this inclination, preferably of about 40 degrees, is reached due to the bias of said control lever 15 on abutment 18, first said slider 24 associated with roller 22 and then said sliding bar 20 are subjected to a translation such as to release them from said backing means 21 on frame 25, thus allowing door 17 to be opened. The preferred embodiment described and illustrated in the accompanying figures should be considered a non-limiting example with respect to alternative embodiments which employ the same inventive concept. With this regard, in the present invention, different locking systems may also be used in which said slider 24 is associated with a hook adapted to engage a corresponding seat on frame 25 of door 17, for example, instead of said roller 22. The sliding bar 20 may be moved so as to translate parallel to the surface of the door, while moving away therefrom to promote the engagement between said hook and the corresponding seat. Furthermore, said slider 24 may advantageously be moved by means of an appropriate gear associated with handle 11 instead of being pushed by means of said lever 15.

Claims

1. A snap-closing device for doors (17) comprising an inner lock body (14) of the door (17) and an outer lock body (10) of the door (17), said outer lock body (10) comprising, in turn, a handle (11), said inner lock body (14) comprising, in turn, a sliding bar (20) adapted to translate parallel to the surface of said door (17) so as to engage appropriate backing means (21) on the frame (25) of said door (17), wherein said handle (11) is associated with said slid-

ing bar (20) so as to control the movement thereof through the movement of said handle (11), to three different positions: a start-of-travel position, a central position and an end-of-travel position, corresponding to the steps of locking, closing and opening said door (17), respectively.

2. A device according to claim 1, wherein said sliding bar (20) is associated with elastic means adapted to contrast the movement of said sliding bar (20) in such a direction to allow said door (17) to be snap-closed.
3. A device according to claim 2, wherein said elastic means preferably comprise a compression spring (23), integral at one end with the movable end of said sliding bar (20), and at the other end with the structure of said inner lock body (14).
4. A device according to claims 1-3, wherein said sliding bar (20) comprises one end provided with a profile adapted to slide on the corresponding profile of said appropriate backing means (21) on the frame (25) of said door (17).
5. A device according to claims 1-4, wherein said handle (11) is associated with a control lever (15) adapted to engage a specific housing (16) inside said inner lock body (14) and provided with two abutments (18, 19), and being further adapted to be actuated by said handle (11) so as to control the translation of said sliding bar (20) parallel to the surface of said door (17).
6. A device according to claims 1-4, wherein said handle (11) is associated with said sliding bar (20) by means of an appropriate gear adapted to control the translation of said sliding bar (20) parallel to the surface of said door (17).
7. A device according to claim 5, wherein said control lever (15) is adapted to operate on a slider (24) integral with said housing (16).
8. A device according to claim 6, wherein said slider (24) is provided with a roller (22) at one end thereof, which is adapted to slide under the bias of said slider (24) on said backing means (21).
9. A device according to claim 6, wherein said slider (24) is associated with a hook adapted to be engaged with a corresponding seat on the frame (25) of the door (17).

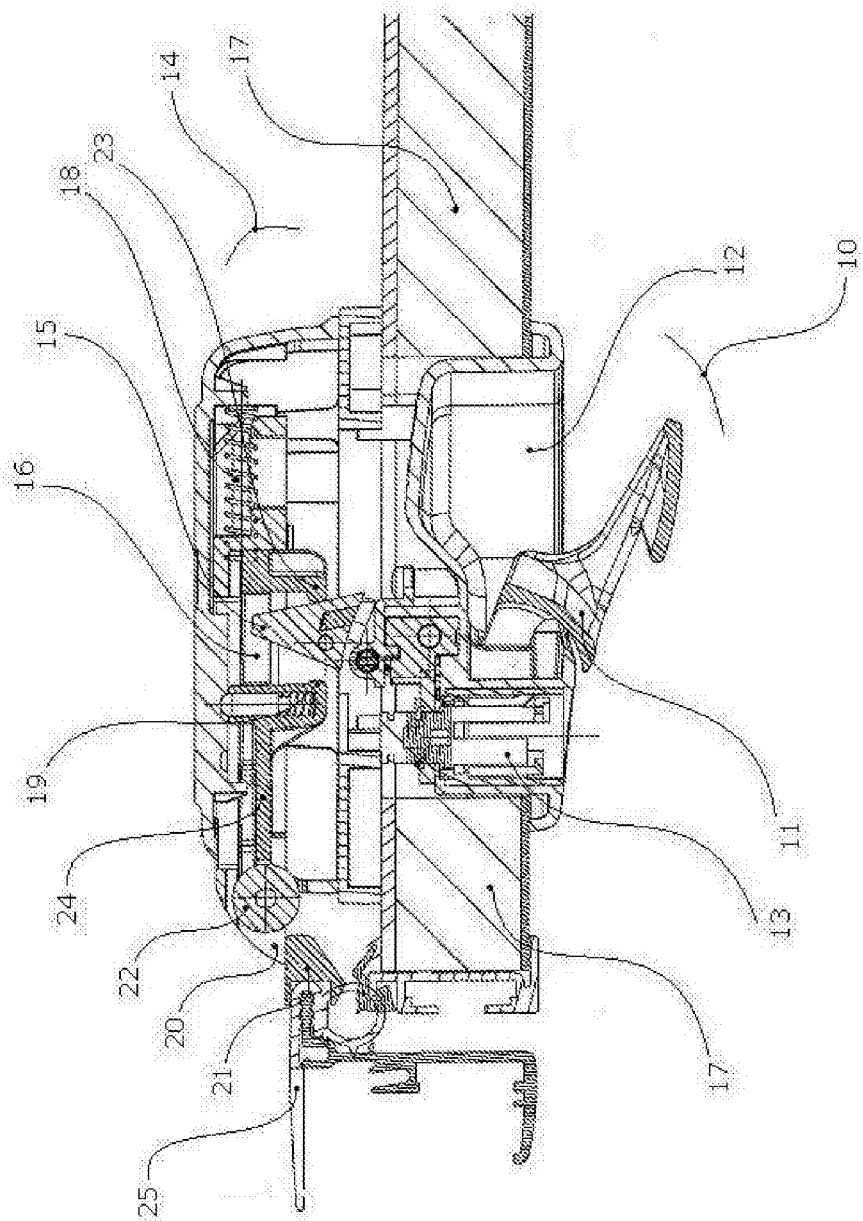


Fig. 1

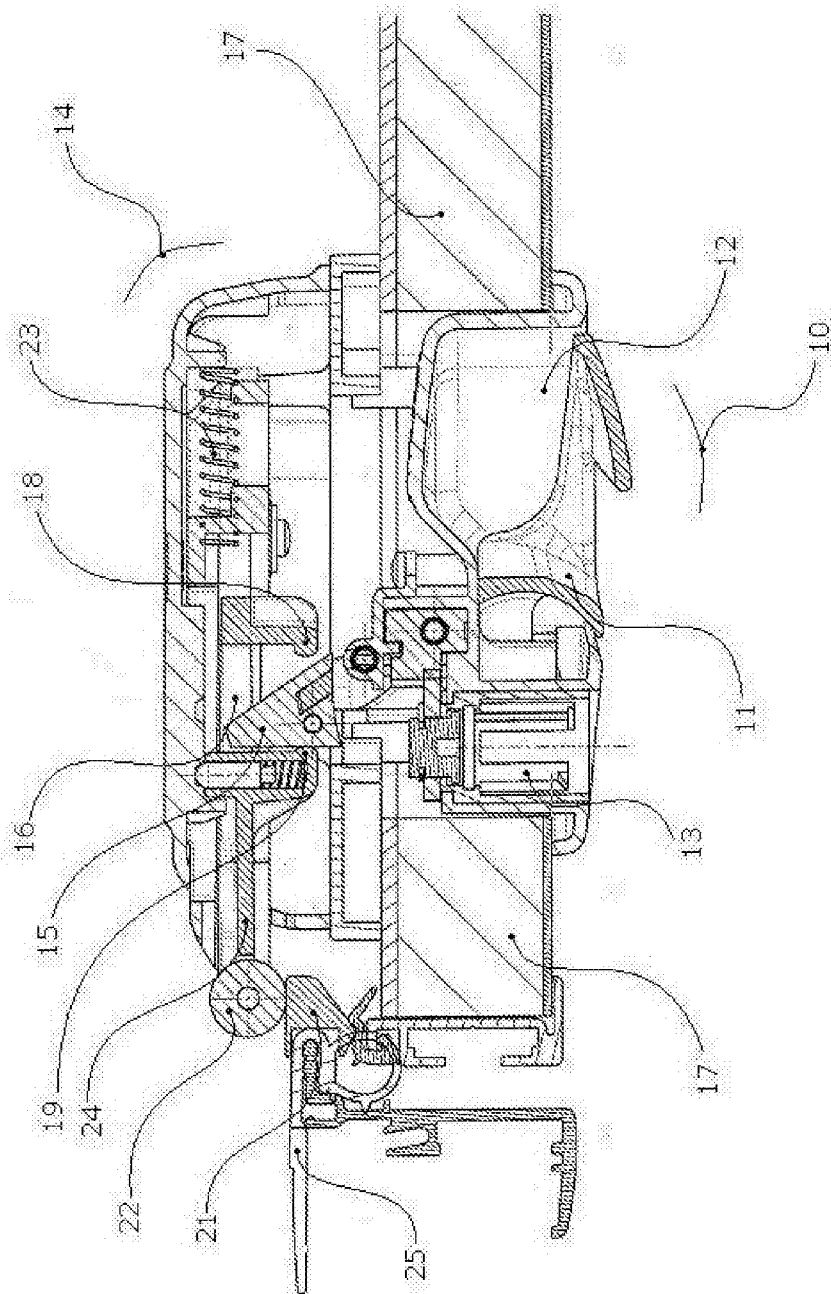


Fig. 2

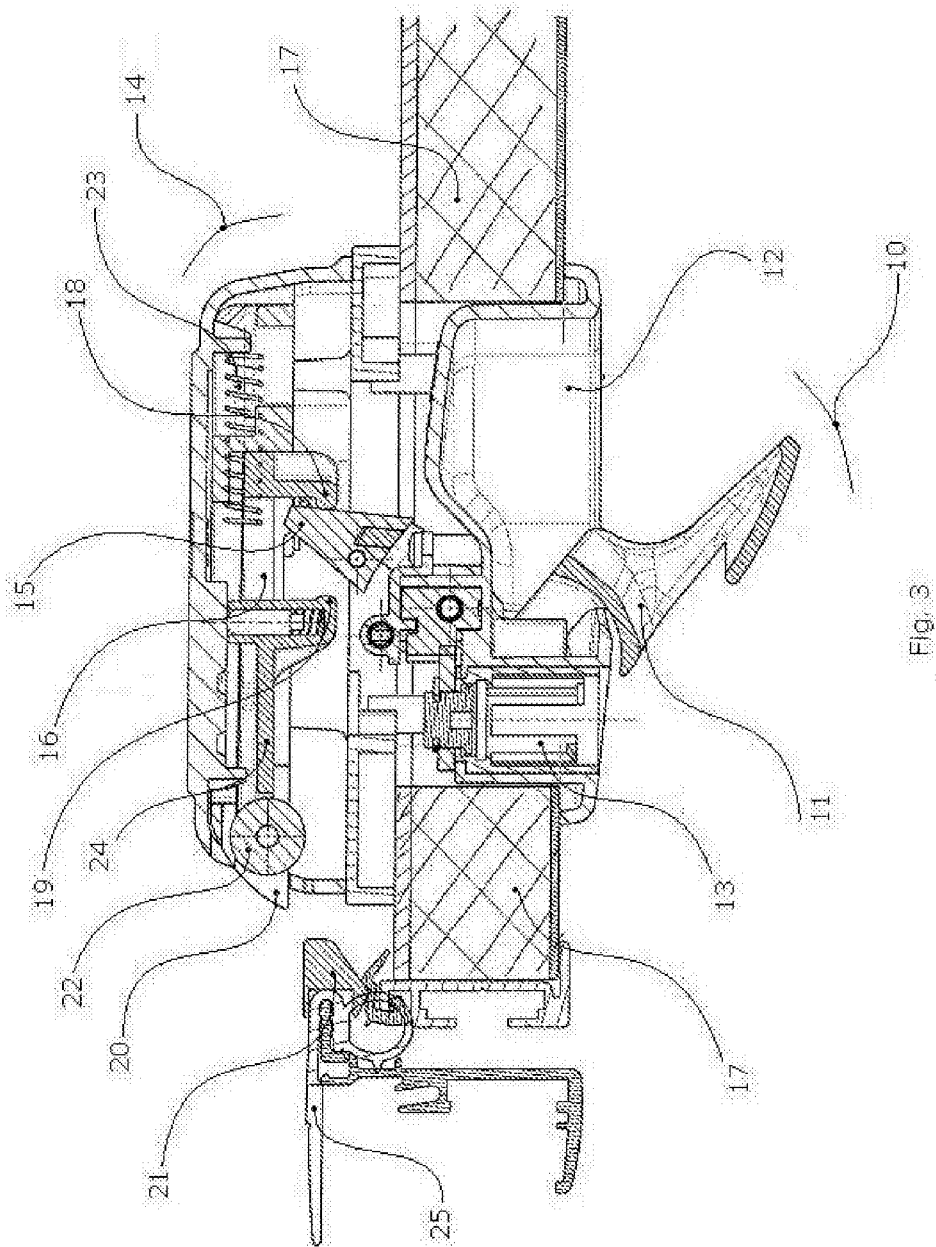


Fig. 3



EUROPEAN SEARCH REPORT

Application Number
EP 11 17 3613

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 298 01 855 U1 (RIEDHAMMER FRANZ [DE]; RIEDHAMMER MAX [DE]) 2 July 1998 (1998-07-02) * the whole document *	1-9	INV. E05B63/14 E05C1/14
X	GB 2 272 019 A (WEST ALLOY DIECASTINGS [GB]) 4 May 1994 (1994-05-04) * the whole document *	1-9	
X	W0 2007/096921 A1 (CEFIS GIOVANNI [IT]) 30 August 2007 (2007-08-30) * the whole document *	1-9	
X	DE 103 43 230 A1 (SOUTHC0 [US]) 23 September 2004 (2004-09-23) * the whole document *	1	
X	US 2006/191303 A1 (SHVARTS VLADIMIR [US]) 31 August 2006 (2006-08-31) * the whole document *	1	
X	EP 0 420 037 A2 (OBERHOLZ SOEHNE PAUL [DE]) 3 April 1991 (1991-04-03) * the whole document *	1	TECHNICAL FIELDS SEARCHED (IPC) E05B E05C
The present search report has been drawn up for all claims			
Place of search The Hague		Date of completion of the search 6 October 2011	Examiner Geerts, Arnold
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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**ANNEX TO THE EUROPEAN SEARCH REPORT
ON EUROPEAN PATENT APPLICATION NO.**

EP 11 17 3613

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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06-10-2011

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 29801855	U1	02-07-1998	NONE	
GB 2272019	A	04-05-1994	NONE	
WO 2007096921	A1	30-08-2007	NONE	
DE 10343230	A1	23-09-2004	NONE	
US 2006191303	A1	31-08-2006	AU 2006218948 A1	08-09-2006
			CA 2597674 A1	08-09-2006
			CN 101160441 A	09-04-2008
			IL 185115 A	30-12-2010
			KR 20070115914 A	06-12-2007
			NZ 560510 A	25-06-2010
			US 2008141740 A1	19-06-2008
			WO 2006093684 A2	08-09-2006
EP 0420037	A2	03-04-1991	DE 9012540 U1	31-01-1991