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(54) Automotive vehicle latch assembly

(57) Latch (1) assembly for an automotive vehicle with at least one first element, one element being mobile to the other one, and a second element comprising:
-a latch (1) intended to be fixed in the first element,
- a striker (2) with at least one wire and intended to be fixed in the second element, the latch being able to maintain the striker (2),
the latch (1) further comprising a claw adapted to receive the wire by rotating around the wire (22) according to a first axis (X1) and comprising a first face (113) adapted to face the wire, the first face (113) having a projection (114) intended to be in contact with the striker (2) either the closing or at the opening of the mobile element wherein the striker is released from the claw, said projection being made in a deformable material.

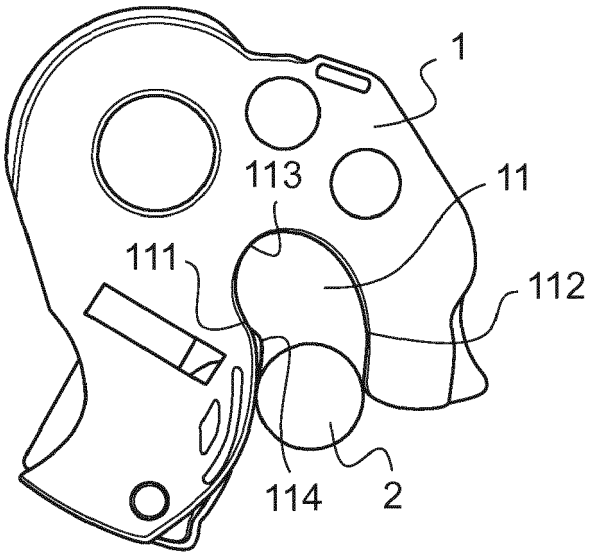

Fig.2

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Description

FIELD OF THE INVENTION

[0001] The invention relates to the field of automotive vehicle latch assembly.

TECHNICAL BACKGROUND

[0002] Figure 1 illustrates an example of an automotive vehicle latch assembly comprising a latch 1, itself, and a striker 2. The latch 1 is fixed in a fixed element of the automotive vehicle 3 and the striker 2 is mounted in a mobile element 4 of the vehicle.

[0003] The striker 2 comprises two wires 21, one wire being engaged in the claw 11 of the latch. Therefore, before opening, the mobile element is closed and cannot move. The claw is typically made in a U-shape form, that is to say the claw comprises a recess for receiving the wire.

[0004] When the mobile element is opened, energy stored in the mobile element is released. During the opening and the closing, the claw rotates according to a rotation axis X1 around the wire. As illustrated on figure 1, as the opening, as soon as the claw leaves the wire, a change in tangency occurs and the wire of the striker impacts the claw at the end 12 of the claw because of the clearance A existing between the end of the claw and the wire. This clearance A is necessary for the transmission of movement at the closing and at the opening of the mobile element of the vehicle. But, because of the clearance and of the impact between the wire and the claw at the end of the opening of the mobile element, a noisy sound is produced when the mobile element is opened.

SUMMARY

[0005] It is an object of the invention to reduce the noise at the opening and also at the closing of the mobile element of an automotive vehicle.

[0006] To this end, the invention provides a latch assembly for an automotive vehicle with at least one first element, one element being mobile to the other one, and a second element comprising :

- a latch intended to be fixed in the first element,
- a striker with at least one wire and intended to be fixed in the second element, the latch being able to maintain the striker,

the latch further comprising a claw adapted to receive the wire by rotating around the wire according to a first axis and comprising a first face adapted to face the wire, the first face having a projection intended to be in contact with the striker either the closing or at the opening of the mobile element wherein the striker is released from the claw, said projection being made in a deformable material.

[0007] Thanks to the invention, the project acts as a bumper at the opening and at the closing of the latch. Therefore, it is no more possible to have any impact between the claw and the wire since any clearance is absorbed by the projection. Therefore, the noise at the opening is reduced in a simple, efficient and not costly way.

- the claw comprises a recess and the projection is located at the contact zone of the entry of the recess, which enables to save cost by having the protrusion located in a specific area,
- the useful length of the entry of the recess is at least equal to the diameter of the wire, the useful length being the length between the walls of the claw which can be in contact with the wire, which enables a limited clearance between the claw and the wire when the wire is received into the claw,
- the thickness of the projection is equal to sensibly 10% of the thickness of the wall of the claw.
- the deformable material is made in an injectable elastomer chosen in the list comprising thermoplastic elastomer, such as HYTREL®G5544, HYTREL®5556, HYTREL®5557, HYTREL®6356, KEYFLEX®BT155D, BEXLOY®GPV55B5NL010, and polyamid, such as PA6.6

[0008] The invention also provides an automotive vehicle comprising at least one first and second elements, one element being mobile to the other one, and at least one latch assembly according to any one of the previous claims, the latch being mounted in the first element and the striker being mounted in the second element of the automotive vehicle such that the claw retains the striker by rotating around one wire of the striker.

[0009] According to an advantageous embodiment, the automotive vehicle has the latch mounted in the mobile element, such as an opening, and the wire in the fixed element, such as the chassis.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Some embodiments of apparatus in accordance with embodiments of the present invention are now described, by way of example only, and with reference to the accompanying drawings, in which:

- figure 1 shows a schematic view of a automotive vehicle latch assembly of the prior art;
- figure 2 shows a schematic view of the claw for a automotive vehicle latch assembly according to an embodiment of the invention;
- figure 3 shows a view of the claw of the latch of figure 2.

[0011] It is noted that like reference numerals represent similar parts throughout the several views of the drawings.

DESCRIPTION OF EMBODIMENTS

[0012] Figure 2 shows an automotive vehicle latch assembly comprising a latch 1, itself, and a striker 2. The said latch assembly is intended to be used for opening and closing a mobile element of an automotive element. The mobile element may be a door or a trunk and rotates according to a rotation axis. The automotive vehicle also comprised a fixed element which does not move, such as the chassis.

[0013] The latch 1 may be made a metal body molded by a plastic coating.

[0014] The latch comprises a claw 1 intended to be mounted in a first element, which may be the mobile element.

[0015] The striker 2 comprises a body 21 and at least one wire 22, here two. The striker is intended to be mounted in a second element, which may be the fixed one.

[0016] The claw 11 is able to maintain the striker 2 by rotating around the wire 22 according to a first axis X1. The first axis X1 is thus defined as the axis of insertion of the striker into the latch when closing or opening the automotive vehicle mobile element.

[0017] According to the invention, the claw comprises a first face 113 adapted to face the wire, the first face 113 having a projection 114 intended to be in contact with the striker 2 wherein the latter is introducing into the claw, said projection being made in a deformable material.

[0018] The assembly of the invention enables is a simple and cheap way a high reduction of the noise due to the opening or closing of the mobile element. Indeed, the projection acts as a dumper when the claw rotates out of the wire for making the latter free.

[0019] Thus, thanks to the use of a deformable material, the projection reduces to null the clearance between the latch and the striker and the latch assembly but allows the striker to enter through the first arm and the second arm of the U-shaped claw of the latch. Moreover, because of the deformable material of the projection, the projection is compressible in order to avoid a sudden change of tangency at the closing or at the opening of the mobile element which could generate a shock.

[0020] According to an advantageous embodiment, the claw comprises a recess and the projection is located at the contact zone of the entry of the recess. The projection may then be located at the contact area between the wire and the claw. The recess may be in a sensibly U shape. In this case, the projection is made at one end of the U, specifically the one on the side intended to be in contact with the wire.

[0021] More specifically, the said claw 11 may comprise a recess comprising a first arm 111 and a second arm 112, the first arm 111 and the second arm 112 being substantially parallel one to another. When the mobile element of the vehicle is assembled, the striker 2 of the automotive vehicle latch assembly is received by the claw 11 and thus goes from the exterior of the claw to the interior of the claw by passing between the first arm 111 and the second arm 112 of the claw. The claw 11 comprises a first face 113, the first face 113 of the claw 11 is facing the striker 2 of the latch assembly when the striker is received by the claw.

[0022] Having only one projection on one of the first or second arm of the recess enables to ease the production process comprising molding a plastic material.

[0023] According to a variant, the projection may be made on the two sides of the entry of the recess in order to limit the size of the projection and also guarantee the absorption of any clearance.

[0024] According to an advantageous embodiment, the useful length of the entry of the recess is at least equal to the diameter of the wire enables a limited clearance between the claw and the wire when the wire is received into the claw. The useful length corresponds to the length between two walls of the claw intended to receive the wire.

[0025] For example, the diameter of the wire may be comprised between 7mm and 10 mm.

[0026] The projection is dimensioned depending on the striker and the latch in order to reduce to null the clearance between the claw and the wire when opening the mobile element. The projection may thus have a thickness of about 10% of the thickness of the wall of the claw. For example, the thickness of the projection may be less than 1 millimeter, be comprised between 0,5mm and 1 mm.

[0027] The deformable material may be an injectable elastomer chosen in the list comprising nitrile, thermoplastic elastomer, such as HYTREL® G5544, HYTREL®5556, HYTREL®5557, HYTREL®6356, KEYFLEX®BT155D, BEXLOY®GPV55B5NL010, and polyamid, such as PA6.6.

Claims

1. Latch (1) assembly for an automotive vehicle with at least one first element, one element being mobile to the other one, and a second element comprising:

- a latch (1) intended to be fixed in the first element,
- a striker (2) with at least one wire and intended to be fixed in the second element, the latch being able to maintain the striker (2),

the latch (1) further comprising a claw adapted to receive the wire by rotating around the wire (22) according to a first axis (X1) and comprising a first face (113) adapted to face the wire, the first face (113) having a projection (114) intended to be in contact

with the striker (2) either the closing or at the opening of the mobile element wherein the striker is released from the claw, said projection being made in a deformable material.

2. Latch assembly according to the previous claim, wherein the claw comprises a recess and the projection is located at the contact zone of the entry of the recess.

3. Latch assembly according to the previous claim, wherein the useful length of the entry of the recess is at least equal to the diameter of the wire.

4. Latch assembly according to any one of the previous claims, wherein the thickness of the projection is equal to sensibly 10% of the thickness of the wall of the claw.

5. Latch assembly according to any one of the preceding claims, wherein the deformable material is made in an injectable elastomer chosen in the list comprising thermoplastic elastomer, such as HYTREL® G5544, HYTREL®5556, HYTREL®5557, HYTREL®6356, KEYFLEX®BT155D, BEXLOY®GPV55B5NL010, and polyamid, such as PA6.6.

6. Automotive vehicle comprising at least one first and second elements, one element being mobile to the other one, and at least one latch assembly according to any one of the previous claims, the latch being mounted in the first element and the striker being mounted in the second element of the automotive vehicle such that the claw retains the striker by rotating around one wire of the striker.

7. Automotive vehicle according to the previous claim, comprising a latch mounted in the mobile element, such as an opening, and the wire in the fixed element, such as the chassis.

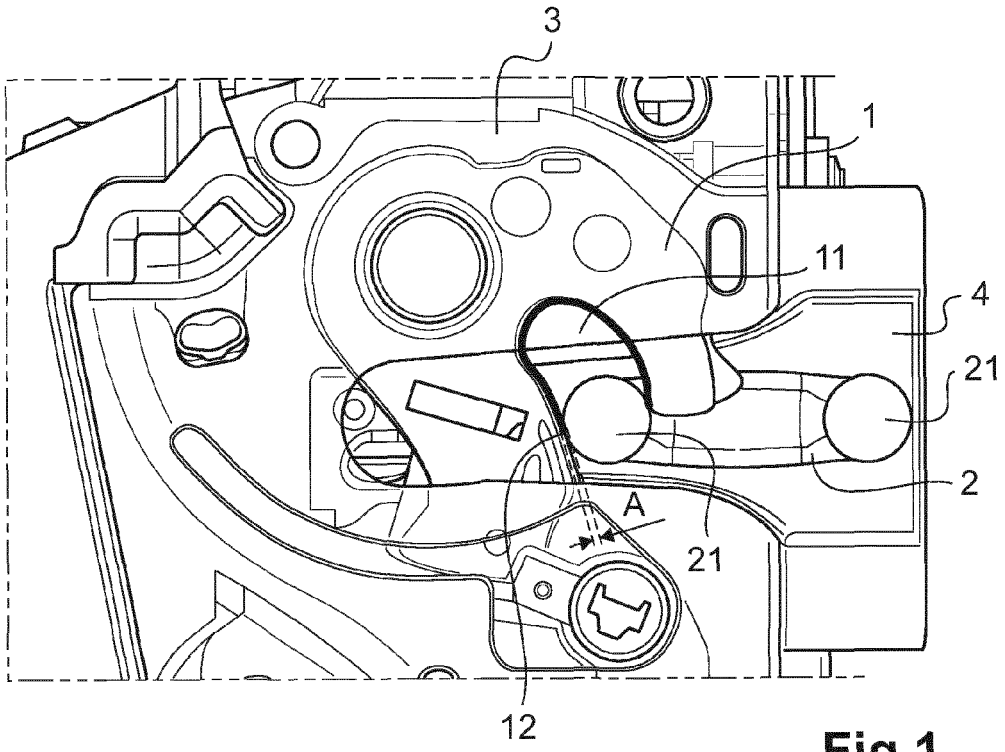

Fig.1

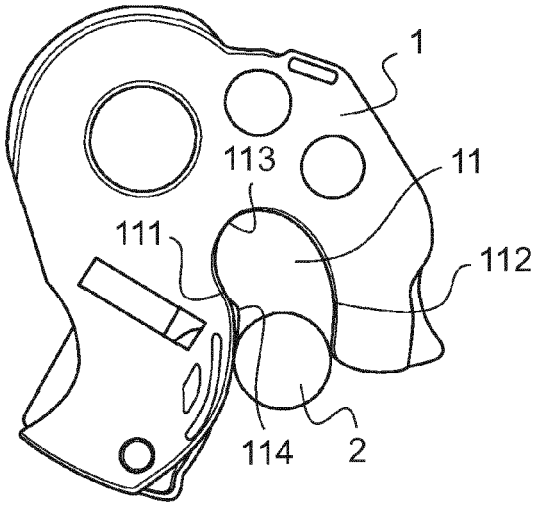

Fig.2

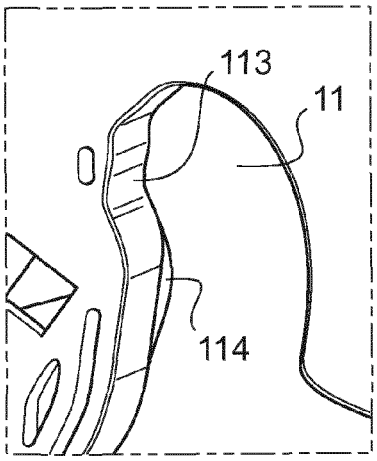

Fig.3

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EUROPEAN SEARCH REPORT

Application Number
EP 14 30 6129

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 10 2010 023904 A1 (KIEKERT AG) 22 December 2011 (2011-12-22) * paragraph [0033]; figure 5 *	1-7	INV. E05B77/40 E05B85/24
A	DE 10 2010 056227 A1 (VOLKSWAGEN AG) 28 June 2012 (2012-06-28) * paragraph [0060]; figure 5 *	1-3,6,7	
A	WO 2012/097803 A2 (KIEKERT AG) 26 July 2012 (2012-07-26) * figure 1 *	1	
A	DE 10 2006 028423 A1 (VOLKSWAGEN AG) 27 December 2007 (2007-12-27) * figure *	1	
A	US 2011/012376 A1 (HUNT ET AL) 20 January 2011 (2011-01-20) * paragraph [0025]; figures *	1	
A	DE 10 2008 035389 A1 (KIEKERT AG) 4 February 2010 (2010-02-04) * paragraphs [0021] - [0022]; figure 2 *	1	TECHNICAL FIELDS SEARCHED (IPC) E05B

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	18 December 2014	Van Beurden, Jason

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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E : earlier patent document, but published on, or after the filing date
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ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 14 30 6129

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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18-12-2014

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