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(54) Title: REAR LIGHTING DEVICE

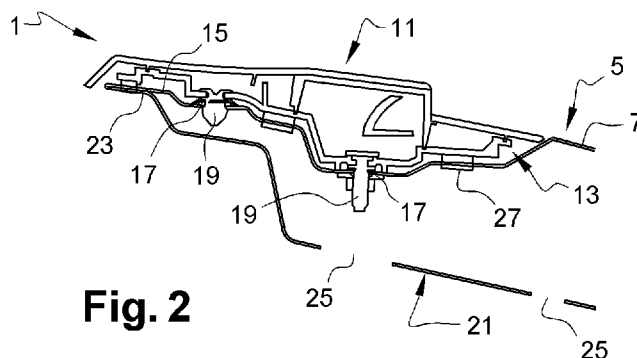


Fig. 2

(57) Abstract: A rear trunk lid (1) for an automotive three-box type vehicle comprises: an outer panel (5) with a main portion (7) and a rear portion (9); and an inner panel (21) attached to an inner side of the outer panel (5). Moreover, the main portion (7) of the outer panel (5) of the rear trunk lid (1) comprises a depression (13) which is adjacent to a front edge (15) of the main portion (7) and configured for receiving a lighting device (11).



REAR LIGHTING DEVICE

FIELD OF TECHNOLOGY

The invention is directed to the field of the rear lighting system of automotive vehicles, and more particularly to the rear lights and even more particularly to the third brake light.

BACKGROUND

For the enhancement of the traffic security, actual automotive vehicles, in addition to the two rear lights, comprise a third brake light. In general, this third light is positioned at the bottom part or at the upper part of the rear window inside the passenger compartment. In some cases, as particularly in the published patent document FR 2 949 103 A1, the third brake light is even actually fixed in a rear spoiler at the upper edge of the rear window. Although these positions of the third brake light enable a vehicle being braked to be clearly visible, they also lead to decrease the rear visibility of the driver.

Another position involves placing a third brake light on the rear part of the rear trunk lid. In this regard the published patent document DE 10 2015 015 841 A1 discloses a third brake light which consists of an illuminated decorative strip arranged horizontally between the two rear lights on a rear trunk lid. Although in this case the rear visibility of the rear window is not impacted nor is the aerodynamics, in some circumstances this decorative light can be not enough visible to indicate emergency braking.

SUMMARY

The invention addresses the technical problem of providing a solution to at least one shortcoming of the above-mentioned prior art. More specifically, the invention has for technical problem to promote the visibility of the third rear brake light and improving the integration of said light in the bodywork of the vehicle.

For this purpose, the invention is directed to a rear trunk lid for an automotive three-box type vehicle, comprising an outer panel with a main portion and a rear portion, the main portion being generally horizontal and the rear portion being generally vertical when the lid is in a normal closing portion of the trunk; an inner

panel attached to an inner side of the outer panel; wherein the main portion of the outer panel comprises a depression adjacent to a front edge of said portion, configured for receiving a lighting device.

According to a preferred embodiment of the invention, the depression extends transversally along the front edge of the main portion of the outer panel.

According to a preferred embodiment of the invention, the depression extends longitudinally over at least 100mm.

According to a preferred embodiment of the invention, the depression comprises holes for fixation of the lighting device.

According to a preferred embodiment of the invention, the lid comprises the lighting device, said device comprising an outer cover with a rear edge that flushes with the outer panel at a location distant from, or adjacent to the depression.

According to a preferred embodiment of the invention, the outer cover is generally flat with a transversal rearward shoulder forming a transparent window for transmission of light.

According to a preferred embodiment of the invention, the outer cover of the lighting device comprises a front edge that extends longitudinally beyond the front edge of the main portion of the outer panel.

According to a preferred embodiment of the invention, the inner panel has a front edge attached to the front edge of the main portion of the outer panel and extends longitudinally below the depression of said portion.

The invention is also directed to an automotive vehicle of the three-box type with a rear trunk and a rear trunk lid, wherein said lid is according to the invention.

The invention is also directed to a lighting device for an automotive vehicle, comprising a support, light sources mounted on said support, optical means mounted on said support for forming a light beam with the light of the light sources, and an outer cover mounted on said support and with a transparent window through which the light beam can be transmitted, wherein the outer cover is generally flat with a transversal rearward shoulder forming the transparent window, configured for being mounted on the rear trunk lid according to claim 1.

The invention is particularly interesting in that the configuration of the third rear brake light and its positioning, in a depression at the front edge of the outer panel of the rear trunk lid, not only avoids reducing the visibility of the driver but also enables to get a rear brake light easily observable by the other drivers. This invention is also interesting in that the holding and fastening means of the third rear brake light on the rear trunk lid enable also its mounting or demounting in an easy, rapid, clean and efficient way. Moreover, this invention is even more interesting since while improving the visibility of rear part of a vehicle, the positioning of the third rear light in a depression of the main portion of the outer panel, as well as its continuation with this last one, allow to obtain a better visual rendering with the two other rear brake lights.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will be described more in details in relation with the following figures:

Figure 1 is a perspective view of an upper face of a rear trunk lid of an automotive three-box type vehicle, with a third rear brake light, according to the invention.

Figure 2 shows a view of a cross section of the rear trunk lid of the figure 1, according to the axis II-II'.

Figure 3 is an enlarged cross-sectional view of the third brake light of the rear trunk lid of figures 1 and 2.

Figure 4 presents a top perspective view of the third brake light of the figure 3.

Figure 5 presents a below perspective view of the third brake light of the figure 3.

DETAILED DESCRIPTION

Figure 1 is a perspective view of the upper face of a rear trunk lid 1 of an automotive three-box type vehicle, according to the invention. The rear trunk lid 1, which is showed on this figure 1, is actually formed of an outer panel 5 and an inner panel (not visible). The outer panel 5 is formed of two portions, a main portion 7 generally horizontal, and a rear portion 9 generally vertical when the lid 1 is in a normal closing position of the trunk (as illustrated). The main portion 7 of the outer panel 5 further comprises a depression (not visible on figure 1) adjacent to a front edge located generally opposite the lower edge of the rear window of the vehicle (not represented), this depression being actually configured for receiving a lighting device constituting a third rear brake light 11. Concerning the inner panel, this panel is for its part attached

to an inner side of the outer panel 5. In this case in figure 1, only the outer panel 5 with the lighting device 11 positioned at a front edge of this panel 5 is visible, the inner panel being below the outer panel 5.

Figure 2 is a view of a cross section of the rear trunk lid 1 of the figure 1, along the axis II-II'. In this figure 2, we clearly observe the depression 13 of the outer panel 5 of the main portion 7 of the rear trunk lid 1. This depression 13 actually extends transversally along the front edge 15 of the main portion 7, as well as longitudinally over at least 100 mm, and comprises also holes 17 in which are introduced holding means 19 of the third rear brake light 11. Conversely, as it can be noticed in figure 2, the inner panel 21 of the rear trunk lid 1 has a front edge 23 which is attached to the front edge 15 of the main portion 7 of the outer panel 5 and extends longitudinally below the depression 13 of this portion 7. The inner panel 21 comprises also apertures 25 which are designed among others to provide access for engaging and/or tightening the fixation means 27 of the third rear brake light 11 and thus to securely fix this last one 11 in the depression 13 of the main portion 7 of the outer panel 5 of rear trunk lid 1.

Figure 3 is an enlarged view of the third brake light 11 of the rear trunk lid 1 of figures 1 and 2. This third rear brake light 11 comprises actually a support 29 on which are mounted light sources 31 such as one or more electroluminescent diodes (LEDs), optical means 33 such as a parabolic reflector for forming a light beam with the light emitted by the light sources 31, and an outer cover 35 with a transparent window 37 through which the light beam can be transmitted.

Preferably, and as illustrated in figure 3, the outer cover 35 of the third rear brake 11 according to the invention, is generally flat with a transversal rearward shoulder 39 forming the transparent window 37, and it also presents a front 41 and a rear edge 43. The front edge 41 actually extends longitudinally beyond the front edge 15 of the main portion 7 of the outer panel 5 of the rear trunk lid 1 (see figure 2), and the rear edge 43 flushes with the outer panel 5 at a location distant from or adjacent to the depression 13 (see figure 2). In this case, and according to the invention, the transversal rearward shoulder 39 of the third rear brake light 11, is in fact positioned between the front 41 and the rear edge 43 of the outer cover 35.

Concerning the support 29 of the third rear brake light 11, advantageously it conforms to the depression 13 (not represented on figure 3, see figure 2) of the main portion 7

of the outer panel 5 of the rear trunk lid 1, allowing thus the embedding of the lighting device 11 in the rear trunk lid 1. Advantageously, this support 29 comprises holes 45 placed in front of the holes 17 of the outer panel 5 (see figure 2), and through which are introduced holding means 19 to maintain the support 29 on the rear trunk lid 1.

Figure 4 and figure 5 are respectively a view from above and below of the third rear brake light 11 according to the invention. On figure 4, it can be observed the transparent window 37 through which the light beam of the third rear brake light 11 is transmitted, this window 37 extends along the lighting device 11. In figure 5, it can be observed the lower part of the support 29 of the rear brake light 11 with the different holes 45 for introducing means of holding/fixation 19/27 (not visible) in the depression 13 (not represented) of the outer panel 5 of the rear trunk lid 1 (not represented).

WHAT IS CLAIMED IS:

1. A rear trunk lid (1) for an automotive three-box type vehicle, comprising:
 - an outer panel (5) with a main portion (7) and a rear portion (9), the main portion (7) being generally horizontal and the rear portion (9) being generally vertical when the lid (1) is in a normal closing position of the trunk;
 - an inner panel (21) attached to an inner side of the outer panel (5);
 - wherein the main portion (7) of the outer panel (5) comprises a depression (13) adjacent a front edge (15) of said portion (7), configured for receiving a lighting device (11).
2. The rear trunk lid (1) according to claim 1, wherein the depression (13) extends transversally along the front edge (15) of the main portion (7) of the outer panel (5).
3. The rear trunk lid (1) according to claim 1, wherein the depression (13) extends longitudinally over at least 100mm.
4. The Rear trunk lid (1) according to claim 1, wherein depression (13) comprises holes (17) for fixation of the lighting device (11).
5. The rear trunk lid (1) according to claim 1, wherein said lid (1) comprises the lighting device (11), said device (11) comprising an outer cover (35) with a rear edge (43) that flushes with the outer panel (5) at a location distant from, or adjacent to the depression (13).
6. The rear trunk lid (1) according to claim 5, wherein the outer cover (35) is generally flat with a transversal rearward shoulder (39) forming a transparent window (37) for transmission of light.
7. The rear trunk lid (1) according to one of claims 5 and 6, wherein the outer cover (35) of the lighting device (11) comprises a front edge (41) that extends longitudinally beyond the front edge (15) of the main portion (7) of the outer panel (5).
8. The rear trunk lid (1) according to claim 1, wherein the inner panel (21) has a front edge (23) attached to the front edge (15) of the main portion (7) of the outer panel (5) and extends longitudinally below the depression (13) of said portion (7).
9. An automotive vehicle of the three-box type with a rear trunk and a rear trunk lid

(1), wherein said lid (1) is according to claim 1.

10. A lighting device (11) for an automotive vehicle, comprising a support (29), light sources (31) mounted on said support (29), optical means (33) mounted on said support (29) for forming a light beam with the light of the light sources (31), and an outer cover (35) mounted on said support (29) and with a transparent window (37) through which the light beam can be transmitted, wherein the outer cover (35) is generally flat with a transversal rearward shoulder (39) forming the transparent window (37), configured for being mounted on the rear trunk lid (1) according to claim 1.

1/1

Fig. 1

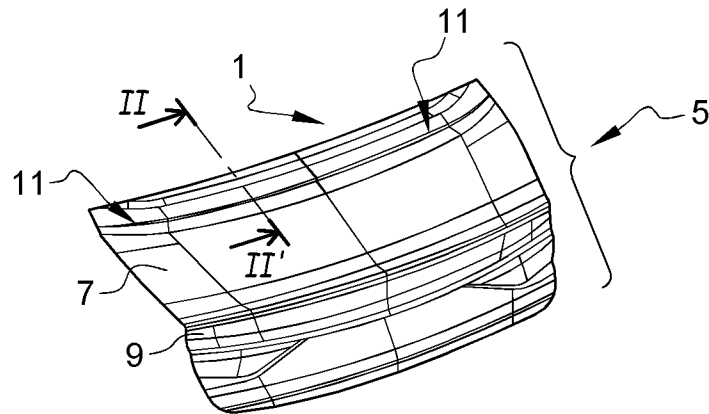


Fig. 2

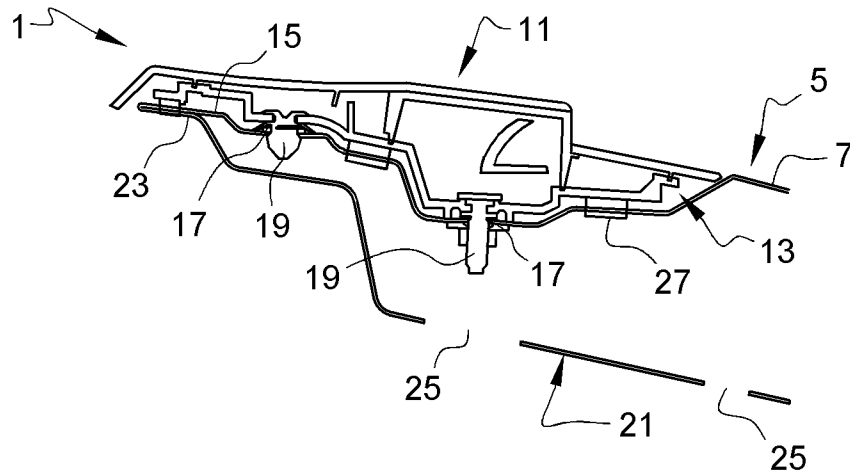


Fig. 3

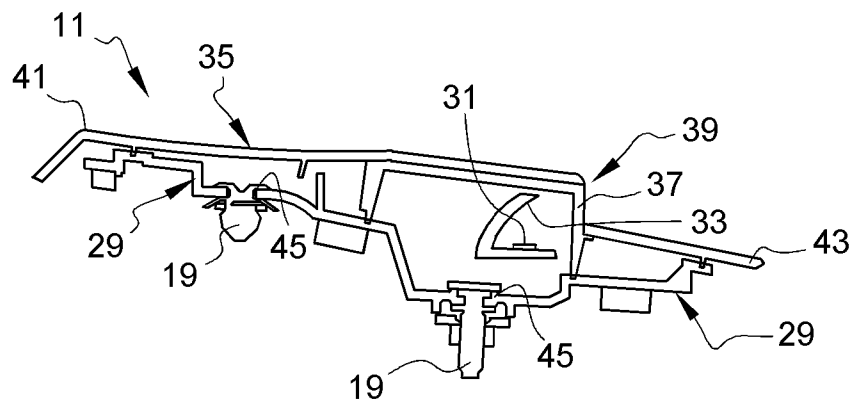


Fig. 4

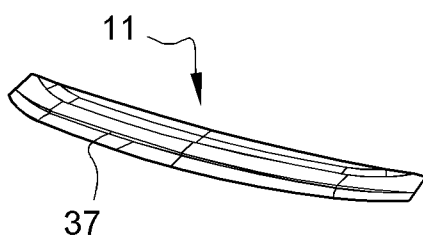
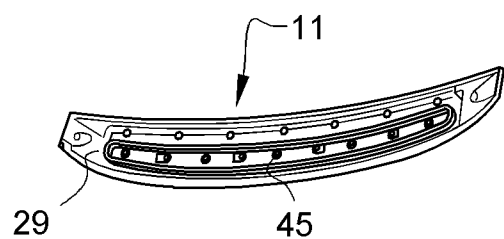


Fig. 5



INTERNATIONAL SEARCH REPORT

International application No.

PCT/CN2019/076057

A. CLASSIFICATION OF SUBJECT MATTER

B60Q 1/44(2006.01)i

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

B60Q1/-

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

CNPAT, CNKI, WPI, EPODOC: stop, brake, rear, light+, lamp+, trunk, lid, high, mount+, position+

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	CN 203666503 U (BEIJING MOTOR CO., LTD.) 25 June 2014 (2014-06-25) description paragraphs [0002]-[0024], figures 1-2	1-10
A	CN 202573969 U (SHANGHAI CHAOCHUANG ADVERTISEMENT CO., LTD. ET AL) 05 December 2012 (2012-12-05) the whole document	1-10
A	CN 2803813 Y (LIAO, CHUNRONG) 09 August 2006 (2006-08-09) the whole document	1-10
A	US 2018264991 A1 (DAIMLER AG.) 20 September 2018 (2018-09-20) the whole document	1-10
A	US 4631516 A (CLINKER, GERALD) 23 December 1986 (1986-12-23) the whole document	1-10
A	JP H06191439 A (MAZDA MOTOR) 12 July 1994 (1994-07-12) the whole document	1-10



Further documents are listed in the continuation of Box C.



See patent family annex.

* Special categories of cited documents:

“A” document defining the general state of the art which is not considered to be of particular relevance

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“O” document referring to an oral disclosure, use, exhibition or other means

“P” document published prior to the international filing date but later than the priority date claimed

“T” later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

“X” document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

“Y” document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

“&” document member of the same patent family

Date of the actual completion of the international search

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INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.

PCT/CN2019/076057

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CN	203666503	U	25 June 2014	None			
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