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(54) **A LOCK WITH SIMPLIFIED ASSEMBLY FOR DOORS AND HATCHES OF MOTOR VEHICLES SUCH AS VANS, CARAVANS, MOTOR CARAVANS AND SIMILAR**

(57) Simplified assembly lock for doors and hatches of motor vehicles such as vans, caravans, motorhomes and the like. The lock may be fastened with simple rivets and it is adapted to allow an effective fastening to the door or hatch without the need to reinforce the panels of the door with inserts of a material having increased density and robustness such as to allow an adequate support for the screws or similar fastening means in use with current locks.

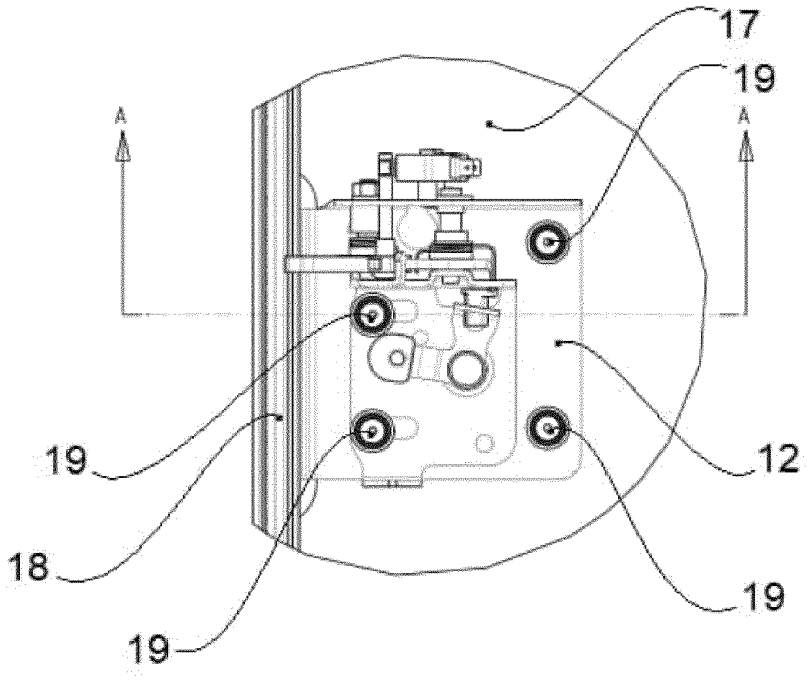

Fig. 2

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Description

FIELD OF THE INVENTION

[0001] The present invention relates to the field of closing devices and safety locks for doors and hatches; in greater detail, the present invention relates to the technical field of locks for doors, tailgates, and hatches, in particular for motor vehicles, such as vans, caravans, motorhomes and the like.

BACKGROUND ART

[0002] Lock blocks and blocks containing the counterpart plate to the lock which is adapted to engage with the locking linkage of the aforesaid lock are known in the field of closing devices and safety locks for doors and hatches.

[0003] The lock block and the corresponding block containing the plate adapted to engage with the lock locking linkage must be fastened, respectively, to the door and frame fastened to the wall accommodating the door. In case of vans, caravans, motorhomes and the like, both the door and the wall accommodating the door are often made by means of composite-material panels comprising two rigid outer plates made of relatively lightweight material such as, for example, aluminum (on the outer side of the door) and wood (on the inner side of the door), and a thick inner layer of lightweight insulating material such as, for example, polystyrene. Thermally insulating and lightweight materials are used to increase the thermal insulation of the passenger compartment inside the vehicle with respect to the outside while simultaneously limiting the weight of the vehicle itself.

[0004] The fastening of the blocks comprising the lock obviously must take into consideration the relatively weak structure of the composite panels used in the doors or tailgates of vehicles such as vans, caravans, motorhomes and the like, on which these blocks must be fastened. For this reason, the panels used in these vehicles are provided with inner inserts made of a material which is denser, stronger and more solid than the materials with which the inside of these panels is commonly made. These inner inserts, often made of wood, are placed at areas in which lock blocks are arranged, or other accessories are arranged such as, for example, the supports for the waste basket, so as to provide an adequate support for the related fastening screws.

[0005] Thus, the doors, and also some walls of vehicles such as vans, caravans, motorhomes and the like, must be provided with panels reinforced by the aforesaid inserts and therefore, are weighed down and more costly, thus generally requiring additional processing.

[0006] Therefore, it is an object of the present patent application to introduce a lock for simplified assembly on doors and hatches of motor vehicles such as vans, caravans, motorhomes the like. The lock according to the invention is adapted to allow the door or hatch to be effectively fastened without the need to reinforce the door panels with inserts made of a material having increased density and robustness.

BRIEF DESCRIPTION OF THE INVENTION

[0007] The invention achieves the intended object with a lock provided with a mounting base piece adapted to engage with the frame of a door or hatch - in particular, for vans, caravans, motorhomes and the like - and allow the fastening thereof also on panels not provided with reinforcing inserts.

[0008] The doors commonly employed for vans, caravans, motorhomes and the like are made by means of a composite panel comprising generally two outer plates made of rigid but relatively lightweight material such as, for example, aluminum (usually on the outer side of the door) and wood (usually on the inner side of the door), and a thick inner layer of insulating and lightweight material such as, for example, polystyrene.

[0009] The aforesaid doors further comprise a frame, generally a metal frame, having, for example, an "L"-shaped or "C"-shaped section and such as to provide the edge of the composite panel. Said frame is applied to the composite panel by means of suitable fastening means, for example, by means of structural adhesives, and comprises at least one edge adapted to cover the corners of the door so as to finish and give stability to the composite structure of the door itself.

[0010] The mounting base piece of the lock according to the invention is made of rigid and resistant material, preferably metal material, and comprises at least one through hole for fastening the lock closing block.

[0011] In a preferred embodiment, the mounting base piece according to the invention comprises four fastening holes, two of which passing through the main body of the lock. In another preferred embodiment, the base piece of the lock according to the invention has a greater surface than the volume of the main body of the lock.

[0012] The mounting base piece of the lock according to the invention comprises a main flat surface which supports the main body of the lock and, when installed, is between the main body of the lock and the composite panel of the door.

[0013] One of the four sides of the base piece also has a step which joins said main flat surface to an end which is lowered with respect to the main surface of the base piece.

[0014] The application of the lock according to the invention provides making, in the door, a recess made at the border of the composite panel covered by the edge of the frame, and a plurality of seats or housings. Said recess has a length which is at least equal to the length of the side of the base piece provided with the aforesaid lowered end, and the number of said seats or housings is equal to the number of holes of the base piece and has positions corresponding to said holes.

[0015] The assembly of the lock closing block provides

positioning the base piece so that the aforesaid lowered end of the base piece is housed in said recess and engages with the edge of said frame. The closing block is then arranged on the base piece so that said seats or housings correspond to the holes of the base piece of the lock. To finish, fastening is carried out by means of, for example, applying rivets which stably engage with the aforesaid seats or housings made in the composite panel of the door.

[0016] If the profile provided by the frame is provided with teeth or slots or similar processing adapted to provide an engaging counterpart for the aforesaid end of the base piece, it may be avoided to make the recess at the border of the composite panel described above.

[0017] Thereby, fastening may be carried out in a stable and secure manner also on doors which are not provided with inner inserts made of denser, stronger and more solid material adapted to allow the engagement of fastening screws because the metal structure of the lock engages with the frame, made of metal, generally made of aluminum, which constitutes the edge of the door.

BRIEF DESCRIPTION OF THE FIGURES

[0018] Further objects, features and advantages of the present invention will be more apparent from the following detailed description provided by way of non-limiting example and illustrated in the accompanying figures, in which:

Figure 1 shows a sectional view of the lock according to the present description, applied to a door, and
Figure 2 shows a plan view of the lock according to the present description, applied to a door.

[0019] The following description of exemplary embodiments relates to the accompanying drawings. The same reference numerals in the various drawings identify the same elements or similar elements. The following detailed description does not limit the invention. The scope of the invention is defined by the appended claims.

DETAILED DESCRIPTION OF THE INVENTION

[0020] In reference to accompanying Figures 1 and 2, lock 10 according to the present description comprises a main body 11 and a mounting base piece 12.

[0021] The mounting base piece 12 comprises a main flat surface 13 which supports the main body 11 of lock 10 and, when installed, is between the main body of the lock and plate 16 of the composite panel of door 17.

[0022] This base piece12 has a step 14 which joins said main flat surface 13 at an end 15 which is lowered with respect to the main surface of the base piece 12. Said end constitutes an element for fastening the base piece, and therefore the whole lock, to the composite panel of door 17 by means of a mechanical engagement with the edge of frame 18.

[0023] The base piece 12 further comprises at least one fastening through hole. In a preferred embodiment, the mounting base piece 12 according to the invention comprises four fastening holes 19, two of which passing through the main body of lock 11. In another preferred embodiment, the base piece of the lock according to the invention has a greater surface than the volume of the main body 11 of the lock.

[0024] The doors commonly employed for vans, caravans, motorhomes and the like are made by means of a composite panel having a structure generally comprising two plates 16 made of rigid but relatively lightweight material such as, for example, aluminum (usually employed on the outer side of the door) and wood (usually employed on the inner side of the door), and a thick layer of insulating and lightweight material such as, for example, polystyrene, interposed between the two plates.

[0025] These doors further comprise a frame 18 which is used to outline the thickness of the composite panel of the door so as to protect it and provide the door structure with stability and solidity. This frame is made with a profile, generally a metal profile having a "C"- or "L"-shaped section, having a larger part of width adapted to cover the thickness of the composite panel and at least one smaller part of width adapted to cover the corner of the composite panel of door 17 defined by the end of at least one of the plates of said composite panel.

[0026] The assembly of the lock according to the present description provides making a recess in the corner of the door covered by the frame and a recess for each fastening hole 19 of the base piece12, in a position corresponding to said holes. The recess in the corner will have dimensions such as to receive the lowered end 15 of the base piece 12. Once inserted in the recess, the lowered end 15 engages the edge of frame 18 so that the upper surface of the lowered end 15 presses against the inner face of the edge of frame 18. At this point, simple rivets or other suitable fastening means may be applied through the fastening holes 19 to stably fasten lock 10 to the composite panel of door 17. In a preferred embodiment, threaded inserts assembled on the composite panel of door 17 must correspond to the fastening holes 19 of the base piece 12.

[0027] If the profile making frame 18 is fitted with teeth or slots or similar processing adapted to provide an engagement counter-part for the aforesaid end 15 of the base piece 12, it may be avoided to make the recess at the border of the composite panel and described above.

[0028] Finally, in a preferred embodiment of the invention, lock 10 comprises a base piece 12 not integral with, rather separate from the body of lock 10, and adapted to be interposed between the lock itself and the composite panel of door 17. Thereby, locks not originally provided with the base piece 12 described above may be adapted for assembly on composite panels without the need of inner reinforcing inserts.

[0029] The lock according to the invention described is applied to doors provided with a closing point or mul-

tiple closing points and, in a preferred embodiment, is provided with an actuation or release handle.

Claims

1. A lock (10) for doors and hatches that comprise a composite panel (17) consisting of two plates made of rigid material, an inner layer of thermal-insulating material and a frame (18) which provides the edge of the door or hatch, **characterized in that** it comprises a base piece (12) provided with at least one through hole (19) adapted to house suitable fastening means and with a side provided with an end (15) adapted to engage with said frame (18) when the lock (10) is used.

2. A lock (10) according to claim 1, **characterized in that** said base piece (12) is not integral with, rather separate from the body of the lock (10) and it is adapted to be interposed between the lock itself and the composite panel (17) of the door.

3. A lock (10) according to one or more of the preceding claims, **characterized in that** said base piece (12) comprises a step (14) which joins the main surface (13) of the base piece (12) to an end (15) which is lowered with respect to the main surface (13) of the base piece, said lowered end (15) being adapted to engage with said frame (18) when the lock (10) is used.

4. A lock (10) according to one or more of the preceding claims, **characterized in that** said end (15) of the base piece (12) is configured to engage with a tooth or slot or a similar processing of the profile of the frame (18).

5. A lock (10) according to one or more of the preceding claims, **characterized in that** the mounting base piece (12) comprises four fastening holes (19), two of which passing through the main body (11) of the lock (10).

6. A lock (10) according to one or more of the preceding claims, **characterized in that** the mounting base piece (12) has a greater surface than the volume of the main body (11) of the lock (10).

7. A lock according to one or more of the preceding claims, **characterized in that** it is applicable to doors with one or more closing points.

8. A lock according to the preceding claims, **characterized in that** it comprises an actuation or release handle.

9. A lock according to the preceding claims, **characterized in that** said fastening points are made by means of threaded inserts mounted on the composite panel (17).

10. A lock according to the preceding claims, **characterized in that** said suitable fastening means are screws or rivets.

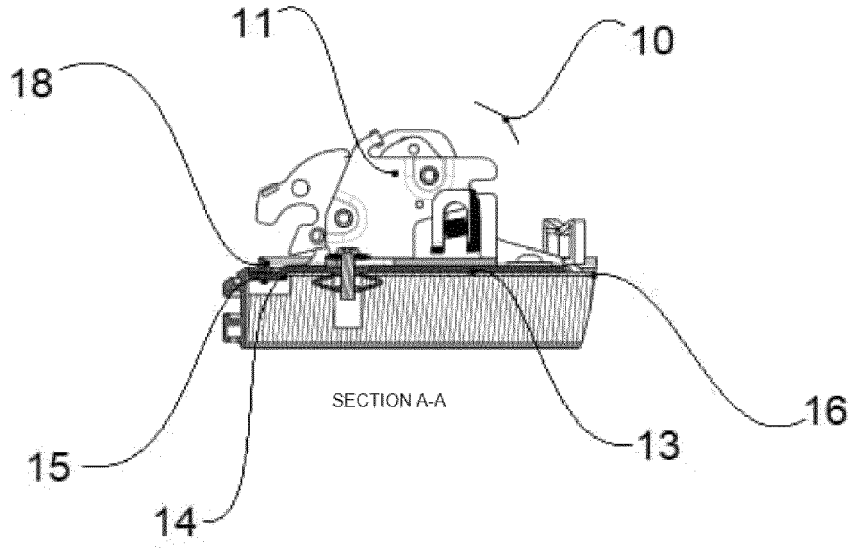

Fig. 1

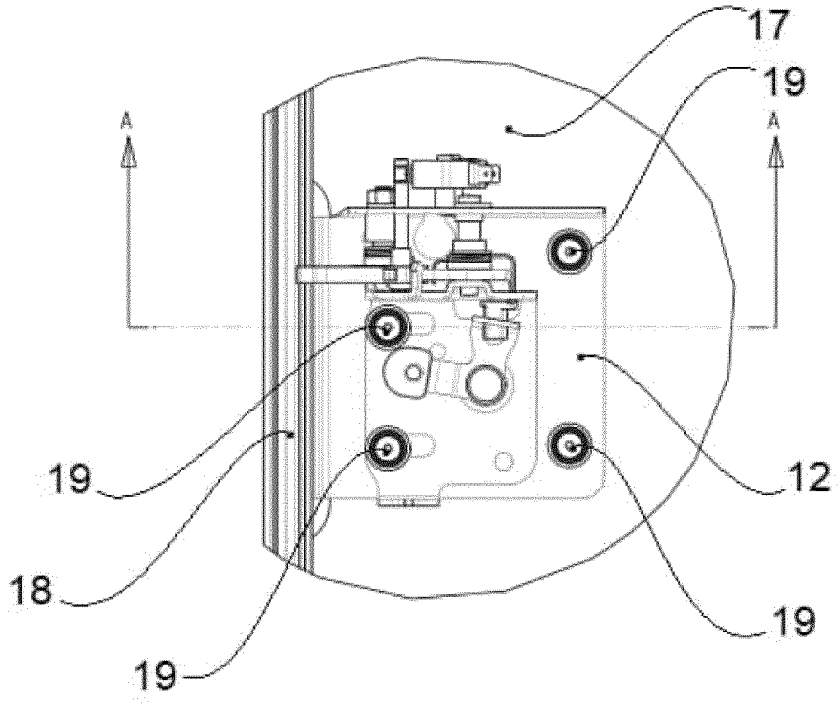

Fig. 2

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EUROPEAN SEARCH REPORT

Application Number
EP 24 15 9133

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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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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	13 May 2024	Westin, Kenneth

CATEGORY OF CITED DOCUMENTS

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