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ASSEMBLY FOR LOCKING THE DOOR OF VEHICLES

(57) An assembly for locking the door (A) of vehicles (B), of the type of vans, trucks, lorries, semi-trailer trucks, trailers and the like, which comprises at least one base plate (2), which can be rigidly applied to the frame of the vehicle (B), proximate to an access to an internal compartment. Furthermore, the assembly comprises a lever (3), which can be rigidly anchored to a rod (C) which can be rotatably supported by the door (A) that at least partially closes the access to the compartment. The plate (2) comprises means of retaining (4) the lever (3), which can be activated when it is arranged in at least one respective preset angular position and the door (A) is deployed to close the access to the compartment. The plate (2) and the lever (3) are affected by a further mutual coupling apparatus (5), which can be activated when the lever (3) is retained by the plate (2) by way of the means (4), in order to define a stably locked configuration of the door (A), and can be selectively deactivated by an operator, in order to allow the free movement of the lever (3) and the unlocking of the door (A).

The assembly comprises an auxiliary locking unit (8), which can be coupled to the lever (3) and comprises two splayed strips (8a) which are mutually opposite and mutually proximate, and are provided with at least respective first slots (9a) which are mutually facing. When the lever (3) is retained by the plate (2) by way of the means (4) between the splayed strips (8a), a lug (10) is interposed, which is coupled to the plate (2) and has a respective first eyelet (11a), which is aligned with the first slots (9a) in order to allow, in the first eyelet (11a) and in the first slots (9a), the introduction of a control cable (D), for obstructing the rotation, even partial, of the lever (3) and the movement, even partial, of the door (A)

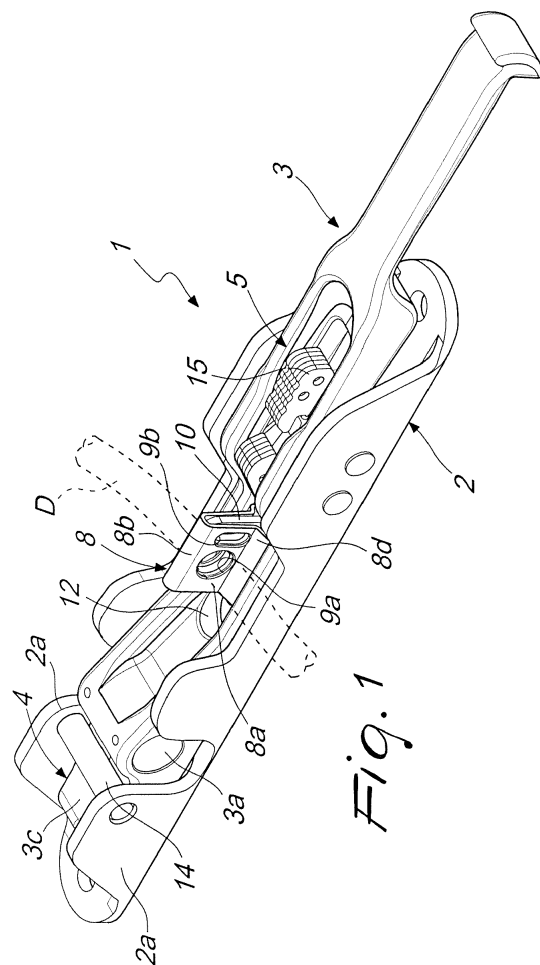


Fig. 1

Description

[0001] The present invention relates to an assembly for locking the door of vehicles.

[0002] In vehicles for professional use such as vans, lorries, trucks, semi-trailer trucks, and the like, the rear doors are typically associated with adapted apparatuses, sometimes called "undersill" devices, which ensure the stable locking of the door, when the latter is deployed to close the internal compartment of the body of the vehicle (which is used for transporting goods).

[0003] According to methods that are now consolidated, such devices thus comprise a contoured plate, which is fixed to the body, below the sill of the door (hence the term "undersill"), and a lever, which is supported in a cantilever fashion, rigidly, by a vertical rod, which in turn is rotatably coupled to the door. Typically in fact, the rod is rotatably accommodated inside the door and protrudes outside the latter above and/or below, where it is coupled with the lever.

[0004] When the door is moved to close the body, the lever will be facing and proximate to the plate (resting thereupon), and one end of the lever can thus be engaged with a corresponding retaining element, which is defined by the plate, thus ensuring the desired locking of the door.

[0005] In this manner, the device ensures the locking of the door (by way of the coupling between the end of the lever and the retaining element). Subsequently, in order to reopen the door the user has to grasp the lever and impose a partial rotation thereon, in order to cause the disengagement thereof from the retaining element. However, for reasons of security, the rotation is usually allowed only by simultaneously pressing an adapted button, which is integral with the plate and is by other means kept elastically in interference with such rotation.

[0006] Regulations stipulated by the Customs Authorities of some countries require that undersill devices meet a further requirement: they require in fact that, in the locked configuration of the door, the disengagement of the lever from the plate can also be prevented by a metallic cable, conveniently arranged, so that only by breaking or extracting the cable is it possible to actuate the device in order to reopen the body.

[0007] During an inspection, the integrity of the cable (and of other seals associated therewith) can thus tell the Customs officers that no further (and illegal) accesses have been made to the internal compartment of the body (for example in order to load goods that were not declared), in the time interval comprised between positioning the cable and conducting the inspection.

[0008] Therefore, to perform such function, according to conventional methods, a first lug, which has at least one first slot, rises from the contoured plate; when the door is closed and the lever is engaged with the retaining element, the first lug will be facing a second lug, which is defined by said lever and is provided with a second slot. Thus, it is possible to thread the cable into the two slots and obtain the desired result: even by pressing the

button, it is in fact impossible to gain access to the internal compartment of the body, because the necessary rotation of the lever (and thus of the door) is prevented by the cable.

[0009] Some Customs Authorities however have recently stipulated even more restrictive directives in this area, to the point where the implementation solutions described above are no longer sufficient.

[0010] It should be noted in fact that even though the cable, inserted in the slots of the two lugs, evidently prevents a sufficient rotation of the lever and of the door to offer full access to the compartment, pressing the button still obtains the disengagement of the lever from the retaining element and thus, thanks to the flexibility of the cable and to the inevitable plays present in the coupling between the cable and the two slots, it is possible to obtain a minimal rotation of the door (of a few degrees for example).

[0011] Under some regulations such minimal rotation is now completely unacceptable, in that it still defines a minimal crack (of a few centimeters for example) between the door and the surrounding frame of the vehicle, which is sufficient to (illegally) insert documents or flat products inside the body (thus rendering the simple verification of the integrity of the cable ineffective).

[0012] Furthermore, the configuration described above allows an ill-intentioned individual to force apart the two lugs, and also the respective slots, thus increasing the width of the obtainable crack and thus making it possible to place bigger objects or goods inside the internal compartment. Subsequently, in order to elude checks, the ill-intentioned individual can easily return the lugs to the original configuration.

[0013] It should moreover be noted that only the Customs Authorities of some countries impose rules (more or less restrictive) of the type described above, and this causes further problems for the makers of undersill devices, in that it requires them to make, stock and track different versions of the same devices, or to develop complex solutions in order to adapt the same product to different requirements and regulations.

[0014] The aim of the present invention is to solve the above mentioned problems, by providing a locking assembly in which, in the configuration for closing the compartment of the body, a control cable can be arranged to obstruct any movement, even minimal, of the door, which would be adapted to define any kind of access to the compartment.

[0015] Within this aim, an object of the invention is to provide an assembly for locking the door of vehicles which ensures full compliance with Customs regulations.

[0016] Another object of the invention is to provide a locking assembly in which the function of the control cable, arranged to obstruct movements, even minimal, of the door, cannot be easily bypassed by ill-intentioned individuals.

[0017] Another object of the invention is to provide a versatile locking assembly that offers the option of using

a control cable, as an obstacle to moving the door, even minimally, only where required by the regulations of the country of application.

[0018] Another object of the invention is to provide a locking assembly that ensures a high reliability of operation.

[0019] Another object of the invention is to provide a locking assembly that adopts an alternative technical and structural architecture to those of conventional locking assemblies.

[0020] Another object of the invention is to provide a locking assembly that can be easily implemented using elements and materials that are readily available on the market.

[0021] Another object of the invention is to provide a locking assembly that is low cost and safely applied.

[0022] This aim and these and other objects which will become better apparent hereinafter are achieved by an assembly for locking the door of vehicles, of the type of vans, trucks, lorries, semi-trailer trucks, trailers and the like, which comprises at least one base plate, which can be rigidly applied to the frame of the vehicle, proximate to an access to an internal compartment, and a lever, which can be rigidly anchored to a rod which can be rotatably supported by the door that at least partially closes the access to the compartment, said plate comprising means of retaining said lever, which can be activated when said lever is arranged in at least one respective preset angular position and the door is deployed to close the access to the compartment, said plate and said lever being affected by a further mutual coupling apparatus, which can be activated when said lever is retained by said plate by way of said means, in order to define a stably locked configuration of the door, and can be selectively deactivated by an operator, in order to allow the free movement of said lever and the unlocking of the door, characterized in that it comprises an auxiliary locking unit, which can be coupled to said lever and comprises two splayed strips which are mutually opposite and mutually proximate and are provided with at least respective first slots which are mutually facing, a lug being interposed when said lever is retained by said plate by way of said means between said splayed strips, and being coupled to said plate and having a respective first eyelet, which is aligned with said first slots in order to allow, in said first eyelet and in said first slots, the introduction of a control cable, for obstructing the rotation, even partial, of said lever and the movement, even partial, of the door.

[0023] Further characteristics and advantages of the invention will become better apparent from the description of a preferred, but not exclusive, embodiment of the locking assembly according to the invention, which is illustrated by way of non-limiting example in the accompanying drawings wherein:

Figure 1 is a perspective view of a locking assembly according to the invention;

Figure 2 is a front elevation view of the locking as-

sembly in Figure 1;

Figure 3 is a view from below of the locking assembly in Figure 1;

Figure 4 is a sectional view of Figure 3, taken along the line IV-IV;

Figure 5 is a perspective view of the base plate;

Figure 6 is a front elevation view of the plate in Figure 5;

Figure 7 is a perspective view of the lever;

Figures 8 and 9 are perspective views from opposite sides of the auxiliary unit;

Figure 10 is a perspective view of the lever associated with the auxiliary unit;

Figure 11 is a view from below of the components in Figure 10;

Figure 12 is a sectional view of Figure 11, taken along the line XII-XII;

Figure 13 shows the use of two assemblies according to the invention, for locking respective doors of a vehicle;

Figure 14 is a greatly enlarged detail of Figure 13.

[0024] With reference to the figures, the reference numeral 1 generally designates an assembly for locking the door A of vehicles B. The vehicles B for which the assembly 1 is intended can be any (as can the doors A), but according to the preferred application the vehicles B are of the type of vans, trucks, lorries, semi-trailer trucks, trailers and the like and the assembly 1 enables the locking of the rear door A thereof.

[0025] Thus reference shall be made to such preferred application in the present discussion, but it should be noted from this point onward that the adoption is not ruled out of the assembly 1 according to the invention in different applications, according to specific requirements, while remaining within the scope of protection claimed herein.

[0026] It should further be noted from this point onward that the possibility exists of providing a door A with two or more assemblies 1 according to the invention, just as the possibility is not ruled-out of installing, on the same vehicle B, an assembly 1 (or even two or more) for each door A that may be provided.

[0027] As can be seen from Figure 13, the locking assembly 1 comprises at least one base plate 2, which can be rigidly applied on the frame of the vehicle B, proximate to (typically, but not exclusively, below) an access to an internal compartment.

[0028] In the preferred application, such compartment is the one provided inside the body of the vehicle B, and intended for the storage and transport of goods of various types.

[0029] The locking assembly 1 further comprises a lever 3, which can be rigidly anchored to a rod C which in turn can be rotatably supported by the door A that at least partially closes the access to the compartment. The rod C can also optionally form part of the assembly 1 according to the invention, and be sold with it. For example, the

rigid coupling between the lever 3 and the rod C can be obtained by inserting an end limb of the latter into a through duct 3a, which is defined by the lever 3.

[0030] The plate 2 thus comprises means of retaining 4 the lever 3, which can activate themselves or be activated when the lever 3 is arranged in at least one respective preset angular position and the door A is deployed to close the access to the compartment. Such reciprocal condition is precisely the one in which the assembly 1 is illustrated in the accompanying Figures 1, 2, 3, 4, 13 and 14.

[0031] In the present discussion, a detailed description will be given of a possible embodiment of the retention means 4, but it should be noted from this point onward that these means may be chosen at will, according to the specific requirements, while remaining within the scope of protection claimed herein.

[0032] It should be noted however that in the preferred application, shown in Figure 13, the plate 2 is rigidly anchored to the frame of the vehicle B, immediately below the door A, while the lever 3 is supported in a cantilever fashion by the rod C: in turn, the rod C is rotatably coupled to the door A and preferably extends for the entire height, and beyond, of the door A proper (it being in fact accommodated therein and protruding from the latter above and/or below). When the latter is deployed to close the access to the compartment, the lever 3 will be proximate to the plate 2 (abutting against it), so that a user can make it rotate until it reaches the preset angular position (Figure 1), in which the lever 3 engages with the retention means 4.

[0033] Furthermore, the plate 2 and the lever 3 are affected by a further mutual coupling apparatus 5, which can be activated when the lever 3 is retained by the plate 2 by way of the means 4, in order to define a stably locked configuration of the door A, in which accidental opening of the door A is guarded against and unwanted access to the compartment is prevented.

[0034] The apparatus 5 thus can be selectively deactivated by an operator, in order to allow the free movement of the lever 3 and the release of the door A (which is prevented in the absence of the intervention of the operator).

[0035] As previously noted for the retention means 4, the description in the present discussion of the apparatus 5 is also of a possible embodiment (the one illustrated in the accompanying figures), but in this case also the protection claimed herein should be understood to be extended to different practical solutions as well.

[0036] As can be seen from Figure 13, it should further be pointed out that, according to substantially conventional methods, the locking assembly 1 according to the invention can also comprise an abutment plate 6 (also known as a "strike plate"), which in turn can be coupled rigidly to the frame of the vehicle B, usually above the door A.

[0037] The plate 6 can engage a pawl element 7, which in turn is rigidly anchored to the rod C, at the opposite

end with respect to the lever 3.

[0038] So in fact, after having deployed the door A to close the access to the compartment, the operator can make the lever 3 rotate until the preset angular position, thus coupling it to the retention means 4 (and integrally obtaining the coupling between the plate 6 and the pawl element 7), thus obtaining, by way of the apparatus 5, the desired locked configuration.

[0039] In such condition, only a subsequent intervention of the operator (on the lever 3) will allow the movement and the reopening of the door A, and hence entry to the compartment.

[0040] According to the invention, the locking assembly comprises an auxiliary locking unit 8, which can be coupled to the lever 3 (stably or temporarily, as will be seen hereinafter).

[0041] The unit 8 comprises two splayed strips 8a which are mutually opposite and mutually proximate, and which have at least respective mutually facing first slots 9a.

[0042] Furthermore, when the lever 3 is retained by the plate 2 by way of the means 4, a lug 10 is interposed between the splayed strips 8a, is coupled to the plate 2 and has a respective first eyelet 11a.

[0043] In such condition, thanks to an adapted placement of the components involved, the first eyelet 11a will be aligned with the first slots 9a and this makes it possible to introduce, into the three holes constituted by the first eyelet 11a and by the first slots 9a, a control cable D, which in turn obstructs the rotation, even partial, of the lever 3 and the movement, even partial, of the door A.

[0044] The cable D, and the rod C, can optionally be supplied and sold together with the assembly 1 according to the invention, while remaining within the scope of protection claimed herein.

[0045] It should be noted that, obviously, since the splayed strips 8a are very close to each other, in the locked configuration the lug 10 (and the first eyelet 11a in particular) will be very close to the splayed strips 8a (at the first slots 9a).

[0046] It should thus be noted that from this point onward the set aim is achieved: as shown schematically in Figure 1, in the locked configuration (or in any case when the lever 3 is retained by the plate 2) the cable D can in fact be inserted in sequence in the first slot 9a of a splayed strip 8a of the unit 8, in the first eyelet 11a of the lug 10 and then in the first slot 9a of the other splayed strip 8a of the unit 8, and then be wrapped around the door A and part of the body.

[0047] In this manner, the cable D (independently of the retention means 4 and/or of the apparatus 5) will also oppose the movement of the lever 3 and the opening of the door A. It should be noted that in the solution proposed here the cable D is inserted in three separate holes (the two first slots 9a and the first eyelet 11 a) which are extremely close together, and this ensures a stable coupling which is substantially free from play (thanks in part to the extreme closeness of the three holes) and from the pos-

sibility of even minimal excursions.

[0048] Even by acting on the retention means 4 and/or on the apparatus 5 in fact, and even if the cable D is flexible, it is impossible to impose even minimal movements on the lever 3, or in any case movements such as to cause a rotation, no matter how small, of the door A. Thus, in a Customs inspection the integrity of the cable D can absolutely confirm that nothing (not even sheets of paper or thin goods) has been illegally introduced into the internal compartment, after the cable D was suitably deployed.

[0049] According to a first possible practical solution, each splayed strip 8a is provided in a single piece with the lever 3, preferably by molding.

[0050] In a second possible practical solution, each splayed strip 8a can be stably anchored to the lever 3 by welding or by way of respective fixing elements, of the type of screws, rivets, nails, and the like.

[0051] Conveniently, in a preferred but non-limiting embodiment of the application of the invention, the auxiliary unit 8 is constituted substantially by a latten which is folded in a "U-shape" substantially at a central region, so as to define the previously mentioned splayed strips 8a, which are joined along a common edge 8b, which coincides with this central region. It is this possible embodiment which is illustrated in the accompanying figures (and in detail in Figures 8 and 9).

[0052] It should be noted that such embodiment can also be adopted for the first and second practical solutions described in the previous paragraphs, but, preferably, the methods of coupling the unit 8 to the lever 3 are different, and are described hereinafter.

[0053] In fact, in the preferred practical solution, advantageously the latten, which is a separate component from the lever 3, is elastically deformable, in order to allow the mutual approaching of the splayed strips 8a, following the clamping of the unit 8 by an operator, until the deformed configuration is defined.

[0054] The elasticity can be obtained by making the latten out of a suitable material, for example (but not exclusively) harmonic steel.

[0055] In such deformed configuration (which is evidently distinguished by a smaller transverse space occupation), the latten can be inserted in a longitudinal slit 12 which is provided along the lever 3 (with a width such as to not permit the introduction of the latten in the non-deformed configuration).

[0056] The insertion can thus be arrested upon the abutting of respective transverse lips 8c, which protrude from each splayed strip 8a at the opposite end with respect to the common edge 8b, against respective reference surfaces 3b of the lever 3 (see for example Figures 4 and 12).

[0057] When insertion has been completed, the operator can then release the unit 8 (the latten).

[0058] It should thus be noted that in the locked configuration (or in any case when the lever 3 is retained by the plate 2 by way of the means 4), in which as has been

seen the lug 10 is interposed between the splayed strips 8a, a further elastic deformation of the latten, which would be such as to mutually approach the splayed strips 8a again, is prevented by the lug 10. Thus, the danger of an accidental extraction of the latten is guarded against.

[0059] In the locked configuration, obviously the extraction of the latten can occur only by exerting a traction force (in the opposite direction to the plate 2), which is such as to irreversibly deform the lips 8c: moreover, such an act would be easily detectable during an inspection, and thus the functionality of the cable D is absolutely maintained.

[0060] In order to further consolidate the coupling between the latten and the lever 3, after the former has been fully inserted in the slit 12, each splayed strip 8a will have, externally, a central thickened region 8. In fact, upon the insertion of the latten in the slit 12 until the transverse lips 8c abut against the reference surfaces 3b of the lever 3, each thickened region 8d opposes the subsequent extraction of the latten from the lever 3 in the opposite direction to the direction of insertion (see again, for example, Figures 4 and 12).

[0061] Furthermore, in the locked configuration, it is obviously not possible to press the latten further toward the plate 2, precisely because it opposes such movement.

[0062] In a first embodiment, the lug 10 is provided in a single piece with the plate 2, preferably by molding.

[0063] Alternatively, in a second embodiment (which in any case does not exhaust the possible embodiments which fall within the scope of protection claimed herein), the plate 2 is provided with a longitudinal notch 13 the shape of which is complementary to the transverse cross-section of the lug 10, thus enabling the shape coupling, which may be forced, between the plate 2 and the lug 10, which in this case is provided separately.

[0064] The possibility is not ruled out however of providing stable coupling between the lug 10 and the plate 2 by welding, as previously noted for the lever 3 and the splayed strips 8a.

[0065] Conveniently, the splayed strips 8a are provided with respective second slots 9b, which are laterally adjacent to the first slots 9a and which preferably but not exclusively have a different shape. When the lever 3 is retained by the plate 2 by way of the means 4, both of the second slots 9b will be aligned with a second eyelet 11b defined by the lug 10, in order to allow (where required by specific regulations) the insertion of a further, wire-like control element (of the type for example of the cable D, even with a different transverse cross-section).

[0066] As has already been observed in the foregoing pages, the retention means 4 (and the apparatus 5) can be any but advantageously, in the preferred (not exclusive) embodiment, the retention means 4 comprise a crossmember 14 which is rigidly supported by side walls 2a which are formed by the plate 2.

[0067] A curved appendage 3c of the lever 3 can thus be engaged by interlocking below the crossmember 14,

obviously when the lever 3 is arranged in the preset angular position and the door A is deployed to close the access to the compartment (Figures 1, 2, 3, 4, 13 and 14).

[0068] With further reference to the preferred (not exclusive) embodiment, the further mutual coupling apparatus 5 comprises at least one button 15, which is elastically articulated to the plate 2 and arranged, when the lever 3 is retained by the plate 2 by way of the means 4, in interference with the free rotation of the lever 3. The button 15 is thus selectively activatable by an operator in order to be moved away from the path of the lever 3, allowing the free movement thereof and thus permitting the release of the door A.

[0069] It should be noted that, in order to ensure greater security, it is further possible to provide the locking assembly 1 according to the invention with a key-operated mechanism, which opposes the activation of the button 15 or in any case the movement of the lever 3, and the function of which can be inhibited solely by the person in possession of the key.

[0070] Use of the locking assembly according to the invention is the following.

[0071] As has previously been seen, when the door A of a vehicle B (of the type of a truck, van etc.) is deployed to at least partially close an access to the internal compartment, the lever 3 makes it possible to lock the door A, thus ensuring its coupling to the frame and guarding against the danger of accidental opening.

[0072] When in fact the door A is deployed to at least partially close the access to the compartment, the lever 3 can be abutted against the plate 2 (in the preset angular position) and the curved appendage 3c of the lever 3 can thus be inserted below the crossmember 14, opposing the rotation of the door A and so preventing access to the compartment.

[0073] From such condition, if the user wishes to gain access to the compartment, he/she can press the button 15 (which otherwise opposes the release) and grip the lever 3 (at the opposite end with respect to the curved appendage 3c), imparting a rotation thereon which is such as to disengage it from the plate 2 and thus being able to move the door A at will.

[0074] In the locked configuration, as has been seen the two first slots 9a of the splayed strips 8a are aligned with each other and with the first eyelet 11a of the lug 10: a control cable D can therefore be inserted in such three holes, where the specific requirements (or regulations) require it.

[0075] After having been inserted, and as long as it is not taken out, it seems obvious that the cable D will not permit movements of the lever 3 with respect to the plate 2 (even if the button 15 is activated). In fact, thanks to the three holes (which are extremely close together) into which it is inserted in sequence (the two first slots 9a and the first eyelet 11a), and which are defined respectively by components that are integral with the lever 3, with the plate 2 and also with the lever 3, the cable D (even if flexible) is afforded no play or possibility of movement,

and thus the latter prevents substantially any rotation, even minimal, of the lever 3.

[0076] This achieves the desired result, in that it makes it possible to define a locking assembly 1 that can interact with a control cable D to be placed as an obstacle to any movement of the door A, even of minimal extent, which would be adapted to define any sort of access to the compartment.

[0077] As has been described in detail in the foregoing pages, this ensures full compliance with Customs regulations, even the most stringent, in that without unthreading or breaking the cable D (and/or the seals associated with it) it is not possible to introduce any type of goods or document through the access closed by the door A.

[0078] It should further be noted that advantageously the choice to use a unit 8 constituted by a folded latten offers maximum protection against ill-intentioned individuals: differently from conventional solutions, the structure obtained is (obviously) very rigid and compact and it is therefore not possible to temporarily deform (move away from each other) the components in which the first slots 9a and the first eyelet 11a are defined. Therefore, and differently from what occurs with conventional undersill devices, with the assembly 1 according to the invention an ill-intentioned individual cannot obtain the minimal movement of the lever 3, and of the door A, which is necessary in order to introduce documents and goods into the compartment.

[0079] Furthermore, the unit 8 with the edge 8b effectively covers the lug 10, thus preventing any interaction with the latter and thus guarding against any attempts at damaging or tampering.

[0080] It should be noted finally that, among the various possible embodiments described in the foregoing pages, solutions have been illustrated in which both the lug 10 (inserted with shape coupling in the notch 13) and the unit 8 (the latten insertable by elastic deformation in the slit 12) are constituted by separate bodies (which may be sold separately and optionally) from the plate 2 and from the lever 3.

[0081] In such form, the locking assembly 1 according to the invention has thus been found to be highly versatile, in that the same assembly 1 can also be used without the components necessary for the control cable D, thus reserving the use of these latter components only for countries where the regulations require them. The same lever 3 and the same plate 2 can in fact be employed indifferently (possibly with only small adaptations) both if the unit 8 and of the lug 10 are to be used, and if these latter components are lacking.

[0082] In practice it has been found that the locking assembly according to the invention fully achieves the set aim and objects, in that the auxiliary locking unit, which can be coupled to the lever and comprises two mutually opposite splayed strips which have respective first slots, makes it possible to introduce into these slots, and into a first eyelet which is aligned with the first slots and defined by a lug coupled to the plate, a control cable,

so as to obstruct the rotation, even partial, of the lever and the movement, even partial, of the door.

[0083] The invention, thus conceived, is susceptible of numerous modifications and variations, all of which are within the scope of the appended claims. Moreover, all the details may be substituted by other, technically equivalent elements.

[0084] In the embodiments illustrated, individual characteristics shown in relation to specific examples may in reality be substituted with other, different characteristics, existing in other embodiments.

[0085] In practice, the materials employed, as well as the dimensions, may be any according to requirements and to the state of the art.

[0086] Where technical features mentioned in any claim are followed by reference signs, those reference signs have been included for the sole purpose of increasing the intelligibility of the claims and accordingly, such reference signs do not have any limiting effect on the interpretation of each element identified by way of example by such reference signs.

Claims

1. An assembly for locking the door (A) of vehicles (B), of the type of vans, trucks, lorries, semi-trailer trucks, trailers and the like, which comprises at least one base plate (2), which can be rigidly applied to the frame of the vehicle (B), proximate to an access to an internal compartment, and a lever (3), which can be rigidly anchored to a rod (C) which can be rotatably supported by the door (A) that at least partially closes the access to the compartment, said plate (2) comprising means of retaining (4) said lever (3), which can be activated when said lever (3) is arranged in at least one respective preset angular position and the door (A) is deployed to close the access to the compartment, said plate (2) and said lever (3) being affected by a further mutual coupling apparatus (5), which can be activated when said lever (3) is retained by said plate (2) by way of said means (4), in order to define a stably locked configuration of the door (A), and can be selectively deactivated by an operator, in-order-to allow the free movement of said lever (3) and the unlocking of the door (A), **characterized in that** it comprises an auxiliary locking unit (8), which can be coupled to said lever (3) and comprises two splayed strips (8a) which are mutually opposite and mutually proximate and are provided with at least respective first slots (9a) which are mutually facing, a lug (10) being interposed when said lever (3) is retained by said plate (2) by way of said means (4) between said splayed strips (8a), and being coupled to said plate (2) and having a respective first eyelet (11a), which is aligned with said first slots (9a) in order to allow, in said first eyelet (11a) and in said first slots (9a), the introduction of a control

cable (D), for obstructing the rotation, even partial, of said lever (3) and the movement, even partial, of the door (A).

2. The locking assembly according to claim 1, **characterized in that** each one of said splayed strips (8a) is provided in a single piece with said lever (3), preferably by molding.
3. The locking assembly according to claim 1, **characterized in that** each one of said splayed strips (8a) can be stably anchored to said lever (3) by welding or by way of respective fixing elements, of the type of screws, rivets, nails, and the like.
4. The locking assembly according to one or more of the preceding claims, **characterized in that** said auxiliary unit (8) is constituted by a latten which is folded in a "U-shape" substantially at a central region, in order to define said splayed strips (8a), which are joined along a common edge (8b), which coincides with said central region.
5. The locking assembly according to claim 4, **characterized in that** said latten is elastically deformable, for the mutual approach of said splayed strips (8a), following the clamping of said unit (8) by an operator, until a deformed configuration is defined, in which said latten can be inserted in a longitudinal slit (12), provided along said lever (3), until respective transverse lips (8c), which protrude from each one of said splayed strips (8a) on opposite sides with respect to said common edge (8b), abut against respective reference surfaces (3b) of said lever (3), the elastic deformation of said latten being prevented by said lug (10) when said lever (3) is retained by said plate (2) by way of said means (4).
6. The locking assembly according to claim 5, **characterized in that** each one of said splayed strips (8a) is provided externally with a central thickened region (8d), at the point of insertion of said latten in said slit (12), until said transverse lips (8c) abut against said reference surfaces (3b) of said lever (3), each one of said thickened regions (8d) opposing the subsequent extraction of said latten from said lever (3) in the opposite direction to the direction of insertion.
7. The locking assembly according to one or more of the preceding claims, **characterized in that** said lug (10) is provided in a single piece with said plate (2), preferably by molding.
8. The locking assembly according to one or more of claims 1 to 6, **characterized in that** said plate (2) is provided with a longitudinal notch (13) the shape of which is complementary to the transverse cross-section of said lug (10), for the shape coupling, which

may be forced, between said plate (2) and said lug (10).

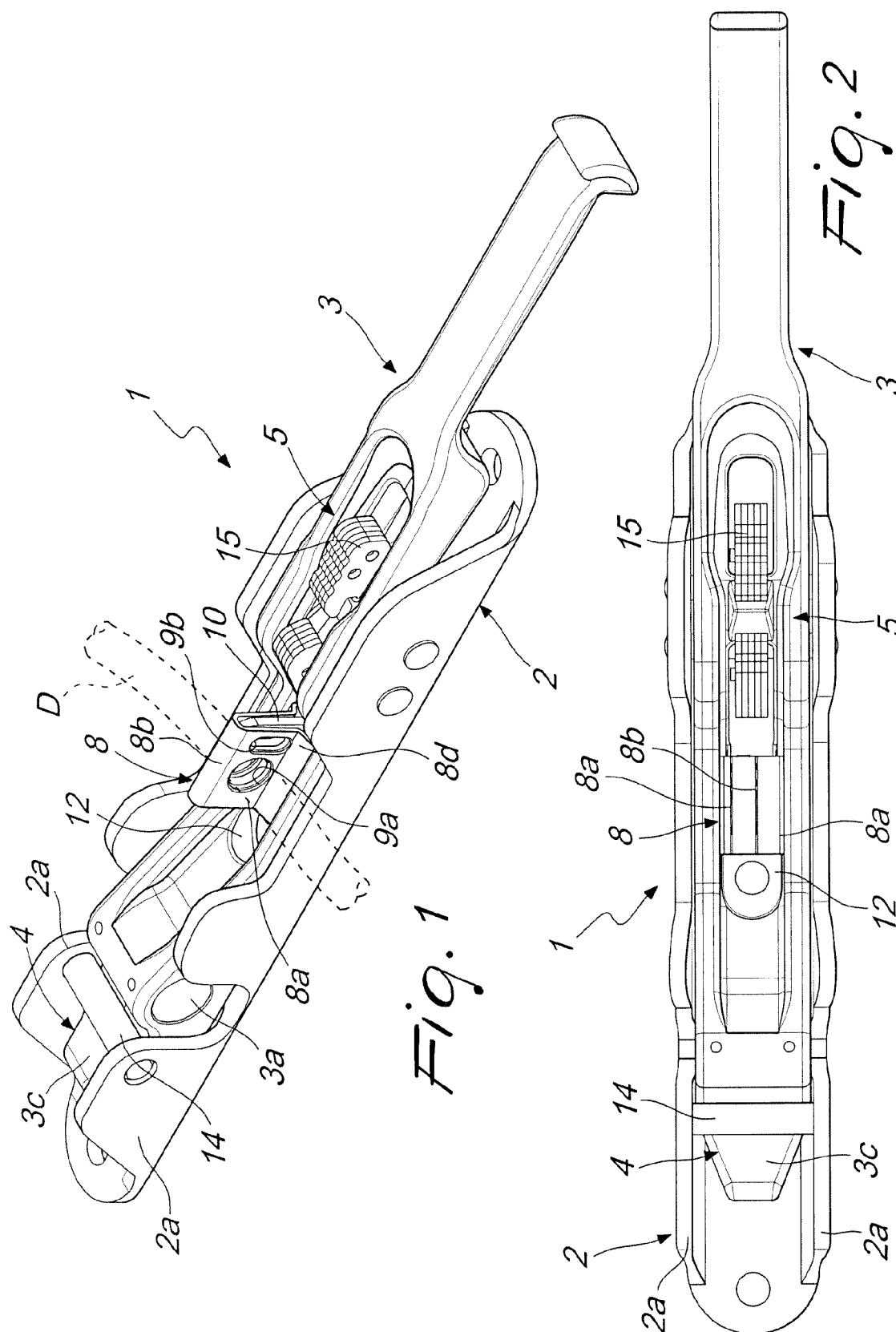
9. The locking assembly according to one or more of the preceding claims, **characterized in that** said displayed strips (8a) have respective second slots (9b), which are laterally adjacent to said first slots (9a), when said lever (3) is retained by said plate (2) by way of said means (4) said second slots (9b) being both aligned with a second eyelet (11b) defined by said lug (10), for the insertion of a further, wire-like control element. 5 10
10. The locking assembly according to one or more of the preceding claims, **characterized in that** said retention means (4) comprise a crossmember (14) which is rigidly supported by side walls (2a) which are formed by said plate (2), a curved appendage (3c) of said lever (3) being engageable by interlocking below said crossmember (14) when said lever (3) is arranged in said preset angular position and the door (A) is deployed to close the access to the compartment. 15 20
11. The locking assembly according to one or more of the preceding claims, **characterized in that** said mutual coupling apparatus (5) comprises at least one button (15), which is elastically articulated to said plate (2) and arranged, when said lever (3) is retained by said plate (2) by way of said means (4), in interference with the free rotation of said lever (3), said button (15) being selectively activatable by an operator in order to allow the free movement of said lever (3) and the release of the door (A). 25 30 35

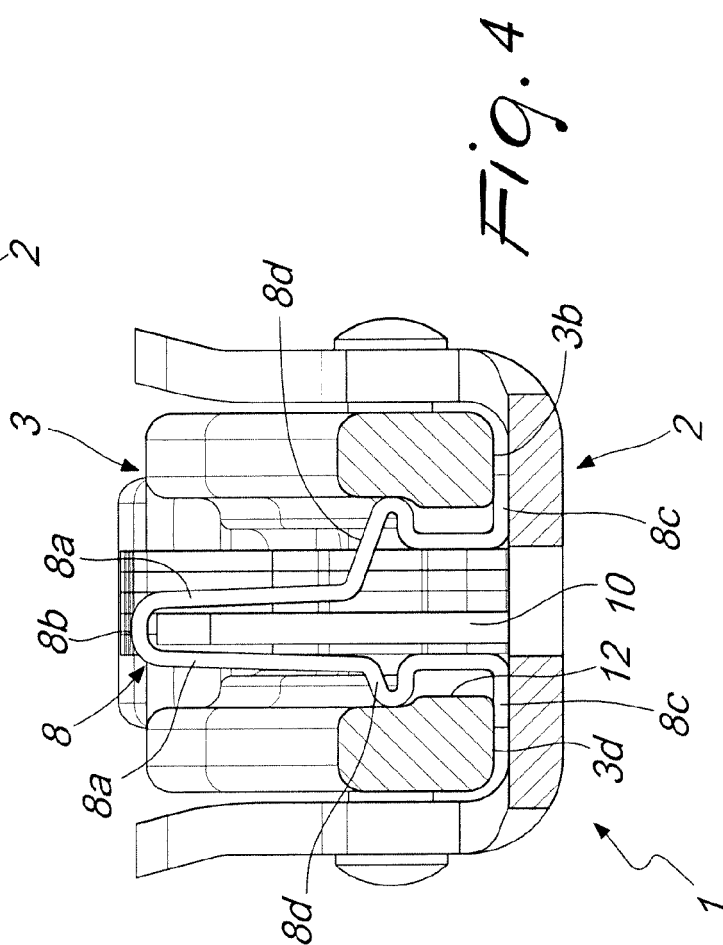
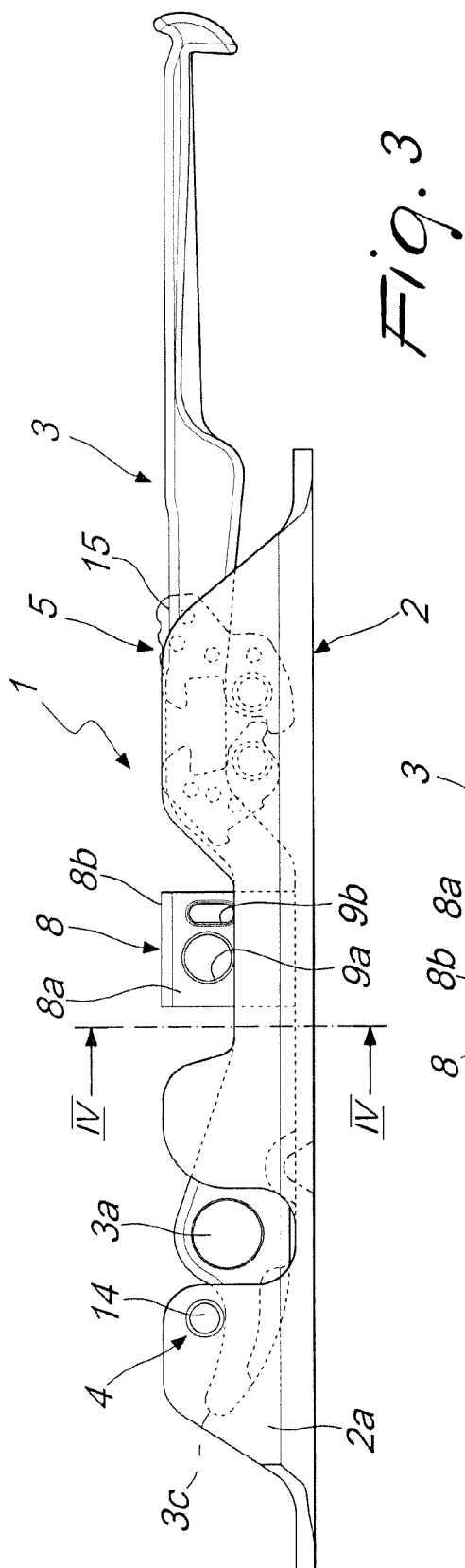
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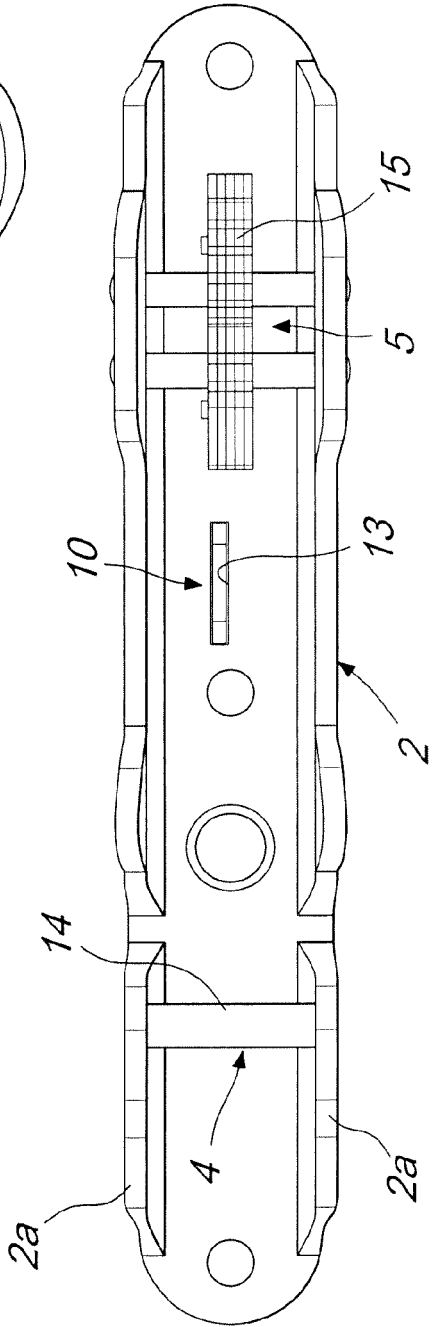
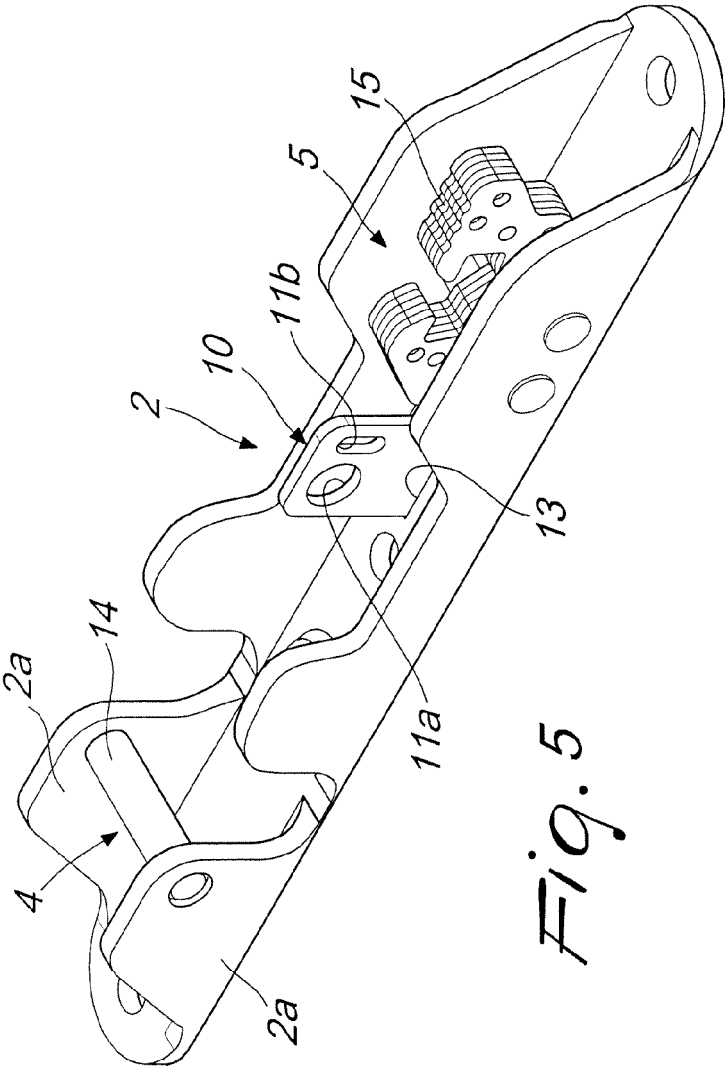
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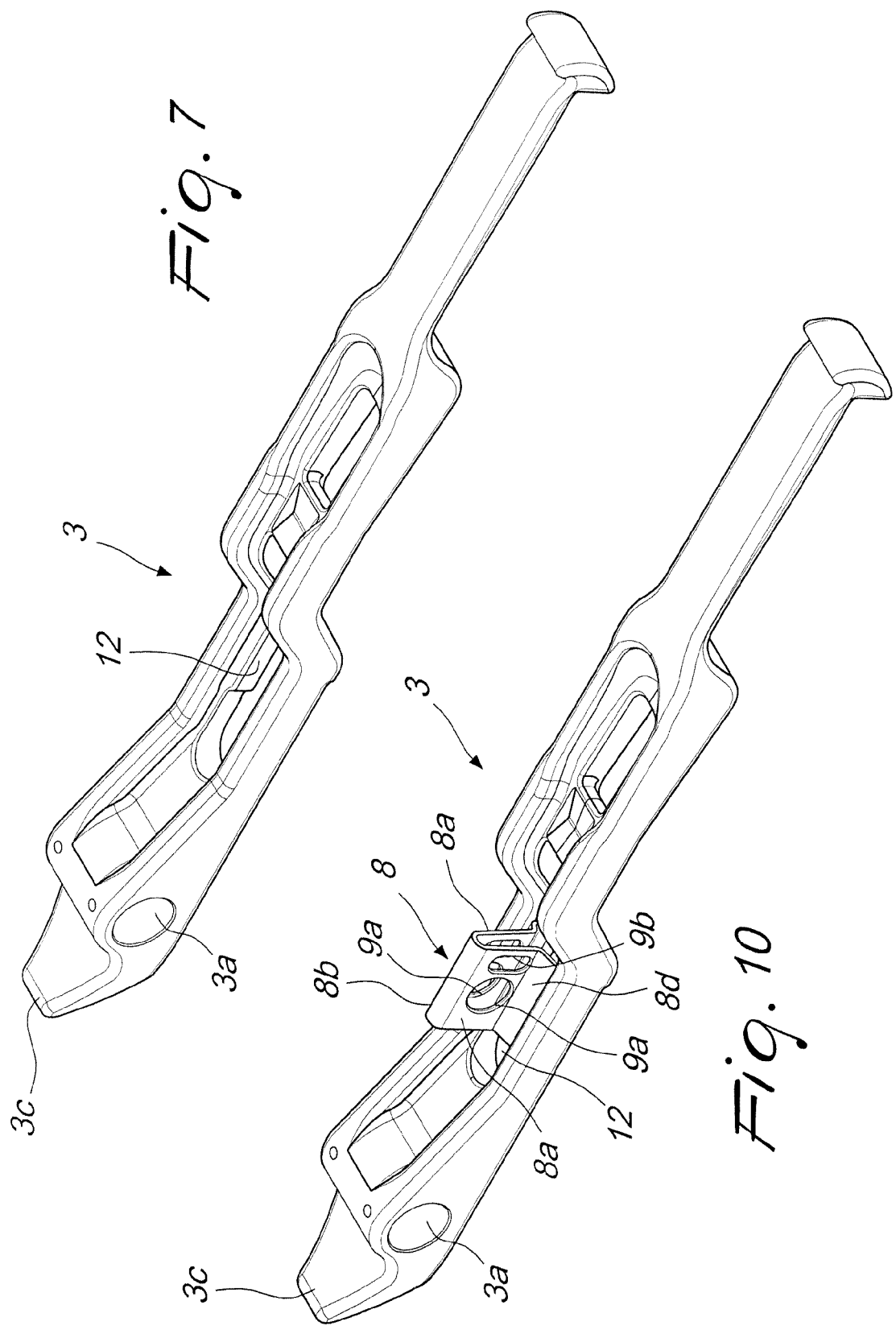
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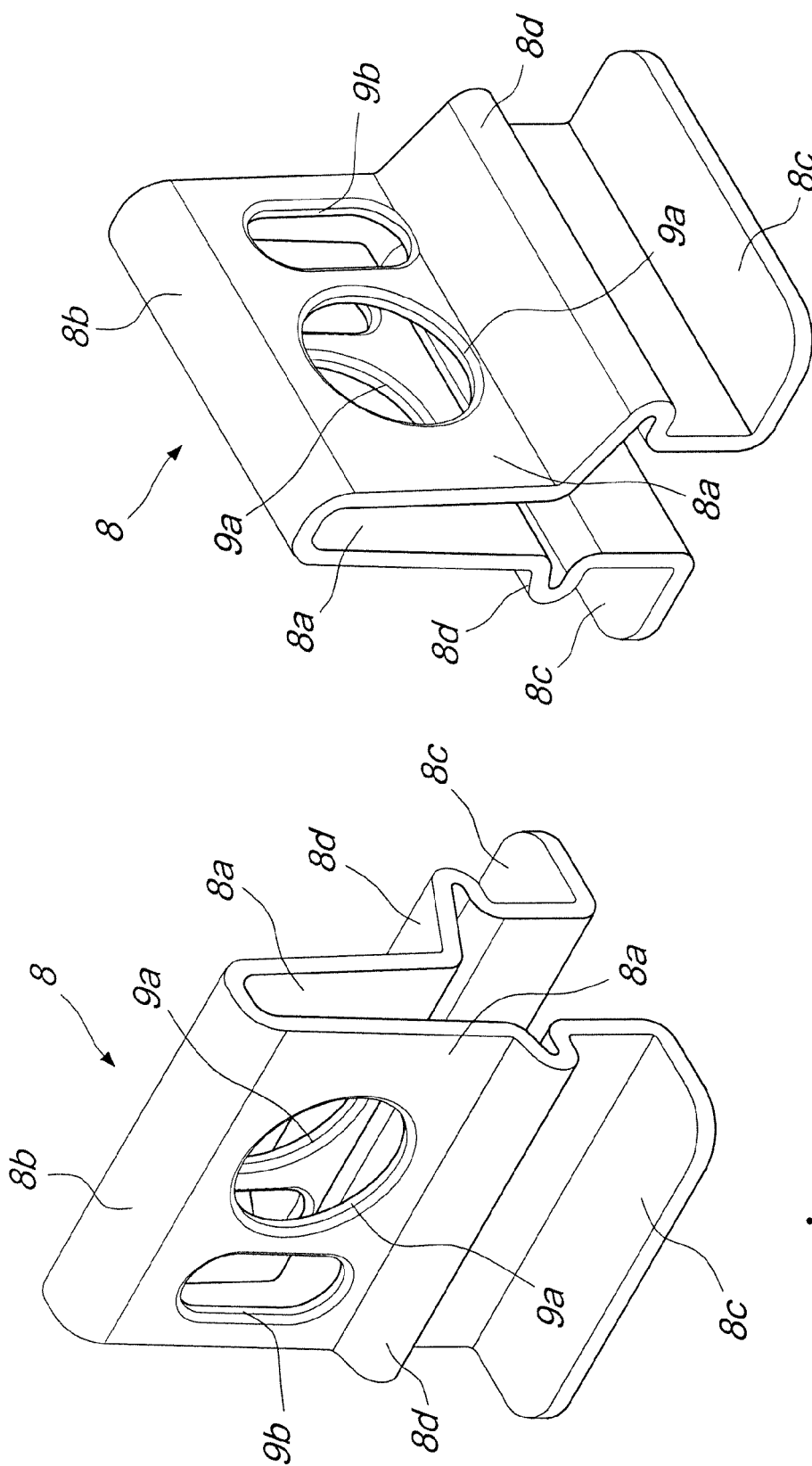
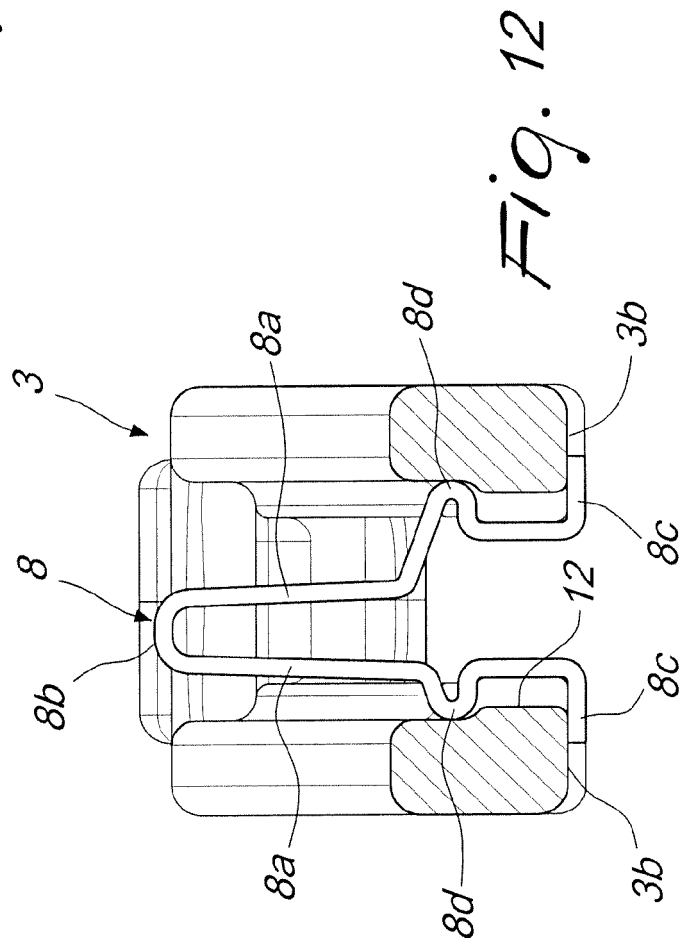
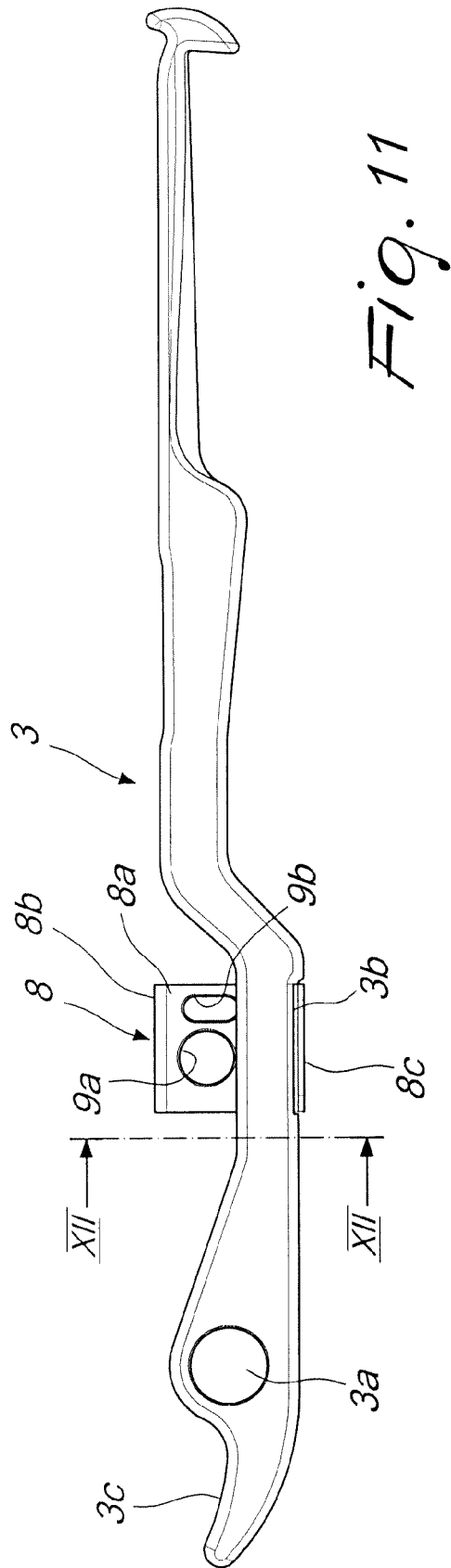


Fig. 9

Fig. 8



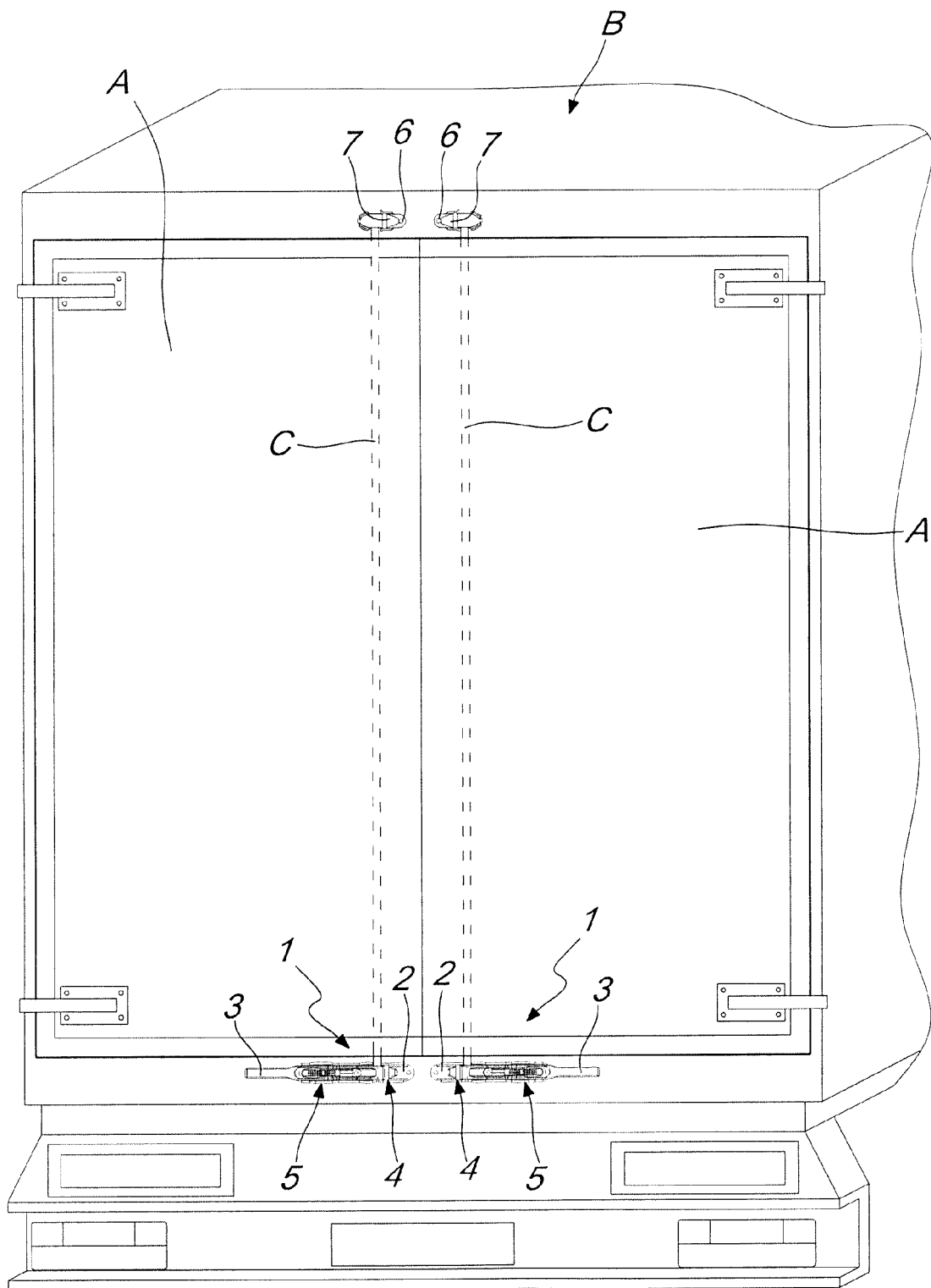


Fig. 13

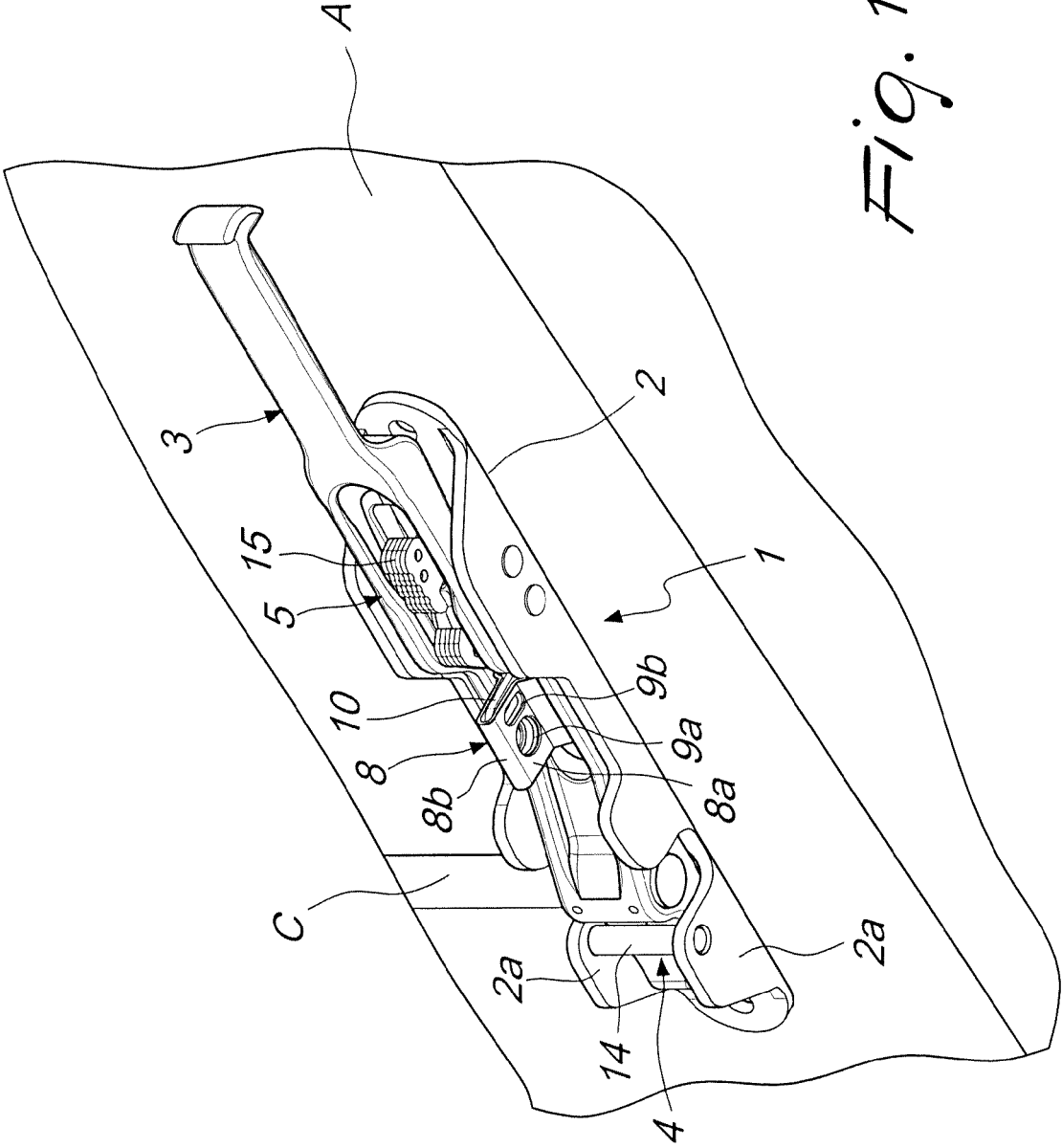


Fig. 14



EUROPEAN SEARCH REPORT

Application Number
EP 15 42 5048

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			E05B
Place of search		Date of completion of the search	Examiner
The Hague		1 December 2015	Van Beurden, Jason
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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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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