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(54) **Handle for controlling a vehicle door lock**

Griff zur Kontrolle eines Schlosses einer Kraftfahrzeugtür

Poignée pour le contrôle d'une serrure de porte de véhicule

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Description

[0001] The present invention relates to a handle for controlling a vehicle door lock.

[0002] More specifically, the present invention relates to a handle of the type comprising a connecting structure fitted to the vehicle door; a lever hinged to the connecting structure and gripped by the user; a user recognition device for reading an identification code carried by the user; and a pushbutton switch operated manually by the user to set the lock to safety-off mode.

[0003] In most applications, the pushbutton switch is fitted to the handle, and is operated from the outside directly by the user acting on a deformable seal protecting the switch, or is operated by means of a mechanical transmission interposed between the switch and the lever, so that the user activates the switch and releases the lock over a first and second portion of the rotation of the lever respectively.

[0004] Known handles of the above type are fairly unsatisfactory owing, in the case of the seal design, to the difficulty encountered by the user in immediately locating the exact point on the seal in which to activate the pushbutton switch. By way of a solution to the problem, contoured seals are used, but which are relatively complex and, in most cases, are subject to fairly rapid wear, thus impairing both the performance and appearance of the handle.

[0005] Mechanical transmissions, on the other hand, feature a fairly large number of expensive components, thus considerably increasing both the production and assembly cost of the handle.

[0006] Document DE-A-19 752 974 discloses a handle like the preamble of claim 1.

[0007] It is an object of the present invention to provide a handle for controlling a vehicle door lock, designed to solve the above problems in a straightforward, low-cost manner, and which, in particular, is easy to use and comprises a relatively small number of component parts.

[0008] According to the present invention, said connecting means comprise guide and slide means permitting translation of said movable control lever in a direction substantially parallel to said switching direction in order to activate said control device.

[0009] Further embodiments of the invention are defined in the dependent claims.

[0010] A preferred, non-limiting embodiment of the present invention will be described by way of example with reference to the accompanying drawings, in which:

Figure 1 shows a section, with parts removed for clarity, of a preferred embodiment of a handle for controlling a vehicle door lock in accordance with the present invention;

Figure 2 shows a section along line II-II in Figure 1.

[0011] Number 1 in Figure 1 indicates a handle

(shown partly) for controlling a lock (not shown) of a vehicle door 3 having an outer body 5.

[0012] Handle 1 comprises a connecting structure 7 fitted, in known manner not described in detail, to an inner frame of door 3; and a movable control lever 8 connected to structure 7 and which, in use, is gripped by a user's hand to control the lock of door 3.

[0013] As shown in Figure 1, and particularly in Figure 2, structure 7 comprises two opposite end guide walls 9, both extending parallel to a direction A crosswise with respect to body 5, and defining a guide seat 11.

[0014] With reference to Figure 1, structure 7 also comprises a prismatic locating and hinge pin 13 extending between and integrally with walls 9, along an axis B perpendicular to walls 9 and to direction A, and transversely separated from body 5; and a stop portion 15 extending between walls 9, parallel to axis B and in an intermediate position between pin 13 and body 5.

[0015] Structure 7 has an opening 20, which is closed by an elastically deformable protective seal 21 forming part of handle 1 and interposed between structure 7 and movable control lever 8.

[0016] Movable control lever 8 comprises a hollow outer portion 17 gripped by the user; and a substantially platelike fork 19 extending from portion 17 and through opening 20 into structure 7, and surrounded by seal 21.

[0017] As shown in Figures 1 and 2, fork 19 carries two opposite lateral appendixes 23, each projecting parallel to axis B and adjacent to a respective wall 9, and comprises two arms 25 and 26 extending crosswise to and on opposite sides of pin 13, and separated from each other by a distance D1 greater than the dimension D2 of pin 13 measured parallel to direction A, so that arms 25 and 26 engage seat 11 in sliding manner parallel to direction A.

[0018] Fork 19, pin 13 and walls 9 form part of an assembly 29 for connecting movable control lever 8 to structure 7, and which comprises a guide and slide coupling defined by walls 9 and fork 19 to permit translation of lever 8 in a direction substantially parallel to direction A, and a hinged coupling defined by fork 19 and pin 13 to permit rotation of lever 8 about hinge axis B and with respect to structure 7.

[0019] Assembly 29 also comprises a U-shaped elastic plate member 31, which in turn comprises a first arm 32 interposed between stop portion 15 and arm 25 adjacent to portion 15, and a second arm 33 interposed between arm 25 and pin 13.

[0020] With reference to Figures 1 and 2, handle 1 also comprises a known detecting device 35 for detecting the presence of the user about to open door 3. More specifically, device 35 comprises an aerial 36 (shown partly), which is housed inside hollow portion 17, is connected by a cable 36a to a known central control unit (not shown), and provides, in use, for reading an identification code carried by the user, and for transmitting an identification signal to the central control unit.

[0021] As shown in Figure 1 and particularly in Figure

2, handle 1 also comprises a control device 37 housed inside structure 7 and which is operated manually from the outside to switch the lock electrically to safety-on or safety-off mode, once the identification code is recognized, so as to disable or enable release of the lock. Control device 37 comprises a pushbutton switch 38, connected, in known manner not described in detail, to structure 7 in a position adjacent to one of walls 9; and a switch lever 40 resting directly on one of appendices 23 and movable in a switching direction C, substantially parallel to direction A and perpendicular to axis B, to activate the switch when lever 8 is operated.

[0022] In actual use, as the user approaches door 3, device 35 reads the user-carried identification code in known manner, and the central control unit enables control of the lock safety (not shown). The user pushes on lever 8; elastic member 31 exerts thrust in opposition to that activating switch lever 40; fork 19 slides inside guide seat 11 in a direction parallel to switching direction C, so as to directly switch device 37; and elastic member 31 provides for recalling lever 8.

[0023] Once the lock safety is released, the user opens the lock, in known manner not described in detail, by rotating lever 8 about axis B.

[0024] The advantages of handle 1 will be clear from the foregoing description.

[0025] In particular, handle 1 is obviously extremely easy to use, by device 37 being switched by simply pressing lever 8 against structure 7, i.e. with no seals on which to act manually to activate control device 37. In particular, handle 1 has no contoured seals which might possibly impair the appearance of the handle.

[0026] Moreover, handle 1 is extremely straightforward, and hence cheap, to produce and assemble, by comprising a relatively small number of component parts and having no complex mechanical transmissions between lever 8 and control device 37. For the same reason, handle 1 is also extremely efficient and reliable.

[0027] The efficiency and reliability of handle 1 and, in particular, of device 37 are further enhanced by device 37 of handle 1 being fully protected against external agents by seal 21.

[0028] Clearly, changes may be made to handle 1 as described and illustrated herein without, however, departing from the scope of the present invention.

[0029] In particular, provision may be made for a user detecting and/or recognition device other than device 35 described by way of example; or aerial 36 may be dispensed with or located in a position other than as shown.

[0030] Moreover, as opposed to simply engaging and releasing the lock safety, control device 37 of handle 1 may also control full opening of the lock, especially when the lock, like control of the lock safety, is also opened electrically.

Claims

1. A handle (1) for controlling a lock of a vehicle door (3), the handle comprising a connecting structure (7) which is fitted to said door (3); a movable control lever (8) gripped, in use, by a user's hand; connecting means (29) for connecting said movable control lever (8) to said connecting structure (7) said connecting means (29) comprising hinge means (19, 13) having a hinge axis (B) to permit rotation of said movable control lever (8) about said hinge axis (B) and with respect to said connecting structure (7); and control device (37) activated manually from the outside to set said lock to a safety-off mode, and in turn comprising a switching member (40) movable in a switching direction (C); said control device (37) being activated directly by said movable control lever (8); said switching direction (C) and said hinge axis (B) extending crosswise to each other, **characterized in that** said connecting means (29) comprise guide and slide means (9, 19) permitting translation of said movable control lever (8) in a direction substantially parallel to said switching direction (C) in order to activate said control device.
2. A handle as claimed in Claim 1, **characterized in that** said guide and slide means (9, 19) comprise a guide (9) carried by said connecting structure (7); and a slide (19) defined by a portion (19) of said movable control member (8).
3. A handle as claimed in Claim 2, **characterized in that** said connecting means (29) comprise a locating member (13) integral with said connecting structure (7); and **in that** said slide (19) comprises a fork (19) in turn comprising two arms (25, 26) located on opposite sides of said locating member (13); said arms (25, 26) being separated by a distance (D1) greater than the dimension (D2) of said locating member (13) measured parallel to said switching direction (C).
4. A handle as claimed in Claim 3, **characterized in that** said hinge means (19, 13) comprise said fork (19) and said locating member (13) connected to each other to permit rotation of said movable control lever (8) with respect to said connecting structure (7) and about said hinge axis (B).
5. A handle as claimed in any one of Claims 2 to 4, **characterized in that** said switching member (40) rests directly on said slide (19).
6. A handle as claimed in any one of the foregoing Claims, **characterized in that** said connecting means (29) also comprise elastic return means (31) interposed between said connecting structure (7) and said movable control lever (8) to exert thrust in

opposition to that activating said switching member (40).

7. A handle as claimed in Claims 3 and 6, **characterized in that** said elastic return means (31) comprise an elastic member (31) at least partly interposed between said fork (19) and said locating member (13). 5
8. A handle as claimed in Claim 7, **characterized in that** said elastic member (31) is U-shaped and comprises a first arm (33) interposed between said fork (19) and said locating member (13), and a second arm (32) extending between said fork (19) and a stop portion (15) of said connecting structure (7). 10
9. A handle as claimed in any one of the foregoing Claims, **characterized by** comprising elastically deformable sealing means (21) interposed between said movable control lever (8) and said connecting structure (7). 15
10. A handle as claimed in any one of the foregoing Claims, **characterized in that** said control means (37) comprise a pushbutton switch (38) connected to said connecting structure (7). 20

Patentansprüche

1. Handgriff (1) zur Steuerung einer Verriegelung einer Fahrzeugtür (3), wobei der Handgriff eine Verbindungsstruktur (7) aufweist, die an der Tür (3) angebracht ist, einen beweglichen Steuerhebel (8), an dem im Gebrauch eine Benutzerhand greift, Verbindungsmittel (29) zum Verbinden des beweglichen Steuerhebels (8) mit der Verbindungsstruktur (7), wobei die Verbindungsmittel (29) Scharniermittel (19, 13) mit einer Scharnierachse (B) aufweisen, um das Drehen des beweglichen Steuerhebels (8) um die Scharnierachse (B) und bezüglich der Verbindungsstruktur (7) zu gestatten, sowie eine Steuervorrichtung (37), die von außen mit der Hand betätigt wird, um die Verriegelung in einen Sicherungs-Modus zu setzen, und ihrerseits ein Schaltelement (40) aufweist, das in eine Schaltrichtung (C) beweglich ist, wobei die Steuervorrichtung (37) direkt von dem beweglichen Steuerhebel (8) betätigt wird, wobei sich die Schaltrichtung (C) und die Scharnierachse (B) über Kreuz zueinander erstrecken, **dadurch gekennzeichnet, dass** die Verbindungsmittel (29) Führungs- und Gleitmittel (9, 19) aufweisen, welche die Translation des beweglichen Steuerhebels (8) in eine Richtung ermöglichen, die im Wesentlichen parallel ist zur Schaltrichtung (C), um die Steuervorrichtung zu betätigen. 30
2. Handgriff nach Anspruch 1, **dadurch gekennzeichnet, dass** die Führungs- und Gleitmittel (9, 19) eine Führung (9) aufweisen, die von der Verbindungsstruktur (7) getragen ist, und ein Gleitteil (19), das durch einen Abschnitt (19) des beweglichen Steuerelements (8) definiert ist. 35
3. Handgriff nach Anspruch 2, **dadurch gekennzeichnet, dass** die Verbindungsmittel (29) ein mit der Verbindungsstruktur (7) einstückig ausgebildetes Fixierungselement (13) aufweisen und dass das Gleitteil (19) eine Gabel (19) aufweist, die ihrerseits zwei Arme (25, 26) aufweist, die sich an gegenüberliegenden Seiten des Fixierungselements (13) befinden, wobei die Arme (25, 26) durch einen Abstand (D1) getrennt sind, der größer ist als die Abmessung (D2) des Fixierungselements (13), die parallel zur Schaltrichtung (C) gemessen wird. 40
4. Handgriff nach Anspruch 3, **dadurch gekennzeichnet, dass** die Scharniermittel (19, 13) die Gabel (19) und das Fixierungselement (13) aufweisen, die miteinander verbunden sind, um das Drehen des beweglichen Steuerhebels (8) bezüglich der Verbindungsstruktur (7) und um die Scharnierachse (B) zu gestatten. 45
5. Handgriff nach einem der Ansprüche 2 bis 4, **dadurch gekennzeichnet, dass** das Schaltelement (40) direkt am Gleitteil (19) anliegt. 50
6. Handgriff nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Verbindungsmittel (29) ebenfalls elastische Rückstellmittel (31) aufweisen, die zwischen der Verbindungsstruktur (7) und dem beweglichen Steuerhebel (8) angeordnet sind, um einen Schub auszuüben, der dem Schub entgegengesetzt ist, welcher das Schaltelement (40) betätigt. 55
7. Handgriff nach den Ansprüchen 3 bis 6, **dadurch gekennzeichnet, dass** die elastischen Rückstellmittel (31) ein elastisches Element (31) aufweisen, das mindestens teilweise zwischen der Gabel (19) und dem Fixierungselement (13) angeordnet ist.
8. Handgriff nach Anspruch 7, **dadurch gekennzeichnet, dass** das elastische Element (31) U-förmig ist und einen ersten Arm (33) aufweist, der zwischen der Gabel (19) und dem Fixierungselement (13) angeordnet ist, und einen zweiten Arm (32), der sich zwischen der Gabel (19) und einem Anschlagabschnitt (15) der Verbindungsstruktur (7) erstreckt.
9. Handgriff nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** er elastisch verformbare Dichtmittel (21) aufweist, die zwischen dem beweglichen Steuerhebel (8) und der Verbindungsstruktur (7) angeordnet sind.

10. Handgriff nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** die Steuermittel (37) einen Druckknopfschalter (38) aufweisen, der mit der Verbindungsstruktur (7) verbunden ist.

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Revendications

1. Poignée (1) pour une serrure de véhicule (3), cette poignée comprenant une structure de raccordement (7) fixée sur ladite porte (3) ; un levier de commande mobile (8) empoigné, en utilisation, par la main d'un utilisateur ; un moyen de raccordement (29) pour raccorder ledit levier de commande mobile (8) à ladite structure de raccordement (7) ; ledit moyen de raccordement (29) étant constitué de moyens d'articulations (19, 13) dotés d'un axe d'articulation (B) afin de permettre la rotation dudit levier de commande mobile (8) autour dudit axe d'articulation (B) et par rapport à ladite structure de raccordement (7) ; et un dispositif de commande (37) activé manuellement de l'extérieur pour mettre ladite serrure en mode de sécurité désactivée ; et constitué à son tour d'un élément de commutation (40) mobile dans une direction de commutation (C) ; ledit dispositif de commande (37) étant activé directement par ledit levier de commande mobile (8) ; ladite direction de commutation (C) et ledit axe d'articulation (B) étant situés perpendiculairement l'une par rapport à l'autre, **caractérisée en ce que** ledit moyen de raccordement (29) est constitué d'un guide et d'un moyen coulissant (9, 19) permettant la translation dudit levier de commande mobile (8) dans une direction principalement parallèle à ladite direction de commutation (C) afin d'activer ledit dispositif de commande.
2. Poignée selon la Revendication 1, **caractérisée en ce que** ledit guide et moyen coulissant (9, 19) comprennent un guide (9) supporté par ladite structure de raccordement (7) et un moyen coulissant (19) délimité par une section (19) dudit élément de commande mobile (8).
3. Poignée selon la Revendication 2, **caractérisée en ce que** ledit moyen de raccordement (29) comprend un élément de positionnement (13) intégré à ladite structure de raccordement (7) ; et **en ce que** ledit moyen coulissant (19) comprend une fourche (19) constituée à son tour de deux bras (25), 26 situés des deux côtés opposés dudit élément de positionnement (13), lesdits bras (25, 26) étant séparés par une distance (D1) supérieure à la dimension (D2) dudit élément de positionnement (13) mesuré parallèlement à ladite direction de commutation (C).
4. Poignée selon la Revendication 3 **caractérisée en**

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ce que lesdits moyens d'articulation (19, 13) sont constitués de ladite fourche (19) et dudit élément de positionnement (13) reliés l'un à l'autre afin de permettre la rotation dudit levier de commande mobile (8) par rapport à ladite structure de raccordement (7) et autour dudit axe d'articulation (B).

5. Poignée selon l'une quelconque des Revendications (2) à (4), **caractérisée en ce que** ledit élément de commutation (40) repose directement sur ledit moyen coulissant (19).
6. Poignée selon l'une quelconque des Revendications précédentes, **caractérisée en ce que** ledit moyen de raccordement (29) comprend également un moyen de retour élastique (31) interposé entre ladite structure de raccordement (7) et ledit levier de commande mobile (8) afin d'exercer une poussée opposée à celle activant ledit élément de commutation (40).
7. Poignée selon les Revendications 3 et 6, **caractérisée en ce que** ledit moyen de retour élastique (31) est constitué d'un élément élastique (31) au moins partiellement interposé entre ladite fourche (19) et ledit élément de positionnement (13).
8. Poignée selon la Revendication 7 **caractérisée en ce que** ledit élément élastique (31) est en forme de U et est constitué d'un premier bras (33) interposé entre ladite fourche (19) et ledit élément de positionnement (13) et un deuxième bras (32) situé entre ladite fourche (19) et une butée (15) de ladite structure de raccordement (7).
9. Poignée selon l'une quelconque des Revendications précédentes, **caractérisée en ce qu'elle** comprend un moyen de fermeture à déformation élastique (21) interposé entre ledit levier de commande mobile (8) et ladite structure de raccordement (7).
10. Poignée selon l'une quelconque des Revendications précédentes, **caractérisée en ce que** ledit moyen de commande (37) comprend un bouton-poussoir (38) relié à ladite structure de raccordement (7).

