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(54) **Reinforcement part for lock case**

(57) The invention concerns a reinforcement part configured for being arranged on the outside (21) or the inside (23) of a door (11) in level with a lock case (12) arranged in the door. The reinforcement part comprises a first surface (19), which is configured for in a mounted state abutting, directly, or indirectly via one or more further elements, against the outside (21) or the inside (23) of the door. The reinforcement part comprises a first portion (25) which, in a mounted state, extends into the door (11). The first portion (25) comprises a first vertical abutment surface (27) configured such that it, in a mounted state, abuts directly, or via one or more further elements, against a vertical surface (29) of the lock case (12), or such that the first vertical abutment surface (27) is positioned at a distance which is less than 2.0 mm from the vertical surface (29) of the lock case. The invention also concerns a door (11).

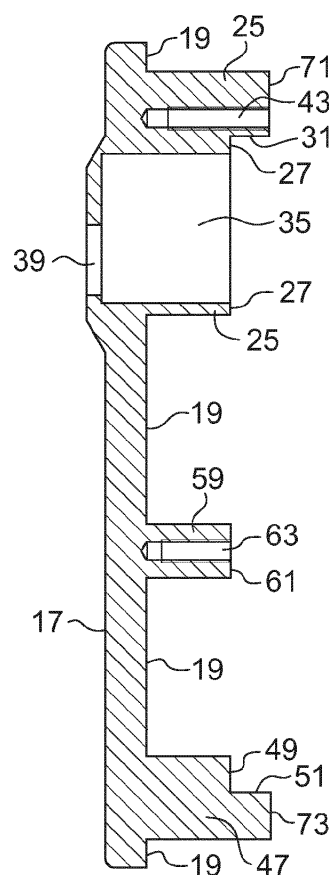


Fig. 3

Description

BACKGROUND OF THE INVENTION AND PRIOR ART

[0001] The present invention concerns a reinforcement part which is configured for being arranged on the outside or the inside of a door. The invention also concerns a door with such a reinforcement part.

[0002] The reinforcement part is configured for being arranged in level with a lock case which is arranged in the door. The reinforcement part may have a hole for a key or a turning knob. Furthermore, the reinforcement part may for example have a hole for the axle from a door handle. Such reinforcement parts are often arranged on the outside or the inside of a door and thereby often constitute a part of the lock design.

[0003] For doors it is important that the lock design is secure against burglary. This presupposes that the lock itself is secure and difficult to force open and also that the whole lock design is stable and difficult to remove or to cause damage to in some other manner. That the lock design is stable is also important in order for the lock to function in a reliable manner.

[0004] There are different kinds of doors. Some doors are made of metal. The door may also have a frame of metal, in which the lock is arranged, while the main surface of the door may be made of another material, for example of glass. The metal structure of the door, or of the frame in which the door is arranged, is often made of a metal profile, for example of aluminium. Such a metal profile often has relatively thin walls and a hollow space. A lock case arranged in such a kind of door is not always completely securely fixed at its determined position in the door. The lock case may therefore sometimes be displaced from its position. This may lead to the fact that the door lock does not function properly. Furthermore, because of the relatively thin metal profile, wear during use or damage caused to the lock design may lead to the fact that the position of the lock design, or the lock case, is changed. The lock design may thereby function less well. Furthermore, such a lock design may be easier to manipulate and to bend apart. This leads to the fact that the risk for burglary may increase.

SUMMARY OF THE INVENTION

[0005] An object of the present invention is to provide a reinforcement part which is configured to be applied to a door and which increases the stability of the lock design and which also increases the security against burglary. Another object is to provide such a reinforcement part which is suitable to be used in doors where the lock case is arranged in a metal profile, for example in an aluminium profile. But the reinforcement part may also be used for other door designs in order to reinforce the lock design. A further object is to achieve such a reinforcement part which has a relatively simple design and which is easy to produce and to install.

[0006] These objects are achieved with the reinforcement part which is defined in claim 1.

[0007] Since the reinforcement part has said first portion with said first vertical abutment surface, this first vertical abutment surface can abut directly, or via further elements, against the lock case, or at least be arranged at only a small distance from the lock case. The position of the lock case in the door is thereby secured. The reinforcement part and the lock case are thus, in a mounted state, arranged such that a stable lock design is obtained. The lock design will thereby have a reliable function. Furthermore, the stability leads to the fact that the security against burglary increases. Furthermore, such a reinforcement part is easy to produce and to arrange at the door.

[0008] Preferably, the vertical abutment surface abuts directly against the lock case. However, possibly for example a thin flat element, possibly a somewhat elastic element, may be arranged between the vertical abutment surface and the lock case. One or more such intermediate elements are preferably together relatively thin, preferably less than 2 mm. Alternatively, the vertical abutment surface is configured such that it in a mounted state is positioned at a short distance, less than 2.0 mm, from the vertical surface of the lock case.

[0009] The reinforcement part preferably has a length (in vertical direction in a mounted state) of 15-40 cm, preferably 18-22 cm. The reinforcement part preferably has a width of 2.0-6.0 cm, preferably 2.5-3.5 cm. The reinforcement part preferably has a thickness such that the distance (in horizontal direction perpendicular to the door surface in a mounted state) between said first side and said first surface is larger than 5.0 mm, preferably larger than 8.0 mm, for example 8.0-15.0 mm. The mentioned first surface may for example have an area of at least 10 cm², preferably at least 20 cm².

[0010] It should be observed that the concepts vertical and horizontal or the like are in this document used in order to define the directions which normally are the case in a mounted state. The outside or the inside of a door thus normally extends in a vertical direction and therefore defines a vertical direction.

[0011] It should also be noted that the term "first", "second", "third" etc. which is mentioned in the claims primarily is used in order to distinguish the different parts from each other and should therefore not be seen as designating a definitive number.

[0012] According to an embodiment of the reinforcement part according to the invention, the first portion comprises a first horizontal surface configured such that it, in a mounted state, abuts directly, or via one or more further elements, from above against a horizontal surface of the lock case, which horizontal surface preferably is the top side of the lock case, or such that the first horizontal surface extends in above the top side of the lock case.

[0013] According to this embodiment, the position of the lock case can be secured laterally as well as vertically. Therefore further stability and security are achieved.

Preferably, the first vertical abutment surface and the first horizontal surface are arranged next to each other such that they meet along a line.

[0014] According to a further embodiment, the reinforcement part comprises a recess, preferably arranged in said first portion, with a cross-sectional dimension adapted for receiving a lock cylinder or a turning knob cylinder. The reinforcement part which makes the lock design more stable may thus simultaneously function as a part in which a lock cylinder or a turning knob cylinder can be arranged. The lock cylinder or the turning knob cylinder can thereby be held in a well defined and stable manner relative to the lock case.

[0015] According to a further embodiment, the recess, as seen in a mounted state, extends in the direction from the lock case and in the direction towards said first side of the reinforcement part, but not all the way to the first side, but where a hole which, as seen in a vertical section in a mounted state, has a smaller dimension than the recess and than the lock cylinder or the turning knob cylinder extends from said recess out through the first side, wherein the hole is configured such that in a mounted state either

a key via the hole can interact with a lock cylinder which is positioned in the recess, either in that the key is inserted into a key hole in the lock cylinder or in that the key in another manner communicates with the lock cylinder, or a turning knob via the hole can interact with a turning knob cylinder which is positioned in the recess. A lock cylinder can in this manner be securely arranged in the recess, since it is difficult to cause damage to the lock cylinder since it lies protected in the recess and since there at the lock cylinder only is a hole for the key itself. In a similar manner, a turning knob cylinder may be arranged in a stable and secure manner in the recess.

[0016] According to an embodiment, a rotatable plate may be arranged directly inside of the hole. The plate has a slot for the key. Such a plate makes it difficult for a possible burglar to be able to bore up the lock by trying to bore through the lock cylinder.

[0017] It should be noted that according to an alternative embodiment, the reinforcement part has no recess for a lock cylinder or a turning knob cylinder and no hole for a key or for a turning knob. According to this alternative, the reinforcement part is thus a "blind" part, and the lock in the door where this blind part is arranged is not intended to be able to be unlocked with a mechanical key or with a turning knob from the side of the door where the blind part is positioned.

[0018] With a lock cylinder is meant the part of the lock that interacts with a key and that has at least some movable part, for example a so-called cam, which can be moved with the help of a key and which directly or indirectly interacts with a latch bolt or a similar device in the lock case for locking the door in a closed position. The concept "key" includes in this document a traditional mechanical key which is inserted into a keyhole in the lock cylinder, but also different forms of electronic keys which

interact with the lock cylinder, either through direct contact with the lock cylinder or through a wireless connection with the lock cylinder. The lock can thus for example be electromechanical, wherein the cam or similar member can be moved with an "electronic" key. Such an electronic key can communicate with the lock cylinder either through direct contact with a corresponding part of the lock cylinder or through wireless communication. The lock cylinder can have different designs, for example of the kind that is shown in Fig 7 or the kind that is shown in Fig 8. The recess in the reinforcement part is suitably adapted to the shape of the kind of lock cylinder/turning knob cylinder which is used.

[0019] According to a further embodiment, said first vertical abutment surface surrounds the recess. Thereby a vertical abutment surface with a relatively large extension is obtained. This further improves the act of securing the position of the lock case. A very stable design can thereby be achieved.

[0020] According to a further embodiment, the first portion comprises one, two or more holes for screws, with which the reinforcement part is fastened with screws to the door, which holes for screws extend from that side of the first portion which, in a mounted state, lies in the door, wherein said holes for screws are threaded and wherein said holes for screws do not reach to the first side of the reinforcement part. The reinforcement part may thus in a simple and secure manner be held fixed to the door with the help of screws which are screwed into the threaded screw holes. Since the screw holes do not reach to the first side of the reinforcement part, the security of the lock design is increased, since the screws cannot be reached from the first side. Since the screw holes are arranged in the first portion, which thus extends into the door, a stable lock design is obtained when the reinforcement part is installed at the door.

[0021] According to another embodiment, the first portion comprises one, two or more holes for screws, with which the reinforcement part is fastened with screws to the door, which holes for screws extend from that side of the first portion which, in a mounted state, lies in the door, wherein said holes for screws preferably are unthreaded and wherein said holes for screws reach to and out through the first side of the reinforcement part. Such a reinforcement part is suitable to be arranged on the inside of the door. Screws can thereby easily be screwed in through the screw holes and through the door in order to be connected in a reinforcement part on the outside of the door.

[0022] According to a further embodiment, said holes for screws in the first portion are positioned such that the screws, in a mounted state, run above the lock case. Since the screws run above the lock case, no special holes for the screws are needed through the lock case. Furthermore, the reinforcement part is safely held in position at the door with the help of such screws.

[0023] According to a further embodiment, the reinforcement part comprises a second portion which, in a

mounted state, extends into the door, wherein the second portion comprises a second vertical abutment surface configured such that it, in a mounted state, abuts directly, or via one or more further elements, against a vertical surface of the lock case, or such that the second vertical abutment surface is positioned at a distance which is less than 2.0 mm from the vertical surface of the lock case. In a similar manner to that which has been described above in connection with the first portion, the position of the lock case in the door is thereby further secured. An even more stable and functionally secure design is thus obtained. Preferably, the second vertical abutment surface abuts directly against the lock case. However, possibly for example a thin flat element, possibly a somewhat elastic element, may be arranged between the second vertical abutment surface and the lock case. One or more such intermediate elements are preferably together relatively thin, preferably less than 2 mm. Alternatively, the second vertical abutment surface is configured such that it in a mounted state is positioned at a short distance, less than 2.0 mm, from the vertical surface of the lock case. The first vertical abutment surface may, in a mounted state, be arranged at the upper part of the lock case and the second vertical abutment surface may be arranged at the lower part of the lock case.

[0024] According to a further embodiment, the second portion comprises a second horizontal surface configured such that it, in a mounted state, abuts directly, or via one or more further elements, from below against a horizontal surface of the lock case, which horizontal surface preferably is the underside of the lock case, or such that the second horizontal surface extends in below the underside of the lock case. Through this design, an increased stability is obtained for the lock design, since the position of the lock case is further secured. Preferably, the second vertical abutment surface and the second horizontal surface are arranged next to each other such that they meet along a line.

[0025] According to a further embodiment, the second portion comprises one, two or more holes for screws, with which the reinforcement part is fastened with screws to the door, which holes for screws extend from that side of the second portion which, in a mounted state, lies in the door, wherein said holes for screws are threaded and wherein said holes for screws do not reach to the first side of the reinforcement part.

[0026] According to a further embodiment, the second portion comprises one, two or more holes for screws, with which the reinforcement part is fastened with screws to the door, which holes for screws extend from that side of the second portion which, in a mounted state, lies in the door, wherein said holes for screws preferably are unthreaded and wherein said holes for screws reach to and out through the first side of the reinforcement part.

[0027] According to a further embodiment, said holes for screws in the second portion are positioned such that the screws, in a mounted state, run below the lock case. With the holes for screws in the second portion, corre-

sponding advantages are achieved as those which have been described above in connection with the holes for screws in the first portion.

[0028] According to a further embodiment, the reinforcement part comprises a third portion which, in a mounted state, extends into the door, wherein the third portion comprises a third vertical abutment surface configured such that it, in a mounted state, abuts directly, or via one or more further elements, against a vertical surface of the lock case, or such that the third vertical abutment surface is positioned at a distance which is less than 2.0 mm from the vertical surface of the lock case, wherein the third vertical abutment surface is positioned between the first and the second vertical abutment surface. Preferably also the third vertical abutment surface abuts directly against the lock case.

[0029] According to a further embodiment, the third portion comprises at least one hole for a screw, with which the reinforcement part is fastened with screw to the door, which hole for a screw extends from that side of the third portion which, in a mounted state, lies in the door, wherein either

said hole for a screw is threaded and wherein said hole for a screw does not reach to the first side of the reinforcement part, or

wherein said hole for a screw preferably is unthreaded and wherein said hole for a screw reaches to and out through the first side of the reinforcement part,

wherein said hole for a screw in the third portion is positioned such that the screw, in a mounted state, runs through the lock case. Further stability is achieved with the help of at least one screw which is screwed through said at least one hole for a screw in the third portion. Suitably, the third portion is arranged between the first and the second portion. The holes for screws in said first, second and third portion are preferably arranged such that the screws in the holes in a mounted state are arranged horizontally.

[0030] According to a further embodiment, the reinforcement part is configured as one solid piece, preferably of a steel alloy, for example of stainless steel and/or hardened steel, or of cast iron. A very stable design is obtained, in a mounted state, if such a reinforcement part is used. If the reinforcement part is made of a suitable material, such as of hardened steel, the reinforcement part also functions as a very efficient bore protection, in order to prevent a burglar from being able to bore up the lock in the door where the reinforcement part is arranged.

[0031] Another object of the invention is to provide a door with a stable and secure lock design. This object is achieved with a door which comprises at least one hole which extends from the outside of the door to the inside of the door, a lock case which is arranged in the door in level with said hole and a reinforcement part according to any one of the preceding embodiments mounted as intended at the door. A door with such a lock design is stable and secure and has the advantages which have been described above in connection with the embodi-

ments of the reinforcement part.

[0032] According to an embodiment of the door, said reinforcement part is arranged on the outside of the door, wherein the door comprises a lock cylinder which is arranged in the reinforcement part, or such that it extends between the lock case and the reinforcement part, in such a manner that the lock cylinder can interact with the lock case in order to lock and unlock the lock, wherein the door also comprises a further reinforcement part according to any one of the embodiments above arranged as intended at the inside of the door, wherein the door also comprises at least two screws which extend from the inside of the door through the there positioned reinforcement part, through the door and which are fastened screwed into threaded screw holes in the reinforcement part on the outside of the door. A particularly stable and secure design is achieved if the door has two reinforcement parts which are arranged in this manner. In order to increase the security against damage, the screw heads, on the screws which hold the reinforcement parts fixed at the door, are suitably sealed. Such a seal may suitably be made with the help of a breakable pin of the kind which is shown in the EU design number 001175368-0001.

[0033] According to a further embodiment of the door, each of the reinforcement parts comprises further surfaces which are arranged such that the further surfaces of one reinforcement part abut directly, or via one or more further elements, against the corresponding further surfaces of the other reinforcement part or which are arranged such that the further surfaces of one reinforcement part are positioned at a distance which is less than 2.0 mm from the corresponding further surfaces of the other reinforcement part. Through this embodiment, the stability and the security are further increased. Preferably, the further surfaces are arranged above and below the lock case. The further surfaces of the two reinforcement parts are thereby directed towards each other both above and below the lock case. Preferably, the further surfaces of one reinforcement part abut directly against the corresponding further surfaces of the other reinforcement part.

[0034] According to a further embodiment of the door, the door, or at least the part of the door where said reinforcement part or reinforcement parts are arranged, is made of metal, preferably of a metal profile, in particular of an aluminium profile or a steel profile. The design according to the invention is particularly suitable for doors where the lock case is arranged in an aluminium profile or in a steel profile, since the stability of a lock design in this kind of door is substantially increased, and in a simple manner, with the help of the present invention. It should be noted that the lock case preferably is of the narrow profile kind. There is a need to stabilize a lock design with this kind of lock case in doors of this kind.

BRIEF DESCRIPTION OF THE DRAWINGS

[0035]

- 5 Fig 1 shows schematically a front view of an embodiment of a reinforcement part according to the invention.
- Fig 2 shows schematically a view from behind of the part according to Fig 1.
- 10 Fig 3 shows a sectional view the part in the direction which is marked A-A in Fig 1.
- Fig 4 shows schematically a front view of another embodiment of a reinforcement part according to the invention.
- 15 Fig 5 shows schematically a view from behind of the part according to Fig 4.
- Fig 6 shows a sectional view of the part in the direction which is marked A-A in Fig 4.
- Fig 7 shows schematically an example of a lock cylinder.
- 20 Fig 8 shows schematically an example of another kind of lock cylinder.
- Fig 9 shows schematically an exploded view of an embodiment of a door according to the invention with two reinforcement parts according to the invention.
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DESCRIPTION OF EMBODIMENTS OF THE INVENTION

- 30 **[0036]** Fig 1-3 show an embodiment of a reinforcement part which is particularly suitable to be arranged at the outside 21 of a door 11 (see also Fig 9). The reinforcement part is configured for being arranged in level with a lock case 12 arranged in the door 11. The reinforcement part has an upper end 14 and a lower end 15. The reinforcement part extends in a mounted state in the vertical direction somewhat longer than the extension of the lock case 12 in the vertical direction.
- 35 **[0037]** The reinforcement part has a first side 17 which in a mounted state is facing away from the door 11. On the opposite side, the reinforcement part has a first surface 19 which is configured for in a mounted state abutting preferably directly against the outside 21 of the door.
- 40 **[0038]** The reinforcement part has a first portion 25 which projects relative to the first surface 19 such that it in a mounted state extends into the door 11. The first portion 25 has a first vertical abutment surface 27 and a first horizontal surface 31. The vertical abutment surface 27 abuts, in a mounted state, preferably directly against a vertical side surface 29 of the lock case 12. The first horizontal surface 31 extends, in a mounted state, in above a horizontal surface 33 on the top side of the lock case 12.
- 45 **[0039]** The first portion 25 has a recess 35. The recess 35 has a cross-sectional dimension which is adapted for receiving a lock cylinder 37, in this case of the kind which is shown in Fig 7, or a turning knob cylinder 37'. A turning
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- 55

knob cylinder can have a similar design as the lock cylinder but is configured for interacting with a turning knob 75 instead of with a key. A lock cylinder 37 of another kind is shown in Fig 8. The recess 35 is suitably of a shape which is adapted to the shape of the lock cylinder 37 which is to be used.

[0040] The recess 35 extends, in a mounted state, in the direction from the lock case 12 towards the first side 17. However, the recess does not in its entirety reach all the way to the first side 17. There is however a hole 39 which has a smaller cross-sectional dimension than the recess 35 and than the lock cylinder 37 and which extends out through the first side 17. Through this hole 39 a key can interact with the lock cylinder 37. The key can be a mechanical key which is inserted into a key hole 41 in the lock cylinder 37. Alternatively, the key may interact in another manner with the lock cylinder 37, for example if the lock is of an electromechanical kind. If a turning knob cylinder 37' is arranged in the recess 35, a turning knob 75 can interact with the turning knob cylinder via the hole 39. The above mentioned first vertical abutment surface 27 surrounds the recess 35.

[0041] The first portion 25 has, according to this embodiment, three holes 43 for screws. The holes 43 extend from a surface 71 on that side of the first portion 25 which in a mounted state lies in the door. The holes 43 are threaded and do not reach to the first side 17 of the reinforcement part. The holes 43 are arranged such that the screws in a mounted state run above the lock case 12.

[0042] The reinforcement part has a second portion 47 in the lower part. The second portion 47 is designed in a similar manner as the first portion 25. The second portion 47 thus extends, in a mounted state, into the door 11. The second portion 47 has a second vertical abutment surface 49 which in a mounted state preferably abuts directly against the vertical side surface 29 of the lock case 12.

[0043] Furthermore, the second portion 47 has a second horizontal surface 51 which, in a mounted state, extends in below the horizontal underside 53 of the lock case 12.

[0044] The second portion 47 has two holes 55 for screws. The holes 55 extend from a surface 73 on that side of the second portion 47 which in a mounted state lies in the door. The holes 55 are threaded and do not reach to the first side 17 of the reinforcement part. The holes 55 are positioned such that the screws in a mounted state run below the lock case 12.

[0045] Furthermore, the reinforcement part has a third portion 59 which is arranged between the first portion 25 and the second portion 47. The third portion 59 has a third vertical abutment surface 61 which in a mounted state preferably abuts directly against the side surface 29 of the lock case.

[0046] Also the third portion 59 has a hole 63 for a screw, with which the reinforcement part is fastened with screw to the door 11. The hole 63 extends from that side of the third portion 59 which in a mounted state lies in

the door. The hole 63 is threaded and does not reach to the first side 17 of the reinforcement part. The hole 63 is positioned such that the screw that is screwed into the same, in a mounted state, runs through the lock case 12.

[0047] The reinforcement part is configured as one solid piece, for example of a hardened steel alloy.

[0048] Fig 4-6 show another embodiment of the reinforcement part. This reinforcement part is particularly suited for being arranged on the inside 23 of a door 11. The design of this part is almost identical with that of the reinforcement part which has been described in connection with Fig 1-3. The only essential difference is that the reinforcement part according to Fig 4-6 has through holes 45 for screws in the first portion 25, and through holes 57 for screws in the second portion 47. Furthermore, the reinforcement part according to Fig 4-6 has a through hole 65 for a screw in the third portion 59. The holes 45, 57, 65 are preferably unthreaded. As for the rest, the part according to Fig 4-6 may be designed in a similar manner as the part according to Fig 1-3. We therefore do not describe the function of the different parts and surfaces a further time. The reinforcement part according to Fig 1-3 and the reinforcement part according to Fig 4-6 may also have further surfaces 71, 73 which, in a mounted state, with one reinforcement part arranged on the inside of the door and one reinforcement part arranged on the outside of the door, may abut against each other, or may be positioned at a short distance from each other.

[0049] Fig 9 shows schematically an embodiment of a door according to the invention. For the sake of clarity, the design is here shown as an exploded view, but in reality the parts are of course arranged as intended, that is such that the surface 19 of the reinforcement parts abuts against the outside 21 and inside 23 of the door.

[0050] The door has preferably three holes, which correspond to the positions of the first portion 25, the second portion 47 and the third portion 59. A lock case 12 is arranged in the door 11 in level with the holes through the door. A reinforcement part of the kind which is shown in Fig 1-3 is arranged on the outside 21 of the door. Another reinforcement part of the kind which is shown in Fig 4-6 is arranged on the inside 23 of the door. A lock cylinder 37 is arranged in the recess 35 in the reinforcement part on the outside 21 of the door. A turning knob cylinder 37' (or a lock cylinder 37) is arranged in the recess 35 in the reinforcement part on the inside 23 of the door. In Fig 9 is also shown schematically a turning knob 75 which interacts with the turning knob cylinder 37'.

[0051] With the help of screws 67 the parts are mounted such that the different surfaces are positioned in the manner which has been mentioned above. After the assembly, the screw heads on the screws 67 are suitably sealed. The seal may be made with the help of a breakable pin of the kind which is shown in EU design number 001175368-0001.

[0052] The further surfaces 71, 73 of one reinforcement part may abut directly, or via one or more further elements, against the corresponding surfaces 71, 73 of

the other reinforcement part.

[0053] The door may for example be of the kind where the lock case 12 is arranged in an aluminium profile. The lock case can thereby be of the narrow profile kind.

[0054] It should be noted that the reinforcement parts may also be provided with further holes, for example for the axle from a door handle which is to interact with a corresponding member in the lock case 12.

[0055] The invention is not limited to the described embodiments but may be modified within the scope of the following claims.

Claims

1. Reinforcement part configured for being arranged on the outside (21) or the inside (23) of a door (11) in level with a lock case (12) arranged in the door, wherein the reinforcement part has an extension such that it in a mounted state in vertical direction extends from an upper end (14) to a lower end (15), wherein the distance between the upper end and the lower end preferably is substantially at least as long as the length of the lock case in vertical direction in a mounted state, wherein the reinforcement part has a first side (17), which in a mounted state will be facing away from the door (11), wherein the reinforcement part comprises a first surface (19), which is facing away from the first side (17), wherein the first surface (19) is configured for in a mounted state abutting, directly, or indirectly via one or more further elements, against the outside (21) or the inside (23) of the door, wherein the reinforcement part comprises a first portion (25) which, in a mounted state, extends into the door (11), **characterized in that** the first portion (25) comprises a first vertical abutment surface (27) configured such that it, in a mounted state, abuts directly, or via one or more further elements, against a vertical surface (29) of the lock case (12), or such that the first vertical abutment surface (27) is positioned at a distance which is less than 2.0 mm from the vertical surface (29) of the lock case.
2. Reinforcement part according to claim 1, wherein the first portion (25) comprises a first horizontal surface (31) configured such that it, in a mounted state, abuts directly, or via one or more further elements, from above against a horizontal surface (33) of the lock case (12), which horizontal surface (33) preferably is the top side of the lock case, or such that the first horizontal surface (31) extends in above the top side of the lock case (12).
3. Reinforcement part according to any one of the claims 1-2, comprising a recess (35), preferably arranged in said first portion (25), with a cross-sectional dimension adapted for receiving a lock cylinder (37) or a turning knob cylinder (37').
4. Reinforcement part according to claim 3, wherein the recess (35), as seen in a mounted state, extends in the direction from the lock case (12) and in the direction towards said first side (17) of the reinforcement part, but not all the way to the first side (17), but where a hole (39) which, as seen in a vertical section in a mounted state, has a smaller dimension than the recess (35) and than the lock cylinder (37) or the turning knob cylinder (37') extends from said recess (35) out through the first side (17), wherein the hole (39) is configured such that in a mounted state either a key via the hole (39) can interact with a lock cylinder (37) which is positioned in the recess, either in that the key is inserted into a key hole (41) in the lock cylinder (37) or in that the key in another manner communicates with the lock cylinder (37), or a turning knob (75) via the hole (39) can interact with a turning knob cylinder (37') which is positioned in the recess (35).
5. Reinforcement part according to any one of the claims 3-4, wherein said first vertical abutment surface (27) surrounds the recess (35).
6. Reinforcement part according to any one of the preceding claims, wherein the first portion (25) comprises one, two or more holes (43) for screws, with which the reinforcement part is fastened with screws to the door (11), which holes (43) for screws extend from that side of the first portion which, in a mounted state, lies in the door, wherein said holes (43) for screws are threaded and wherein said holes (43) for screws do not reach to the first side (17) of the reinforcement part.
7. Reinforcement part according to any one of the claims 1-5, wherein the first portion (25) comprises one, two or more holes (45) for screws, with which the reinforcement part is fastened with screws to the door (11), which holes (45) for screws extend from that side of the first portion which, in a mounted state, lies in the door, wherein said holes (45) for screws preferably are unthreaded and wherein said holes (45) for screws reach to and out through the first side (17) of the reinforcement part.
8. Reinforcement part according to any one of the claims 6-7, wherein said holes (43, 45) for screws in the first portion (25) are positioned such that the screws, in a mounted state, run above the lock case (12).
9. Reinforcement part according to any one of the preceding claims, wherein the reinforcement part comprises a second portion (47) which, in a mounted state, extends into the door (11), wherein the second portion (47) comprises a second vertical abutment

surface (49) configured such that it, in a mounted state, abuts directly, or via one or more further elements, against a vertical surface (29) of the lock case (12), or such that the second vertical abutment surface (49) is positioned at a distance which is less than 2.0 mm from the vertical surface (29) of the lock case.

10. Reinforcement part according to claim 9, wherein the second portion (47) comprises a second horizontal surface (51) configured such that it, in a mounted state, abuts directly, or via one or more further elements, from below against a horizontal surface (53) of the lock case (12), which horizontal surface (53) preferably is the underside of the lock case, or such that the second horizontal surface (51) extends in below the underside of the lock case (12).
11. Reinforcement part according to any one of the claims 9-10, wherein the second portion (47) comprises one, two or more holes (55) for screws, with which the reinforcement part is fastened with screws to the door (11), which holes (55) for screws extend from that side of the second portion which, in a mounted state, lies in the door, wherein said holes (55) for screws are threaded and wherein said holes (55) for screws do not reach to the first side (17) of the reinforcement part.
12. Reinforcement part according to any one of the claims 9-10, wherein the second portion (47) comprises one, two or more holes (57) for screws, with which the reinforcement part is fastened with screws to the door (11), which holes (57) for screws extend from that side of the second portion which, in a mounted state, lies in the door, wherein said holes (57) for screws preferably are unthreaded and wherein said holes (57) for screws reach to and out through the first side (17) of the reinforcement part.
13. Reinforcement part according to any one of the claims 11-12, wherein said holes (55, 57) for screws in the second portion (47) are positioned such that the screws, in a mounted state, run below the lock case (12).
14. Reinforcement part according to any one of the claims 9-13, wherein the reinforcement part comprises a third portion (59) which, in a mounted state, extends into the door (11), wherein the third portion (59) comprises a third vertical abutment surface (61) configured such that it, in a mounted state, abuts directly, or via one or more further elements, against a vertical surface (29) of the lock case (12), or such that the third vertical abutment surface (61) is positioned at a distance which is less than 2.0 mm from the vertical surface (29) of the lock case, wherein the third vertical abutment surface (61) is positioned

between the first (27) and the second (49) vertical abutment surface.

15. Reinforcement part according to claim 14, wherein the third portion (59) comprises at least one hole (63, 65) for a screw, with which the reinforcement part is fastened with screw to the door (11), which hole (63, 65) for a screw extends from that side of the third portion which, in a mounted state, lies in the door (11), wherein either said hole (63) for a screw is threaded and wherein said hole (63) for a screw does not reach to the first side (17) of the reinforcement part, or wherein said hole (65) for a screw preferably is unthreaded and wherein said hole (65) for a screw reaches to and out through the first side (17) of the reinforcement part, wherein said hole (63, 65) for a screw in the third portion (59) is positioned such that the screw, in a mounted state, runs through the lock case (12).
16. Reinforcement part according to any one of the preceding claims, wherein the reinforcement part is configured as one solid piece, preferably of a steel alloy, for example of stainless steel and/or hardened steel, or of cast iron.
17. Door (11) comprising at least one hole which extends from the outside (21) of the door to the inside (23) of the door, a lock case (12) which is arranged in the door (11) in level with said hole and a reinforcement part according to any one of the preceding claims mounted as intended at the door (11).
18. Door according to claim 17, wherein said reinforcement part is arranged on the outside (21) of the door, wherein the door (11) comprises a lock cylinder (37) which is arranged in the reinforcement part, or such that it extends between the lock case (12) and the reinforcement part, in such a manner that the lock cylinder (37) can interact with the lock case (12) in order to lock and unlock the lock, wherein the door (11) also comprises a further reinforcement part according to any one of the claims 1-16 arranged as intended at the inside (23) of the door, wherein the door also comprises at least two screws (67) which extend from the inside (23) of the door through the there positioned reinforcement part, through the door (11) and which are fastened screwed into threaded screw holes (43, 53, 63) in the reinforcement part on the outside (21) of the door.
19. Door according to claim 18, wherein each of the reinforcement parts comprises further surfaces (71, 73) which are arranged such that the further surfaces (71, 73) of one reinforcement part abut directly, or via one or more further elements, against the corresponding further surfaces (71, 73) of the other rein-

forcement part or which are arranged such that the further surfaces (71, 73) of one reinforcement part are positioned at a distance which is less than 2.0 mm from the corresponding further surfaces (71, 73) of the other reinforcement part.

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20. Door according to any one of the claims 17-19, wherein the door, or at least the part of the door where said reinforcement part or reinforcement parts are arranged, is made of metal, preferably of a metal profile, in particular of an aluminium profile or a steel profile.

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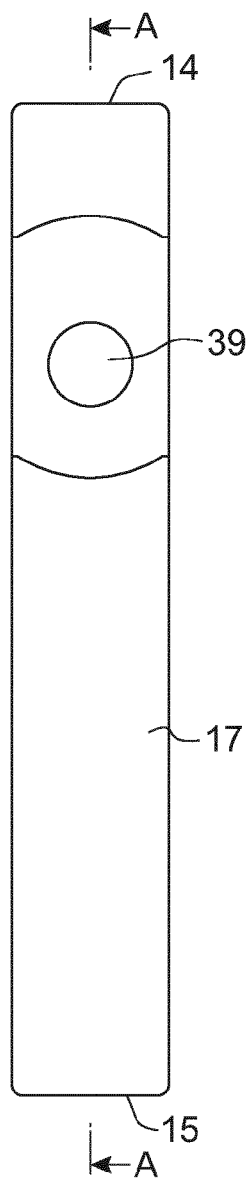


Fig. 1

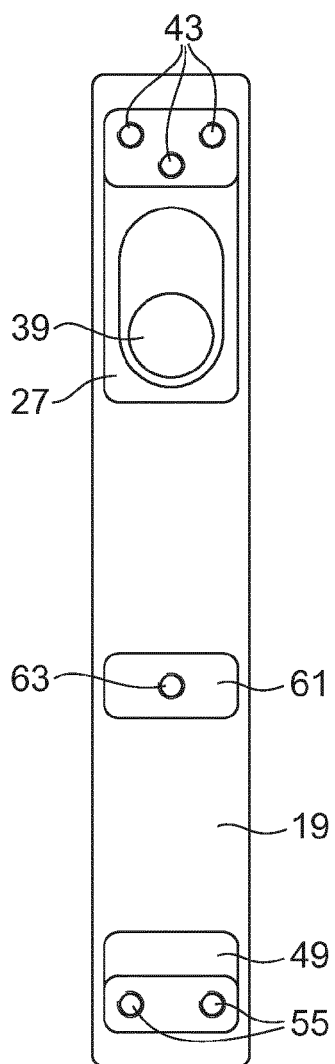


Fig. 2

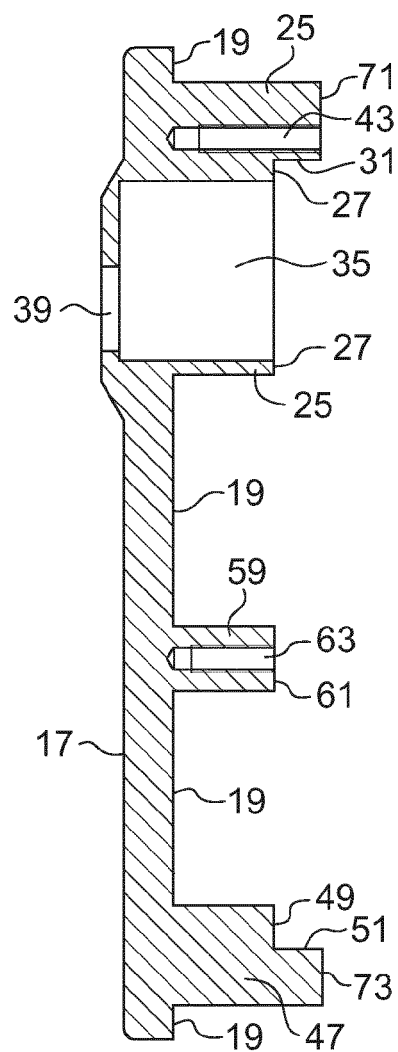


Fig. 3

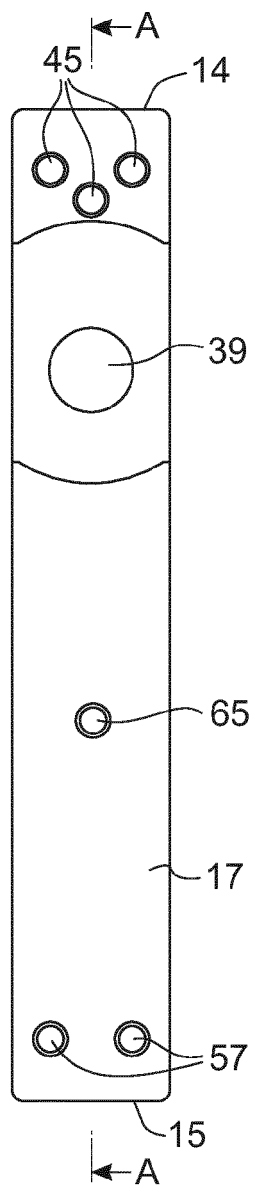


Fig. 4

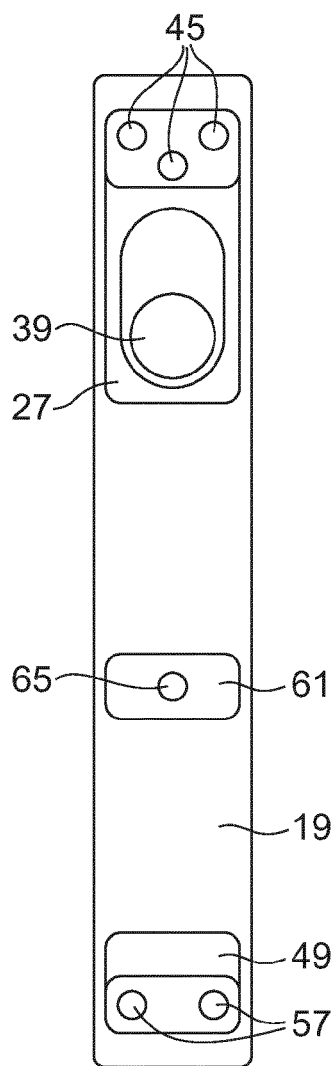


Fig. 5

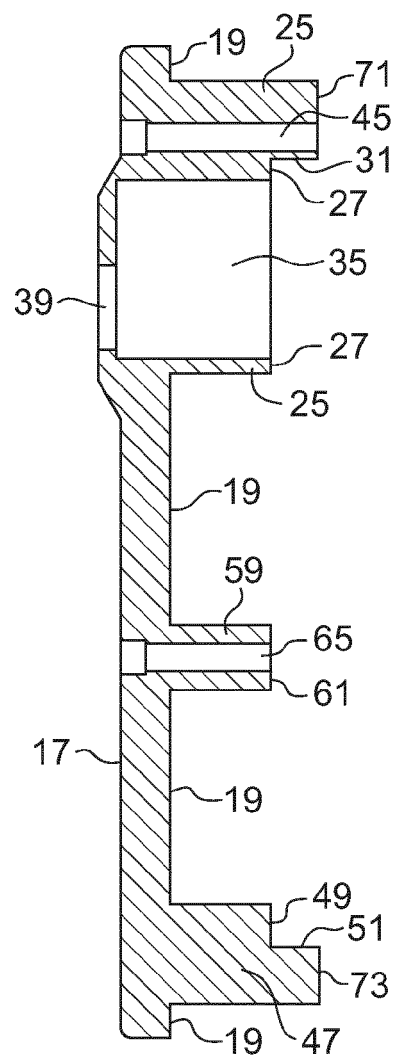


Fig. 6

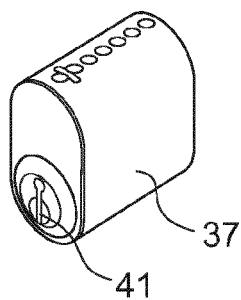


Fig. 7

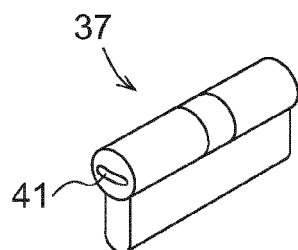


Fig. 8

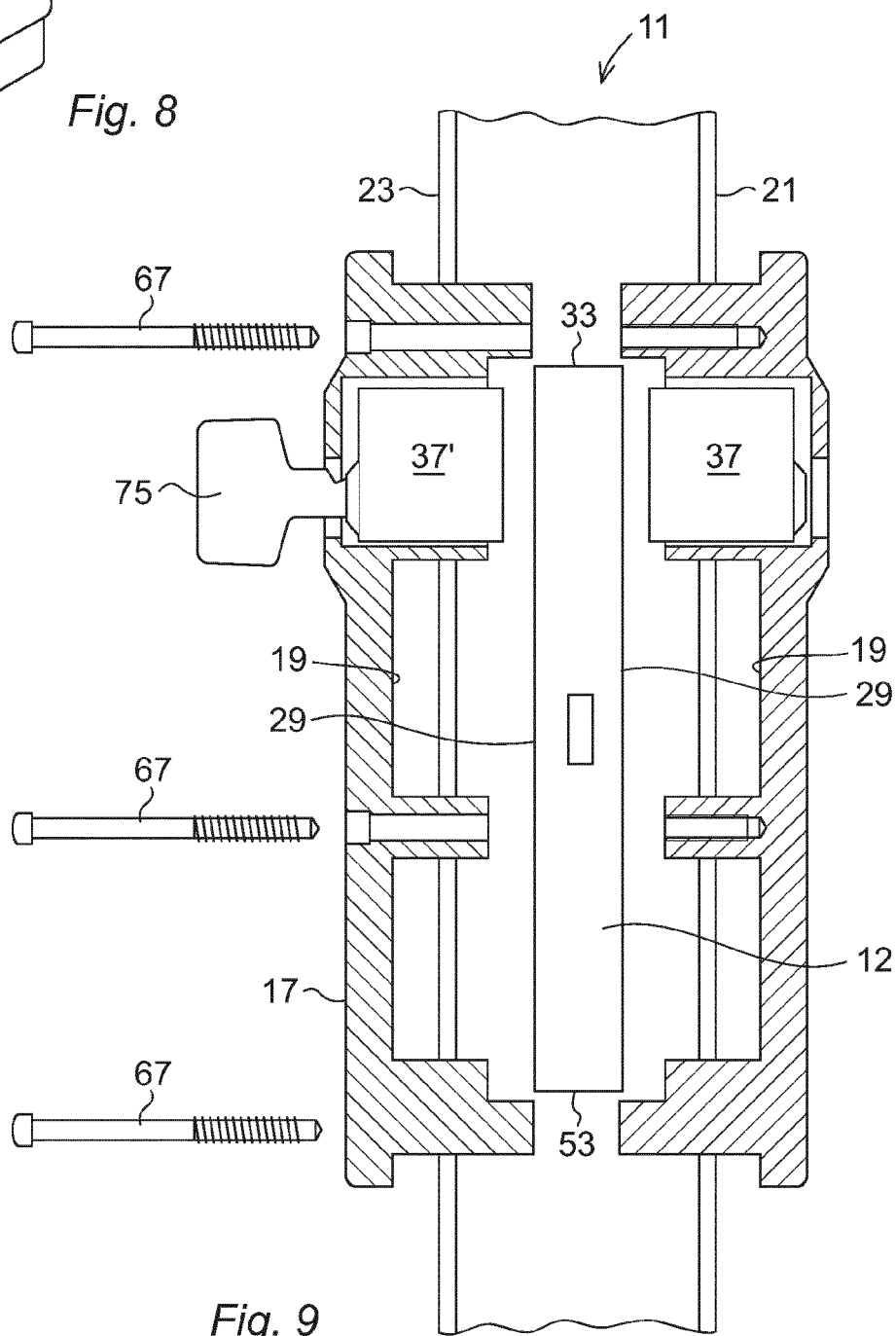


Fig. 9