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SPACE SAVING MECHANISM FOR INSTALLATION OF SWING DOOR OPERATOR

Abstract

A clamp (**1**) for attaching a component (**3**) to a back plate (**2**), said clamp (**1**) comprises two clamp members (**11, 12**), the clamp members (**11, 12**) being connected by a fastener (**13**) configured to apply a force at least in a direction which brings the clamp members (**11, 12**) closer together, and wherein each clamp member (**11, 12**) is configured to cooperate with a retaining shoulder (**31**) of the component (**3**).

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Background/Summary

TECHNICAL FIELD

[0001] The present invention relates to the technical field of door operator assemblies and interfaces for attaching components to a wall.

BACKGROUND

[0002] Door operator assemblies are today common items in office buildings, shopping centres etc. for providing automated opening of various types of doors. Often are the door operator assemblies mounted to a fixed structure, such as a wall, and then connected to the door via some sort of linkage.

[0003] It is also a regularly occurring technique to use some sort of back plate, or bracket, which is attached firstly to the fixed structure. The back plate then serves as an interface onto which the remaining components are attached. This gives several benefits in the mounting of the door operator assembly. One such benefit being that the components of the door operator assembly may be attached and removed in a manner that is less tedious than attaching them directly to the wall. This also allows components to be replaced more easily, which is desirable given that many door operator assemblies are modular to allow that components to be replaced for instance for upgrading or in case of malfunction.

[0004] As the available room for mounting the door operator assembly to a door may be limited, manufacturers of door operator assemblies continuously strive to reduce the size of the operator assemblies in whole and the operators themselves. One problem when reducing the size of the operator and how far the back plate and operator protrudes from the wall is that it may make the attachment of each component to the back plate more difficult, as accessibility may be somewhat compromised due to the overall decrease in size.

[0005] It is therefore desired to provide a way of mounting a door operator assembly to a wall that is easy, allows the size of the door operator assembly to be reduced while simultaneously reducing or at least maintaining the time required for mounting the entire door operator assembly to the wall. It is also desired to provide means for attaching components to the back plate that is strong while using small amounts material, keeping production costs down without compromising structural integrity.

SUMMARY

[0006] It is therefore an object of the invention to at least partly overcome one or more of the above-identified limitations of the prior art. In particular, it is an object to provide a clamp for attaching a component to back plate, a component comprising a retaining shoulder for cooperation with the clamp, a back plate, a door operator assembly and a method for attaching components to a back plate.

[0007] In a first aspect of the invention is a clamp provided for attaching a component to a back plate. The clamp comprises two clamp members, the clamp members being connected by a fastener configured to apply a force at least in a direction that brings the clamp members closer together. Each clamp member is configured to cooperate with a retaining shoulder of the component such that movement of the clamp members towards each other also moves each clamp member into contact with a respective surface of the back plate securing the component to the back plate. The

clamp provides a quick and easy way of securing a component to a back plate. The clamp requires little space on the back plate for securing the component, allowing the size of the entire door operator assembly to be reduced.

[0008] The clamp may further comprise a resilient member configured provide a biasing force pushing the clamp members away from each other, facilitating mounting of the clamp to the back plate. The clamp members may be pushed towards each other against the biasing force of the resilient member, and then arranged against the back plate. When the clamp members are subsequently released, the resilient member will bring the clamp members apart to the distance defined by the fastener or by contact with the back plate, and in the latter case will the interaction of the clamp and the back plate hold the clamp loosely in place on the back plate.

[0009] In an embodiment, each clamp member comprises a retaining lip arranged distally on each clamp member. The retaining lip being configured to cooperate with the respective surface in the back plate. The retaining lip secures the clamp and the component to the back plate by its contact with the surface on the back plate.

[0010] Each clamp member may further comprise a inclined surface configured to face the retaining shoulder and to cooperate with the retaining shoulder of the component. When the fastener is tightened so that the clamp members starts moving closer together over the retaining shoulder, the inclined surface will cause the simultaneous motion of the clamp away from the front surface of the back plate and bring the clamp into contact with the surface of the back plate.

[0011] The inclined surface may extend from a heel arranged proximally of the retaining lip on each clamp member and is inclined away from the back plate in a proximal direction towards the center of the clamp.

[0012] In one embodiment, the clamp comprises rounded edges surrounding the retaining lip and the inclined surface. The rounded edges prevent unnecessary high contact stresses from occurring during the fixing of the component to the back plate.

[0013] The fastener may be a screw arranged with the screw head at the first clamp member and in threaded engagement at a second end with the second clamp member. The screw may further be angled in relation to the back plate such that the center of the screw head is configured to be arranged further away from the back plate than the center of the second end. This facilitates access to the screw, as the screw head is positioned slightly further away from the back plate. The angle of the screw allows the tool that is used to also be angled slightly outwards from the wall, also contributing to making the clamp easier to attach to the back plate. Further in the field of entrance systems it is usually preferred to mount the component from below since thereby usage of a ladder may be avoided. Thus, the inclined orientation allows for mounting from below while avoiding a protruding door casing getting in the way.

[0014] In a second aspect is a component provided, the component being configured to be attached to a back plate by means of a clamp of the first aspect. The component further comprises at least one retaining shoulder on a side of the component configured to face in the longitudinal direction of the back plate. A distal portion of the retaining shoulder is configured to fit between and cooperate with the clamp members of the clamp to secure the component to the back plate. The retaining shoulder provides a strong connection of the component to the back plate.

[0015] The retaining shoulder may comprise a inclined surface configured to face the clamp on each side of the distal portion. The inclined surfaces being configured to cooperate with the inclined surfaces on the clamp members. The inclined surfaces on the retaining shoulder and the clamp form a sliding interface between the components.

[0016] Further still, the edges surrounding the inclined surfaces on the retaining shoulder may be rounded reducing contact stresses between the clamp and the retaining shoulder.

[0017] In a third aspect is a back plate provided. The back plate being configured to form an interface for attaching components to a wall. The back plate comprises a rear side intended to face the wall and a front side opposite the rear side. At least one component is mountable to the front

side by means of at least one clamp and at least one retaining shoulder arranged on the at least one component. The back plate comprises surfaces facing the front side and extending longitudinally along at least a portion of the back plate, and the clamp is configured come into contact with the surfaces to secure the component to the back plate.

[0018] The back plate may further comprise a longitudinal wall arranged one each side of the back plate, the walls each being provided with a groove on the side of each wall facing the other wall. The grooves extends longitudinally along at least a portion of the back plate and being arranged on each side of the front side. The surfaces are formed by an upper surface in the grooves. The grooves guides the clamp during the placement of it in relation to the retaining shoulder of the component, as well as provides a strong upper surface against which the clamp is pressed when the component is secured to the back plate.

[0019] In a fourth aspect is a door operator assembly provided comprising at least one clamp of the first aspect, a back plate of the second aspect, at least one component comprising at least one retaining shoulder of the third aspect. The at least one clamp secures the component to the back plate. The door operator assembly is thus made easier to assemble and easier to mount to a wall. The size of the operator assembly may be reduced as the clamp and retaining shoulder does not need to rest on a bottom flange of the back-plate, while also not compromising with the strength of the wall attachment. With such a door operator assembly the size of the back-plate may be reduced significantly. Thereby it is also possible to achieve a door operator assembly which protrudes from the wall. As the door operator assembly is quick to assemble are there also benefits in costs, as the man hours required both during installation as well during different types of maintenance operations can be reduced. Furthermore, the versatility of the door operator assembly is improved allowing it to be fitted to doors where regular door operator assemblies will not fit or where for instance door casings are in the way. Also, the back-plate allows for components to be fitted freely in relation to the wall, enabling further flexibility.

[0020] In a fifth aspect is a method provided for attaching a component comprising at least one retaining shoulder of the second aspect, to a back plate of the third aspect by means of at least one clamp of the first aspect. The method comprises the steps of: arranging the at least one component in its desired position against the front side of the back plate, placing the at least one clamp over the at least one retaining shoulder, and securing the at least one component to the back plate by use of the fastener.

[0021] In one embodiment, the step of placing further comprises moving the clamp members towards each other against the biasing force of the resilient member, and releasing the clamp members such that the respective retaining lip on each clamp member is arranged in a respective groove and thereafter sliding the at least one clamp over the at least one retaining shoulder. The resilient member keeps the clamp loosely attached to the back plate by the interaction between the retaining lips and the respective grooves. This is beneficial as the clamp can simple be placed on the back plate adjacent to the retaining shoulder of the component and it will be kept in place without having to secure it using a tool. Then it is moved, guided by the grooves, over the retaining shoulder and then secured by use of the fastener. The time it takes for mounting or removing each component from the back plate can thus be reduced.

[0022] Embodiments of the invention are defined by the appended dependent claims and are further explained in the detailed description section as well as in the drawings.

[0023] It should be emphasized that the term “comprises/comprising” when used in this specification is taken to specify the presence of stated features, integers, steps, or components, but does not preclude the presence or addition of one or more other features, integers, steps, components, or groups thereof. All terms used in the claims are to be interpreted according to their ordinary meaning in the technical field, unless explicitly defined otherwise herein. All references to “a/an/the [element, device, component, means, step, etc]” are to be interpreted openly as referring to at least one instance of the element, device, component, means, step, etc., unless explicitly stated

otherwise. The steps of any method disclosed herein do not have to be performed in the exact order disclosed, unless explicitly state

Description

BRIEF DESCRIPTION OF THE DRAWINGS

[0024] The present invention will be described further below by way of example and with reference to the enclosed drawings. In the drawings:

[0025] FIG. **1** shows a side view of a clamp according to one embodiment,

[0026] FIG. **2** shows a perspective view of a retaining shoulder according to one embodiment,

[0027] FIG. **3** shows the profile of a back plate according to one embodiment,

[0028] FIG. **4** shows a perspective view of a door operator assembly according to one embodiment, and

[0029] FIG. **5** shows a flow chart of a method for attaching component to a back plate according to one embodiment.

DETAILED DESCRIPTION OF EMBODIMENTS

[0030] Embodiments of the invention will now be described with reference to the accompanying drawings. The invention may, however, be embodied in many different forms and should not be construed as limited to the embodiments set forth herein; rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art. The terminology used in the detailed description of the particular embodiments illustrated in the accompanying drawings is not intended to be limiting of the invention. In the drawings, like numbers refer to like elements. First will the details of the ingoing parts of the door operator assembly **100** be explained in relation to FIGS. **1** to **3**, and then their mutual relationship in relation to FIGS. **4** and **5**.

[0031] FIG. **1** shows a clamp **1** that is to be used to attach a component **3**, preferably a component **3** of a door operator assembly such as a door operator, to a back plate **2**. The clamp **1** comprises a first clamp member **11** and a second clamp member **12**. The clamp members **11**, **12** are connected by a fastener **13** here shown in the form of a screw. Other fasteners are also considered such as lever arm type fasteners etc. The clamp **1** is preferably made out of a metallic material such as aluminum or an alloy such as steel, however polymeric materials and composite materials are also considered. In one embodiment the clamp members **11**, **12** may be manufactured in one material and the fastener **13** in another material.

[0032] The door operator assembly is preferably for causing movements of one or more movable door members of an entrance system between a closed and open position. The entrance system may for example be a swing door system, a sliding door system or a high speed door system. A transmission mechanism conveys mechanical power from the door operator **30** to the movable door members.

[0033] The clamp members **11**, **12** constitutes the part of the clamp **1** that is configured to contact the back plate **2** as well as the retaining shoulder **31** (shown in FIG. **2**) and to secure these together. The retaining shoulder **31** is in turn mounted to a component **3**, either integrally or as a removable part. Each clamp member **11**, **12** is shaped such that an upper portion **111**, **121** comprises a hole for receiving the fastener **13**. The holes may be through holes in both clamp members **11**, **12** or only in the first clamp member **11**. At least one of the holes for receiving the fastener **13** is threaded, preferably the hole in the second clamp member **12**. Preferably is the first clamp member **11** free to move axially and rotationally on the fastener **13**, the axial movement being limited by a screw head **131** of the fastener **13**.

[0034] The clamp members **11**, **12** further comprises a lower portion **113**, **123** that is connected to the upper portion **111**, **121** by an inclined intermediate portion **112**, **122**. The lower portion **113**, **123**

is by the inclination of the intermediate portion **112**, **122** arranged distally or laterally of the upper portion **111**, **121**, i.e. further away from the center of the clamp **1**. Each lower portion **113**, **123** on each clamp member **11**, **12** further comprises a retaining lip **15** arranged outer most or distally on the clamp **1**. In other words, the retaining lips **15** form two lateral protrusions on the lower portions **113**, **123** of the clamp **1**. On the opposite side of the retaining lip **15** on each lower portion **113**, **123** is a heel **18** arranged, forming the transition from the underside of the lower portion **113**, **123** to the inclined intermediate portion **112**, **122**. An inclined surface **16** is arranged on the intermediate portion **112**, **122** extending from the heel **18** to the upper portion, thus facing the retaining shoulder **31** and the front surface **24** of the back plate **2**. The inclined surface **16** being arranged on the side of the intermediate portion **112**, **122** facing downwards and against the other clamp member **11**, **12**.
[0035] The fastener **13**, preferably being a screw **13**, comprises a screw head **131** arranged at the first clamp member **11** and a threaded second end **132** interacting with the threaded hole in the second clamp member **12**. In this way, the rotation of the fastener **13** controls the distance between the first and second clamp members **11**, **12**. A resilient member **14** may be provided surrounding the fastener **13**. The resilient member **14** may be a coil spring or any other type of spring that is suitable for providing a biasing force pushing the clamp members **11**, **12** away from each other. The resilient member **14** will keep the first clamp member **11** pushed against the screw head **131** as long as no external force is applied to the clamp members **11**, **12** that overcomes the biasing force of the resilient member **14**.
[0036] Furthermore, the edges **17** surrounding the retaining lip **15** and the inclined surface **16** on each clamp member **11**, **12** is preferably rounded. This is beneficial as the retaining lip **15** and the inclined surface **15** serve as contact surfaces and the rounded edges **17** prevents that high contact stresses form in the adjacent component(s), i.e. the retaining shoulder **31** and the back plate **2**.
[0037] As is also evident from FIG. **1**, the fastener **13** may be arranged at an angle through the clamp member **11**, **12**. Preferably is the distance between the center of the screw head **131** to the underside of the lower portion **113** on the first clamp member **11** longer than the distance between the center of the second end **132** to the underside of the lower portion **123** of the second clamp member **12**. The inclination of the fastener **13** simplifies access to the screw head **131**, as will be explained further in relation FIG. **4**.
[0038] Turning to FIG. **2** in which a retaining shoulder **31** is shown. The retaining shoulder **31** is preferably made out of a metallic material or an alloy such as steel or aluminum, however polymeric materials and composite materials are also considered.
[0039] The retaining shoulder **31** is configured to be attached integrally or as a removable part to a component **3** (shown in FIG. **4**). The retaining shoulder **31** is configured to cooperate with the clamp **1** in securing the component **3** to the back plate **2**. The retaining shoulder **31** is configured to be arranged on the sides of each component **3** facing in the longitudinal direction of the back plate **2**. The retaining shoulder **31** comprises a distal portion **32** that is configured to be arranged between the clamp members **11**, **12**.
[0040] On each side, i.e. the sides facing essentially perpendicularly to the longitudinal direction of the back plate **2**, of the distal portion **32** is an inclined surface **33** arranged facing the clamp **1**, or more specifically the inclined surfaces **16** on the clamp members **11**, **12**. The surfaces **33** are oppositely arranged facing away from each other. The inclinations of the surfaces **33** are preferably such that they essentially match the inclination of the respective inclined surface **16** on the clamp members **11**, **12**. As with the edges **17** on the clamp **1**, the edges **34** surrounding the inclined surfaces **33** on the retaining shoulder **31** are preferably also rounded.
[0041] In FIG. **3** is a back plate **2** shown in a view in the longitudinal direction of the back plate **2**. The back plate **2** may be an elongated bracket profile, preferably made out of a metallic material such as aluminum or an alloy such as steel, however polymeric materials and composite materials are also considered.
[0042] The back plate **2**, which forms an interface for connecting components **3** of a door operator

assembly **100** to a wall, comprises a rear side **23** intended to face the wall or another similar fixed structure. Opposite of the rear side **23** is a front side **24** arranged, onto which the components **3** are mountable. On each side of the back plate **2** is a wall **25** arranged protruding upwards from the front side **24**. The walls **25** extending in the longitudinal direction and along at least a part of the length of the back plate **2**, giving the back plate **2** an essentially C-shaped cross-section. The inner side on each wall **25** is provided with a groove **21** also extending along at least a part of the length of the back plate **2**. The grooves **21** are configured to cooperate with the retaining lips **15** on the clamp **1**. A surface **22** in each groove **21** is arranged facing downwards against the front side **24** of the back plate **2**, this surface **22** forms an upper restriction for movement of the clamp **1** during its cooperation with the retaining shoulder **31** of the component **3**. The surfaces **22** thus essentially forms flanges on the back plate **2**. This is critical as when the clamp **1** is placed over a retaining shoulder **31** and the fastener **13** is tightened such that the clamp members **11**, **12** are moved closer together, the clamp **1** will move upwards (i.e. away from the front surface **24** of the back plate **2**) on the retaining shoulder **31** and eventually make contact with the surface **22**. This interaction mechanism will lock the component **3** to the back plate **2**. More specifically, the interaction of the inclined surfaces **16** on the clamp **1** and the inclined surfaces **33** on the retaining shoulder **31** provides the upwardly motion of the clamp **1** in relation to the retaining shoulder **31** when the fastener **13** is tightened and the clamp members **11**, **12** moves towards each other.

[0043] FIG. **4** shows the cooperation of the clamp **1**, the retaining shoulder **31** on the component **3** and the back plate **2**. The component **3** shown here in the form of a door operator **3**, but it could also be any other component **3** of the door operator assembly **100**. Each component **3** may comprise one or more retaining shoulders **31**, depending on the application. Preferably is one retaining shoulder **31** arranged on each side of the component that faces in the longitudinal direction of the back plate **2**.

[0044] FIG. **5** shows a block diagram of a method for attaching a component **3** to the back plate **2** using a clamp **1**. Firstly is the component **3** arranged S**1** in its desired position against the front side **24** of the back plate **2**. It is to be noted that the process of mounting components **3** to the back plate **2** may be performed after that the back plate **2** is attached to the wall as well as before. The actual attachment of the back plate **2** to the wall may be performed in a number of ways, and is not considered relevant to the invention.

[0045] After that the component **3** has been positioned on the back plate **2** can a clamp **1** be placed S**2** over each retaining shoulder **31** on the component **3**. The positioning of the clamp **1** on the back plate **2** is facilitated in that the clamp members **11**, **12** may be brought closer together before the clamp **1** is placed S**2** on the back plate **2**. After that the clamp **1** is positioned against the front side **24** may the clamp members **11**, **12** be brought further apart again which places the retaining lips **15** in the grooves **21** in the back plate **2**. This is especially convenient if the clamp **1** comprises the resilient member **13**, as this will provide a biasing force holding the clamp **1** loosely in place on the back plate **2**. The clamp **1** can thereafter simply be moved over the retaining shoulder **31** of the component **3**, as the interaction between the grooves **21** and the retaining lips **15** will guide the motion of the clamp **1** and make sure that the retaining shoulder **31** fits between the clamp members **11**, **12**. What is of importance is that the clamp **1** is placed over the retaining shoulder **31** of the component **3**, naturally may also the clamp **1** be placed first in a desired position with the component **3** then being moved such that the retaining shoulder **31** is placed between the clamp members **11**, **12**.

[0046] After that the retaining shoulder **31** and the clamp **1** are positioned correctly in relationship to one another may the component **3** be secured S**3** to the back plate **2**. This is achieved by means of the fastener **13**, as turning this causes the clamp member **11**, **12** to move closer together causing a simultaneous upwardly (i.e. in a direction away from the front surface **24** of the back plate **2**) motion of the clamp **1** by its contact with the retaining shoulder **31**. The retaining lips **15** will then make contact with the surface **22** in the grooves **21** of the back plate **2**, and the interaction between

the surface **22**, the retaining lips **15** and the inclined surfaces **16**, **33** on the clamp **1** and retaining shoulder **31** respectively will secure the component **3** to the back plate **2**.
[0047] As it may sometimes difficult to access the fastener **13** with tools, the fastener **13** can be arranged at angle in the clamp **1** as mentioned above. The screw head **131** is thus arranged slightly higher than the second end **132** of the fastener **13**, and is also angled slightly upwards. This will facilitate access to the clamp **1** with tools, and allow the door operator assembly **100** to be placed for instance directly over a door casing without risking that this obstructs the access to the fastener **13**.
[0048] It should be mentioned that the inventive concept is by no means limited to the embodiments described herein, and several modifications are feasible without departing from the scope of the appended claims. In the claims, the term “comprises/comprising” does not exclude the presence of other elements or steps. Additionally, although individual features may be included in different claims, these may possibly advantageously be combined, and the inclusion in different claims does not imply that a combination of features is not feasible and/or advantageous. In addition, singular references do not exclude a plurality. The terms “a”, “an”, “first”, “second” etc do not preclude a plurality. Reference signs in the claims are provided merely as a clarifying example and shall not be construed as limiting the scope of the claims in any way.

Claims

1.-**15**. (canceled)
16. A door operator assembly comprising at least one clamp for attaching a component to a back plate, the at least one clamp comprising: two clamp members forming a clamp, the clamp members being connected by a fastener configured to apply a force at least in a first direction which brings the clamp members closer together, wherein the fastener comprises a head portion accessible from outside of the clamp to facilitate actuation of the fastener to apply the force, and wherein each clamp member comprises an inclined surface and a retaining lip; a resilient member configured to provide a biasing force in a second direction pushing the clamp members and retaining lips away from each other, at least one retaining shoulder arranged on the component; and at least one retaining surface and a front face arranged on the back plate, wherein the at least one retaining surface faces toward the front face and wherein the at least one retaining surface defines at least one groove, wherein the retaining lip of at least one clamp member is positioned in the groove between the front face and the at least one retaining surface, wherein the biasing force in the second direction moves clamp members apart and moves the retaining lips away from one another and moves the lip of the at least one retaining clamp member into engagement with the groove to loosely hold the clamp to the back plate, wherein the inclined surface of the at least one clamp member cooperates with the at least one retaining shoulder such that movement of the clamp members towards each other moves the inclined surface of the at least one of the clamp members in the first direction opposite from the second direction into contact with and along the respective retaining shoulder, and wherein the motion of the respective inclined surface along the at least one retaining shoulder moves the retaining lip toward the retaining surface of the back plate securing the component to the back plate.
17. The door operator assembly according to claim 16, wherein the inclined surface extends from a heel arranged proximally of the retaining lip on each clamp member and is inclined away from the back plate in a proximal direction towards a center of the clamp.
18. The door operator assembly according to claim 16, wherein edges surrounding the retaining lip and the inclined surface are rounded.
19. The door operator assembly according to claim 16, wherein the fastener is a screw, wherein the head portion comprises a screw head in contact with a first clamp member, wherein the screw comprises a threaded portion in threaded engagement with a second clamp member, and wherein

the screw is angled in relation to the back plate such that a center of the screw head is configured to be arranged further away from said back plate than a center of the second end.

20. The door operator assembly according to claim 16, wherein the at least one retaining shoulder is disposed on a side of the component to face in a longitudinal direction of the back plate, and wherein a distal portion of the at least one retaining shoulder is configured to fit between and cooperate with the clamp members of the clamp to secure the component to the back plate.

21. The door operator assembly according to claim 20, wherein the at least one retaining shoulder comprises a further retaining shoulder, wherein the inclined surfaces of the clamp members are configured to cooperate with the retaining shoulder and the further retaining shoulder.

22. The door operator assembly according to claim 20, further comprising edges surrounding the inclined surfaces of each of the clamp members and wherein the edges are rounded.

23. The door operator assembly according to claim 16, wherein the back plate is configured to form an interface for attaching components to a wall, wherein said back plate comprises a rear side intended to face the wall and a front side opposite the rear side, wherein the component is mountable to the front side by means of the at least one clamp member and the at least one retaining shoulder arranged on the component, and wherein the at least one retaining surface extends longitudinally along at least a portion of the back plate, and wherein the at least one retaining lip is configured come into contact with the at least one retaining surface to secure the component to the back plate, wherein the at least one retaining shoulder is provided on a side of the component configured to face in a longitudinal direction of the back plate, and wherein a distal portion of the at least one retaining shoulder is configured to fit between and cooperate with the clamp members to secure the component to the back plate and wherein the at least one clamp member secures the component to the back plate.

24. The system according to claim 16, wherein the clamp members are adapted to be pushed toward one another against the bias force to arrange the retaining lips in the one or more grooves.

25. The system according to claim 16, wherein the fastener comprises a screw in threaded engagement with the clamp members and wherein rotation of the screw moves the clamp members toward one another to secure the component to the back plate.

26. A door operator assembly comprising a back plate system configured to form an interface for attaching a component to a wall, the back plate system comprising: a back plate, wherein said back plate comprises a rear side intended to face the wall, a front side opposite the rear side, two longitudinal walls arranged along respective longitudinal edges of the back plate, and two retaining surfaces extending from respective ones of the walls to define two longitudinal grooves along edges of the back plate; at least one clamp comprising two clamp members and a fastener, wherein the fastener comprises a head portion accessible from outside of the at least one clamp to facilitate rotation of the fastener, wherein the component is mountable to the back plate by means of the at least one clamp and wherein the clamp members each comprise a retaining lip and an inclined surface, and wherein rotation of the fastener moves the two clamp members in a first direction toward one another, a biasing mechanism adapted to bias the retaining lips of the clamp members along a second direction away from one another into engagement with the one or more grooves, to loosely hold the clamp to the back plate, and at least one retaining shoulder arranged on the component, wherein, when the force in the first direction is applied by the fastener at least one of the inclined surfaces is displaced along the at least one retaining shoulder to move at least one of the retaining lips against at least one of the retaining surfaces to secure the component to the back plate.

27. A method for attaching a component comprising at least one retaining shoulder on a side of the component configured to face in a longitudinal direction of a back plate, and wherein a distal portion of the at least one retaining shoulder is configured to fit between and cooperate with at least one clamp, wherein the at least one clamp comprises: two clamp members, the clamp members being connected by a fastener configured to apply a force at least in a first direction which brings

the clamp members closer together, wherein the fastener comprises a head portion accessible from outside of the clamp to facilitate actuation of the fastener to apply the force, and wherein each clamp member comprises an inclined surface and a retaining lip; a resilient member configured to provide a biasing force in a second direction pushing the clamp members and retaining lips away from each other, at least one retaining shoulder arranged on the component; and at least one retaining surface and a front face arranged on the back plate, wherein the at least one retaining surface faces toward the front face and wherein the at least one retaining surface defines at least one groove, wherein the retaining lip of at least one clamp member is positioned in the groove between the front face and the at least one retaining surface, wherein the biasing force in the second direction moves clamp members apart and moves the retaining lips away from one another and moves the lip of the at least one retaining clamp member into engagement with the groove to loosely hold the clamp to the back plate, wherein the inclined surface of the at least one clamp member cooperates with the at least one retaining shoulder such that movement of the clamp members towards each other moves the inclined surface of the at least one of the clamp members in the first direction opposite from the second direction into contact with and along the respective retaining shoulder, and wherein the motion of the respective inclined surface along the at least one retaining shoulder moves the retaining lip toward the retaining surface of the back plate to secure the component to the back plate, wherein said back plate comprises a rear side intended to face the wall and a front side opposite the rear side, wherein the component is mountable to the front side by means of the at least one clamp and the at least one retaining shoulder arranged on the component, and wherein the back plate comprises surfaces facing the front side and extending longitudinally along at least a portion of the back plate, and wherein the at least one clamp is configured come into contact with the surfaces to secure the component to the back plate by means of at least one clamp, said method comprises the steps of: arranging the component in its desired position against the front side of the back plate, placing the at least one clamp over the at least one retaining shoulder, and securing the component to the back plate by use of the fastener.

28. The method according to claim 27, wherein the step of placing further comprises moving the clamp members towards each other against the biasing force of the resilient member, and releasing the clamp members such that the respective retaining lip on each clamp member is arranged in a respective groove and thereafter sliding the at least one clamp over the at least one retaining shoulder.