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- (73) Patenthaver: **TROX GmbH, Heinrich-Trox-Platz 1, 47506 Neukirchen-Vluyn, Tyskland**
- (72) Opfinder: **Leitner, Daniel, Burgstraße 182, 47918 Tönisvorst, Tyskland**
Steinhausen, Hannah, Bismarckstraße 170, 47057 Duisburg, Tyskland
- (74) Fuldmægtig i Danmark: **PATRADE A/S, Fredens Torv 3A, 8000 Århus C, Danmark**
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Description

- 5 [0001] The invention relates to a system comprising a component of an air conditioning assembly with an opening, in particular, a component with an inspection opening provided in a housing wall, and a closing element for closing the opening, wherein the closing element in its closing position completely covers the opening on the outside, and comprises an insertion area which projects at least in some areas into the opening.
- 10 [0002] A system according to the preamble to claim 1 is known from EP-2 199 701-A.
- 15 [0003] In a component of an air conditioning assembly, such as a channel element, an inspection opening can be provided, which can be closed with a closing element. This closing element can be removed, for example for maintenance purposes, and then refitted. A known closing element comprises a cylindrically shaped insertion area, which projects into the opening. Nuts are welded onto the component for fastening. The closure element exhibits corresponding boreholes, through which screws can be introduced. The assembly and also disassembly are time-consuming, however. Since this involves a plurality of components, some of
- 20 them small, these can also easily be lost.
- [0004] The object of the invention is to avoid the foresaid disadvantages and to provide a system wherein the closing element is more easily applied and, likewise, is also more easily removable.
- 25 [0005] This object is solved in that the insertion area and the opening are formed as polygonal, in particular hexagonal, wherein the insertion area is dimensioned in relation to the opening in such a way that the insertion area can be introduced through the opening, and that at least part areas of the edge areas of the opening and of the insertion area are formed in the manner of a bayonet closure fitting, such that the closing element can be repositioned by rotation in the closing direction, i.e. out of the assembly position, into its closed position. For the assembly,
- 30 only the insertion area needs to be introduced into the opening, and then the complete closure element rotated, clockwise or anticlockwise, into its closing position. No means of assistance are required for this. Assembly and disassembly are therefore very easy. Further components which were formerly required, such as
- 35 screws, therefore cannot be lost either.
- [0006] The part areas of the edge areas of the opening of the component and of the insertion area of the closing element, which are formed in the manner of a bayonet closure fitting, can be arranged at least in a corner, in particular in all

corners. In particular, with an arrangement with which, arranged in each corner of the opening on the one hand, and of the insertion area on the other, are part areas of the edges, formed in the manner of a bayonet closure fitting, the closing element is securely fixed across its circumference.

5 [0007] The part areas of the edge areas of the opening and the insertion area, formed in the manner of a bayonet closure fitting, can be configured as a tongue-and-groove connection, wherein either the groove is arranged in the edge area of the insertion area and the tongue is formed by the edge area of the opening, or the tongue is formed by the edge area of the insertion area and the groove is arranged in the edge area of the opening, wherein, in the closed position, each
10 tongue is accommodated in its corresponding groove.

[0008] If the component is, for example, a channel housing made of sheet metal, it is convenient for the edge area of the opening to represent the tongue and the groove to be arranged in the edge area of the insertion area. In the closed position, the tongue, i.e. in this case the edge area of the opening, is accommodated
15 in the corresponding groove of the insertion area.

[0009] In a preferred embodiment, at least one groove is arranged in the edge area of the insertion area, in particular in the edge area of the corner of the insertion area, and this groove is formed, on the one hand, by a surface of the closing element, which in the closed position is in contact, in particular in surface contact,
20 with the outside of the component, and, on the other, by a section projecting laterally opposite the insertion area.

[0010] In order to achieve an automatic tightening of the closing element, it is convenient if the spacing interval A is reduced between the surface of the closing element and the section, seen in the closing direction, since the section, seen in
25 the closing direction, is aligned obliquely pointing in the direction of the surface, which in the closed position is in contact with the outside of the component. When rotated in the closing direction, the closing element then tightens by itself.

[0011] The insertion area and the opening can exhibit the same number of corners.
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[0012] The closing element can comprise an actuating handle on the outside. This allows for easy assembly and disassembly of the closing element from the outside.

[0013] At least one corner of the insertion area and/or at least one corner of the opening can be configured as rounded. This then avoids sharp corners and reduces the risk of injury.
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[0014] The closing element can consist of metal or another suitable material.

[0015] The closing element can consist of plastic, preferably completely, at least in the area interacting with the edge of the opening.

[0016] An exemplary embodiment of the invention, represented in the drawings, is now explained in greater detail. The figures show:

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Fig. 1 an outside view of a component with an opening, which is closed with a closing element,

Fig. 2 the object from claim 1, without a closing element,

Fig. 3 a view from the interior of the object according to Fig. 1,

10 Fig. 4 a view from the interior of the closing element, located in the opening, in the closed position,

Fig. 5 the detail "Y" from Fig. 4,

Fig. 6 a view from the interior of the closing element, located in the opening, in the assembly position,

15 Fig. 7 the detail "Z" from Fig. 6,

Fig. 8 a side view of a corner area of the closing element, and

Fig. 9 an oblique view from above of a corner area of the closing element.

20 [0017] In all the figures concordant reference numbers are used for the same or same type of components.

[0018] Represented in the figures is a section of a component 1 with a hexagonal opening 2. The opening 2 can be closed with a closing element 3, which comprises an insertion area 4, likewise with six corners.

25 [0019] As can be seen, for example from Figs. 2 and 6, the corners of the opening 2 and the corners of the insertion area 4 are configured as rounded.

[0020] The insertion area 4 is selected in respect of its dimensioning in such a way that it is somewhat smaller than the opening 2 in the component 1, such that the insertion area 4 in the assembly position is introduced into the opening 2 and can be drawn out from it.

30 [0021] Represented in Fig. 6 is the closing element 3, with its insertion area 4 projecting into the opening 2, in its assembly position. It can clearly be seen that the corners of the insertion area 4 and the corners of the openings 2 are in alignment with each other.

35 [0022] Fig. 8 shows a side view of one of the six corner areas of the closing element 3. The edge of the opening 2 in the component 1 is not represented. As can be seen from Fig. 8, part areas of the edge areas, namely the corners, of the opening 2 of the component 1 on the one hand, and of the insertion area 4 of the

closing element 3 on the other, are configured in the manner of a bayonet closure fitting, comprising in each case a tongue 5 and a groove 6.

[0023] The tongue 5 is formed by the edge area of the opening 2. In the exemplary embodiment represented, the groove 6 is arranged in the edge area of the insertion area 4. Each groove 6 is formed, on the one hand, by a surface 7 of the closing element 3 and a seal 10 which may be located on it, the surface being in contact in the closed position with the outside of the component 1, and, on the other, by a section 8 projecting laterally opposite the insertion area 4.

[0024] Seen in the closing direction 9, the spacing interval A between the surface 7 of the closing element 3 and the section 8 is reduced, since the section 8, seen in the closing direction 9, is aligned running obliquely in the direction of the surface 7, which in the closed position is in contact with the outside of the component 1. As a result, with the rotation of the closing element 3 in its closing direction, the edge of the opening 2 is increasingly clamped, and therefore the closing element 3 is fixed, clamped against unintentional loosening.

[0025] As is represented in Figure 9, two circumferential seals 10 are provided on the surface 7 of the closing element 3, this surface being in contact in the closed position with the outside of the component 1, in the exemplary embodiment shown in surface contact, these seals being, for example, foamed. In Fig. 8 the seals 10 have been cut out. Each seal 10 also serves to adapt to different thicknesses of the component 1.

[0026] As can be seen, for example in Fig. 7, the groove 6 is at its deepest in the middle of a corner of the insertion area 4, while the depth of the groove 6 decreases towards both sides of the groove 6. The six straight edge areas 11 connecting two adjacent corners do not exhibit a groove 6.

[0027] For closing, in the exemplary embodiment shown, the closing element 3 is rotated in the clockwise direction. This causes the edge area of the opening 2, serving as a tongue 5, to be accommodated into the respective groove 6 of the insertion area 4. The closing element 3 automatically tightens with the increasing rotation, due to the oblique alignment of at least one section 8, such that the closing element 3 closes the opening 2 with sealing effect, and cannot come loose.

[0028] As represented in Fig. 1, the closing element 3 comprises an outside actuating handle.

Patentkrav

1. System omfattende en komponent (1) af et klimaanlæg med en åbning (2), især en komponent (1) med en inspektionsåbning tilvejebragt i en husvæg, og et lukkeelement (3) til at lukke åbningen (2), hvori lukkeelementet (3) i sin lukkeposition fuldstændigt dækker åbningen (2) på ydersiden, og omfatter et indføringsområde (4), der rager i det mindste delvist ind i åbningen (2), **kendetegnet ved, at** indføringsområdet (4) og åbningen (2) er udformet som polygoner, især sekskantede, hvori indføringsområdet (4) er dimensioneret i forhold til åbningen (2) på sådan måde, at indføringsområdet (4) kan indføres gennem åbningen (2), og at mindst delområder af åbningens (2) og indføringsområdets (4) kantområder er udformet som et bajonetlukke, sådan at lukkeelementet (3) ved drejning ud af monteringspositionen kan forskydes til sin lukkede position.
2. System ifølge det foregående krav, **kendetegnet ved, at** delområder af åbningens (2) og indføringsområdets (4) kantområder er arrangeret som et bajonetlukke mindst i et hjørne, især i samtlige hjørner.
3. System ifølge et af de foregående krav, **kendetegnet ved, at** delområder af åbningens (2) og indføringsområdets (4) kantområder er udformet som et bajonetlukke som en not/feder forbindelse, hvori enten noten (6) er arrangeret i kantområdet af indføringsområdet (4) og federen (5) dannet af åbningens (2) kantområde, eller federen (5) er dannet af indføringsområdets (4) kantområde og noten (6) er arrangeret i åbningens (2) kantområde, hvori hver feder (5) i den lukkede position er optaget i sin modsvarende not (6).
4. System ifølge det foregående krav, **kendetegnet ved, at** mindst en not (6) er arrangeret i indføringsområdets (4) kantområde, og at denne not (6) er dannet på den ene side af en overflade (7) af lukkeelementet (3), som i den lukkede position er i kontakt, især fladekontakt, med komponentens (1) yderside, og på den anden side af et afsnit (8), der rager sideværts i forhold indføringsområdet (4).
5. System ifølge det foregående krav, **kendetegnet ved, at** afstanden A mellem lukkeelementets (3) flade (7) og afsnittet (8) formindskes set i lukkeretningen (9).
6. System ifølge et af de foregående krav, **kendetegnet ved, at** indføringsområdet (4) og åbningen (2) omfatter samme antal hjørner.

7. System ifølge et af de foregående krav, **kendetegnet ved, at** lukkeelementet (3) omfatter et udvendigt betjeningsgreb (12).
- 5 8. System ifølge et af de foregående krav, **kendetegnet ved, at** mindst et hjørne af indføringsområdet (4) og/eller af åbningen (2) er udformet afrundet.
9. System ifølge et af de foregående krav, **kendetegnet ved, at** lukkeelementet (3) består af metal.
- 10 10. System ifølge et af de foregående krav, **kendetegnet ved, at** lukkeelementet (3) i det mindste i området, der samvirker med åbningens (2) kant, består fortrinsvis fuldstændigt af plast.









