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Title: Hinge**Description**

The invention relates to a hinge according to patent claim 1.

- 5 Said hinges are known from EP 1 170 513 A2, which are used therein to pivotably arrange panels made from glass. Each hinge is composed of two functionally identical designed hinge straps, respectively one hinge strap, by means of attachment elements, being clamped
- 10 with an opposed counter-plate with a flush surface in an opening, that is chamfered on both sides.

Manufacturing a glass opening that is chamfered on both sides implies considerable production and mounting expenses. Furthermore, the attachment

15 elements are clearly visible on both sides and present an inconvenient interruption of the hinge surface.

It is therefore an object of the invention to provide a hinge according to the generic part of patent claim 1, which, while requiring the least manufacturing and

20 material expenses, will present a compact and aesthetically pleasing unit and maintain the already known variety of applications and functions.

This problem is solved with the characteristics specified in patent claim 1. Advantageous embodiments of the subject matter of patent claim 1 are specified in the dependent claims.

- 5 The inventive hinge, according to patent claim 1, presents the advantage that all major parts of the hinge are arranged in an opening of the leaf and possibly in an opening of an adjoining panel, and that a compact unit is provided having a small required mounting volume,
10 thanks to the crowned exterior shape of the hinge straps and counter-bodies. The lowering, known until so far particularly from heavy glass leaves with large sized glass pane openings, is effectively prevented, as the hinge straps are positively and non-positively attached
15 in the complementary opening.

The crowned curvature allows for an optimum exploitation of the construction space and an optimization of manufacturing expenses and of the used material as well. All material thicknesses are reduced to
20 a minimum. The crowned course of the frontal surfaces minimizes the material use in the edge areas. Although the amount of material required for the inventive hinge is extremely low, the stability and functionality characteristics continue to be guaranteed.

The hinge straps and the counter-bodies respectively present a surrounding clamping edge, which transfers the clamping force from the attachment elements. As the clamping edges abut at the surface of the leaf, respectively of the stationary panel, the borders of the openings in the leaf and/or in the lateral panel are rectilinear and thus easy to manufacture. An expensive countersinking/chamfering of the borders is no longer required, however a small construction depth continues to be guaranteed.

In a further embodiment, the hinge straps and/or the counter-bodies present surrounding clamping surfaces that are inwardly inclined, which cooperate with a lowered opening on at least one side in the leaf and/or the lateral panel and advantageously form an integral part of the crowned execution of the respective frontal surface. More particularly, this embodiment can be applied, if, due to a heavy door, strong clamping forces are to be realized.

Mounting the hinge straps on leaves, respectively lateral panels made from glass, of existing door installations is fundamentally simplified. In this case, it should be understood that door installations also include sanitary cubicles or shower cubicles and shower partitionings, with at least one pivotably hinged (glass) leaf being provided. The attachment of the hinge in the openings is

realized by means of attachment elements, which are screwed through aligned bore holes of the hinge strap and the counter-bodies. The positioning of the attachment elements permits easy access with
5 commercially available tools for the mechanical fitter. The operation is user-friendly such that even an untrained user may perform the mounting.

Mounting the hinge strap is advantageous in that there is only a small number of individual parts to be handled.
10 Furthermore, no direct force acts upon the door leaves. In this regard damages to the door leaves are thus excluded.

The advantageous positioning of the construction elements, particularly the attachment structure thereof,
15 eliminates the use of separate cover caps. The hinge construction is considerably simplified and the manufacturing and mounting expenses are reduced. The execution of pocket boreholes for the attachment elements in the hinge strap guarantees a pleasing
20 frontal appearance. The resulting exterior contours are conceived in a visually appealing way with smooth and seamless transitions. The result is a universal, model-independent, yet well-balanced exterior line of design.

The hinge straps as well as the counter-bodies may be
25 produced from metallic materials, plastic materials or

from so-called hybrid materials. Colour composition is largely unlimited. Furthermore, the mentioned characteristics considerably contribute to reducing the cost of manufacturing.

- 5 The hinge is designed such that the hinge-halves are exchangeable like modules and therefore the abundant variety is maintained, both with regard to colour composition and adaptation to diverse constructional situations. The hinge is suitable for both the mounting of
10 a leaf at a stationary lateral panel and for mounting of a leaf at a constructional periphery, for example a wall or a frame. Depending on the mounting situation, a corresponding hinge-half or a screw-on part will be selected and connected via the gudgeon with the hinge
15 strap of the leaf. The hinge strap of the leaf is executed identical in all cases.

In case of mounting the hinge at a leaf extending in the same plane as the lateral panel, both hinge straps of the hinge are executed mirror-symmetrically and positioned
20 towards each other, such that all-glass panes, which are correspondingly connected in abutting relationship, may be opened up to an opening angle of 180°.

The hinge provides an advantageous visual appearance, particularly with regard of the transparency
25 of all-glass panes. Furthermore, there are no protruding

or unintentionally detachable parts, such that also the cleaning of the leaves and hinges is made easy.

Further details, characteristics and advantages of the invention will be obvious from the following description,
5 the invention being described in detail on the basis of embodiment examples, in which:

Figure 1: illustrates a frontal view of a sanitary cubicle, an inventive hinge being used to pivotably support the cubicle door,

10 Figure 2: illustrates an enlarged partial section of Figure 1,

Figure 3: illustrates an exploded view of the hinge according to Figure 2,

15 Figure 4: illustrates a cross-section through the installed hinge according to Figure 2,

Figure 5: illustrates a cross section of another embodiment of an installed hinge,

20 Figure 6: illustrates a partial view of another embodiment, a single hinge strap being attached at a vertical member structure.

In the following description, similar or similarly functioning construction parts are referenced with identical numerals.

The inventive hinges 1 illustrated in Figures 1 to 6 are normally used within a door installation, particularly for sanitary cubicles or shower cubicles, to pivotably attach the movable leaf 2 at an adjoining stationary panel 3.

5 The leaf 2 and the stationary panel 3 may consist of different materials, for of example plastic material, wood, or glass, and present complementary planar openings 4 for the attachment of hinge 1. Such hinge 1 is comprised of the hinge strap 5 mountable on the leaf
10 2, and of another hinge strap 6 or screw-on part 22 mountable on the panel 3, which, like a turning pair, are pivotably connected to each other via a so-called gudgeon 7. These components of hinge 1 and associated counter-bodies 13 preferably consist of
15 metallic materials, however plastic materials and hybrid materials are also conceivable.

Due to the fact that the hinge 1 is mirror symmetrical, respectively that at least one identically functioning hinge strap is used in all embodiment examples, the
20 detailed explanation and representation of the invention is given first on the basis of hinge strap 5, which is attached to the pivotable leaf 2.

The hinge strap 5 consists of a flat round body 8 and, integrally formed thereto, a radially extending
25 prolongation 9. The prolongation 9 is of elongate shape and in turn extends integrally into the gudgeon 7. A

visible frontal surface 10 of the hinge strap 5 is executed uninterrupted and crowned, the curvature being regularly formed. Opposite to the frontal surface 10, a locating surface 11 is provided into which a centrically
5 extending threaded pocket borehole 12 is embedded.

A circular counter-body 13 likewise presents a crowned frontal surface 14 having a regular curvature. The counter-body 13 is penetrated by a central threaded borehole 15, which extends from the frontal surface 14
10 to an opposite locating surface 16.

According to the embodiment example of Figures 1 to 4, both the hinge straps 5, 6 and the counter-bodies 13 present a radial surrounding and protruding clamping edge 17 and 18, being integral with the crowned
15 execution of the respective frontal surface 10, 14.

According to the embodiment example of Figure 5, both the hinge straps 5, 6 and the counter-bodies 13 present radial surrounding clamping surfaces 19 and 20, which extend inwardly inclined from the frontal surface 14.

20 The hinge strap 5 will be positively placed into the complementary opening 4 of leaf 2 and subsequently the counter-body 13 will be likewise positively placed into the opening 4 on the opposite side of leaf 2, the threaded pocket borehole 12 being necessarily aligned
25 with the threaded borehole 15 in the counter-body 13.

Finally, an attachment element 21, in form of a countersunk headless screw, will be screwed into the threaded pocket borehole 12 and into the threaded borehole 15 of the hinge strap 5. Upon completed
5 screwing of the attachment element 21, the hinge strap 5 is correctly fixed at the leaf 2 and the attachment element 21 is then placed countersunk in the threaded borehole 15.

The connection of the hinge strap 5 to another hinge
10 strap 6 or to a screw-on part 22 is realized via the gudgeon 7, which guarantees the pivotable attachment of the leaf 2 at the corresponding adjoining panel 3, and thus forms the complete hinge 1.

Figures 1 to 4 illustrate a complete hinge 1 in the
15 embodiment as a hinge joint, the hinge straps 5 and 6 being placed mirror-symmetrically with regard to each other. The reference numerals of the described hinge strap 5 analogically apply to the other hinge strap 6. The hinge straps 5 and 6 may be placed at a stationary
20 lateral panel 3 and at a leaf 2 and are arranged towards each other such that, due to the crowned frontal surface 14 insignificantly protruding over the leaf surface, corresponding glass panes in an abutting relationship may be opened up to an opening angle of almost 180°.

The hinge straps 5 and 6, respectively the counter-bodies 13, present a surrounding clamping edge 17, 18, which transfers the clamping force of the attachment elements 21. As the clamping edges 17, 18 abut at the
5 surface of the leaf 2 and of the stationary panel 3, the borders of the openings 4 are rectilinear and thus present a simple construction.

Figure 5 illustrates a complete hinge 1 in the embodiment as a hinge joint, the hinge straps 5 and 6
10 thereof being placed mirror-symmetrically with regard to each other. The reference numerals of the described hinge strap 5 analogically apply to the other hinge strap 6. The hinge straps 5 and 6 may be attached at a stationary lateral panel 3 and at a leaf 2 and may be
15 arranged towards each other such that, due to a crowned frontal surface 14 insignificantly protruding over the leaf surface, corresponding glass panes in abutting relationship may be opened up to an opening angle of almost 180°. The hinge straps 5 and 6, respectively the
20 counter-bodies 13, present surrounding, inwardly inclined clamping edges 19, 20, which transfer the clamping force of the attachment elements 21. In this case, a chamfered execution, sunk on both sides, of the opening 4 in the leaf 2, respectively in the lateral panel
25 3, results in an execution of inclined clamping surfaces 19 and 20.

Figure 6 illustrates a complete hinge 1 in the embodiment as a screw-on hinge, the hinge strap 5 being attached at a glass leaf 2, and by means of a screw-on part 22, at a constructional periphery, for example a vertical member 23 or a wall. The hinge strap 5 and the screw-on part 22 are connected to each other via a gudgeon 7. The screw-on part 22 is comprised of an attachment plate, not illustrated in more detail, to which the angled bearing shell of the gudgeon 7 is subsequently conformed.

The above description of embodiment examples according to the present invention serves for illustrative purposes only and is not intended to limit the invention. Various changes and modifications are possible within the range of the invention without leaving the scope of the invention or the equivalents thereof.

References

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|----|----|--------------------------|
| | 1 | hinge |
| | 2 | leaf |
| 5 | 3 | adjoining panel |
| | 4 | opening |
| | 5 | hinge strap |
| | 6 | hinge strap |
| | 7 | gudgeon |
| 10 | 8 | round body |
| | 9 | prolongation |
| | 10 | frontal surface |
| | 11 | locating surface |
| | 12 | threaded pocket borehole |
| 15 | 13 | counter-body |
| | 14 | frontal surface |
| | 15 | threaded borehole |
| | 16 | locating surface |
| | 17 | clamping edge |
| 20 | 18 | clamping edge |
| | 19 | clamping surface |
| | 20 | clamping surface |
| | 21 | attachment element |
| | 22 | screw-on part |
| 25 | 23 | vertical member |

Patent claims

1. A hinge for pivotably attaching a leaf (2) at an adjoining panel (3), the hinge (1) consisting of a hinge strap (5) attachable at the leaf (2) and of another hinge strap (6) or screw-on part (22) pivotably connected via a gudgeon (7) and being attachable at the adjoining panel (3), the leaf (2) and the adjoining panel (3) presenting openings (4) that are complementary with regard to the hinge straps (5, 6), into which the hinge straps (5, 6) can be inserted from one side and, on the opposite side, they are screwable with a counter-body 13 respectively, the latter being inserted into the openings (4), while clamping the leaf (2), respectively the adjoining panel (3), the hinge strap (5, 6) and the counter-body (13) each presenting crowned frontal surfaces (10, 14).
2. A hinge according to patent claim 1, characterized in that the counter-bodies (13) are circular in execution.
3. A hinge according to patent claim 1 or 2, characterized in that the hinge straps (5, 6) consist each of a round body (8) and of a radial

extending prolongation (9) in integral connection with the gudgeon (7).

4. A hinge according to one of the patent claims 1 to 3, characterized in that the counter-body (13) and the round body (8) each present a radial surrounding clamping edge (17, 18) and the opening (4) rectilinear borders.
5. A hinge according to one of the patent claims 1 to 3, characterized in that the counter-body (13) and the round body (8) each present radial surrounding clamping surfaces (19, 20) that are inwardly inclined, and the opening (4) presents chamfered borders.
6. A hinge according to one of the patent claims 1 to 5, characterized in that, penetrating through a threaded borehole (15) being centrally arranged in the counter-body (13), an attachment element (21) is screwable into a centrally arranged threaded pocket borehole (12) in the round body (8).
7. A hinge according to patent claim 6, characterized in that the attachment element (21) can be sunk in with a flush surface in the counter-body (13).

8. A hinge according to patent claim 6 or 7, characterized in that the attachment element (21) is a headless screw.
- 5 9. A hinge according to one of the patent claims 1 to 8, characterized in that the two hinge straps (5, 6) are formed and arranged mirror-symmetrical with regard to each other.
- 10 10. A hinge according to one of the patent claims 1 to 9, characterized in that the leaf (2) or the adjoining panel (3) are made from glass.
- 15 11. A hinge according to one of the patent claims 1 to 10, characterized in that the hinge straps (5, 6) and the counter-bodies (13) are made from metallic material, from plastic material, or from hybrid material.