



(11)

EP 1 688 572 A2

(12)

EUROPEAN PATENT APPLICATION

(43) Date of publication:
09.08.2006 Bulletin 2006/32

(51) Int Cl.:
E05D 7/12 (2006.01)

(21) Application number: **06101018.7**

(22) Date of filing: **30.01.2006**

(84) Designated Contracting States:
**AT BE BG CH CY CZ DE DK EE ES FI FR GB GR
HU IE IS IT LI LT LU LV MC NL PL PT RO SE SI
SK TR**
Designated Extension States:
AL BA HR MK YU

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(30) Priority: **02.02.2005 FI 20055047**

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(54) Hinge and locking piece

(57) The invention relates to a hinge and a locking piece therefor. The hinge comprises a first hinge part (1) and a second hinge part (2). The second hinge part comprises a projecting part (8) and a locking piece (6). The projecting part may be pushed into a locking space (12)

provided in the locking piece, whereby a locking projection (14) provided in a cover part (11) of the locking piece locks the projecting part in place. The cover part is provided with a tongue (13) with the locking projection provided therein. A bottom part (10), side parts (18) and the cover part of the locking piece constitute one uniform unit.

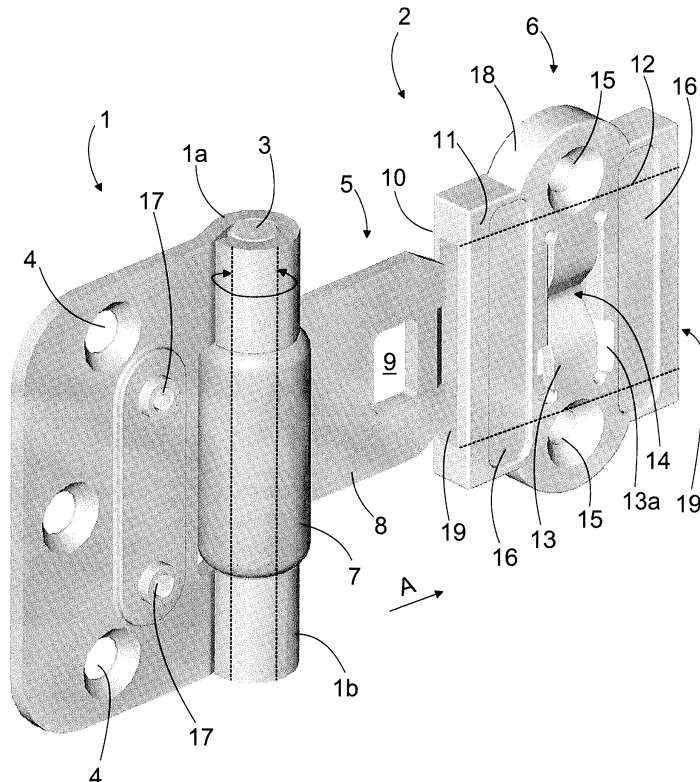


FIG. 1

Description

BACKGROUND OF THE INVENTION

[0001] The invention relates to a hinge comprising a first hinge part and a second hinge part; a hinge pin which connects the hinge parts pivotably with respect to one another; a first hinge component and a second hinge component in at least one hinge part; a projecting part included in the first hinge component and provided with at least one locking aperture; fastening means included in the second hinge component for fastening the hinge component to a fastening point, at least one side part, a cover part, and at least one locking element in the cover part; a locking space arranged to be defined by a bottom part and the cover part of at least the second hinge component, and comprising at least one supporting surface; and wherein the projecting part is arrangeable into the locking space, and is arranged to be supported by the supporting surface in a longitudinal direction of the hinge pin; and further wherein the locking element of the second hinge component is arranged to become locked in the locking aperture of the projecting part, and to prevent movement of the first hinge component and the second hinge component with respect to one another in a direction transverse to the hinge pin; wherein the cover part of the second hinge component is provided with at least one elongated and flexible tongue; and wherein the tongue is provided with at least one locking projection extending towards the locking space such that the locking projection is arranged to become locked in the locking aperture when the projecting part is pushed into the locking space.

[0002] The invention further relates to a locking piece for locking a hinge, the locking piece comprising: fastening means for fastening the locking piece to a fastening point; a bottom part; a cover part; at least one locking element in the cover part; at least one side part; a locking space arranged to be defined by at least the side part, the bottom part and the cover part; and at least one supporting surface in the locking space; the cover part being provided with at least one elongated and flexible tongue arranged to serve as a locking element; the tongue being provided with at least one locking projection extending towards the locking space.

[0003] A hinge is previously known which comprises a locking piece and an actual hinge such that the two can be detached from one another. The locking piece can be fastened in advance into place e.g. to a door, while the actual hinge can be attached to a door frame. When the door is installed in place, a locking projection provided in one hinge part of the hinge is arranged into the locking piece. The locking projection is equipped with an aperture, and the locking piece is equipped with a locking element compatible with the aperture such that when the hinge part is arranged into the locking piece, the locking element becomes connected with the locking aperture. A disadvantage of the current locking pieces is that they

typically consist of a plurality of different parts, which makes them laborious and expensive to manufacture. A further disadvantage of most known solutions is that both installation and disengagement require screws to be unscrewed or loosened, which makes a door more time-consuming to install.

BRIEF DESCRIPTION OF THE INVENTION

[0004] An object of the present invention is to provide a novel and improved hinge and a locking piece for locking the hinge.

[0005] The hinge according to the invention is characterized in that the side part, the bottom part and the cover part of the second hinge component constitute one uniform unit; and that the tongue is fastened to the cover part by its both ends.

[0006] The locking piece according to the invention is characterized in that the side part, the bottom part and the cover part constitute one uniform unit; and that the tongue is fastened to the cover part by its both ends.

[0007] An idea of the invention is that a locking piece enables the actual hinge to be locked e.g. to a door or a window. A projecting part provided in the hinge can be pushed into a locking space provided in the locking piece, so that the projecting part, in a direction of a hinge pin, is supported against a supporting surface located in the locking space. Furthermore, a cover part of the locking piece is provided with a flexible tongue whose surface facing the locking space is provided with a locking projection arranged to lock the projecting part in place in a direction transverse to the hinge pin. In addition to the cover part, the locking piece comprises a bottom part and at least one side part such that together they constitute one uniform unit. Furthermore, the tongue is fastened to the cover part of the locking piece by its both ends.

[0008] An advantage of the invention is that the locking piece is simple to manufacture, so that it may also be inexpensive. Since the locking piece consists of one uniform unit, it is simple to install and handle. A still further advantage is that the bottom part forms a good and a relatively large supporting surface, enabling the locking piece to be firmly fastened to the fastening surface. The tongue being fastened to the cover part of the locking piece by its both ends makes it relatively rigid in a direction transverse to the hinge pin.

[0009] An idea of an embodiment of the invention is that the tongue comprises a section bent towards the locking space, whereby a surface of the tongue facing the locking space is provided with a locking projection in the bent section.

[0010] An idea of an embodiment of the invention is that a second hinge component, i.e. the locking piece, is made from a plastic material.

[0011] An idea of an embodiment of the invention is that the second second hinge component, i.e. the locking piece, is made from a plastic material, and that it is made by injection moulding in one stage. Hence, the locking

piece is quick to manufacture, and thus inexpensive.

[0012] An idea of an embodiment of the invention is that the second second hinge component, i.e. the locking piece, comprises a cover part whose outer surface is provided with one or more recesses. In such a case, an end of an adjustment element provided in a first hinge part is allowed to penetrate into such a recess when the hinge is closed.

[0013] An idea of an embodiment of the invention is that the second second hinge component, i.e. the locking piece, is symmetrical with respect to its central axis, and that the locking piece comprises two side openings in its opposite sides. This allows the locking projection of the hinge to be pushed into the locking piece from two alternative directions.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] Some embodiments of the invention are described in closer detail in the accompanying drawings, in which

[0015] Figure 1 schematically shows a hinge according to the invention before installation,

[0016] Figure 2 schematically shows a hinge according to the invention after installation,

[0017] Figure 3 schematically shows a locking piece according to the invention as seen from the bottom,

[0018] Figure 4 schematically shows a locking piece according to the invention as seen from the top, and

[0019] Figure 5 is a schematic, extended view showing the locking piece according to Figure 4 in cross-section taken along line C - C.

[0020] For the sake of clarity, the figures show some embodiments of the invention in a simplified manner. In the figures, like reference numerals identify like elements.

DETAILED DESCRIPTION OF SOME EMBODIMENTS OF THE INVENTION

[0021] A hinge shown in Figure 1 comprises a first hinge part 1 and a second hinge part 2 which are connected by means of a hinge pin 3 such that they can be turned with respect to one another. The hinge pin 3 is illustrated in broken line in the figure. The first hinge part 1 may be a hinge leaf, and it may comprise openings 4 or other means for fastening the hinge leaf. Alternatively, the first hinge part 1 may be a fastening bolt or a corresponding element which can be fastened to a frame structure in a wall. The first hinge part 1 may further be provided with rolled sections 1 a and 1 b for the hinge pin 3. The second hinge part 2 may consist of two components, i.e. a first hinge component 5 and a second hinge component 6. The first hinge component 5 may be fastened to the hinge pin 3 e.g. by means of a sleeve 7. Alternatively, it may be fastened e.g. by means of a rolled section, or it may be fastened e.g. by welding directly to the hinge pin 3. The first hinge component 5 may comprise a pro-

jecting part 8, which may be a substantially sheet-like section. The projecting part 8 is provided with at least one locking aperture 9, through which the first hinge component 5 may be locked to the second hinge component 6. The second hinge component 6 may comprise a bottom part 10 and a cover part 11 which may define therebetween a locking space 12 into which the projecting part 8 of the first hinge component 5 may be pushed in direction A. In Figure 2, the hinge is shown with the second hinge part 2 assembled. When the projecting part 8 has been pushed into the locking space 12, it is, in the direction of the hinge pin 3, supported against supporting surfaces located in the locking space 12. Furthermore, the cover part 11 is provided with a tongue 13 having at least one locking projection 14 extending towards the locking space 12 such that the locking projection 14 is arranged to be received by the locking aperture 9 in the projecting part 8, and thus to prevent unacceptable movement of the first hinge component 5 with respect to the second hinge component 6 in direction A transverse to the hinge pin 3. When necessary, the tongue 13 may be bent outwards e.g. by a screwdriver, so that the locking projection 14 emerges from the locking aperture 9, thus allowing the projecting part 8 to be drawn out of the locking space 12. One or more recesses or incisions 13a may be provided in the vicinity of the tongue 13 so as to make use of a tool and bending the tongue 13 easier. It is to be noted that a locking aperture 9 refers both to an opening through a projecting part 8 and to a recess provided in a projecting part 8.

[0022] The second hinge component 6 thus constitutes a locking piece which can be fastened e.g. to a door. For the fastening, the locking piece 6 may be equipped with one or more openings 15 which may receive a fastening screw. Alternatively, other ways of fastening the locking piece 6 may also be applied. Furthermore, the cover part 11 of the locking piece 6 may be provided with one or more recesses 16 which may receive an end of an adjustment screw 17 or a corresponding adjustment element possibly provided in the first hinge part 1. The cover part 11 and the bottom part 10 may be fastened to one another by means of one or more side parts 18. The body of the locking piece 6 may be formed in this manner. The side parts 18, on one side or on both opposite sides thereof, may be provided with a side opening 19.

[0023] In Figure 3, the locking piece 6 is shown as seen from a bottom part 10. An outer surface of the bottom part 10 may be substantially even. The bottom part 10 may form a relatively large mating surface against a target surface, so that the locking piece 6 may be fastened extremely firmly e.g. to a door or a window frame. It is possible to make the fastening firm even if the hardness or quality, for example, of the target surface were relatively poor.

[0024] In Figure 4, the locking piece 6 is shown as seen from a cover part 11. A tongue 13 may be an elongated section provided in the cover part 11 such that a section

20, which is bent towards a locking space 12 and which forms a locking projection 14, may be placed substantially centrally within the elongated section. The tongue 13 may be fastened by its both ends to the cover part 11 by means of fastening sections 21a and 21 b. Furthermore, a connecting point of the tongue 13 and the fastening sections 21 a, 21 b may be provided with openings 22 to enhance the durability of the locking piece 6.

[0025] The second hinge component 6, i.e. the locking piece, shown in Figures 1 to 4 is symmetrical in its external dimensions with respect to the central axis D, which enables the second hinge component 6 to be arranged in a fastening point either as shown in the figure or by turning it by 180°. It is, however, possible to make the locking piece 6 such that it is not symmetrical. For example, a side opening 19 may be provided on one side only.

[0026] Figure 5 shows a cross-section of the locking piece 6 taken along line C - C. As can be seen in the figure, the side part 18, the bottom part 10, the cover part 11 and the tongue 13 may constitute one uniform unit. Such a unit may be manufactured in one manufacturing stage e.g. by injection moulding it from an appropriate plastic material. One or more supporting surfaces 23 may be provided in connection with the locking space 12 to support the first hinge component 5 against the locking piece 6, immovably in the longitudinal direction of the hinge pin 3. In such a case, the locking means formed by the locking aperture 9 and the locking projection 14 only need to be responsible for preventing the projecting part 8 from emerging from the locking space 12 unacceptably. Furthermore, the openings 15 may be situated with respect to the locking space 12 such that screws or corresponding fastening elements arranged in the openings 15 partly overlap with the locking space 12. Such an overlapping section is illustrated in Figure 5 by reference E. In such a case, the head of a screw may press the cover part 11 against the projecting part 8, which makes the fastening extremely firm. In order to arrange the projecting part 8 into the locking space 12, fastening screws may be slightly unscrewed for installation. Furthermore, the heads of the screws may support the fastening sections 21 a, 21 b, which enhances the rigidity of the tongue 13.

[0027] Although Figures 1 to 5 show a tongue 13 which is supported by its both heads against the cover part 11, it is also possible to make a locking piece 6 wherein an elongated tongue 13 is fastened to the cover part 11 by its one end only, thus leaving the other end free. The other end may be provided with a locking projection 14 which may be a projection section provided on a lower surface of the tongue 13, or it may be a bent section 20 extending towards the locking space 12.

[0028] A hinge according to the invention may be shaped and dimensioned as desired. Furthermore, the first hinge part 1 may be a hinge leaf, or it may be e.g. a fastening bolt. The hinge may also be a lifting hinge, allowing the first hinge part 1 and the second hinge part 2 to be detached by lifting one hinge part off from another.

[0029] In some cases, the features disclosed in the present application may be used as such, regardless of other features. On the other hand, the features disclosed in the present application may, when necessary, be combined in order to provide different combinations.

[0030] The drawings and the related description are only intended to illustrate the idea of the invention. The details of the invention may vary within the scope of the claims.

Claims

1. A hinge comprising:

a first hinge part (1) and a second hinge part (2);
a hinge pin (3) which connects the hinge parts (1, 2) pivotably with respect to one another;
a first hinge component (5) and a second hinge component (6) in at least one hinge part (1, 2);
a projecting part (8) included in the first hinge component (5) and provided with at least one locking aperture (9);
fastening means (15) included in the second hinge component (6) for fastening the hinge component (6) to a fastening point, at least one side part (18), a cover part (11), and at least one locking element in the cover part (11);
a locking space (12) arranged to be defined by a bottom part (10) and the cover part (11) of at least the second hinge component (6), and comprising at least one supporting surface (23); and wherein
the projecting part (8) is arrangeable into the locking space (12), and is arranged to be supported by the supporting surface (23) in a longitudinal direction of the hinge pin (3);
and further wherein
the locking element of the second hinge component (6) is arranged to become locked in the locking aperture (9) of the projecting part (8), and to prevent movement of the first hinge component (5) and the second hinge component (6) with respect to one another in a direction transverse to the hinge pin (3); wherein
the cover part (11) of the second hinge component (6) is provided with at least one elongated and flexible tongue (13); and wherein
the tongue (13) is provided with at least one locking projection (14) extending towards the locking space (12) such that the locking projection (14) is arranged to become locked in the locking aperture (9) when the projecting part (8) is pushed into the locking space (12);

characterized in that

the side part (18), the bottom part (10) and the cover part (11) of the second hinge component (6) consti-

tute one uniform unit; and that
the tongue (13) is fastened to the cover part (11) by
its both ends.

2. A hinge as claimed in claim 1, **characterized in that** 5
the side part (18), the bottom part (10) and the cover
part (11) of the second hinge component (6) are man-
ufactured from a plastic material and in one stage.
3. A hinge as claimed in claim 1 or 2, **characterized** 10
in that
the tongue (13) is provided with a section (20) which
is bent towards the locking space (12) and which is
arranged to form a locking projection (14) arranged
to become locked in the locking aperture (9) provided
in the projecting part (8). 15
4. A hinge as claimed in any one of the preceding 20
claims, **characterized in that**
the first hinge part (1) comprises at least one adjust-
ment element (17) for adjusting the hinge in a lateral
direction;
the cover part (11) of the second hinge component
(6) is provided with at least one recession (16) ar- 25
ranged to receive the adjustment element (17) when
the hinge is in a closed position.
5. A hinge as claimed in any one of the preceding
claims, **characterized in that** 30
the fastening means (15) in the second hinge com-
ponent (6) include a first opening and a second open-
ing, and that
the openings are located on opposite sides of the
locking space (12) such that each opening is ar- 35
ranged to at least partly overlap with the locking
space (12) by a predetermined distance (E).
6. A locking piece for locking a hinge, the locking piece
(6) comprising: 40

fastening means (15) for fastening the locking
piece (6) to a fastening point;
a bottom part (10);
a cover part (11);
at least one locking element in the cover part 45
(11);
at least one side part (18);
a locking space (12) arranged to be defined by
at least the side part (18), the bottom part (10)
and the cover part (11); and 50
at least one supporting surface (23) in the lock-
ing space (12);
the cover part (11) being provided with at least
one elongated and flexible tongue (13) arranged
to serve as a locking element; 55
the tongue (13) being provided with at least one
locking projection (14) extending towards the
locking space (12),

characterized in that

the side part (18), the bottom part (10) and the cover
part (11) constitute one uniform unit; and that
the tongue (13) is fastened to the cover part (11) by
its both ends.

7. A locking piece as claimed in claim 6, **characterized**
in that
the locking piece (6) is manufactured from a plastic
material and in one stage.
8. A locking piece as claimed in claim 6 or 7, **charac-**
terized in that
the tongue (13) is provided with a section (20) which
is bent towards the locking space (12) and which is
arranged to form a locking projection (14).
9. A locking piece as claimed in any one of claims 6 to
8, **characterized in that**
the locking piece (6) is symmetrical with respect to
its central axis (D).

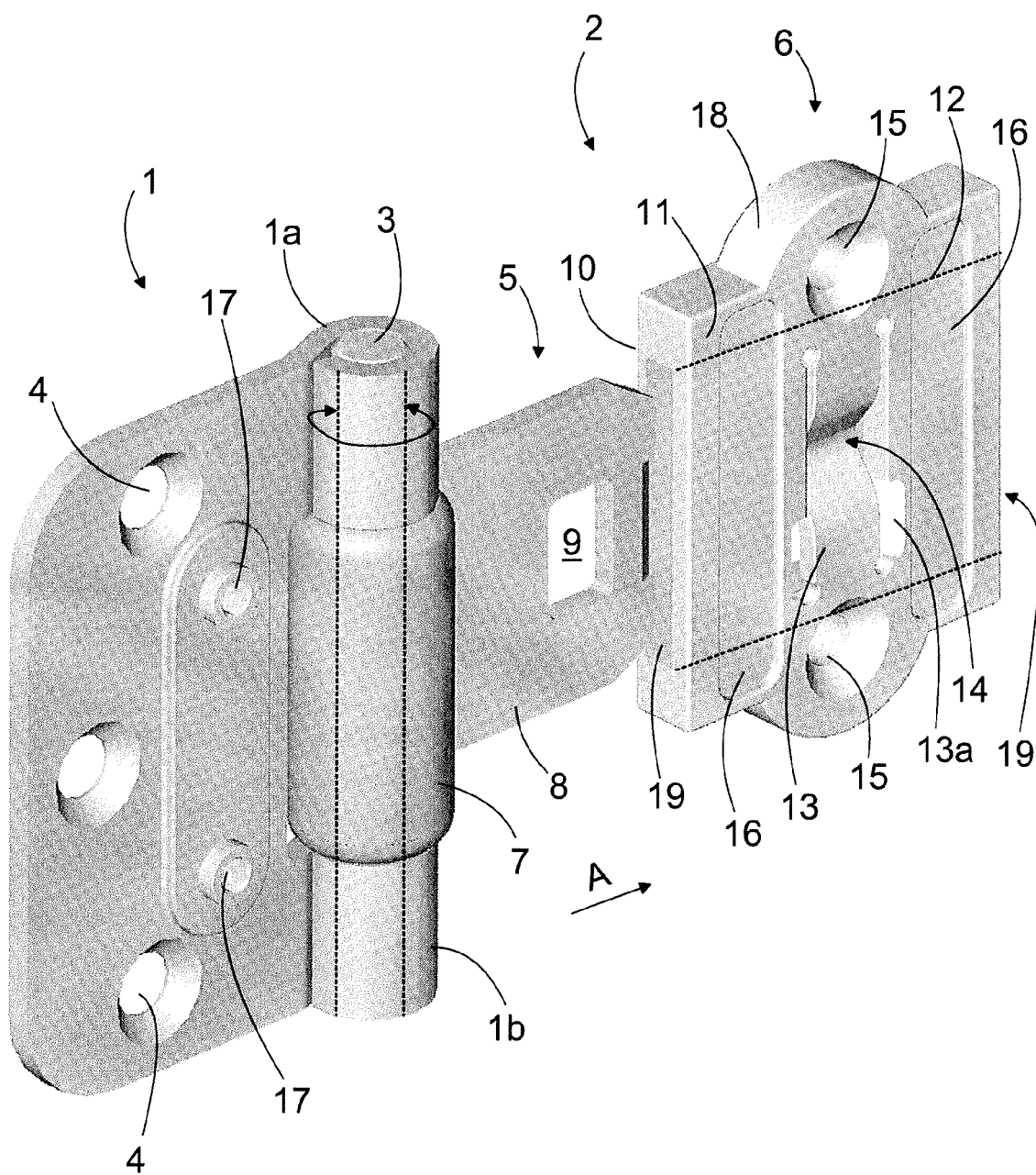


FIG. 1

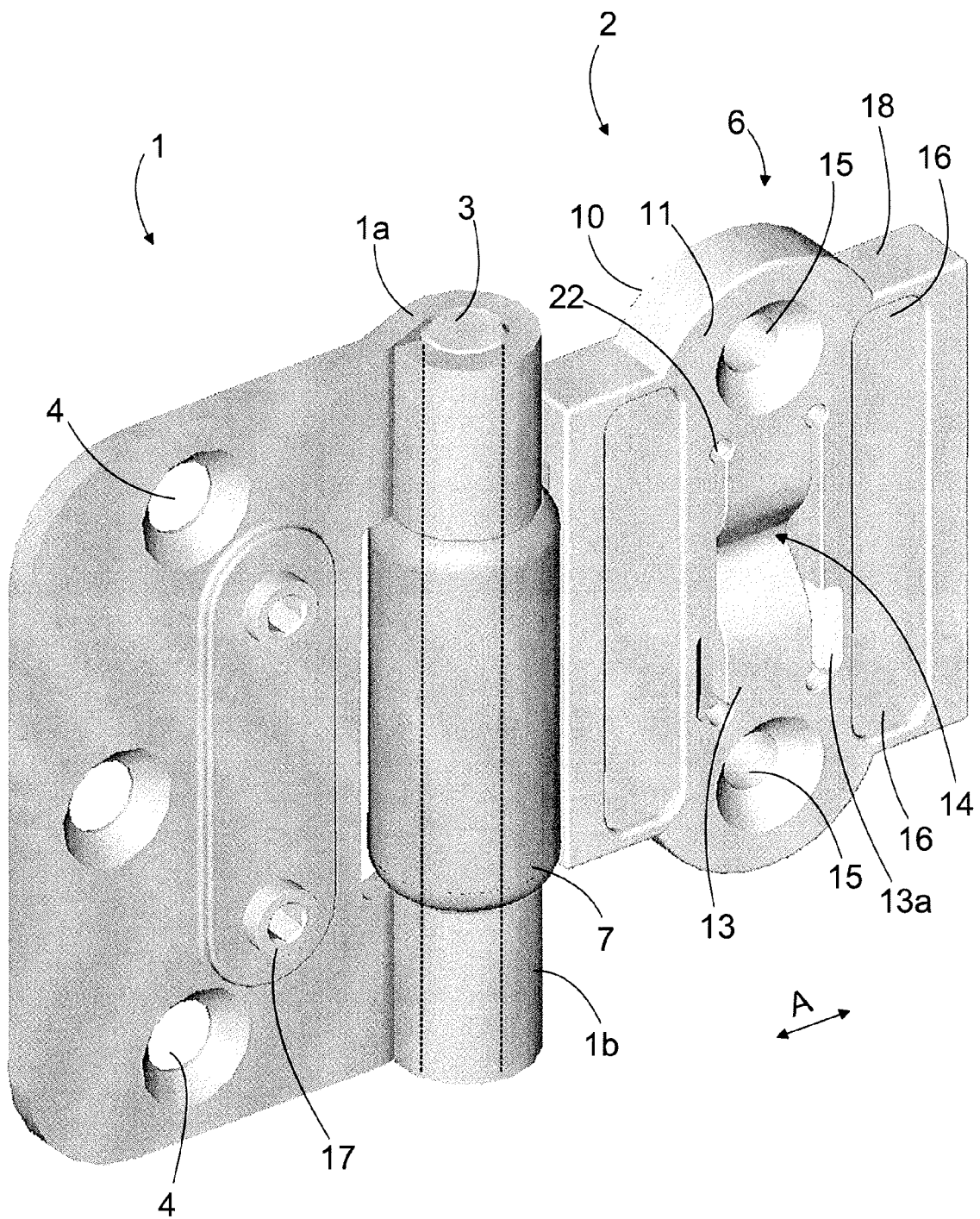


FIG. 2

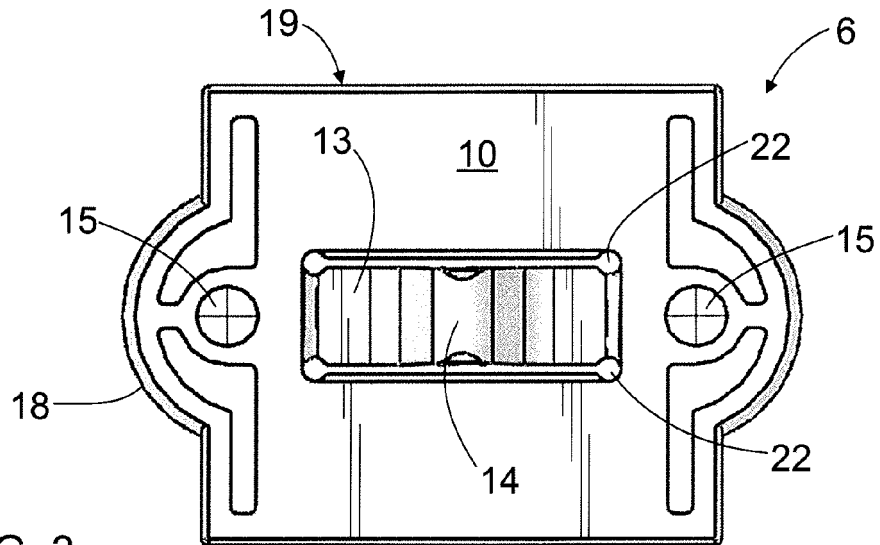


FIG. 3

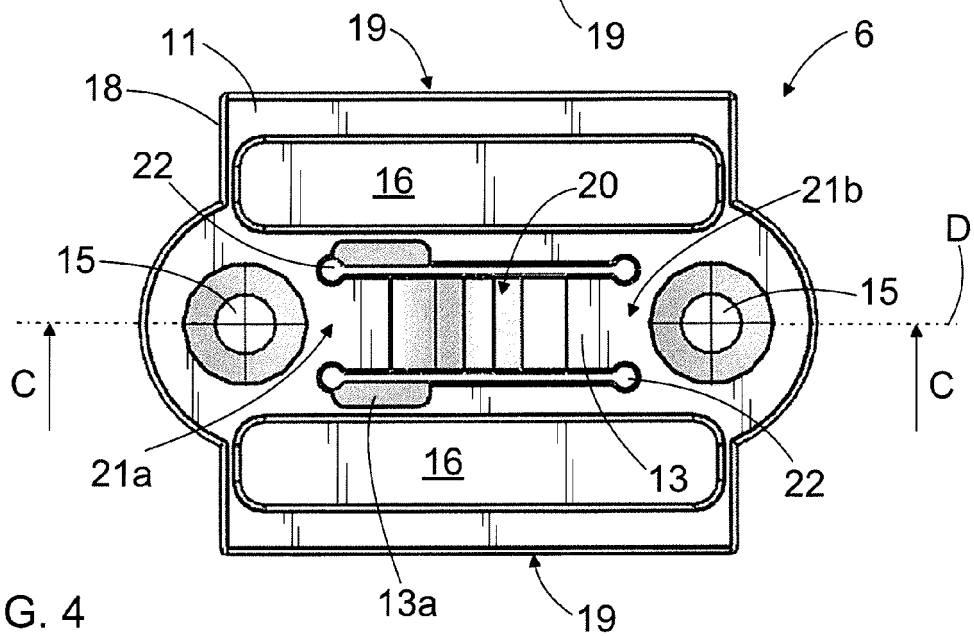


FIG. 4

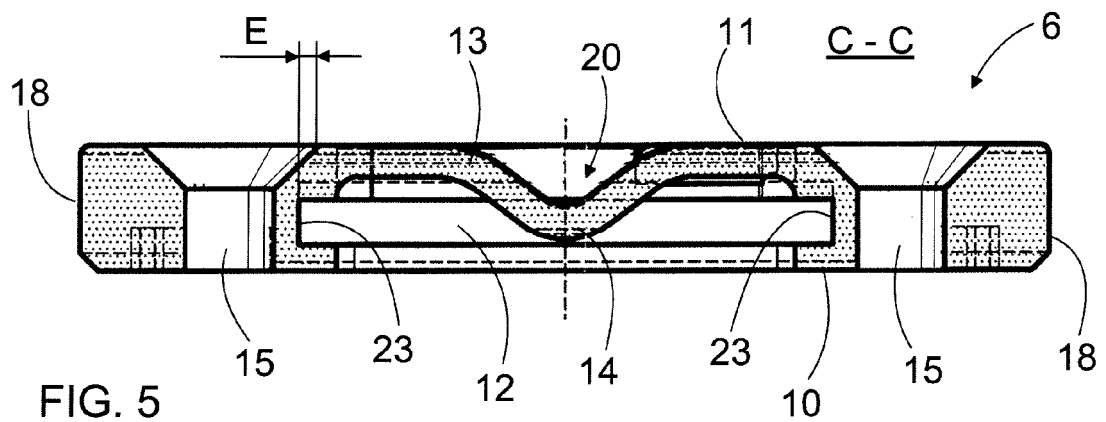


FIG. 5