(19) DANMARK

(10) **DK/EP 3663500 T3**

Patent- og
Varemærkestyrelsen

(12) Oversættelse af
europæisk patentskrift

(51) Int.Cl.: ***E 06 B 3/972 (2006.01)***

(45) Oversættelsen bekendtgjort den: **2021-06-07**

(80) Dato for Den Europæiske Patentmyndigheds
bekendtgørelse om meddelelse af patentet: **2021-03-31**

(86) Europæisk ansøgning nr.: **19207348.4**

(86) Europæisk indleveringsdag: **2019-11-06**

(87) Den europæiske ansøgnings publiceringsdag: **2020-06-10**

(30) Prioritet: **2018-12-06 DE 102018221155**

(84) Designerede stater: **AL AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO RS SE SI SK SM TR**

(73) Patenthaver: **markilux GmbH & Co. KG, Hansestrasse 53, 48282 Emsdetten, Tyskland**

(72) Opfinder: **Dieckmann, Martin, Brunsheider Weg 28, 49497 Mettingen, Tyskland**

(74) Fuldmægtig i Danmark: **Chas. Hude A/S, H.C. Andersens Boulevard 33, 1780 København V, Danmark**

(54) Benævnelse: **LÅSEBESLAG TIL RAMMEKONSTRUKTIONSDELE DER GRÆNSER OP TIL HINANDEN**

(56) Fremdragne publikationer:
EP-A1- 3 284 893
EP-B1- 3 121 363
DE-A1-102014 016 508

The present patent application claims the priority of the German patent application DE 10 2018 221 155.8, the content of which is hereby included by reference.

The invention relates to a lock fitting for adjacent frame construction parts having the features indicated in the preamble of claim 1.

The object of the invention in this context shall be used universally as a fitting part for connecting, for example, profile parts in window frames, door frames or frames intended for other purposes, such as for the construction of privacy screen or windscreen elements.

For this purpose, usually, corner connectors are used which are inserted into longitudinal guides of profile parts to be connected, and there are fixed in a suitable manner, for example by means of clamping screws, clamping wedges or similar construction elements. Examples for such corner connectors including the preamble indicated in claim 1 are given in DE 10 2014 016 508, EP 3 284 893 A1 or EP 3 121 363 B1.

The problematic circumstance with these common fitting parts is that the construction elements are separate parts for which special connections, such as threads, have to be created on the fitting parts. Furthermore, their installation technology is often very complex in itself and – due to the fact that the separate construction elements are single pieces that can get lost – often troublesome. Moreover, such fitting parts are often directly screwed into the frame parts to be connected, which may lead to adverse effects thereon.

Therefore, basically, with regard to such fitting parts produced as bulk goods and applied in large quantities, there is the need for a lock fitting

which is easily to produce, rationally mountable and at the same time very stable in the state of final assembly.

This object is achieved according to claim 1 by means of a lock fitting which comprises

- an inner part as a first construction part having an at least sectionally flat rectangular cross-section, and
- an outer part as a second construction part, which flanks the inner part in the area of its flat rectangular cross-section, as well as
- at least one twist lock element cut out of the material of the inner part in the area of the flat rectangular cross-section by means of a vertically passing through cut contour and hence formed in one piece, which has
  = a disc-shaped twist lock body being rotatably guided in a circular guide contour of the inner part and adjacent to the lateral surface of the inner part which is flanking the outer part,
  = an eccentric surface applied to a circumferential section of the twist lock body and recessing, which in the unlocked position of the twist lock body essentially is aligned with the flanking lateral surface of the inner part, and which in the position of the twist lock body locked by a rotation of the twist lock body shifts into the guide contour of the inner part such that the twist lock body acts upon the outer part in a locking manner with its flank adjacent to the eccentric surface, as well as
- a holding bar between the twist lock body and the inner part, bridging a recess in the inner part.

One of the main advantages of the embodiment according to the invention is in that the twist lock element of the lock fitting can be easily produced by cutting it out of the material of the inner part itself, for example by die cutting, however preferably by laser cutting out of a flat iron. This cutting tech-

nique, which is meanwhile quite common, allows for very fine and delicate cut contours, which are perfectly suitable for forming the twist lock element.

One further advantage of the lock fitting according to the invention is in the fact that due to the integral formation of the inner part with the twist lock element the latter is held on the inner part with the help of the holding bar and cannot get lost. This holding bar, in connection with the recess surrounding same in the inner part according to preferred further developments of the object of the invention, has additional functions. For instance, together with an angular form of the recess, it acts as a boundary to the rotational angle of the twist lock body. In addition to this, in its deformation during the rotation of the twist lock body, it imitates the function of a toggle lever mechanism, which on the one hand allows for an additional fixing of the twist lock body in the locked beyond dead center position and on the other hand results in a further acting on the twist lock body in the direction of the outer part to be fixed.

Finally, the locking device acting according to the manner of an eccentric between the inner and the outer part allows for a very stable connection between these two components.

In order to avoid unnecessary repetitions, regarding the illustration of further features, details, advantages and preferred working examples, reference is made to the following description of embodiments of the invention based on the attached drawings, in which

Fig. 1 shows a top view onto an inner part of a locking device formed as a flat iron, in an unlocked position,

Fig. 2 shows a top view analogous to Fig. 1 in a locked position of the locking device,

Fig. 3 shows an enlarged, partial top view of detail III of Fig. 2,

Fig. 4 shows a partial top view onto the corner area of a frame including the locking device in locked position,

Fig. 5 shows a cross-section of the frame along the section line V-V according to Fig. 4,

Fig. 6 shows an enlarged, partial top view of detail VI of Fig. 5, as well as

Fig. 7 shows a perspective view of an inner part of a locking device formed as an angle iron, in unlocked position.

Fig. 1 shows the inner part 1 as a first construction part of a locking device as is it shown as a whole for example in Fig. 4 as a connector for a frame 2. This inner part 1, from a top view, is an angularly shaped flat iron produced out of a sheet steel part having a flat rectangular cross-section. The two legs 4.1, 4.2 of the flat iron cannot only be arranged in a right angle, but actually in every random angle towards one another in order to form, for example, triangular frames.

On the inner edges 3 of the two legs 4.1, 4.2 of the inner part 1, respectively, two twist lock elements 5 are incorporated, whose contour is produced by laser cuts which are passing through the entire sheet thickness. Each twist lock element 5 has a disc-shaped twist lock body 6 as a central element, which, due to the laser cut, is rotationally guided by a circular guide contour 7 on a large part of its circumference. The twist lock body 6 is cut

out such that its imaginary circumference slightly protrudes beyond the inner edges 3 of the inner part 1, whereas this circumferential section is taken away by a recessing eccentric surface 8, and the latter, in the unlocked position shown in Fig. 1, are aligned with the lateral surfaces of the inner part 1 forming the inner edges 3. On the side of the twist lock body 6 opposite to the eccentric surface 8, the twist lock body 6 is integrally connected with the inner part 1 by a holding bar 9 having an inclined position to the radial direction, whereas the holding bar 9 is extending in a parallel manner to the edge 13a of a recess 10 expanding angularly towards the twist lock body 6. In its center, the twist lock body 6 has a hexagon receptacle 11 for the engagement with a hexagonal spanner for the rotational actuation of the twist lock body 6.

From Figs. 2 and 3, the behavior of the twist lock body 6 after such a rotational actuation DR becomes evident. The twist lock body 6 rotates in situ around its central axis in the guide contour 7. In the course of this, the eccentric surface 8 shifts into the guide contour 7, and the flank 12 of the twist lock body 6 adjacent to the eccentric surface 8 protrudes beyond the inner edge 3 of the inner part 1. During the rotational movement, the holding bar 9 is deformed at the same time, whereas the rotational angle of the twist lock body 6 is limited by the holding bar 9 abutting on the second edge 13b of the recess 10. Due to the deformation of the holding bar 9, which becomes evident by comparing Figs. 1 and 2, a form of beyond dead center kinematics is simulated, which results in the fact that on the one hand the twist lock body 6 is pushed especially strongly beyond the inner edges 3 and on the other hand is fixed in its locked position shown in Figs. 2 and 3. Basically, the locking is reversible by a rotational actuation of the twist lock body 6 opposite to the directional arrows DR shown in Figs. 1 and 2.

With reference to Figs. 4 to 6, the functionality of the locking device is hereinafter described in more detail. For instance, frame profiles, for example of

a stable frame for a privacy or wind screen element, which are each mitered, are slid onto the two legs 4.1, 4.2 of the inner part 1 as outer parts 14. These outer parts 14 are flanking the inner part 1 in the area of its flat rectangular cross-section, while the outer parts 14 are enclosing the outer edges 16 and inner edges 3, facing away from each other, with pre-fitted guide grooves 15. As becomes evident from Figs. 4 and 6, the twist lock bodies 6 with their hexagon receptacles 11 are still accessible and can be rotationally actuated – as it is explained above – and hence can be transferred into the locking position shown in Figs. 2 to 6. In this position, the twist lock bodies 6 are acting upon the outer parts 14 with their flanks 12 in the guide grooves 15 and thus are forming a stable connection between the two outer parts 14. Due to the fact that the acting upon the outer parts 14 by the rotating twist lock bodies 6 is directed such that the outer parts 14 each are pushed towards one another in the direction of the corner between the two legs 4.1, 4.2, the miter between the two legs 4.1, 4.2 is optimally pressed together, which results in a good alignment of these construction parts and accordingly in a good visual appearance.

In Fig. 7, an alternative inner part 1‘ is shown which is formed as a corner-connecting angle iron having legs 17.1, 17.2 positioned in two perpendicular planes. For this embodiment as well, the two legs 17.1, 17.2 can also be positioned at another, basically random angle towards one another. In the two legs 17.1, 17.2, respectively, again twist lock elements 5 are inserted adjacent to the side edges 18. Outer parts attached thereto (not shown) as profiles for the production of a frame shall be connected in the stable manner explained above.

Patentkrav

1. Låsebeslag til rammekonstruktionsdele der grænser op til hinanden, hvilket beslag omfatter:
- en indre del (1, 1') som en første konstruktionsdel, der har et mindst sektionsvist fladt rektangulært tværsnit,
- en ydre del (14) som en anden konstruktionsdel, der flankerer den indre del (1, 1') i området med dens flade rektangulære tværsnit, og
- mindst et drejelåselement (5), der omfatter:
= et skiveformet drejelåslegeme (6) der kan føres drejeligt i en cirkulær føringskontur (7) af den indre del (1, 1') og som grænser op til sidefladen (3) af den indre del (1, 1'), der flankerer den ydre del (14), såvel som
= en forsænket excentrisk overflade (8) der er anlagt på en rundtgående sektion af drejelåslegemet (6), som i den ulåste stilling af drejelåslegemet (6) i det væsentlige flugter med den flankerende sideflade (3) af den indre del (1, 1'), og som i den låste positionen for drejelåslegemet ved en drejning af drejelåslegemet (6) forskydes ind i føringskonturen (7) på den indre del (1, 1'), således at drejelåslegemet (6) virker på den ydre del (14) på en låsende måde med sin flanke (12), der grænser op til den excentriske overflade (8),
kendetegnet ved,
- en udformning af drejelåslegemet (6) i området for det flade rektangulære tværsnit af den indre del (1, 1'), der er skåret ud af materialet af denne ved et kontursnit og dermed dannet i et stykke, og
- en holdestang (9) der danner bro over en fordybning (10) i den indre del (1, 1') mellem drejelåslegemet (6) og den indvendige del (1, 1').

2. Låsebeslaget ifølge krav 1, **kendetegnet ved, at** der i drejelåslegemet (6) er tilvejebragt en optager, især en indre sekskant (11) til indgreb af et drejningsmomentoverførende værktøj.

3. Låsebeslag ifølge krav 1 eller 2, **kendetegnet ved, at** fordybningen (10) til holdestangen (9) er udformet således, at den udvides ringformet mod drejelåslegemet (6), og at holdestangen (9) i ulåst stilling løber parallelt med en første kant (13a) af fordybningen (10), såvel som at den låste position er deformerbar i retning af den anden kant (13b) af fordybningen (10) ved drejning af drejelåslegemet (6).

4. Låsebeslaget ifølge krav 3, **kendetegnet ved, at** holdestangen (9) er deformerbar på en vendbar måde for tilbagevenden af drejelåslegemet (6) til den ulåste position.

5. Låsebeslag ifølge et hvilket som helst af de foregående krav, **kendetegnet ved, at** kontursnittet til dannelse af drejelåselementet (5) ud af den indre del (1, 1') er dannet ved laserskæring.

6. Låsebeslag ifølge et hvilket som helst af de foregående krav, **kendetegnet ved, at** den indre del (1, 1') er dannet som et fladt jern eller et vinkeljern, der er lavet af metal, fortrinsvis af et stålmateriale.

7. Låsebeslag ifølge et hvilket som helst af de foregående krav, **kendetegnet ved, at** den ydre del (14) er en profildel, der omslutter den flankerende laterale overflade (3) af den indre del (1, 1') med forud tilpassede styrespor (15), således at drejelåselementet (5) fortrinsvis forbliver tilgængeligt til aktivering fra profilens indvendige side.

8. Låsebeslag ifølge et hvilket som helst af de foregående krav, **kendetegnet ved, at** den indre del (1) er udformet som et hjørneforbindende fladt jern med ben (4.1, 4.2), der ligger i en vinkel i forhold til hinanden i et plan til at forbinde to ydre dele (14), hvor mindst et, fortrinsvis to drejelåselementer (5) er anbragt i hvert af benene (4.1, 4.2).

9. Låsebeslag ifølge et hvilket som helst af kravene 1 til 7, **kendetegnet ved, at** den indre del (1') er udformet som et hjørneforbindende fladt jern, hvor to ben (17.1, 17.2) er anbragt i to vinkelstillede planer til at forbinde to ydre dele, hvor der i hvert af benene (17.1, 17.2) er tilvejebragt mindst et, fortrinsvis to drejelåselementer (5).

10. Låsebeslag ifølge krav 8 eller 9, **kendetegnet ved, at** drejelåselementerne (5) der er tilordnet inden for de to forskellige ben (4.1, 4.2; 17.1, 17.2) omfatter en modsat rotationsretning (DR) til overførsel fra ulåst til låst position, således at de ydre dele (14), som påvirkes af rotationsretningen skubbes mod hinanden af låsebevægelsen.

11. Låsebeslag ifølge et hvilket som helst af de foregående krav, **kendetegnet ved, at** den kontursnittet i området med det flade rektangulære tværsnit af den indre del (1, 1') er udformet vertikalt gennem materialet af denne.

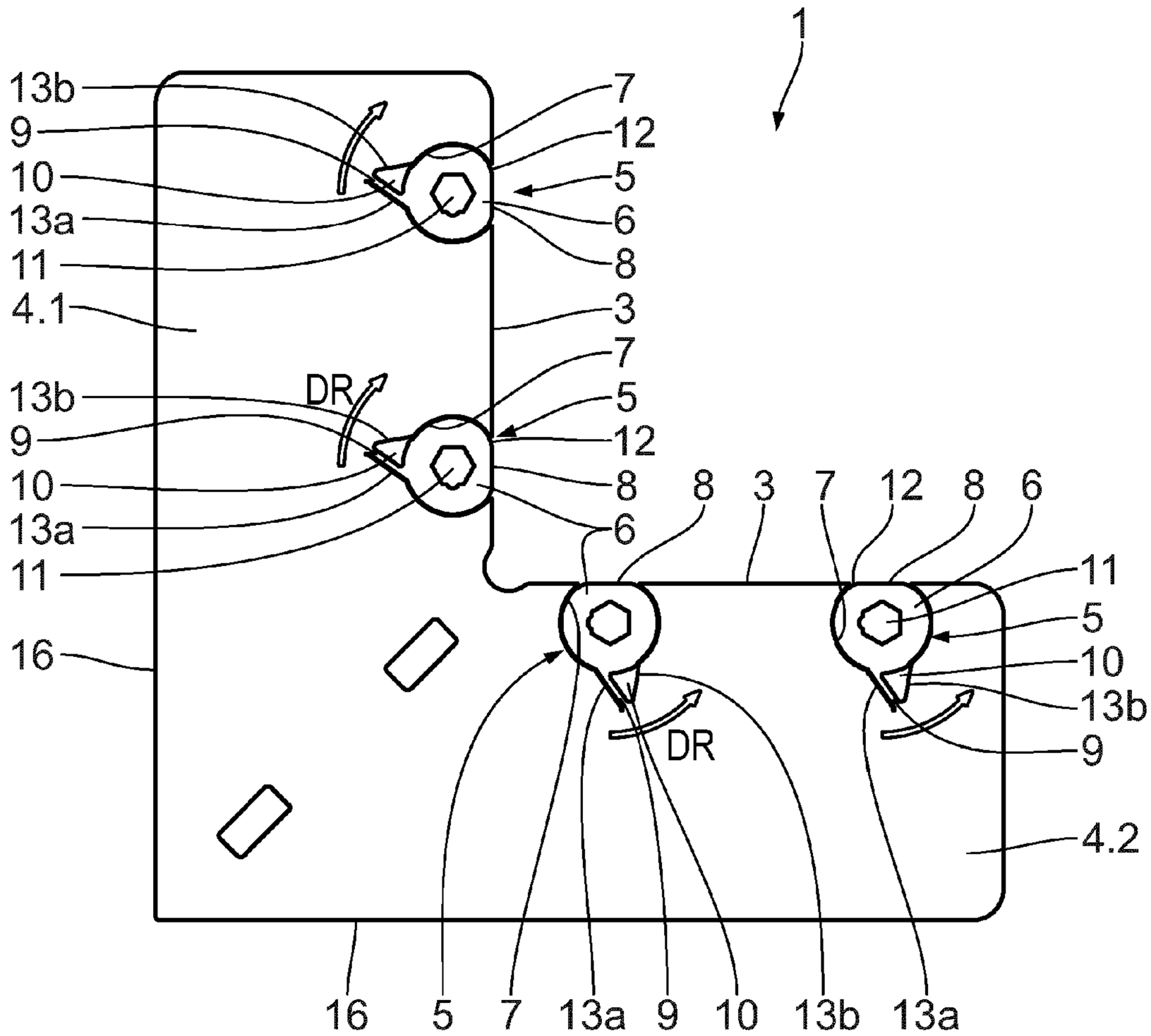

Fig. 1

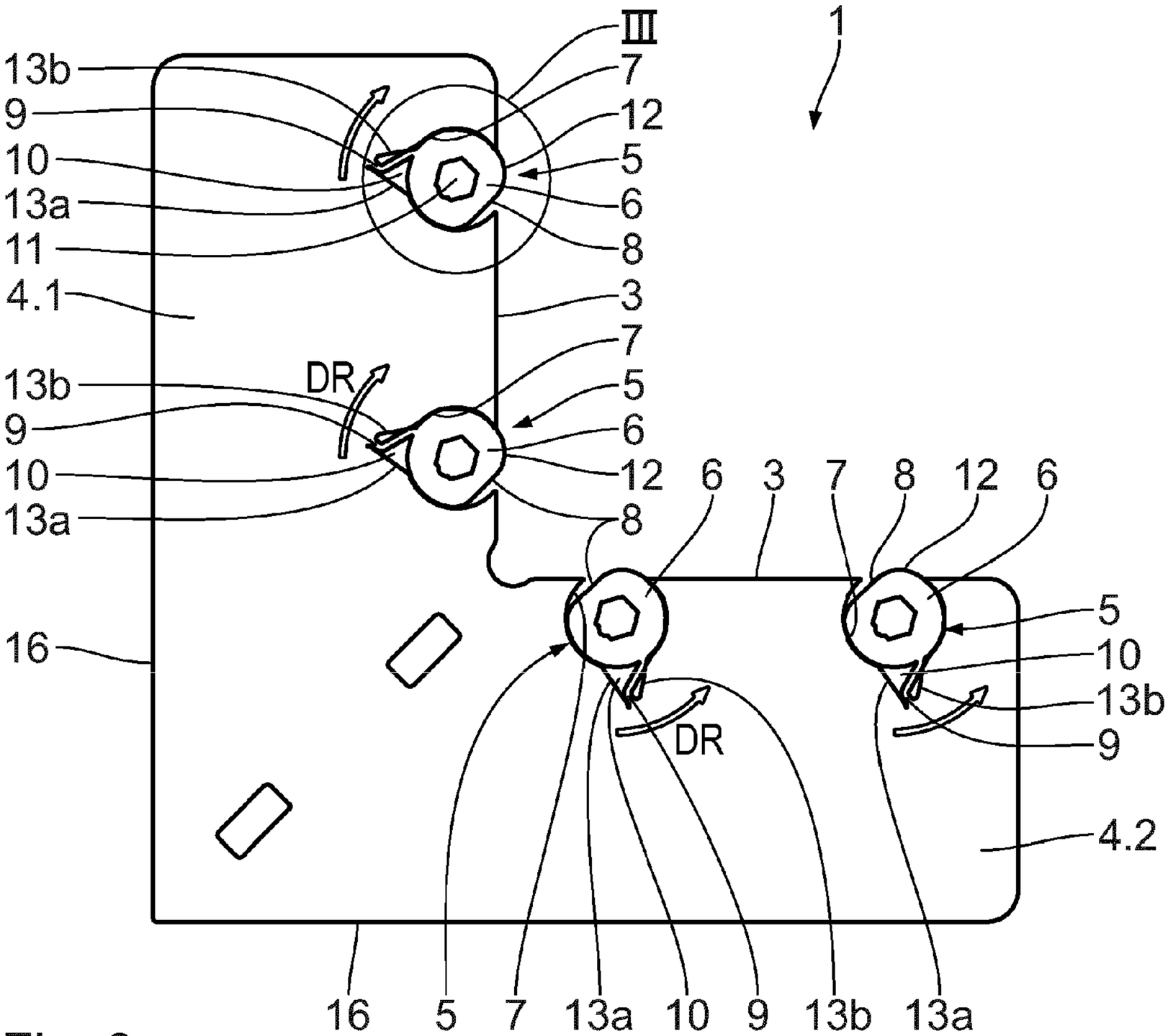

Fig. 2

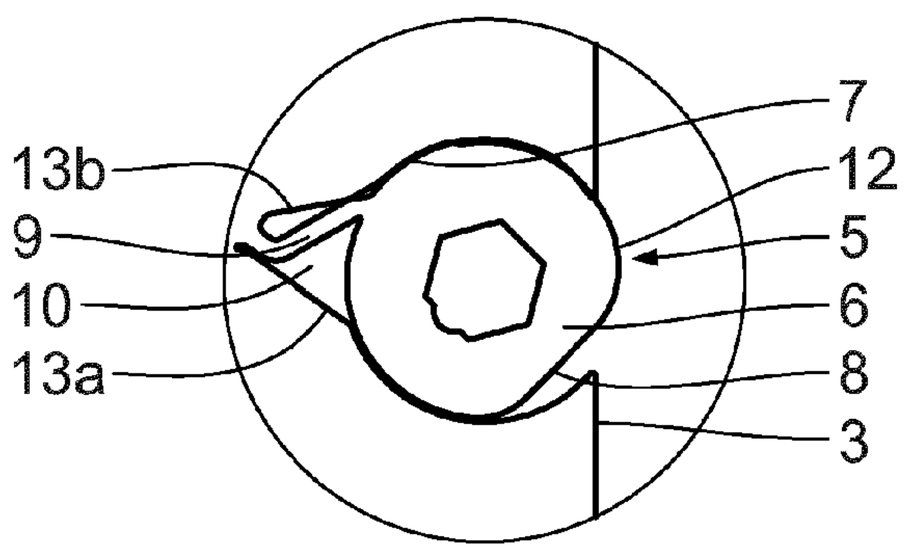

Fig. 3

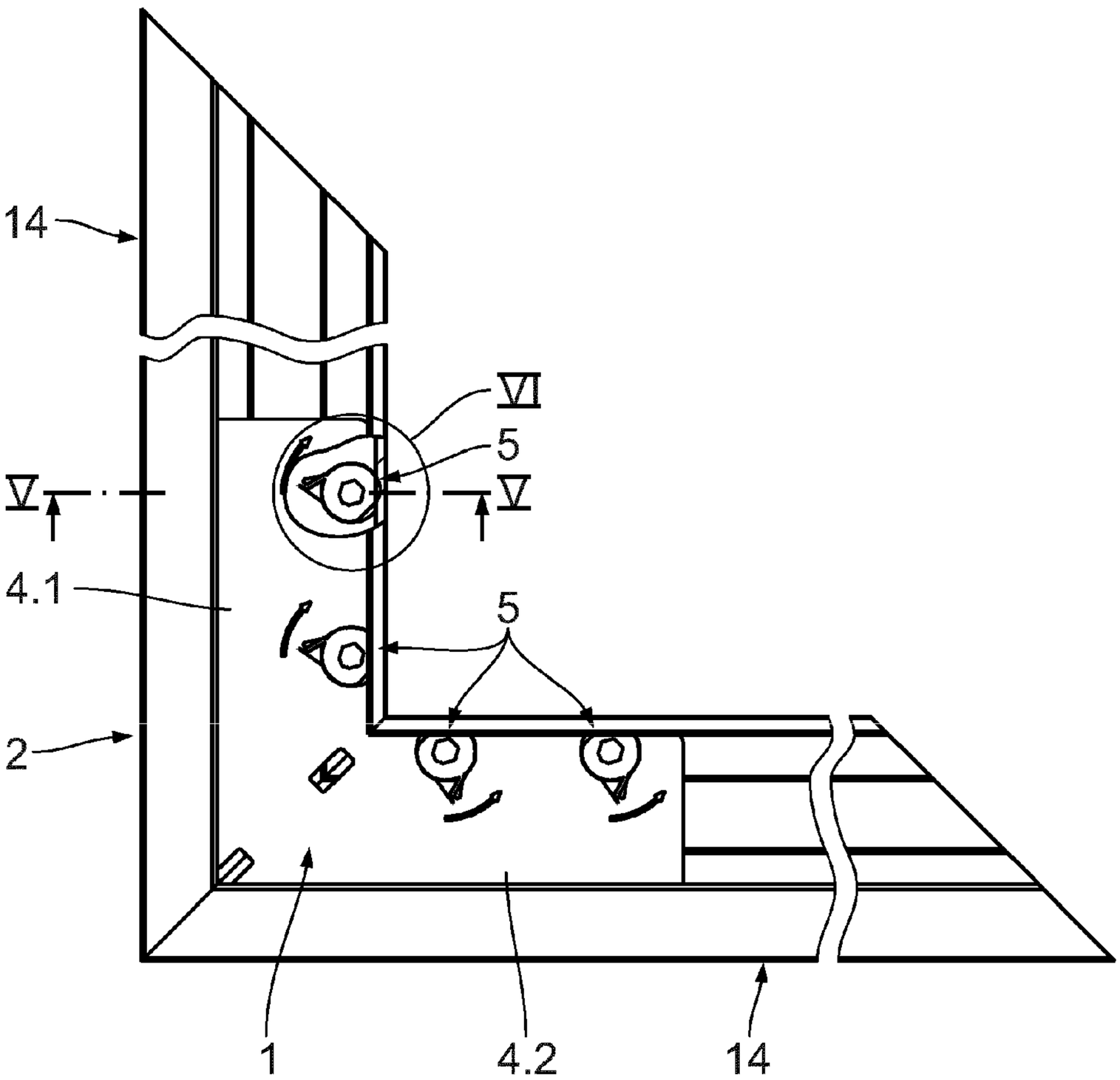

Fig. 4

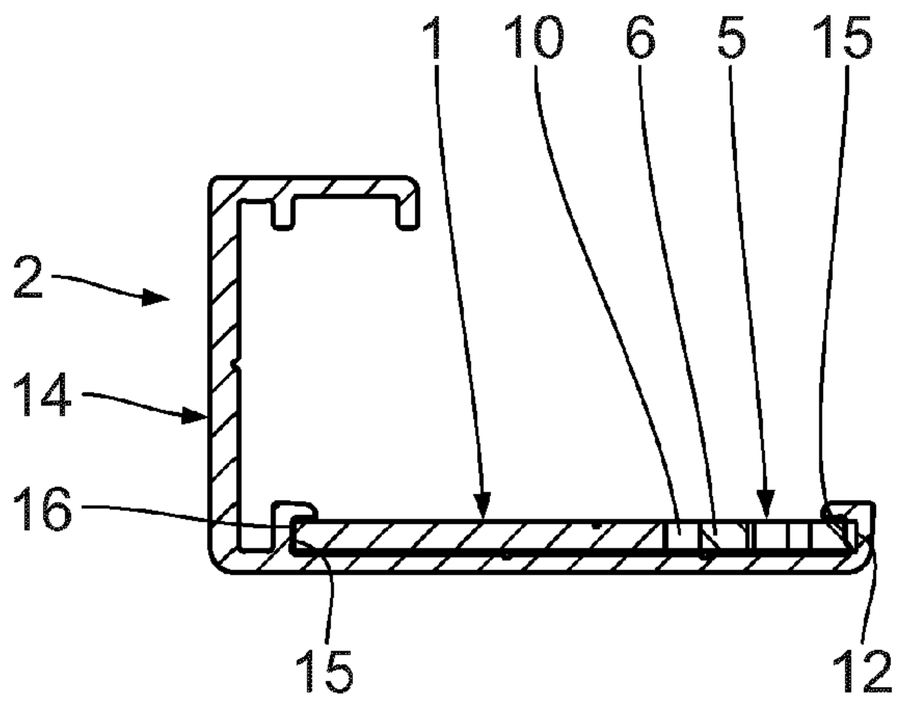

Fig. 5

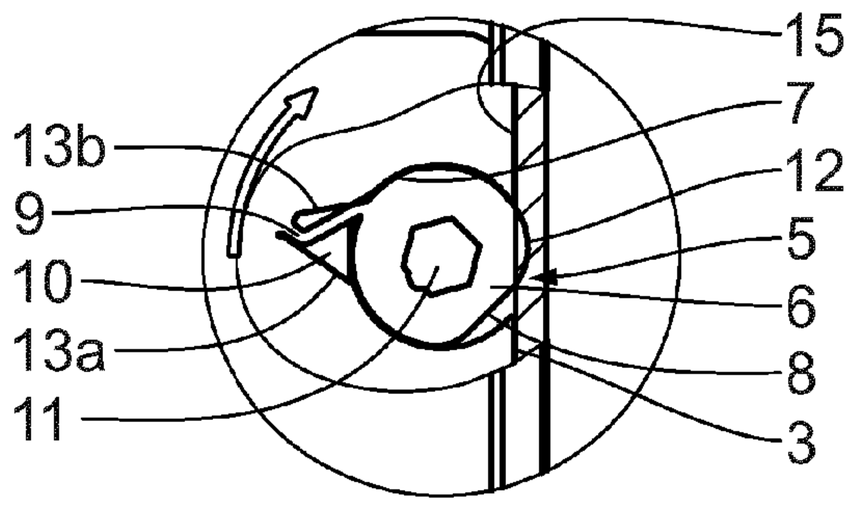
15
7
12
5
6
8
3
13b
9
10
13a
11

Fig. 6

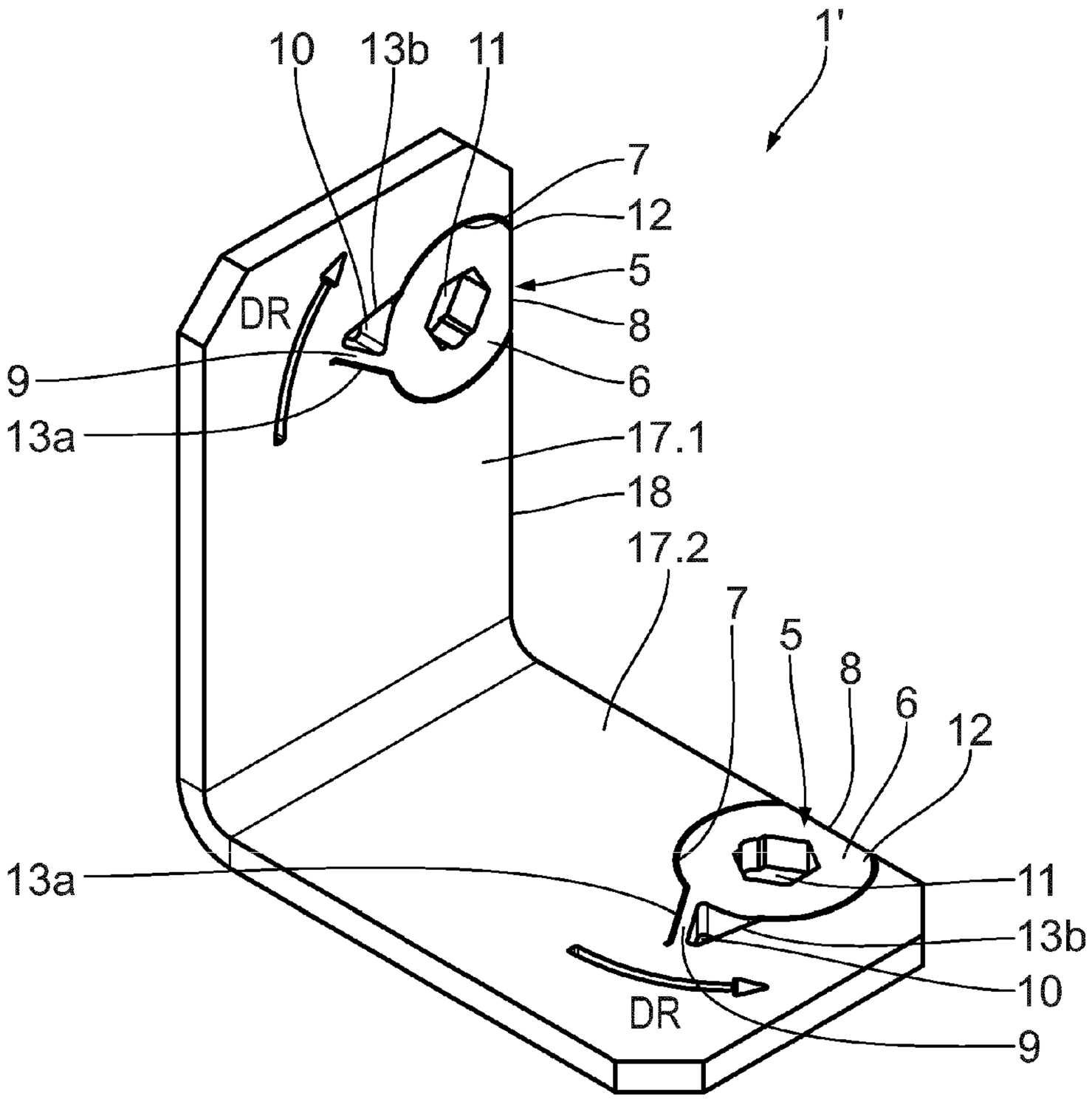
1'
10
13b
11
7
12
5
8
6
DR
9
13a
17.1
18
17.2
7
5
8
6
12
13a
11
13b
10
DR
9

Fig. 7