

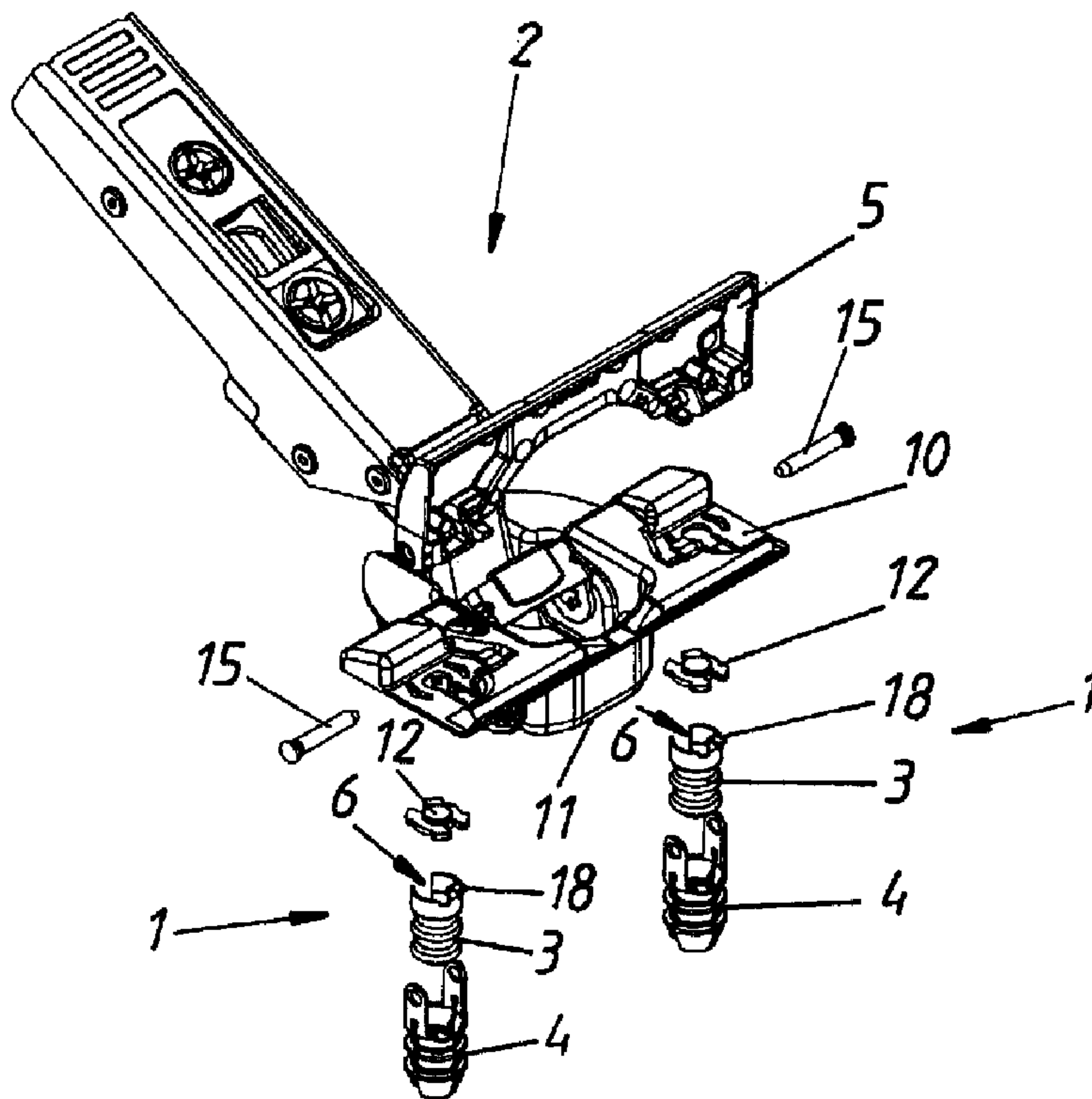


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 (71) Demandeur/Applicant:
 JULIUS BLUM GMBH, AT
 (72) Inventeurs/Inventors:
 RAICH, OSKAR, AT;
 NAGEL, THOMAS, AT
 (74) Agent: FETHERSTONHAUGH & CO.

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Fig. 1a



(57) Abrégé/Abstract:

The invention relates to a fastening device (1) for furniture fittings (2) on furniture parts (13), comprising at least one dowel core (3) that can be inserted into a hole (14) of a furniture part (13), the dowel core being arranged inside a dowel sleeve (4), and an



(57) **Abrégé(suite)/Abstract(continued):**

actuating device (5), by means of which the dowel sleeve (4) can be moved relative to the dowel core (3), wherein the dowel sleeve (4) spreads on the dowel core (3). The dowel core (3) and the dowel sleeve (4) have at least two, preferably more, corresponding inclined surfaces (7, 7', 7'', 8, 8', 8'') that are offset in the axial direction, wherein if the dowel sleeve (4) is moved relative to the dowel core (3), the dowel sleeve (4) spreads substantially evenly at two, preferably more, axially offset locations.

ABSTRACT

The invention relates to a fastening device (1) for furniture fittings (2) on furniture parts (13), comprising at least one dowel core (3) that can be inserted into a hole (14) of a furniture part (13), the dowel core being arranged inside a dowel sleeve (4), and an actuating device (5), by means of which the dowel sleeve (4) can be moved relative to the dowel core (3), wherein the dowel sleeve (4) spreads on the dowel core (3). The dowel core (3) and the dowel sleeve (4) have at least two, preferably more, corresponding inclined surfaces (7, 7', 7'', 8, 8', 8'') that are offset in the axial direction, wherein if the dowel sleeve (4) is moved relative to the dowel core (3), the dowel sleeve (4) spreads substantially evenly at two, preferably more, axially offset locations.

English Translation of WO 2011/044598**FASTENING DEVICE FOR FURNITURE FITTINGS**

The invention relates to a fastening device for furniture fittings on furniture parts, having at least one dowel core that can be inserted into a drilled hole of a furniture part, which is
5 arranged inside a dowel sleeve, and an actuating device via which the dowel sleeve is capable of being moved relative to the dowel core, by means of which the dowel sleeve expands on the dowel core.

The advantage of fastening furniture fittings using dowel-like clamping parts rather than fastening using screws lies in the fact that assembly can be carried out without tools, and so
10 assembly times can be shorter. A further advantage of dowel-like clamping parts lies in the fact that, unlike screws, they cannot be “over-tightened”; when using screws, this can lead to worsening of the hold of the furniture fitting in the furniture part.

Thus, DE 200 02 994 U1 discloses a fitting for detachable fastening to a furniture part having a fitting body adjacent to the furniture part having at least one sleeve-like anchoring part
15 that can be inserted into a drilled hole of the furniture part, wherein a clamping portion for the sleeve-like anchoring part that preferably bears on the fitting body is provided on the side of the fitting body facing away from the furniture part.

WO 1999/024723 A1 discloses a fitting for detachable fastening to a furniture part, having a fitting body adjacent to the furniture part, at least one dowel-like expansion sleeve that
20 can be inserted into a drilled hole of the furniture part, having a plurality of axially offset retaining projections on its sheath, preferably having a conical tip and a peg-like expansion part for the expansion sleeve which projects out of the fitting body, wherein a clamping portion for the expansion sleeve which advantageously bears on the fitting body is arranged on the side of the fitting facing away from the furniture part.

25 DE 195 05 311 A1, US 5 536, 122 A, EP 1 054 168 A2 and AT 352 333 B also disclose general examples of the prior art.

The aim of the invention is to provide a fastening device for furniture fittings on furniture parts which is improved compared with the prior art, which guarantees a good hold even in non-homogeneous materials, such as chipboard, for example.

This is accomplished by means of the fastening device of the invention for furniture fittings on furniture parts wherein the dowel core and the dowel sleeve are provided with at least two, preferably a plurality of corresponding inclined surfaces that are offset in the axial direction, whereby relative movement of the dowel sleeve with respect to the dowel core causes a substantially even expansion of the dowel sleeve at two, preferably a plurality of axially offset locations.

In other words, these axially offset inclined surfaces mean that the dowel sleeve slides over the dowel core and expands outwardly parallel to it at these inclined surfaces. By means of this continuous expansion, which occurs not only in the lower portion of the dowel sleeve (as was usually the case), but over the whole length of the dowel sleeve, an increased, even hold is obtained in various materials such as hardwood, MDF, chipboard, softwood etc. This is particularly the case in materials which are non-homogeneous as regards their firmness, because the dowel system means that a larger region is covered which is firmer and provides a better hold.

Further advantageous embodiments of the invention are defined in the dependent claims.

Further details and advantages of the present invention will now be described in more detail with reference to the description of the figures below made with reference to the embodiments illustrated in the accompanying drawings in which:

Figure 1a shows a perspective exploded view of a furniture fitting;

Figure 1b shows a sectional front view of the fastening device of a furniture fitting;

Figure 2a shows a side view of an open fastening device;

Figure 2b shows a side view of a closed fastening device;

Figure 3a shows a section through the drilled hole of a furniture part with an open fastening device;

Figure 3b shows a drilled hole of a furniture part with a closed fastening device;

Figure 4 shows a perspective view of a furniture part with furniture fittings.

Figure 1a shows a furniture fitting 2 for a furniture part 13 (not shown), which is provided with a fastening device 1 that is inserted into two drilled holes 14 (not shown) of a furniture part 13. In this embodiment, the fastening device 1 has two dowel cores 3 and two dowel sleeves 4, which can be inserted into two drilled holes 14 of a furniture part 13. A spacer disk 12 is arranged between the dowel core 3 and the fastening flange 10 of the furniture fitting 2. Because of the pins 15, the dowel sleeve 4 can be drawn by the actuation device 5 in the direction of the fastening flange 10. The dowel core 3 has a longitudinal slit 6 that runs axially and continuously through the dowel core 3 and thus forms a cylindrical spring core sleeve. The material of the dowel core 3 and the dowel sleeve 4 is preferably a metal, most preferably spring steel. In a preferred embodiment, it is advantageous if the dowel sleeve 4 is formed from C67 spring steel and the dowel core 3 is formed from C60 spring steel. If the dowel sleeve 4 is drawn in the direction of the fastening flange 10 by means of the actuating device 5, then it is expanded by means of the dowel core 3, thus resulting in fastening the furniture fitting 2 in the drilled holes 14 of a furniture part 13 (see Figure 1b and 3b). Also in this embodiment, the dowel core 3 is arranged on the fastening flange 10. Between the dowel core 3 and the fastening flange 10 is a spacer disk 12, wherein a portion of the spacer disk 12 projects into the fastening flange 10 and another portion projects into the drilled hole 14. Thus, the spacer disk 12 can accommodate lateral forces – inter alia when the furniture part 13 is under load – and thus on the one hand stabilizes the dowel core 3 and on the other hand, it results in less deformation at the fastening flange 10, giving the system as a whole an increased draw. In this embodiment, the spacer disk 12, which is preferably provided with a dog 18, slots into the fastening flange 10 and thus is detachably fastened to the fastening flange 10. In this embodiment, the dowel sleeve 4 is constructed as a single piece, but in another embodiment the dowel sleeve 4 may also be formed from several parts.

Figure 1b shows a furniture fitting 2 arranged in the drilled holes 14 of a furniture part 13. In this case, the fastening device 1 of the furniture fitting 2 is arranged in two drilled holes 14 which outlie the drilled hole 16 of the hinge cup 11.

Figure 2a shows a furniture fitting 2 with a fastening device 1 with which the furniture fitting can be fastened in a furniture part 13 (not shown). In this case the fastening device 1 has an actuating device 5, which in this embodiment is formed as a hinged lever. In this case the dowel sleeve 4, which can be drawn by means of said lever, outlies the hinge cup 11.

Thus, as can be seen in Figure 2a, when the actuating device 5 is hinged into a horizontal position, as shown in Figure 2b, then the dowel sleeve 4 is drawn by said actuating device 5 in the direction of the actuating device 5 and thus expands on the dowel core 3.

Figure 3a shows a section through a furniture part 13 and its drilled holes 14. In this drilled hole 14 there are only the dowel core 3, the spacer disk 12 and the dowel sleeve 4. The optional spacer disk 12 sits on the dowel core 3 and, when the dowel housing 4 is drawn over the dowel core 3, this means that the dowel core 3 is deformed less at the fastening flange 10, resulting in improved transmission of forces in the system as a whole.

In this embodiment both the dowel core 3 and the dowel sleeve 4 are constructed such that they are radially resilient and primarily consist of a metallic material. In addition, they have longitudinal slits; in this embodiment, the dowel core 3 is provided with a continuous longitudinal slit 6 (not shown) and the dowel sleeve 4 is provided with a plurality of discontinuous longitudinal slits. Both the dowel core 3 and the dowel sleeve 4 are provided with a plurality of axially offset inclined surfaces 7, 7', 7'', 8, 8', 8''. The term "axial direction" in this case means in the direction of the longitudinal axis of the drilled hole 14, which corresponds to the insertion direction of the dowel core 3 and the dowel sleeve 4 of the fastening device. Thus, the shape of the inner sheath surface 9 of the dowel sleeve 4 is essentially – in cross-section – corrugated and the shape of the outer sheath surface 9' of the dowel core 3 is essentially – in cross-section – corrugated, wherein these two corrugated sheath surfaces 9, 9' match each other.

Figure 3b shows a dowel core 3 and a dowel sleeve 4 of a fastening device 1 as just described for Figure 3a, with the exception that in Figure 3b the fastening device 1 has been actuated using the actuating device 5 (see Figure 2a and Figure 2b, as it is not shown here). In this case, it is still only the dowel core 3 and the dowel sleeve 4 of the fastening device 1 that project into the drilled hole 14 of the furniture part 13, and the dowel core 3 is still provided with an optional spacer disk 12, which can accommodate lateral forces on the furniture fitting 2 when it is under load in order, inter alia, to result in less deformation of the dowel core 3 at the fastening flange 10.

By actuating the actuating device 5 (not shown), the dowel sleeve 4 is drawn in the direction of the fastening flange 10 and is expanded on the dowel core 3, thereby anchoring the fastening device 1 in the drilled hole 14 of the furniture part 13. Since the inclined surfaces 7, 7' of the dowel core 3 match the inclined surfaces 8, 8' of the dowel sleeve 4, essentially even expansion of the dowel sleeve 4 occurs at a plurality of axially offset locations. This continuous expansion of the dowel sleeve 4 means that material tolerances of the furniture part 13 – some parts of the same material are somewhat harder, some are somewhat softer - are evened out and thus they do not have a negative effect on the hold of the furniture fitting 2 in the furniture part 13. Furthermore, the radially resilient dowel core 3 ensures that the hold of the furniture fitting 2 in various materials used to make the furniture part 13, such as hardwood, MDF, chipboard, softwood etc., is good, since when a hard material is used to make the furniture part 13, the resilient dowel core 3 deforms inwardly to a greater extent, but in contrast when a softer material is used to make the furniture part 13, the resilient dowel core 3 deforms to a lesser extent. Thus, independently of the material, a constant load is transmitted from the fastening device 1 to the furniture part 12 and nevertheless ensures sufficient hold of the furniture fitting 2 in the furniture part 13.

Both in the expanded condition and in the relaxed condition, the dowel core 3 and the dowel sleeve 4 are in constant surface contact, meaning that when the furniture part 13 is dynamically loaded, the resilient dowel core 3 keeps the fastening device 1 pressed against the furniture part 13

and thus the hold of the furniture fitting 2 in the drilled hole 14 of the furniture part 13 under load is enhanced.

By means of the continuous expansion, i.e. because the dowel sleeve 4 is expanded not just at its lower end, but the expansion occurs evenly along its sheath surface, then load transmission can also occur with drilled holes 14 of a furniture part 13 that are “too big”, and an enhanced hold is ensured, as with regular drilled holes 14.

Furthermore, because even in the relaxed condition the dowel sleeve 4 and the dowel core 3 are in a constant surface contact with each other, the fastening device 1 is held in its position, which means that it is possible to insert the furniture fitting 2 and its fastening device 1 easily into the drilled hole 14 of a furniture part 13, meaning that the furniture fitting 2 can be rapidly mounted in the furniture part 13.

Such a fastening device 1 thus has the positive effect of guaranteeing both a good hold of a furniture fitting 2 in various materials used to make a furniture part 13 and also that the material tolerances of the furniture part 13 do not have a negative effect on the hold of the furniture fitting 2. Furthermore, the force required to actuate the actuating device 5 is kept small, since the resilience of the dowel sleeve 4 and the dowel core 3 has a positive influence on force transmission.

Figure 4 shows an item of furniture 17 with a furniture part 13, on which a furniture fitting 2 is applied by means of a fastening device 1.

Even though these embodiments also show the fastening device 1 exclusively outlying the hinge cup 11, this should not be taken to constitute a restriction. Such a fastening device 1 may also be fastened in any drilled hole of a furniture part 13 in order to fasten a furniture fitting 2 in a furniture part 13.

The illustrated embodiments of fastening devices for furniture fittings used on furniture parts are clearly not limiting in nature, but are simply individual examples of the many possibilities in embodying the inventive concept in a fastening device for furniture fittings.

List of reference numerals:

1	fastening device	
2	furniture fitting	
3	dowel core	
4	dowel sleeve	
5	5	actuating device
6	longitudinal slit	
7, 7', 7''	inclined surface of dowel core 3	
8, 8', 8''	inclined surface of dowel sleeve 4	
9	inner sheath surface of dowel sleeve 4	
10	9'	outer sheath surface of dowel core 3
10	fastening flange	
11	hinge cup	
12	spacer disk	
13	furniture part	
15	14	drilled hole
15	pin	
16	drilled hole for hinge cup 11	
17	piece of furniture	
18	dog on dowel core 3	

CLAIMS

1. A fastening device (1) for furniture fittings (2) on furniture parts (13), having:
 - at least one dowel core (3) that can be inserted into a drilled hole (14) of a furniture part (13), which is arranged inside a dowel sleeve (4); and
 - 5 • an actuating device (5) via which the dowel sleeve (4) is capable of being moved relative to the dowel core (3), by means of which the dowel sleeve expands on the dowel core (3);characterized in that the dowel core (3) and the dowel sleeve (4) are provided with at least two, preferably a plurality of corresponding inclined surfaces (7, 7', 7'' 8, 8', 8'') that
10 are offset in the axial direction, whereby relative movement of the dowel sleeve (4) with respect to the dowel core (3) causes a substantially even expansion of the dowel sleeve (4) at two, preferably a plurality of axially offset locations.
2. The fastening device as claimed in claim 1, characterized in that the dowel core (3) is constructed as a spring core sleeve which is preferably essentially cylindrical.
- 15 3. The fastening device as claimed in claim 1 or claim 2, characterized in that the dowel core (3) is provided with at least one, preferably essentially axial, longitudinal continuous slit (6).
4. The fastening device as claimed in one of claims 1 to 3, characterized in that the dowel core (3) is constructed at least in part, preferably essentially entirely, from a metallic
20 material, preferably spring steel.
5. The fastening device as claimed in one of claims 1 to 4, characterized in that the dowel core (3) is provided with at least one inclined surface (7, 7', 7'').
6. The fastening device as claimed in one of claims 1 to 5, characterized in that the dowel core (3) is provided with a plurality of inclined surfaces (7, 7', 7'') that are offset in an
25 axial direction.

7. The fastening device as claimed in one of claims 1 to 6, characterized in that the dowel sleeve (4) is constructed such that it is radially resilient.
8. The fastening device as claimed in one of claims 1 to 7, characterized in that the dowel sleeve (4) is at least partially, preferably essentially completely, constructed from a
5 metallic material, preferably spring steel.
9. The fastening device as claimed in one of claims 1 to 8, characterized in that the dowel sleeve (4) is provided with at least one inclined surface (8, 8', 8'').
10. The fastening device as claimed in one of claims 1 to 9, characterized in that the dowel sleeve (4) is provided with a plurality of axially offset inclined surfaces (8, 8', 8'').
- 10 11. The fastening device as claimed in one of claims 1 to 10, characterized in that the dowel core (3) is constructed such that it is radially resilient.
12. The fastening device as claimed in one of claims 1 to 11, characterized in that the dowel sleeve (4) has an essentially – viewed in cross-section – corrugated inner sheath surface (9), and the dowel core (3) has an essentially – viewed in cross-section – corrugated outer
15 sheath surface (9') which matches the inner sheath surface (9).
13. The fastening device as claimed in one of claims 1 to 12, characterized in that the dowel sleeve (4) and the dowel core (3) are in constant mutual surface contact both in the expanded condition and in the relaxed condition.
14. The fastening device as claimed in one of claims 1 to 13, characterized in that the
20 furniture fitting (2) is provided with a fastening flange (10), wherein the dowel core (3) is arranged on the fastening flange (10) and the dowel sleeve (4) is arranged such that it can be drawn by means of the actuating device (5) in the direction of the fastening flange (10).
15. The fastening device as claimed in one of claims 1 to 14, characterized in that the
25 furniture fitting (2) is provided with two dowel cores (3) and two dowel sleeves (4) that can be inserted into two drilled holes (14) of a furniture part (13).

16. The fastening device as claimed in one of claims 1 to 15, characterized in that the actuating device (5) is constructed as a hinged lever.
17. The fastening device as claimed in one of claims 1 to 16, characterized in that the furniture fitting (2) is provided with a hinge cup (11), wherein the fastening device (1) is
5 arranged to outlie the hinge cup (11).
18. The fastening device as claimed in one of claims 1 to 17, characterized in that only the dowel core (3) and the dowel sleeve (4) of the fastening device (1) project into the respective drilled hole (14) of the furniture part (13).
19. The fastening device as claimed in one of claims 1 to 18, characterized in that a spacer
10 disk (12) is arranged between the dowel core (3) and the fastening flange (10).
20. A furniture fitting (2) with a fastening device (1) as claimed in one of claims 1 to 19.
21. An item of furniture (17) provided with a fastening device (1) as claimed in one of claims 1 to 19.

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Fig. 1a

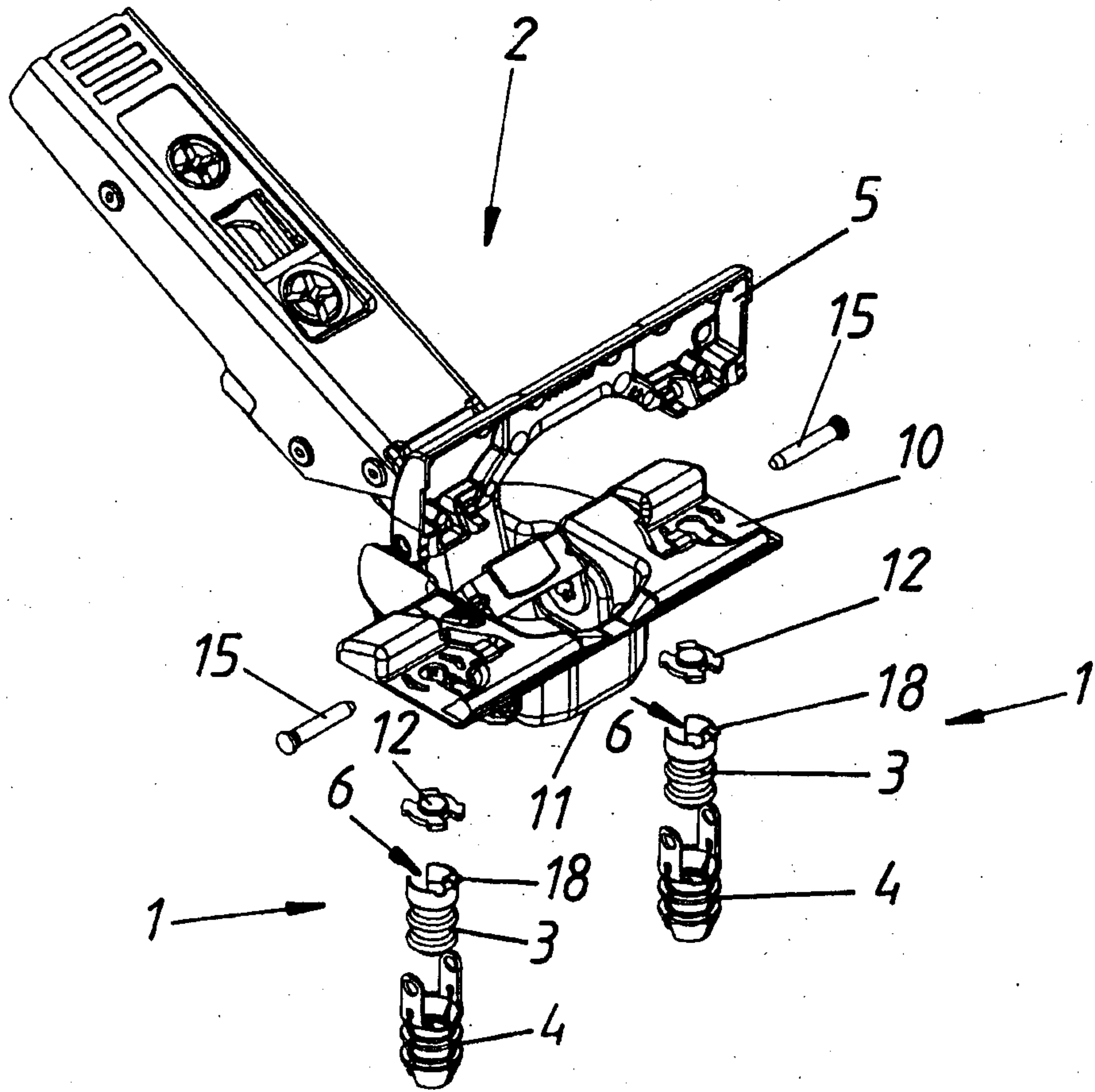


Fig. 1b

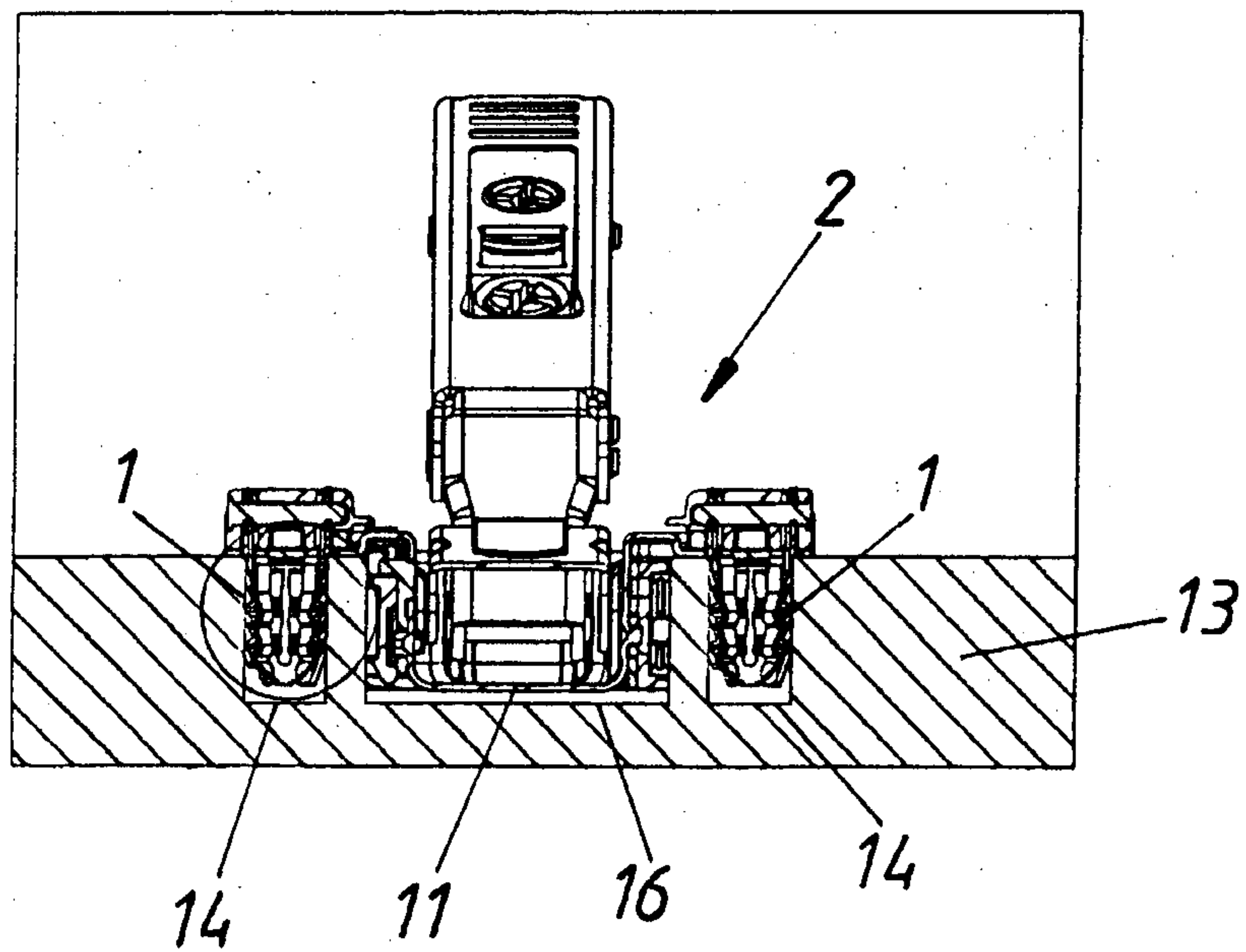


Fig. 2a

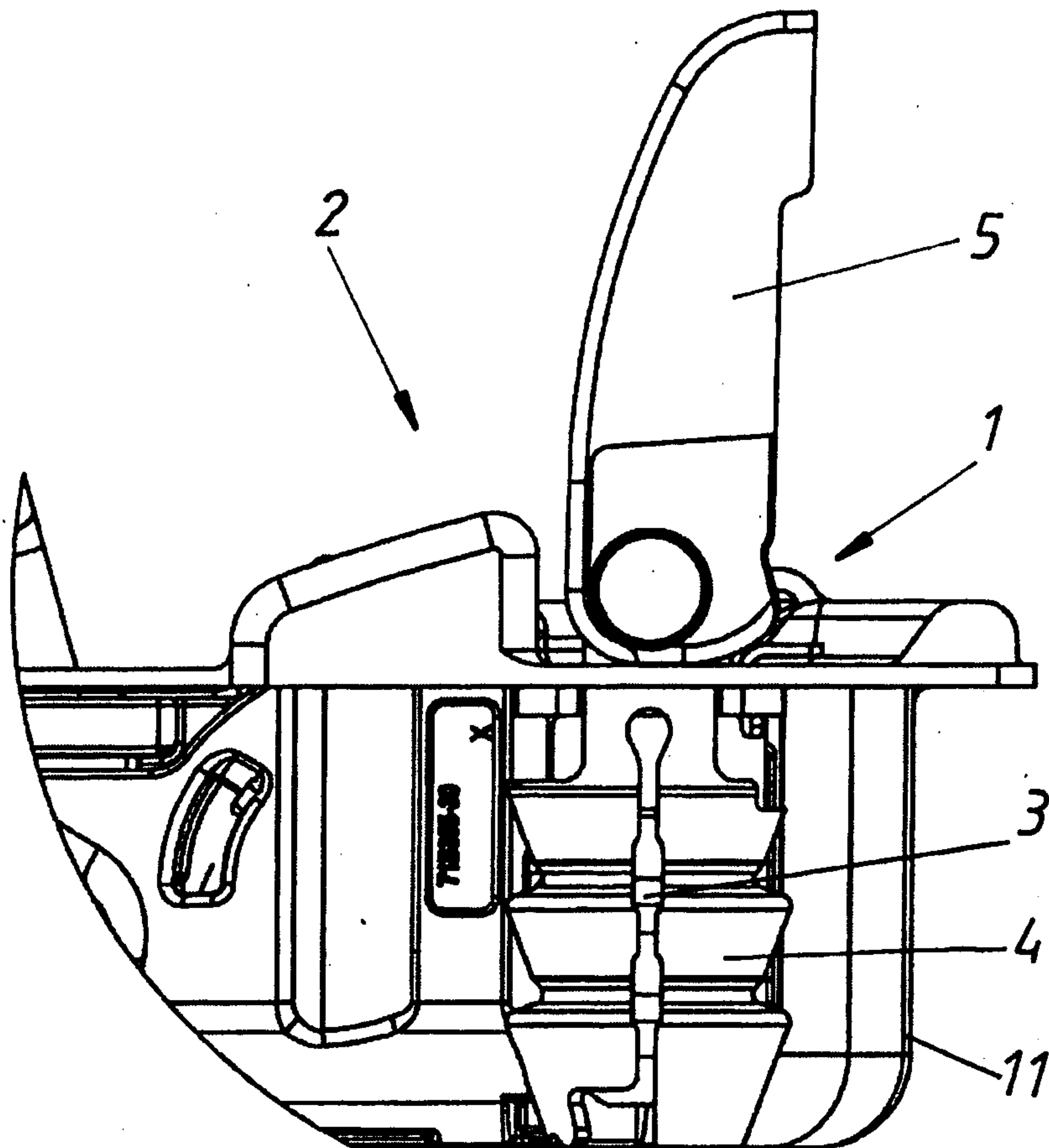


Fig. 2b

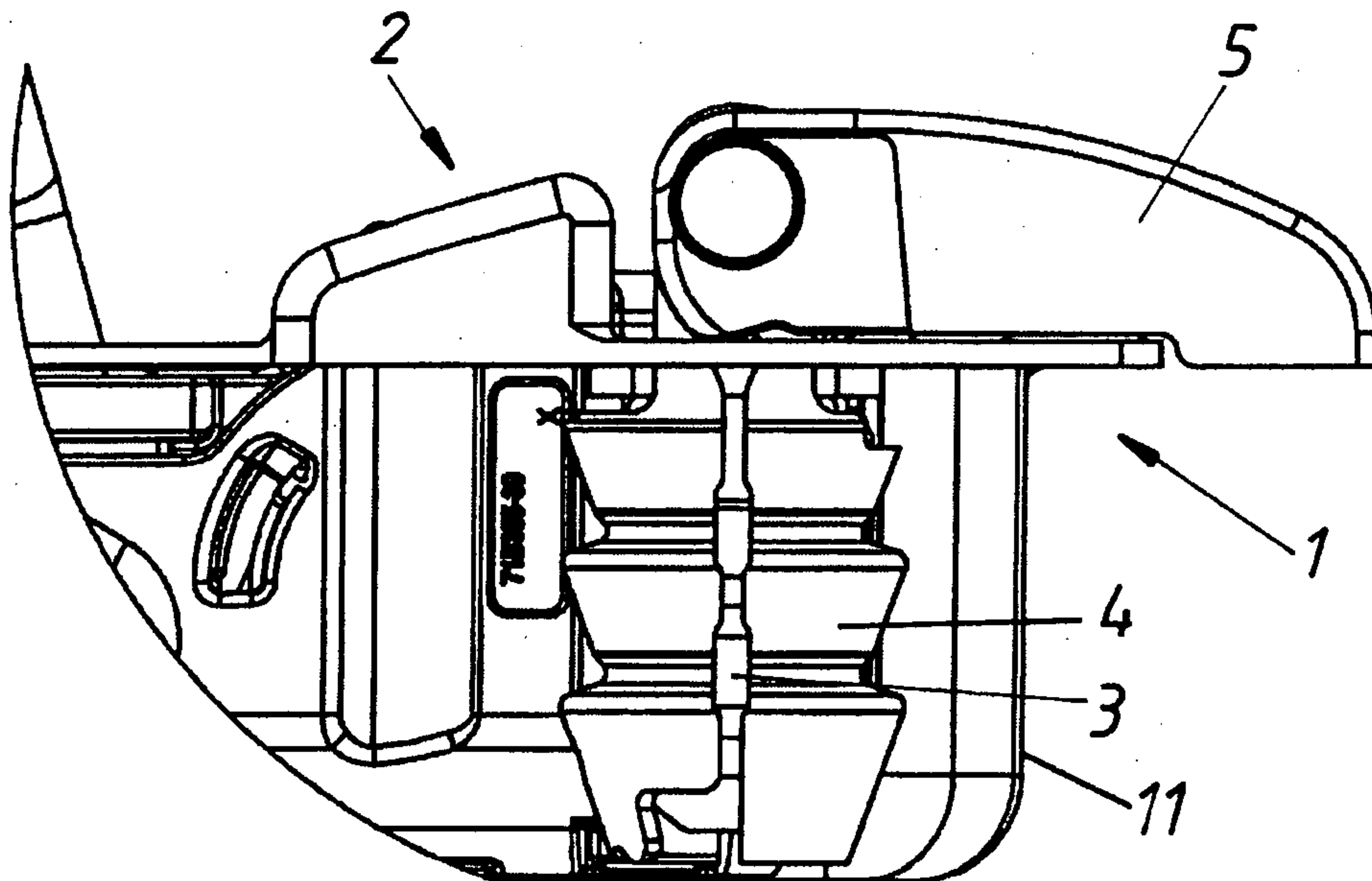


Fig. 4

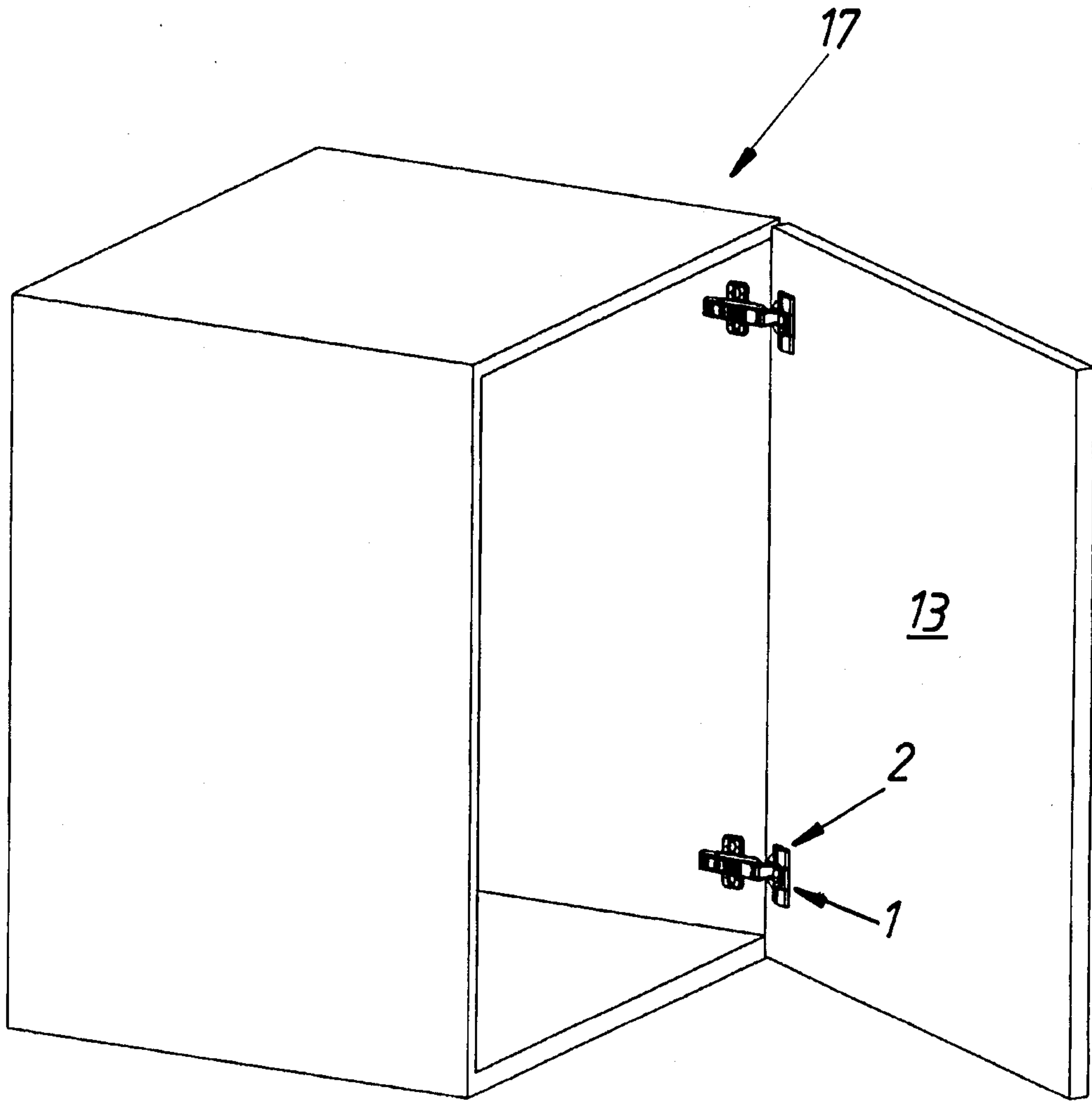


Fig. 1a

