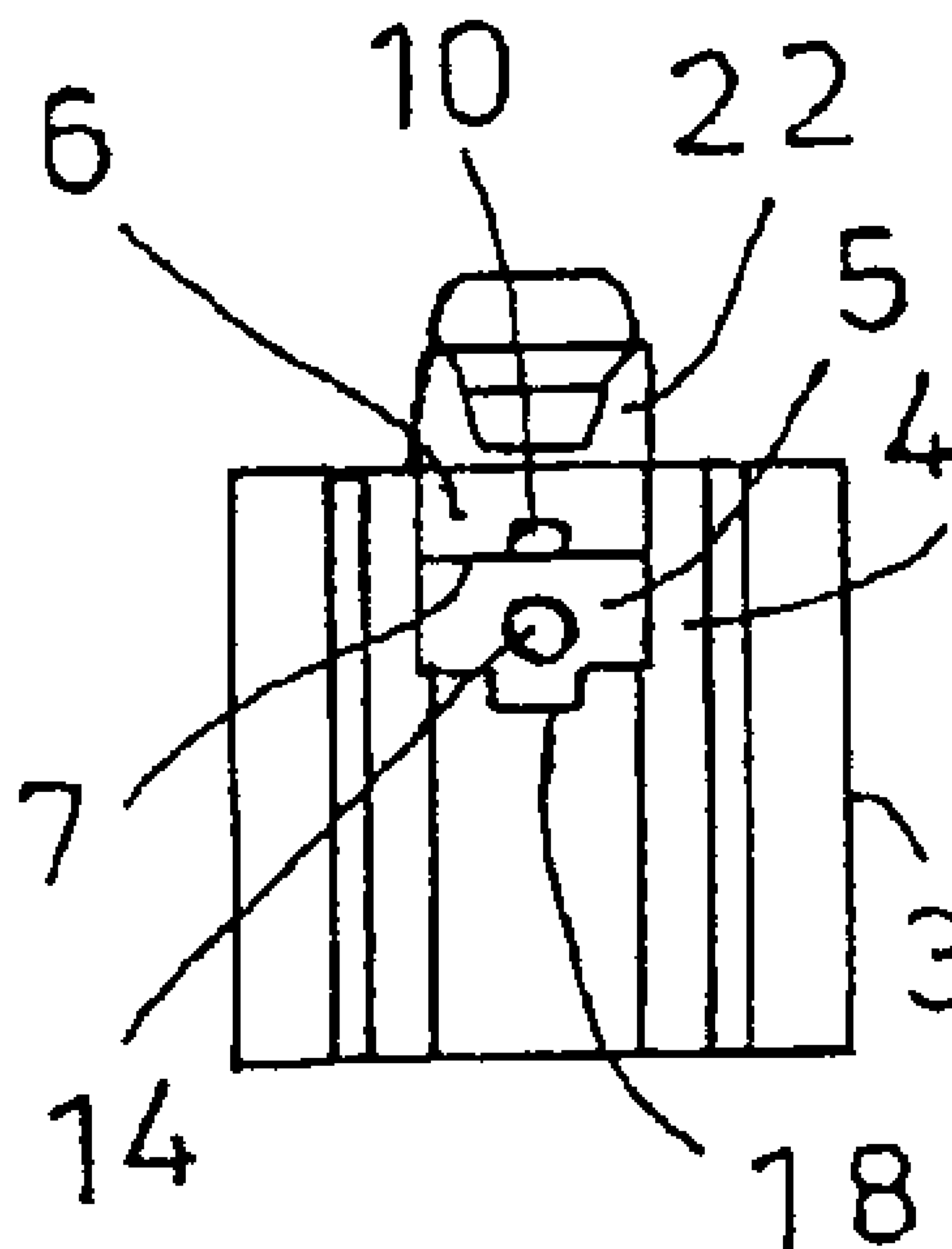




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(54) Titre : PLAQUE DE COUPE FIXEE EN CORRESPONDANCE GEOMETRIQUE SUR UNE PLAQUE D'APPUI
(54) Title: CUTTING PLATE SECURED BY INTERLOCK ON A SUPPORT PLATE



(57) Abrégé/Abstract:

The invention relates to a cutting tool for machining processes, in essence composed of a clamping holder (3) with a recess (4) for accepting a support plate (5) and with a cutting plate (6) secured on the support plate (5) by way of a clamping claw (22). It is proposed, for secure fastening of the cutting plate (6) on the clamping holder (3), that an interlocking tongue-and-groove connection is used for positioning of the cutting plate (6) on the support plate (5).



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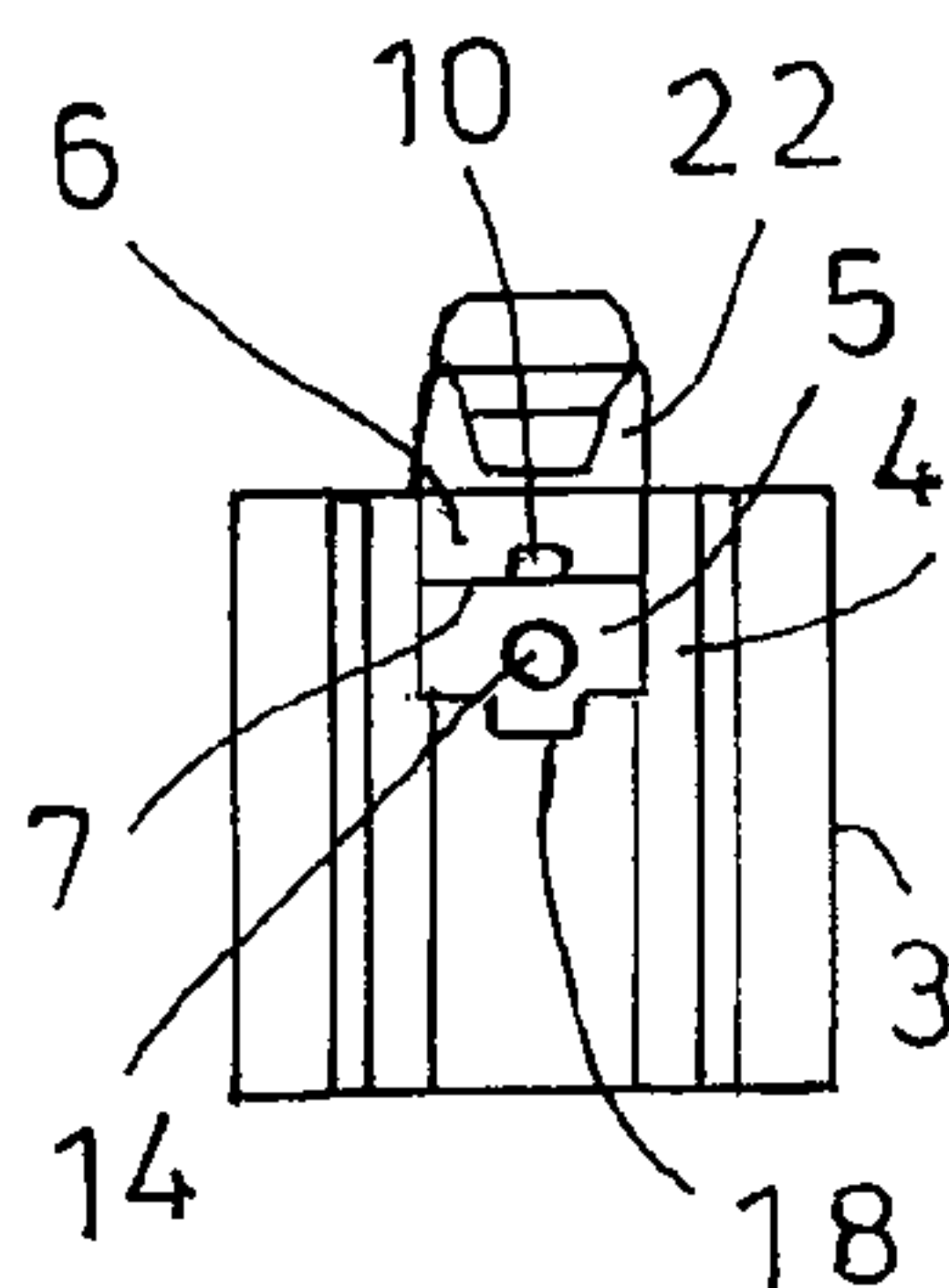
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(DE).**Erklärung gemäß Regel 4.17:**— *Erfindererklärung (Regel 4.17 Ziffer iv)***Veröffentlicht:**— *mit internationalem Recherchenbericht**Zur Erklärung der Zweibuchstaben-Codes und der anderen Ab-
kürzungen wird auf die Erklärungen ("Guidance Notes on Co-
des and Abbreviations") am Anfang jeder regulären Ausgabe der
PCT-Gazette verwiesen.*(54) **Title:** CUTTING PLATE SECURED BY INTERLOCK ON A SUPPORT PLATE(54) **Bezeichnung:** FORMSCHLÜSSIG BEFESTIGTE SCHNEIDPLATTE AUF EINER STÜTZPLATTE(57) **Abstract:** The invention relates to a cutting tool for machining processes, in essence com-
posed of a clamping holder (3) with a recess (4) for accepting a support plate (5) and with a cutting
plate (6) secured on the support plate (5) by way of a clamping claw (22). It is proposed, for secure
fastening of the cutting plate (6) on the clamping holder (3), that an interlocking tongue-and-groove
connection is used for positioning of the cutting plate (6) on the support plate (5).(57) **Zusammenfassung:** Die Erfindung betrifft ein Schneidwerkzeug zur spanabhebenden Be-
arbeitung, im wesentlichen bestehend aus einem Klemmhalter (3) mit einer Ausnehmung (4) zur
Aufnahme einer Stützplatte (5) und mit einer Schneidplatte (6), die auf der Stützplatte (5) über eine
Spannpratze (22) befestigt ist. Zur sicheren Befestigung der Schneidplatte (6) auf dem Klemmhalter
(3) wird vorgeschlagen, dass die Schneidplatte (6) über eine formschlüssige Nut-Feder-Verbindung
auf der Stützplatte (5) aufsitzt.

Cutting plate secured by interlock on a support plate

The invention relates to a cutting tool for machining processes according to the preamble of Claim 1, and to a cutting plate for securing to the cutting tool.

- 5 Figs. 1 a, b, c show a support plate according to the prior art, in this case for receiving circular cutting plates. For this purpose the support plate 1 is provided with a 120 degree prism 2 in which a cutting plate (not shown here) is inserted (cf. EP 0 350 938 A1).
- 10 With a cutting plate thickness of, for example, 4.76 mm, the cutting plate is very thin at the throat of the prism. In addition the tolerances of the cutting plate with respect to the support plate lead to inexact positioning. An adequate seating of the plate is therefore not ensured.
- 15 At present this applies in particular to CBN cutting plates, that is, cutting plates made of cubic boron nitride.

It is the object of the invention to specify a cutting tool according to the preamble of Claim 1, and an associated
20 cutting plate in which the fastening of the cutting plate to the cutting tool is substantially improved.

According to the invention this object is achieved by the features of Claims 1 and 8.

Because the cutting plate is positioned on the support
25 plate by means of an interlocking tongue-and-groove connection, fastening is substantially improved.

In a configuration according to the invention the cutting plate has on its underside oriented towards the support plate a groove in which a feather key engages form-
30 fittingly, which feather key is either formed integrally with the support plate or is fastened therein or thereon.

The upper side of the support plate oriented towards the cutting plate advantageously has a slot into which the feather key is inserted form-fittingly as a separate component.

- 5 The feather key is preferably made of a ceramic material.

In one configuration, the cutting plate has on its underside oriented towards the support plate a raised feather key which engages form-fittingly in a corresponding groove in the upper side of the support plate oriented
10 towards the cutting plate.

The support plate is advantageously fastened to the clamping holder, as far as possible, by means of a screw, the support plate being pulled into its seating in the recess by tightening of the screw.

- 15 In a configuration, the support plate has on its underside oriented towards the clamping holder a tongue which engages in a corresponding groove in the clamping holder, or vice versa.

A cutting plate according to the invention for machining
20 processes, with an upper side having a cutting edge and an underside for being supported on a cutting tool, in particular for use in the cutting tool described above, is characterised according to the invention in that the underside of the cutting plate has a groove for fastening
25 of the cutting plate to the support by means of an interlocking tongue-and-groove connection.

The groove on the underside is advantageously formed continuously. The material of the cutting plate consists preferably of a ceramic. It may also be a cubic boron
30 nitride (CBN) or a metal.

Through the interposition according to the invention of an interlocking tongue-and-groove connection between cutting

plate and support plate, improved seating of the plate is ensured because of the flat-ground cutting plate and the guidance in the key. A further advantage lies in the fact that the support plate can be screwed from the front and
5 the groove wedge can also be designed in a ceramic material, which results in less warping in the holder through the heat generated during machining.

The invention is described in more detail below with reference to the Figures.

10 Figs. 2 a, b, c show a clamping holder 3 with a recess 4 for receiving a support plate 5. The support plate 5 is itself shown in Figs. 3 a, b, c, d. Figs. 4 a, b, c show the associated feather key 9 and Fig. 5 shows a cutting plate 6 according to the invention.

15 The cutting plate 6 is preferably a circular cutting plate but may also have other geometries; it has a groove 10 in its underside 7 oriented towards the support plate 5 (cf. in particular Fig. 5). The cutting plate 6 is preferably made of a ceramic material, but may also consist of another
20 material, for example metal. The cutting plate 6 is fastened to the clamping holder 3 by means of a clamping claw 22.

A support plate 5, shown in detail in Fig. 3, is inserted in a recess 4 of the clamping holder 3. The support
25 plate 5 has on its upper side 8 oriented towards the cutting plate 6 a feather key 9, the width 9a of which is adapted to the groove 10 in the cutting plate 6.

The feather key 9 is preferably a separate component (cf. Fig. 4) and is made of a ceramic material.

30 In this preferred embodiment a slot 11, into which the feather key 9 is inserted, is formed in the upper side 8 of the support plate 5.

The support plate 5 is screwed to the clamping holder 3. For this purpose it has a bore 12 with a conically decreasing diameter 13. A screw 14 can be inserted in this bore 12, the head of which screw 14 bears against the
5 conically decreasing diameter 13 and the thread of which screw 14 engages in a corresponding screw thread in the clamping holder 3. The support plate 5 is pulled into its seating in the recess 4 of the clamping holder 3 by tightening of the screw 14.

10 On its underside 16 oriented towards the clamping holder 3 the support plate 5 has a tongue 17 which engages in a corresponding groove 18 in the clamping holder 3. This groove 18 (cf. Fig. 2 c) serves to guide the support plate 5 on the clamping holder 3.

15 The support *[sic]* plate 6 (cf. Fig. 5) is configured here as a circular cutting plate and is provided with a flat upper side 19. The groove 10 in its underside 7 is preferably formed continuously. A cubic boron nitride (CBN) is preferably suitable as the material for this
20 cutting plate 6. However, it may consist of a different material. The flank 20 of the cutting plate 6 preferably has a conical configuration, the diameter of the cutting plate 6 decreasing in the direction towards the groove 10.

The feather key 9 (cf. Fig. 4) is provided with a
25 chamfer 21 on each of its edges and preferably consists of a ceramic material.

Claims

1. A cutting tool for machining processes, consisting essentially of a clamping holder (3) with a recess (4) for receiving a support plate (5), and with a cutting plate (6) which is secured to the support plate (5) by means of a clamping claw (22), characterised in that the cutting plate (6) is positioned on the support plate by means of an interlocking tongue-and-groove connection.
2. A cutting tool according to Claim 1, characterised in that the cutting plate (6) has on its underside (7) oriented towards the support plate (5) a groove (10) in which a feather key (9) engages in a form-fitting manner, which feather key (9) is either formed integrally with the support plate (5) or is fastened therein or thereon.
3. A cutting tool according to Claim 2, characterised in that the upper side (8) of the support plate (5) oriented towards the cutting plate (6) has a slot (11) into which the feather key (9) is inserted in a form-fitting manner as a separate component.
4. A cutting tool according to Claim 2 or 3, characterised in that the feather key (9) is made of a ceramic material.
5. A cutting tool according to any one of Claims 1 to 4, characterised in that the cutting plate (6) has on its underside (7) oriented towards the support plate (5) a raised feather key (5) which engages in a form-fitting manner in a corresponding groove (11) in the upper side (8) of the support plate (5) oriented towards the cutting plate (6).
6. A cutting tool according to any one of Claims 1 to 5, characterised in that the support plate (5) is secured

to the clamping holder by means of a screw (14), the support plate (5) being pulled into its seating in the recess by tightening of the screw (14).

7. A cutting tool according to any one of Claims 1 to 6, characterised in that the support plate (5) has on its underside (16) oriented towards the clamping holder (3) a tongue (17) which engages in a corresponding groove (18) in the clamping holder (3) or vice versa.
8. A cutting plate for machining processes, with an upper side (19) having a cutting edge and an underside (7) for being supported on a cutting tool, in particular for use in a cutting tool according to any one of Claims 1 to 7, characterised in that the underside (7) of the cutting plate (6) has a groove (10) for fastening the cutting plate (6) to the support by means of an interlocking tongue-and-groove connection.
9. A cutting plate according to Claim 8, characterised in that the groove (10) on the underside (7) is formed continuously.
10. A cutting plate according to Claim 8 or 9, characterised in that the material of the cutting plate (6) is a ceramic material or a cubic boron nitride.

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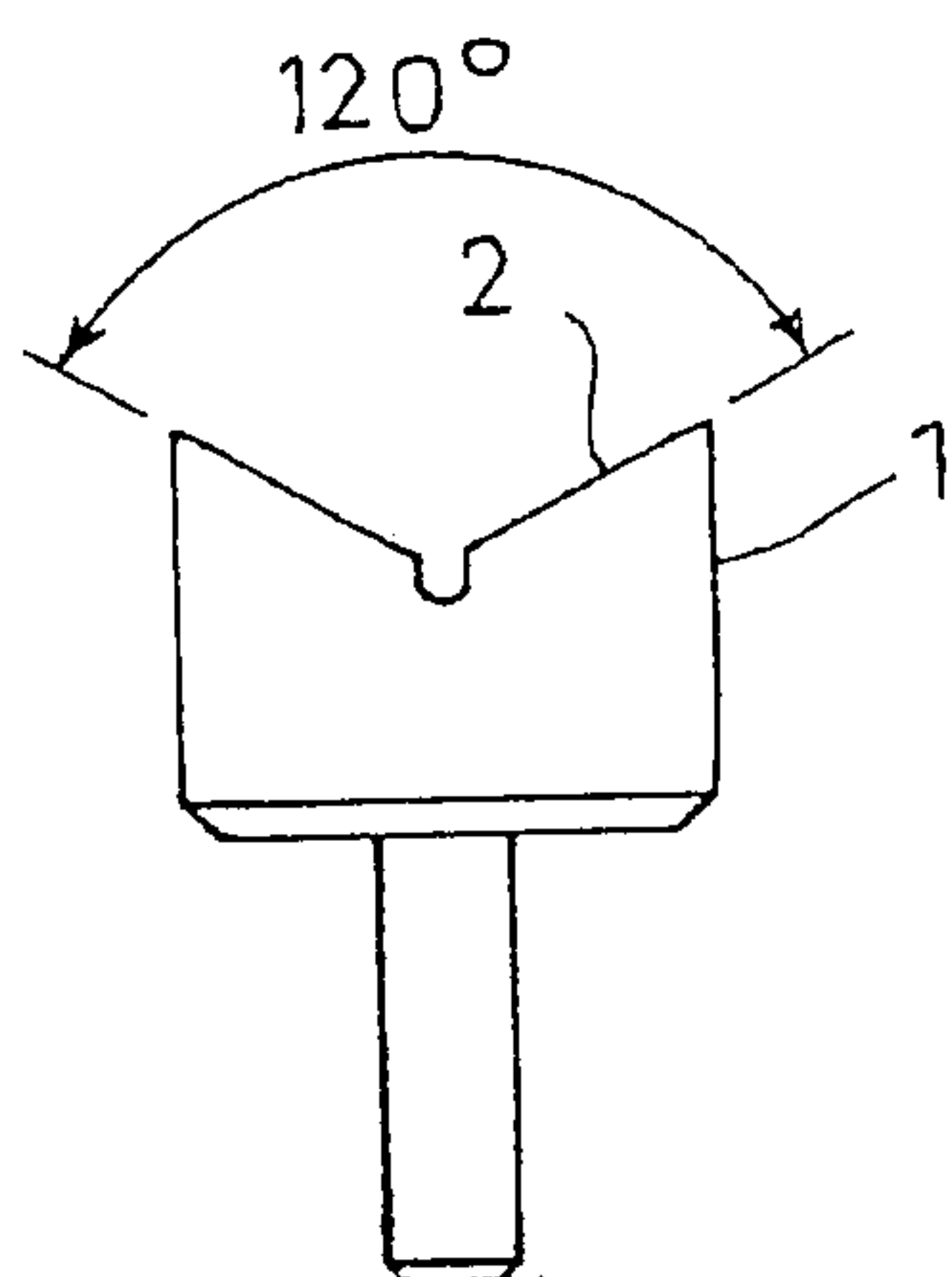


Fig. 1a

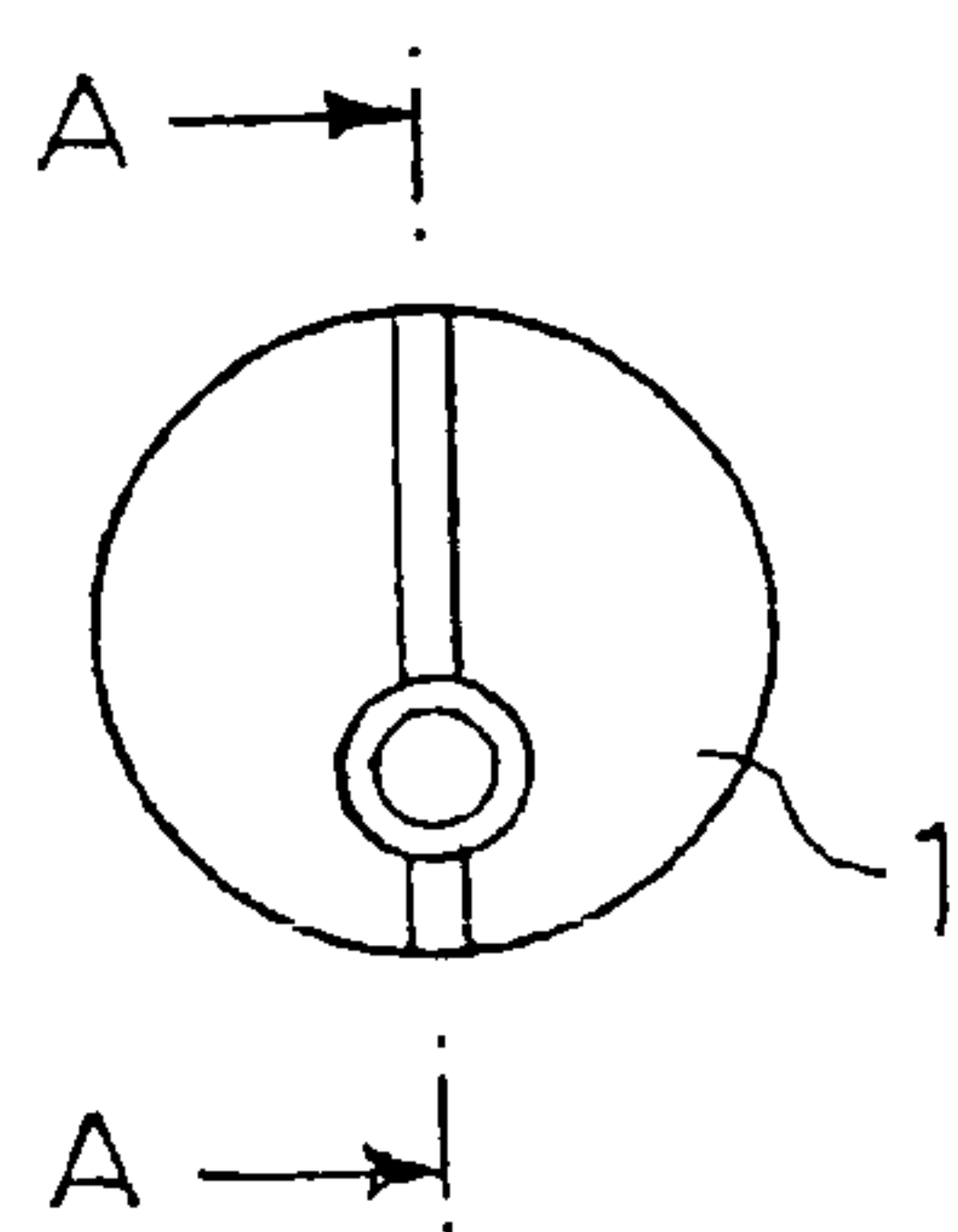


Fig. 1b

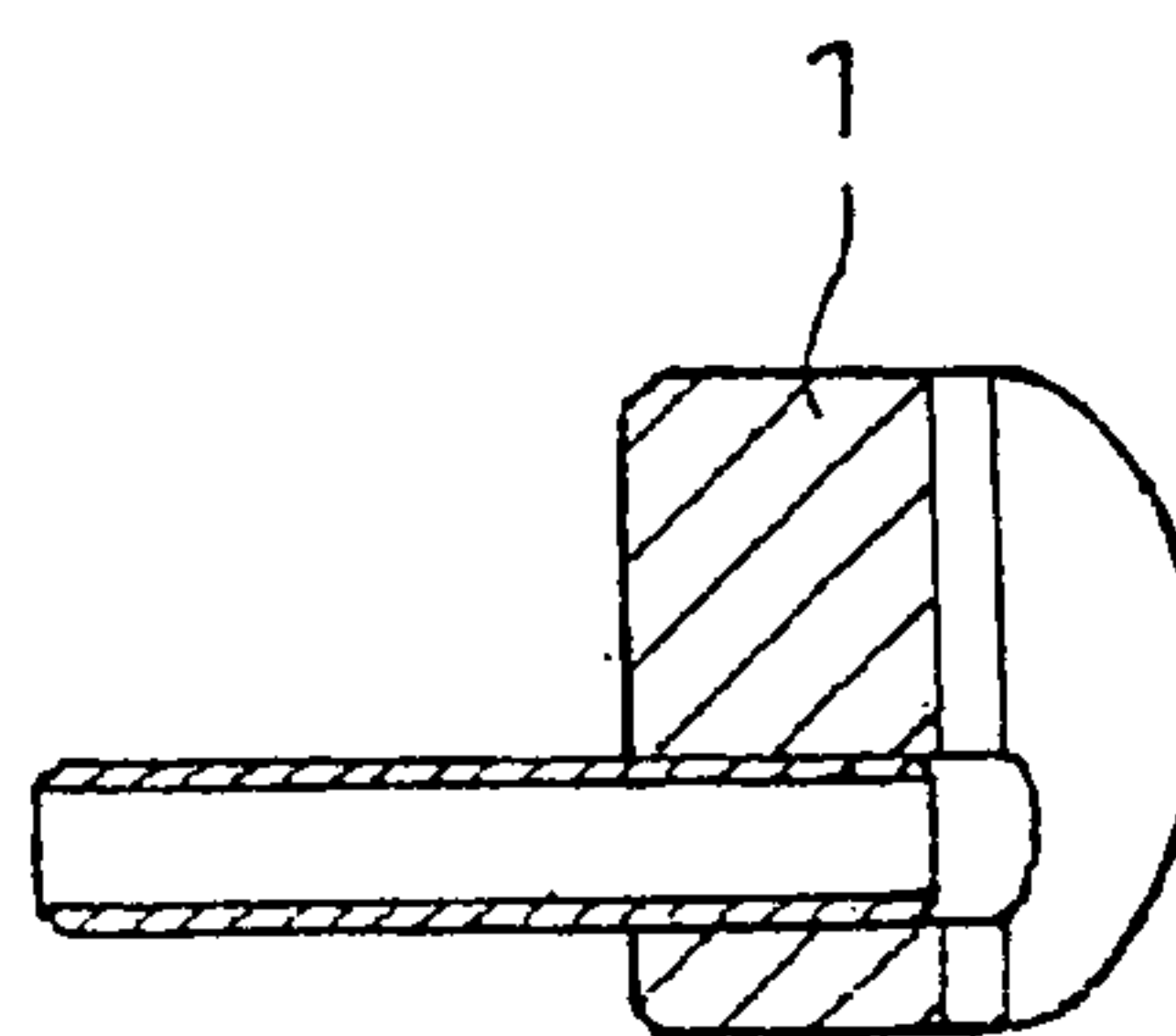


Fig. 1c

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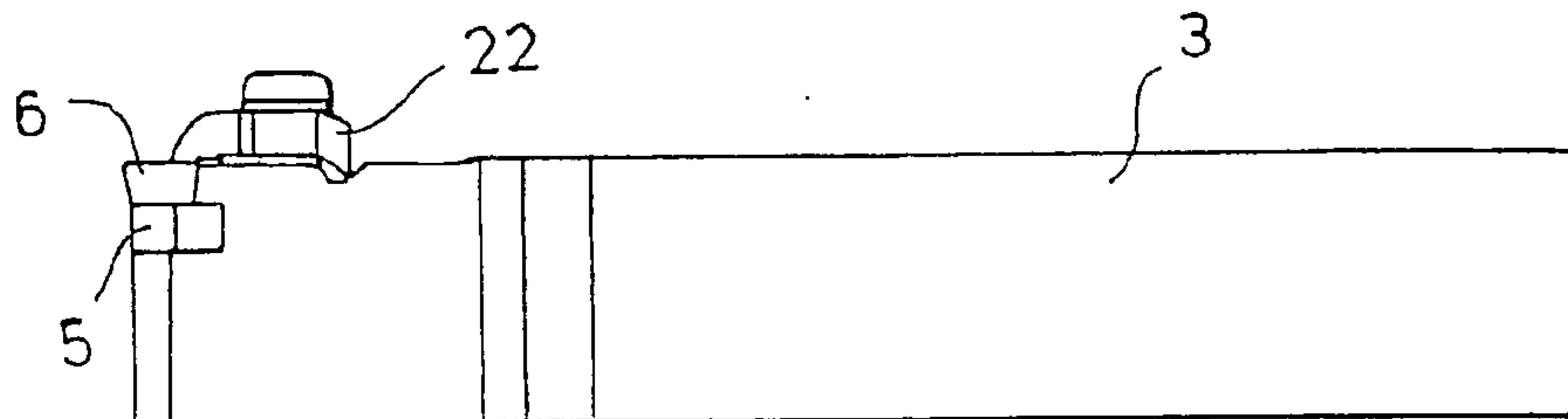


Fig. 2a

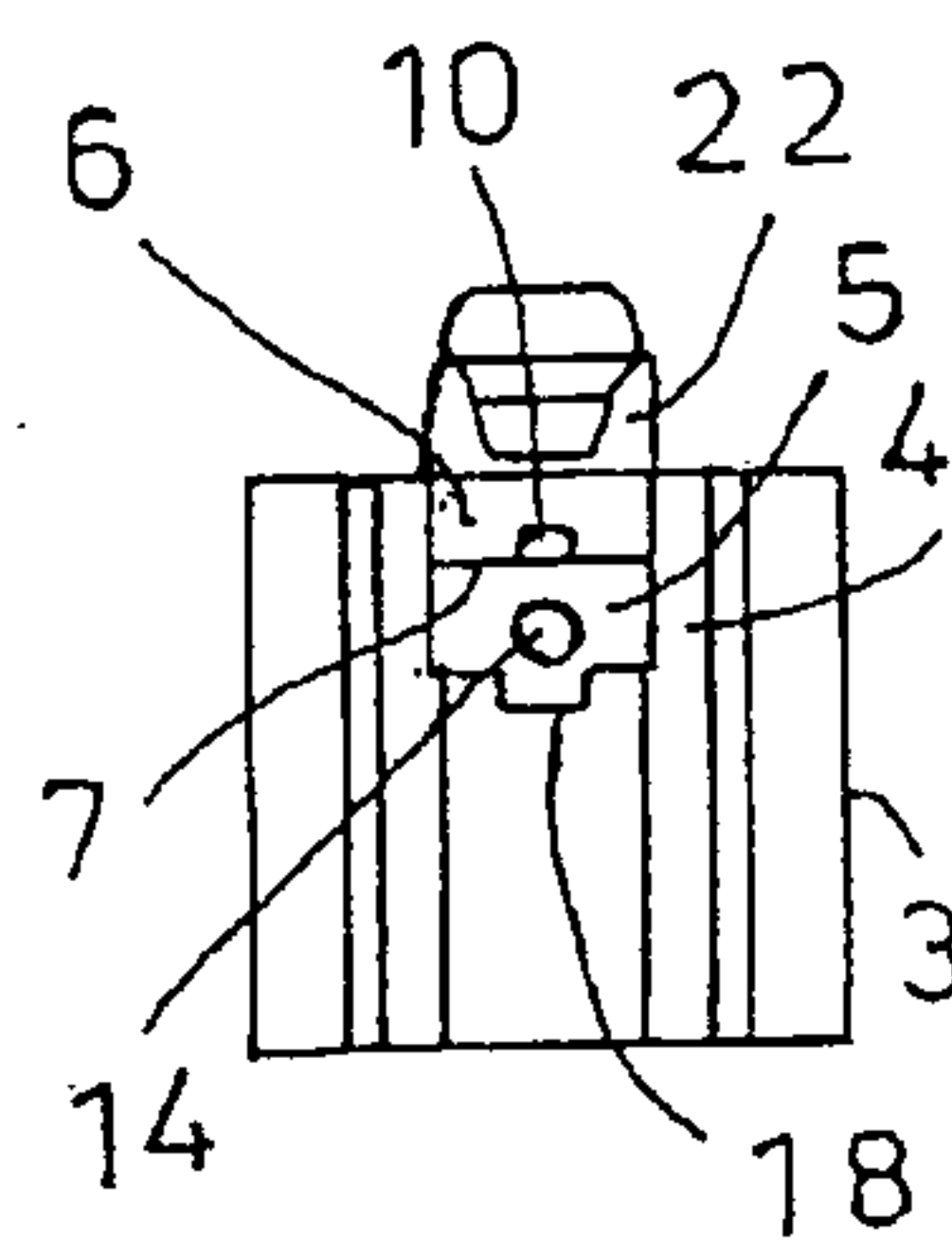


Fig. 2c

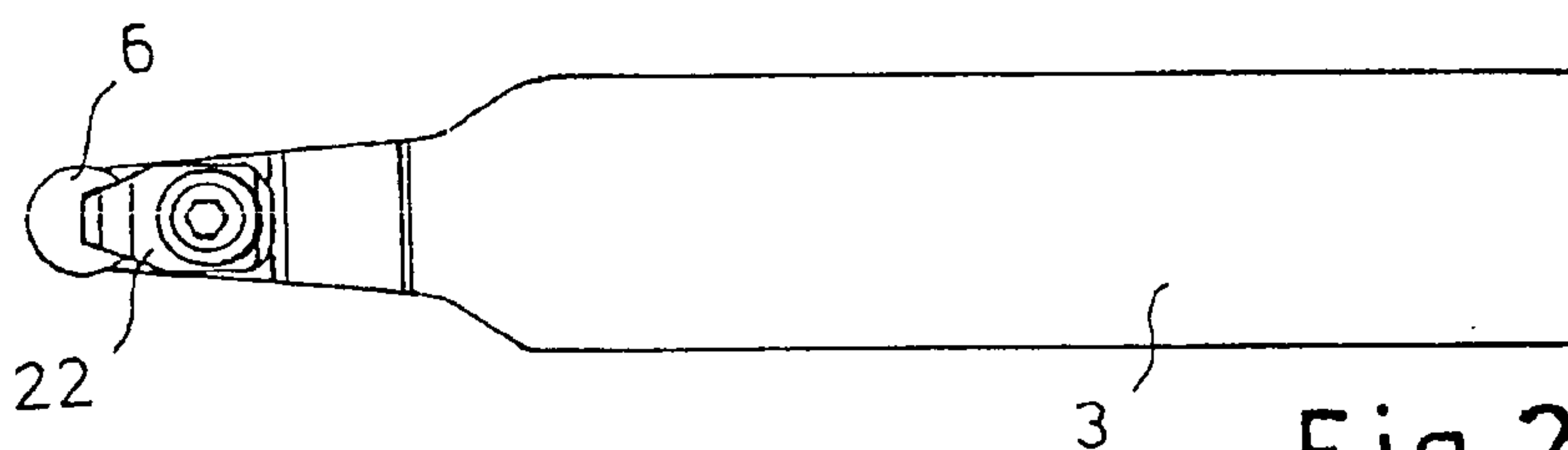


Fig. 2b

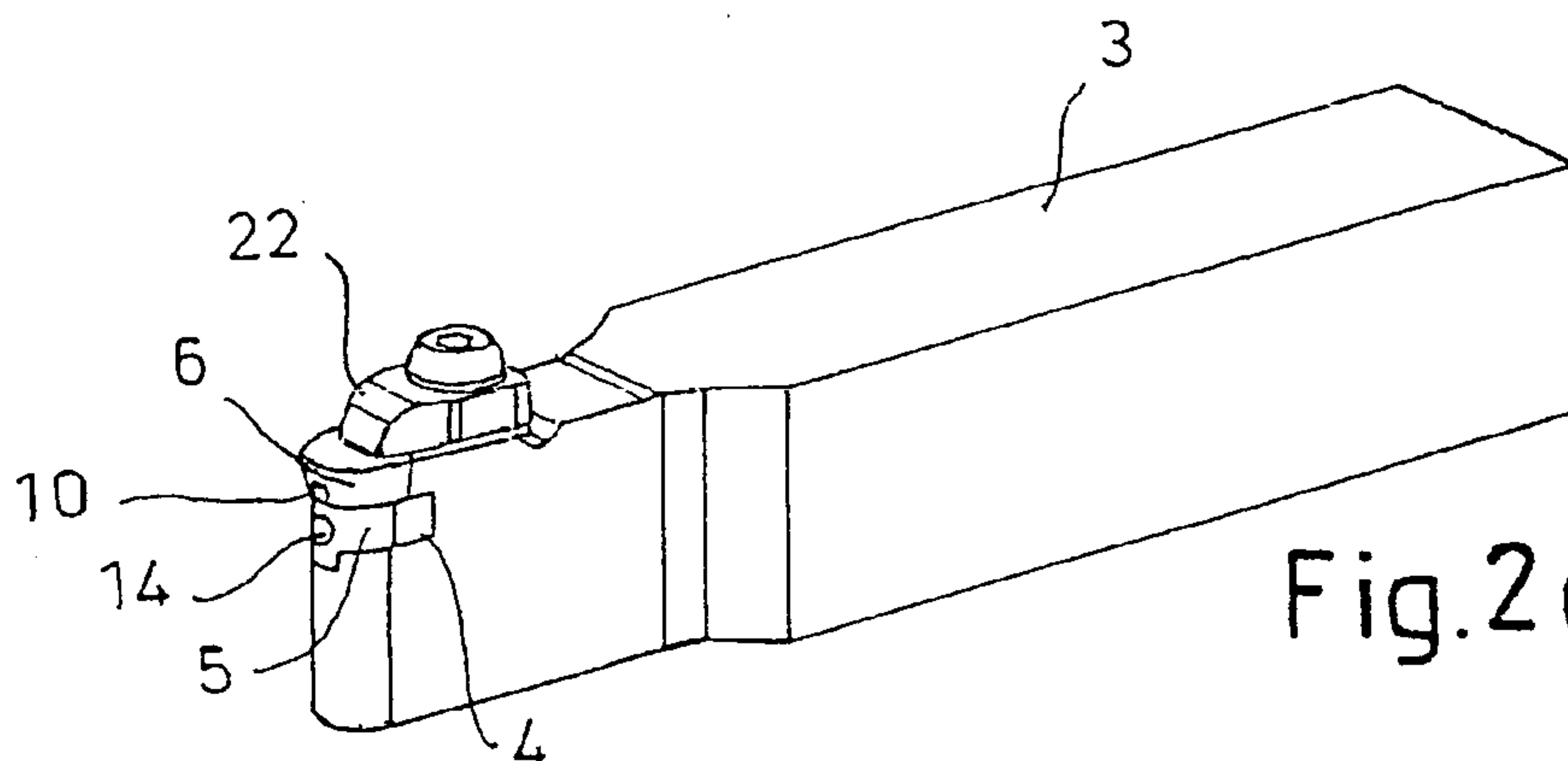


Fig. 2d

3 / 5

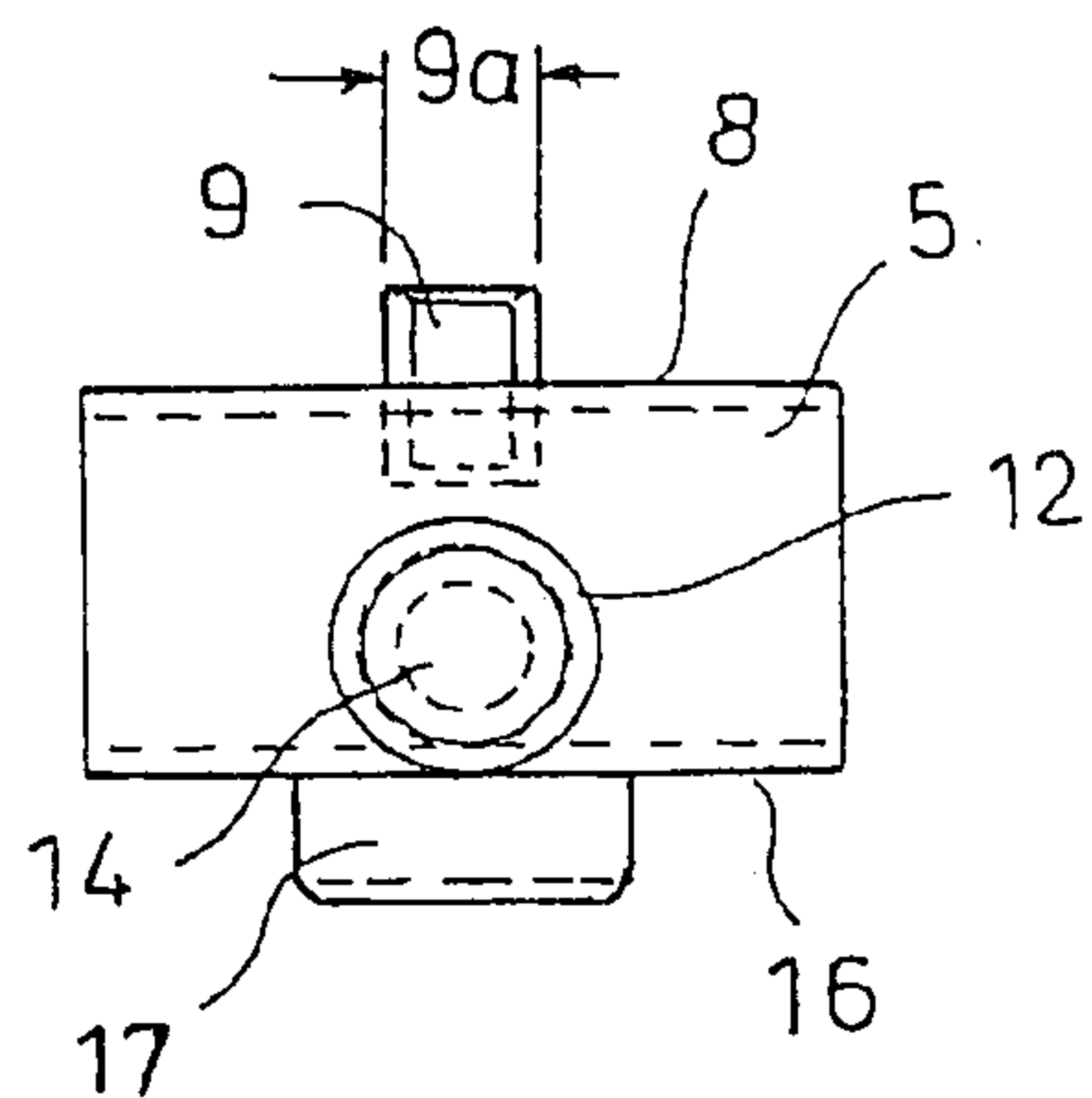


Fig. 3b

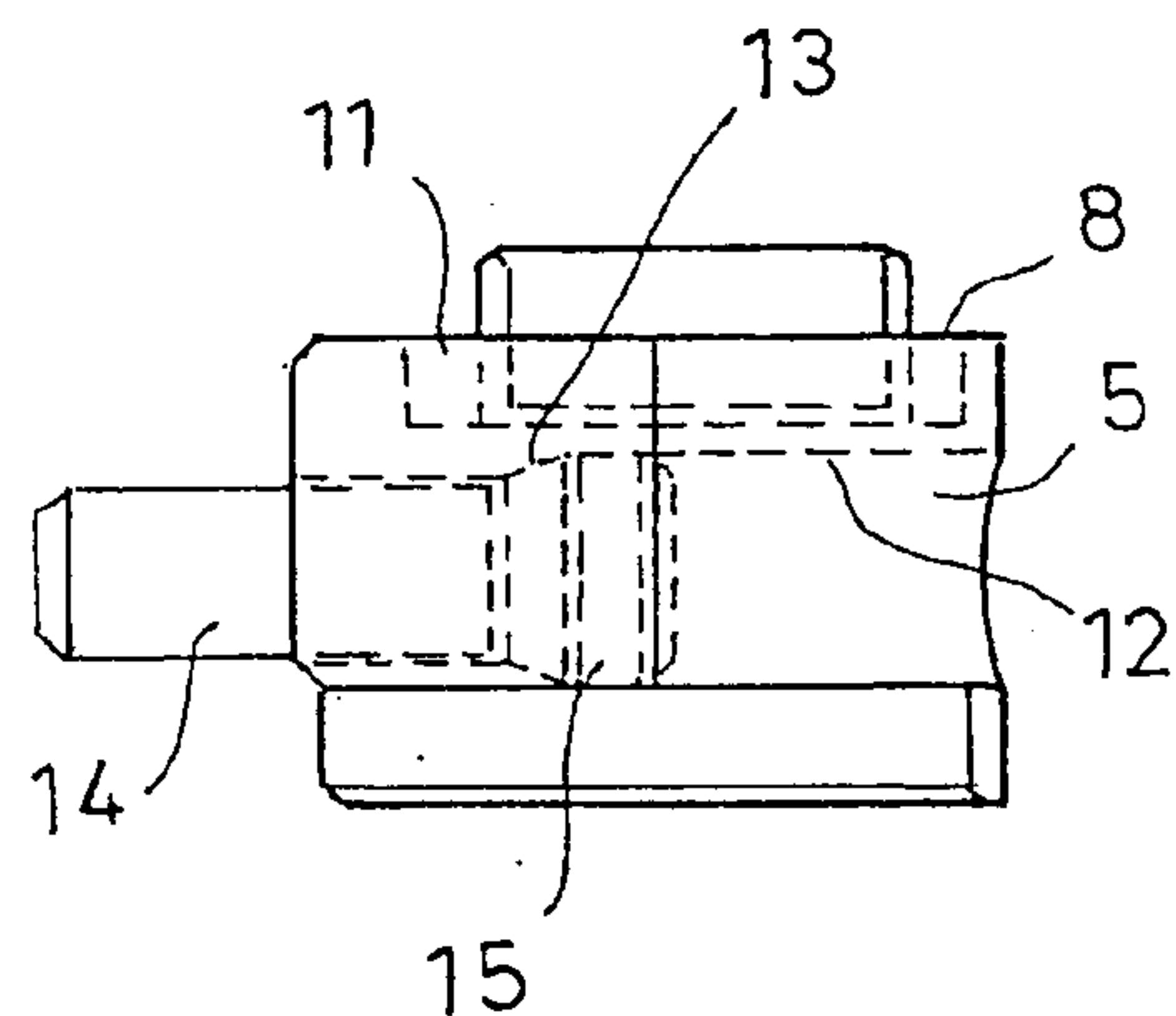


Fig. 3c

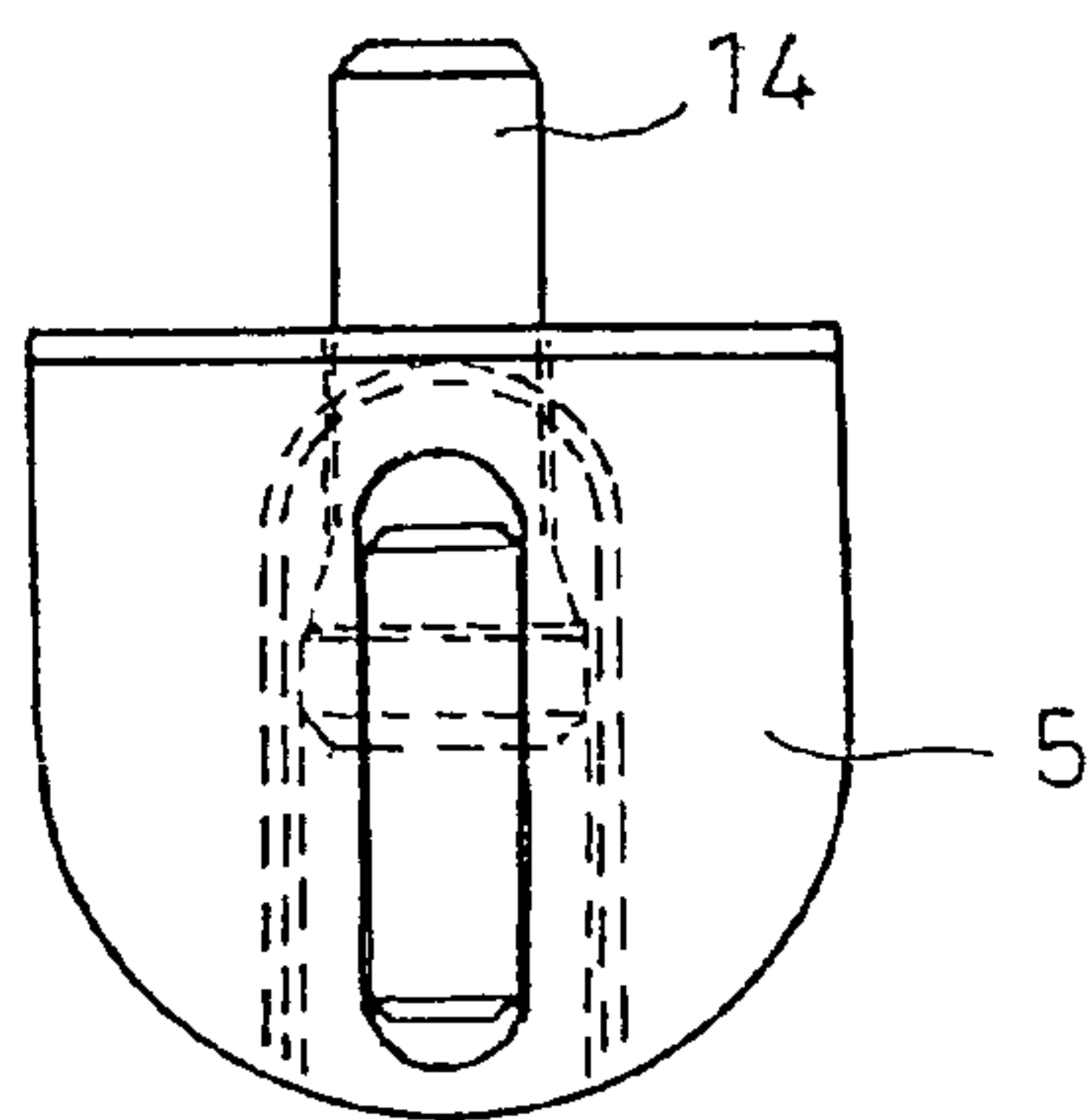


Fig. 3a

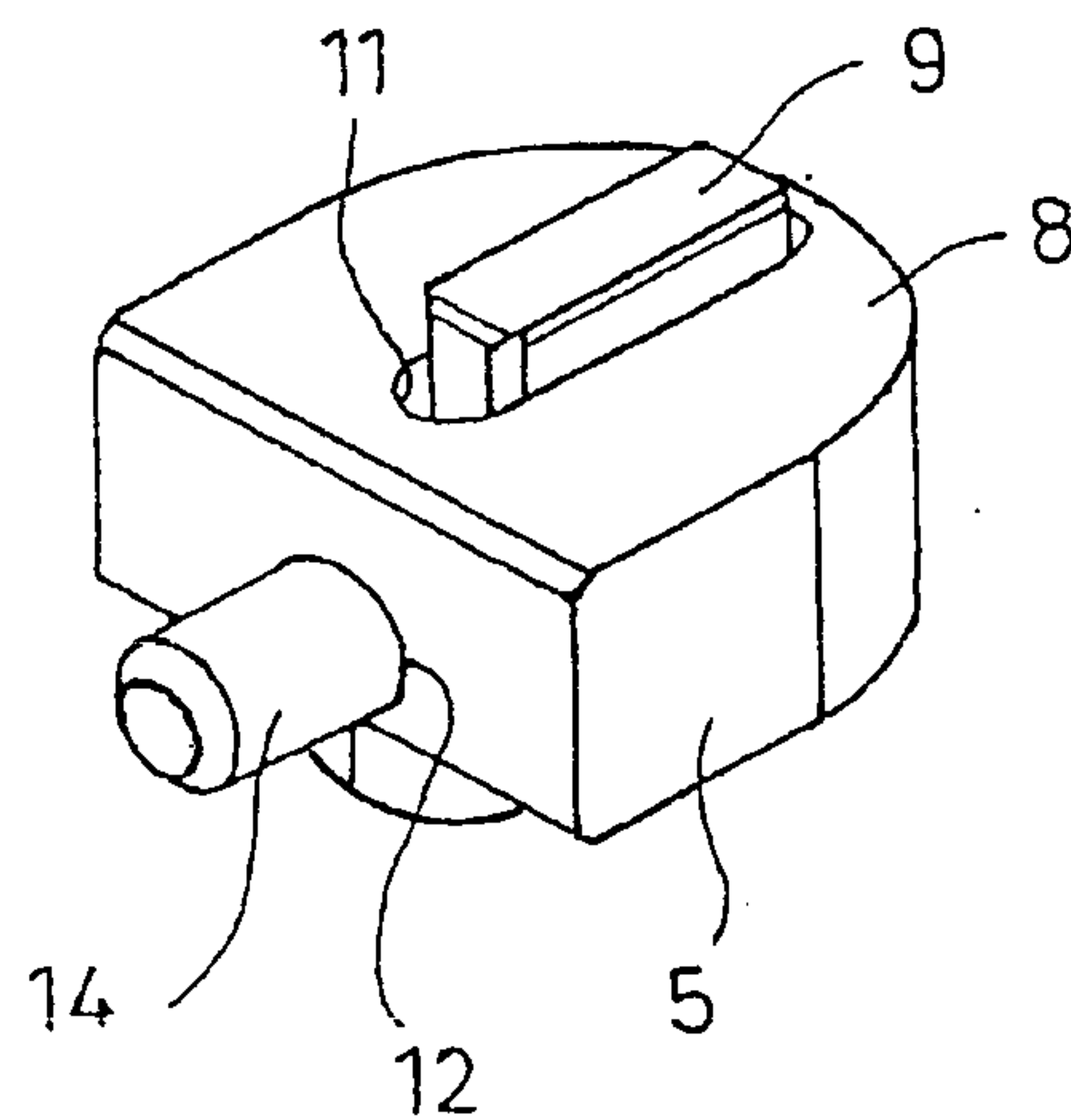


Fig. 3d

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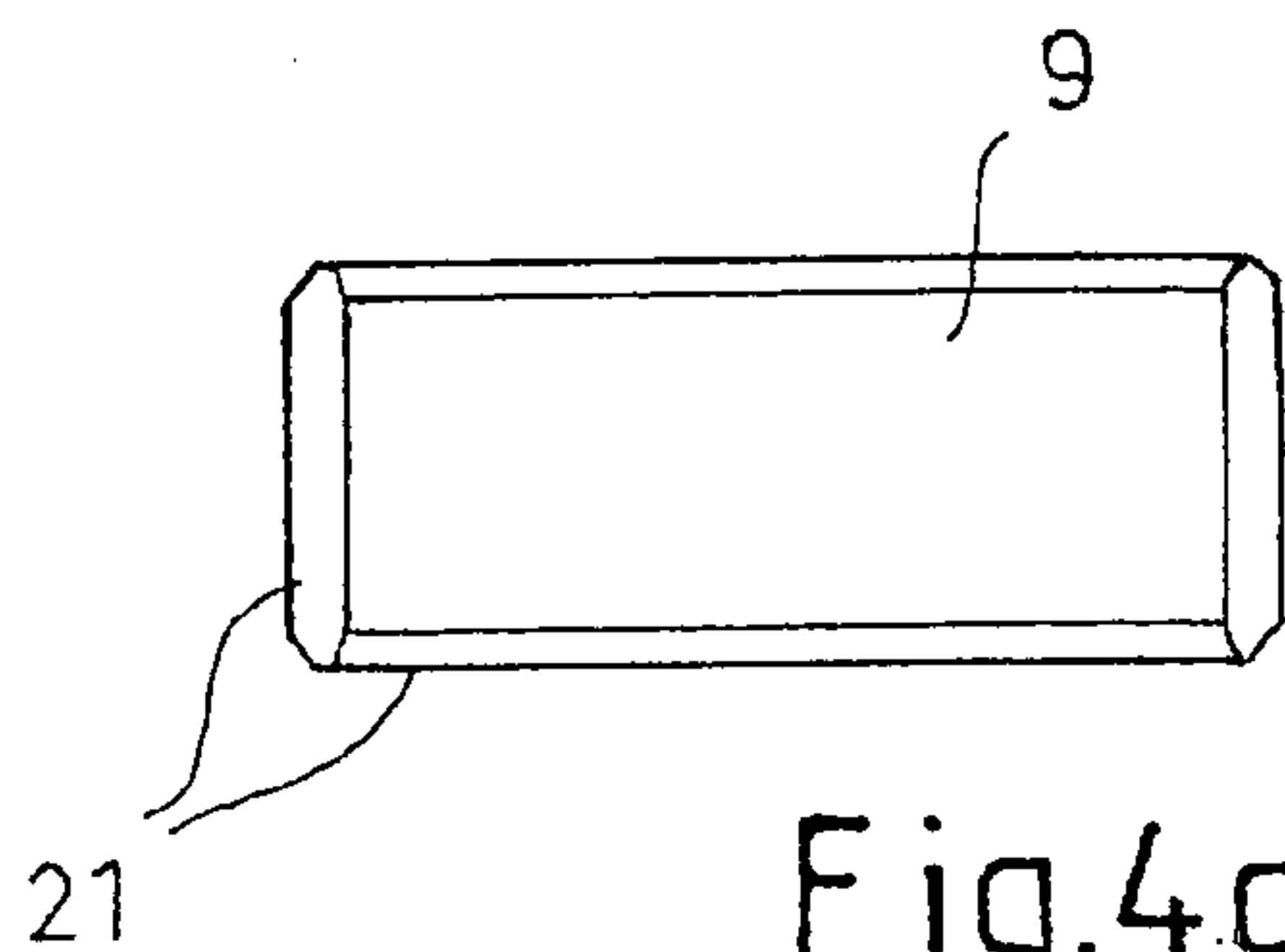


Fig. 4a

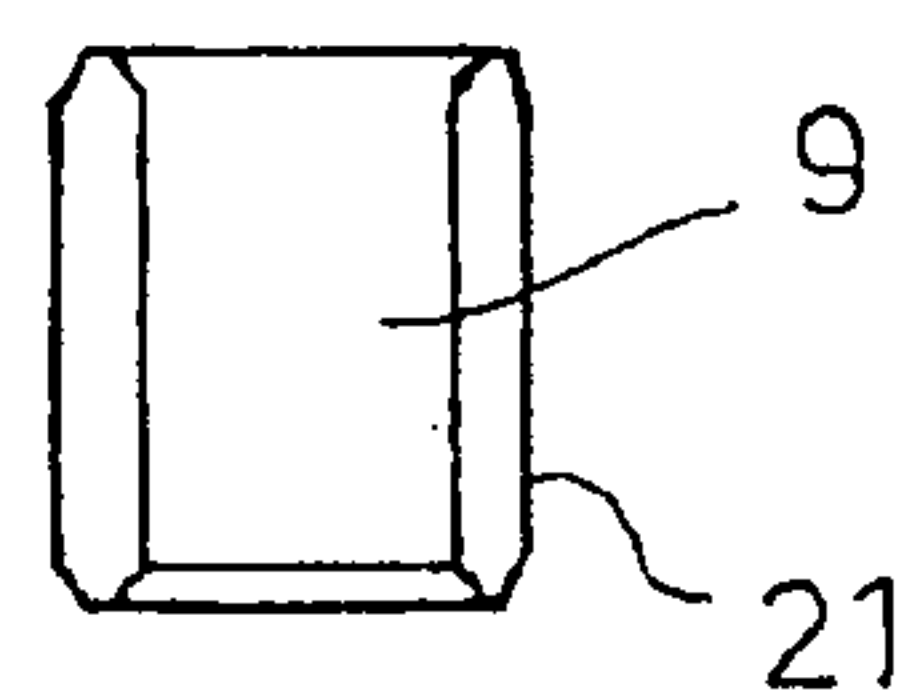


Fig. 4b

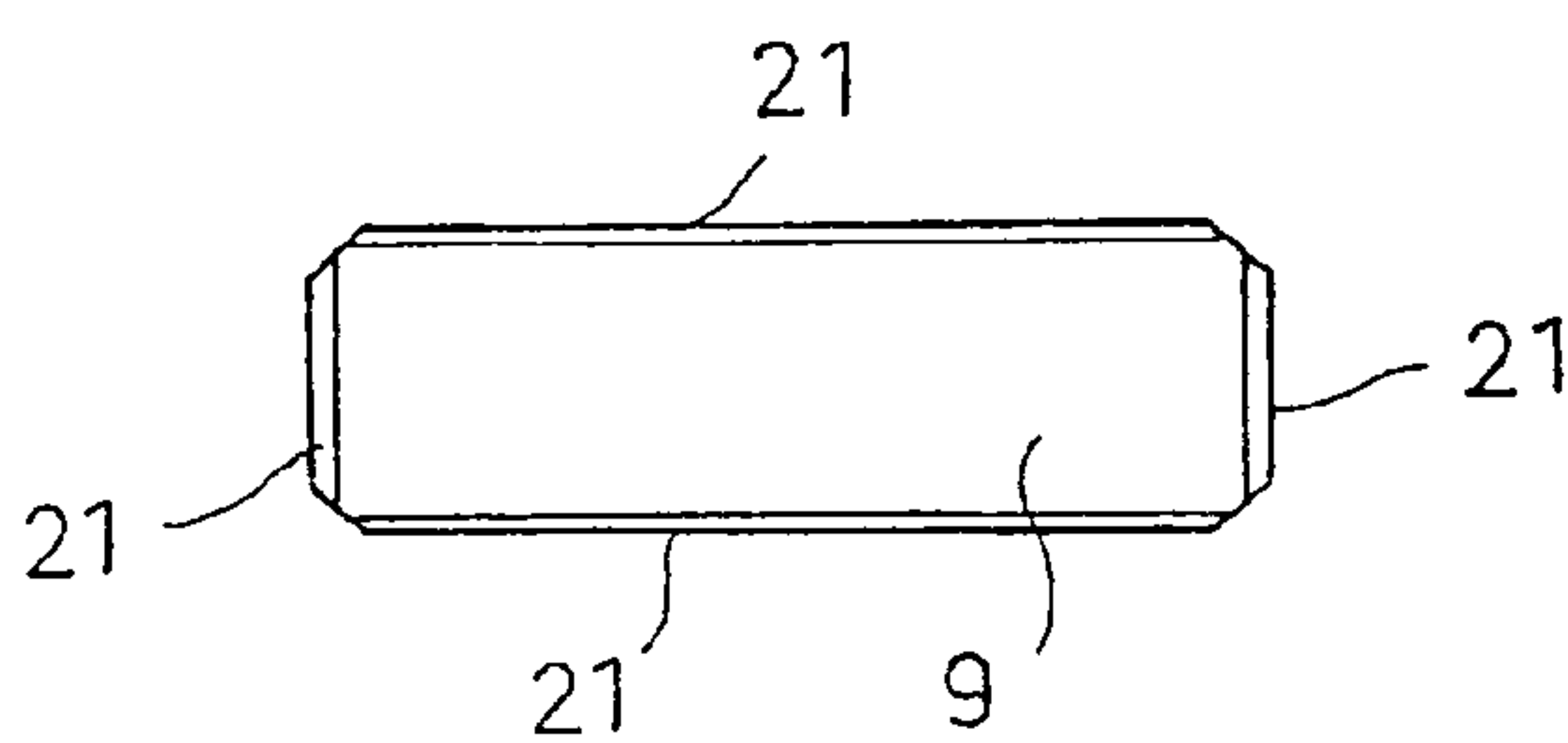


Fig. 4c

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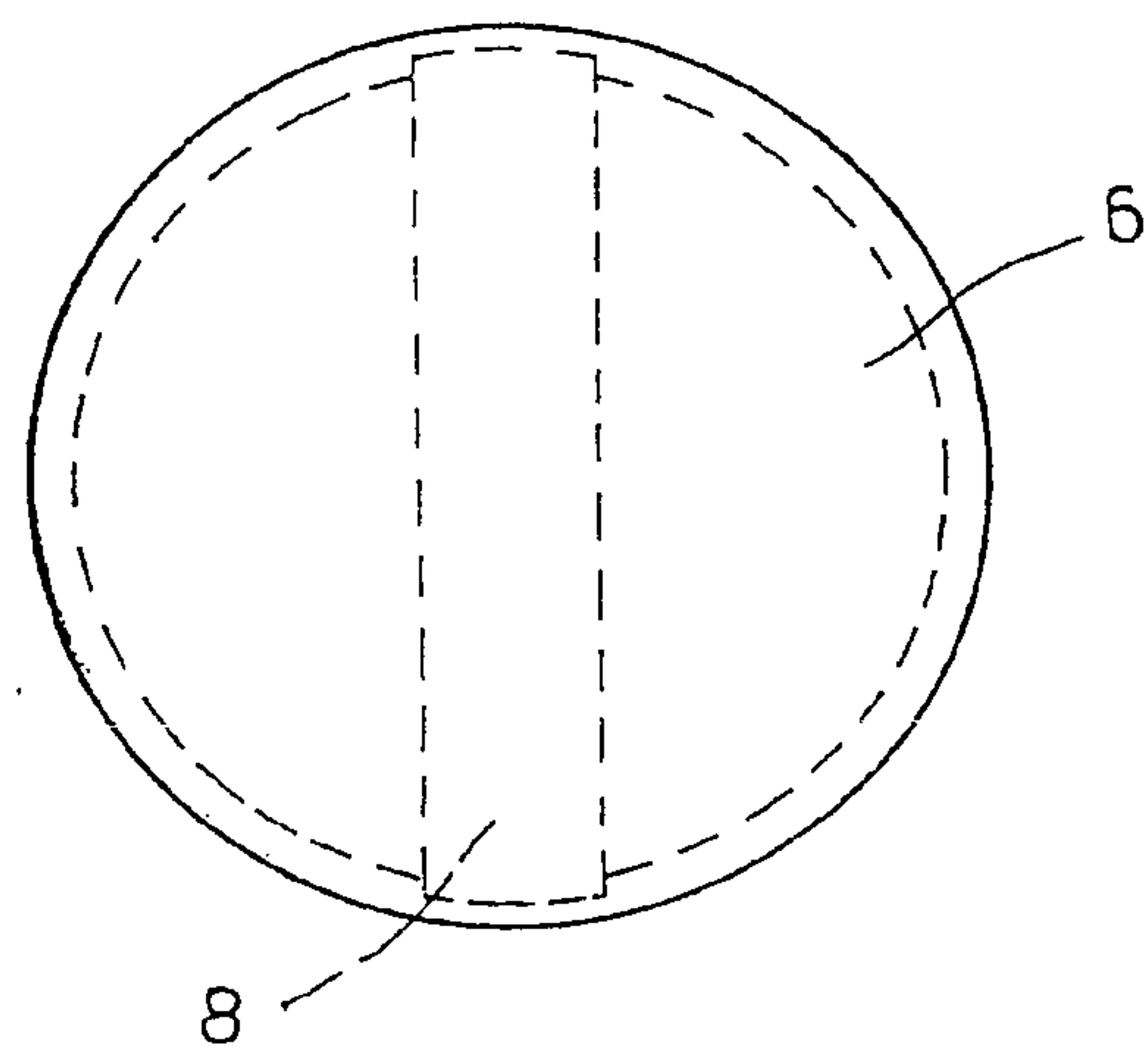
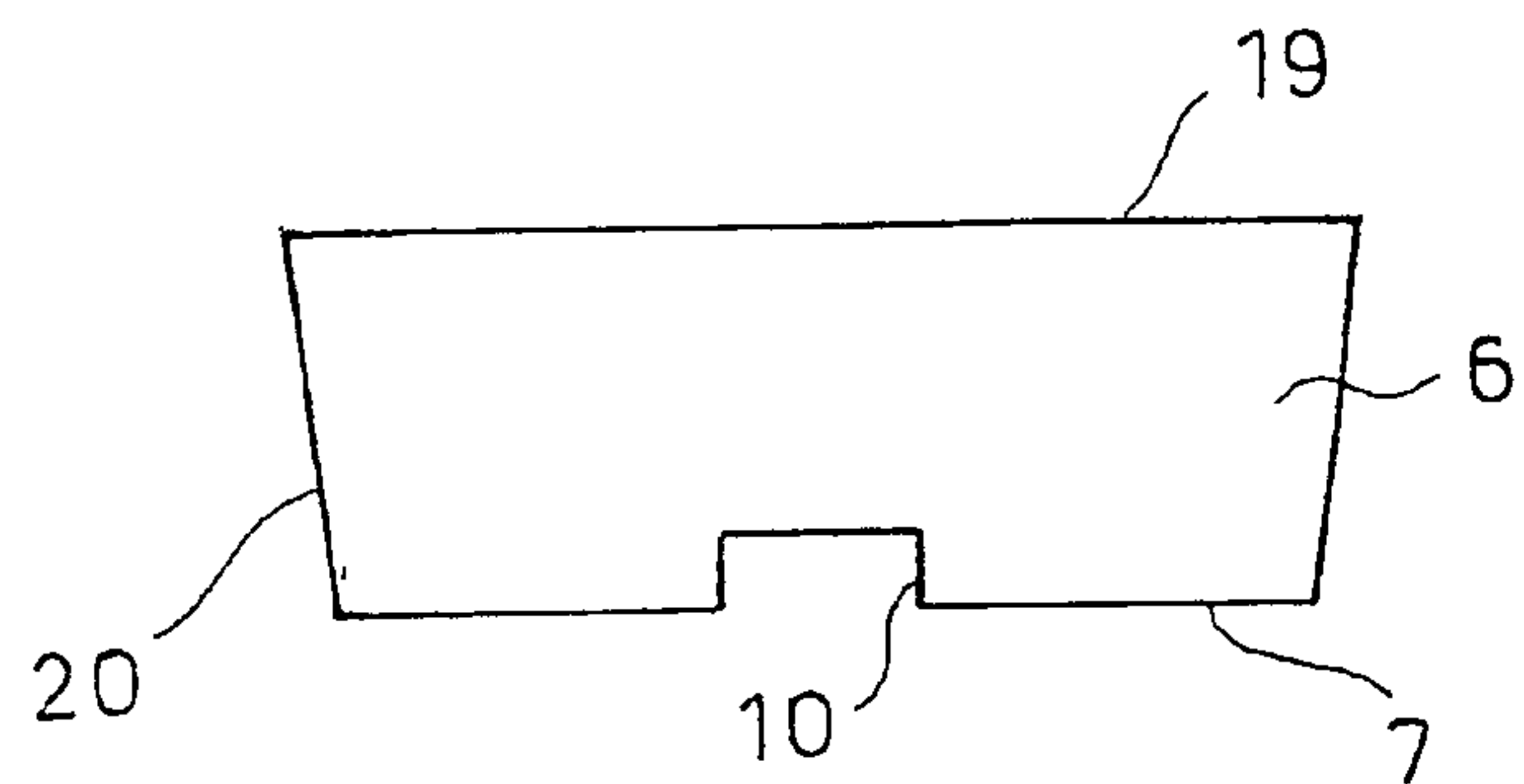


Fig. 5

