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(54) **Titre : DISPOSITIF DE FIXATION D'ELEMENTS DE PROTECTION BALISTIQUE**
(54) **Title: DEVICE FOR ATTACHING BALLISTIC PROTECTION ELEMENTS**

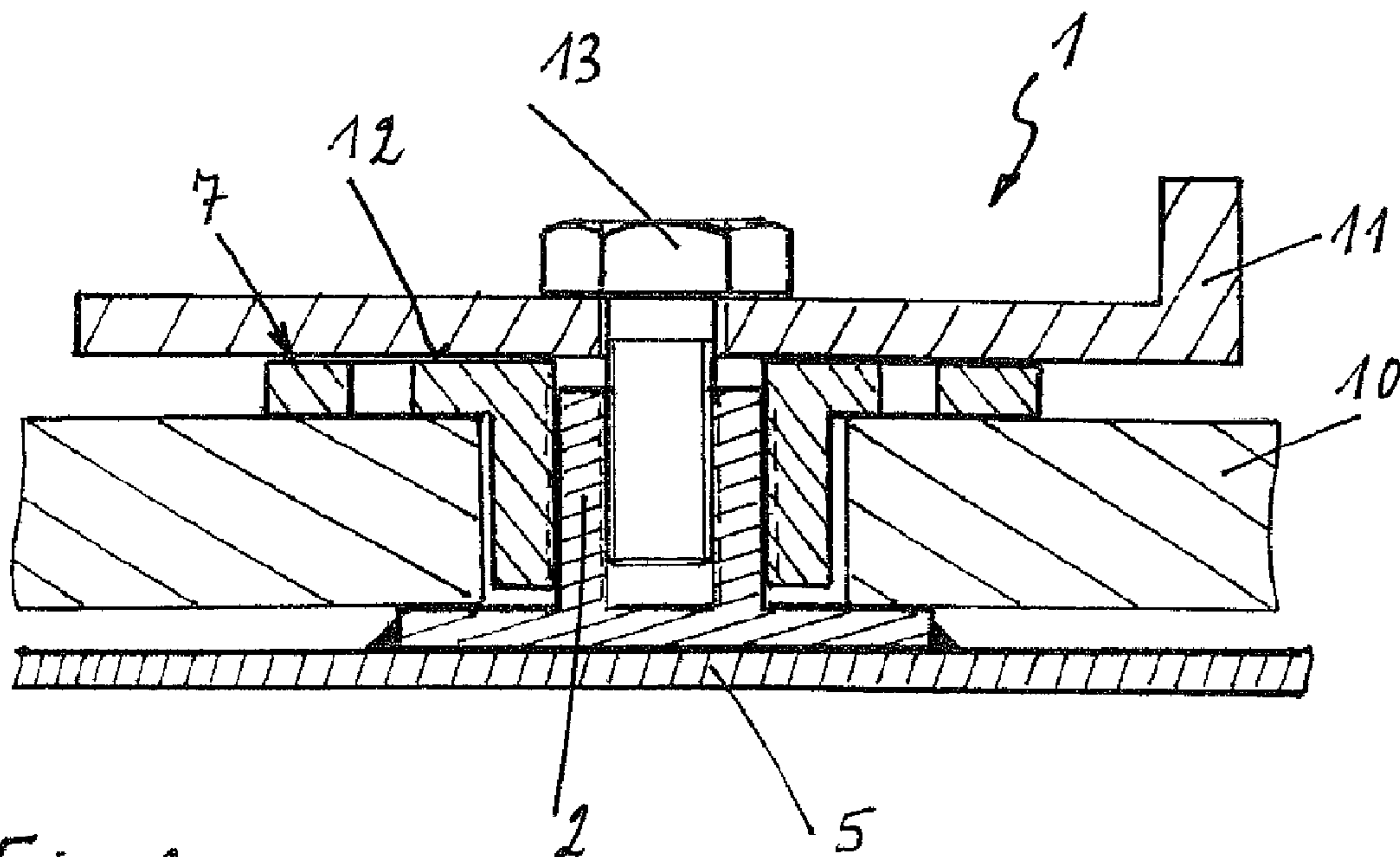


Fig. 2

(57) **Abrégé/Abstract:**

The invention relates to a device (1) comprising at least one welding cam (2-2'') for attaching ballistic protection elements (10) and additional add-on parts (11) to an object (5). In order to be able to attach a ballistic protection element (10) and an add-on part (11) to the same welding cam (2-2'') with different torques, a welding cam (2-2'') having a threaded bore (3) and an external thread (4) is proposed. In this case, the ballistic protection element (10) is screwed on with a first predefinable torque by means of a clamping nut (7; 7') which can be screwed onto the external thread (4) of the welding cam (2-2''). For this purpose, the clamping nut (7; 7') has a through-bore with an internal thread (8). Through this through-bore, the corresponding add-on part (11) can be connected to the threaded bore (3) of the welding cam (2-2''). Since the add-on part (11) bears against the clamping nut (7; 7') and not against the ballistic protection element (10), the add-on part (11) can be attached to the welding cam (2-2'') with a second torque conforming to standards, without damaging the ballistic protection element (10).

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[Fortsetzung auf der nächsten Seite]

(54) Title: DEVICE FOR ATTACHING BALLISTIC PROTECTION ELEMENTS

(54) Bezeichnung : VORRICHTUNG ZUR BEFESTIGUNG BALLISTISCHER SCHUTZELEMENTE

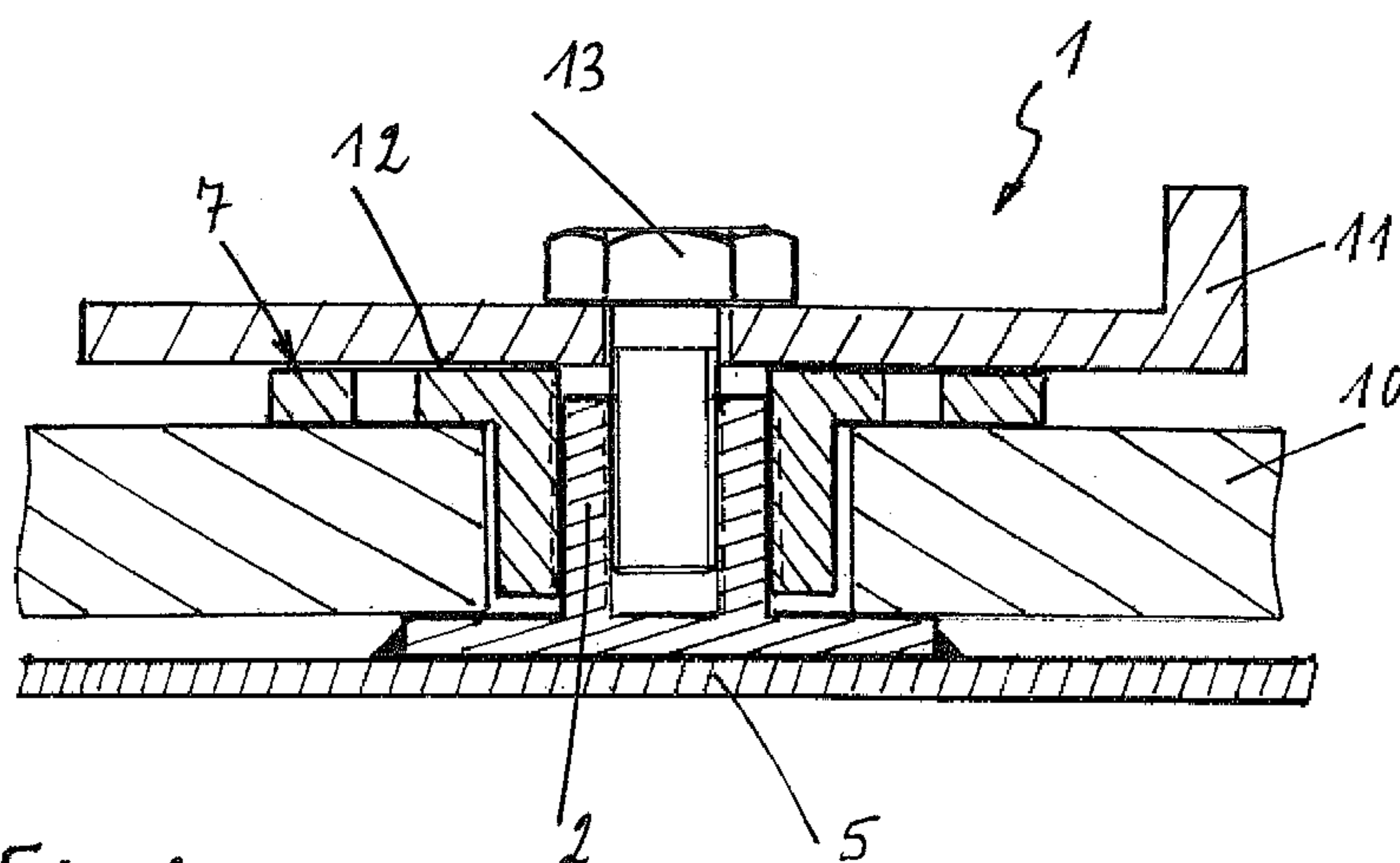


Fig. 2

(57) Abstract: The invention relates to a device (1) comprising at least one welding cam (2-2'') for attaching ballistic protection elements (10) and additional add-on parts (11) to an object (5). In order to be able to attach a ballistic protection element (10) and an add-on part (11) to the same welding cam (2-2'') with different torques, a welding cam (2-2'') having a threaded bore (3) and an external thread (4) is proposed. In this case, the ballistic protection element (10) is screwed on with a first predefinable torque by means of a clamping nut (7; 7') which can be screwed onto the external thread (4) of the welding cam (2-2''). For this purpose, the clamping nut (7; 7') has a through-bore with an internal thread (8). Through this through-bore, the corresponding add-on part (11) can be connected to the threaded bore (3) of the welding cam (2-2''). Since the add-on part (11) bears against the clamping nut (7; 7') and not against the ballistic protection element (10), the add-on part (11) can be attached to the welding cam (2-2'') with a second torque conforming to standards, without damaging the ballistic protection element (10).

(57) Zusammenfassung:

[Fortsetzung auf der nächsten Seite]

WO 2015/155196 A1**Veröffentlicht:**

— mit internationalem Recherchenbericht (Artikel 21 Absatz 3)

Die Erfindung betrifft eine Vorrichtung (1) umfassend mindestens einen Schweißnocken (2-2'') zur Befestigung ballistischer Schutzelemente (10) und zusätzlicher Anbauteile (11) an einem Objekt (5). Um an dem gleichen Schweißnocken (2-2'') ein ballistisches Schutzelement (10) und ein Anbauteil (11) mit unterschiedlichen Drehmomenten befestigen zu können, wird ein Schweißnocken (2-2'') mit einer Gewindebohrung (3) und einem Außengewinde (4) vorgeschlagen. Dabei erfolgt das Anschrauben des ballistischen Schutzelementes (10) mittels einer auf das Außengewinde (4) des Schweißnockens (2-2'') aufschraubbaren Spannmutter (7; 7') mit einem ersten vorgebbaren Drehmoment. Die Spannmutter (7; 7') verfügt hierzu über eine Durchgangsbohrung mit Innengewinde (8). Durch diese Durchgangsbohrung kann das entsprechende Anbauteil (11) mit der Gewindebohrung (3) des Schweißnockens (2-2'') verbunden werden. Da das Anbauteil (11) auf der Spannmutter (7; 7') und nicht auf dem ballistischen Schutzelement (10) anliegt, kann das Anbauteil (11) mit einem zweiten, normgerechten Drehmoment an dem Schweißnocken (2-2'') befestigt werden, ohne das ballistische Schutzelement (10) zu beschädigen.

DESCRIPTION**Device for attaching ballistic protection elements**

5 The invention relates to a device for fastening ballistic protective elements and additional add-on parts to an object which is to be protected in particular from the effects of weapons or mines, said device comprising a welded stub which is fastenable to the object and the
10 base region of which, facing the object, is connectable to the object via a welded connection, said welded stub also having a threaded bore into which a bolt is able to be screwed from the outside.

15 A fastening device of this type is known for example from the documents DE 20 2005 000 198 U1 and DE 10 2010 018 486 A1. A disadvantage in the use of these known devices has proved to be that when both a ballistic protective element and an add-on part are fastened to the
20 same welded stub, these parts cannot be mounted independently of one another in time. Furthermore, when the known welded stub is used, it is not generally possible to screw the ballistic protective element and the additional add-on part to the welded stub - and thus
25 to the object to be protected - with different torques. Since, however, the protective elements have to be fastened with less torque than is prescribed for the add-on parts by corresponding standards, a standard screw-connection of the add-on parts to the welded stub is
30 frequently not possible.

The invention is based on the object of specifying a device of the type mentioned at the beginning, in which a ballistic protective element and an add-on part are able
35 to be fastened to the same welded stub with different torques.

This object is achieved according to the invention by the features of claim 1. Further, particularly advantageous configurations of the invention are disclosed in the
5 dependent claims.

The invention is based essentially on the idea of using a welded stub having an internal and an external thread. In this case, the respective ballistic protective element is
10 screwed on by means of a clamping nut that is able to be screwed onto the external thread of the welded stub with a first predefinable torque. To this end, the clamping nut has a through-bore with an internal thread. Through this through-bore, the respective add-on part can be
15 connected to the internal thread of the welded stub. Since the add-on part rests on the clamping nut and not on the ballistic protective element, it can be fastened to the welded stub with a second, standard torque, without damaging the ballistic protective element.

20

A further advantage of the device according to the invention is that the ballistic protective elements and the add-on parts can be fastened to the object to be protected independently of one another in time.

25

In order to fasten the welded stub to the object to be protected, the welded stub can have a circumferential chamfer on its base side, said chamfer being able to be welded to the object via a fillet weld. However, it is
30 also possible to use a welded stub having a flange that protrudes on the base side, which is then able to be welded to the object either peripherally via a fillet weld or via a plug weld.

35 Furthermore, it has proven advantageous for a centering pin to be present on the underside of the welded stub,

said centering pin fitting into a bore present on the object to be protected and thus predefining the exact position of the stub.

5 In order to transfer the tightening torque when the ballistic protective element is fastened, bores can be provided in the flange of the clamping nut (resulting for example in a two-hole nut or in a capstan nut), it being possible for an appropriate special tool to engage in
10 said bores in order to turn the clamping nut.

However, provision can also be made, in order to transfer the tightening torques, for the flange of the clamping nut to be provided circumferentially with two opposite
15 wrench flats.

Further details and advantages of the invention can be gathered from the following exemplary embodiments that are explained with reference to figures, in which:

20

Figure 1 shows the longitudinal section through a device according to the invention, which is arranged on the object to be protected and contains a welded stub and a clamping
25 nut, having a ballistic protective element fastened to the object to be protected;

Figure 2 shows the view corresponding to figure 1, wherein an add-on part has been fastened
30 to the device in addition to the ballistic protective element;

Figures 3-5 show longitudinal sections through different embodiments of welded stubs of
35 the device according to the invention;

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Figures 6 and 7 show two plan views of the flanges of two different embodiments of clamping nuts.

In figure 1, a device according to the invention is denoted 1, said device comprising a welded stub 2 having a central threaded bore 3 and an external thread 4 (cf. also figure 4). The welded stub 2 is fastened to an object 5 to be protected (for example the hull of an armored vehicle) and to this end has a flange 6 on the side facing the object 5, said flange 6 being welded for example peripherally to the object 5.

Screwed onto the external thread 4 of the welded stub 2 is a clamping nut 7 having a through-bore with an internal thread 8, which has a flange 9 on its side facing away from the object 5 to be protected, the size of said flange 9 being chosen such that a ballistic protective element (additional armoring) 10 is fastened between the flange 9 of the clamping nut 7 and the flange 6 of the welded stub 2 in the mounted state of the device 1 (figure 1 and figure 2).

Figure 2 shows the view corresponding to figure 1, wherein an add-on part 11 is fastened to the device 1 in addition to the ballistic protective element 10. To this end, the add-on part 11 is applied to the top side 12 of the clamping nut 7 and fastened to the welded stub 2 in a force-fitting manner by way of a bolt 13 that is screwable into the threaded bore 3 in the welded stub 2.

30

Figures 3-5 show longitudinal sections through different embodiments of welded stubs of the device according to the invention. Here, in figure 3, the welded stub 2' has a circumferential chamfer 14 on its base side, said chamfer 14 being weldable to the object 5 to be protected via a fillet weld.

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In figures 4 and 5, the welded stub 2 and 2", respectively, has a flange 6, 6' on its base side, the peripheral circumference of said flange 6, 6' being weldable to the object 5 to be protected via a fillet weld (figure 4 and figures 1 and 2) or two bores 15 extending axially through said flange 6, 6' (figure 5) such that the welded stub 2" is able to be fastened to the object 5 to be protected via a plug weld.

10

As is indicated in figures 3-5 by dashed lines, the welded stubs 2-2" can additionally each have a centering pin 16 on their sides facing the object 5 to be protected, said centering pin 16 fitting in a bore present in the object 5 to be protected and thus predefining the exact position of the welded stub 2-2".

15

In order to transmit the tightening torque while the ballistic protective element 10 is being fastened, the clamping nut 7 can be configured for example as a two-hole nut (figure 6), i.e. two opposite bores 17 are located in the flange 9 of the clamping nut 7, it being possible for an appropriate special tool to engage in said bores 17 in order to turn the clamping nut 7.

20

25

However, provision can also be made for the flange 9' of the clamping nut 7' to be provided circumferentially with two opposite wrench flats 18 (figure 7) in order to transmit the tightening torques.

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List of reference signs

	1	Device
	2-2"	Welded stub
5	3	Threaded bore
	4	External thread
	5	Object
	6, 6'	Flange (welded stub)
	7, 7'	Clamping nut
10	8	Through-bore with internal thread
	9, 9'	Flange (clamping nut)
	10	Protective element
	11	Add-on part
	12	Top side
15	13	Bolt
	14	Chamfer
	15	Bore
	16	Centering pin
	17	Bore
20	18	Wrench flats

PATENT CLAIMS

1. A device for fastening ballistic protective elements (10) and additional add-on parts (11) to an object (5) which is to be protected in particular from the effects of weapons or mines, said device comprising a welded stub (2-2'') which is fastenable to the object (5) to be protected and the base region of which, facing the object (5), is connectable to the object (5) via a welded connection, said welded stub (2-2'') also having a threaded bore (3) into which a bolt (13) is able to be screwed from the outside, characterized in that the welded stub (2-2'') is provided with an external thread (4), in that the device (1) comprises a clamping nut (7; 7') having a through-bore with an internal thread (8), said clamping nut (7; 7') being able to be screwed onto the welded stub (2-2''), and in that the clamping nut (7; 7') has, on its side facing away from the object (5) to be protected, a flange (9; 9'), the size of which is selected such that, in the mounted state of the device (1), the respective ballistic protective element (10) is fastenable in a force-fitting manner between the flange (9; 9') of the clamping nut (7; 7') and the object to be protected (5) and the corresponding add-on part (11) is fastenable in a force-fitting manner between the bolt head of the bolt (13) and the flange (9; 9') of the clamping nut (7; 7').
2. The device as claimed in claim 1, characterized in that the welded stub (2') has a circumferential chamfer (14) on its base side, said chamfer (14) being able to be welded to the object (5) to be protected via a fillet weld.

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3. The device as claimed in claim 1, characterized in that the welded stub (2) has a flange (6) on its base side, the peripheral circumference of said flange (6) being able to be welded to the object (5) to be protected via a fillet weld.
- 5
4. The device as claimed in claim 1, characterized in that the welded stub (2'') has a flange (6') on its base side, at least one bore (15) extending axially through said flange (6') such that the welded stub (2'') is able to be fastened to the object (5) to be protected via a plug weld.
- 10
5. The device as claimed in one of claims 1 to 4, characterized in that the welded stub (2-2'') has at least one centering pin (16) on its side facing the object (5) to be protected.
- 15
6. The device as claimed in one of claims 1 to 5, characterized in that at least two bores (17) are arranged in the flange (9) of the clamping nut (7), it being possible for an appropriate special tool to engage in said bores in order to turn the clamping nut (7).
- 20
7. The device as claimed in one of claims 1 to 5, characterized in that the flange (9') of the clamping nut (7') is provided circumferentially with two opposite wrench flats (18).
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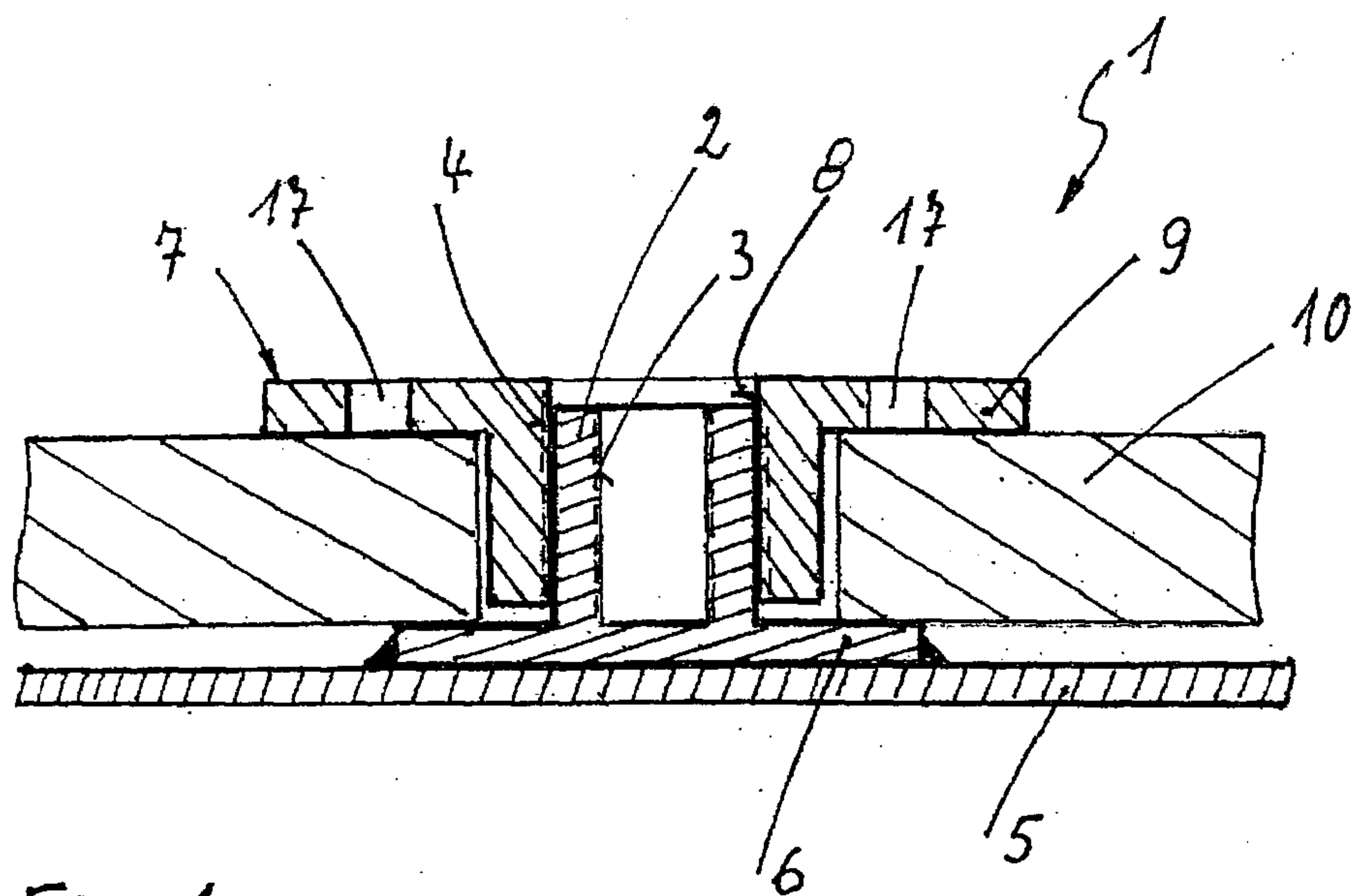


Fig. 1

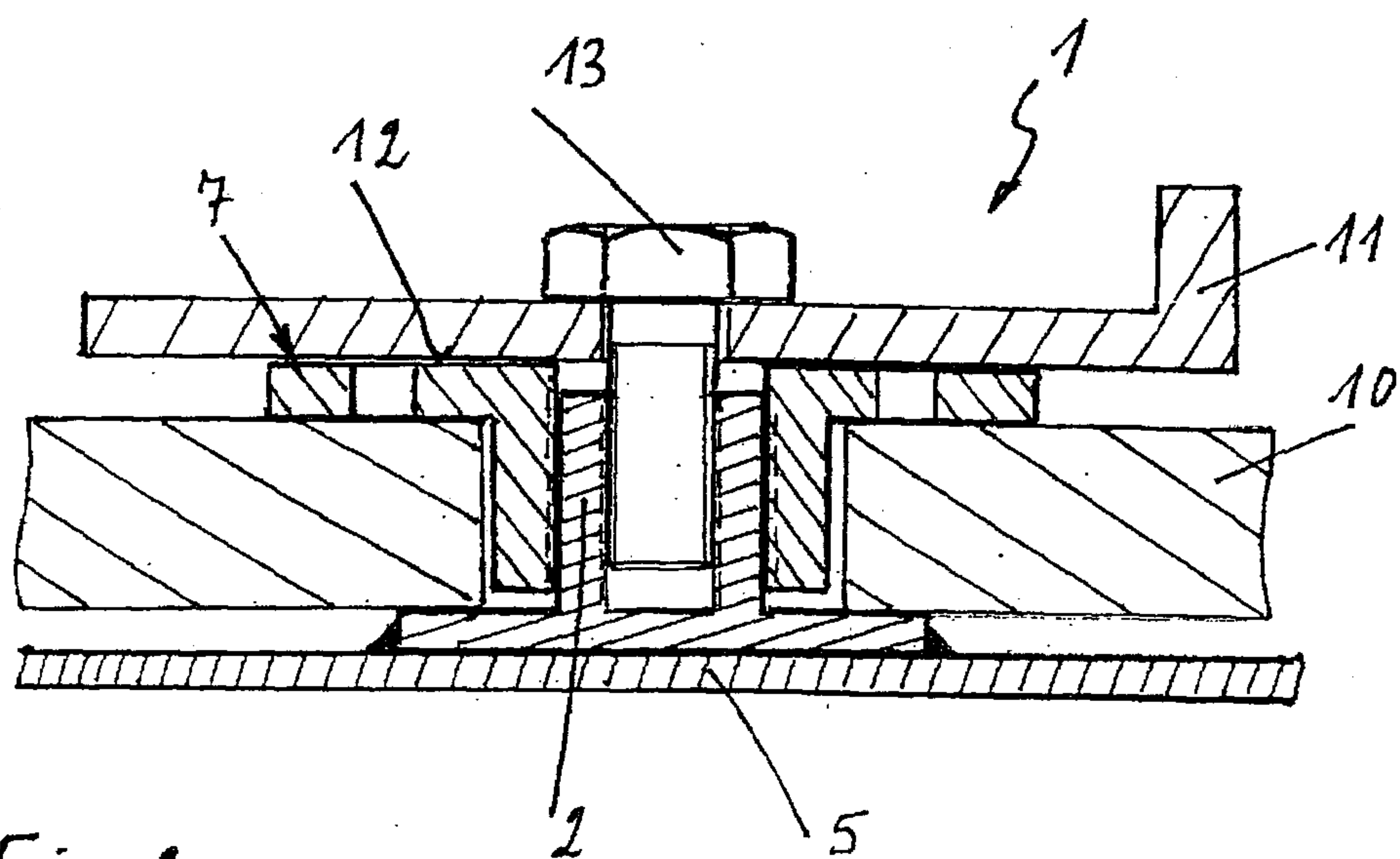


Fig. 2

Fig. 3

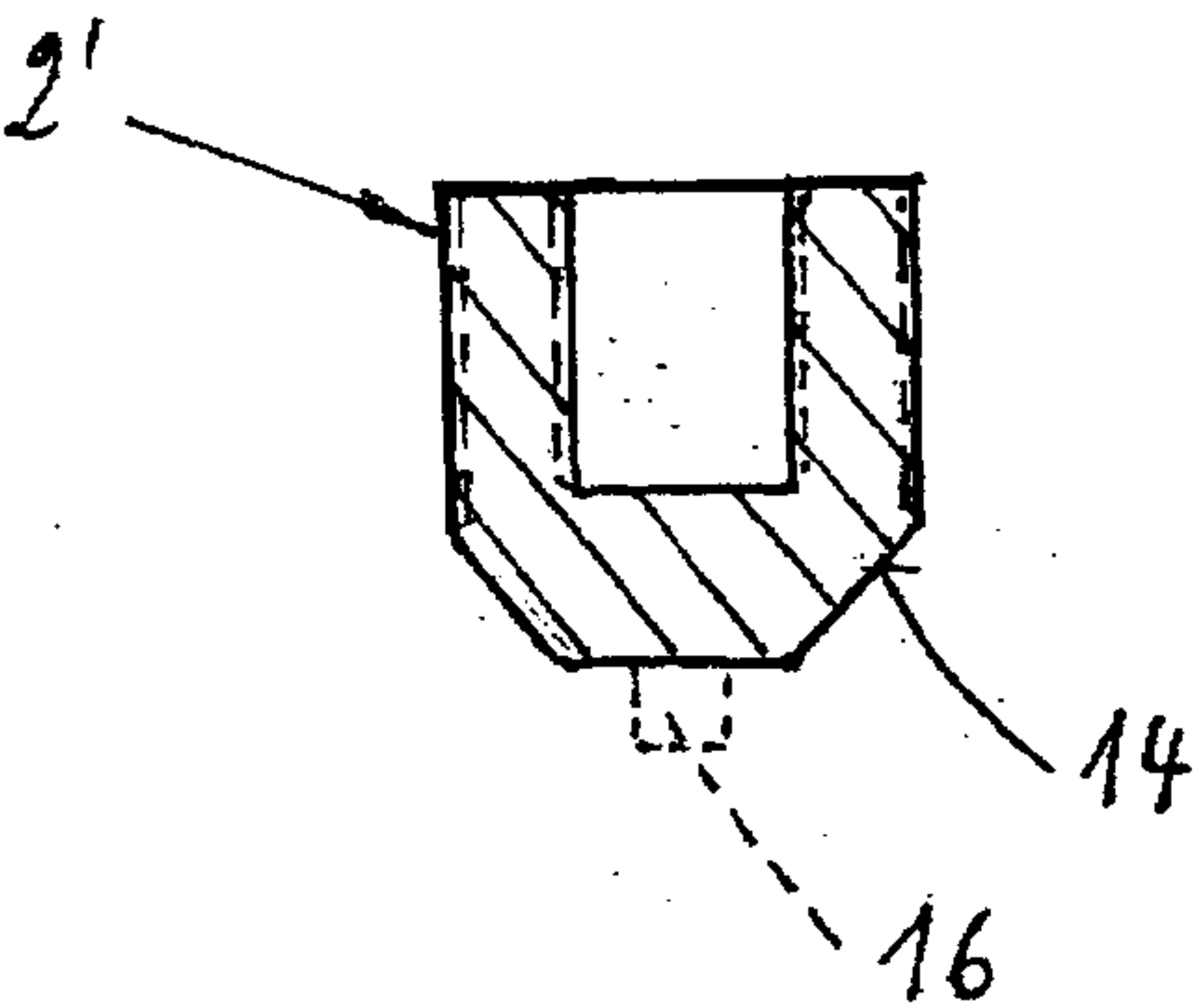


Fig. 4

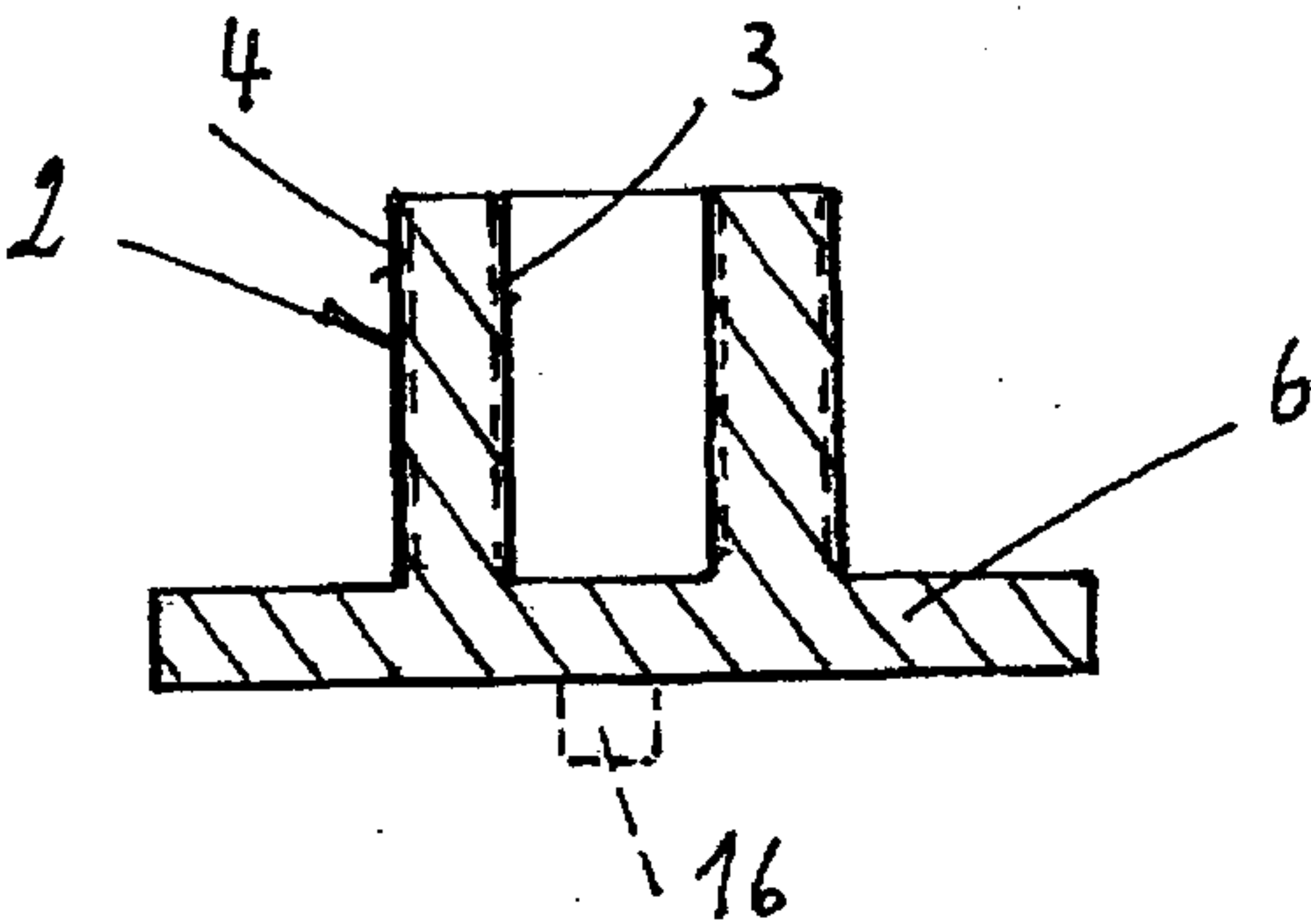
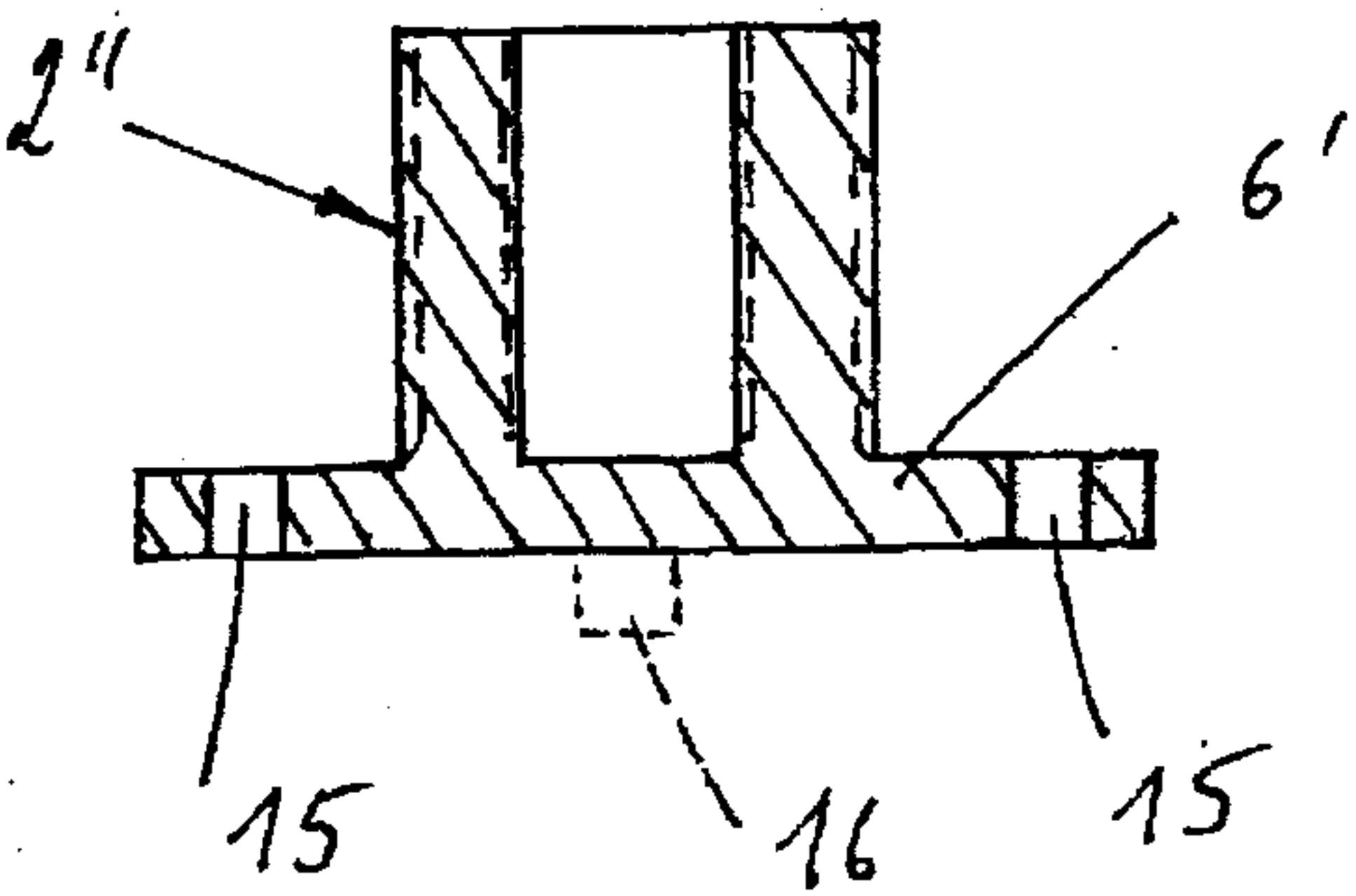


Fig. 5



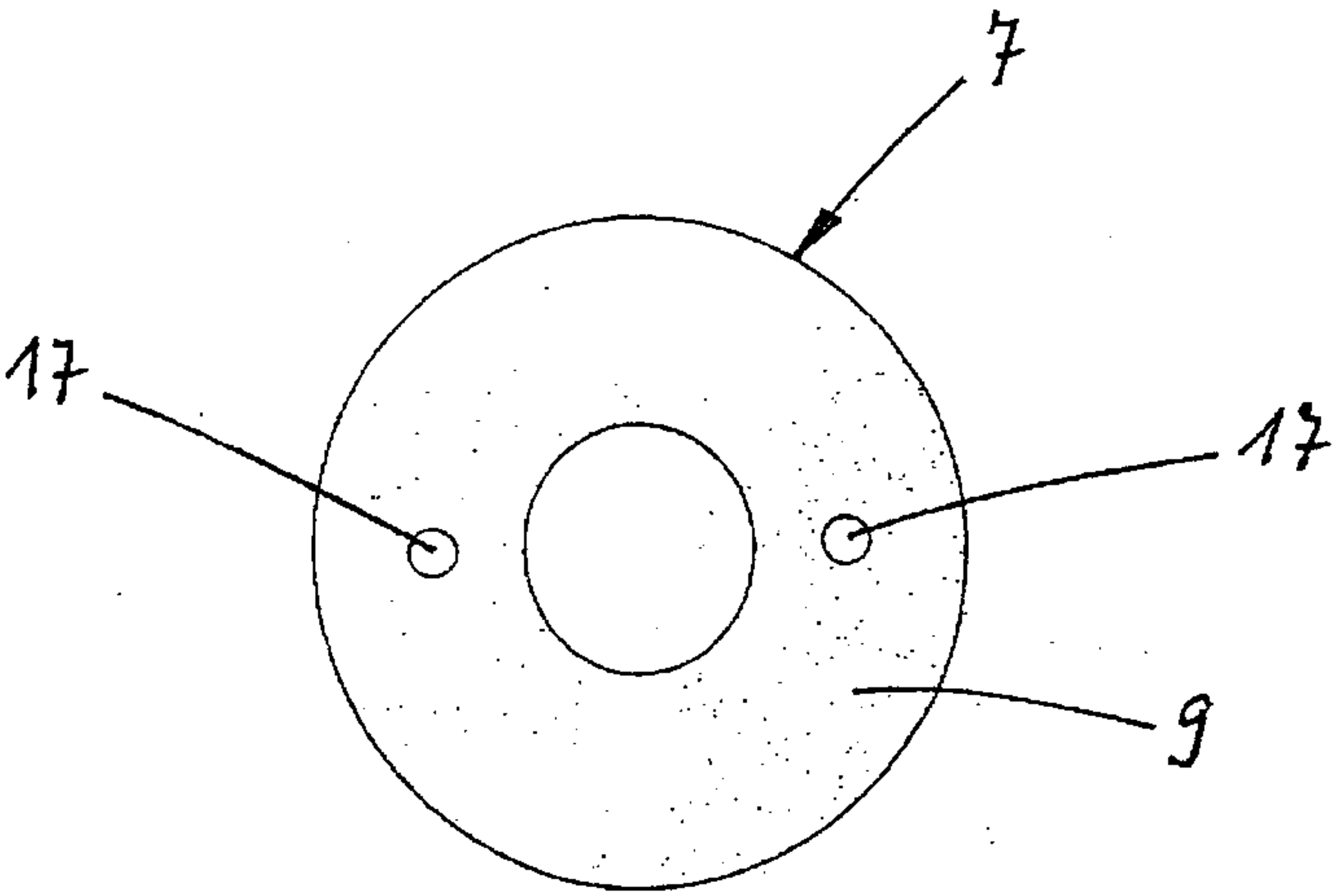


Fig. 6

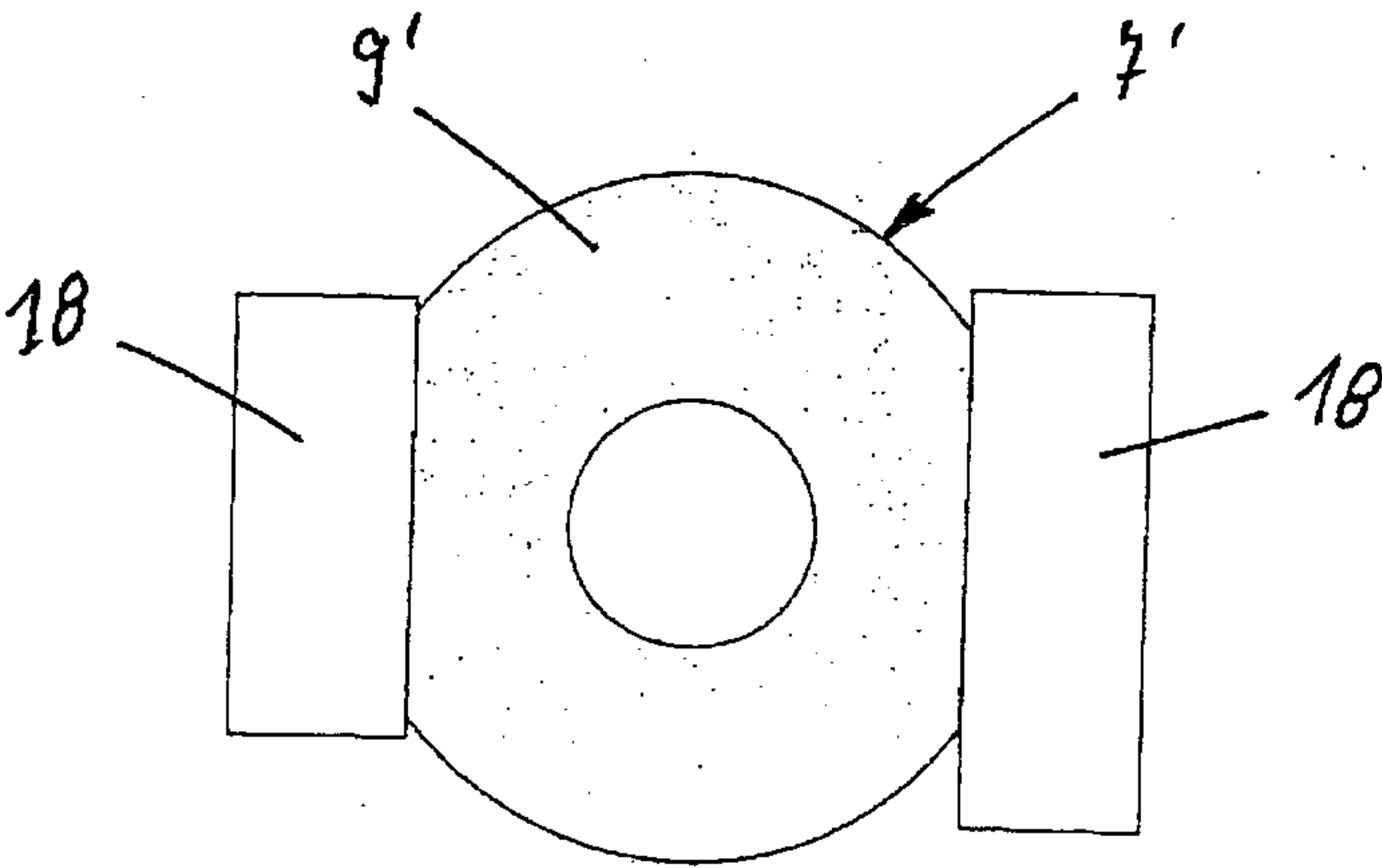


Fig. 7

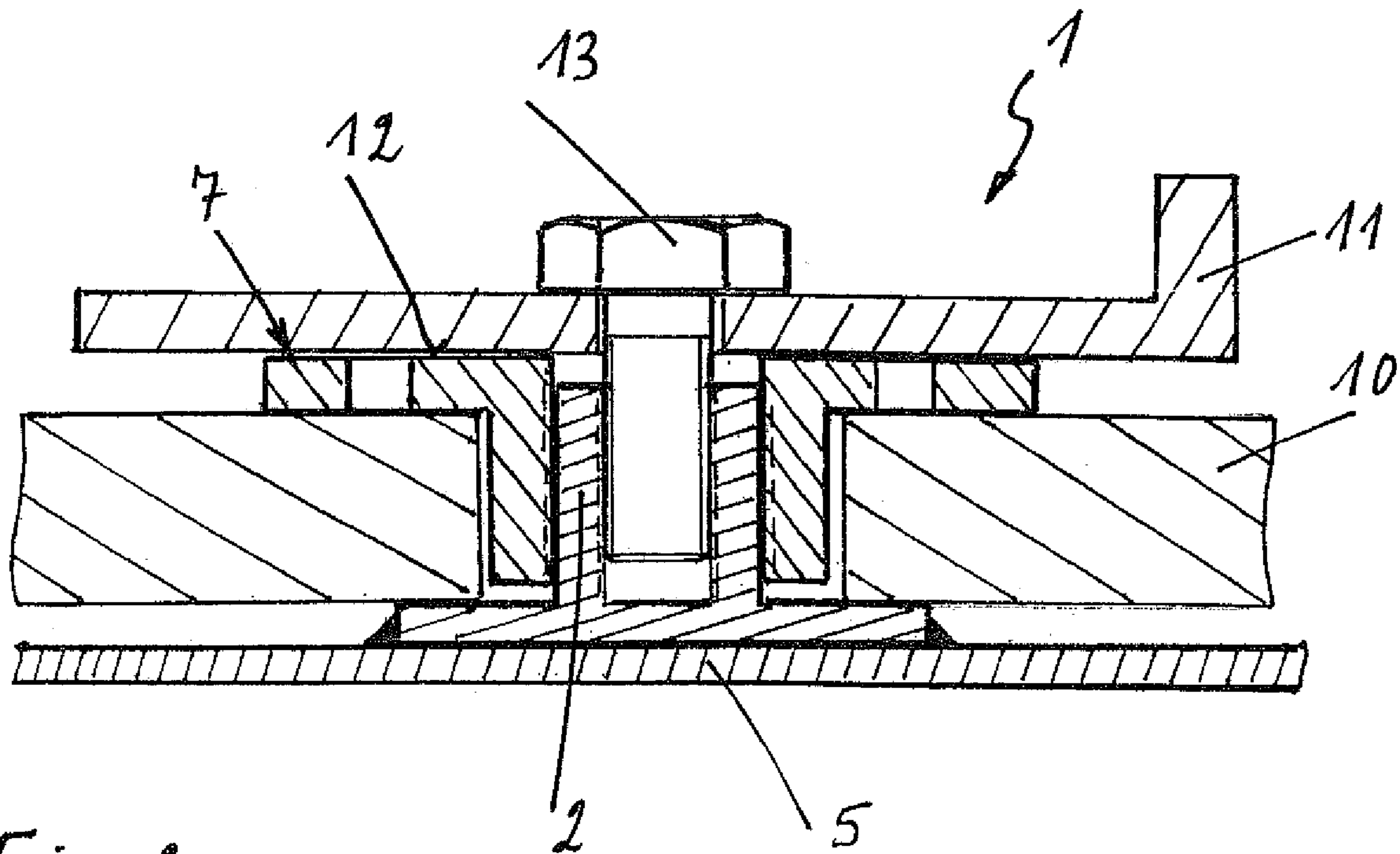


Fig. 2